CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT

Final Environmental Impact Report/ Environmental Impact Statement SCH# 2006101004

Prepared for
California Public Utilities Commission and
Monterey Bay National Marine Sanctuary

March 2018

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Office of National Marine Sanctuaries
1305 East-West Highway
Silver Spring, Maryland 20910

March 28, 2018

Dear Reviewer:

In accordance with provisions of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the National Oceanic and Atmospheric Administration (NOAA) and the California Public Utilities Commission (CPUC), as co-Lead Agencies, enclose for your review, the *Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed Monterey Peninsula Water Supply Project.*

California American Water Company (CalAm) submitted a permit application for the construction and operation of its proposed Monterey Peninsula Water Supply Project (MPWSP). The purpose of the MPWSP is to replace existing water supplies for CalAm's Monterey District service area. The MPWSP includes various proposed facilities and improvements including: a subsurface intake system; a 9.6-million-gallons-per-day reverse osmosis desalination plant; desalinated water storage and conveyance facilities; and expanded Aquifer Storage and Recovery facilities. Federal, state, and local agencies will use the Final EIR/EIS to consider related permits or other approvals.

The Final EIR/EIS assesses the potential environmental impacts associated with the proposed project and six alternatives including a No Action Alternative. The Final EIR/EIS identifies Alternative 5a as the environmentally superior/environmentally preferred alternative, assuming implementation of the Pure Water Monterey Groundwater Replenishment Project. Alternative 5a is also the NOAA-preferred alternative.

NOAA and the CPUC are not required to respond to comments received as a result of issuance of the Final EIR/EIS. However, comments received will be reviewed and considered for their impact on the issuance of a Certificate of Public Convenience and Necessity (CPCN) or a Record of Decision (ROD) described in Section 1.5.4. Please send comments to the decision makers below. The ROD will be made publically available after a final agency action.

Responsible Officials:

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Sincerely,

John Armor
Director

Enclosure

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LIST OF ACRONYMS

AF	Acre feet
afy	Acre-feet per year
ALJ	Administrative Law Judge
AMBAG	Association of Monterey Bay Area Governments
amsl	Above mean sea level
ASBS	Area of Special Biological Significance
ASR	Aquifer storage and recovery
AWTP	Advanced water treatment plant
BIRP	Begonia Iron Removal Plant
BLM	Bureau of Land Management
BMP	Best management practices
CAAQS	California Ambient Air Quality Standards
CAD	Computer Automated Design
Cal OSHA	California Division of Occupational Safety and Health
CalAm	California American Water Company (distribution center)
CalTrans	California Department of Transportation
CAWD	Carmel Area Wastewater District
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAMP	Central Coast Ambient Monitoring Program
CCC	California Coastal Commission
CCLEAN	Central Coast Long-term Environmental Assessment Network
CCoWS	Central Coast Watershed Studies
CCRWQCB	Central Coast Regional Water Quality Control Board
CCSD	Castroville Community Services District
CDFG	California Department of Fish and Game
CDO	Cease and Desist Order
CDHS	California Department of Health Services
CDPH	California Department of Public Health
CDPR	California Department of Parks and Recreation
CEC	California Energy Commission
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CGS	California Geological Survey
CHP	California Highway Patrol
CIP	Clean in place (for a membrane system)
CIWR	Center for Integrated Water Research
CNPS	California Native Plant Society
COCs	Contaminants of concern
Corps	United States Army Corps of Engineers (or USACE)
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission

CRDRP	Carmel River Dam and Reservoir Project
CSIP	Castroville Seawater Intrusion Project
CSU	California State University
CTR	California Toxics Rule
CVFP	Carmel Valley Filter Plant
CWA	Clean Water Act
CWP	Coastal Water Project
dB	Decibels
dBA	A-weighted decibels
DBP	disinfection byproducts
DEIR	Draft Environmental Impact Report
DRA	Division of Ratepayer Advocates
DTSC	California Department of Toxic Substances Control
DWPS	Desalinated Water Pump Station
DWR	Department of Water Resources
EDR	Environmental Data Resources
EFM	Enhanced flux maintenance
EIR	Environmental Impact Report
ESA	Endangered Species Act
ESF	Elkhorn Slough Foundation
ESNERR	Elkhorn Slough National Estuarine Research Reserve
ETo	Evapotranspiration
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FLEWR	Filter Loading Evaluation for Water Reuse
FOR A	Fort Ord Reuse Authority
ft	Feet
FTE	Foot Equivalent
GAC	Granular Activated Carbon
GHG	Greenhouse gases
gpm	Gallons per minute
GRRP	Groundwater Recharge Reuse Project
GWUDI	Groundwater under the direct influence of surface water
HAA	haloacetic acid
HDD	Horizontal directional drilling
HDPE	High-density polyethylene
HP	Horsepower
Hwy 218	Canyon Del Rey Boulevard
ID	Internal diameter
KOP	Key Observation Point
kW	Kilowatt
kWh	Kilowatt-hour
lbs/yr	Pounds per year
LF	Linear feet
LOS	Level of Service
LSI	Langlier Saturation Index
LUP/LCP	Land Use Plan/Local Coastal Program
LUST	Leaking underground storage tank
MBNMS	Monterey Bay National Marine Sanctuary
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MCEHD	Monterey County Health Department, Environmental Health Division
MCWD	Marina Coast Water District

MCWRA	Monterey County Water Resources Agency
MEC	Munitions and explosives of concern
MF	Microfiltration
MG	Million gallons
mg/L	Milligrams per liter
mgd	Million gallons per day
MLCSP	Mortar Lined and Course Steel Pipe
MLLW	Mean lower low water
MLML	Moss Landing Marine Laboratories
MLPP	Moss Landing Power Plant
MPWMD	Monterey Peninsula Water Management District
MRSWMP	Monterey Regional Stormwater Management Program
MRWMD	Monterey Regional Waste Management District
MRWPCA	Monterey Regional Water Pollution Control Agency
MSDS	Material Safety Data Sheet
msl	Mean sea level
MST	Monterey-Salinas Transit
MURP	Modern Urban Runoff Program
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NLP	New Los Padres Dam and Reservoir
NOAA	National Oceanic and Atmospheric Association
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRMCP	National Refractories and Minerals Corporation Plant
NTU	Nephelometric turbidity unit
O_3	Ozone
OTC	Once-through cooling
PBCSD	Pebble Beach Community Services District
PEA	Proponent's Environmental Assessment
PG&E	Pacific Gas and Electric
ppt	Parts per thousand
PPV	Peak Particle Velocity
psi	Pounds per square inch
PSMCSD	Pajaro/Sunny Mesa Community Services District
REPOG	Regional Plenary Oversight Group
RO	Reverse osmosis
ROW	Right-of-way
RTP	Regional Treatment Plant
RUWAP	Regional Urban Water Augmentation Project
RWQCB	Regional Water Quality Control Board
SBD	Ship-based desalination
SCV	Seawater conversion vessel
SEA	Monterey Regional Storm Water & Education Alliance
SEIR	Supplemental environmental impact report
SGB	Seaside Groundwater Basin
SHPO	California State Historic Preservation Office
SRDF	Salinas River Diversion Facility
SVA	Salinas Valley Aquitard

SVGB	Salinas Valley Groundwater Basin
SVIGSM	Salinas Valley Integrated Groundwater Surface Model
SVRP	Salinas Valley Reclamation Plant
SVWP	Salinas Valley Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	California State Water Resources Control Board
SWTP	Surface water treatment plant
TAMC	Transportation Agency of Monterey County
TDS	Total dissolved solids
thd	Total daily head
THM	Trihalomethane
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbons
TPH	Total Petroleum Hydrocarbons
UC	University of California
UCSC	University of California, Santa Cruz
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers (or Corps)
USEPA	United State Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
UV	Ultraviolet light
VGPS	Valley Greens Pumps Station
VOC	Volatile Organic Compounds
WFMCC	Water for Monterey County Coalition
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
WY	Water Year

ES. EXECUTIVE SUMMARY

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ES.1 Introduction

This Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared by the California Public Utilities Commission (CPUC) pursuant to the California Environmental Quality Act (CEQA) and Monterey Bay National Marine Sanctuary (Sanctuary or MBNMS) pursuant to the National Environmental Policy Act (NEPA). This EIR/EIS analyzes the potential environmental impacts of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) proposed by the California American Water Company (CalAm). CalAm is proposing the MPWSP to develop water supplies for CalAm's Monterey District service area (Monterey District). The MPWSP would include a subsurface source water intake system; a desalination plant; a brine discharge system; product water conveyance pipelines, one pump station, storage facilities; and improvements to the existing Seaside Groundwater Basin's aquifer storage and recovery (ASR) system (see Chapter 3, Description of the Proposed Project).

This EIR/EIS has been prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3, §15000 et seq.), and with NEPA (42 U.S.C. §4321 et seq.,) and its implementing regulations (40 CFR Parts 1500-1508). For the purposes of this document, the CEQA lead agency for the MPWSP is the CPUC; the NEPA lead agency is MBNMS. This EIR/EIS presents information to understand the potential environmental consequences of the proposed project, proposed permit issuance by MBNMS, and alternatives. Consistent with CEQA and NEPA, this Final EIR/EIS includes responses to all comments received on the Draft EIR/EIS that was published on January 13, 2017, and includes revisions to the Draft EIR/EIS text that were made in response to comments (see Section 1.5.3 for details) as well as Lead Agency-initiated changes.

ES.2 Project Background

CalAm, the project applicant, is a privately owned public water utility that has served the Monterey Peninsula since 1966. CalAm's Monterey District encompasses most of the Monterey Peninsula, including the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the unincorporated areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. Within this service area, CalAm provides water to residential, commercial, industrial, and other customers. The water supply challenges facing CalAm and the Monterey Peninsula are substantial and have been well-documented in a number of venues including the State Water Resources Control Board (SWRCB), the Monterey County Superior Court, the CPUC, and the California Legislature.

In 2004, CalAm filed Application A.04-09-019 seeking a Certificate of Public Convenience and Necessity from the CPUC for the Coastal Water Project. The Coastal Water Project (CWP) was intended to replace existing Carmel River water supplies for the CalAm Monterey District service area that are constrained by legal decisions. In general, the CWP involved the production of desalinated water supplies (using existing intakes at the Moss Landing Power Plant), increasing the yield from the Seaside Groundwater Basin ASR system, and building additional storage and conveyance systems to move the replacement supplies to the existing CalAm distribution system. The CWP was sized to meet existing water demand and did not include supplemental supplies to accommodate growth. On January 30, 2009, the CPUC published a Draft EIR analyzing the environmental impacts of the CWP and two project alternatives—the North Marina Project and the Regional Project. The CPUC published the Coastal Water Project Final EIR (SCH No. 2006101004) in October 2009 and certified the Final EIR in December 2009 (Decision D.09-12-017). A year later, in Decision D.10-12-016, the CPUC approved implementation of the Regional Project alternative. The Coastal Water Project Final EIR is available for review at the CPUC, 505 Van Ness Avenue, San Francisco, California 94102.

Subsequent to approval of the Regional Project, CalAm withdrew its support for the Regional Project in January 2012. As a result, in April 2012, CalAm submitted Application A.12-04-019 to the CPUC for the MPWSP. The MPWSP includes many of the same elements previously analyzed in the CWP EIR; however, key components, including the source water intake system and desalination plant, have been relocated and/or modified under the current proposal. The CPUC issued a Notice of Preparation (NOP) of an EIR for the proposed project on October 10, 2012. Hardcopies of the NOP were mailed to all federal, state, responsible, and trustee agencies involved in approving or funding the project, as well as relevant local agencies and special districts with jurisdiction in the project area. The mailing list also included organizations, members of the public, and local, regional, and state agencies who commented on, or were involved in, the CalAm Coastal Water Project Draft EIR (State Clearinghouse No. 2006101004, concerning the predecessor proposed project to the MPWSP), or who have expressed interest in participating in the CEQA process for the MPWSP. In addition, although not required by CEQA, property owners and occupants of parcels located within 300 feet of proposed project components were identified and sent NOP postcards with information about the project, scoping period, and opportunities for submitting comments. The NOP was also made available at 13 local libraries and was published in local newspapers and legal advertisements. Three scoping meetings were

conducted in the project area in October 2012. A Draft EIR on the MPWSP was issued on April 30, 2015. The MPWSP Draft EIR is available for review at the CPUC, 505 Van Ness Avenue, San Francisco, California. In September 2015, after considering the Draft EIR comments and based on conversations with MBNMS and internal CPUC deliberations, the CPUC Energy Division announced that the April 2015 Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination with MBNMS.

On May 19, 2015, MBNMS received a permit application from CalAm and responded on June 16, 2015, that the agency would initiate a NEPA review for the project. On August 26, 2015, NOAA's Office of National Marine Sanctuaries initiated the NEPA process by issuing a Notice of Intent (NOI) to prepare an EIS for the project (80 FR 51787, August 26, 2015). The NOI solicited input on the issues to be analyzed in depth related to the portion of the proposed project within the Sanctuary's boundaries, and regarding the full spectrum of environmental issues and concerns relating to the scope and content of the EIS. On September 10, 2015, MBNMS held a NEPA scoping meeting for the project; the scoping period closed on October 2, 2015. A summary of EIS scoping comments is provided in Appendix A.

On September 15, 2016, in Decision 16-09-021, the CPUC authorized CalAm to enter into a Water Purchase Agreement, which provides that the Monterey Regional Water Pollution Control Agency (MRWPCA) will sell purified water from its advanced treated Pure Water Monterey Groundwater Replenishment (GWR) Project to the Monterey Peninsula Water Management District (MPWMD), which in turn will sell it to CalAm for extraction and distribution to ratepayers in the Monterey District service area. The GWR Final EIR Project Description is presented in Appendix H.

CPUC Decision 16-09-021 also authorized CalAm to construct the new Monterey Pipeline and Pump Station.

ES.3 CEQA Project Objectives / NEPA Purpose and Need

ES.3.1 Project Objectives

Based on review of information in CalAm's application, the primary, or fundamental, objectives of the proposed MPWSP are to:

1. Develop water supplies for the CalAm Monterey District service area to replace existing Carmel River diversions in excess of CalAm's legal entitlement of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2009-0060;

2. Develop water supplies to enable CalAm to reduce pumping from the Seaside Groundwater Basin from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality;

3. Provide water supplies to allow CalAm to meet its obligation to pay back the Seaside Groundwater Basin by approximately 700 afy over 25 years as established by the Seaside Groundwater Basin Watermaster;

4. Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers;
5. Develop a reliable water supply that meets fire flow requirements for public safety;
6. Provide sufficient water supplies to serve existing vacant legal lots of record;
7. Accommodate tourism demand under recovered economic conditions;
8. Minimize energy requirements and greenhouse gas emissions per unit of water delivered; and
9. Minimize project costs and associated water rate increases.

The secondary objectives of the MPWSP are to:

1. Locate key project facilities in areas that are protected against predicted future sea-level rise in a manner that maximizes efficiency for construction and operation and minimizes environmental impacts;
2. Provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build out demand in accordance with adopted General Plans; and
3. Improve the ability to convey water to the Monterey Peninsula cities by improving the existing interconnections at satellite water systems and by providing additional pressure to move water over the Segunda Grade.

ES.3.2 MBNMS Purpose and Need

Federal proposed actions consist of the following: 1) authorization of a Coastal Development Permit for CalAm to drill into the submerged lands of MBNMS to install a subsurface seawater intake system; 2) authorization of a Central Coast Regional Water Quality Control Board (RWQCB) issued National Pollutant Discharge Elimination System (NPDES) permit to allow for the discharge of brine into MBNMS via an existing ocean outfall pipe; and 3) issuance of a special use permit to CalAm for the continued presence of a pipeline in MBNMS transporting water to or from a desalination facility.

The purpose of these proposed actions is to authorize otherwise prohibited activities to occur within MBNMS, to ensure that the State and Federal permits and the proposed project comply with MBNMS regulations, and to ensure that MBNMS resources are protected by requiring terms and conditions that may be necessary. The need for MBNMS action is to respond to CalAm's permit and authorization request in accordance with NMSA regulations and to protect sanctuary resources.

ES.4 Public & Agency Involvement

ES.4.1 Public and Agency Involvement

This Final EIR/EIS is a public document for use by the CPUC, MBNMS, other governmental agencies, and the public in identifying and evaluating the potential environmental consequences of the proposed project and proposed federal actions, identifying mitigation measures to lessen or

eliminate adverse impacts, and examining feasible alternatives to the proposed project. It is expected that the CPUC, MBNMS, and other responsible, trustee, and relevant agencies will use this EIR/EIS in deciding whether to approve the MPWSP or any alternative. The analyses contained within this EIR/EIS will be used to determine any necessary regulatory permits, authorizations, or approvals.

The Draft EIR/EIS was published on January 13, 2017 and was circulated to local, state, and federal agencies as well as interested organizations and individuals who wished to review it. Copies of the Draft EIR/EIS were made available at local libraries and water agencies, and it is available for downloading at http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html. Notice of the Draft EIR/EIS availability was also sent directly to every agency, person, or organization that commented on the CPUC's Notice of Preparation (NOP) or the Sanctuary's Notice of Intent (NOI). The publication of the Draft EIR/EIS marked the beginning of a public review period that ran from January 13, 2017 through March 29, 2017. The Lead Agencies held public meetings in the cities of Marina and Seaside on February 15, 2017, and held a public hearing for the receipt of oral and written comments on the Draft EIR/EIS in Carmel-by-the-Sea, on February 16, 2017.

The Lead Agencies received approximately 85 comment letters, plus 2 form letter submissions (Form Letter 1 consists of 149 one-page letters, and Form Letter 2 consists of 791 one- or two-page letters), sent through mail, hand-delivery, or email, as well as 18 oral comments received at the public hearing. Chapter 8, Draft EIR/EIS Responses to Comments, includes a list of all agencies, organizations, and individuals that submitted comments, copies of all comment letters and the transcript of oral comments, and responses to all comments.

Following circulation of the Draft EIR/EIS and incorporation of public comments and responses to comments (see Chapter 8), this Final EIR/EIS is being published by the CPUC and submitted into the formal record of the Commission's Certificate of Public Convenience and Necessity proceeding (A.12-04-019). Concurrently, NOAA is submitting the Final EIR/EIS to the USEPA and publishing a Notice of Availability in the Federal Register.

ES.4.2 Final EIR/EIS and Revisions Made to the Draft EIR/EIS

Public and agency comments on the Draft EIR/EIS did not require changes in the conclusions of the Draft EIR/EIS that resulted in any new or substantially more severe impacts for the proposed project. Furthermore, there were no changes to the proposed project or to the circumstances under which the proposed project will be undertaken or significant new information relevant to environmental concerns that indicate the proposed project would result in impacts more adverse than disclosed in the Draft EIR/EIS or that additional feasible mitigation measures or alternatives warrant consideration. The following key changes have been incorporated into the Final EIR/EIS, consistent with minor modifications made to the proposed project, other clarifications requested by comments on the Draft EIR/EIS, and Lead Agency-initiated changes:

- Removal of references to, and analysis of, the Terminal Reservoir, which CalAm has indicated is not needed for project operation and no longer proposes as part of the project;

- Addition of the Brine Mixing Box to the description and analysis of the proposed Brine Disposal Pipeline by request of CalAm and Monterey Regional Water Pollution Control Agency (MRWPCA);
- Inclusion of additional brine discharge dilution modeling and Ocean Plan Compliance modeling in Section 4.3, Surface Water Hydrology and Water Quality, by request of MRWPCA (also see Appendices D1 and D3);
- Inclusion of information from recent geophysical studies of seawater intrusion in the Salinas Valley Groundwater Basin (SVGB) – Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) – in Section 4.4.1.4, Groundwater Resources;
- Expansion of the SVGB Return Water/Ocean Water Percentage discussion in Section 4.4.1.5, Groundwater Resources;
- Clarification of the capture zone, the cone of depression, aquifer responses to the Deep Aquifers and consistency of the proposed project with the Sustainable Groundwater Management Act (SGMA) in Section 4.4.5.2;
- Revision of Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage;
- Revision of several mitigation measures to clarify performance standards and provide additional details for implementation;
- Revision of Mitigation Measure 4.11-1 in Section 4.11, Greenhouse Gas Emissions, to require net zero indirect emissions from electricity use during operation (reducing the significance of all impacts related to greenhouse gas emissions from significant and unavoidable to less than significant with mitigation);
- Revision of Impact and Mitigation Measure 4.13-5 in Section 4.13, Public Services and Utilities, to address potential corrosion of the existing outfall as a result of MPWSP brine discharge, including WEKO seal clamp replacement inside the existing offshore segment of the outfall;
- Identification of a NOAA-preferred alternative in Section 5.6, in addition to the environmentally superior/environmentally preferred alternative;
- Revision to Section 6.4, Project Consistency with MBNMS Desalination Guidelines, to include alternatives described in Section 5.4 in the assessment of project conformity with guidelines for desalination plants in MBNMS (see Table 6.4-1); and
- Addition of the Hydrogeologic Working Group's Hydrogeologic Investigation Technical Report as Appendix E3.

Other minor corrections, clarifications, and explanations have been made throughout the document.

ES.4.3 Use of this EIR/EIS in Decision Making

The assigned CPUC Administrative Law Judges (ALJs) will review the Final EIR/EIS and submit a proposed decision to the Commission concerning certification of the EIR/EIS and approval of the MPWSP. If the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity for the MPWSP, as proposed or modified. In

addition to environmental impacts addressed during the CEQA process, the Certificate of Public Convenience and Necessity process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project.

This Final EIR/EIS will be used by MBNMS, along with other information developed in the formal record (including interagency consultations and/or permits in compliance with the Endangered Species Act, Marine Mammal Protection Act, Magnuson Stevens Act, and the National Historic Preservation Act, among others), to decide whether or not: to authorize a Coastal Development Permit to be issued by the City of Marina under its certified Local Coastal Program, to authorize a NPDES permit to be issued by the Central Coast RWQCB, and to issue a special use permit to CalAm for the continued presence of a pipeline conveying seawater to or from a desalination facility. If MBNMS moves forward with a final action, a 30-day mandatory waiting period will occur after issuance of the Final EIR/EIS, and then MBNMS may issue its Record of Decision (ROD). The decision-making authority for the ROD under NEPA is NOAA's Assistant Administrator for the National Ocean Service (NOAA Administrative Order 216-6A; NOAA, 2016).

ES.5 The Proposed Project

ES.5.1 Description of the Proposed Project

The project area extends approximately 18 miles, from the town of Castroville in the north to the City of Carmel-by-the-Sea in the south (see **Figure ES-1**). The MPWSP would include a source water intake system, which would consist of 10 subsurface slant wells[1] (eight active and two on standby) extending offshore into the submerged lands of MBNMS and a Source Water Pipeline that would convey the source water from the well sites to the desalination plant. The slant wells would be constructed at the CEMEX sand mining site in the northern coastal area of the City of Marina and would extract 24.1 million gallons per day (mgd) of source water through the seafloor in MBNMS.

A 9.6 million gallons per day (mgd) capacity desalination plant would be constructed in unincorporated Monterey County on Charles Benson Road, northeast of the City of Marina and would produce approximately 10,750 acre-feet per year (afy) of desalinated water. Related facilities would include pretreatment, reverse osmosis (RO), and post-treatment systems; backwash supply and filtered water equalization tanks; treated water storage tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities.

The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system facilities, which would enable CalAm to inject desalinated product water into the groundwater basin for subsequent extraction and distribution to customers. The expanded ASR system would include two additional injection/extraction wells, the ASR-5 and ASR-6 Wells, and three parallel pipelines, the ASR Conveyance Pipeline, ASR

[1] The existing test slant well would be converted into a permanent well, and nine additional slant wells would be built.

Pump-to-Waste Pipeline, and ASR Recirculation Pipeline, and would improve the reliability of the existing ASR system. The proposed project would also include a pump station in Carmel Valley and about 21 miles of water conveyance pipelines.

CalAm's application includes two capacity options or build-out scenarios. The first option, addressed in this document as the "Proposed Project," is a 9.6 mgd desalination plant and related facilities designed to meet the full project objectives for a replacement water supply. The second option would meet the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. This second capacity option in CalAm's application is reflected in Alternative 5a, which is analyzed in Chapter 5, Alternatives Screening and Analysis. The MRWPCA certified the Final EIR and approved the GWR Project in October 2015; the GWR Project is described in Section 4.1 of Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures and is one of the projects included in the cumulative scenarios. The GWR Final EIR project description is presented in Appendix H.

To inform the final design of the subsurface slant wells and the MPWSP Desalination Plant treatment system, and to collect geologic and hydrogeologic data needed for permitting the full-scale project, CalAm constructed and operated a test slant well at CEMEX. Construction of the test slant well and operation of the pilot program was covered under separate environmental review.[2] The test slant well was originally permitted to operate until February 2018, the permit was extended in November 2017 to allow the test slant well to operate intermittently until February 2019, and the test slant well is not part of the proposed project being evaluated in this EIR/EIS; see Section 8.2.11.8. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well will be decommissioned.

ES.5.2 Summary of Potential Impacts and Mitigation Measures for Proposed Project

Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures, of this EIR/EIS evaluates the environmental effects of implementing the proposed project and presents mitigation measures that would reduce potentially significant impacts to less than-significant levels, when feasible. Significant impacts may occur relative to: geology and soils; surface water hydrology and water quality; groundwater resources; terrestrial biological resources; hazards and hazardous materials; land use, land use planning and recreation; traffic and transportation; noise and vibration; utilities; aesthetic resources; cultural and paleontological resources; agricultural resources, and; energy resources. All impacts would be reduced to less-than-significant levels through the implementation of mitigation measures, with the exception of impacts relative to terrestrial biology (inconsistency with City of Marina Local Coastal Land Use Plan policy), air quality (during construction), noise (during construction), and indirect impacts

[2] In October 2014, MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, the California Coastal Commission completed its review of environmental impacts consistent with CEQA.

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure ES-1

Monterey Peninsula Water Supply Project Overview

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from growth. Further, the proposed project may result in significant cumulative impacts when viewed in combination with other past, present, and reasonably foreseeable future projects. The EIR/EIS identifies that with mitigation, the proposed project would not have a considerable contribution to cumulative impacts, and therefore, the project's contribution to cumulative impacts would be less than significant, with the exception of cumulative impacts relative to terrestrial biological resources (inconsistency with the City of Marina Local Coastal Land Use Plan policy during operation), transportation and traffic (during construction), air quality (during construction), noise (during construction), and indirect growth impacts.

ES.6 Alternatives to the Proposed Project

In addition to the proposed project, this EIR/EIS fully evaluates a No Project/No Action alternative, reduced-size alternatives, alternatives with different seawater intake systems, and additional complete desalination project alternatives being proposed by other entities.

ES.6.1 No Project/No Action Alternative

Under the No Project Alternative, the CPUC would not issue a CPCN for the MPWSP or another alternative; MBNMS would not issue authorizations or a special use permit for the components of the project within MBNMS. No new facilities would be constructed and the test slant well would be decommissioned. CalAm would continue to operate its Monterey District facilities in compliance with the 2009 SWRCB Cease and Desist Order (CDO) as amended by SWRCB Order WR 2016-0016 (together referred to herein as the Revised CDO) and the Seaside Groundwater Basin Adjudication.[3] This would also benefit riparian species as discussed in SWRCB Order 95-10. Mandatory rationing and conservation measures would likely be implemented. CalAm would purchase and extract 3,500 afy of Pure Water Monterey Groundwater Replenishment (GWR) Project water from the Seaside Groundwater Basin. The only construction related impacts under this alternative would involve the decommissioning of the test slant well. Potential impacts associated with decommissioning would be similar to the impacts associated with construction activities such as mobilization, site clearance, grading, excavation, and other earthmoving activities in the original construction footprint. However, slant well decommissioning would not involve drilling or excavation but would involve cutting and removing a portion of the well casing, which may result in significant but mitigable impacts on terrestrial biological resources, including:

- Special-Status Species. See Impact 4.6-1 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, and 4.14-2 would reduce impacts to a less-than-significant level.
- Sensitive natural communities and critical habitat. See Impact 4.6-2 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b would reduce impacts to a less-than-significant level.

[3] The April 2015 MPWSP Draft EIR included two No Project Alternatives: No Project A was consistent with the CDO at the time; No Action B included an extension of the CDO timeframe. The No Project alternative in this EIR/EIS is consistent with the Revised CDO.

- Introduction or spread of invasive non-native species. See Impact 4.6-5 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a and 4.6-1p would reduce impacts to a less-than-significant level.

ES.6.2 Alternative 1 – Slant Wells at Potrero Road

Under Alternative 1, 10 new subsurface slant wells would be constructed at Potrero Road, rather than at the proposed CEMEX site, the test slant well at CEMEX would be decommissioned, and two new wells would be drilled at the existing ASR system. The desalination plant and brine discharge/outfall facilities would be the same as the proposed project. Conveyance pipelines would be the same as the proposed project, with an additional 5.5 miles of source water pipeline extending to Potrero Road.

ES.6.3 Alternative 2 – Open-Water Intake at Moss Landing

Under Alternative 2, a new screened open-water intake with a 36-inch diameter subsurface intake pipeline would be constructed offshore and southwest of Moss Landing in MBNMS, and the test slant well at CEMEX would be decommissioned. The desalination plant and brine discharge/outfall facilities would be the same as the proposed project and two new wells would be drilled at the existing ASR system. Conveyance pipelines would be the same as the proposed project, with an additional 6.5 miles of source water pipeline extending to Moss Landing.

ES.6.4 Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Under Alternative 3, a new screened open-water intake with two 42-inch diameter subsurface intake pipelines and a 110-foot long x 30-foot wide x 12-foot tall intake structure would be constructed offshore and southwest of Moss Landing in MBNMS, and the test slant well at CEMEX would be decommissioned. The new outfall would consist of two 36-inch diameter subsurface discharge pipelines and a 140-foot L x 10-foot W x 15-foot T discharge structure. The 22 mgd desalination plant and co-located data center would be constructed on a 110-acre site off Dolan Road in Moss Landing. Product water would be delivered to CalAm at Dolan Road and Highway 1 and two new wells would be drilled at the existing ASR system. Conveyance pipelines would be the same as the proposed project, with an additional 6.5 miles of product water pipeline, plus two new product water pipelines totaling 25 additional miles to serve Salinas and Santa Cruz County (31.5 additional miles of pipeline, compared to the proposed project).

ES.6.5 Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Under Alternative 4, a new screened open-water intake with two 96-inch diameter screened intakes and a 40-inch diameter discharge pipeline would be constructed offshore Moss Landing in MBNMS, and the test slant well at CEMEX would be decommissioned. The new outfall at Moss Landing would be an extension of an existing outfall with a 36-inch diameter pipeline and two 16-inch diameter diffuser ports. The 12 mgd desalination plant would be constructed at the former National Refractories facility in Moss Landing. Product water would be delivered to

CalAm at Dolan Road and Highway 1, with a 6.5 mile pipeline that connects with the proposed project pipelines at Marina and two new wells would be drilled at the existing ASR system.

ES.6.6 Alternative 5a – Reduced Project 6.4 mgd Desalination Plant (Intake Slant Wells at CEMEX)

Under Alternative 5a, fewer slant wells (7) would be constructed at CEMEX compared to the proposed project; the brine discharge/outfall facilities would be the same as the proposed project, and a 6.4 mgd desalination plant would be constructed at the Charles Benson Road site. CalAm would purchase and extract 3,500 afy of GWR Project water from the Seaside Groundwater Basin.

ES.6.7 Alternative 5b – Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at Potrero Road)

Under Alternative 5b, fewer slant wells (7) would be constructed at Potrero Road than Alternative 1, and the test slant well at CEMEX would be decommissioned; the brine discharge/ outfall facilities would be the same as the proposed project and Alternative 1, and a 6.4 mgd desalination plant would be constructed at the Charles Benson Road site. The conveyance pipelines would be the same as the proposed project, with an additional 5.5 miles of source water pipeline. CalAm would purchase and extract 3,500 afy of GWR Project water from the Seaside Groundwater Basin.

ES.7 Comparison of Alternatives, Environmentally Superior/Environmentally Preferred Alternative, and NOAA-Preferred Alternative

Comparing the results of the analysis of alternatives presented in Chapter 5 (Alternatives Screening and Analysis), with the results of the analysis of the proposed project presented in Chapter 4 (Environmental Setting, Impacts, and Mitigation Measures), provides a basis for identifying the environmentally superior alternative under CEQA and the environmentally preferred alternative under NEPA. **Table ES-1** presents the impact conclusion for each impact statement, for every topical area evaluated, for the proposed project and for all alternatives, and provides a relative impact severity for each alternative (increased, decreased or same) compared to the proposed project; beneficial impacts are highlighted in green.

ES.7.1 Key Impact Differences Between Alternatives

The following discussion summarizes key differences in the significant environmental impacts among the alternatives.

Under the No Project Alternative, although impacts from project construction would be avoided, impacts associated with decommissioning of the test slant well would be similar to the impacts associated with construction activities such as mobilization, site clearance, grading, excavation,

and other earthmoving activities in the original construction footprint. However, slant well decommissioning would not involve drilling or excavation but would involve cutting and removing a portion of the well casing. Under the No Project Alternative, it would not be possible to meet the proposed project objectives; reliance on existing and planned water conservation and recycling programs would continue. The implementation of mandatory rationing and conservation measures would be likely. The lack of water supply would adversely affect the region's economic vitality. The reduction of available water supply by almost 40 percent could lead to water shortages throughout the CalAm Monterey District service area, impacting all economic sectors, including the County's "four pillars" – agriculture, tourism, education, and research – by substantially reducing the reliability of water resources and water infrastructure.

Under the No Project Alternative, current diversions from the Carmel River would continue, consistent with existing conditions in the short-term. However, CalAm would not meet CDO milestones associated with the construction and implementation of the MPWSP. As a result, diversions from the Carmel River would be required to be reduced sooner than under the proposed project and Carmel River flows would be restored by a total of 10,000 acre-feet over the period of October 2018 through 2021. The increases to Carmel River flows under the No Project Alternative would be beneficial to Carmel River steelhead habitat. Since no construction would occur under the No Project Alternative, there would be no impacts on special-status species, such as western snowy plover and Smith's blue butterfly, that would be impacted by the proposed project. However, decommissioning of the test slant well could result in potentially significant but mitigable secondary impacts on terrestrial biological resources, including:

- Special-Status Species. See Impact 4.6-1 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, and 4.14-2 would reduce impacts to a less-than-significant level.
- Sensitive natural communities and critical habitat. See Impact 4.6-2 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b would reduce impacts to a less-than-significant level.
- Introduction or spread of invasive non-native species. See Impact 4.6-5 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a and 4.6-1p would reduce impacts to a less-than-significant level.

Alternative 2 (Open-Water Intake at Moss Landing), Alternative 3 (DeepWater Desal Project), and Alternative 4 (People's Project) would use screened, open water intakes, which would reduce or avoid several potential proposed project impacts on groundwater because of the absence of slant well pumping for source water, but would result in new significant impacts on marine biological resources. Significant and unavoidable impacts on marine habitat and biological resources would result from the in-water construction of new open water intakes. Operation of screened open-water intakes for all three alternatives would result in impingement and entrainment of marine organisms, resulting in significant long-term direct and indirect effects on marine biological resources within MBNMS in Monterey Bay, even with implementation of mitigation measures.

For Alternative 3 (DeepWater Desal Project) and Alternative 4 (People's Project), operation of a new, brine-only outfall (no co-mingling with wastewater or other diluent flows) could result in

significant and unavoidable water quality impacts from increased levels of salinity and concentrations of certain other constituents. Due to the proximity of live-aboard boats in Moss Landing Harbor, construction activities would result in exposure of more sensitive receptors to substantial pollutant concentrations from construction equipment emissions, resulting in a significant and unavoidable impact. Both of these alternatives would produce more desalinated water than the proposed MPWSP, resulting in more water being available that would remove an impediment to and potentially support increased growth in the three county-region.

Alternative 3 (DeepWater Desal Project) may result in significant and unavoidable impacts from energy use from operation of the co-located data center that would constrain local or regional supplies and require additional capacity. Operation of emergency generators would use large amounts of fuel in a manner that would be unnecessary and wasteful, resulting in a significant and unavoidable impact.

For Alternative 4 (People's Project), construction of the desalination plant could impact (currently unsurveyed) historical resources, resulting in a significant and unavoidable impact. Operation and siting of the intake pumping facilities on top of the existing caisson at the existing shoreline could result in long-term direct effects on coastal erosion and scour processes that could expose adjacent properties to coastal flooding and a change in sediment transport, resulting in potentially significant impacts. In addition, being within a 100-year flood zone could cause long-term direct effects related to redirection of flood flows, resulting in a significant and unavoidable impact. The intake pumping facilities on top of the existing caisson would result in impacts on the visual quality of the shoreline in Moss Landing and interrupt views of MBNMS resources, resulting in potentially significant impacts.

Alternatives 1 and 5b would include operation of the slant wells at Potrero Road (for a 9.6 mgd or a 6.4 mgd desalination plant, respectively). Alternative 5b would lower groundwater levels in the Dune Sands/Perched-A aquifers in the Moss Landing area. Operation of Alternative 1 would additionally lower groundwater levels in the 180- and 400-foot aquifers, thereby capturing groundwater that would have otherwise flowed into Elkhorn Slough. The direct and indirect permanent effects on marine and terrestrial biological resources at Elkhorn Slough from the operation of slant wells at Potrero Road (Alternatives 1 or 5b) and the lowering of groundwater levels would result in significant and unavoidable impacts.

The proposed project and Alternative 5a would not affect Elkhorn Slough; there would be no construction on the seafloor; and impacts on groundwater resources, surface water resources and marine biological resources would be localized and less than significant. The proposed project and Alternative 5a would use an existing outfall and would co-mingle brine with wastewater; they would each meet Ocean Plan Water Quality objectives for salinity within a very short distance; they would avoid impingement and entrainment of marine organisms associated with an open water intake; and with mitigation, they would be consistent with the Ocean Plan and MBNMS Desalination Guidelines. While the proposed slant wells at CEMEX would be inconsistent with the City of Marina's Local Coastal Plan Land Use Plan policy (and thereby would cause a significant and unavoidable impact when considered with the test slant well at the CEMEX site), Coastal Act Section 30260 encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned.

ES.7.2 Environmentally Superior/Environmentally Preferred Alternative and NOAA-Preferred Alternative

This Final EIR/EIS identifies Alternative 5a as the environmentally superior/environmentally preferred alternative, assuming implementation of the GWR Project. Alternative 5a is also the NOAA-preferred alternative. While the combined Alternative 5a and GWR Project would result in a larger physical footprint than the proposed project alone, the pairing of Alternative 5a and the GWR project would result in reduced operational energy use, reduced GHG emissions, and reduced effects on groundwater levels influenced by fewer slant wells and less volume of pumping, compared to the proposed project. The GWR project would also provide water to growers through the Castroville Seawater Intrusion Project that would benefit the groundwater basin. In addition, Alternative 5a paired with the GWR project would be consistent with the 2016 California Action Plan seeking integrated water supply solutions, the Governor's drought proclamations, the CPUC Water Action Plan goal of promoting water infrastructure investment, the Ocean Plan and MBNMS Desalination Guidelines.

ES.8 Areas of Controversy and Issues to be Resolved

Pursuant to Section 15123(b)(1) of the state CEQA Guidelines and NEPA regulations (40 CFR 1502.12), an EIR/EIS shall identify areas of controversy known to the lead agency including issues raised by agencies and the public and the issues to be resolved (including the choice among alternatives and whether or how to mitigate the significant effects).

The following areas of controversy and issues to be resolved were raised through the scoping and public meetings conducted in association with circulation of the NOP and NOI, comments submitted on the 2015 MPWSP Draft EIR, and comments submitted on the 2017 MPWSP Draft EIR/EIS.

- **Demand to be Met by the Proposed Project and Desalination Plant Sizing**

  Comments were received advocating that the desalination plant be sized to provide supply to replace the portions of CalAm's existing Carmel River and Seaside Groundwater Basin supplies that have been constrained by legal decisions (in compliance with SWRCB Orders 95-10 and 2016-0016 and the adjudication of the Seaside Groundwater Basin) to meet current service area demand only. Since demand has continued to decline over the past several years, some comments suggest the proposed project should plan to serve a smaller demand of current customers, and suggest that a desalination plant may not even be necessary. Other comments expressed support for sizing the plant to accommodate differing degrees of additional future demand (e.g., demand associated with the development of vacant legal lots of record, demand associated with full general plan buildout, etc.). Chapter 2, Water Demand, Supplies, and Water Rights, discusses existing service area demand and supplies and the level of demand the MPWSP proposes to meet, and Section 6.3, Growth-Inducing Impacts, evaluates the growth inducement potential of the water supply proposed to be provided by the MPWSP that would exceed current customers' demands. In addition, Master Response 13, Demand (Project Need) and Growth, in Section 8.2.13, responds to comments on the Draft EIR/EIS that concerned customer water demand, available water supplies, and growth that could be induced by the proposed MPWSP water supply.

- **Groundwater Modeling, Impacts and Water Rights**

CalAm's proposed use of subsurface slant wells to withdraw source water for the MPWSP Desalination Plant is the subject of two controversies: (1) whether CalAm has the legal right to extract groundwater from the Salinas Valley Groundwater Basin (SVGB); and (2) whether implementation of the MPWSP and operation of the subsurface slant wells would exacerbate seawater intrusion in the SVGB and harm the existing water supply of other users of the SVGB, particularly Marina Coast Water District (MCWD). The proposed subsurface slant wells at CEMEX would be screened in aquifer units of the SVGB that have long been intruded by seawater. Although the subsurface slant wells would draw water (i.e., source water for the MPWSP Desalination Plant) from beneath the ocean floor, a fraction of the source water would be drawn from inland portions of the SVGB; therefore, the source water would at least initially be a combination of brackish groundwater and seawater. After pumping begins, the wells would extract increasing proportions of infiltrating recharge from the ocean. The ocean recharge would gradually replace the ambient groundwater within what is defined as the capture zone, and would move within the capture zone toward the well, but would not advance beyond the capture zone. This EIR/EIS focuses the definitions of groundwater and seawater based on their chemical properties rather than on their location; see Chapter 3 and Section 4.4.

In 2012, the CPUC asked the SWRCB to provide an opinion regarding whether CalAm has the legal right to extract source water for the MPWSP Desalination Plant from offshore aquifers of the SVGB. The SWRCB has indicated that for CalAm to appropriate groundwater from the SVGB, the MPWSP EIR/EIS must demonstrate that the proposed project will not harm or cause injury to other basin users (SWRCB, 2013) and made certain recommendations for further study.

The recommendations of the SWRCB have been implemented by a Hydrogeologic Working Group (HWG) comprised of licensed hydrogeologists with pertinent experience in the Monterey Bay region. The HWG was a result of an August 2013 Settlement Agreement between CalAm and 16 parties whereby CalAm agreed their hydrologist and technical team would work with the Salinas Valley Water Coalition's and Monterey County Farm Bureau's assigned hydrogeologists. The HWG developed a work plan in order to reach agreement about the studies, well tests, field work, modeling, monitoring, and other data analyses that is needed to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SVGB and the water supply available to legal water users thereof. The resulting hydrogeological study informed the analysis presented in Section 4.4, Groundwater Resources, as well as the corresponding analysis in Chapter 5, Alternatives. Refer to Section 2.6 in Chapter 2, Water Demand, Supplies, and Water Rights, for a discussion of water rights. The workplan and results of the work plan are presented in EIR/EIS Appendix E3.

Furthermore, the groundwater model and results presented in the 2015 Draft EIR have been revised to address questions about the accuracy and credibility of the groundwater modeling work that was the subject of potential conflict of interest comments. The CPUC made the groundwater data files used in the April 2015 Draft EIR available for public review. The CPUC employed the Lawrence Berkeley National Laboratory to conduct an

independent evaluation of that data; the results of that evaluation are provided in Appendix E1. The CPUC hired a new hydrogeologist (HydroFocus) to revise the groundwater model; see Appendix E2. The groundwater analysis from the 2015 Draft EIR has been updated to reflect the results of the new and revised groundwater model.

Similar comments were received on the Draft EIR/EIS with regard to water rights, source water, the HWG, and groundwater modelling. See Master Responses 2, 3, 5, 8, and 12 in Chapter 8 for a full discussion of these issues.

- **Private (Versus Public) Ownership of the Desalination Plant**

  A Monterey County ordinance (Health and Safety Code Section 10.72.030 [the Monterey County Desalination Ordinance]) prohibits ownership of a desalination plant by a private entity and at one point in time, Monterey County had filed a lawsuit against CalAm on the issue. In October 2012 and July 2013, the CPUC concluded that the Monterey County Desalination Ordinance is in conflict with California law and that the CPUC's authority preempts the Monterey County Desalination Ordinance to the extent that the ordinance purports to apply to public utility facilities or operations. The CPUC's 2013 decision noted that the Court action initiated by the County had since been dismissed. The Settlement Agreement entered into between CalAm and other parties in August 2013 includes provisions that address project governance and financing that are intended to ensure the consideration of community values and public agency representation in all the important aspects of the MPWSP and to lower project costs, respectively. While the CPUC decisions and provisions of the proposed Settlement Agreement address concerns related to the private ownership of the MPWSP, it is expected that some concerns about this issue may remain.

- **Brine Discharge**

  During scoping and evidentiary hearings, many commenters expressed concerns about the proposed discharge of desalination plant brine to Monterey Bay within MBNMS. Comments primarily focused on the potential effect of brine discharges on benthic habitats and the marine environment, including impacts close to the point of discharge as well as longer term impacts at greater distances associated with the migration of the brine plume. In addition, concerns were expressed over the potential for hypoxia to occur near the seabed as a result of proposed MPWSP operational discharges. Hypoxia, or oxygen depletion, is an environmental phenomenon where the concentration of dissolved oxygen in the water column decreases to a level that can no longer support living aquatic organisms.

  Concerns were raised about the consistency of MPWSP brine discharges with MBNMS and California Ocean Plan standards and requirements, the effects of combining brine with wastewater effluent, and the reduction of effluent that would be available for use as an alternative water source if effluent was used to dilute brine.

  New brine discharge dilution modeling has been performed, resulting in refinements and clarification of the modeling outcomes relative to the Ocean Plan water quality objectives. The direct, indirect, and cumulative effects of brine discharges on water quality are addressed in Chapter 4, Section 4.3, Surface Water Hydrology and Water Quality; the direct, indirect, and cumulative effects of brine discharges on the marine environment are

addressed in Section 4.5, Marine Biological Resources; and the effects of the proposed project on outfall capacity are addressed in Section 4.13, Public Services and Utilities.

- **Alternatives**

  While this EIR/EIS evaluates the MPWSP as proposed by CalAm, other parties are pursuing the development of other desalination projects to provide potable water supply to the Monterey Peninsula and beyond. The Monterey Bay Regional Water Project, proposed by DeepWater Desal, LLC, would provide up to 25,000 afy of potable water supply to serve participating communities in the Monterey Bay region, potentially including the Monterey Peninsula, Castroville, Salinas, and parts of Santa Cruz County. The People's Moss Landing Water Desalination Project (People's Project), proposed by Moss Landing Commercial Business Park, LLC, would provide 13,404 afy (11.97 mgd) of potable water supply to serve North Monterey County and the Monterey Peninsula. Chapter 5, Alternatives, presents information on these other desalination projects based on available information, and includes analysis of these projects as alternatives to the proposed MPWSP project. In addition, Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario in Section 8.2.15 responds to comments received on the 2017 Draft EIR/EIS and provides clarification on the status of the DeepWater Desal Project and People's Project (to the extent that information is available), and also addresses questions on assumptions used for considering cumulative impacts of these projects.

- **Greenhouse Gas Emissions (GHG) and De-Gassing**

  Comments on the 2015 Draft EIR raised concerns about GHG emissions from subsurface intakes and requested that CO_2 degassing from intake water to the atmosphere be analyzed. These issues are addressed in Section 4.11, Greenhouse Gas Emissions. Furthermore, at the time of publication of the 2017 Draft EIR/EIS, it was not possible to substantiate numerically that the GHG emissions, resulting from construction and operation of the proposed project, would be reduced to less than significant level. Since publication, a detailed mitigation strategy was developed that enabled quantification of reductions with sufficient certainty to support the determination of less than significant with mitigation.

- **Coastal Erosion**

  Sea level rise is expected to continue over the next century, in turn accelerating coastal erosion and resulting in the inland retreat of the Monterey Bay coastline. Concerns were raised that coastal erosion could expose subsurface elements of the proposed project such as the slant wells, slant well vaults, and associated infrastructure, potentially damaging them and shortening their lifespan, while the exposed wells and associated structures could also present a hazard to recreational activities. A project-specific coastal retreat study was conducted to evaluate erosion impacts associated with project components in the coastal zone and determined that the slant wells, in their originally-proposed locations, could be undermined and exposed within the project lifetime. Consequently, the slant well sites were moved farther inland. Section 4.2, Geology, Soils, and Seismicity, describes the issues related to sea level rise and coastal erosion in more detail and evaluates the potential impacts on coastal erosion resulting from the proposed slant wells and associated infrastructure.

- **Intake Technologies**

  Several state and federal regulatory and permitting agencies (SWRCB, California Coastal Commission (CCC)) will not consider permitting an open-water intake unless a subsurface intake has been deemed infeasible or would result in greater environmental impacts. NOAA's MBNMS and National Marine Fisheries Service also established guidelines for discretionary approvals for new intake structures stating that subsurface intakes should be used where feasible and beneficial. CalAm has proposed subsurface intakes (slant wells) to supply source water to the MPWSP. Chapter 4 of this EIR/EIS evaluates the potential impacts of the proposed project and Chapter 5, Alternatives, presents an extensive analysis of alternative intake technologies and locations. Section 8.2.11.8 discusses the evolving subsurface intake technology and Appendix E3 presents the results of the test slant well long term pump test.

- **Environmentally Sensitive Habitat, the Coastal Act and City of Marina Local Coastal Land Use Plan**

  In order to implement the MPWSP-proposed subsurface intakes, CalAm will be required to secure a Coastal Development Permit (CDP) under the California Coastal Act. The City of Marina has an approved Local Coastal Program (LCP) and would be responsible for issuing this permit. The CalAm Summer 2014 application to the City of Marina for a CDP associated with the exploratory bore holes at CEMEX, and the City's Fall 2014 denial of CalAm's application for a CDP associated with the test slant well, proved to be very controversial. Even after the CCC approved the test well in November 2014, several lawsuits were filed to stop the drilling and the associated pump test. Section 4.6, Terrestrial Biological Resources, addresses the potential terrestrial biological impacts associated with construction and operation of the proposed slant wells at CEMEX, including analysis of potential inconsistencies with the City of Marina LCP Land Use Plan policy; and Section 4.4, Groundwater Resources addresses the potential groundwater impacts associated with construction and operation of the slant wells at CEMEX.

- **Monterey Pipeline**

  Comments were received on the April 2015 Draft EIR and the 2015 Federal Register Notice of Intent, expressing concerns about the Monterey Pipeline. Originally proposed by CalAm to follow a coastal route, the new Monterey Pipeline was evaluated as an alternative route in the April 2015 Draft EIR and in the October 2015 GWR Final EIR. The new 5.4-mile-long, 36-inch-diameter pipeline would allow for bi-directional flows of potable water between the GWR Project and the Monterey Peninsula and allow CalAm to maximize the benefits of water produced by the GWR and, through utilization of the ASR, allow CalAm to reduce reliance on Carmel River diversions. Concerns have been expressed about the construction impacts and cost of the pipeline that would include right angle, 45-degree bends and welded junctions. The CPUC approved the new Monterey Pipeline and Pump Station in September 2016, along with the Water Purchase Agreement for the GWR Project. In so doing, the Commission found that benefits associated with the pipeline/pump station project outweighed the significant and unavoidable impact to noise resources that will result from temporary construction. Therefore, as approved projects with utility independent from the proposed project, the Monterey Pipeline and Pump Station are evaluated as cumulative projects in this EIR/EIS since they are no longer a part of the proposed project.

TABLE ES-1
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.2: Geology, Soils, and Seismicity							
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↓**
Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically-induced groundshaking.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-4: Exposure of people or structures to substantial adverse effects related to seismically-induced ground failure, including liquefaction, lateral spreading, or settlement.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.	**NI**	**NI ↓**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**
Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems.	**LS**	**NI ↓**	**LS =**	**LS ↓**	**LS ↓**	**LS ↓**	**LS =**
Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.	**LSM**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**SU ↑**	**5a: LSM = 5b: NI ↓**
Impact 4.2.11: Degrades the physical structure of any geologic resource or alters any oceanographic process, such as sediment transport, that is measurably different from pre-existing conditions.	**NI**	**NI ↓**	**NI =**	**SU ↑**	**SU ↑**	**SU ↑**	**NI =**
Impact 4.2-C: Cumulative impacts related to Geology, Soils, and Seismicity.	**LSM**	**NI ↓**	**LSM =**	**SU ↑**	**LSM =**	**SU ↑**	**LSM =**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.3: Surface Water Hydrology and Water Quality							
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	**LS**	**LS ↓**	**LS ↑**	**LS ↑**	**SU ↑**	**SU ↑**	**LS ↓**
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development.	**LSM**	**NI ↓**	**LSM ↑**	**LSM =**	**LSM ↑**	**LSM ↓**	**LSM ↓**
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	**LS**	**NI ↓**	**LS ↑**	**LS =**	**LS ↑**	**LS ↓**	**5a: LS = 5b: LS ↑**
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**SU ↑**	**LSM =**
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**SU ↑**	**LSM =**
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR -5 and ASR-6 Wells.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↑**	**LS ↓**	**LS =**
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded.	**LS**	**NI ↓**	**LS ↑**	**LS ↓**	**LS ↑**	**LS ↓**	**LS ↓**
Impact 4.3-9: Impedance or redirection of flood flows due to the siting of project facilities in a 100-year flood hazard area.	**LS**	**NI ↓**	**LS ↓**	**LS =**	**LS ↓**	**SU ↑**	**5a: LS = 5b: LS ↓**
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	**LS**	**NI ↓**	**LS ↓**	**LS =**	**LS ↓**	**SU ↑**	**LS =**
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	**LS**	**NI ↓**	**LS ↓**	**LS =**	**LS ↓**	**SU ↑**	**LS =**
Impact 4.3-C: Cumulative impacts related to Surface Water Hydrology and Water Quality.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**SU ↑**	**LSM =**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.4: Groundwater Resources							
Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.	**NI**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**
Impact 4.4-2: Violate any water quality standards or otherwise degrade groundwater quality during construction.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS ↑**	**LS ↑**	**LS =**
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS ↓ 5b: LS =**
Impact 4.4-4: Violate any water quality standards or otherwise degrade groundwater quality during operations.	**LSM**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LSM = 5b: LS ↓**
Impact 4.4-C: Cumulative impacts related to Groundwater Resources.	**LS**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**5a: LS = 5b NI ↓**
Section 4.5: Marine Resources							
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction	**LS**	**NI ↓**	**LS ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**LS ↓**
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.	**LS**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: LS = 5b: SU ↑**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.5: Marine Resources (cont.)							
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS =**	**LS =**	**LS ↓**
Impact 4.5 6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS =**	**LS =**	**LS ↓**
Impact 4.5-C: Cumulative impacts on Marine Resources.	**LS**	**NI ↓**	**LS =**	**SU ↑**	**NI ↓**	**SU ↑**	**LS ↓**
Section 4.6: Terrestrial Biological Resources							
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM ↓**	**LSM ↑**	**LSM =**	**LSM =**
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM ↓**	**SU ↑**	**LSM =**	**LSM =**
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the State during construction.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance with local tree ordinances.	**SU**	**NI ↓**	**SU ↓**	**SU =**	**SU =**	**SU =**	**SU =**
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	**LSM**	**↓**	**LSM =**	**LSM ↓**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations	**LSM**	**↓**	**SU ↑**	**LSM ↓**	**LSM =**	**LSM =**	**5a: LSM = 5b: SU ↑**
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the State during project operations.	**LSM**	**NI ↓**	**LSM =**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	**LSM**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**5a: LSM = 5b: NI ↓**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.6: Terrestrial Biological Resources (cont.)							
Impact 4.6-10: Conflict with the provisions of an adopted Habitat Conservation Plans, natural community conservation plans or other approved local, regional, or state habitat conservation plan.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-C: Cumulative impacts related to Terrestrial Biological Resources.	**SU**	**LS ↓**	**SU =**	**SU =**	**LSM ↓**	**SU =**	**SU ↑**
Section 4.7: Hazards and Hazardous Materials							
Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.7-3: Project facilities would be located on a known hazardous materials site.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS ↑**	**LS ↑**	**LS =**
Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of schools during construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.7-5: Increase risk of wildland fires during construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.7-C: Cumulative impacts related to Hazards and Hazardous Materials.	**LSM**	**LS ↓**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Section 4.8: Land Use, Land Use Planning, and Recreation							
Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.8-C: Cumulative impacts related to Land Use, Land Use Planning, and Recreation.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.9: Traffic and Transportation							
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-4: Impaired emergency access during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-7: Parking interference during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM =**	**LSM =**	**LSM =**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.9-C: Cumulative impacts related to Traffic and Transportation.	**SU**	**NI ↓**	**SU =**	**SU =**	**SU =**	**SU =**	**SU =**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.10: Air Quality							
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	**SU**	**LSM ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**	**SU =**
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**	**SU =**
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *Coccidioides immitis* (Valley Fever) spores or create objectionable odors affecting a substantial number of people during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**SU ↑**	**SU ↑**	**LS =**
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LSM ↑**	**LS ↑**	**LS ↓**
Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LSM ↑**	**LS ↑**	**LS ↓**
Impact 4.10-C: Cumulative impacts related to Air Quality.	**SU**	**LS ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**
Section 4.11: Greenhouse Gas Emissions							
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	**LSM**	**LSM ↓**	**LSM =**	**LSM =**	**SU ↑**	**LSM =**	**LSM =**
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**SU ↑**	**LSM =**	**LSM =**
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**SU ↑**	**LSM =**	**LSM =**
Impact 4.11-C: Cumulative impacts related to Greenhouse Gas Emissions.	**LSM**	**LS ↓**	**LSM =**	**LSM =**	**SU ↑**	**LSM =**	**LSM =**
Section 4.12: Noise and Vibration							
Impact 4.12-1: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: SU = 5b: SU ↑**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.12: Noise and Vibration (cont.)							
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.12-3: Exposure of people to or generation of excessive groundborne vibration during construction.	**LSM**	**NI ↓**	**LSM ↓**	**LSM ↓**	**LSM ↓**	**LSM ↓**	**5a: LSM = 5b: LSM ↓**
Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM =**	**5a: LSM = 5b: LSM ↓**
Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.12-6: Expose people to or generate operational noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operation.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LSM ↑**	**LS =**
Impact 4.12-C: Cumulative impacts related to Noise and Vibration.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: SU = 5b: SU ↑**
Section 4.13: Public Services and Utilities							
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.13-3 Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**LS ↓**	**LS =**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.13: Public Services and Utilities (cont.)							
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.	**LSM**	**NI** ↓	**LSM** =	**LSM** =	**LS** ↓	**LS** ↓	**LSM** =
Impact 4.13-5: Increased corrosion of the MRWPCA outfall and diffuser as a result of brine discharge associated with project operations.	**LSM**	**NI** ↓	**LSM** =	**LSM** =	**NI** ↓	**NI** ↓	**LSM** =
Impact 4.13-C: Cumulative impacts related to Public Services and Utilities.	**LSM**	**NI** ↓	**LSM** =	**LSM** =	**LSM** ↓	**LSM** ↓	**LSM** =
Section 4.14: Aesthetic Resources							
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LS**	**NI** ↓	**LS** =	**LS** =	**LS** =	**LSM** ↑	**LS** =
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	**LSM**	**NI** ↓	**LSM** ↑	**LSM** ↑	**LSM** ↑	**LSM** ↑	**LSM** =
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LSM**	**NI** ↓	**LSM** =	**LSM** ↓	**LSM** ↓	**LSM** =	**LSM** =
Impact 4.14-4: Permanent new sources of light or glare.	**LSM**	**NI** ↓	**LSM** =	**LSM** =	**LSM** ↑	**LSM** ↑	**LSM** =
Impact 4.14-C: Cumulative impacts related to Aesthetic Resources	**LSM**	**NI** ↓	**LSM** =	**LSM** =	**LSM** =	**LSM** =	**LSM** =
Section 4.15: Cultural and Paleontological Resources							
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	**NI**	**NI** =	**NI** =	**NI** =	**NI** =	**SU** ↑	**NI** =
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	**LSM**	**LSM** ↓	**LSM** ↑	**LSM** ↑	**LSM** ↑	**LSM** ↑	**5a: LSM** = **5b: LSM** ↑
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	**LS**	**NI** ↓	**LS** ↑	**LS** ↑	**LS** ↑	**LS** ↑	**5a: LS** = **5b: LS** ↑

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.15: Cultural and Paleontological Resources (cont.)							
Impact 4.15-4: Disturbance any human remains, including those interred outside of formal cemeteries, during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.15-C: Cumulative impacts related to Cultural and Paleontological Resources.	**LS**	**LS ↓**	**LS =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Section 4.16: Agricultural Resources							
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**NI ↓**	**LSM =**
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**NI ↓**	**LS =**
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**NI ↓**	**LS =**
Impact 4.16-C: Cumulative impacts related to Agricultural Resources.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**NI ↓**	**LSM =**
Section 4.17: Mineral Resources							
Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state or result in the loss of a locally-recognized important mineral resource recovery site.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS = 5b: LS ↓**
Impact 4.17-C: Cumulative impacts related to Mineral Resources.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS = 5b: LS ↓**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.18: Energy Conservation							
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM ↓ 5b: LSM ↑**
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**SU ↑**	**LS ↑**	**LS ↓**
Impact 4.18-C: Cumulative impacts related to Energy Resources.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**5a: LSM ↓ 5b: LSM ↓**
Section 4.19: Population and Housing							
Impact 4.19-1: Induce substantial population growth directly during project construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.19-2: Induce substantial population growth directly during project operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.19-C: Cumulative impacts related to Population and Housing.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Section 4.20 Socioeconomics and Environmental Justice							
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.	**LSM**	**SU ↑**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.	**LS**	**SU ↑**	**LS =**	**LS ↓**	**SU ↑**	**SU ↑**	**LS ↓**
Impact 4.20-C: Cumulative impacts related to Socioeconomics and/or Environmental Justice.	**LSM**	**SU ↑**	**LSM =**	**LSM =**	**SU ↑**	**SU ↑**	**LSM ↓**

TABLE ES-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Growth Inducement							
Impact 6.3-1: Secondary effects of planned growth.	**SU**	**NI** ↓	**LS** ↓	**SU** ↑	**SU** ↑	**SU** ↑	**LS** ↓
Impact 6.3-C: Cumulative impacts related to growth inducement.	**SU**	**NI** ↓	**SU** ↑	**SU** ↑	**SU** ↑	**SU** ↑	**SU** =

NOTES:

↑ Increased severity of impact ↓ Decreased severity of impact = Same severity of impact

NI – No Impact
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable impact, even with implementation of mitigation
= Beneficial Impact

TABLE ES-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.2: Geology, Soils, and Seismicity															
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction.	LS	LS	LSM	LS	LS	LSM	LSM	LS	LSM	LS	LS	LS	LSM		**LSM**
Mitigation Measures															
4.6-2b: Avoid, Minimize, and Compensate for Direct Construction Impacts on Sensitive Communities.	-	-	X	-	-	X	X	-	X	-	-	-	X		
4.16-1: Minimize Disturbance to Farmland	-	-	X	-	-	X	X	-	-	-	-	-	-		
Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.	NI	NI	NI	NI	NI	NI	NI	LS	NI	NI	LS	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically-induced groundshaking.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-4: Exposure of people or structures to substantial adverse effects related to seismically-induced ground failure, including liquefaction, lateral spreading, or settlement.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures.	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	LS	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils.	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils.	NI	LS	NI	NI	NI	NI	NI	NI	LS	LS	LS	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-			
Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**NI**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems.	LS	NI	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.2: Geology, Soils, and Seismicity (cont.)															
Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.2-9: Slant Well Abandonment Plan.	X	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2.11: Degrades the physical structure of any geologic resource or alters any oceanographic process, such as sediment transport, that is measurably different from pre-existing conditions.	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**NI**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.2-C: Cumulative impacts related to Geology, Soils, and Seismicity.	**LSM for cumulative impacts associated with soil erosion or loss of topsoil during construction, and for cumulative impacts associated with coastal erosion and bluff retreat.**														
Section 4.3: Surface Water Hydrology and Water Quality															
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development.	LS	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LS	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.7-2b: Soil and Groundwater Management Plan.	-	X	X	X	X	X	X	X	-	X	X	X	X		
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	NI	NI	LS	LS	LS	LS	LS	LS	NI	LS	LS	LS	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	NI	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance	-	X	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	NI	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives	-	X	-	-	-	-	-	-	-	-	-	-	-		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.3: Surface Water Hydrology and Water Quality (cont.)															
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR -5 and ASR-6 Wells.	LS	NI	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff.	LS	LS	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded.	LS	LS	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-9: Impedance or redirection of flood flows due to the siting of project facilities in a 100-year flood hazard area.	LS	NI	LS	NI	NI	NI	LS	LS	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	LS	NI	NI	NI	NI	NI	LS	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	LS	LS	LS	NI	NI	NI	LS	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.3-C: Cumulative impacts related to Surface Water Hydrology and Water Quality.	**LSM for cumulative impacts associated with surface water quality during construction, and ocean water quality during operation.**														
Section 4.4: Groundwater Resources															
Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.4-2: Violate any water quality standards or otherwise degrade groundwater quality during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.4: Groundwater Resources (cont.)															
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Applicant Proposed Measure															
4.4-3: Groundwater Monitoring and Avoidance of Well Damage.	X	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.4-4: Violate any water quality standards or otherwise degrade groundwater quality during operations.	LSM	NI	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.4-4: Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes.	X	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.4-C: Cumulative impacts related to Groundwater Resources.	**LS**														
Section 4.5: Marine Resources															
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction.	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.	LS	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	LS	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.5: Marine Resources (cont.)															
Impact 4.5 6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.	LS	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Impact 4.5-C: Cumulative impacts on Marine Resources.								**LS**							
Section 4.6: Terrestrial Biological Resources															
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4.6-1c: General Avoidance and Minimization Measures.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4.6-1d: Protective Measures for Western Snowy Plover.	X	-	X	-	-	-	-	-	-	-	-	-	-	-	
4.6-1e: Avoidance and Minimization Measures for Special-status Plants.	X	X	X	-	-	X	X	X	X	X	X	X	-	X	
4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.	X	-	X	-	-	X	-	X	-	-	-	-	-	X	
4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.	X	-	X	-	-	X	X	X	X	X	-	-	-	X	
4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl.	-	-	X	-	-	X	-	X	-	-	-	-	-	X	
4.6-1i: Avoidance and Minimization Measures for Nesting Birds.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4.6-1j: Avoidance and Minimization Measures for American Badger.	-	X	X	-	-	X	X	X	X	X	X	X	-	X	
4.6-1k: Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat.	-	-	-	-	-	-	-	X	X	X	X	X	X	X	
4.6-1l: Avoidance and Minimization Measures for Special-status Bats.	-	X	X	X	X	X	X	X	X	X	X	X	X	X	
4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine.	-	-	-	-	-	-	-	-	X	X	X	X	X	-	
4.6-1n: Habitat Mitigation and Monitoring Plan.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.	-	X	X	X	X	X	X	-	-	-	X	X	X	X	
4.6-1p: Control Measures for Spread of Invasive Plants	X	X	X	-	-	X	X	X	X	X	-	-	-	X	
4.6-1q: Frac-out Contingency Plan	-	-	-	-	-	-	X	-	-	-	-	-	-	-	
4.12-1b: General Noise Controls for Construction Equipment.	X	-	X	-	-	-	-	-	-	-	-	-	-	-	
4.14-2: Site-Specific Construction Lighting Measures.	X	X	X	X	X	X	X	X	X	X	-	-	-	-	

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.6: Terrestrial Biological Resources (cont.)															
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	LSM	LSM	LSM	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
4.6-1c: General Avoidance and Minimization Measures.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
4.6-1d: Protective Measures for Western Snowy Plover.	X	-	X	-	-	-	-	-	-	-	-	-	-	-	
4.6-1e: Avoidance and Minimization Measures for Special-status Plants.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1n: Habitat Mitigation and Monitoring Plan.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.	-	-	-	-	-	-	-	-	-	-	-	X	X	-	
4.6-1p: Control Measures for Spread of Invasive Plants	X	X	X	-	-	X	X	X	X	X	-	-	-	-	
4.6-1q: Frac-out Contingency Plan	-	-	-	-	-	-	X	-	-	-	-	-	-	-	
4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.	X	--	X	-	-	X	X	X	-	-	-	-	-	X	
4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.	X	X	X	-	-	X	X	X	X	X	X	X	X	X	
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the State during construction.	LSM	LS	LSM	LSM	LSM	LSM	LSM	LSM	LS	LS	LSM	LSM	LSM	LS	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	-	X	X	X	X	X	X	-	-	X	X	X	-	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	-	X	X	X	X	X	X	-	-	X	X	X	-	
4.6-1c: General Avoidance and Minimization Measures.	X	-	X	X	X	X	X	X	-	-	X	X	X	-	
4.6-1q: Frac-out Contingency Plan	-	-	-	-	-	-	X	-	-	-	-	-	-	-	
4.6-3: Avoid, Minimize, and or Mitigate Impacts to Wetlands.	-	-	-	-	-	X	X	-	-	-	X	X	X	-	
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance with local tree ordinances.	SU	LSM	SU	LSM	LSM	SU	LSM	SU	LSM	LSM	LSM	LSM	LSM	SU	**SU**
Mitigation Measures															
4.6-1n: Habitat Mitigation and Monitoring Plan.	X	-	X	-	-	X	-	X	-	-	-	-	-	X	
4.6-4: Compliance with Local Tree Ordinances.	-	X	X	X	X	X	X	X	X	X	X	X	X	-	
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	LSM	LSM	LSM	NI	NI	LSM	LSM	LSM	LSM	LSM	NI	NI	NI	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	X	X	-	-	X	X	X	X	X	-	-	-	-	
4.6-1p: Control Measures for Spread of Invasive Plants.	X	X	X	-	-	X	X	X	X	X	-	-	-	-	

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.6: Terrestrial Biological Resources (cont.)															
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	LSM	LSM	NI	NI	NI	NI	NI	NI	LSM	NI	NI	LSM	LSM	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1c: General Avoidance and Minimization Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1d: Protective Measures for Western Snowy Plover.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1e: Avoidance and Minimization Measures for Special-status Plants.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1i: Avoidance and Minimization Measures for Nesting Birds.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1n: Habitat Mitigation and Monitoring Plan.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1p: Control Measures for Spread of Invasive Plants.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-6: Installation and Monitoring of Bird Deterrents at the Brine Storage Basin.	-	X	-	-	-	-	-	-	-	-	-	-	-	-	
4.12-1b: General Noise Controls for Construction Equipment.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.12-5: Stationary Source Noise Controls.	-	-	-	-	-	-	-	-	X	-	-	X	-	-	
4.14-2: Site-Specific Nighttime Lighting Measures.	X	-	-	-	-	-	-	-	-	-	-	-	X	-	
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1c: General Avoidance and Minimization Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1d: Protective Measures for Western Snowy Plover	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1n: Habitat Mitigation and Monitoring Plan.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1p: Control Measures for Spread of Invasive Plants	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-2b: Avoid, Minimize, and Compensate for Direct Construction Impacts to Sensitive Communities.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.6: Terrestrial Biological Resources (cont.)															
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the State during project operations.	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1b: Construction Worker Environmental Awareness Training and Education Program.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1c: General Avoidance and Minimization Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.6-1p: Control Measures for Spread of Invasive Plants.	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
Impact 4.6-10: Conflict with the provisions of an adopted Habitat Conservation Plans, natural community conservation plans or other approved local, regional, or state habitat conservation plan.	NI	NI	NI	NI	NI	NI	NI	LSM	NI	NI	NI	NI	NI	NI	**LSM**
Mitigation Measures															
4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.								X							
4.6-1n: Habitat Mitigation and Monitoring Plan.	-	-	-	-	-	-	-	X	-	-	-	-	-	-	
4.6-2b: Avoid, Minimize, and Compensate for Direct Construction Impacts to Sensitive Communities.	-	-	-	-	-	-	-	X	-	-	-	-	-	-	
4.6-8: Management Requirements within Borderland Development Areas along Natural Resource Management Area Interface.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Impact 4.6-C: Cumulative impacts related to Terrestrial Biological Resources.	**SU for cumulative impacts associated with inconsistencies with local policies or ordinances protecting biological resources.** **LSM for cumulative impacts associated with all other project impacts.**														
Section 4.7: Hazards and Hazardous Materials															
Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.7-2a: Health and Safety Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.7-2b: Soil and Groundwater Management Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.7: Hazards and Hazardous Materials (cont.)															
Impact 4.7-3: Project facilities would be located on a known hazardous materials site.	NI	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of schools during construction.	NI	NI	NI	NI	NI	LS	NI	LS	NI	LS	LS	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.7-5: Increase risk of wildland fires during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.	LS	LS	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.7-C: Cumulative impacts related to Hazards and Hazardous Materials.	**LSM for cumulative impacts associated with the potential to encounter hazardous materials during construction.**														
Section 4.8: Land Use, Land Use Planning, and Recreation															
Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.	LS	NI	NI	NI	NI	NI	NI	LSM	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	-	-	-	-	-	-	-	X	-	-	-	-	-		
Impact 4.8-C: Cumulative impacts related to Land Use, Land Use Planning, and Recreation.	**LS**														
Section 4.9: Traffic and Transportation															
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.	LS	LS	LS	LS	LS	LS	LS	LSM	LSM	LSM	LSM	LSM	LS		**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	-	-	-	-	-	-	-	X	X	X	X	X	-		
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM	LS	LSM	LSM	LSM	LS		**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	-	-	X	X	X	X	X	X	-	X	X	X	-		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.9: Traffic and Transportation (cont.)															
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.9-4: Impaired emergency access during construction.	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM	LS	LSM	LSM	LSM	LS	LS	**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	-	-	X	X	X	X	X	X	-	X	X	X	-	-	
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.	NI	NI	LSM	NI	NI	LSM	LSM	LSM	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.	-	-	X	-	-	X	X	X	-	-	-	-	-		
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.9-6: Roadway Rehabilitation Program.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.9-7: Parking interference during construction.	NI	NI	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LSM	**LSM**
Mitigation Measures															
4.9-7: Construction Parking Requirements.	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.9-C: Cumulative impacts related to Traffic and Transportation.	**SU for cumulative impacts associated with traffic during construction.**														
Mitigation Measure 4.9-C: Construction Traffic Coordination Plan.	**X**														
Section 4.10: Air Quality															
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU		**SU**
Mitigation Measures															
4.10-1a: Equipment with High-Tiered Engine Standards.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.10-1b: Idling Restrictions.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.10-1c: Construction Fugitive Dust Control Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.10-1e: Off-site Mitigation Program	X	X	X	X	X	X	X	X	X	X	X	X	X		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.10: Air Quality (cont.)															
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU		**SU**
Mitigation Measures															
4.10-1a: Equipment with High-Tiered Engine Standards.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.10-1b: Idling Restrictions.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *Coccidioides immitis* (Valley Fever) spores or create objectionable odors affecting a substantial number of people during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	LS	LS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	NI	LS	NI	NI	NI	NI	NI	NI	LS	NI	NI	NI	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.10-C: Cumulative impacts related to Air Quality.	**SU for cumulative impacts associated with air quality standards during construction.**														
Section 4.11: Greenhouse Gas Emissions															
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	**LSM**														
Mitigation Measures															
4.11-1: GHG Emissions Reductions Plan.	**X**														
4.18-1: Construction Equipment and Vehicle Efficiency Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	**LSM**														
Mitigation Measures															
4.11-1: GHG Emissions Reduction Plan.	**X**														
4.18-1: Construction Equipment Efficiency Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	**LSM**														
Mitigation Measures															
4.11-1: GHG Emissions Reduction Plan.	**X**														
Impact 4.11-C: Cumulative impacts related to Greenhouse Gas Emissions.	**LSM**														

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.12: Noise and Vibration															
Impact 4.12-1: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.	LS	LS	LS	LS	LS	LSM	SU	LSM	SU	LS	LS	LS	LSM		**SU**
Mitigation Measures															
4.12-1a: Neighborhood Notice and Construction Disturbance Coordinator.	-	-	-	-	-	X	X	X	X	-	-	-	X		
4.12-1b: General Noise Controls for Construction Equipment and Activities.	-	-	-	-	-	X	X	X	X	-	-	-	X		
4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.	-	-	-	-	-	X	X	X	-	-	-	-	-		
4.12-1d: Additional Noise Controls for ASR-5 and ASR-6 Wells.	-	-	-	-	-	-	-	-	X	-	-	-	-		
4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors.	-	-	-	-	-	-	-	-	X	-	-	-	-		
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.	LS	LS	LS	LS	LS	LSM	LSM	LSM	NI	LSM	LS	LS	LS		**LSM**
Mitigation Measures															
4.12-1b: General Noise Controls for Construction Equipment.	-	-	-	-	-	X	X	X	-	X	-	-	-		
4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.	-	-	-	-	-	X	X	X	-	-	-	-	-		
Impact 4.12-3: Exposure of people to or generation of excessive groundborne vibration during construction.	LS	LS	LSM	LS	LS	LSM	LSM	LSM	LS	LS	LS	LS	LS		**LSM**
Mitigation Measures															
4.12-3: Vibration Reduction Measures.	-	-	-	-	-	X	X	X	-	-	-	-	-		
Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions.	NI	NI	NI	NI	NI	LSM	NI	LSM	LSM	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.	-	-	-	-	-	-	-	-	X	-	-	-	-		
4.12-4: Nighttime Construction Restrictions in Marina.						X		X							
Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations.	LS	LS	NI	NI	NI	NI	NI	NI	LSM	NI	LS	LSM	LS		**LSM**
Mitigation Measures															
4.12-5: Stationary-Source Noise Controls.	-	-	-	-	-	-	-	-	X	-	-	X	-		
Impact 4.12-6: Expose people to or generate operational noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operation.	LS	LS	LS	LS	LS	LS	NI	LS	NI	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.12-C: Cumulative impacts related to Noise and Vibration	**SU for cumulative impacts associated with nighttime noise impacts during construction.**														
	LSM for cumulative impacts associated with construction-related vibration.														

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.13: Public Services and Utilities															
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.13-1a: Locate and Confirm Utility Lines.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.13-1b: Coordinate Final Construction Plans with Affected Utilities.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.13-1c: Safeguard Employees from Potential Accidents Related to Underground Utilities.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.13-1d: Emergency Response Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.13-1e: Notify Local Fire Departments.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.13-1f: Ensure Prompt Reconnection of Utilities.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.13-2: Construction Waste Reduction and Recycling Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.13-3 Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.	NI	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance.	-	X	-	-	-	-	-	-	-	-	-	-	-		
4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives.	-	X	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.13-5: Increased corrosion of the MRWPCA outfall as a result of brine discharge associated with project operations.	NI	LSM	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.13-5a: Replacement of WEKO Seal Clamps, Periodic Inspections and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall.	-	X	-	-	-	-	-	-	-	-	-	-	-		
4.13-5b: Install Protective Lining in Land Segment of MRWPCA Ocean Outfall	-	X	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.13-C: Cumulative impacts related to Public Services and Utilities.	**LSM for cumulative impacts related to wastewater treatment requirement and corrosion of the MRWPCA outfall and diffuser during operations.**														
Section 4.14: Aesthetic Resources															
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
4.14-1: Maintain Clean and Orderly Construction Sites.	X	X	X	X	X	X	X	X	X	X	X	X	X		

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.14: Aesthetic Resources (cont.)															
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	LSM	LS	LSM	LSM	LSM	LSM	LSM	LSM	LSM	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.14-2: Site-Specific Nighttime Lighting Measures.	X	-	X	X	X	X	X	X	X	-	-	-	-		
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	LSM	LS	NI	NI	NI	NI	NI	NI	LSM	NI	NI	NI	LS		**LSM**
Mitigation Measures															
4.14-3a: Facility Design.	X	-	-	-	-	-	-	-	X	-	-	-	-		
4.14-3b: Facility Screening.	-	-	-	-	-	-	-	-	X	-	-	-	-		
Impact 4.14-4: Permanent new sources of light or glare.	NI	LS	NI	NI	NI	NI	NI	NI	LSM	NI	NI	NI	LSM		**LSM**
Mitigation Measures															
4.14-2: Site-Specific Nighttime Lighting Measures.	-	X	-	-	-	-	-	-	X	-	-	-	X		
Impact 4.14-C: Cumulative impacts related to Aesthetic Resources	**LSM for cumulative impacts associated with nighttime lighting impacts during construction.**														
Section 4.15: Cultural and Paleontological Resources															
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI		**NI**
Mitigation Measures															
4.15-1: Avoidance and Vibration Monitoring for Pipeline Installation	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.15-2a: Establish Archaeologically Sensitive Areas.	-	-	X	-	-	-	X	-	-	-	-	-	-		
4.15-2b: Inadvertent Discovery of Cultural Resources.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.15-4: Disturbance any human remains, including those interred outside of formal cemeteries, during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.15-4: Inadvertent Discovery of Human Remains.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.15-C: Cumulative impacts related to Cultural and Paleontological Resources.	**LS**														

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.16: Agricultural Resources															
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	NI	LS	LSM	NI	NI	LSM	LSM	NI	NI	NI	NI	NI	NI		**LSM**
Mitigation Measures															
4.16-1: Minimize Disturbance to Farmland.	-	-	X	-	-	X	X	-	-	-	-	-	-		
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	NI	NI	LS	NI	NI	LS	LS	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	NI	NI	LS	NI	NI	LS	LS	NI	NI	NI	NI	NI	NI		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.16-C: Cumulative impacts related to Agricultural Resources.	**LSM for cumulative impacts related to conversion of farmland to non-agricultural use during construction.**														
Section 4.17: Mineral Resources															
Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state or result in the loss of a locally-recognized important mineral resource recovery site.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.17-C: Cumulative impacts related to Mineral Resources.	**LS**														
Section 4.18: Energy Conservation															
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction.	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM		**LSM**
Mitigation Measures															
4.18-1: Construction Equipment and Vehicle Efficiency Plan.	X	X	X	X	X	X	X	X	X	X	X	X	X		
4.10-1b: Idling Restrictions.	X	X	X	X	X	X	X	X	X	X	X	X	X		
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations.	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS		**LS**
Mitigation Measures															
None proposed.	-	-	-	-	-	-	-	-	-	-	-	-	-		
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.	**LS**														
Mitigation Measures															
4.11-1: GHG Emissions Reduction Plan	**X**														
Impact 4.18-C: Cumulative impacts related to Energy Resources.	**LSM for impact associated with energy use during construction.**														

TABLE ES-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES – MPWSP PROPOSED PROJECT

IMPACT	Subsurface Slant Wells	MPWSP Desalination Plant	Source Water PL	Brine Discharge PL	PL to CSIP Pond	New Desalinated Water PL	Castroville PL	New Transmission Main	ASR-5 and ASR-6 Wells	ASR Conveyance PL, ASR Pump-to-Waste PL, ASR Recirculation PL	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	Carmel Valley Pump Station	Staging Areas	Overall Impact Significance Determination for Proposed Project
Section 4.19: Population and Housing															
Impact 4.19-1: Induce substantial population growth directly during project construction.								**LS**							
Mitigation Measures															
None proposed.								**-**							
Impact 4.19-2: Induce substantial population growth directly during project operations.								**LS**							
None proposed.								**-**							
Impact 4.19-C: Cumulative impacts related to Population and Housing.								**LS**							
Section 4.20: Socioeconomics and Environmental Justice															
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.								**LSM**							
Mitigation Measures															
4.9-1: Traffic Control and Safety Assurance Plan.								**X**							
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.								**LS**							
Mitigation Measures															
None proposed.								**-**							
Impact 4.20-C: Cumulative impacts related to Socioeconomics and/or Environmental Justice.								**LSM for impact associated with interference with businesses during construction.**							

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CHAPTER 1
Introduction and Background

Sections

1.1 Introduction
1.2 Lead Agency Roles
1.3 Project Objectives and Purpose and Need
1.4 Project Setting and Background
1.5 Environmental Review Process and Use of This Document
1.6 Organization of EIR/EIS

1.1 Introduction

The California American Water Company (CalAm) is proposing to construct and operate the Monterey Peninsula Water Supply Project (MPWSP, or proposed project) in the Monterey Bay area. CalAm is proposing the MPWSP to develop water supplies for CalAm's Monterey District service area (Monterey District) to replace existing supplies that have been constrained as a result of legal decisions affecting the Carmel River and Seaside Groundwater Basin (SWRCB Order 95-10 and the Seaside Basin Adjudication; see Sections 2.2.3 and 2.2.4). Based on the analysis presented in Chapter 2, some of the supply provided by the proposed project would meet existing demands and some of the supply would be available to serve future uses. Part of the project's implementation includes obtaining permits and authorizations from various federal, state, regional, and local agencies.

The California Public Utilities Commission (CPUC) is the lead State agency for the project. Given that a portion of the project is proposed to occur within Monterey Bay National Marine Sanctuary (MBNMS or Sanctuary), the National Oceanic and Atmospheric Administration's (NOAA's) MBNMS is the lead Federal agency considering through its authorization process, whether or not to allow otherwise prohibited MPWSP activities within MBNMS.

The California Environmental Quality Act (CEQA) requires that state, regional, and local agencies analyze and disclose potentially significant environmental effects for activities that involve governmental approval through the preparation of an Environmental Impact Report (EIR). The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies analyze and disclose the impacts of major Federal actions, including those projects regulated or approved by the agency, significantly affecting the quality of the human environment through an Environmental Impact Statement (EIS). This Final Environmental Impact Report and Environmental Impact Statement (EIR/EIS) has been prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3,

§15000 et seq.), and with NEPA (42 U.S.C. §4321 et seq.,) and its implementing regulations (40 CFR Parts 1500-1508). For the purposes of this document, the CEQA lead agency for the MPWSP is the California Public Utilities Commission (CPUC); the NEPA lead agency is MBNMS.

This EIR/EIS has been prepared to analyze and disclose potentially significant environmental effects associated with the construction and operation of the MPWSP (see Chapter 4) proposed by CalAm (also referred to throughout this document as the "proposed project"[1]) and with the construction and operation of a range of alternatives to the proposed project (see Chapter 5). This EIR/EIS provides the primary source of environmental information for the lead, responsible, and trustee agencies to consider when exercising any permitting or approval authority related to implementation of CalAm's proposed project or alternatives. This Final EIR/EIS includes and responds to all comments concerning CEQA/NEPA issues that were received on the January 2017 Draft EIR/EIS (see Chapter 8), and includes revisions to the Draft EIR/EIS text made in response to comments as well as Lead Agency-initiated changes (see EIR/EIS Section 1.5.3 Revisions Made to the Draft EIR/EIS, for details).

The MPWSP would involve the construction and operation of various facilities and improvements, including a subsurface source water intake system, a desalination plant, desalinated water storage and conveyance facilities, and expanded Aquifer Storage and Recovery (ASR) facilities. See Chapter 3, Description of the Proposed Project, for a full description of the proposed facilities for the desalination plant.

CalAm's application includes two capacity options or build-out scenarios. The first option, addressed in this document as the Proposed Project, is a 9.6 mgd desalination plant and related facilities designed to meet the full project objectives. The second option would meet the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. This second capacity option in CalAm's application is reflected in Alternative 5a. While both of these options were proposed by CalAm (in an "either/or" fashion) and thus represent the project proposed by the applicant, the larger desalination plant was selected to be analyzed as the Proposed Project in EIR/EIS Chapter 4, since it is the larger project, and thus was expected to have greater impacts than the smaller capacity option, which is fully examined as Alternative 5a in Chapter 5.

The EIR/EIS identifies alternatives consistent with NEPA and CEQA for the full capacity option and for the reduced capacity options. Alternatives to the full capacity option include Alternatives 1 and 2 and assume that GWR would not be operational, whereas the reduced capacity options reflected in Alternatives 5a and 5b assume that GWR would be operational. Alternatives 3 and 4 are desalination projects proposed by other entities and consist of different capacities; 22 mgd and 12 mgd, respectively. These alternatives are described and evaluated in Chapter 5.

[1] The term "proposed project" is used when referring to CalAm's proposed MPWSP. This term is used when discussing impacts resulting from implementation of all federal, state, and local permits, approvals, and authorizations. The term "proposed action," more commonly used in NEPA documents, refers specifically to MBNMS's ' three federal proposed actions described in Section 1.3.2.

The Monterey Regional Water Pollution Control Agency (MRWPCA) certified the Final EIR and approved the GWR Project in October 2015; see Appendix H for the GWR project description. The CPUC authorized CalAm to enter into a water purchase agreement for 3,500 afy from the GWR Project, and to build the new Monterey Pipeline and associated pump station needed for the GWR project, in September 2016. On March 30, 2017, the MRWPCA was issued a Water Quality Certification pursuant to section 401 of the Clean Water Act, and construction has commenced, for certain project components. However, additional permits will be needed for other project components, including issuance of a NPDES permit from the RWQCB and authorization from MBNMS. Therefore, presenting and evaluating both desalination capacity options allows the fullest consideration of the scope of the potential project and alternatives that may be feasible to meet project objectives under various scenarios, and furthers public transparency of the analysis of the options proposed in CalAm's applications to the CPUC and MBNMS.

This EIR/EIS also evaluates a No Action/No Project alternative, alternatives with different source water intake systems, and two additional complete desalination project alternatives being proposed by other entities. The analysis in Chapter 5 concludes that the proposed MPWSP is the environmentally superior alternative among the alternatives that produce at least 9.6 mgd of water; Alternative 5a combined with the GWR Project is the environmentally superior alternative if the GWR Project is able to produce water in a timely manner. The NEPA agency-preferred alternative is also Alternative 5a.

This chapter describes the roles of the Lead Agencies, and provides the proposed project and proposed action's objectives, the purpose and need for agency actions, background information on the proposed project's setting, and an overview of the environmental review process (including changes from the Draft to Final EIR/EIS) and the decisions to be made on the proposed project and proposed action.

1.2 Lead Agency Roles

1.2.1 California Public Utilities Commission

The CPUC is a constitutionally established[2] state agency charged with regulating investor-owned utilities (IOUs) in the transportation, energy, communications, and water industries. The Commission[3] consists of five commissioners who are appointed for six-year terms by the Governor. The commissioners are served by an Executive Director and a staff of professional engineers, economists, policy and industry analysts, attorneys, and administrative law judges (ALJs). The CPUC provides regulatory oversight for IOUs in the areas of purpose and need, economic cost, ratemaking, safety and reliability, and customer service, among others related to the four industries mentioned above. The CPUC makes decisions by vote of its commissioners at regularly scheduled public business meetings. More information on the CPUC is provided at: http://www.cpuc.ca.gov.

[2] State of California Constitution, Article XII.

[3] The CPUC refers to the state agency as a whole, while the "Commission" refers to the decision-making body consisting of the five commissioners.

The CPUC regulates the construction and expansion of water lines, plants, and systems by such private water service providers pursuant to Certificates of Public Convenience and Necessity (Pub. Util. Code §1001) and requires that water service providers charge their customers "just and reasonable rates." (Pub. Util. Code §§451 and 454). More specifically concerning Certificates of Public Convenience and Necessity, "No . . . water corporation . . . shall begin the construction of. . . a line, plant, or system, or of any extension thereof, without having first obtained from the commission a certificate that the present or future public convenience and necessity require or will require such construction." (Pub. Util. Code §1001.) The CPUC may issue a Certificate of Public Convenience and Necessity as requested, refuse to issue it, or issue it for only part of a project, and may attach terms and conditions to the exercise of the rights granted by the Certificate of Public Convenience and Necessity to the extent that, in the CPUC's judgment, the public convenience and necessity so require. (Pub. Util. Code §1005.)

CalAm is a public utility under the CPUC's jurisdiction, and has applied to the CPUC for a Certificate of Public Convenience and Necessity under Public Utilities Code Section 1001 to build, own, and operate all elements of the MPWSP, and also for permission to recover present and future costs for the proposed project by short-term rate increases.

1.2.2 Monterey Bay National Marine Sanctuary

MBNMS was designated in 1992 as a federally protected marine area off of California's central coast. It stretches from Marin to Cambria, encompasses a shoreline length of 276 miles and 4,601 square nautical miles of ocean, and extends an average distance of 30 miles from shore. Its mission is to "understand and protect the coastal ecosystem and cultural resources of Monterey Bay National Marine Sanctuary." Its goals include:

- enhancing resource protection through comprehensive and coordinated conservation and management tailored to the specific resources that complements existing regulatory authorities;
- supporting, promoting, and coordinating scientific research on sanctuary resources, and monitoring those resources to improve management decision-making in the sanctuary;
- enhancing public awareness, understanding, and ecologically sound use of the marine environment; and
- facilitating multiple uses of the sanctuary, so long as those uses are compatible with the Sanctuary's primary objective of resource protection, and so long as they are not otherwise prohibited.

As federal Lead Agency, MBNMS has joined in the preparation of this EIR/EIS for purposes of NEPA compliance and consideration of authorizations and permits for CalAm's proposed project. The authority for MBNMS actions is outlined in Section 1.3.2. The U.S. Army Corps of Engineers and the U.S. Army are Cooperating Agencies under NEPA due to their discretionary approval authority over some components of CalAm's proposed project and alternatives. A complete list of federal agencies and potential approval authorities is provided in Chapter 3, Table 3-8.

1.3 Project Objectives and Purpose and Need

The MPWSP is proposed to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources. In 1995, the California State Water Resources Control Board (SWRCB) directed CalAm to reduce and eventually terminate surface water diversions from the Carmel River in excess of its legal entitlement of 3,376 acre-feet per year (afy). SWRCB Order 95-10 directed CalAm either to obtain appropriative rights to the water that was being unlawfully diverted, or to obtain water from other sources. In the meantime, to reduce diversions from the Carmel River to the greatest practicable extent, the order directed CalAm to implement conservation measures to offset demand and to maximize its use of the Seaside Groundwater Basin to serve existing customers. (See Chapter 2 for more information on Order 95-10 and the subsequent Cease and Desist Order, SWRCB Orders 2016-0016).

In 2006, the Monterey County Superior Court adjudicated the rights of various entities to use groundwater resources from the Seaside Groundwater Basin. In its decision, the Court established the adjudicated water rights of all the users of the Seaside Groundwater Basin, for the purpose of avoiding long-term damage to the basin. The adjudication substantially reduced the amount of groundwater available to CalAm (from approximately 4,000 afy to 1,474 afy). (See Section 2.2.4 in Chapter 2, Water Demand, Supplies, and Water Rights, for more information on the Seaside Groundwater Basin adjudication.)

The need for the proposed MPWSP is predicated on the following:

1. SWRCB Order 95-10, which requires CalAm to reduce and terminate surface water diversions from the Carmel River in excess of its legal entitlement of 3,376 afy;

2. SWRCB Order 2016-0016, which requires CalAm to terminate the diversions in excess of its legal entitlement by December 2021; and

3. The Monterey County Superior Court's adjudication of the Seaside Groundwater Basin, which effectively reduced CalAm's pumping from the Seaside Groundwater Basin from approximately 4,000 afy at the time of the adjudication to CalAm's adjudicated right of 1,474 afy.

1.3.1 Project Objectives

Based on information in CalAm's application to the CPUC[4], the primary objectives of the proposed MPWSP are to:

1. Develop water supplies for the CalAm Monterey District service area to replace existing Carmel River diversions in excess of CalAm's legal entitlement of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2016-0016;

[4] The CPUC refined the general project objectives stated in CalAm's application to provide a sound basis for comparing alternatives.

2. Develop water supplies to enable CalAm to reduce pumping from the Seaside Groundwater Basin from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality;

3. Provide water supplies to allow CalAm to meet its obligation to pay back the Seaside Groundwater Basin by approximately 700 afy over 25 years as established by the Seaside Groundwater Basin Watermaster;

4. Develop a reliable water supply for the CalAm Monterey District service area, accounting for the peak month demand of existing customers;

5. Develop a reliable water supply that meets fire flow requirements for public safety;

6. Provide sufficient water supplies to serve existing vacant legal lots of record;

7. Accommodate tourism demand under recovered economic conditions;

8. Minimize energy requirements and greenhouse gas emissions per unit of water delivered; and

9. Minimize project costs and associated water rate increases.

The secondary objectives of the MPWSP are to:

1. Locate key project facilities in areas that are protected against predicted future sea-level rise in a manner that maximizes efficiency for construction and operation and minimizes environmental impacts; and

2. Provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build out demand in accordance with adopted General Plans; and

3. Improve the ability to convey water to the Monterey Peninsula cities by improving the existing interconnections at satellite water systems and by providing additional pressure to move water over the Segunda Grade.

1.3.1.1 MBNMS Purpose and Need for Proposed Actions

Three federal proposed actions are addressed in this document and consist of the following: 1) authorization of a Coastal Development Permit for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface source water intake system; 2) authorization of a Central Coast Regional Water Quality Control Board (RWQCB) issued National Pollutant Discharge Elimination System (NPDES) permit to allow for the discharge of brine into the Pacific Ocean and MBNMS via an existing ocean outfall pipe, and; 3) issuance of a special use permit to CalAm for the continued presence of a pipeline[5] in MBNMS transporting seawater to or from a desalination facility.

[5] The Applicant proposes to use subsurface intakes (slant wells) to supply the desalination plant with source water. The well casings, or pipes, would extend seaward of mean high water and would require a special use permit to be present within MBNMS.

The purpose of these proposed actions is to authorize otherwise prohibited activities to occur within MBNMS, to ensure that the State and Federal permits and the proposed project comply with MBNMS regulations, and to ensure that MBNMS resources are protected by requiring terms and conditions that may be necessary. The MBNMS proposed action was prompted by CalAm's request for National Marine Sanctuaries Act (NMSA; 16 U.S.C. §1431 et seq.) authorizations and a permit to construct, operate, maintain, and decommission subsurface intake facilities in the Sanctuary, and to allow brine discharges through an existing ocean outfall facility within the Sanctuary; these activities would be associated with CalAm's proposed desalination plant. Therefore, the need for MBNMS action is to respond to CalAm's permit and authorization request in accordance with NMSA regulations and to protect Sanctuary resources. Since MBNMS has federal authority to issue authorizations and permits, impose additional conditions of approval, or to deny authorizations or permits for CalAm's proposed project, MBNMS qualifies as the lead federal agency under NEPA. As part of its review, MBNMS has coordinated with other government agencies that have jurisdiction over CalAm's proposed project, including NEPA cooperating agencies U.S. Army Corps of Engineers and the U.S. Army. A complete list of federal agencies and approval authorities is provided in Chapter 3, Table 3-8. MBNMS actions needed to approve CalAm's project include two authorizations and a special use permit as described below. While the ability to issue authorizations and special use permits is delegated to the MBNMS Superintendent, the ultimate NOAA decision-maker for approval of the EIS and Record of Decision for NEPA is the Assistant Administrator for the National Ocean Service.

1.3.1.2 Authorizations

The NMSA regulations identify activities that are prohibited in the sanctuaries and establish a system of permits or authorizations to allow the conduct of certain types of activities that are otherwise prohibited. Each sanctuary has unique regulatory prohibitions codified within a separate subpart of Title 15, Code of Federal Regulations, Part 922 (i.e., 15 CFR Part 922). Subpart M contains the regulations specific to MBNMS. Section 922.132 of the regulations lists activities that are prohibited or otherwise regulated within the Sanctuary. Among the listed prohibitions, the following prohibited activities relate to the proposed project and may qualify for authorizations, pursuant to Section 922.132(e):

1. Discharging or depositing from within or into the sanctuary any material or other matter, except as specified in A – F of this section. (15 CFR § 922.132(a)(2)(i)).

2. Drilling into, dredging, or otherwise altering the submerged lands of the sanctuary; or constructing, placing, or abandoning any structure, material, or other matter on or in the submerged lands of the sanctuary (15 CFR § 922.132(a)(4)).

One of the federal decisions to be made by MBNMS is whether or not to authorize two separate state permits (or approvals) that would allow CalAm's proposed drilling into the submerged lands (for installation of the proposed subsurface slant wells) and discharge of brine produced during the desalination process into the waters of the sanctuary.

The term "authorization" is a specific approval tool described in the NMSA regulations at 15 CFR Section 922.49, which provides, in part, that:

A person may conduct an activity prohibited by subparts L through P, or subpart R, if such activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of MBNMS designation, provided that: 1) the applicant notifies the Director of the Office of Ocean and Coastal Resource Management, NOAA, or designee, in writing, of the application for such authorization; 2) the applicant complies with the provisions of Section 922.49; 3) the Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization, and; 4) the applicant complies with any terms and conditions the Director deems reasonably necessary to protect sanctuary resources and qualities.

Upon completion of the review of the application and information received with respect thereto, the Director shall notify both the agency and applicant, in writing, whether he or she has any objection to issuance and what terms and conditions he or she deems reasonably necessary to protect sanctuary resources and qualities.

1.3.1.3 Special Use Permit

NOAA has the authority in the NMSA (16 U.S.C. §1431 et seq.) to issue special use permits for specific activities in national marine sanctuaries to establish conditions of access to, and use of, any sanctuary resource or to promote public use and understanding of a sanctuary resource. Section 310(d) of the NMSA (16 U.S.C. § 1441(d)) allows NOAA to assess and collect fees for the conduct of any activity under a special use permit issued under that section. NOAA Office of National Marine Sanctuaries (ONMS) recently approved a new category of special use permit that allows the continued presence of a pipeline transporting seawater to or from a desalination facility (82 FR 42298). In addition to the two authorizations listed above, the other decision to be made by MBNMS is whether or not to issue that special use permit to CalAm for the continued presence of the subsurface slant wells in MBNMS. The authority to issue a special use permit is delegated to the MBNMS Superintendent.

1.4 Project Setting and Background

CalAm, the project applicant, is a privately owned public utility that has served the Monterey Peninsula since 1966. CalAm's Monterey District encompasses most of the Monterey Peninsula, including the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the unincorporated areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. The water supply challenges facing CalAm and the Monterey Peninsula are substantial and have been well-documented in a number of venues including the SWRCB, the Monterey County Superior Court, the CPUC, and the California Legislature. Water sources consist primarily of surface water from the Carmel River and groundwater from the Seaside Groundwater Basin. Because of its geography and rainfall patterns, the area is prone to severe droughts. Rainfall is the primary source of water and groundwater recharge within coastal Monterey County.

1.4.1 The Coastal Water Project

In 2004, CalAm filed Application A.04-09-019 seeking a Certificate of Public Convenience and Necessity from the CPUC for the Coastal Water Project (also referred to as the Moss Landing Project). The Coastal Water Project was intended to replace existing Carmel River water supplies for the CalAm Monterey District service area that are constrained by legal decisions described in Section 1.3, above. In general, the Coastal Water Project involved producing desalinated water supplies, increasing the yield from the Seaside Groundwater Basin ASR system, and building additional storage and conveyance systems to move the replacement supplies to the existing CalAm distribution system. The Coastal Water Project was sized to meet existing water demand and did not include supplemental supplies to accommodate growth. The Coastal Water Project proposed to use the existing intakes at the Moss Landing Power Plant to draw source water for a new 10 mgd desalination plant at Moss Landing, to build conveyance and storage facilities, and to make improvements to the existing Seaside Groundwater Basin ASR system. (Refer to Chapter 3, Description of the Proposed Project, for more information on the existing ASR system.)

On January 30, 2009, the CPUC published a Draft EIR analyzing the environmental impacts of the Coastal Water Project, as well as the environmental impacts of two project alternatives, the North Marina Project[6] and the Regional Project. The CPUC published the Coastal Water Project Final EIR (SCH No. 2006101004) in October 2009 and certified the EIR in December 2009 (Decision D.09-12-017). A year later, in Decision D.10-12-016, the CPUC approved implementation of the Regional Project alternative.

The Regional Project would have been implemented jointly by CalAm, Marina Coast Water District (MCWD), and Monterey County Water Resources Agency (MCWRA), and would have been built in two phases. It included vertical intake wells on coastal dunes located south of the Salinas River and north of Reservation Road; a 10-mgd desalination plant in North Marina (Armstrong Ranch); product water storage and conveyance facilities; and expansion of the existing Seaside Groundwater Basin ASR system. The second phase of the Regional Project, which was evaluated at a programmatic level of detail, included water to meet demand under buildout of the service-area cities' general plans and water for areas of North Monterey County.

The Coastal Water Project Draft EIR and Final EIR are available for review during normal business hours at the CPUC, 505 Van Ness Avenue, San Francisco, California.

[6] The North Marina Project alternative included most of the same facilities as the previously proposed Coastal Water Project and, like the previously proposed Coastal Water Project, would only provide replacement supplies to meet existing demand. The key differences between the North Marina Project alternative and the previously proposed Coastal Water Project were that the slant wells and desalination plant would be constructed at different locations (Marina State Beach and North Marina, respectively), and the desalination plant would have a slightly greater production capacity (11 mgd versus 10 mgd).

1.4.2 The Monterey Peninsula Water Supply Project

After the CPUC approved the Regional Project, CalAm withdrew its support for that project in January 2012. On July 12, 2012, in Decision D.12-07-008, the CPUC closed the Coastal Water Project proceeding.

In April 2012, CalAm submitted Application A.12-04-019 (CalAm, 2012), asking the CPUC's permission to build, own, and operate a desalination facility for water supply. This project is the MPWSP. The MPWSP incorporates many of the same elements previously analyzed in the Coastal Water Project EIR, including a modified version of the North Marina Alternative that would include a desalination facility and subsurface slant wells at new locations. The MPWSP would include many of the same Aquifer Storage and Recovery (ASR) systems and most of the conveyance and storage facilities that were evaluated for the North Marina Alternative in the Coastal Water Project Final EIR. There are, however, changes to some of the project facilities.

The MPWSP includes the following proposed facilities, all of which are described in detail, and locations shown on figures, in Chapter 3:

1. A source water intake system, which would consist of 10 subsurface slant wells (eight active and two on standby) extending offshore into the submerged lands of Monterey Bay at the CEMEX sand mining facility in the City of Marina, and a Source Water Pipeline;

2. A 9.6 mgd desalination plant located on a CalAm-owned parcel on Charles Benson Road, which would produce an average of 9.5 mgd of desalinated water supplies. Other facilities would be located with the plant, including pretreatment, reverse osmosis (RO), and post-treatment systems; backwash supply and filtered water equalization tanks; treated water storage tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities;

3. Desalinated water conveyance facilities, including pipelines, pump stations, and clearwells; and

4. An expanded ASR system, including two additional injection/extraction wells (Wells ASR-5 and ASR-6) and three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline).

1.4.3 Environmental Review: Context for this Final EIR/EIS

The previous MPWSP Draft EIR was issued on April 30, 2015, for a 60-day review period. The MPWSP Draft EIR is available for review during normal business hours at the CPUC, 505 Van Ness Avenue, San Francisco, California.

In a letter dated July 9, 2015, the CPUC Energy Division[7] extended the public comment period on the Draft EIR until September 30, 2015 for three reasons:

[7] Energy Division is responsible for all large scale CEQA Compliance efforts at the CPUC, including water infrastructure projects like this one.

1. To address a possible conflict of interest associated with one of the CPUC's environmental subconsultants, Geosciences;

2. To provide access to the data, models, and assumptions used by Geosciences in the hydrogeologic modeling work; and

3. To seek comments from the public on the advisability of recirculating the Draft EIR as a joint state/federal environmental review document (EIR/EIS) that complies with both CEQA and NEPA requirements, in coordination with the Sanctuary.

Approximately 150 comment letters from various federal, state, and local agencies, special interest groups, and individuals were received during the 5-month Draft EIR public review period. In September 2015, after considering the Draft EIR comments and based on conversations with the Sanctuary and internal CPUC deliberations, the CPUC Energy Division announced that the Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination with MBNMS; the groundwater modeling would be peer-reviewed and updated by a new groundwater modeling consultant; and the recirculated document would further consider as alternatives the two other active desalination proposals at Moss Landing: the Monterey Bay Regional Water Project (aka DeepWater Desal) and the People's Moss Landing Water Desalination Project (the People's Project).

On August 26, 2015, NOAA's Office of National Marine Sanctuaries started the NEPA process by issuing a Notice of Intent (NOI) to prepare an EIS for the project (80 Fed. Reg. 51787). The NOI solicited input on the issues to be analyzed in depth related to the portion of the proposed project within the Sanctuary's boundaries, and regarding the full spectrum of environmental issues and concerns relating to the scope and content of the EIS. On September 10, 2015, MBNMS held a NEPA scoping meeting for the project; the scoping period closed on October 2, 2015. A summary of EIS scoping comments is provided in **Appendix A**.

To address questions about the accuracy and credibility of the groundwater modeling work that was the subject of the potential conflict of interest comments, the CPUC made the groundwater data files available for public review, and the CPUC employed the Lawrence Berkeley National Laboratory to conduct an independent evaluation of that data. The results of that evaluation are incorporated into the groundwater model that was used in the analysis in Chapters 4 and 5, and are provided in detail in **Appendix E1**.

Per CEQA Guidelines Section 15088.5(f)(1), regarding the treatment of comments when recirculating a substantially revised, complete EIR, the CPUC need not provide individual responses to comments received on the April 2015 Draft EIR, and such responses are therefore not provided in this EIR/EIS. Instead, the comments received by September 2015 on the April 2015 Draft EIR will become part of the administrative record of this proceeding, and key substantive comments and themes of comments received on the April 2015 Draft EIR have been addressed in the appropriate sections of this EIR/EIS. See Section 1.5, Environmental Review Process, for details about the CPUC's and the Sanctuary's joint CEQA/NEPA process for the proposed project. Under Section 15088.5(f)(1), new comments were required to be submitted on the Draft EIR/EIS and it is only these new comments that are responded to in this Final EIR/EIS.

1.4.4 Revisions Made in the 2017 Draft EIR/EIS Compared to the 2015 Draft EIR

On March 14, 2016, CalAm filed an Amended Application with the CPUC (CalAm, 2016) in response to feedback from the community and resource agencies, the findings made in the April 2015 Draft EIR alternatives analysis regarding pipeline alignments, and increased technical knowledge and experience resulting from the installation and operation of the test slant well.[8] The updated project description provided in Appendix H of CalAm's Amended Application reflects modifications to facilities analyzed in the 2015 Draft EIR. These modifications are included in this EIR/EIS project description (Chapter 3). The most substantial modifications include:

1. Revised slant well layout at CEMEX:

    a. Revised slant well configuration: two sites with three slant wells each and four sites with a single well. (The previous configuration had the 10 slant wells grouped at three sites.)

    b. Six single-story electrical control cabinets. (The previous configuration included one electrical control building for all wells.)

    c. Well Sites 1 through 6 would include the following facilities: aboveground wellhead(s), a below-ground mechanical piping vault (12 feet by 6 feet by 6 feet) for meters, valves, gauges, etc. per well, an aboveground electrical enclosure, and a pump-to-waste basin. The electrical controls for operation of the slant wells would be housed in a single-story, 17-foot-long by 10-foot-wide, 10-foot-tall fiberglass enclosure located at each of the six well sites. All permanent slant wells and associated aboveground infrastructure would be built on a 5,250- to 6,025-square-foot graded pad located above the maximum high tide elevation on the inland side of the dunes (no concrete pads would be constructed). Wellheads would be located aboveground. (With the exception of the electrical control building, the previous configuration located all of the wellhead facilities below grade.)

2. Revised alignments for the roughly 21 miles of conveyance pipelines.

    a. The "New" Transmission Main (product water pipeline south of Reservation Road that was evaluated in the April 2015 Draft EIR as an Alternative Pipeline) becomes the proposed pipeline.

[8] In October 2014, MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program, and issued a Finding of No Significant Impact (FONSI). In September 2014, the City of Marina declined to adopt its Initial Study and Mitigated Negative Declaration and denied CalAm's CDP application for development of the test slant well, and in November 2014, the CCC approved the CDP application on appeal and documented its compliance with CEQA requirements. The test slant well is permitted to operate until February 2019 (per a December 2017 permit amendment) and it is not part of the proposed project being evaluated in this EIR/EIS. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well will be removed as analyzed and approved pursuant to the CEQA and NEPA reviews of the test slant well project. However, if the proposed subsurface slant wells at CEMEX are ultimately approved as part of the proposed project, CalAm would convert the test slant well into a permanent well (forming one of the 10 wells) and operate it as part of the proposed seawater intake system. The conversion and long-term operation of the well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project.

b. The Transfer Pipeline evaluated in the April 2015 Draft EIR has been eliminated, since it is no longer necessary due to the alignment of the New Transmission Main and the New Monterey Pipeline.

3. The "New" Monterey Pipeline (product water pipeline connecting Seaside and Pacific Grove) is discussed in the Chapter 4 cumulative analysis for each topical area to which its impacts are relevant, since the CPUC in Decision 16-09-021 on September 15, 2016, authorized CalAm to build the Monterey Pipeline and Monterey Pump Station, subject to compliance with a Mitigation Monitoring and Reporting Program.

4. The ASR Pump Station has been eliminated. The Monterey (Hilby) Pump Station, like the new Monterey Pipeline discussed above and for the same reason, is discussed in the Chapter 4 cumulative analysis for each topical area where relevant.

5. The preferred method of returning water to the Salinas Valley now includes a new 5-mile-long pipeline to the city of Castroville, with connections to the Castroville Community Services District (CCSD) and Castroville Seawater Intrusion Project (CSIP) distribution systems. Returning the water via the existing Salinas Valley Reclamation Project Storage Pond (hereafter referred to as "CSIP pond") is retained as a backup option. (Previously, Salinas Valley return flows would be returned to the existing CSIP pond at the MRWPCA Regional Wastewater Treatment Plant.)

6. Revised construction assumptions, phasing, and schedule.

In addition to the project description changes, the Draft EIR/EIS included several other substantive revisions to the 2015 Draft EIR. These include some re-organization of the document, revised technical studies, and revisions to the analyses as a result of the revised technical studies, including:

1. MBNMS, as federal lead agency, has proposed federal actions pertaining to CalAm's application, including authorization of state permits and issuance of a special use permit for otherwise prohibited activities within MBNMS. These proposed actions are discussed in Section 1.3.2, above.

2. All topical sections (in Chapter 4) have been revised in response to the amended project description (in Chapter 3).

3. Cumulative impacts are now addressed within each topical section in Chapters 4 and 5, rather than being addressed in a separate chapter.

4. The Variant (Reduced Project) is now referred to as Alternative 5 and is evaluated in Chapter 5, Alternatives Screening and Analysis, rather than in a stand-alone chapter. The DeepWater Desalination Project and the People's Project are also addressed in Chapter 5, Alternatives Screening and Analysis

5. Additional brine discharge modeling has been performed. It is included as Appendix D1 and reflected in the analyses in Section 4.3, Surface Water Hydrology and Water Quality, and Section 4.5, Marine Biological Resources.

6. Revised Ocean Plan Water Quality Compliance analysis has been performed. It is included as Appendix D3 and reflected in the analyses in Sections 4.3, Surface Water Hydrology and Water Quality, and Section 4.5, Marine Biological Resources.

7. Lawrence Berkeley National Laboratory has peer-reviewed the groundwater modeling performed for the April 2015 Draft EIR (referred to as North Marina Groundwater Model version 2015, or $NMGWM^{2015}$) and the review is included as Appendix E1.

8. The North Marina groundwater model has been revised (referred to as North Marina Groundwater Model version 2016, or $NMGWM^{2016}$) and new groundwater modeling has been performed. Modeling results are included as Appendix E2 and reflected in the analyses in Section 4.4, Groundwater Resources and Chapter 5, Alternatives Screening and Analysis.

9. The coastal hazards analysis has been revised as a result of the re-located wells at the CEMEX sand mine property. That analysis is included as Appendix C2 and reflected in Section 4.2, Geology, Soils, and Seismicity.

10. Sensitive plant lists and calculations regarding energy consumption and air pollutant and greenhouse gas (GHG) emissions have been revised; see Sections 4.6, Terrestrial Biological Resources, Section 4.10, Air Quality, Section 4.11, Greenhouse Gas Emissions and Section 4.18, Energy Conservation.

1.5 Environmental Review Process and Use of This Document

This EIR/EIS has been prepared in compliance with CEQA (Pub. Res. Code §21000 et seq.) and NEPA (42 U.S.C. §4321 et seq., and implementing regulations at 40 CFR 1500-1508). This EIR/EIS is a public document for use by the CPUC, MBNMS, other governmental agencies, and the public in identifying and evaluating the potential environmental consequences of the proposed project and proposed federal actions, identifying mitigation measures to lessen or eliminate adverse impacts, and examining feasible alternatives to the proposed project. The impact analyses in this report are based on a variety of sources; references for these sources are listed at the end of each technical section.

This Final EIR/EIS will be used primarily by the CPUC, as the CEQA Lead Agency, and by MBNMS, as the NEPA Lead Agency, to evaluate environmental impacts of the proposed project and its alternatives as part of the decision-making processes of these agencies. It is expected that the CPUC, MBNMS, the U.S. Army, and other responsible trustees, and relevant agencies will use this EIR/EIS in deciding whether to approve the MPWSP or any alternative to, or of, the MPWSP. The analyses contained within this EIR/EIS would be used to determine any necessary regulatory permits, authorizations, or approvals.

1.5.1 Notice of Preparation, Notice of Intent, and Scoping

In accordance with CEQA Guidelines Section 15082, the CPUC issued a Notice of Preparation (NOP) for the MPWSP and circulated it to local, state, and federal agencies, Native American tribal organizations, as well as other interested parties, on October 5, 2012. The NOP solicited both written and verbal comments on the document's scope during a 30-day comment period and provided information on the forthcoming public scoping meetings. Comments were requested by November 5, 2012. The NOP provided a description of the MPWSP, a discussion of possible

alternative projects being considered, a map of the project location and the area, and a summary of the probable environmental effects of the project to be addressed.

In addition to the NOP, the CPUC published legal and display advertisements in the *Monterey Herald* on October 10, October 21 and October 24, 2012; in the *Carmel Pine Cone* on October 12, 2012; in the *Salinas Californian* on October 10 and October 25, 2012; and in Spanish in the *El Sol* on October 12, 2012.

During the CEQA scoping period, the CPUC held a series of three scoping meetings in Monterey County to discuss the proposed project and to solicit public input as to the scope and content of this EIR. Scoping meetings were held on October 24, 2012 in Carmel, and on October 25, 2012 in Seaside.

In accordance with Section 102(2)(C) of NEPA (42 U.S.C. § 4332), the NOAA Office of National Marine Sanctuaries published a Notice of Intent (NOI) to prepare an EIS for the proposed project on August 26, 2015 (80 Fed. Reg. 51787). The NOI solicited input on the full spectrum of environmental issues and concerns relating to the scope and content of the EIS, including: the human and marine biological resources that could be affected, the nature and extent of the potential significant impacts on those resources, a reasonable range of alternatives, and mitigation measures. The NOI provided background information, information on possible alternatives, explained the need for action, and disclosed federal consultation obligations. The scoping period closed on October 2, 2015.

During the NEPA scoping period, MBNMS held a scoping meeting in Pacific Grove on September 10, 2015 to discuss the proposed project and to solicit public input as to the scope and content of the EIS.

Appendix A of this EIR/EIS contains a copy of the NOP and NOI, a description of public outreach efforts, a summary of comments received during the scoping process and a Draft EIR/EIS Distribution List.

1.5.2 Draft EIR/EIS and Public Review

A joint document constituting the Draft EIR/EIS was published on January 13, 2017. As provided for in CEQA and NEPA, the Draft EIR/EIS was consistent with the February 2014 guidance issued by the Executive Office of the President of the United States and the California Governor's Office of Planning and Research entitled, NEPA and CEQA: Integrating Federal and State Environmental Reviews. The Draft EIR/EIS was circulated to local, state, and federal agencies as well as interested organizations and individuals who wished to review it. Notice of the Draft EIR/EIS was also sent directly to every agency, person, or organization that commented on the CPUC's NOP or the Sanctuary's NOI. The January 13, 2017 publication of the Draft EIR/EIS marked the beginning of a public review and comment period that was subsequently extended to close on March 29, 2017. The Lead Agencies held two public meetings on February 15, 2017, and a public hearing for the receipt of oral and written comments on the Draft EIR/EIS on February 16, 2017.

The Lead Agencies received approximately 82 comment letters, plus 2 form letter submissions, sent through mail, hand-delivery, or email, as well as 18 oral comments from the public hearing. On November 9, 2017, subsequent to the close of the Draft EIR/EIS comment period, MCWD submitted additional comments to the Lead Agencies including a June 16, 2017 "Preliminary Interpretation of SkyTEM Data Acquired in the MCWD", a September 29, 2017 memo from Hopkins Groundwater Consultants, and a June 22, 2017 memo from EKI, "Groundwater Remedial Actions and Establishment of Remedial Goals at the Fort Ord Marina Coast Water District, California. Comments Regarding Cal Am Monterey Peninsula Water Supply". EIR/EIS Chapter 8, Responses to Comments, includes a list of all agencies, organizations, and individuals that submitted comments, copies of all letters and the transcript of oral comments, and responses to all comments.

1.5.3 Final EIR/EIS and Revisions Made to the Draft EIR/EIS

Following circulation of the Draft EIR/EIS and incorporation of public comments and responses to comments (see Chapter 8), the Final EIR/EIS is being published by the CPUC and submitted into the formal record of the Commission's Certificate of Public Convenience and Necessity proceeding (A.12-04-019). Concurrently, NOAA is submitting the Final EIR/EIS to the U.S. EPA and publishing a Notice of Availability in the Federal Register. This begins the 30-day waiting period required under NEPA prior to signing a Record of Decision.

Public and agency comments on the Draft EIR/EIS did not require changes in the conclusions of the Draft EIR/EIS that resulted in any new or substantially more severe impacts for the proposed project. Furthermore, there were no substantial changes to the proposed project or to the circumstances under which the proposed project would be undertaken, or significant new information relevant to environmental concerns that indicate the proposed project would result in impacts more adverse than disclosed in the Draft EIR/EIS or that additional feasible mitigation measures or alternatives warrant consideration. The following key changes have been incorporated into the Final EIR/EIS, consistent with minor modifications made to the proposed project and other clarifications requested by comments on the Draft EIR/EIS:

- Removal of references to, and analysis of, the Terminal Reservoir, which CalAm has indicated is not needed for project operation and no longer proposes as part of the project;
- Revisions to Slant Well Sites 2 through 6 by making them graded pads rather than concrete pads, thereby eliminating almost 25,000 square feet of new impervious surfaces;
- Addition of the Brine Mixing Box to the description and analysis of the proposed Brine Disposal Pipeline by request of CalAm and Monterey Regional Water Pollution Control Agency (MRWPCA);
- Inclusion of additional brine discharge dilution modeling and Ocean Plan Compliance modeling in Section 4.3, Surface Water Hydrology and Water Quality, by request of MRWPCA (also see revised Appendices D1 and D3);
- Inclusion of information from recent geophysical studies of seawater intrusion in the Salinas Valley Groundwater Basin (SVGB) – Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) – in Section 4.4.1.4, Groundwater Resources;

- Expansion of the SVGB Deeper Aquifers discussion in Section 4.4.1.2 and the Return Water/Ocean Water Percentage discussion in Section 4.4.1.5, Groundwater Resources;
- Clarification of the capture zone, the cone of depression, aquifer responses to the Deep Aquifers and consistency of the proposed project with the Sustainable Groundwater Management Act (SGMA) in Section 4.4.5.2;
- Revision of Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage;
- Revision of several mitigation measures to clarify performance standards and provide additional details for implementation;
- Revision of Mitigation Measure 4.11-1 in Section 4.11, Greenhouse Gas Emissions, to require net zero indirect emissions from electricity use during operation (reducing the significance of all impacts related to greenhouse gas emissions from significant and unavoidable to less than significant with mitigation);
- Revision of Impact and Mitigation Measure 4.13-5 in Section 4.13, Public Services and Utilities, to address potential corrosion of the existing outfall as a result of MPWSP brine discharge, including WEKO seal clamp replacement inside the existing offshore segment of the outfall;
- Revision to Section 6.4, Project Consistency with MBNMS Desalination Guidelines, to include alternatives described in Section 5.4 in the assessment of project conformity with guidelines for desalination plants in MBNMS (see Table 6.4-1); and
- Addition of the Hydrogeologic Working Group's Hydrogeologic Investigation Technical Report as Appendix E3.

Other minor corrections, clarifications, and explanations have been made throughout the document. A version of the Final EIR/EIS showing the revisions using strikethrough/underline is available for download at: https://tinyurl.com/mpwsp-feireis.

1.5.4 Use of this EIR/EIS in Decision Making

1.5.4.1 CPUC Consideration of the EIR/EIS and Proposed Project

The assigned CPUC Administrative Law Judges (ALJs) will review the Final EIR/EIS and submit a proposed decision to the Commission concerning certification of the EIR/EIS and approval of the MPWSP. Pursuant to CEQA Guidelines Section 15090, as CEQA Lead Agency, the CPUC must certify that the Final EIR/EIS complies with CEQA and reflects the CPUC's independent judgment and analysis prior to approving the MPWSP or an alternative.

If the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity for the MPWSP, as proposed or modified. In addition to environmental impacts addressed during the CEQA process, the Certificate of Public Convenience and Necessity process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. During this process the CPUC will also take into account testimony and briefs from parties who have formally intervened in

A.12-04-019, as well as the formal record of any hearings held by the ALJ in this case. The five CPUC Commissioners will ultimately cast a vote on whether to approve the proposed decision prepared by the ALJs. One or more Commissioners may also prepare alternate proposed decisions that differ from the proposed decision of the ALJs. Whichever proposed decision – original or alternate – garners at least a majority vote of the CPUC Commissioners will become the decision of the Commission.

Should the CPUC decide in favor of the MPWSP, as proposed or as modified, the CPUC must make findings on each significant environmental impact. As to each such impact, the Lead Agency must find that either: (1) the environmental effect has been reduced through mitigation measures to a less-than-significant level, essentially "eliminating, avoiding, or substantially lessening" the expected impacts, or; (2) the residual significant adverse impact that cannot be mitigated to less than-significant level is outweighed by project benefits. This latter finding is called a Statement of Overriding Considerations. If the CPUC makes a Statement of Overriding Considerations, it would be included in the record of the project approval and would be mentioned in the notice of determination.

The CPUC may also deny the proposed project, but decide in favor of an alternative that may require further action on the part of other parties and public agencies. The Commission's final decision may therefore include an order for CalAm to return to the Commission at a later time for approval of either a specific project or some form of water purchase agreement, either of which would resolve at a minimum the water supply issues raised by SWRCB Order 95-10 and the Seaside Basin adjudication.

In addition, state law requires lead agencies to adopt a mitigation monitoring and reporting program for those changes to a project that it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. CEQA does not require that the specific reporting or monitoring program be included in the EIR. Throughout this EIR/EIS, however, proposed mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring program. All adopted measures will be included in a mitigation monitoring and reporting program to verify compliance.

1.5.4.2 MBNMS Consideration of the EIR/EIS and Proposed Action

This Final EIR/EIS will be used by MBNMS, along with other information developed in the formal record (including interagency consultations in compliance with the Endangered Species Act, Marine Mammal Protection Act, Magnuson Stevens Act, and the National Historic Preservation Act, among others), to decide whether or not to: authorize a Coastal Development Permit to be issued by the City of Marina under its certified Local Coastal Program (or by the California Coastal Commission on appeal, if the City of Marina denies the permit); authorize a NPDES permit to be issued by the Central Coast RWQCB, and/or; issue a special use permit to CalAm for the continued presence of a pipeline conveying seawater to or from a desalination facility. After MBNMS completes the final NEPA analysis, a 30-day mandatory waiting period will occur after issuance of the Final EIR/EIS, and then MBNMS may issue its Record of Decision (ROD). The decision-making authority for the Record of Decision under NEPA is NOAA's Assistant Administrator for the National Ocean Service (NOAA Administrative Order 216-6A; NOAA, 2016).

1.5.4.3 Other Agencies' Consideration of the EIR/EIS and Proposed Project

Several other agencies will rely on information in this EIR/EIS to inform their decisions over the issuance of specific permits related to project construction or operation. In addition to the CPUC, state agencies such as the SWRCB, the Regional Water Quality Control Boards (Regional Water Boards), California State Lands Commission, California Coastal Commission, Department of Parks and Recreation, Department of Transportation, California Department of Fish and Wildlife, and State Historic Preservation Office would be involved in reviewing or approving the proposed project. On the local level, the City of Marina would be reviewing and approving an application for a Coastal Development Permit for the slant wells consistent with their certified Local Coastal Plan and MRWPCA would be reviewing and approving CalAm's use of the existing wastewater outfall. On the federal level, agencies with reviewing or permitting authority include NMFS, the U.S. Army, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service (USFWS). A complete list of agencies and required permits or other approvals is included in Chapter 3, Description of the Proposed Project, Table 3-8.

1.6 Organization of Final EIR/EIS

The remaining chapters of this EIR/EIS are organized as follows:

Chapter 2 (Water Demand, Supplies, and Water Rights) provides background information on CalAm's existing water supply system; describes the water demand and supply information and assumptions included in CalAm's application; provides supplemental information about water supply and demand, and factors affecting them in the area that would be served by the proposed project; and addresses the topic of water rights as it pertains to project feasibility.

Chapter 3 (Description of the Proposed Project) describes the components of the MPWSP proposed by CalAm, including construction, operations and maintenance. The information in this chapter is intended to provide a common basis for the analysis of environmental impacts.

Chapter 4 (Environmental Setting [Affected Environment], Impacts, and Mitigation Measures) is divided by issue area or topic, and addresses the proposed project. Each issue area section describes the regional and local environmental setting (the "affected environment"); describes the Sanctuary and sanctuary resources; summarizes applicable laws, regulations, plans, and standards (the "regulatory framework"); identifies the thresholds and other criteria evaluated to determine whether a potential impact would be significant; summarizes the analytical methodology used; analyzes direct, indirect, and cumulative effects of the proposed project on the resource; identifies mitigation measures to address adverse effects; and explains the residual impacts that would remain after the implementation of all recommended mitigation measures. References cited in the analyses are listed in each section.

Chapter 5 (Alternatives Screening and Analysis) describes the alternatives screening process, identifies several alternatives to the proposed project that are being carried forward for full analysis, including the No Action alternative, and summarizes alternatives identified but removed from consideration. This chapter also includes the impact analysis for each alternative and a

detailed comparison of the alternatives to the proposed project. References cited in the analyses are listed in each topical section. An environmentally superior alternative and a NEPA-agency preferred alternative are identified and they are one and the same (see Section 5.6).

Chapter 6 (Other Considerations) addresses other CEQA and NEPA issues, including significant unavoidable impacts, significant irreversible changes, short-term versus long-term uses, growth-inducing impacts, and project consistency with MBNMS Desalination Guidelines.

Chapter 7 (Coordination, Consultation, and Report Preparation) outlines the federal agency consultation process conducted for the project and identifies the authors of the EIR/EIS.

Chapter 8 (Comments and Responses on the 2017 Draft EIR/EIS) provides Master Responses that address common issues raised during the public review period, as well as copies of all comments received on the Draft EIR/EIS and responses to these comments.

Chapter 9 (Index) includes an alphabetical list of key words and their associated page numbers within the EIR/EIS.

The Appendices include a scoping summary, a Draft EIR/EIS distribution list, technical reports and other supporting information.

References – Introduction and Background

82 FR 42298, Final Notice of a New Category of Special Use Permit Related to the Operation of Desalination Facilities Producing Potable Water for Consumption (Sept 7, 2017).

California American Water (CalAm), 2012. Before the Public Utilities Commission of the State of California, A.12-04-019, Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates, Filed April 23, 2012.

California American Water (CalAm), 2016. Before the Public Utilities Commission of the State of California, A.12-04-019, Amended Application of California-American Water Company (U210W), Filed March 14, 2016.

Monterey County Superior Court, 2006. California American Water, Plaintiff, vs. City of Seaside, City of Monterey, et al., Case No. M66343, Decision. Filed March 27, 2006.

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CHAPTER 2
Water Demand, Supplies, and Water Rights

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As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *The existing Pebble Beach water entitlement of 325 acre-feet per year has been included in the Existing System Demand.*

2.1 Introduction

In its application to the California Public Utilities Commission (CPUC) for the Monterey Peninsula Water Supply Project (MPWSP, or proposed project), California American Water (CalAm) proposes either to build a desalination plant with the capacity to produce up to 9.6 million gallons per day (mgd) of desalinated product water, or to build a smaller project that would include the purchase of product water from the proposed Pure Water Monterey Groundwater Replenishment (GWR) project and construction of a 6.4 mgd desalination plant (CalAm, 2016a). This chapter provides background information on CalAm's existing water supply system; describes the water demand[1] and supply information and assumptions included in CalAm's application; provides supplemental information about water supply and demand, and factors affecting them in the area that would be served by the proposed project; and addresses the topic of water rights as it pertains to project feasibility.

CalAm initially filed its application for the MPWSP (Application A.12-04-019) with the CPUC in April 2012 (CalAm, 2012a). The application requests a Certificate of Public Convenience and

[1] Unless otherwise noted, "demand" as used in this chapter refers to *system demand* (sometimes known as production), which is the total amount of potable water produced from supply sources. Demand does not refer to the amount of water delivered and billed to customers, which is typically referred to as consumption or the amount of water consumed. System demand includes "unaccounted-for" or "non-revenue" water, such as water used for flushing water system pipes and fire fighting, and water lost to leaks within the delivery system.

Necessity[2] and approval to build, own, and operate the MPWSP. In January 2013, CalAm submitted supplemental testimony that updated and superseded the water demand and supply estimates that had been provided in the original April 2012 application; the January 2013 testimony proposed a 9.6 mgd desalination plant that would produce approximately 10,627 acre feet per year (afy) of desalinated product water to meet estimated service area demand of 15,296 afy and provide return water for the Salinas Valley Groundwater Basin (SVGB return water),[3] or a project variant consisting of a 6.4 mgd plant in conjunction with the purchase of GWR water (Svindland, 2013a). In March 2016, CalAm submitted an amended application and updated project description. The 2016 amended application and associated testimony confirmed the project sizing and overall demand assumptions described in the January 2013 supplemental testimony while updating estimates of the quantities of desalinated product water that would be delivered to CalAm's service area and returned to the SVGB. The demand and supply information presented below is based on data provided in CalAm's January 2013 supplemental testimony, as updated or revised by CalAm since then. The information below also includes relevant supply and demand data collected independently from other sources such as the Monterey Peninsula Water Management District (MPWMD).

CalAm is proposing this project to replace part of its existing water supplies, which have been constrained by legal decisions affecting CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. State Water Resources Control Board (State Water Board) Order 95-10, State Water Board Order 2009-0060 and State Water Board Order 2016-0016 (also referred to as the 2009 and 2016 Cease and Desist Orders [CDOs], or 2009 and 2016 CDOs, respectively), and the Monterey County Superior Court's adjudication of the Seaside Groundwater Basin in 2006 substantially reduced CalAm's rights to use these two primary sources of supply. Section 2.2 provides background on CalAm's existing water system and historical sources of supply as well as information about the State Water Board and Superior Court decisions. Section 2.3 discusses the components of demand that CalAm proposes to meet with the proposed project in conjunction with CalAm's portfolio of other water supply sources, and Section 2.4 describes the water supply sources that would be used to meet those demands. Section 2.5 describes other factors that could affect future water supplies and demand in the Monterey District. Section 2.6 discusses the topic of water rights as it pertains to project feasibility.

2.2 Background

2.2.1 Existing Water System

The proposed project would develop supplemental water supplies to serve CalAm's Monterey District service area (Monterey District). CalAm's Monterey District encompasses most of the Monterey Peninsula, including the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside; the Monterey Peninsula Airport District; and the unincorporated

[2] Public Utilities Code Section 1001 et seq. requires that investor-owned utilities seeking to build certain specified infrastructure obtain a Certificate of Public Convenience and Necessity from the CPUC demonstrating that the proposed infrastructure is necessary for the service, accommodation, convenience, or safety of the public.

[3] Refer to Section 2.5.1 and Section 2.6 for more information on SVGB return water.

areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. The Monterey District's main distribution system is located within these areas. The main system primarily relies on water supplies from the Carmel River and groundwater from the Coastal subarea of the Seaside Groundwater Basin. CalAm's Monterey District also includes five small satellite water systems along the Highway 68 corridor east of the City of Monterey: the Ryan Ranch, Bishop, Hidden Hills, Toro, and Ambler systems. Because the Toro and Ambler areas would not be served by the proposed project, these areas are not included in the proposed project's demand and supply assumptions.[4]

2.2.1.1 Existing Water Supply Facilities

Facility Overview

CalAm's existing Monterey District water supply infrastructure includes the following:

- extraction wells in the Carmel Valley Alluvial Aquifer
- groundwater production wells in the Seaside Groundwater Basin
- a surface water reservoir on the Carmel River[5]
- Aquifer Storage and Recovery (ASR) facilities
- various water treatment facilities
- a conveyance and distribution system consisting of over 500 miles of pipelines and water mains ranging in size from 2 to 36 inches in diameter
- a portion of the supply produced by Sand City's 300 afy Coastal Desalination Plant

The majority of the Monterey District water supply comes from 21 extraction wells screened[6] in the upper alluvial deposits of the Carmel River in Carmel Valley known as the Carmel Valley Alluvial Aquifer. CalAm's supply also includes groundwater production wells in the Seaside Groundwater Basin. Monterey District water supplies are generally treated to remove iron, manganese, and hydrogen sulfide, to control corrosion, and to adjust pH. Sodium hypochlorite is used for primary and secondary disinfection at each treatment facility that provides water to the distribution system.

Distribution and Conveyance

The CalAm Monterey District's distribution and conveyance system is an assemblage of smaller systems that have merged over time, starting with the Carmel Valley and Monterey Peninsula areas and eventually expanding to include the Seaside, Del Rey Oaks, and Sand City areas. The system encompasses several distinct urban areas and water pressure zones and is divided into four distinct districts:

4 There is an existing emergency interconnection between the Toro and Hidden Hills systems; the project would not change the use of this emergency interconnection.

5 Until recently CalAm operated two reservoirs on the Carmel River, the San Clemente and the Los Padres Reservoirs. Section 2.2.2 provides additional information on these reservoirs.

6 A well screen is a filtering device that serves as the intake portion of wells constructed in unconsolidated or semi-consolidated aquifers. The screen permits water to enter the well from the saturated aquifer, prevents sediment from entering the well, and serves structurally to support the aquifer material.

- Upper Carmel Valley
- Lower Carmel Valley and Monterey Peninsula
- Seaside
- Upper Lift Zones

Water produced from wells along the upper and lower reaches of the Carmel River in the Carmel Valley is conveyed in two directions: westward and clockwise around the Monterey Peninsula to the city of Monterey; and northward over the hills via the Segunda Reservoir, Segunda Pipeline, Segunda Pump Station, and Crest Tank facilities to the city of Seaside.

2.2.2 Historical Sources of Supply

2.2.2.1 Carmel River

San Clemente Dam was built on the upper Carmel River in 1921 to form the San Clemente Reservoir. Surface water diverted at San Clemente Dam was the sole water supply for the Monterey Peninsula until the 1940s. Starting in the 1940s and continuing into the early 1990s, multiple production wells were installed in the Carmel Valley Alluvial Aquifer along the lower reach of the Carmel River. In 1949, Los Padres Dam, which forms Los Padres Reservoir, was built about 6 miles upstream of San Clemente Dam to control the inflow of water into San Clemente Reservoir. CalAm has owned and operated both reservoirs since 1966. Over the years, sediment that accumulated behind San Clemente and Los Padres Dams significantly reduced the usable storage in both reservoirs. As a result, by 1995 CalAm relied primarily on the multiple wells in the alluvial aquifer along the lower Carmel River for its Carmel River supplies and more recently CalAm has relied entirely on these wells for its Carmel River supply. The San Clemente Dam was removed in 2015, after two years of construction work to reroute the river and prepare the site for dam removal, and the Carmel River currently flows around the former dam site (California Coastal Conservancy, National Marine Fisheries Service, CalAm, et al., 2016). Summer releases from the Los Padres Reservoir continue to recharge a portion of the Carmel Valley Alluvial Aquifer and maintain fish habitat between the Los Padres Dam and San Clemente Dam site. MPWMD and CalAm are currently studying options for use or removal of the Los Padres Reservoir (MPWMD, 2015a; CalAm et al., 2016a).[7]

2.2.2.2 Seaside Groundwater Basin

In addition to Carmel River supplies, CalAm operates several production wells for its main system in the Coastal subarea of the Seaside Groundwater Basin. The Seaside Groundwater Basin, which encompasses 24 square miles and consists of several subareas, is generally bounded by the Pacific Ocean to the west, the Salinas Valley to the north, the Toro Park area to the east, and Highways 68 and 218 to the south.

[7] The CPUC's General Rate Case for 2015-2017 authorized CalAm to co-fund studies with the MPWMD to develop a long term management plan for the Los Padres Dam and Reservoir, and in April 2016 the MPWMD approved a contract for preparation of the first such study, a Los Padres Dam fish passage study (MPWMD, 2016a). In January 2017, the MPWMD approved a contract for preparation of an alternatives study for Los Padres Dam and sediment management in the reservoir (MPWMD, 2017).

East of the main system along the Highway 68 corridor, in the Laguna Seca subarea of the Seaside Groundwater Basin, CalAm operates wells that supply the Ryan Ranch, Bishop, and Hidden Hills satellite systems (WSC, 2012). CalAm also provides Carmel River water to the Ryan Ranch system during fires and emergencies via an emergency interconnection between the Crest Tank and Ryan Ranch. In addition, in June 2015 MPWMD approved CalAm's application for an interconnection between the Bishop and Ryan Ranch systems that would allow water to be conveyed from the Bishop system to Ryan Ranch for emergency use only (i.e., when Ryan Ranch supplies were insufficient to meet demand) (MPWMD, 2015b). As a result of the adjudication of the Seaside Groundwater Basin (see Section 2.2.4), these satellite systems will lose all of their allocated Seaside Groundwater Basin supplies by 2018. Therefore, the demand assumptions presented below in Section 2.3 include demand for the Ryan Ranch, Hidden Hills, and Bishop systems. (See Section 3.2.3.9 and Figures 3-2 and 3-10a and 3-10b in Chapter 3, Project Description, regarding interconnections proposed as part of the MPWSP to enable water delivery to these small systems when CalAm no longer has rights to pump from the Laguna Seca subarea.)

CalAm's Toro and Ambler satellite systems lie east of the Laguna Seca subarea, on the south side of Highway 68. There are no existing or proposed direct infrastructure interconnections between CalAm's main system and the Toro and Ambler systems, which rely on groundwater supplies from the Corral de Tierra Subbasin of the SVGB. There is an existing emergency interconnection between the Hidden Hills and Toro systems.

2.2.2.3 Allocation Program

The MPWMD augments, manages, and regulates surface and groundwater resources in the Carmel Valley and the greater Monterey Peninsula. MPWMD's jurisdiction includes the area served by CalAm's Monterey District (shown in **Figure 3-1** in Chapter 3, Description of the Proposed Project) and CalAm's sources of supply (the Seaside Groundwater Basin and Carmel Valley Alluvial Aquifer), which MPWMD defines as the Monterey Peninsula Water Resource System (MPWMD, 2015b). The Monterey Peninsula Water Resource System includes supplies for non-CalAm pumpers in the Seaside Basin and Carmel Valley Alluvial Aquifer, as well. The MPWMD was established by state statute in 1978 to provide integrated management of all water resources for the Monterey Peninsula; among its functions is the allocation of water supply within its boundaries. MPWMD's initial, interim allocation, adopted in 1981, set CalAm's production limit (from the Carmel River system and the Coastal subarea of the Seaside Groundwater Basin) at 20,000 acre-feet (af), of which a net of 18,600 af was allocated among the jurisdictions in CalAm's service area. With the adoption of its current allocation program in 1990, MPWMD set CalAm's production limit at 16,744 afy. MPWMD has adjusted CalAm's production limit several times since then, most recently in 1997 when it set the production limit at 17,641 afy. Before the 2006 adjudication of the Seaside Groundwater Basin (described below in Section 2.2.4), the MPWMD assumed CalAm's yield from the Coastal subarea of the Seaside Groundwater Basin to be 4,000 afy (MPWMD, 2006a). In 2008, MPWMD expanded the regulated area it defines as the Monterey Peninsula Water Resource System to include the Laguna Seca subarea of the Seaside Groundwater Basin (through adoption of MPWMD Ordinance 135).

2.2.2.4 Carmel River Flow Agreements

In addition to MPWMD's allocation program and State Water Board Orders 95-10, 2009-0060, and 2016-0016 (discussed below in Section 2.2.3), CalAm's use of its Carmel Valley wells is also restricted by agreements with state and federal wildlife agencies.

California Department of Fish and Wildlife Annual Memorandum of Agreement

An annual Memorandum of Agreement (MOA) developed and entered into each year by CalAm, MPWMD, and the California Department of Fish and Wildlife provides an annual guideline to minimize localized drawdown from the use of wells located along certain reaches of the Carmel River, and limits surface water diversions from April to October. Before the San Clemente Dam was removed, the MOA specified minimum releases to the river from San Clemente Reservoir (CalAm, 2007). In 2015 the parties established minimum flow targets below the Los Padres Dam, which were expected to produce estimated minimum flows at the gaging station near the San Clemente Dam site (MPWMD, 2015c).

U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS) Agreements

Two species listed as threatened under the Endangered Species Act, the California red-legged frog and the South-Central California Coast distinct population segment of steelhead (S-CCC steelhead), inhabit the Carmel River.[8]

- The California red-legged frog was listed as threatened under the Federal Endangered Species Act (ESA) in 1996. In 1997, the U.S. Fish and Wildlife Service (USFWS) issued an ESA-4(d) rule that allowed it to prosecute for "take"[9] of the frog.
- The S-CCC steelhead was listed as threatened under the ESA in 1997, reaffirming that status in 2006 and 2014. In 2000 NMFS issued an ESA-4(d) rule allowing it to prosecute for take of steelhead, and revised it in 2005.

USFWS and NMFS have taken the position that any entity that pumps water from the Carmel Valley Aquifer may be liable for a take because the pumping may alter the habitat, affect the steelhead's ability to migrate in the river, and affect the frog's ability to grow to maturity. In 1997, CalAm entered into an agreement with USFWS to further regulate its well production activities in an attempt to avoid or mitigate impacts on the frog and has renewed that agreement several times. In 2001, CalAm negotiated a Conservation Agreement with NMFS that included various changes in operations, with the long-term goal of procuring an alternative water supply source to reduce withdrawals from the Carmel River Alluvial Aquifer. In 2009, Cal-Am entered into a Settlement Agreement with NOAA that updated the expired 2001 Conservation Agreement. In 2017, CalAm entered into a Memorandum of Agreement with NMFS that incorporates provisions of the 2009 Settlement Agreement and requires additional measures to conserve S-CCC steelhead.

[8] Refer to Section 4.6, Terrestrial Biological Resources in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, for more information on biological resources in the project area.

[9] As defined in the ESA, to "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

If CalAm fails to satisfy USFWS and NMFS concerns regarding ESA, those agencies could bring enforcement actions against CalAm and its customers. The consequences could include further reduction of the water supply obtained from the Carmel Valley Alluvial Aquifer, and fines that could be in the millions of dollars.

2.2.3 State Water Board Order 95-10 and Cease and Desist Orders 2009-0060 and 2016-0016

State Water Board Order 95-10, issued in July 1995, substantially limited the supplies available to CalAm from the Carmel River. In the order, the State Water Board established that CalAm has a legal right to 3,376 afy (equivalent to about 3 mgd) from the Carmel River system, including surface water diversions from the river and subsurface flow pumped from the Carmel Valley Alluvial Aquifer. Prior to Order 95-10, CalAm's average annual use during non-drought years was approximately 14,106 afy (12.6 mgd).[10] The order found that CalAm was diverting approximately 10,730 afy of surface and/or subsurface flow from the Carmel River without a valid basis of right and directed CalAm to diligently undertake the following actions to terminate its unlawful diversions: obtain appropriative rights to the Carmel River water that was being unlawfully diverted; obtain water from other sources and make one-for-one reductions of the unlawful diversions; and/or contract with other agencies that had appropriative rights to divert and use water from the Carmel River. Order 95-10 directed CalAm, during its pursuit of an alternative supply, to implement conservation measures to offset 20 percent of demand[11] and restricted CalAm to an annual diversion of 11,285 afy (10.1 mgd) from Carmel River sources. This amount represented a 20 percent reduction from CalAm's average usage at the time of 14,106 afy. The order also prohibited CalAm from diverting water from San Clemente Dam when streamflows reach a predetermined low flow. The order directed CalAm to maximize use of the Seaside Groundwater Basin for the purpose of serving existing connections, honoring existing commitments (allocations), and to reduce diversions from the Carmel River to the greatest practicable extent (State Water Board, 1995).[12]

In October 2009, the State Water Board adopted Cease and Desist Order 2009-0060, based on the State Water Board's conclusion that Order 95-10 did not authorize CalAm to divert water from the Carmel River in excess of its water rights and that CalAm was illegally diverting water from the Carmel River in violation of Order 95-10 and Water Code Section 1052. The CDO requires that CalAm "diligently implement actions to terminate its unlawful diversions from the Carmel River and … terminate all unlawful diversions from the river no later than December 31, 2016." The CDO prohibits CalAm from diverting water from the Carmel River for new service connections or intensified water use at existing connections, and required CalAm to reduce diversions by 5 percent, or 549 afy, starting in October 2009, with further annual reductions

[10] 14,106 afy was CalAm's average use of Carmel River water from 1979 to 1988, according to Order 95-10 (citing information provided by CalAm).

[11] Order 95-10 required a conservation reduction, in combination with conservation measures required by the MPWMD, of 15 percent in the 1996 water year and a reduction of 20 percent in each subsequent year.

[12] Water supply projects that were considered by CalAm and the CPUC in response to Order 95-10 prior to the currently proposed project are described in Chapter 5, Alternatives Screening and Analysis.

starting in October 2011 and "continu[ing] until all unlawful CalAm diversions from the river have been terminated" (State Water Board, 2009).

In July 2016 the State Water Board adopted Order WR 2016-0016, which amends Orders 95-10 and 2009-0060. Order 2016-0016 extends the date by which CalAm must terminate all unlawful diversions from the Carmel River from December 31, 2016, to December 31, 2021. The Revised CDO set an initial diversion limit of 8,310 afy for Water Year 2015-2016 (October 1, 2015-September 30, 2016) and establishes annual milestones that CalAm must meet in order to maintain the 8,310 afy diversion limit through 2021. The milestones would demonstrate tangible progress in developing alternative water supply that would enable CalAm to reduce and terminate its unlawful diversions. If CalAm fails to meet a milestone, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy. The Revised CDO also provides that "[i]f the State Water Board determines that the cause [for failing to achieve a milestone] is beyond Applicants' control, it may suspend any corresponding reductions under [the specified CDO condition] until such time as the Applicants can reasonably control progress towards the Milestone."[13] Section 5.4.2, No Project Alternative, provides further discussion on the CDO and the milestones.

2.2.4 Seaside Groundwater Basin Adjudication

Another purpose of the proposed project is to reduce CalAm's reliance on the Seaside Groundwater Basin, which is currently CalAm's other principal source of supply for the Monterey District. In March 2006, the Monterey County Superior Court issued a decision in *California American Water v. City of Seaside,* (Super. Ct. Monterey County, 2006, No. M66343), setting forth the adjudicated water rights of the various parties who produce groundwater from the Seaside Basin. The court amended that decision in February 2007.

In August 2003, CalAm sued a number of parties who held, or potentially held, water rights in the Seaside Groundwater Basin, and asked the court to adjudicate those rights. CalAm also asked the court to establish a plan for the coordination of groundwater management within the Seaside Groundwater Basin. Most of the defendants then cross-claimed against CalAm, and the Monterey Peninsula Water Management District and the Monterey County Water Resources Agency both intervened.

By adjudicating the water rights for all users of the basin, the court intended to protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping. The Decision identified the "natural safe yield"[14] for the basin as a whole, and individually for the Coastal and Laguna Seca subareas, and found that production in each of the preceding 5 years had exceeded the natural safe yield throughout the basin and in each of its subareas. The Decision also found (and noted that all parties agreed) that continued production in excess of the natural safe yield would result in seawater intrusion and deleterious effects on the basin.

13 Order WR 2016-0016 Schedule and Condition 3(b)(viii).

14 The Decision defines "natural safe yield" as the quantity of groundwater in the Seaside Basin that occurs solely as a result of natural replenishment. The estimate of natural safe yield assumes no action is taken to capture subsurface flow exiting the northern boundary of the basin.

The Decision established a physical solution to basin management that was intended to reduce aquifer drawdown to the level of the natural safe yield; to maximize potential beneficial uses of the basin; and to provide a means of augmenting water supply for the Monterey Peninsula. In addition to allocating groundwater rights to the various users, the Decision established an initial "operating safe yield," to be decreased incrementally over time until withdrawals are equal to the identified natural safe yield.[15] The Decision also established the Seaside Groundwater Basin Watermaster, consisting of representatives of the parties to the complaint, to administer and enforce the provisions of the Decision. CalAm's 2007 allocation under the initial operating safe yield was 3,504 afy from the Coastal subarea and 345 afy from the Laguna Seca subarea. CalAm's current (water year[16] 2016) operating yield allocation is 2,254 afy from the Coastal subarea and 48 af from the Laguna Seca subarea (Watermaster, 2015). CalAm's eventual allocation, when withdrawals pursuant to the adjudication equal the natural safe yield of the basin, will be 1,474 afy from the basin overall (Watermaster, 2009). Although this quantity was calculated based on the basin as a whole, by the time withdrawals have been reduced to equal the natural safe yield, the entire natural safe yield of the Laguna Seca subarea will be allocated to other producers with overlying groundwater rights that are superior to CalAm's appropriative rights (Svindland, 2013a); therefore, CalAm's adjudicated right to 1,474 afy from the basin will be drawn from the Coastal subarea.

Table 2-1 summarizes key determinations contained in the Decision and the initial and current production allocations prepared by the Seaside Groundwater Basin Watermaster (Watermaster, 2007, 2015). For comparison, Table 2-1 also shows CalAm's production from the Seaside Groundwater Basin prior to Order 95-10, CalAm's average production for the years following Order 95-10 prior to the adjudication, and the MPWMD allocation for CalAm prior to the adjudication.

The Decision also requires that production from the Seaside Groundwater Basin in excess of the natural safe yield (i.e., the difference between the natural safe yield and the interim operating yield limits) be replenished. CalAm and the Seaside Groundwater Basin Watermaster have agreed to a replenishment schedule of 25 years at a replenishment rate of 700 afy (Watermaster and CalAm, 2014). The replenishment volume, which may occur as in-lieu or artificial replenishment,[17] will be based on a running 5-year average. Based on this replenishment schedule, CalAm's proposed sizing of the MPWSP Desalination Plant assumes that, over the 25-year "repayment period," available supply from the Seaside Groundwater Basin will be limited to 774 afy (700 afy less than CalAm's adjudicated right of 1,474) (Svindland, 2013a).

[15] The Decision defines "operating safe yield" (also referred to as operating yield) as the maximum amount of groundwater resulting from natural replenishment that the Decision, based upon historical usage, allows to be produced from each subarea for a finite period of years, unless such level of production is found to cause material injury. In general, the initial operating yield for each subarea was to be maintained for the first three water years; starting in the fourth water year and triennially thereafter, it is to be decreased by 10 percent until the operating yield is equivalent to the subarea's natural safe yield.

[16] A water year runs from October 1 through September 30 of the following year, and is named for the year it ends. For example, water year 2016 extends for October 1, 2015, through September 30, 2016.

[17] "In-lieu replenishment" refers to programs in which groundwater producers agree to refrain, in whole or in part, from exercising their right to produce their full production allocation with the intent to replenish the Seaside Groundwater Basin through forbearance, in lieu of injection or spreading of non-native water. "Artificial replenishment" refers to the addition of non-native water to the groundwater supply of the Seaside Groundwater Basin, through spreading or direct injection, to offset cumulative over-production from the basin (Monterey County Superior Court, 2007).

TABLE 2-1
SEASIDE GROUNDWATER BASIN ADJUDICATED OPERATING AND NATURAL SAFE YIELDS WITH CALAM'S PRE-ADJUDICATION PRODUCTION

Basin Management Element	Quantity
Initial operating safe yield – entire basin	5,600 af[a]
Total initial (2007) operating safe yield – Coastal subarea (CalAm and other producers)	4,611 af[a]
CalAm's initial (2007) standard production allocation of operating safe yield – Coastal subarea	3,504 af[b]
CalAm's current (water year 2016) operating yield allocation – Coastal subarea	2,254 af
Total initial (2007) operating safe yield – Laguna Seca subarea	989 af[a]
CalAm's initial (2007) standard production allocation – Laguna Seca subarea	345 af[b]
CalAm's current (water year 2016) operating yield allocation – Laguna Seca subarea	48 af
Natural safe yield – entire basin	2,581 – 2,913 afy
Natural safe yield – Coastal subarea	1,973 – 2,305 afy
Natural safe yield – Laguna Seca subarea	608 afy
Natural safe yield – CalAm's eventual allocation – entire basin	1,474 afy[c]
MPWMD allocation for CalAm for the Coastal subarea prior to the adjudication[d]	4,000 afy
CalAm Seaside Basin production when Order 95-10 was issued	2,700 afy
CalAm average annual production, water years 1996–2006, Coastal subarea	3,695 afy
CalAm average annual production, water years 1996–2006, Laguna Seca subarea	432 afy

NOTES: af = acre feet; afy = acre feet per year.

[a] The initial operating safe yield was established for the first three water years (changed from administrative years in the 2007 Amended Decision); at the beginning of the fourth water year and triennially thereafter, it is to be decreased by 10 percent until it is equivalent to the natural safe yield. The adjudication provides for possible revisions of the established operating safe yield based on the findings of the Seaside Groundwater Basin Watermaster.

[b] CalAm's initial standard production allocations are based on the table, "Seaside Basin Groundwater Account Per Amended Decision, Dated February 9, 2007," prepared by the Seaside Groundwater Basin Watermaster.

[c] This Seaside Groundwater Basin Watermaster estimate (Watermaster, 2009) revises the MPWMD's 2006 estimate that CalAm's eventual allocation would be 1,494 afy from the Coastal subarea and zero from the Laguna Seca subarea. Because other Laguna Seca subarea producers have water rights that are superior to those of CalAm, the entire natural safe yield of the Laguna Seca subarea will be allocated to other producers (Svindland, 2013a, pp. 16–17); therefore, CalAm's adjudicated right to 1,474 afy at natural safe yield would be drawn from the Coastal subarea.

[d] At the time, MPWMD's definition of the Monterey Peninsula Water Resource System did not include the Laguna Seca subarea; therefore, a corresponding allocation was not provided for that subarea.

SOURCES: Monterey County Superior Court, 2007; MPWMD, 2006a; Watermaster, 2007, 2009, 2015; State Water Board, 1995; Svindland, 2013a.

2.3 CalAm Service Area Demand

Based on State Water Board Orders 95-10, 2009-0060, and 2016-0016 and the Seaside Groundwater Basin adjudication, CalAm must develop a replacement water supply to meet existing demand in its Monterey District service area. CalAm's existing demand includes existing water service required by existing customers as well as demand associated with existing Pebble Beach water entitlements in the Del Monte Forest area, as described below. In addition, CalAm proposes to provide sufficient supply to meet demand associated with the development of existing legal lots of record and tourism demand under improved economic conditions within its service area.

2.3.1 Existing System Demand

2.3.1.1 Annual Demand

Annual demand for CalAm's Monterey District main system plus the Bishop, Ryan Ranch, and Hidden Hills satellite systems between 2006 and 2015 is shown in **Table 2-2**. Average annual demand over this period was 12,351 afy. This estimate of average annual demand is about 940 afy lower than the estimated service area demand CalAm provided in its 2013 testimony (13,291 afy) based on years 2007 through 2011.

TABLE 2-2
EXISTING DEMAND[a] 2006–2015 (acre-feet)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Annual[b] Demand	14,176	14,596	14,439	13,198	12,270	12,129	11,549	11,356	10,250	9,545
10-Year Average (2006-2015): 12,351										

NOTES:

[a] Demand values are for the Monterey District main system plus the Ryan Ranch, Hidden Hills, and Bishop satellite water systems.
[b] Demand shown is for the calendar year.

SOURCE: California American Water, 2016b

CalAm anticipates that by the time the desalination plant is operational, the average 10-year and maximum year demand will be lower than the current 10-year average, most notably due to the continuing decline in per capita water use. As discussed below in Section 2.3.1.2, CalAm has concluded that demand in 2010, 12,270 afy, represents an appropriate estimate of annual demand for CalAm to use in assessing the adequacy of its water supplies to meet peak demands and regulatory supply capacity requirements.

2.3.1.2 Peak Demands

While annual water demand characterizes the overall system demand expected to occur within a service area, actual water use fluctuates over the course of a day, month, season, and year. For example, people use less water in the middle of the night and more around dinnertime; they use more during the warmer and drier months and seasons than in the cooler and wetter ones; and they typically use more in dry years than in average or wet years – at least until conservation measures kick in. The California Department of Public Health's California Waterworks Standards[18] require that public water system's water sources have the capacity to meet the system's maximum day demand and (for systems with 1,000 or more service connections) peak hour demand, and specify that maximum day demand and peak hour demand are to be determined based on the most recent ten years of operation. CPUC General Order 103-A also requires that water utilities within its jurisdiction meet these standards. CalAm considers peak month demand a more critical consideration for its operations than peak day demand because the Monterey District's portfolio of supplies provides sufficient flexibility to meet such short term peak

[18] California Code of Regulations Title 22, Division 4, Chapter 16, Section 64554.

demand. By contrast, peak month demand represents more sustained elevated demand, over multiple days, which needs to be considered as a factor in plant sizing (Svindland, 2013b). CalAm hopes to bring the desalination plant on line in 2020. By that time, the 10-year demand record would cover the period from 2010 through 2019, and the 2007, 2008 and 2009 demands will have dropped off the 10-year historical record period. CalAm assumes that demand in years 2016 through 2019 will not exceed demand in 2010 and that 2010 would, therefore, represent the maximum-demand year for this period (Svindland, 2016). CalAm also assumed that peak month demand in 2010 (July 2010), which was the highest month demand of the years 2010 through 2015, adequately represents peak month demand for planning purposes.

2.3.1.3 Pebble Beach Water Entitlements

In 1989, the MPWMD granted water entitlements totaling 380 afy to the Pebble Beach Company and two other fiscal sponsors for underwriting the development of a wastewater reclamation project that is estimated to save substantially greater amount of potable water. The wastewater reclamation project was jointly undertaken by the Carmel Area Wastewater District, the Pebble Beach Community Services District, and the MPWMD to provide recycled water in lieu of potable water to golf courses in the Del Monte Forest, which includes Pebble Beach. The MPWMD subsequently authorized the Pebble Beach Company to sell a portion of the remaining water entitlements to other Del Monte Forest property owners as a means of financing part of the project. The project now provides 100 percent of the irrigation water for all of the golf courses and some open space areas in the Del Monte Forest. The MPWMD estimates that the project saves approximately 1,000 afy of potable water (Stoldt, 2011).

Recognizing that the wastewater project reduced demand on the Carmel River by more than the amount of the water entitlements, SWRCB has stated that the 380 afy represented by the water entitlements is available to serve the Del Monte Forest properties when they are developed and that increased diversions from the Carmel River by CalAm to satisfy the Pebble Beach entitlements would not be counted as part of CalAm's diversion limit but instead added to the adjusted base against which CalAm's compliance was measured. Likewise, the properties developed using these entitlements would not be subject to the prohibition on new service connections contained in the SWRCB CDOs (Anton, 1998; SWRCB, 2009; SWRCB, 2016). As stated in Order 2016-0016, CalAm must terminate all illegal diversions from the Carmel River by December 31, 2021 and thus may not serve the Del Monte Forest properties using illegal diversions from the river after that time. However, the water entitlements constitute an existing commitment by MPWMD and obligation to serve by CalAm when the properties are developed, and are therefore considered part of CalAm's existing demand.

Of the 380 afy, entitlements totaling about 325 afy had not been used (i.e., had not been exchanged for water permits allowing actual water system connections) at the time CalAm revised its estimate of system demands in 2013; the remaining unused entitlements represented water demand that was not reflected in the existing demand figures shown in Table 2-3.

As of the end of 2012, MPWMD reported it had issued water permits totaling 58.419 afy and that remaining Pebble Beach water entitlements totaled 321.581 afy (MPWMD, 2013a). Testimony by

the MPWMD during the CPUC proceedings on the proposed MPWSP in February 2013 confirmed these figures and noted that a portion of the 58.419 afy of issued permits had probably not yet been connected to the CalAm system. The MPWMD testimony concluded that the estimated 325 afy of demand associated with the Pebble Beach water entitlements was reasonable (Stoldt, 2013). Since 2013, MPWMD has issued additional water permits associated with the Pebble Beach water entitlements and, as of May 2016, the remaining entitlement for all Pebble Beach entitlement holders stood at 303.768 afy (MPWMD, 2016b). Because the recently issued permits may not immediately translate to water connections and water use, the estimate of 325 afy should remain a reasonable estimate of the portion of the Pebble Beach entitlements not reflected in existing system demands.

2.3.2 Other Service Area Demand Assumptions

In addition to meeting existing annual demand and demand associated with the Pebble Beach water entitlements, CalAm proposes that the MPWSP be sized to provide, in conjunction with other supply sources, sufficient supplies to also meet the water demands associated with the anticipated economic recovery (or "rebound") of the local hospitality industry, resulting in increased water demand by existing businesses compared to current levels, and demand associated with the development of existing legal lots of record in jurisdictions served by the project (Svindland, 2013a). **Table 2-3** shows existing system demands together with demands associated with economic recovery and lots of record, which total approximately 1,680 afy; these demand components are discussed further below.

TABLE 2-3
OTHER DEMAND ASSUMPTIONS

Demand Component	Annual Demand (acre-feet)
Existing Annual Service Area Demand	12,270
Pebble Beach Water Entitlements	325
Hospitality Industry Rebound Economic Recovery	500
Legal Lots of Record	1,180
Total to Service Area	**14,275**

SOURCE: RBF Consulting, 2013; Svindland, 2016.

2.3.2.1 Hospitality Industry Rebound

The hospitality industry, which includes hotels, restaurants, and other visitor-serving businesses, experienced reductions in occupancy and visitation rates during the economic recession that began in late 2007. Since then, the industry has been recovering slowly: industry representatives expect that occupancy and visitation rates will soon rebound to pre-recession levels. So they feared that CalAm's previous demand estimate, which was based on recession-era numbers, would not accurately reflect demand in a healthy economy. In response to this concern, CalAm's January 2013 revised demand estimate allocated an additional 500 afy to meet demand associated with the future rebound of the local hospitality industry (Svindland, 2013a). CalAm based its

estimate on discussions with hospitality industry representatives in the region (RBF, 2013) without providing additional documentation. As discussed below, MPWMD conducted its own assessment of CalAm's estimate using available data (MPWMD, 2013b). The MPWMD compared occupancy and water-use levels for several periods over the last 15 years, finding that the average occupancy level in 2011 was just below 68 percent (compared to 75 percent for the period of 1998 through 2001, when the economy was robust). The analysis noted that if the economy improved, occupancy rates would go up, and the demand for water would rise. So the proposed project should be sized to accommodate an increase in water use. The MPWMD's comparison of commercial-sector water use found that:

- Average annual demand in 2000 was about 440 afy greater than the average annual demand for 2009 through 2011;
- Average annual demand for 2006 through 2008 was 236 afy greater than the average annual demand for 2009 through 2011; and
- A 7 percent increase in the average annual demand in 2009 through 2011 (based on the 7 percent difference in occupancy rates between the 1998–2001 period and 2011) would increase water demand by 194 afy.

The MPWMD's direct testimony to the CPUC in February 2013 concluded that CalAm's estimate of demand related to tourism rebound was reasonable (Stoldt, 2013).[19]

CalAm's 2016 amended application and the testimony supporting it updated the existing service area demand estimate, providing information on average 10-year demand over the period 2006 through 2015, and using demand in 2010 as the basis for its analysis of system operations and the adequacy of anticipated supplies under the project. As in 2013, CalAm's current estimate of system demand includes 500 afy to meet future demand of the existing hospitality industry under recovered conditions. While the current estimate is based on consideration of a longer time frame, and while the region has recovered to some degree from the economic recession, the 10-year period CalAm considered for its demand estimate includes the past four years of drought, during which water use has dropped significantly. Therefore, even if the region's economy has largely recovered, water demand of existing businesses reflected in recent demand data may be lower than would be expected under normal weather conditions. As discussed in more detail in Section 6.3, Growth Inducement, this EIR/EIS assumes that some of the economic recovery for which this 500 afy CalAm estimate is intended has already occurred, and that some of this supply would be available for other uses.

2.3.2.2 Lots of Record

CalAm has repeatedly testified that the proposed project would also provide an estimated 1,181 afy of water to meet demand resulting from the development of vacant legal lots of record in the service area (Svindland, 2012; 2013a; 2016). CalAm had previously included this demand estimate in its

[19] For additional review of CalAm's estimate of this component of demand refer to Section 6.3, Growth Inducement. Refer to Section 2.6 of this chapter regarding assumptions about the allocation of water supply provided by the MPWSP.

2006 *Urban Water Management Plan* (Management Plan). The 2006 Management Plan cited a 2001 analysis by MPWMD staff as the source for the estimate of 1,181 afy (CalAm, 2006).

In February 2013, the MPWMD reviewed its analyses of water demand related to legal lots of record and found no documentation to support the 1,181 afy estimate. The summary of the results of the documentation review, prepared for the MPWMD Board of Directors (MPWMD, 2013c), defines a legal lot of record as "a lot resulting from a subdivision of property in which the final map has been recorded in cities and towns, or in which the parcel map has been recorded in Parcels or Maps or Record of Surveys. Not all legal lots are buildable."[20] The summary states that "[t]he District does not certify that the estimate of 1,181 afy [for demand associated with vacant lots of record] is a valid value" and does not recommend its continued use.

The summary identifies two reports on the topic of lots-of-record water demand that were prepared for the MPWMD in 2000 and 2002, and notes that the 2001 estimate cited in CalAm's 2006 Management Plan was from an interim period between these two reports. The 2000 report, which had identified demand of 1,166.3 afy for vacant lots and remodels, was not adopted by the MPWMD Board because it did not include estimates for the city of Monterey or the unincorporated county; the revised 2002 report, which identified demand of 1,211 afy, included estimates for the city of Monterey but not for the unincorporated county (MPWMD, 2013c). The MPWMD's direct testimony to the CPUC in February 2013 reiterated these observations, stating that the MPWMD does not consider the 1,181 afy estimate a valid value and that the higher 2002 estimate did not account for vacant lots on improved parcels in the unincorporated areas (Stoldt, 2013). While MPWMD testified that CalAm's estimate may therefore underestimate the actual demand for lots of record (Stoldt, 2013), MPWMD observed in 2017 that development of lots of record has occurred since the estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). Whether development of lots of record since the early 2000s has offset, or more than offset, the number of uncounted lots that should have been included in the 2002 study, and by how much, cannot be determined from available data.

Another factor affecting the estimate of demand associated with lots of record is water use rates. Comment on the 2015 MPWSP Draft EIR suggested that water demand per lot has likely decreased in years since those reports were prepared. It may be the case that per-lot water demand is somewhat lower than 15 years ago, considering the general trend in lower per capita demand in the service area and throughout the state; however, the extent of such reductions may not be quantifiable based on available data. (Refer to Section 6.3, Growth Inducement, for additional discussion of this demand component.)

[20] An exhibit filed in conjunction with MPWMD testimony in December 2013 states that "[i]t is generally considered that [legal lots of record] are considered buildable by, and have the approval of, the local land use jurisdiction.…" (MPWMD, 2013d).

2.3.3 2010 Urban Water Management Plan Demand Estimates

Under the Urban Water Management Planning Act,[21] CalAm is required to provide information on existing and projected future demand in the Monterey District. The information presented in CalAm's 2010 Management Plan, which was completed in September 2012 (WSC, 2012), is summarized here for informational purposes. The Urban Water Management Planning Act requires all urban water suppliers to prepare a Management Plan (and update it every 5 years) for the purpose of "actively pursu[ing] the efficient use of available supplies." As part of their long-range planning, urban water suppliers must make every effort to meet their customers' needs during normal, dry, and multiple dry water years. So although CalAm did not cite the 2010 Management Plan as the basis for the proposed project's demand estimates, the evaluation of service area demands presented in the Management Plan provides insight into CalAm's expectations regarding population growth and water demand in the Monterey District using a different projection methodology from that used for the proposed MPWSP (summarized above in Sections 2.3.1 through 2.3.3).

2.3.3.1 Urban Water Management Plan Service Area Population

Senate Bill 7, enacted in November 2009,[22] requires all water suppliers in the state to increase water use efficiency. In particular, urban water suppliers must achieve a 20 percent reduction in urban per-capita water use by 2020, and must include in their 2010 Management Plans their baseline per-capita water use; their 2020 per-capita water use target; and an interim (2015) per-capita water use target. Consequently, CalAm performed an assessment of its service area population to calculate per-capita water use and project future service area demands for its 2010 Management Plan.

To determine the population of the Monterey District, which includes portions of unincorporated Monterey County, CalAm took geographic information system (GIS) shapefiles containing 2010 population data by census block obtained from the U.S. Census Bureau, compared those data with their service area boundaries, and determined how much of the service area was within each census block. Based primarily on the area of the Monterey District within each census block,[23] the 2010 Management Plan analysis estimated the population of each of the Monterey District's distribution systems and the District as a whole. The Management Plan indicates that the population of CalAm's entire Monterey District was 99,396 in 2010 and that the combined population of the main system and the Bishop, Hidden Hills, and Ryan Ranch satellite distribution systems, which would also be served by the proposed project, was 95,972. The Management Plan estimated future population growth for each distribution system based on the Association of Monterey Bay Area Governments' 2008 forecast, which the Management Plan analysis adjusted to incorporate 2010 census data (WSC, 2012).

21 California Water Code Section 10610 et seq.
22 Codified at California Water Code Sections 10608 and 10800–10853.
23 The UWMP population analysis found that, for the most part, population distribution was generally uniform within each census block; where population was not uniformly distributed, the distribution was adjusted based on visual inspection of recent aerial photographs.

2.3.3.2 Urban Water Management Plan Demand Estimates

According to the CalAm 2010 Management Plan, total water use – that is, water delivered to customers and non-revenue water[24] – in the Monterey District in 2010 was 12,809 af. Total water use in the main system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems in 2010 was 12,270 af. The Management Plan presents CalAm's calculation of baseline, interim (2015) target, and 2020 target per-capita water use rates for the Monterey District as required by Senate Bill 7: the baseline, 2015, and 2020 per-capita use rates are 144, 131, and 118 gallons per-capita per day (gpcd), respectively. But the Monterey District's actual 2010 per-capita water use was 115 gpcd, which was less than its 2020 reduction target, and the Management Plan projections of future water demand between now and 2030 assumed the 115 gpcd rate.

The 2010 Management Plan estimates of non-revenue water are based on information CalAm submitted to the CPUC. The Management Plan indicates that non-revenue water for the Monterey main system decreased from 2,332 afy in 2005 to 1,389 afy in 2010 and was projected to decrease to 1,251 afy in 2030. Non-revenue water data for the satellite systems are not provided for 2005. In 2010, non-revenue water for the main system plus the Bishop, Hidden Hills, and Ryan Ranch satellite systems was 1,445 afy and was projected to decrease to 1,290 afy in 2030. (Refer to Section 2.5.3.3, below, for additional discussion of non-revenue water.)

The 2010 Management Plan projects total water demand in the Monterey District in 2030 to be 13,936 afy, and projects total demand in the main system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems to be 13,544 afy (WSC, 2012). This amount is less than CalAm's current demand estimate for the proposed project service area (14,275 afy) and the supply that would be provided with implementation of the proposed project in conjunction with Carmel River, Seaside Groundwater Basin, and other assumed supplies (discussed in Section 2.4). Demand assumed for the MPWSP differs from that of the Management Plan because CalAm determined that an additional supply and demand analysis was needed to address the repayment of the Seaside Groundwater Basin, the potential for tourism in the area to recover, the Pebble Beach water entitlements, and water for lots of record. These factors are included in CalAm's current assumptions regarding service area demand, as described in Section 2.3.3.

2.4 Available Supplies

Table 2-4 shows the individual supply sources, both with and without the GWR project.[25] These supply sources are described below. As the table shows, available supplies range from 16,211 afy to 16,994 afy, depending on whether the proposed 6.4 mgd or 9.6 mgd plant is built and whether Seaside Groundwater Basin replenishment is in progress or completed. The "Supply Available for Other Uses" in Table 2-4 is the difference between Total Supplies and Service Area Demand. It

[24] Non-revenue or unaccounted-for water refers to the difference between the total water produced in a system and the total water billed to customers (i.e., water consumed). Non-revenue water includes water lost to leaks in the distribution system, water use that is not billed or tracked in the system, such as water used for firefighting and system flushing, and unauthorized uses.

[25] The GWR project would convey advanced treated water from the Monterey Regional Water Pollution Control Agency to the Seaside Groundwater Basin, where it could be injected for storage and subsequent recovery by CalAm. MRWPCA, the Lead Agency for the GWR EIR certified the Final EIR and approved the GWR project in October 2015.

represents water from the MPWSP that could be available for other uses, such as returning water to the Salinas Valley Groundwater Basin, or supporting growth. Both uses are discussed in Section 6.3, Growth Inducing Impacts.

TABLE 2-4
CALAM MONTEREY DISTRICT WATER SUPPLIES WITH PROPOSED MPWSP
(acre-feet per year)

Supply Source	During Replenishment of the Seaside Groundwater Basin		After Replenishment of the Seaside Groundwater Basin	
	Without GWR (9.6 mgd[a] Desalination Plant)	With GWR (6.4 mgd[b] Desalination Plant)	Without GWR (9.6 mgd[a] Desalination Plant)	With GWR (6.4 mgd[b] Desalination Plant)
Carmel River[c]	3,376	3,376	3,376	3,376
Seaside Groundwater Basin[d]	774	774	1,474	1,474
Aquifer Storage and Recovery (ASR)[e]	1,300	1,300	1,300	1,300
Sand City Coastal Desalination Plant[f]	94	94	94	94
Groundwater Replenishment Project (GWR)[g]	0	3,500	0	3,500
MPWSP Desalination Plant Production[h]	10,750	7,167	10,750	7,167
Total Supplies	**16,294**	**16,211**	**16,994**	**16,911**
Service Area Demand (from Table 2-3)	14,275	14,275	14,275	14,275
Supply Available for Other Use (Total Supplies Minus Service Area Demand)	**2,019**	**1,936**	**2,719**	**2,636**

NOTE: mgd = million gallons per day

[a] 9.6 mgd is the rated capacity of the desalination plant CalAm proposes to build for the MPWSP, and is typically used to characterize the size of the plant; operating at full capacity a 9.6 mgd plant would produce 10,750 acre feet of desalinated water per year. (That is, the conversion factor is 893 gallons per day per acre-foot per year, or about 1,120 acre-feet per year per 1 million gallons per day.)

[b] 6.4 mgd is the rated capacity of the desalination plant CalAm proposes to build if the GWR project is successfully implemented. The 6.4 mgd rated capacity is typically used to characterize the size of the smaller plant proposed in conjunction with the GWR water purchase. Operating at full capacity a 6.4 mgd plant would produce 7,167 acre feet per year.

[c] CalAm's recognized right to Carmel River water established in Order 95-10.

[d] CalAm's adjudicated water right in the Seaside Groundwater Basin is 1,474 afy; in-lieu recharge of 700 afy would occur during 25-year Seaside Groundwater Basin replenishment period.

[e] Assumed average annual yield with completion of Phase II of the ASR; Phase I of the ASR is currently in operation, and Phase II is nearing completion.

[f] Quantity shown is CalAm's long-term share of plant production pursuant to agreements between CalAm and the city of Sand City.

[g] The Final EIR for the GWR project was certified and the GWR project approved by the Monterey Regional Water Pollution Control Agency, the lead agency, in October 2015.

[h] Assumes 9.6 mgd and 6.4 mgd desalination plants operating at full capacity.

SOURCE: CalAm, 2016b; Svindland, 2016.

2.4.1 Carmel River System

As described above in Section 2.2.3, State Water Board Order 95-10 established that CalAm has a legal right to divert a total of 3,376 afy from the Carmel River system, including surface water diversions from the Carmel River and water pumped from the Carmel Valley Alluvial Aquifer.

2.4.2 Seaside Groundwater Basin Supplies

As described in Section 2.2.2.2, CalAm's adjudicated right to Seaside Groundwater Basin groundwater at the natural safe yield of the basin is 1,474 afy. CalAm and the Seaside Groundwater Basin Watermaster have agreed to a 25-year replenishment schedule for CalAm to pay back the volume of groundwater CalAm has withdrawn in excess of its adjudicated right. CalAm will start to pay back the basin once it has new water supplies. While repayment could occur as either in-lieu or artificial replenishment, CalAm's supply assumption for the sizing of its MPWSP Desalination Plant is that repayment over the 25-year period will occur as in-lieu replenishment at the rate of 700 afy, based on a 5-year running average. Therefore, supply assumed to be available from the Seaside Basin over this period would be limited to 774 afy, again, based on a 5-year running average.

2.4.3 Aquifer Storage and Recovery

The MPWMD and CalAm have implemented Phase I and Phase II of the Seaside Groundwater Basin Aquifer Storage and Recovery (ASR) project. The ASR project entails diverting and conveying Carmel River water during periods of high flow that occur between December and May of each year to the Seaside Groundwater Basin, where it is injected into the aquifer for storage and subsequently recovered for delivery to customers. The Phase I project, which was completed in 2007, includes two ASR injection/extraction wells (the ASR-1 and ASR-2 Wells, also known as Santa Margarita Wells #1 and #2) and a chemical/electrical building that includes a disinfection system for treating extracted water. The ASR-1 and ASR-2 wells are located at the former Fort Ord military base, on the east side of General Jim Moore Boulevard near Eucalyptus Road. ASR water supplies that are extracted from the Seaside Groundwater Basin are disinfected onsite before being conveyed via an existing 16-inch diameter pipeline beneath General Jim More Boulevard to the CalAm distribution system (MPWMD, 2005). In water year 2011, which was wetter than average, 1,117 af of Carmel River water was injected into the groundwater basin. In water year 2012, 132 af was injected; in 2013, 295 af was injected, in 2014, no Carmel River water was injected, and in 2015, 215 af was injected. The estimated average annual yield from the Phase I injection/extraction wells is 920 afy.

The Phase II ASR project has been built and will start running when treatment facilities are completed at the Phase I site. Phase II includes two additional injection/extraction wells (ASR-3 and ASR-4 Wells) at Seaside Middle School, located on the west side of General Jim Moore Boulevard. Together, the ASR-3 and ASR-4 Wells provide the capacity to yield an additional 1,000 afy from the ASR system, resulting in a total capacity of 1,920 afy for Phases I and II combined (Denise Duffy & Associates, 2012). The Phase I and Phase II ASR projects correspond to MPWMD and CalAm's existing State Water Board Permits 20808A and 20808C, which authorize the diversion of up to 2,426 afy for ASR Phase I, and up to 2,900 afy for ASR Phase II (State Water Board, 2007, 2011). Permit conditions establish limits on diversions to the ASR system, including a requirement that minimum mean daily instream flows in the Carmel River be maintained for the protection of fisheries, wildlife, and other instream uses. Because diversions for the ASR system are contingent on maintaining minimum daily instream flows, and precipitation and streamflow can vary substantially from year to year, for the purposes of

CalAm's water supply assumptions, the estimated combined long-term average annual yield from ASR is 1,300 afy for the Phase I and Phase II projects (RBF, 2013). In addition to the injection/extraction wells and treatment facilities, the Phase I and Phase II ASR facilities include two pump stations, a backflush percolation basin,[26] and conveyance pipelines.

As part of the MPWSP, CalAm proposes two additional injection/extraction wells, ASR-5 and ASR-6 Wells. The purpose of the proposed ASR-5 and ASR-6 Wells is to increase the injection/extraction capacity for both desalinated product water and Carmel River supplies and to improve system reliability. The proposed ASR-5 and ASR-6 Wells would not increase CalAm's yield from injected Carmel River supplies; consequently, the average annual yield from Carmel River supplies that are diverted to underground storage would remain at 1,300 afy. The proposed MPWSP ASR facilities are described in Chapter 3, Description of the Proposed Project, and evaluated throughout this EIR/EIS.

2.4.4 Sand City Coastal Desalination Plant

The Sand City Coastal Desalination Plant, which began operations in April 2010, is owned by the City of Sand City and operated by CalAm. The plant's total capacity is 300 afy, of which CalAm's long-term share is 94 afy. The balance of the plant's capacity is reserved by Sand City to support its future growth. Sand City is served by CalAm's distribution system, consistent with the MPWMD's allocation program.

2.4.5 Groundwater Replenishment Project

As described in more detail in Chapter 5, Alternatives, CalAm's MPWSP Application includes a variant of the MPWSP that would combine a reduced-capacity desalination plant (6.4 mgd compared to 9.6 mgd under the MPWSP) with the purchase of 3,500 afy of product water from the GWR project, a joint project proposed by Monterey Regional Water Pollution Control Agency (MRWPCA) and MPWMD. The MRWPCA would inject up to 3,500 afy of purified water from a new advanced water treatment plant into the Seaside Groundwater Basin. Under a purchase agreement with the MPWMD, CalAm would later extract the 3,500 afy for delivery to customers.

If CalAm is able to purchase water from the GWR project, the size of its MPWSP Desalination Plant could be reduced. MRWPCA certified the Final EIR for the GWR and approved the project in October 2015. Because of uncertainties pertaining to project timing and cost at the time CalAm submitted its application for the MPWSP, CalAm's project application proposes a 9.6 mgd plant, but also seeks authorization to reduce the size of the proposed plant to provide 6.4 mgd, and to enter into a water purchase agreement if the cost of the GWR water is reasonable. CalAm would then supplement its supplies with water purchased from the GWR project.

[26] The backwash percolation basin receives discharges produced during routine backflushing and operation of the ASR injection/extraction wells.

On September 15, 2016, the CPUC issued a Decision (D. 16-09-021) authorizing CalAm to enter into a Water Purchase Agreement with the MRWPCA and the MPWMD for the purchase of 3,500 afy. The CPUC Decision also authorizes CalAm to build the new Monterey Pipeline and Monterey Pump Station (CPUC, 2016).[27]

2.4.6 Other supplies

2.4.6.1 Table 13 Water

In 1993, CalAm applied to the State Water Board (Application No. 30215A) for a permit authorizing CalAm to divert from the Carmel River water above its existing rights under Order 95-10 and the ASR permits. This additional water is known as Table 13 water. In October 2013, the State Water Board issued water-right Permit 21330 in response to this application. The permit conveys to CalAm the right to divert a maximum of 1,488 af annually from December 1 of each year to May 31 of the succeeding year, subject to prior rights, the adequacy of daily instream flow, and other provisions and requirements.

In MPWSP testimony submitted to the CPUC in February 2013, before the Table 13 permit was issued, CalAm stated that the Table 13 water would be subject to flow criteria similar to criteria that applied to water diversions for the ASR, and that the Table 13 diversions would, therefore, be constrained by the limited timeframe in which they could occur and by the existing production capacity of the wells and treatment plant on the Carmel River. CalAm also noted that, unlike the ASR diversions, Table 13 water could only be used within the Carmel River watershed. Based on its analysis of customer water use in the watershed at times of year when Table 13 water would be available, CalAm estimated that, during wet years, a maximum of 600 afy of Table 13 water could be used. Because Table 13 water would not be available during dry years, CalAm did not assume the availability of Table 13 water for purposes of sizing the proposed plant (Svindland, 2013c). CalAm reiterated this perspective in testimony provided in 2016.

According to quarterly reports posted at CalAm's website under the State Water Board's Cease and Desist Order, CalAm began reporting diversions of Table 13 water with its reporting of monthly water diverted to ASR storage under Permits 20808A and 20808C in October 2015 (reported in Table 2 of the quarterly reports). According to the October 2015 report, CalAm diverted 42.2 af of Table 13 water for use in water year 2015 and diverted a total of 214.7 af to its four ASR injection wells in Seaside under its ASR permits 20808A and 20808C (CalAm, 2015). According to its April 2016 quarterly report, CalAm diverted 164.2 af of Table 13 water in the first half of water year 2016 (through March 2016), and diverted 647 af of water to storage under its ASR permits (CalAm, 2016c).

[27] On October 30, 2017, the Board of Directors of the MRWPCA adopted an Addendum to the GWR Final EIR to allow for an increase in the peak output of purified recycled water from 4 mgd to 5 mgd. This expansion of the GWR Project would be achieved by utilizing redundancies built into the approved 4 mgd GWR Project and would enable the delivery of 600 afy of purified recycled water to Marina Coast Water District (MCWD) for MCWD customers to use for urban landscape irrigation. The expansion, however, would not result in any potential additional yield for use by CalAm, and it would not impact CalAm's purchase price for water.

2.4.6.2 Malpaso Water Company LLC

In 2015, the State Water Board issued Water Right License 13868A (License 13868A) to Malpaso Water Company, LLC. License 13868A authorizes Malpaso to divert up to 85.6 afy from the Carmel River and to have this water conveyed by CalAm through its water distribution system to property owners that have entered into subscription agreements with Malpaso, for beneficial uses on their properties.[28] License 13868A authorizes use of the diverted water in CalAm's service area in the Carmel River watershed or in the City of Carmel-by-the-Sea. In its decision issuing License 13868A, the State Water Board determined that diversions of water from the Carmel River under the new license for the benefit of Malpaso Water Company Water Use Permit subscribers (Malpaso subscribers) would not be classified as water diverted by CalAm for new service connections or for increased use of water at existing service connections that are prohibited under terms of the CDO.

Malpaso has since contracted with CalAm for the conveyance of water diverted under License 13868A to Malpaso subscribers through CalAm's distribution system, and for the temporary use of the portions of License 13868A that are not used each year by Malpaso subscribers to supply water to CalAm.[29] Excess water not used by Malpaso and diverted for CalAm's use pursuant to this agreement offsets CalAm's Carmel River diversions (CalAm, 2017).

In August 2015, MPWMD adopted Ordinance 165, which gives Malpaso a water entitlement of 80 afy through the CalAm distribution system. The size of the entitlement reflects anticipated production and conveyance losses compared to 85.6 afy diversion permitted by License 13868A. MPWMD will only issue a water permit to a property owner after the person has purchased the water and received plan approval (Locke, 2016).

License 13868A thus increases supplies available to the CalAm Service area from 16,294 afy to 16,380 afy (during the Seaside Basin replenishment period, assuming a 9.6 mgd desalination plant, and from 16,994 afy to 17,090 afy after the replenishment period).

2.4.6.3 Rancho Canada Golf Course Retirement

In April 2016, a coalition of conservation organizations[30] announced plans to acquire 140 acres of the Rancho Canada Golf Club, whose lease expired in April 2017. Under the plan, a large portion of the land, which is located along the Carmel River near Palo Corona Regional Park, would ultimately be turned over to the Monterey Peninsula Regional Park District. The Trust for Public Land would acquire and hold the property until summer of 2017, while raising funds that would enable the Trust to convey the property to the park district. The parties expect to finance the deal through a variety of sources, including state grants, private donations, and support from CalAm (Monterey County Herald, 2016). As part of the plan, CalAm and the Trust executed a water diversion forbearance agreement in April 2016 to reduce pumping from the Carmel River and retire irrigation of two golf courses at the golf club. That irrigation now uses about 381 afy of

[28] MPWMD Ordinance 165.
[29] MPWMD Ordinance 165.
[30] The organizations include the Trust for Public Land, the Monterey Peninsula Regional Park District, the Santa Lucia Conservancy, and Trout Unlimited.

Carmel River water. CalAm has agreed to pay the Trust for its forbearance of diversion during the CDO extension period, which will help CalAm offset its unauthorized diversions and help the Trust acquire the property. Because the acquisition plan anticipates converting much of the acquired land to riparian habitat, a substantial portion of water previously used to irrigate the golf courses should remain in the river permanently (CalAm et al., 2016a).

Because the forbearance agreement between CalAm and the Trust is temporary, and future water use at the site is uncertain, this analysis does not assume that this project would necessarily make the offset supply, formerly used for irrigation, available for other future use.

2.5 Other Supply and Demand Considerations

To meet projected system demand along with the other supply sources discussed above, CalAm proposes to build a 9.6 mgd desalination plant. The plant would include six 1.6 mgd reverse osmosis modules and one 1.6 mgd standby module. As noted above in Section 2.3.2, water demand fluctuates over the day, season, and year. Similarly, the availability of some water supplies that would be used along with the proposed desalination plant also varies over the course of the year. For example, while CalAm has a right to an annual quantity of Carmel River water, the river produces more water in the winter and less in the summer. So to provide adequate service, any water system must be sized to ensure it can meet anticipated peak demands, and it is standard engineering practice to do so. Therefore, anticipated monthly operations were analyzed as part of the development of the proposed project (RBF Consulting, 2013). In addition to CalAm service area water demand, plant operations include CalAm's SVGB return water obligation: the volume of water that would be returned to the SVGB based on the percentage of SVGB groundwater that was produced as source water by the subsurface slant wells. SVGB return water is discussed below in Section 2.5.1 and in Section 2.6, Water Rights.

This section also describes other factors that could affect future water demand and supplies in CalAm's Monterey District.

2.5.1 Salinas Valley Groundwater Basin Return Water

MPWSP source water would include some brackish groundwater from the SVGB. As part of the proposed project, CalAm would return to the SVGB a volume of desalinated product water equal to the amount of SVGB groundwater included in the source water. While CalAm's SVGB return water obligation will be based on the amount of fresh water in the source water, in order to consider the effect of the return water for this EIR/EIS, groundwater modeling simulated scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources). The amount of SVGB groundwater included in the source water is expected to decrease over time (CalAm et al., 2016b).

In June 2016, several parties involved in the current proceeding asked the CPUC to approve their proposed "Settlement Agreement on MPWSP Desalination Plant Return Water" (CalAm et al., 2016b). The settlement describes how CalAm would fulfill its annual SVGB return water obligation. As the settlement explains:

- Delivering return water by injecting desalinated water from the proposed project into the SVGB is considered less desirable than delivering return water for beneficial use in the SVGB.
- The Castroville Seawater Intrusion Project (CSIP) may not have sufficient capacity to accommodate all of the MPWSP SVGB return water under some conditions.
- The Castroville Community Services District (CCSD), which provides municipal and domestic water service to the Town of Castroville, currently relies on about 780 afy of SVGB groundwater to meet Castroville's water demands, and increasingly has experienced water supply challenges because the water is getting saltier.
- The CCSD wants to take delivery of a SVGB return water supply to replace all or part of CCSD's current reliance on groundwater from the SVGB.

To fulfill its SVGB return water obligation, CalAm would make return water available for other water suppliers to use instead of pumping groundwater from the SVGB. The return water settlement requires CalAm either to make 800 afy of return water available for delivery to CCSD, assuming they build the 9.6 mgd plant, or to make 690 afy available if they build the 6.4 mgd plant. CCSD's avoided cost – that is, what they would have had to pay to produce enough groundwater to meet demand – will determine the price that CCSD would pay for the return water. If there is any return water left after CCSD takes its share, CalAm would deliver it to the CSIP. The pipeline that would need to be built to convey return water to Castroville is described in Chapter 3, Description of the Proposed Project, and its potential impacts are evaluated in subsequent chapters of this EIR/EIS. See Section 2.6, below, for more on this topic.

2.5.2 Potential Future Changes in Supply

2.5.2.1 Los Padres Reservoir

State Water Board Order 95-10 reduced CalAm's right to divert surface water to storage at Los Padres Reservoir from 3,030 afy to 2,179 afy, because the legal right to divert water to storage is limited by the physical ability to store the water. In a 2006 study, the MPWMD noted that the State Water Board could revisit Order 95-10 and, by applying the same logic, further reduce CalAm's right to divert water to storage based on additional losses in reservoir capacity due to ongoing sedimentation (MPWMD, 2006a). A 2008 bathymetric study by the Watershed Institute at California State University at Monterey Bay determined that the usable storage capacity of the reservoir in 2008 was 1,669 af. Based on the 2008 study, MPWMD estimated that the long-term sedimentation rate of the reservoir was 21 afy and that more than 510 af of replacement supply would likely be needed to offset the lost capacity (MPWMD, 2015b). A 2016 resurvey conducted for MPWMD determined that although the reservoir can hold up to 1,810 af at the spillway level, the safe usable storage was less than 1,400 af due to concerns about releasing anoxic water or water with hydrogen sulfide in the lowest portion of the reservoir (MPWMD, 2017). MPWMD currently estimates that sedimentations rates could range from 11 to 19 afy. Based on the 2016 resurvey and changes in reservoir operation, MPWMD currently believes that the previous estimate of needed replacement supply may be low. However, because the need for this replacement supply is long-term, MPWMD believes that water supply available from the Seaside

Groundwater Basin at the end of CalAm's in-lieu replenishment period (discussed in Section 2.2.4) may be adequate to offset losses in supply from the Los Padres Dam and Reservoir (MPWMD, 2017).[31] As noted in Section 2.2.2, MPWMD and CalAm are currently studying the long term options for the Los Padres Dam and Reservoir.

2.5.2.2 Conclusion of Seaside Groundwater Basin Replenishment Period

As discussed in Section 2.2.4, the proposed project assumes the availability of 747 afy of water supply from the Seaside Groundwater Basin. At the conclusion of the 25-year replenishment period, CalAm would have access to its total adjudicated right of 1,474 afy, thus augmenting available supply by 700 afy.

2.5.3 Potential Future Changes in Demand

Several recent and planned projects and actions could serve to reduce or offset demand assumed by CalAm during the planning and sizing of the proposed MPWSP Desalination Plant. Conversely, growth within the Monterey District service area that is consistent with adopted general plans could increase demand beyond that assumed for the proposed project. This section describes other projects and actions that were not explicitly accounted for in CalAm's demand estimates but that could affect future service area demand.

As the price of water changes, customers' behavior may change as well. When water is less expensive, people typically use more of it; when water is more expensive, people typically conserve more. But no one knows how much water will cost in the future, or how the CPUC will structure CalAm's water rates. Also, people in CalAm's Monterey District have a long history of water conservation, and already use very little water compared to the rest of the state. But if the MPWSP comes on line, that would make CalAm's water supply more reliable, and would probably lift the constraints imposed by Order 95-10 and the CDO, which might induce people to use more water, even if that water is also becoming more expensive. Given the number of variables involved, speculating about what effect future water prices might have on behavior is futile.

2.5.3.1 Pacific Grove Local Water Project

The City of Pacific Grove wants to create a new supply of non-potable water. In the first phase of the Pacific Grove Local Water Project, the city will build and operate a 0.25 mgd satellite recycled water treatment plant that would provide up to 125 afy of recycled water primarily to the Pacific Grove Municipal Golf Links and the El Carmelo Cemetery.[32] The recycled water would replace potable supply currently used for these facilities. Pacific Grove certified an EIR on the project in November 2014. In October 2015, the city certified a supplemental EIR on a modified project, and

[31] The estimate of safe useable reservoir capacity based on the 2016 resurvey is 779 af less than the capacity identified in Order 95-10 (2,179 af), and an additional 700 afy will be available to CalAm at the end of the Seaside Groundwater Basin in-lieu replenishment period.

[32] Subsequent phases of the PGLWP could provide up to 600 afy of recycled water to sites within the cities of Pacific Grove and Monterey and unincorporated areas of Pebble Beach (City of Pacific Grove, 2014).

approved the project as modified. The modified project includes a water entitlement for the city from MPWMD for up to 90 afy of the potable water saved by the PGLWP, to be used to serve a portion of Pacific Grove's anticipated buildout water demand (City of Pacific Grove, 2015).

The State Water Board approved Clean Water State Revolving Fund financing for the project in November 2015. The approval includes a condition that prohibits the allocation of potable water saved by the project for new uses until the State Water Board gives consent to use the water for new connections. In January 2016, MPWMD adopted Ordinance No. 168, which establishes an entitlement for Pacific Grove of 66 afy for consumption from CalAm's distribution system; permanently suspends from use 13 afy, for the benefit of the Carmel River system; and reserves 9 afy for the MPWMD for its exclusive use for allocation to other jurisdictions. MPWMD established the entitlement so that it would be available to Pacific Grove when the State Water Board authorizes use of the saved water for new connections (MPWMD, 2016c; State Water Board 2015). The project is expected to be operational and delivering up to 125 afy by the end of 2017 (MPWMD, 2016c; 2017). Although the MPWMD has issued the City of Pacific Grove a permit to receive potable supply from CalAm's system, when available, and MPWMD has reserved for itself, for future allocation, an entitlement for a portion of the saved water, the combined permits for Pacific Grove and MPWMD associated with this project are less than the amount of potable water currently used for irrigation that the project would offset. So the project should reduce demand when it is operational.

In 2013, CalAm and several other parties asked the CPUC to approve a settlement agreement on plant sizing and operations. The Settling Parties agreed that the Pacific Grove project would be a valuable part of a comprehensive solution to water issues in CalAm's Monterey District when integrated with the MPWSP, the GWR Project, and ASR (CalAm et al., 2013a).

2.5.3.2 Pebble Beach Recycled Water Project Phase II

The Carmel Area Wastewater District-Pebble Beach Community Services District reclamation project provides recycled water to irrigate Del Monte Forest golf courses and other open space areas. Phase I of the project, completed in 1994, offset demand for about 70 percent, or 700 af, of the potable water previously used for this purpose (Sweigert, 2008). Phase II of the project, which was completed in 2009, eliminated the need to mix any potable water with the recycled water; the project now supplies 100 percent of the water used at the area golf courses and is estimated to save approximately 1,000 afy of potable water (Stoldt, 2011). In planning for the MPWSP, CalAm based its current estimate of service area demand on the 10-year average of years 2006 through 2015. Assuming Phase II of the reclamation project became operational midway through 2009, the additional 300 afy demand reduction it achieved would be reflected in demand data for more than half that baseline period; therefore, although additional reductions in service area demand may occur as a result of this project it is expected such reductions would be minor.

2.5.3.3 Non-revenue Water Reduction

The Final EIR for the Coastal Water Project and the Regional Project[33] noted that improvements in CalAm's distribution system could reduce demand by reducing non-revenue water. Non-revenue water, also known as unaccounted-for water, is the difference between a water system's metered production and metered consumption.

In its 2009 CDO, the State Water Board observed that the industry standard for non-revenue water was 10 percent; that CalAm's non-revenue water was about 12 percent of production; and that the MPWMD had required CalAm to reduce non-revenue water to 7 percent (State Water Board, 2009). The State Water Board concluded that CalAm should be required to reduce its system losses by about 549 afy and should immediately start to reduce the losses. Similarly, in 2009, the CPUC addressed CalAm's acute need to reduce non-revenue water in the Monterey District. The CPUC ordered CalAm to develop and implement a program for reducing unaccounted-for water in its Monterey main system and associated subsystems and, to provide a financial incentive, the CPUC created a penalty/reward program to be calculated based on a 9 percent non-revenue water target (CPUC, 2012). A June 2012 CPUC rate case decision (D.12-06-016) also found that non-revenue water in the Monterey District needed to be reduced.

CalAm has often described the company's efforts to reduce non-revenue water in its Monterey District (Sabolsice, 2012; CalAm et al., 2016a). These efforts include:

- investigating and analyzing main breaks and service leak data and evaluating pressure-control methodologies
- replacing older water mains and service lines in areas shown to be more prone to leaks
- replacing meters
- deploying acoustic leak-detection devices throughout the system
- implementing operational fixes such as pressure reduction

CalAm submits quarterly compliance reports to the State Water Board under the CDO (CalAm, 2011, 2012b, 2013, 2014, 2015). Those reports show that between the 2011 and 2015 water years, CalAm reduced system losses by an average of 506 afy compared to the base year system losses in water year 2009, and that by the end of this period the reductions in water losses exceeded the reduction target of 549 afy that had been established in the 2009 CDO: the reduction in system losses ranged from 752 af in water year 2013 to 919 af in water year 2015. System losses (i.e., the amount of non-revenue or unaccounted-for water), as opposed to the *reduction* in losses, for the period October 2014 through September 2015 (water year 2015) totaled to 357 af and system losses for the period January through December 2015 (calendar year 2015) totaled to 247 af (CalAm, 2016d). Since then, through March 2017, system losses were less than 200 afy in all

[33] As described in Chapter 1 (Section 1.4), CalAm previously proposed the Coastal Water Project to replace existing Carmel River supplies to which CalAm no longer has a recognized legal right pursuant to Order 95-10 (discussed in Section 2.2.3 above). The Regional Project emerged as an alternative to the Coastal Water Project during the environmental evaluation of the Coastal Water Project. The CPUC certified the EIR in 2009 and approved the Regional Project, which would have been jointly implemented, in two phases, by CalAm and the Marina Coast Water District, in 2010. CalAm eventually withdrew its support for the Regional Project due to the inability to resolve issues that arose related to its implementation, and in 2012 proposed the MPWSP as an alternative.

12-month periods except one (April 2016 to March 2017), when non-revenue water totaled 271 af. CalAm notes that the actual components of unaccounted-for water are difficult to identify because unaccounted-for water represents a combination of system leaks and unmetered water use. Savings from system repairs and line replacements and the like through 2015 are reflected in CalAm's system demands data discussed in Section 2.3.1.

CalAm's program to address system losses will continue under the CDO and the CPUC's decisions. While additional reductions in demand can be expected from continuing efforts to address system losses, data are not available to quantify potential additional future savings from such efforts. Over time, the size of additional reductions in system losses will inevitably decrease as CalAm replaces the oldest and most leak-prone lines and implements other efforts to reduce losses.

2.5.3.4 General Plan Buildout

CalAm is not proposing that the MPWSP meet future demands associated with general plan buildout, although the proposed project does include water for some future development (e.g., development of vacant lots of record). Phase 2 of the Regional Project[34] included water to meet projected future service area demands; the MPWMD prepared that estimate of future water needs in 2006 based on information obtained from the service area jurisdictions (MPWMD, 2006b). Each jurisdiction provided estimates of the number of residential units and nonresidential square footage that would be developed under buildout of the currently adopted general plan as well as anticipated residential remodels. Because not all jurisdiction submitted estimates for lots of record as a distinct category, that aspect of general plan buildout in the 2006 estimate does not compare to CalAm's current estimate for lots of record. The MPWMD estimated that 4,545 afy would be needed to meet future water demands (MPWMD, 2006b).

Since the 2006 estimate was prepared, the future water needs of four jurisdictions have been revised, reducing the total:[35]

- Monterey County adopted a new general plan that revised their water demand estimates (Monterey County, 2010);
- The City of Pacific Grove testified on the MPWSP in 2013, revising its estimate of water needed to accommodate general plan buildout (Hardgrave, 2013);
- The City of Seaside commented on the April 2015 MPWSP Draft EIR, updating its future water needs, and noting that full buildout of the West Broadway Urban Village Specific Plan would require a net increase of 80 afy of water (City of Seaside, 2015).

34 Refer to Chapter 1 for more information on the Regional Project.

35 The EIR prepared for the *Monterey County General Plan* provides two estimates of future water demand for the Greater Monterey Peninsula: one for the general plan planning horizon, which extends to 2030, and one for complete buildout under the general plan, which the EIR projected would occur in 2092. The estimate assumed in this analysis (1,005 afy) is for the 2030 planning horizon. Total buildout demand under the general plan is much higher (4,439 afy, not including unincorporated Carmel and Del Monte Forest, for which buildout estimates are not provided). Because the general plan EIR estimate of demand used a substantially higher per-capita water use rate than is currently assumed, and projected a higher population level than is currently assumed by the Association of Monterey Bay Area Governments, there is reason to believe that the 2092 buildout projection overstates both future population and water demand; therefore, the shorter term planning horizon was considered a more reasonable estimate for this analysis.

- Sand City built the 300-afy Sand City Coastal Desalination Plant. In consideration for the delivery of 300 afy of potable water from this plant to the CalAm system, MPWMD Ordinance 132 establishes a water entitlement of 206 afy from the CalAm system for Sand City, separate from the city's current water allocation, and indicates that the remaining 94 afy will be permanently added to CalAm's system (as shown above in Table 2-4). The estimated future demand for Sand City is therefore revised to reflect that 206 afy of the city's future demand will be offset by supply from the city's desalination plant (which is not included in the supplies assumed for the MPWSP in Table 2-4).

With these revisions, future demand would total 3,526 afy. **Table 2-5** shows the MPWMD's 2006 future demand estimates, with and without the four revisions. In addition, Pacific Grove may reduce its future demand estimate by 66 afy because of the Pacific Grove Local Water Project (see Section 2.5.3.1). However, the city has not submitted a formal revision to its demand estimate since the 2013 revision noted above.

TABLE 2-5
FUTURE WATER DEMAND – SERVICE AREA JURISDICTIONS
(acre-feet per year)

Jurisdiction	Future Supply Needs (2006 Estimate)[a]	Future Supply Needs (Revised Estimate)
City of Carmel	288	288[b]
City of Del Rey Oaks	48	48
City of Monterey	705	705
City of Pacific Grove	1,264	500[c,d]
City of Sand City	386	180[e]
City of Seaside	582	662[f]
Monterey County (Unincorporated)	1,135	1,005[b,g,h]
Monterey Peninsula Airport District	138	138
Total	**4,545**	**3,526**

NOTES:

[a] Based on the MPWMD's "Estimated Long-Term Water Needs by Jurisdiction Based on General Plan Build-out in Acre-Feet," Exhibit 1-C of Special Meeting/Board Workshop Agenda Item 1, MPWMD Board of Directors Packet, May 18, 2006b.

[b] State Water Board License 13868A, issued in 2015, authorizes Malpaso Water Company to divert 85.6 afy from the Carmel River for delivery to property owners in CalAm's service area in the Carmel River watershed or the City of Carmel-by-the-Sea who have entered into subscription agreements with Malpaso Water Company. Provision of this water supply could therefore reduce system demand in the City of Carmel-by-the-Sea and unincorporated Monterey County by a total of 86.6 afy if the water available from Malpaso Water Company is fully subscribed.

[c] Revised based on testimony submitted to the CPUC by the City of Pacific Grove revising its 2006 estimate as shown.

[d] Future supply needs by the City of Pacific Grove may be reduced by an additional 66 afy in recognition of the 66 afy water entitlement established for the city by MPWMD in consideration of its Pacific Grove Local Water Project (see Section 2.5.3.1).

[e] Sand City's 300 afy desalination plant, which was constructed after preparation of the 2006 estimate of future supply needs, provides Sand City a water entitlement of 206 acre-feet (pursuant to MPMWD Ordinance 132) to meet future demand in the city, thereby offsetting the original demand estimate by 206 afy. (Because this portion of the Sand City plant's production is not included in the supplies assumed by CalAm, shown in Table 2-4, it is also not shown here, in order to avoid double counting demand that will be met by another source.)

[f] Revised based on the City of Seaside comment on April 2015 Draft EIR and attached water supply assessment indicating that full buildout of the West Broadway Urban Village Specific Plan would require a net increase of 80 afy of water (City of Seaside, 2015; Schaaf & Wheeler, 2008); the specific plan was adopted in 2010.

[g] Revised based on the Final EIR prepared for the 2010 *Monterey County General Plan*; the estimate shown is for the unincorporated county areas served by the Carmel River and Seaside Basin aquifer in the general plan horizon year (2030), rather than general plan buildout (which is not expected until 2092).

[h] The estimate provided in the 2010 General Plan Final EIR for the unincorporated county area served by the Carmel River and Seaside Basin aquifer includes 492 acre feet for the Highway 68/Airport affordable housing overlay, as well as supply for Greater Monterey Peninsula area (316 acre feet), the Carmel Mid-Valley affordable housing overlay (75 acre feet), Cachagua (partial) (5 acre feet), Carmel Valley (60 acre feet), unincorporated Carmel (37 acre feet), and Del Monte Forest (20 acre feet).

SOURCES: MPWMD, 2006b; Monterey County, 2010; Hardgrave, 2013, City of Seaside, 2015; Shaaf & Wheeler, 2008.

As discussed in Section 2.3, the proposed MPWSP would provide water supply to meet a projected total service area demand of about 14,275 afy, which is 1,680 afy more than CalAm's estimate of current annual demand (12,270 afy) and existing Pebble Beach water entitlements (325 afy). Part of this 1,680 afy is intended to serve existing service area customers in the hospitality industry under improved economic conditions and part is intended to serve future development of lots of record. Analysis presented in Section 6.3 indicates CalAm might have overestimated the amount needed to serve existing hospitality industry customers under improved economic conditions (500 afy) by about 250 afy and that the other 250 afy designated for hospitality industry recovery may therefore be available to serve future growth. Assuming that revised estimate for the hospitality industry, about 1,430 afy of the 14,275 afy would be available to serve additional development in the CalAm service area. Although the project proposes to meet a narrower range of future development than was assumed for Phase 2 of the Regional Project, the amount of water provided by the proposed project to serve additional development represents about half of the revised estimate of future service area demands. As the revised estimate in Table 2-5 indicates, the proposed project would provide 2,096 afy less than would be needed to meet water demand associated with general plan buildout (3,526 afy) and the other future water demand considered in the 2006 analysis.[36]

The MPWMD, the Monterey Peninsula Regional Water Authority, Monterey County, and CalAm plan to determine an accurate estimate of the added capacity needed to meet the General Plan buildout projections for communities served by CalAm. The findings from this process, which will be undertaken separately from the current A. 12-04-019 proceeding, will be reported to the CPUC either within a subsequent rate design phase of A. 12-04-019 or as part of the general rate case process (CalAm et al., 2013b).

2.5.4 Assumptions about the Allocation of MPWSP Water

As discussed in Section 2.3, CalAm proposes to size the MPWSP Desalination Plant to provide, along with other sources, sufficient supply to meet service area demand of 14,275 afy. This amount is 1,680 afy more than the 12,270 afy annual demand of existing customers and existing Pebble Beach water entitlements (325 afy) (shown in Table 2-3), and without Seaside Basin replenishment, it would be 2,380 afy more than existing annual demand and entitlements. In addition to meeting existing service area demands, CalAm proposes sizing the plant to meet demand associated with the development of vacant legal lots of record and, if the economy improves, demand from increased water use at existing hospitality businesses. While such increases in water demand can reasonably be expected, estimating future water demand necessarily entails the use of assumptions about demand factors that cannot be predicted with absolute certainty. (As discussed in Section 2.3.3,

[36] The estimated difference could be less considering ongoing conservation programs that MPWMD and CalAm have been implementing in response to SWRCB Order 95-10 (in 1995) and the more recent CDOs. The California Water Conservation Act of 2009 (adopted after the general plan estimates were prepared in 2006) requires a 20 percent reduction in per capita water use statewide by the year 2020 (Water Code Section 10608). Assuming the conservation programs implemented in CalAm's Monterey District – in response to SWRCB orders as well as this 2009 law – reduced water use and projected demand by 20 percent, the corresponding future general plan buildout demand would be about 2,870 afy, and the difference between the MPWSP supply and this future demand would be about 1,400 afy. MPWMD states that the appropriate estimate of future water needs is 3,526 afy (shown in Table 2-5), not further reduced by 20 percent, because MPWMD's 2006 estimate assumed efficient plumbing fixtures that meet or exceed the requirements of Water Code Section 10608 (MPWMD, 2017).

MPWMD's review of the factors included in CalAm's estimate produced somewhat different results. For example, MPWMD's review indicated that supply needed for future development of vacant lots of record may be underestimated and the supply needed for economic recovery of the hospitality industry may be overestimated.) Moreover, under past and current allocation programs, once a given supply has been allocated to a jurisdiction, whether or not the jurisdiction reserves its allocation for specific uses and at specific levels that CalAm assumed for project sizing would be up to the jurisdiction. It is the jurisdiction's responsibility to determine, subject to applicable plans, policies, laws, and regulations, whether or not to approve a new or intensified water use within its boundaries. In addition, with other supply sources the MPWSP would provide total supply of 16,294 afy during the Seaside Basin replenishment and 16,994 afy after the replenishment period, as shown in Table 2-4. Available supply after 14,275 afy of anticipated demand was met may need to be returned to the Salinas Valley Groundwater Basin, or may be available for growth within service area jurisdictions, depending on the return water obligation.

One of the MPWMD's key functions is to allocate water supply within its boundaries. The water supply that the proposed project would provide, along with other existing and planned supplies, would continue to be subject to MPWMD's allocation program. Although MPWMD has not yet begun to address allocation of the proposed MPWSP supply, this analysis assumes that the same considerations that informed the past and current allocations will be relevant to the allocation of the MPWSP supply. This EIR/EIS assumes for purposes of the impact analyses presented in Chapters 4 through 6 that water provided by the proposed project will be used to meet existing demand and that any water left over would be allocated in general proportion to projected growth in the CalAm service area jurisdictions. MPWMD recently confirmed that the future allocation process has not been defined and that MPWMD will update its 1990 Allocation Program EIR only when it is clear that CalAm will complete construction of a project to provide replacement supplies [for the reductions that resulted from SWRCB Order 95-10 and related CDOs and the Seaside Basin adjudication] (MPWMD, 2017). MPWMD states that it may not allocate all the water, choosing instead to retain some for future allocation to jurisdictions, "as general plans change over time," or to "retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations" (MPWMD, 2017). In the absence of definitive commitments as to how water provided by the project would be allocated (or not), the assumption that water provided by the project not needed for existing demands or Salinas Valley return water would be used to meet demand associated with future growth, distributed in general proportion to projected planned growth in the CalAm service area, is a reasonable and appropriately conservative assumption for the impact analysis.

2.6 Water Rights

The topic of water rights is not one typically addressed in an EIR/EIS. It is a state legal matter that is rarely relevant to the question of whether a proposed project being evaluated under CEQA or NEPA will generate impacts on the environment. Additionally, consideration of these issues is not required for MBNMS's permit/authorization process and the federal government takes no opinion on these matters of state law. Here, however, the issue of water rights is addressed as one of project

feasibility. The proposed project (MPSWP) and Alternative 5a are designed to take supply water via underground slant wells that would draw water from aquifers that extend underneath Monterey Bay, and at this location, would eventually be recharged primarily by seawater. The wells would be located at the western edge of the Salinas Valley Groundwater Basin (SVGB, or the "Basin"), a large basin that extends approximately 100 miles between Monterey Bay (in the northwest) to the Salinas River headwaters (in the southeast). Details concerning the Basin conditions and stratigraphy (geologic conditions) are set forth in Section 4.4, Groundwater Resources, of this EIR/EIS. Particularly because the project supply wells could draw some source water from the landward area of the Basin, concerns have been expressed as to whether CalAm does or will hold legal rights to use the water that would be taken by the slant wells, treated at the desalination plant and supplied to CalAm customers located outside the Basin.

The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR/EIS should be construed as the CPUC's opinion regarding such rights, except to the extent that the CPUC must determine whether there is a sufficient degree of likelihood that CalAm will possess legal rights to pump and desalinate the source water that would supply the desalination plant such that the proposed project can be deemed to be feasible. Indeed, no government agency will formally grant water rights to CalAm for the proposed project. In California, groundwater rights are established by diversion/pumping and use, and groundwater – other than subterranean streams and underflow of surface water – is regulated through common law (court cases) rather than through the issuance of permits by government bodies. The SVGB is not an adjudicated groundwater basin, so use of the groundwater in the Basin is not subject to existing court decree, written agreements or oversight by an impartial watermaster.[37] There are three relevant types of groundwater rights: (1) overlying rights whereby those who own land atop the Basin may make reasonable use of groundwater on such overlying land; (2) prescriptive rights whereby a water user has acquired another's rights to use water via an open, adverse and sustained use under a claim of right that such user would otherwise not be entitled to; and (3) appropriative rights whereby the groundwater may be used outside the Basin or for municipal purposes. While CalAm owns 46 acres of land (the proposed desalination plant location) overlying the Basin, that land would not support sufficient water for the project and would not entitle CalAm to use the water beyond the property that it owns. CalAm has no prescriptive groundwater rights in the Basin. Thus, CalAm would take any Basin water for the project via appropriative rights. Appropriative groundwater rights are developed subject to, and are thus junior to, existing appropriations and use by overlying users. If the proposed project is approved and any dispute arises as to whether or not CalAm possesses legal water rights, such dispute likely would be resolved through court action. Naturally, however, if CalAm does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove infeasible. This section examines whether, based upon the evidence currently available, the CPUC could conclude that there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible.

[37] An adjudicated groundwater basin is one in which a court has determined the amount of groundwater that each party may extract per year, often based upon studies of the basin and a determination of the safe yield of the basin to sustain it in the long-term. Adjudicated groundwater basins have court-appointed watermasters, who oversee basin operations. The Seaside Basin is an example of an adjudicated groundwater basin.

Numerous court decisions have enunciated that an EIR prepared under CEQA for a large scale land use development project must analyze the reasonably foreseeable impacts of supplying water to the project.[38] Such an EIR should show a reasonable likelihood that water will be available from an identified source and must evaluate environmental impacts from likely future water sources to serve the proposed project. Those cases arise in a different context than the MPWSP. Those cases are concerned with whether there will be enough water to support construction of land use projects and to supply the operational needs of the project occupants for drinking, cooking, bathing, waste water, industrial processes, irrigation, etc. Quite conversely, the MPWSP is itself a water supply project, aimed primarily at creating the water supply to replace current water supplies to which CalAm is not legally entitled. From a physical perspective, it is more than reasonably foreseeable that sufficient water is available to supply feedwater for the MPWSP desalination plant. There is knowledge as to where the water will come from and certainty that a sufficient quantity of water will be available. The physical effects of MPWSP's withdrawal of water are fully analyzed in Section 4.4, Groundwater Resources, of this EIR/EIS.

The primary purpose in requiring an EIR to identify the water supply source for a project and to analyze the effects of supplying water to the project is to ensure that land use development projects that will use water are not built without consideration of water supply. Unlike with land use development projects, here, if CalAm did not possess legal rights to use the feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factors in as a key project feasibility issue.

2.6.1 State Water Resources Control Board Report

Questions have been posed in the CPUC's proceeding as to whether CalAm could demonstrate water rights to the MPWSP supply water. Furthermore, as noted above, CalAm's right to the project feedwater is a basic feasibility issue for the project. The SWRCB is the state agency authorized to exercise advisory, expert, adjudicatory and regulatory functions in the areas of water rights, water quality and safe and reliable drinking water. By letter dated September 26, 2012, the CPUC asked that the SWRCB assist the CPUC and issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. The SWRCB carefully considered the then-available facts and evidence concerning the MPWSP, prepared a draft report on water rights, circulated that draft for public comments and ultimately issued its July 31, 2013, Final Review of California American Water Company's Monterey Peninsula Water Supply Project (Report). The Report is attached to this EIR as **Appendix B2**.

First off, the Report confirms that "Cal-Am needs no groundwater right or other water right to extract seawater from Monterey Bay." Report at 33. Thus, CalAm does not need a water right for the vast majority of the MPWSP supply water because most of the supply water for the 9.6 mgd desalination plant with supply wells at the proposed CEMEX location is projected to be seawater[39]

[38] These decisions include *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, and *Cherry Valley Pass Acres and Neighbors v. City of Beaumont* (2010) 190 Cal.App.4th 316.

[39] The term "seawater" in this EIR/EIS means water that originated in the ocean, identified as containing 33,500 mg/L of TDS, which represents current salinity levels in Monterey Bay.

from the Monterey Bay. No water right need be secured for the seawater element of the MPWSP supply water.

Next, as to water that may be derived from the Basin itself rather than from the ocean, the Report explains (as discussed above) that there are three types of groundwater rights: (1) overlying rights for those who own land above the Basin; (2) prescriptive rights for those who have adversely established a pattern of use of Basin water; and (3) appropriative rights. CalAm would need an appropriative groundwater right to retrieve and export water from the Basin. The Report sets forth the view of the SWRCB as to the set of circumstances under which CalAm would have the requisite appropriative rights to groundwater to support the project. Essentially, if otherwise unusable (i.e., brackish[40] or contaminated) Basin groundwater could be extracted without harm to existing lawful water users and any fresh groundwater[41] extracted is returned to the Basin to avoid injury to existing legal water users, then CalAm would have rights to the portion of feedwater that comes from the Basin because the MPWSP product water that contains such Basin water would be "developed water."

Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source. "The key principle of developed water is if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized." Report at 37. Due to long-term seawater intrusion (where the seawater has moved inland) in the Basin, large areas of the Basin groundwater are impaired and unsuitable for drinking and agricultural uses. The geographic areas from which the project supply wells could draw water from inland of the sea are indeed intruded by seawater. (See Section 4.4, Groundwater Resources) "Since this groundwater is reportedly impaired, it is unlikely that this water is, or will be put to beneficial use." Report at 15. In fact, in response to concerns over seawater intrusion and historic overdraft in the Basin, the County adopted Ordinance No. 3709, which precludes the installation of new groundwater wells and prohibits groundwater pumping between mean sea level and 250 feet below mean sea level in certain areas.

The Report concludes that the project's proposed withdrawal of some brackish groundwater for creating developed water is appropriate so long as no injury is incurred by existing legal water users of the Basin. Setting up the test to discern whether CalAm possesses water rights for the proposed project, the Report states:

> [I]n developing a new water source Cal-Am must establish no other legal user of water is injured in the process. Even if Cal-Am pumps water unsuitable to support beneficial uses, the water could not be considered developed water unless users who pump from areas that could be affected by Cal-Am's MPWSP are protected from harm.

[40] The term "brackish water" in this EIR/EIS means water that is a combination of seawater and fresh water, and thus contains Total Dissolved Solids (TDS) levels between 500 mg/L and 33,500 mg/L.

[41] The term "fresh water" in this EIR/EIS means water that originated in a groundwater basin through precipitation or rivers and streams; in the context of the project, fresh water is water that originated within the SVGB, identified as containing TDS concentrations of less than 500 mg/L, consistent with the secondary drinking water standards established by the SWRCB in Title 22 California Code of Regulations, section 64449, as recommended levels of TDS.

> Cal-Am proposes a replacement program for the MPWSP water that can be attributed to fresh water supplies or sources in the Basin. If Cal-Am can show all users are uninjured because they are made whole by the replacement water supply and method of replacement, export of the desalinated source water would be permissible and qualify as developed water. In the future, this developed water would continue to be available for export even if there are additional users in the Basin. Developed waters are available for use by the party who develops them, subject to the "no injury" standard discussed previously.

Report at 38. The Report specifies three categories of foreseeable injuries that conceivably could be experienced by overlying water users within the area of influence of the MPWSP supply wells: "(1) a reduction in the overall availability of fresh water due to possible incidental extraction by the MWPSP; (2) a reduction in water quality in those wells in a localized area within the capture zone; and, (3) a reduction in groundwater elevations requiring users to expend additional pumping energy to extract water from the Basin." Report at 45. Each of these possible forms of injury is examined below.

State water policy favors enhancement of beneficial uses of water. Specifically, Article X, section 2 of the California Constitution requires "that the water resources of the State be put to beneficial use to the fullest extent to which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented." In addition, Water Code sections 12946 and 12947 proclaim it state policy to economically convert saline water to fresh water, stating, "Desalination technology is now feasible to help provide significant new water supplies from seawater, brackish water and reclaimed water."

In light of these legal requirements, the Report discusses the physical solution doctrine of water rights law, which could come into play if the MPWSP would beneficially develop water, but would in so doing cause injury absent one or more mechanisms to address and ameliorate such injury. In such a circumstance, physical solutions could be employed by CalAm to alleviate the harm effected by the MPWSP and make whole the injured water rights holders. The types of physical solutions would be dictated by the actual harm caused by the MPWSP, but could include such actions as providing replacement water supplies or funding improvements or additional pumping costs needed to ensure that the senior water users in the Basin remain in the same position as they were prior to construction and implementation of the MPWSP. The Report stated that, "Under the physical solution doctrine, although the Basin continues to be in a condition of overdraft, to maximize beneficial use of the state's waters Cal-Am may be allowed to pump a mixture of seawater, brackish water, and fresh water and export the desalinated water to non-overlying parcels." Report at 42. As discussed above, the key criteria are that existing water users will not be injured by CalAm's use of Basin groundwater and that any fresh water component withdrawn by the MPWSP supply wells will be returned to the Basin for beneficial use.

> In summary, to appropriate groundwater from the Basin, the burden is on Cal-Am to show no injury to other users. Key factors will be the following: (1) how much fresh water Cal-Am is extracting as a proportion of the total pumped amount and how much desalinated water is thus available for export as developed water; (2) whether pumping affects the water table level in existing users' wells and whether Cal-Am can avoid injury that would otherwise result from any lowering of water levels through monetary compensation or paying for upgraded wells; (3) whether pumping affects water quality to users' wells within the capture zone and whether Cal-Am can avoid or compensate for

> water quality impacts; (4) how Cal-Am should return any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes, both in the larger Basin area and the immediate area around Cal-Am's wells.

Report at 46. The Report concluded that further data were needed in order to apply the facts and evidence to the criteria set forth in the Report for determining CalAm's water rights. The Report noted that information was needed pertaining to the depth of the project supply slant wells, the hydrogeologic conditions of the site and the area, updated modeling to evaluate the impacts of the project, aquifer testing, and studies to help determine how extracted fresh water would be replaced. These studies and activities have been undertaken and the results are described and reflected in Section 4.4, Groundwater Resources. CalAm has supplied details about its proposed supply wells and return water proposal. Test borings have helped to characterize the hydrogeologic framework within which the project would operate. Groundwater modeling has been conducted. CalAm also obtained approval to construct a test well on the CEMEX site. That well is in place (and core samples taken during the drilling of the well confirmed the assumptions about hydrogeologic conditions) and test pumping is occurring. Information obtained through test slant well pumping and monitoring was used to refine the aquifer properties represented in the revised version of the groundwater model to test the model's reliability for simulating drawdown from slant well pumping. This preliminary analysis of water rights is based upon detailed and extensive groundwater aquifer characterization and groundwater modeling that has been undertaken by the EIR/EIS preparers to assess the effects of the project on Basin groundwater users.[42]

2.6.2 Project Water Rights

As noted above, CalAm extraction of seawater does not require water rights. However, CalAm extraction of Basin water does require appropriative water rights, as discussed above. The question presented is thus whether Basin water rights holders would be injured or harmed by virtue of withdrawal from the Basin of any amount of water that is not purely seawater. The extensive groundwater modeling conducted for this EIR/EIS and discussed in detail in the Groundwater Resources section and in **Appendix E2** is different from that conducted for the 2015 Draft EIR on the MPWSP. As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells. Due to decades of well-documented seawater intrusion in the area, the technical record shows that any Basin water extracted by the supply wells would be brackish water, which is a combination of ocean water and water that originated from the inland aquifers of the Basin. CalAm proposes as part of the MPWSP and to meet the applicable requirements of the Monterey County Resources Agency Act to return to the Basin (in the manner further described below) the

[42] The EIR/EIS preparers have also had the benefit of working closely with, and receiving input from, the Hydrogeologic Working Group (HWG) that was formed as a result of the proposed settlement in the CPUC proceeding on the MPWSP. The HWG is composed of experts representing myriad parties in the CPUC proceeding with diverse interests related to the Basin, including but not limited to the Monterey County Farm Bureau, the Salinas Valley Water Coalition and CalAm. The EIR/EIS preparers obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions. In addition, the HWG has prepared a detailed report that evaluates the results of the test slant well operations and the expected small percentage of project source water that would be fresh water. Input from the HWG work is reflected in Section 4.4, Groundwater Resources.

fresh water portion of the brackish source water. In other words, although the groundwater modeling indicates that the Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water, the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water. As discussed in Section 4.4, Groundwater Resources, the HWG analysis estimates that the long term amount of fresh water within the source water (stabilizing over the first several years of project operation) would be between 1 and 4 percent.

The concept of significant effect under CEQA or NEPA is not necessarily synonymous with harm or injury to water rights holders. In other words, physical change caused by the project might not rise to the level of a significant environmental impact under CEQA or NEPA, but could still cause some harm or injury to a Basin water user (for instance, if the cost to a Basin water rights holder of withdrawing water were to rise even though the environment would not suffer significant impacts). The converse may also be true, that a significant environmental effect under CEQA or NEPA may not cause legal injury in the water rights context. Here, though, the Groundwater Resources section of this EIR/EIS strives to and does in fact effectively and meaningfully analyze two of the three precise concepts of "harm" or "injury" set forth in the Report. These two criteria are reduction in the availability of fresh water and reduction of water quality. In addition, the analysis in the Groundwater Resources section (based upon the groundwater modeling) provides an answer to the third concept of injury set forth in the Report, that of a reduction in groundwater levels that requires users to spend additional funds to extract water.

The impact evaluation in the Groundwater Resources section of this EIR/EIS applied the following relevant thresholds of significance, determining that the project would generate a significant adverse environmental impact if any of the following would occur:

- Substantial depletion of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned land uses for which permits have been granted).
- Extraction from the subsurface slant wells were to lower groundwater levels in the Dune Sand Aquifer or the 180-Foot Equivalent Aquifer such that nearby municipal or private groundwater production wells were to experience a substantial reduction in well yield or physical damage due to exposure of well pumps or screens.
- Extraction from the subsurface slant wells would substantially deplete groundwater in the SVGB such that there would be a net deficit in aquifer volume.
- Extraction from the subsurface slant wells would adversely affect groundwater quality by exacerbating seawater intrusion in the SVGB.
- Violation of any water quality standards or degradation of water quality.
- Extraction from the subsurface slant wells would interfere substantially with groundwater recharge.

Applying the thresholds stated above, the analysis concludes that the MPWSP would not result in a significant impact to groundwater resources. It would not reduce, or affect at all, the availability of fresh water (only brackish water from the Basin is projected to be drawn into the MPWSP supply); would not lower groundwater levels in the Basin so as to affect the water supply of any groundwater users or substantially deplete aquifer volume; and would not alter or reduce groundwater quality.

Due to the ongoing and legacy seawater intrusion in the Basin within the radius of influence (the area within which the project could affect groundwater levels), there are few active wells that could potentially be affected by the project. As discussed in detail in the Section 4.4, Groundwater Resources, there are only three active supply wells with well screens across the Dune Sand Aquifer or 180-Foot Equivalent Aquifer within the area where the project may cause groundwater levels to decrease by more than 1 foot but no more than 5 feet.[43] These three wells are located at the Monterey Peninsula Landfill and are used for dust control. Given that the well pumps and the screens are set at least tens of feet below the existing groundwater level, a decrease in the levels of less than 5 feet would not cause injury to this groundwater user. There are six active wells with well screens in the 400-Foot Aquifer. These include the South Well on the CEMEX property, a well on land owned by Ag Land Trust that is used to supply water for dust control, and four private wells. Due to the brackish quality of the groundwater within the 400-Foot Aquifer, these wells would not be expected to supply drinking water. The Groundwater Resources section concludes as to all active wells that a water level decline between 1 and 5 feet would not expose well screens, cause damage, or reduce yield in the groundwater supply wells that could be influenced by the MPWSP. All in all, the project was determined not to result in a significant impact in terms of groundwater supplies either quantitatively or qualitatively.[44] Thus, it appears reasonable to conclude that the MPWSP would not result in harm or injury to the water rights of legal users of water in the Basin in terms of fresh water supply or water quality, two of the Report's three injury criteria relative to the development of legal water rights.

Turning to the third of the three injury criteria set forth in the Report – increased pumping costs – as noted above, the water levels in seven potentially active wells could drop by somewhere between 1 and 5 feet, thus requiring marginally more energy to extract the water from those wells. Any increased pumping costs are not physical effects on the environment under CEQA or NEPA. However, to ensure that those well owners are not injured by MPWSP implementation, CalAm could compensate the well owners for any increased pumping costs causally tied to the MPWSP. Assuming that CalAm were to compensate the owner of these wells for any increased

[43] This is based upon an assumption that no return water (0 percent) is supplied to the Basin, and thus represents a worst case, conservative scenario given that, as discussed in detail in the Groundwater Resources section, the more water that is returned to the Basin as envisioned by the proposed project, the less total impact there would be on the groundwater levels.

[44] Furthermore, as detailed in Section 4.4, Groundwater Resources, the feedwater for the project would be extracted out of the capture zone, which contains highly brackish to saline groundwater, and is adjacent to the coast and is recharged by the ocean. Though these potentially affected wells are in the area of influence (also referred to as the cone of depression), which is the area of draw down caused by project pumping, the actual water that would be drawn into the slant wells would not originate from those areas where the wells are outside the capture zone. Water is only drawn into the slant wells in the capture zone. This further supports a conclusion that the project would not injure other Basin users by drawing supply from the inland portion of the aquifers,

pumping costs sustained due to the MPWSP, the slant wells' operation would not result in, or would avoid, injury under the Report's third injury criteria.

Furthermore, CalAm has proposed a mitigation measure (set forth in Section 4.4, Groundwater Resources as Mitigation Measure 4.4-3) to further ensure that Basin groundwater users are not injured. Working with the Monterey County Water Resources Agency, CalAm has agreed to fund the installation of monitoring wells to expand the County's network of groundwater monitoring wells so as to be better able to monitor on an on-going basis the effect of the project slant wells on groundwater within the radius of influence. If the monitoring efforts were to demonstrate that the project were affecting any existing neighboring active wells, CalAm would coordinate with the affected well owner and take both interim and long-term steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs).

In light of the foregoing, it seems reasonable to conclude that the MPWSP would not result in harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin as "developed water."

Substantial evidence in the record indicates that the entirety of the geographical area of the Basin that may be affected by the project contains brackish water rather than fresh water. Based on the groundwater modeling and as discussed in the Groundwater Resources section, while the project may actually improve the Basin's seawater intrusion issue by slowing the seawater interface line from advancing more inland, the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project. If indeed no fresh water is withdrawn by the project, then no physical solution in the form of return to the Basin of fresh water (or other off-setting mechanism to alleviate the harm) would be required in order for CalAm to secure and maintain water rights for the project feedwater. If the water in the Basin were to become fresher in the future such that the MPWSP supply wells were drawing fresh water from the Basin, then a physical solution (such as the proposed return component of the project, discussed below) may be needed in order for CalAm to maintain rights to the Basin water for the project.[45]

In any event, the proposed project does include a return water component. CalAm proposes to return to the Basin the percentage of supply water that is determined to have originated from the inland aquifers of the Basin rather than the ocean, i.e., the fresh water component of the brackish water that is extracted by the slant wells as if the brackish water could be segregated between its ocean (seawater) and inland (fresh water) elements. This plan would further protect against injury to Basin groundwater users, and in fact the Basin and its groundwater users could be benefitted by the return of fresh water to the seawater-intruded Basin for use in lieu of groundwater.

[45] The Report addresses the effects on the water rights equation of possible changed conditions in the Basin over time. See Report at pages 43-45. Appropriate physical solutions in the event that the MPWSP wells draw a higher proportion of fresh water in the future may vary depending on whether the higher amount of fresh water results from the MPWSP itself or is due to other causes. The Report states that if increased availability of fresh water were not attributed to the MPWSP and the fresh water extractions could not be returned to the Basin in sufficient quantities, CalAm may have to limit extractions or otherwise modify its project so as to avoid harm to Basin water users.

The Report stated in this regard:

> Cal-Am could use one or more of several possible methods to replace any fresh water it extracts from the Basin. Cal-Am could return the water to the aquifer through injection wells, percolation basins, or through the CSIP. Cal-Am would need to determine which of those methods would be the most feasible, and would in fact, ensure no harm to existing legal users. The feasibility analysis would depend on site-specific geologic conditions at reinjection well locations and at the percolation areas. These studies need to be described and supported in detail before Cal-Am can claim an appropriative right to export surplus developed water from the Basin.

Report at 39. The Report further provides that percolation basins or injection wells would need to be located "where the underlying aquifer does not contain degraded water" (Report at 45); "it would not be appropriate to inject or percolate desalinated water in [the] intruded area, as the water would essentially be wasted." Report at 32.

CalAm has worked with other stake-holders to develop its current proposal for returning water to the Basin. The construct proposed was not an identified option at the time that the SWRCB Report was prepared and thus was not specifically addressed therein, but the proposal appears to advance the goals stated in the Report for returning water to the Basin. CalAm proposes to deliver fully desalinated water to end users for use in lieu of existing groundwater production from the SVGB. The two points of delivery would be (i) to the Castroville Community Services District (CCSD) to supply water for municipal purposes (e.g., typical drinking, bathing, sewer, watering and other non-agricultural water uses) and (ii) to the Castroville Seawater Intrusion Project (CSIP) pond or directly into the reclaimed water CSIP pipe for use by the agricultural users that obtain water through CSIP. Under these return water locales, the clean desalinated water would be provided for municipal or agricultural use (respectively) in lieu of pumping Basin water in an amount equal to the quantity of return water. The return water would be supplied as follows:

1. At the start-up of the MPWSP, 175 acre feet of return water would be provided to CSIP.
2. Each year, 805 acre feet of return water would be provided to CCSD, even if the calculated amount of Basin water withdrawn by MPWSP is less than that amount.
3. To the extent that the calculated amount of Basin water withdrawn by MPWSP exceeds 805 acre feet, that excess amount would be provided to CSIP.

Water is expected to be returned between May and November of the same calendar year as it is withdrawn (see Chapter 3, operating table). As examined by the groundwater modeling and explained in the Groundwater Resources section, this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD and adjacent areas because water levels would increase as a result of in-lieu groundwater recharge, and would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas. Since this return water option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, the return water plan appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.

2.6.3 Effect of Monterey County Water Resources Agency Act

In 1990, the State Legislature enacted the Monterey County Water Resources Agency Act (the Agency Act), creating the MCWRA as a flood control and water agency. The jurisdictional boundaries of the MCWRA are coterminous with County of Monterey boundaries. Per the Agency Act, MCWRA is charged with preventing the waste or diminution of the water supply in its territory by, among other things, controlling groundwater extractions and prohibiting groundwater exportation from the Salinas River Groundwater Basin. When it enacted the Agency Act, the California State Legislature expressly provided that: "no groundwater from that basin may be exported for any use outside the basin, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted, [MCWRA] may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that export of groundwater." Agency Act at Section 21. The Agency Act further empowers the MCWRA to prevent extraction of groundwater from particular areas of the Basin if needed to protect groundwater supplies. Accordingly, MCWRA adopted Ordinance 3709 (the "Ordinance") prohibiting well drilling and/or groundwater extraction within certain portions of the northern Salinas Valley between the depths of 0 mean sea level and -250 mean sea level.

This section evaluates the proposed project's consistency with the Agency Act (and the Ordinance) such that the application of the Agency Act or the Ordinance would not undermine the project's right to withdraw and supply water and thus, impair the feasibility of the project from water rights and legal feasibility perspectives.

First, the State Water Resources Control Board Report, discussed in detail above, raises the question as to whether the Agency Act would apply to all of the proposed project groundwater extractions given the location of some screens of the slant wells outside the jurisdictional boundaries of the County:

> The applicability of the Agency Act to the MPWSP is unclear. As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach. Although the project would serve areas within the territory of the MPWSP, the points of diversion for these proposed wells may be located outside the territory of MCWRA as defined by the Agency Act.

Report at 39. The Agency Act's effect on project feasibility may be minimized by virtue of its application only to water drawn through well screens located within County jurisdiction. Assuming, however, that the Agency Act would apply to the entire project, the Report (while acknowledging that the SWRCB is not the body charged with interpreting the Agency Act) opines that the project would appear consistent with the Agency Act given that the project would return to the Basin any quantity of fresh water withdrawn from the Basin. The Report states:

> Based on the State Water Board's analysis, as reflected in the Report, the Project as proposed would return any incidentally extracted usable groundwater to the Basin. The only water that would be available for export is a new supply, or developed water. Accordingly, it does not appear that the Agency Act or the Ordinance operate to prohibit the Project. The State Water Board is not the agency responsible for interpreting the Agency Act or MRWCA's ordinances. It should be recognized, however, that to the extent the language of the Agency

> Act and ordinance permit, they should be interpreted consistent with policy of article X, section 2 of the California Constitution [declaring that the waters of the state shall be put to maximum beneficial use], including the physical solution doctrine . . .

Report at 40. As to Ordinance 3709 specifically, since the CEMEX parcel within which the proposed slant wells would be located is not within the boundaries of Ordinance 3709, the Ordinance would not apply. Therefore, it appears reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility.

2.6.4 Effect of Annexation Agreement

In 1996, the MCWRA, the MCWD, the City of Marina, the owners of Armstrong Ranch and then owners of the CEMEX property (RMC Lonestar) entered into an *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* ("Annexation Agreement").[46] The agreement established a framework for management of groundwater from the Basin and included terms and conditions for the annexation of lands (including the Armstrong Ranch and CEMEX properties) to MCWRA's benefit assessment zones as a financing mechanism to fund groundwater resource protection and reduction of seawater intrusion (MCWD, et al. 1996).

Under the Annexation Agreement, MCWD's authority to withdraw potable groundwater from the Basin would be limited to 3,020 afy year until such time as a plan for development of a long-term potable water supply capable of mitigating seawater intrusion was developed and implemented. If and when the Armstrong Ranch property were annexed to MCWD's benefit assessment zones, non-agricultural use of Basin groundwater withdrawn from that property would be capped at 920 afy. If and when the CEMEX property was annexed to MCWD's benefit assessment zones, withdrawal of groundwater from that property would be capped at 500 afy.

The Armstrong Ranch property is not included as part of the proposed MPWSP. However, at the CEMEX property (where CEMEX currently conducts sand mining operations), CalAm proposes construction of subsurface slant wells extending offshore under Monterey Bay and other infrastructure to support the MPWSP Seawater Intake System. Consequently, this section addresses the Annexation Agreement to assess its effect on MPWSP feasibility. Specifically, this section examines: (1) whether annexation of the CEMEX property has occurred, triggering the 500 afy groundwater withdrawal limitation; and (2) whether that withdrawal limitation (if effective) would apply to water withdrawn by the MPWSP slant wells and affect CalAm's right to pump water for the project.

Section 7.3 of the Annexation Agreement provides that "Lonestar Property annexation to the Zones will not take effect until the Lonestar Property has been approved for prior or concurrent annexation into MCWD" (MCWD, et al. 1996). Annexation of the property, now owned by CEMEX, requires compliance with CEQA and discretionary approval by the Monterey County Local Agency Formation Commission (LAFCO). At its June 12, 2012 regular board meeting, the MCWD Board adopted a resolution (No. 2012-42) to initiate CEQA studies and submit to

[46] The MRWPCA was not a party to the Annexation Agreement. However, an Addendum attached as Exhibit G to the Annexation Agreement provides that MRWPCA could later elect to become a party to that Agreement.

LAFCO an application for the annexation of the CEMEX property into the MCWD. However, at its November 30, 2012 meeting, counsel for the MCWD Board reported that no application to LAFCO for annexation of the CEMEX property had been submitted (MCWD, 2012). At that same meeting, the MCWD Board adopted Resolution 2012-88, which requires a super majority vote of 4 of 5 MCWD Board members or a majority of the voters within the 1975 jurisdictional boundaries of MCWD to approve any future land annexation (MCWD, 2012).

The MCWD Board considered the status of this possible annexation at its February 17, 2015 meeting. As of that date, no requisite CEQA document for annexation of the CEMEX property had been started and no LAFCO annexation application for the CEMEX property had been submitted. The Agenda Transmittal from the MCWD staff for the February 17, 2015 Board meeting identified several issues and hurdles that would impair MCWD's ability to move forward with annexation of the CEMEX property. Specifically, based upon meetings with the LAFCO Executive Director and CEMEX officials, the MCWD staff reported that annexation would also require approval of a sphere of influence amendment by LAFCO; such an amendment would need to be consistent with the City of Marina General Plan, which does not envision development of the CEMEX property in a manner that would require MCWD water service; CEMEX does not envision developing its land so as to justify provision of urban-level services by MCWD;[47] and CEMEX would not be willing to pay to the County the fee for annexation to MCWD. In light of these facts, MCWD staff concluded that submitting the required application to LAFCO would be "costly and potentially not achievable in the end." (MCWD, 2012). As of the end of 2017, neither CEMEX nor MCWD have taken further action to pursue annexation of the CEMEX property. MCWD's 2015 Urban Water Management Plan, adopted June 6, 2016, notes that the Annexation Agreement would not take effect until the CEMEX property were annexed. The annexation does not appear likely to occur in the foreseeable future.

Per the terms of the Annexation Agreement, it appears that the 500 afy groundwater withdrawal limitation may currently apply to the CEMEX parcel, though annexation has not occurred. However, even if the 500 afy groundwater withdrawal limitation does currently or were in the future to apply to the CEMEX land, it appears that operation of the MPWSP would still be feasible. First and foremost, the purpose and intent of the withdrawal limitation in the Annexation Agreement is to limit groundwater pumping from the deeper aquifers; the Annexation Agreement is not intended to limit brackish water pumping from the shallow aquifers. Second and also key, the Annexation Agreement places a limit on the overlying water rights of the owner of the CEMEX property, but was not intended to and does not affect "developed water" rights upon which CalAm would rely for the MPWSP. In addition, any return of fresh water to the SVGB, such as the return water program proposed as part of the MPWSP, would keep the Basin whole, serving the purpose of the Annexation Agreement as set forth in Section 1.1 of that Agreement by reducing seawater intrusion and protecting the groundwater resources of the Basin, thus arguably being consistent with the Annexation Agreement.

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[47] In addition, in the interim, CEMEX has agreed with the California Coastal Commission to cease mining operations and make its land available for conservation instead.

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CHAPTER 3
Description of the Proposed Project

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3.2 Project Components	3-2 Length of Permanent Slant Wells Seaward of Mean High Water Line
3.3 Construction	3-3 Desalination Chemicals and Annual Usage
3.4 Operations and Maintenance	3-4 Construction Staging Areas
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	3-6 Overview of Typical Facility Operations for the Proposed Project
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3.1 Introduction

3.1.1 Introduction to Project Description

This chapter describes the components of the Monterey Peninsula Water Supply Project (MPWSP) proposed by the California-American Water Company (CalAm). The information in this chapter is intended to provide the reader with an understanding of the construction and operational aspects of CalAm's proposed project[1] and provide a common basis for the analysis of environmental impacts in Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures.

[1] The term "proposed project" is used when referring to CalAm's proposed MPWSP. This term is used when discussing impacts resulting from implementation of all federal, state, and local permits, approvals, and authorizations. The term "proposed action," more commonly used in NEPA documents, refers specifically to MBNMS' three federal proposed actions described in Section 1.3.2.

CalAm is proposing the MPWSP to develop a new water supply for CalAm's Monterey District service area (Monterey District) (see **Figure 3-1**). Section 2.2 of Chapter 2, Water Demand, Supplies, and Water Rights describes the legal decisions and Section 2.3 describes the project demand assumptions that are the basis for the MPWSP's capacity.

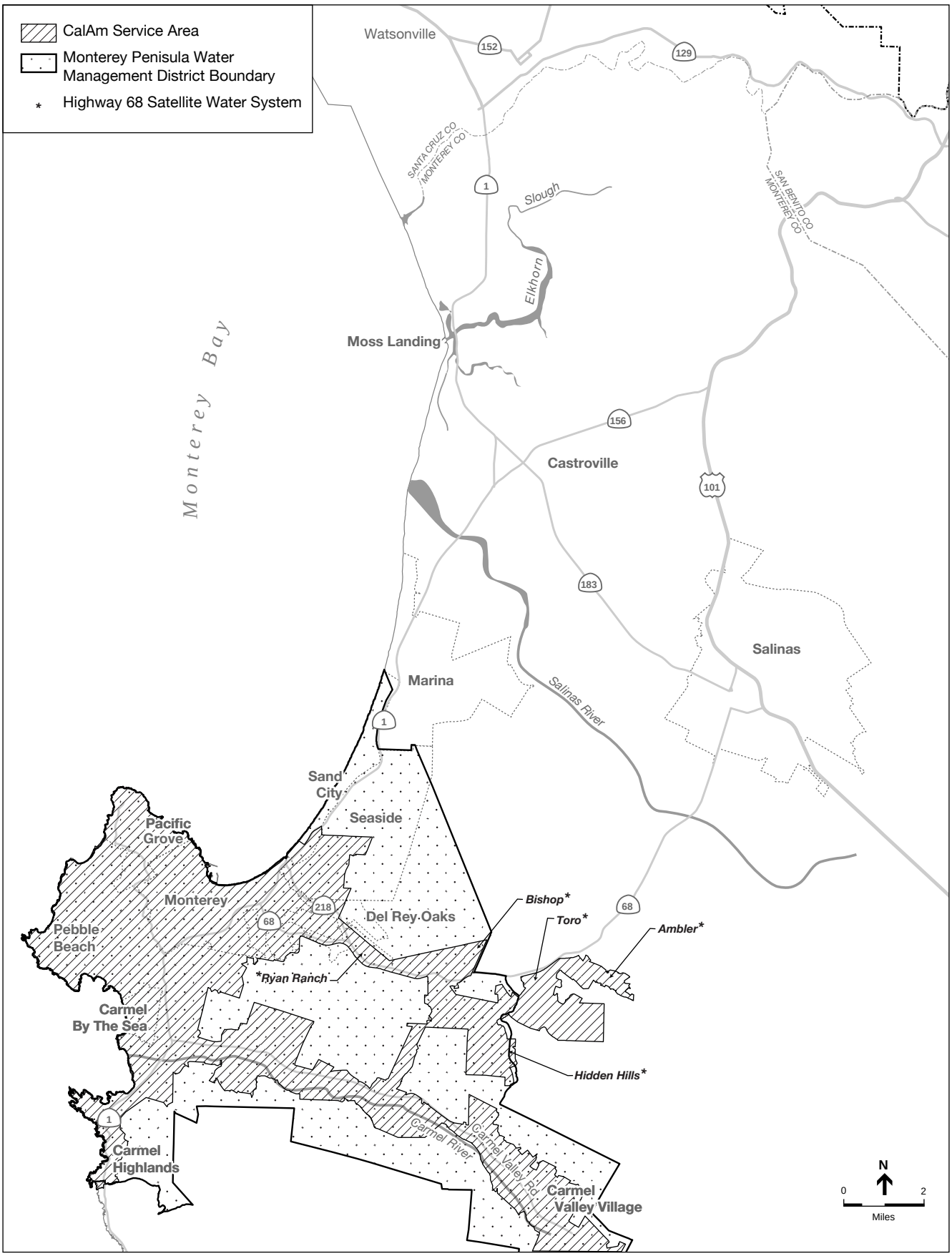
CalAm's application to CPUC contained two capacity options, or build-out scenarios – a 9.6 mgd desalination plant and related facilities, and a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. For the purposes of analysis, this EIR/EIS defines the full-capacity option as the "Proposed Project" analyzed in Chapter 4 and addresses the reduced-capacity option as Alternative 5a in Chapter 5. The proposed project assumes that GWR would not be operational.

The project area extends approximately 18 miles, from Castroville in the north to the city of Carmel-by-the-Sea in the south (see **Figure 3-2**). The MPWSP would include construction of a desalination plant located in unincorporated Monterey County on Charles Benson Road, northeast of the City of Marina, and up to nine new subsurface slant wells and conversion of the existing test slant well at the CEMEX active mining area in the northern area of the City of Marina for a total of 10 wells to produce approximately 10,750 afy of desalinated product water. The proposed MPWSP Desalination Plant would have a rated capacity of 9.6 million gallons per day (mgd).

The proposed MPWSP would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system facilities, which would enable CalAm to inject desalinated product water into the groundwater basin for subsequent extraction and distribution to customers. The proposed improvements to the ASR system would also increase the efficiency and long-term reliability of the ASR system for injecting Carmel River water into the groundwater basin. The proposed project also includes pump stations, storage tanks, and about 21 miles of water conveyance pipelines.

To inform the final design of the subsurface slant wells and the MPWSP Desalination Plant treatment system, and to collect geologic and hydrogeologic data needed for Federal, state, regional, and local permits for the full-scale project, CalAm built a test slant well at the same location as the subsurface intake system for the proposed project. CalAm operated the test slant well between April 2015 and December 2017 as a pilot program to collect data. Construction of the test slant well and operation of the pilot program was covered under separate environmental review.[2] The test slant well is currently permitted to February 2019 by the CCC and MBNMS, and as a result, CalAm will be allowed to conduct limited periodic maintenance pumping necessary to maintain the test slant well. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be removed. However, if the proposed

[2] In October 2014, Monterey Bay National Marine Sanctuary finished its NEPA review of the construction of the test slant well and the operation of the pilot program and issued an authorization (NOAA-NOS-2014-0078). In September 2014, the City of Marina declined to adopt its Initial Study and Mitigated Negative Declaration and denied CalAm's CDP application for development of the test slant well, and in November 2014, the CCC approved the CDP application on appeal and documented its compliance with CEQA requirements.



205335.01 Monterey Peninsula Water Supply Project

SOURCE: ESA, 2013

Figure 3-1

CalAm Monterey District Service Area

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0 2
Miles

Existing Slant Well
MRWPCA Ocean Outfall and and Diffuser (Existing)

Proposed Project Facilities

Slant Well
New Transmission Main
Source Water Pipeline
Brine Discharge Pipeline
HWY 68 Interconnection Improvements
New Desalinated Water Pipeline
Castroville Pipeline
Castroville Pipeline Optional Alignment
Pipeline to CSIP Pond
ASR Pipelines *

Castroville
Connection to Existing CCSD Water Distribution System
3 - 13
3 - 12
3 - 11b
3 - 11a
Subsurface Slant Wells (Proposed)
MRWPCA Ocean Outfall and Diffuser (Existing)
MPWSP Desalination Plant (Proposed)
3 - 4
3 - 5
3 - 3
CSIP Pond (Existing)
3 - 6
MRWPCA Regional Wastewater Treatment Plant (Existing)
3 - 7a
Marina
Reservation Rd
Salinas River
Monterey Bay
3 - 7b
3 - 8
ASR Injection/ Extraction Wells (Proposed)
3 - 9a
Phase II ASR Facilities (Existing)
Phase I ASR Facilities (Existing)
Pacific Grove
La Salle Ave
Sand City
Seaside
General Jim Moore Blvd
Del Monte Blvd
3 - 9b
Hilby Ave
Monterey
Del Rey Oaks
Monterey Peninsula Airport
3 - 10a
Ryan Ranch-Bishop Interconnection Improvements (Proposed)
Carmel Valley Pump Station (Proposed)
3 - 10b
3 - 10c
Main System-Hidden Hills Interconnection Improvements (Proposed)
Carmel Valley Rd
Laureles Grade
1
68
218
183

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 3-2
Monterey Peninsula Water Supply Project Overview and Index Map

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subsurface slant wells at CEMEX are ultimately approved as part of the proposed project or Alternative 5a, CalAm would convert the test slant well into a permanent well and operate it as part of the subsurface intake system. The conversion and long-term operation of the test slant well as a production well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project.

3.1.1.1 Source Water Components and Definitions

Several terms describing source water components are used in this chapter and throughout the EIR/EIS and definitions of these terms are provided here to assist the reader. To begin with, groundwater and ocean water can be described in simple geographic, locational terms as follows:

Groundwater: water located beneath the earth's surface.

Ocean water: water located above the seafloor.

The water chemistry indicates where the water came from (i.e., whether it started as groundwater or ocean water) and how usable it is for domestic and other purposes. In the context of the proposed MPWSP and for purposes of this EIR/EIS, the source water components are defined and used in the EIR/EIS as follows:

Fresh water: water that originated in a groundwater basin through precipitation or rivers and streams; in the context of the MPWSP, fresh water is water that originated within the Salinas Valley Groundwater Basin, identified as containing total dissolved solids (TDS) concentrations of less than 500 milligrams per liter (mg/L), consistent with the secondary drinking water standards established by the SWRCB in Title 22 California Code of Regulations, section 64449, as recommended levels of TDS. TDS is the quantity of dissolved materials in a water sample and is used to quantify the amount of salts in a sample.

Seawater: water that originated in the ocean, identified as containing 33,500 mg/L of TDS, which represents current salinity levels in Monterey Bay.

Brackish water: water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L.

Source water (also referred to as feed water): water that would be drawn into the proposed project slant wells and conveyed to the desalination facility. This water would be a combination of brackish groundwater representing the ambient conditions in the water-bearing sediments of the Dune Sand and 180-FTE Aquifers at the coast, and the seawater that is drawn in through the aquifer sediments to recharge the capture zone. The capture zone is the localized region that would contribute source water to the slant wells.

3.1.2 Summary of Changes Made by CalAm to Project Description

Following publication of the Draft EIR/EIS, CalAm proposed several changes to the project description. These changes are reflected in this chapter and in the analysis throughout this Final EIR/EIS. Changes include:

- Removal of the Terminal Reservoir from the proposed project (no longer proposed by CalAm);
- Removal of pump capacity upgrades at Upper Tierra Grande Booster Station from the proposed project (no longer proposed by CalAm);
- Addition of Brine Mixing Box and appurtenances to Brine Disposal Facilities based on discussions with Monterey Regional Water Pollution Control Agency;
- Clarification of Brine Discharge Pipeline diameter (36 inches rather than 30 inches);
- Clarification of pre-treatment building size (4,000 square feet rather than 6,000 square feet)

Other changes have been made throughout the document as a result of public comment and authors' changes. These are described in the introduction to topical sections in Chapter 4.

3.2 Project Components

The MPWSP comprises the following facilities:

- The source water intake system, which would consist of 10 subsurface slant wells[3] (eight active and two on standby) extending into submerged lands of Monterey Bay National Marine Sanctuary (MBNMS), and a Source Water Pipeline
- A full build out 9.6 mgd desalination plant option and related facilities, including pretreatment, reverse osmosis (RO), and post-treatment systems; backwash supply and filtered water equalization tanks; treated water storage tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities
- Desalinated water conveyance facilities including pipelines and a stand-alone pump station
- An expanded ASR system, including two additional injection/extraction wells, the ASR-5 and ASR-6 Wells, and three parallel pipelines, the ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline. These expanded pipelines would convey water to and from the new ASR injection/extraction wells and backwash effluent from the wells to an existing settling basin

Table 3-1 summarizes the proposed MPWSP facilities; for detailed descriptions of the facilities and definitions of technical terms contained in Table 3-1, see Sections 3.2.1 through 3.4. As discussed in Section 1.1, Introduction, CalAm's application for the proposed project also includes an option that would meet all of the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the GWR project. That option is discussed in Chapter 5 as Alternative 5; the project description for the GWR is provided as EIR/EIS Appendix H.

[3] The existing test slant well would be converted into a permanent well, and nine additional slant wells would be built.

TABLE 3-1
FACILITIES SUMMARY FOR THE PROPOSED PROJECT

Facility	Description	Purpose
Source Water Intake System		
Subsurface Slant Wells	• Ten slant wells (one existing test slant well converted into a permanent well plus nine new wells), with up to eight wells operating at any given time and two wells on standby. • Each slant well would be up to 970 feet long with a diameter of 22 to 36 inches, and extend beneath the coastal dunes, sandy beach, and the surf zone, terminating 63 to 257 feet seaward of the Mean High Water (MHW) line (i.e., within MBNMS, except SW-10 which would not extend past the MHW line; see Table 3-2 and Figure 3-3a) and at depths of about 200 feet below the seafloor. • The wellheads (surface components) for the ten slant wells would be located at six sites inland of the dune face: two sites with three slant wells each and four sites with one slant well each. • Each slant well would be equipped with a 2,500 gpm, 300 hp submersible well pump for a total feedwater supply of 24.1 mgd from 8 active slant wells. • Each well site would have one wellhead (Sites 1, 3, 4, and 5) or three wellheads (Sites 2 and 6), below-ground mechanical piping vault (meter, valves, gauges), one electrical control cabinet, and one pump-to-waste basin. • Except for Site 1 (test slant well site), the aboveground facilities (at Sites 2 through 6) would be built on a graded pad ranging between 5,250 and 6,025 square feet in area.	The slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant.
Source Water Pipeline	• 2.2-mile-long, 42-inch-diameter pipeline • Two hydraulic surge tanks would be located near the collector pipe/Source Water Pipeline connection point, south of the CEMEX access road and inland of the dunes.	This pipeline would convey the source water from the slant wellheads located inland of the dunes, to the MPWSP Desalination Plant. The surge tanks would protect the wells and pipeline infrastructure from hydraulic surge events (i.e., power loss) that could occur in the Source Water Pipeline.
Desalination Facilities		
Pretreatment System	• Pressure filters or multimedia gravity filters would be partially housed within a 4,000-square-foot pretreatment building. • Two 300,000-gallon backwash supply and filtered water equalization tanks • Two 0.25-acre, 10-foot-deep, lined backwash settling basins with decanting system • Multi-purpose pump station would consist of an outdoor concrete pad, with an area of approximately 8,000 square feet, located central to the process facilities, and include the following equipment:	The pretreatment system would treat source water to remove suspended and dissolved contaminants that could damage the RO system, thus increasing the efficiency and lifespan of the RO system. Cartridge filters would remove fine particulates from the filtered water and protect the RO membranes. Filtered water pumps would direct process water through the cartridge filters to RO system.

TABLE 3-1 (Continued)
FACILITIES SUMMARY FOR THE PROPOSED PROJECT

Facility	Description	Purpose
Desalination Facilities (cont.)		
Pretreatment System (cont.)	– Seven cartridge filters – Four filtered water pumps: Two 12-mgd, 350-horsepower (hp) pumps, and two 6-mgd, 200-hp pumps – Two backwash supply pumps (16 mgd, 150 hp each)	Backwash supply pumps would be used to clean the media in the pressure filters.
Reverse Osmosis (RO) System	• First-pass seawater RO system comprising seven modules (six active and one standby), with each module producing 1.6 mgd of "permeate," that is, the purified water produced through the RO membrane. • Partial second-pass brackish water RO system comprising four modules (three duty and one standby), with each module producing 1.3 mgd of permeate. • The RO units and cleaning systems and chemical storage tanks would be housed within a 30,000-square-foot process and electrical building (membrane process building).	The RO system would remove salts and other minerals from pretreated source water.
Post-treatment System	• Ultraviolet disinfection system (if required) comprising three reactors (two active and one standby) that would be housed in the membrane process building. • Carbon dioxide system comprising one 120-ton storage tank and feed equipment in a concrete enclosure that would be located next to membrane process building • Lime system comprising two 20,000-gallon storage tanks and feed equipment in a concrete enclosure that would be located next to membrane process building	If required by the State Water Resources Control Board (SWRCB) Division of Drinking Water, the UV Disinfection system would provide additional primary disinfection. The carbon dioxide and lime systems would adjust the hardness, pH, and alkalinity of the desalinated product water in accordance with drinking water requirements.
Chemical Storage (Membrane Process Building)	The following treatment chemicals would be housed in the membrane process building. The storage tanks/drums would sit on concrete stalls with secondary containment curbs to contain inadvertent spills of hazardous treatment chemicals: • Sodium hypochlorite - two 6,500-gallon storage tanks • Sodium hydroxide - one 5,200-gallon tank • Sulfuric acid -one 10,000-gallon tank • Sodium bisulfite - one 6,000-gallon tank • Zinc orthophosphate -one 5,600-gallon tank • Anti-scalant - one 6,300-gallon tank • Non-ionic polymer – multiple 55-gallon drums	The sodium hypochlorite system would generate low-concentration chlorine solution using salt and electricity; and the chlorine would provide primary and residual disinfection for drinking water. The sodium hydroxide system would adjust the pH and alkalinity of the desalinated product water and disinfect the water in accordance with drinking water requirements. The sulfuric acid system would be used to clean the RO membranes. The sodium bisulfite system would be used to dechlorinate process waters and brine in the treatment, cleaning and disposal processes. The zinc orthophosphate system would be used as a corrosion inhibitor in the treated water to protect the distribution system.

TABLE 3-1 (Continued)
FACILITIES SUMMARY FOR THE PROPOSED PROJECT

Facility	Description	Purpose
Desalination Facilities (cont.)		
Chemical Storage (Membrane Process Building) (cont.)		The anti-scalant system would be used in the treatment process to reduce fouling and protect the RO membranes. The non-ionic polymer system would be used in the treatment process to improve settling of particulates in the used washwater from the pressure filters before the clarified washwater was returned to the plant for treatment or disposed of with the brine.
Administrative Building	• 4,000- to 6,000-square-foot building	This building would house restrooms, locker rooms, break rooms, conference rooms, electrical controls, laboratory facilities, equipment storage and maintenance, and electrical service equipment.
Brine Storage and Disposal Facilities		
Brine Storage and Disposal	• 3-million-gallon brine storage basin • 1-mile-long, 36-inch-diameter Brine Discharge Pipeline with Brine Mixing Box and appurtenances • Two 6 mgd, 40 hp brine disposal pumps • Brine aeration system	Brine concentrate produced during the RO process would be conveyed to the brine storage basin located at the MPWSP Desalination Plant. The Brine Discharge Pipeline would convey decanted effluent from the pretreatment filtration backwash cycle and RO concentrate produced by the RO system (both located in the membrane process building) and brine stored in the brine storage basin to the Brine Mixing Box before being conveyed to the headworks of the existing MRWPCA outfall. The brine aeration system would maintain dissolved oxygen concentrations in the brine at acceptable levels.
MRWPCA Ocean Outfall Pipeline and Diffuser (existing)	• Existing 2.3 mile-long, 60-inch diameter pipe (onshore portion) • Existing 2.1-mile-long, 60-inch and 48-inch-diameter pipe (offshore portion) • Existing 1,100-foot-long diffuser with 172 ports, each 2 inches in diameter and spaced 8 feet apart	Brine and pretreatment backwash effluent from the desalination plant would be conveyed from the headworks, to the existing ocean outfall pipeline. The existing outfall terminates at a diffuser located offshore in MBNMS that would discharge the brine concentrate or brine blended with treated wastewater effluent to Monterey Bay.
Desalinated Water Conveyance and Storage Facilities		
Treated Water Storage Tanks	• Two approximately 103-foot-diameter, 1.75-million gallon above ground treated water storage tanks (with a total combined storage volume of 3.5 mg).	The treated water storage tanks would serve as holding tanks from which water would be pumped to either the CalAm water system, the existing CSIP pond or the Castroville Pipeline.
Desalinated Water Pumps	• Desalinated water pumps and equipment would be located at a multi-purpose pump station and would include the following equipment: – Two 4.8 mgd, 600 hp treated water pumps – Two 2.4 mgd, 300 hp treated water pumps – Two 1.4 mgd, 10 hp Salinas Valley return flow pumps	The treated water pumps would pump desalinated water from the MPWSP Desalination Plant through distribution pipelines to the customers in the Monterey District service area. The Salinas Valley pumps would direct desalinated water (i.e., Salinas Valley return flows) from the MPWSP Desalination Plant to the Castroville Community Services District (CCSD) and/or CSIP system.

TABLE 3-1 (Continued)
FACILITIES SUMMARY FOR THE PROPOSED PROJECT

Facility	Description	Purpose
Desalinated Water Conveyance and Storage Facilities (cont.)		
New Desalinated Water Pipeline	• 3.3-mile-long, 36-inch-diameter pipeline	This pipeline would convey desalinated water from the treated water storage tanks at the MPWSP Desalination Plant to the new Transmission Main at Reservation Road.
New Transmission Main	• 6-mile-long, 36-inch-diameter pipeline	This pipeline would convey desalinated water between the new Desalinated Water Pipeline at Reservation Road, crossing U.S. Army-owned property along General Jim Moore Blvd. to the existing Phase I ASR Facilities where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection.
Carmel Valley Pump Station	• 3 mgd, 100 hp pump station	This 500-square-foot facility would provide the additional water pressure needed to pump water through the existing Segunda Pipeline into Segunda Reservoir.
Interconnection Improvements for Highway 68 Satellite Systems a) Ryan Ranch–Bishop Interconnection b) Main System–Hidden Hills Interconnection	• 1.1-mile-long, 8-inch-diameter pipeline • 1,200-foot-long, 6-inch-diameter pipeline • One new 350 gpm pump	These interconnection pipelines and associated improvements would allow CalAm to convey MPWSP water supplies to the Ryan Ranch, Bishop, and Hidden Hills satellite water systems.
Castroville Pipeline	• 4.5-mile-long, 12 inch-diameter pipeline extending from MPWSP Desalination Plant to Castroville (see Figures 3-11 and 3-12)	This pipeline would convey desalinated water from the MPWSP Desalination Plant to the Castroville Seawater Intrusion Project (CSIP) distribution system and the CCSD Well #3. Desalinated water would be delivered to the CSIP system via a new connection point located approximately halfway along the pipeline alignment at Nashua Road and Monte Road. At the northern pipeline terminus, desalinated water would be delivered to the CCSD Well #3 at Del Monte Avenue and Merritt Street.
Pipeline to CSIP Pond	• 1.2-mile-long, 12-inch-diameter pipeline (see Figure 3-5)	This pipeline would convey desalinated water from the MPWSP Desalination Plant to the CSIP pond for subsequent delivery to agricultural users in the Salinas Valley.
ASR System		
Two new ASR Injection/Extraction Wells, referred to as ASR-5 and ASR-6 Wells	• Two proposed 1,000-foot-deep injection/extraction wells (ASR-5 and ASR-6 Wells) with a combined injection capacity of 2.2 mgd and extraction capacity of 4.3 mgd	The proposed new ASR injection/extraction wells would be used to inject Carmel River supplies and desalinated water into the Seaside Groundwater Basin for storage. The two proposed ASR wells would be located on U.S. Army-owned property in the Fitch Park neighborhood of the Ord Military Community. The four existing ASR wells would also be used for these purposes. During periods of peak demand, the stored water would be extracted and delivered to customers.

TABLE 3-1 (Continued)
FACILITIES SUMMARY FOR THE PROPOSED PROJECT

Facility	Description	Purpose
ASR System (cont.)		
ASR Pipelines: 1. ASR Recirculation Pipeline 2. ASR Conveyance Pipeline 3. ASR Pump-to-Waste Pipeline	• Three parallel 0.9-mile-long, 16-inch-diameter pipelines	ASR Recirculation Pipeline would be used to convey water from existing conveyance pipelines and infrastructure at Coe Avenue and General Jim Moore Boulevard to the new ASR-5 and ASR-6 Wells for injection. ASR Conveyance Pipeline would be used to convey extracted ASR water supplies to the existing infrastructure at Coe Avenue/General Jim Moore Boulevard. ASR Pump-to-Waste Pipeline would convey backflush effluent produced during routine maintenance of the ASR-5 and ASR-6 Wells to the existing Phase I ASR settling basin. Portions of the ASR Recirculation, ASR Conveyance, and ASR Pump-to-Waste pipelines would be located on U.S. Army-owned property between the proposed ASR wells and the southern end of U.S. Army property located north of the Coe Avenue/General Jim Moore Boulevard intersection.

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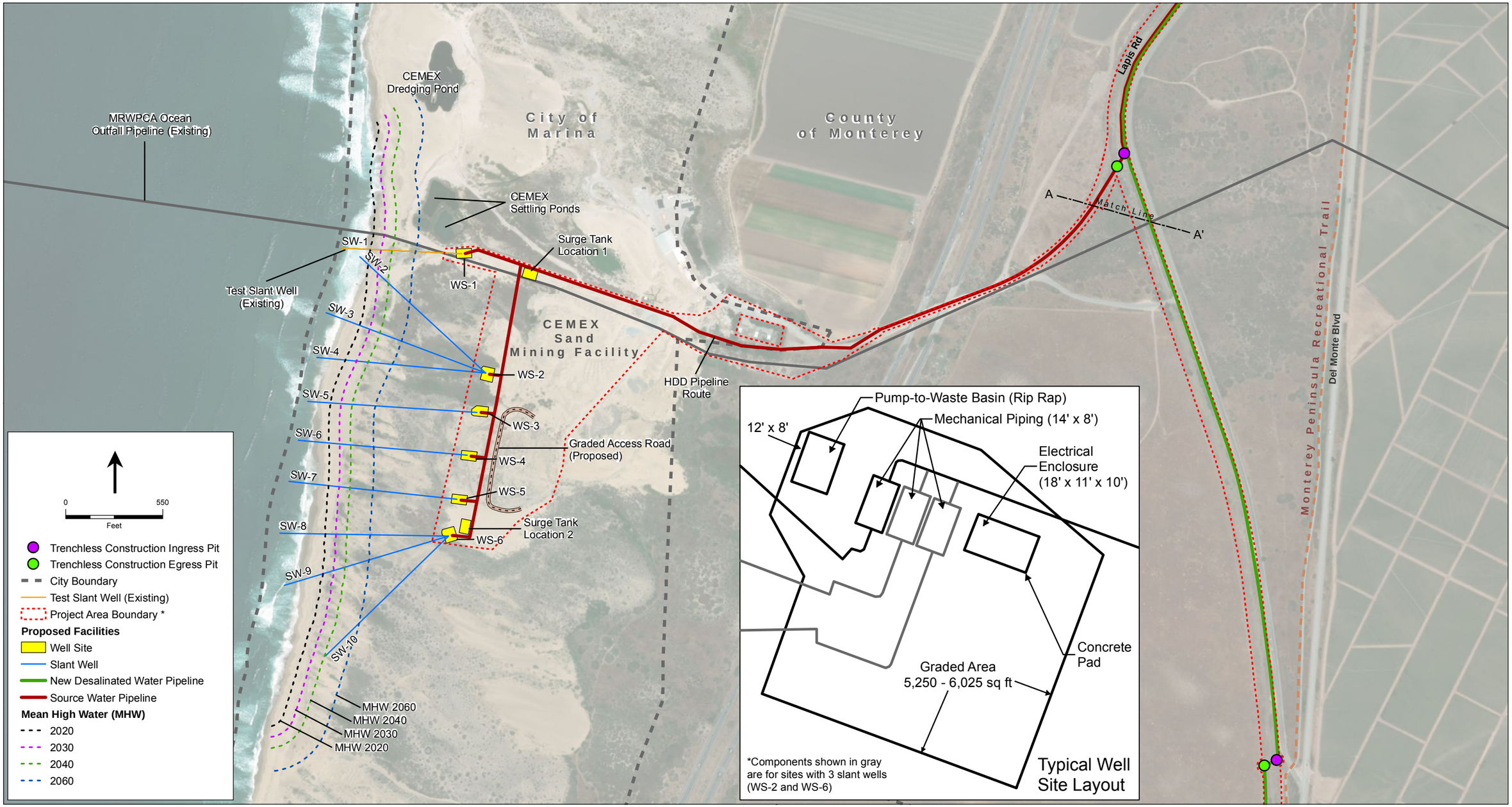

NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

Figure 3-3a
MPWSP Seawater Intake System

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3.2.1 Source Water Intake System

3.2.1.1 Subsurface Slant Wells

The source water intake system would include 10 subsurface slant wells at the coast (eight active and two on standby at any given time) that would draw water from aquifers that extend beneath the ocean floor, for treatment at the MPWSP Desalination Plant. When compared to vertical wells, slant wells are a new and evolving technology that allows for a substantially increased screen length in the target water source, resulting in higher production rates than vertical wells. The subsurface slant wells would be located in the city of Marina, about 2 miles south of the Salinas River, in the retired mining area of the CEMEX sand mining facility (see **Figure 3-3a**). The slant wells would be built south of the existing CEMEX access road.

Test Slant Well and Long-Term Aquifer Pump Test

As described in Section 3.1, CalAm built a test slant well in the CEMEX retired mining area and operated the test slant well for over two years as a pilot program to collect data. The environmental effects associated with construction and operation of the test slant well were evaluated in accordance with CEQA and NEPA requirements by the California Coastal Commission (CCC) and MBNMS in November 2014, respectively. The test slant well was originally permitted to operate until February 2018, but CalAm requested and was granted an extension from the CCC and MBNMS. As a result, CalAm will be allowed to conduct limited periodic pumping necessary to maintain the test slant well, through February 2019. The installation and operation of the test slant well is not part of the proposed project being evaluated in this EIR/EIS due to the separate environmental review conducted in 2014. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well will be decommissioned.

The site-specific field data collected during the pilot program are intended to inform the final design of the subsurface slant wells, the overall source water intake system, and the MPWSP Desalination Plant treatment system. The test slant well facilities include the test well, a submersible well pump, a wellhead vault, electrical facilities and controls, temporary flow measurement and sampling equipment, monitoring wells, and a temporary pipeline connection to the adjacent MRWPCA ocean outfall pipeline for discharges of the test water. The test slant well was drilled at 19 degrees below horizontal, is 685 feet long, and is screened[4] for 450 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent (FTE) Aquifer of the Salinas Valley Groundwater Basin (see Section 4.4, Groundwater Resources, for aquifer descriptions).

Upon completion of the aquifer pump testing, CalAm proposes to convert the test slant well into a permanent well and operate it as part of the MPWSP source water intake system. Both the construction of the additional conveyance and treatment facilities needed to convert the test slant well into a permanent well and the long-term operation and maintenance of the converted test slant

[4] A well screen is a perforated steel or plastic device placed within the well casing that draws water from the surrounding geologic formations but which minimizes sediment from entering the well. The depth of the screen is based on geologic and hydraulic criteria.

well are part of the proposed project, and are thus evaluated in this EIR/EIS. Sections 3.2.1.2 through 3.2.2.6, below, describe the conveyance and treatment facilities for the source water produced at the subsurface slant wells during long-term operations.

Permanent Slant Wells

Each of the 10 subsurface slant wells (the converted test slant well and nine new wells) would have a submersible pump to provide a total combined 24.1 mgd of feedwater when eight wells are operating. The slant wells would be drilled from an onshore location and would extend under the seafloor within MBNMS using a 36-inch- to 22-inch-diameter steel casing. The completed pump columns and wellheads would be 10 to 12 inches in diameter.

The nine new permanent slant wells would be up to 970 feet long and drilled at approximately 14 degrees below horizontal to extend offshore to a distance of 63 (Slant Well-2) to 257 (Slant Well-8) feet seaward of the 2020 MHW line (except #10, which would not extend past the MHW line) and to a depth of 190 to 210 feet beneath the seafloor. This means that although all construction activities and ground disturbance would occur above mean sea level and landward of the MHW line, the well casings would extend subsurface and seaward of the MHW line and below the seafloor within MBNMS. Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent (FTE) Aquifer of the Salinas Valley Groundwater Basin. CalAm would operate eight wells at a time at approximately 2,100 gallons per minute (gpm) per well and maintain the other two wells on standby.

Table 3-2 presents the total length of each slant well extending seaward of the MHW line. Because the slant wells would be drilled at a 14-degree angle, the horizontal distance to which the wells would extend seaward of the MHW line would be slightly shorter than the length of the well casing. This is illustrated in **Figure 3-3b**, **Illustrative Cross-Sectional View of Subsurface Slant Wells**.

The 10 slant wells would be located at six sites inland of the dune face: four sites (the test slant well site and three new sites) would each have one slant well, and two sites would have three slant wells (see Figure 3-3a). The well sites are numbered sequentially, with Site 1 being the northernmost site and Site 6 the southernmost site. The test slant well would be converted into a permanent well at Site 1. The nine new permanent wells would be drilled over a total distance of about 900 feet at Sites 2 through 6. The wellheads of the three new permanent wells at Site 2 would be located about 600 feet south of Site 1. Sites 3, 4, and 5 would be spaced approximately 250 feet apart and would have one slant well each. Site 6 would have three wells.

Sites 1 through 6 would include the following facilities: aboveground wellhead(s), a below-ground mechanical piping vault (12 feet by 6 feet by 6 feet) for meters, valves, gauges, etc. per well, an aboveground electrical enclosure, and a pump-to-waste basin. Each wellhead would be located aboveground for ease of maintenance. Each slant well would be equipped with up to a 2,500 gpm, 300 hp submersible well pump. The electrical controls for operation of the slant wells would be housed in a single-story, 17-foot-long by 10-foot-wide, 10-foot-tall fiberglass enclosure located at each of the six

TABLE 3-2
LENGTH OF PERMANENT SLANT WELLS SEAWARD OF MEAN HIGH WATER LINE

Well	Total Length	2020		2040		2060	
		Offshore	Onshore	Offshore	Onshore	Offshore	Onshore
Test Slant Well, SW-1	685	166	519	290	395	423	262
SW-2	970	63	907	219	751	385	585
SW-3	966	202	764	325	641	455	511
SW-4	961	162	799	292	669	431	530
SW-5	961	130	831	254	707	385	576
SW-6	961	174	787	298	663	428	533
SW-7	957	225	732	347	610	479	478
SW-8	955	257	698	379	576	510	445
SW-9	970	228	742	357	613	500	470
SW-10	970	0	970	0	970	262	708

NOTES:

All lengths in feet.
MHW = Mean high water - A tidal datum. The average of all the high water heights observed over the National Tidal Datum Epoch. The 2020 MHW at the Monterey Tide Gauge NOAA#9413450 equals 1.53 m (5.02 ft) NAVD88, considering a high sea level rise scenario of 8.1 cm (3.2 in) by 2020 (5.46 ft by 2100). See also Appendices C1 and C2.

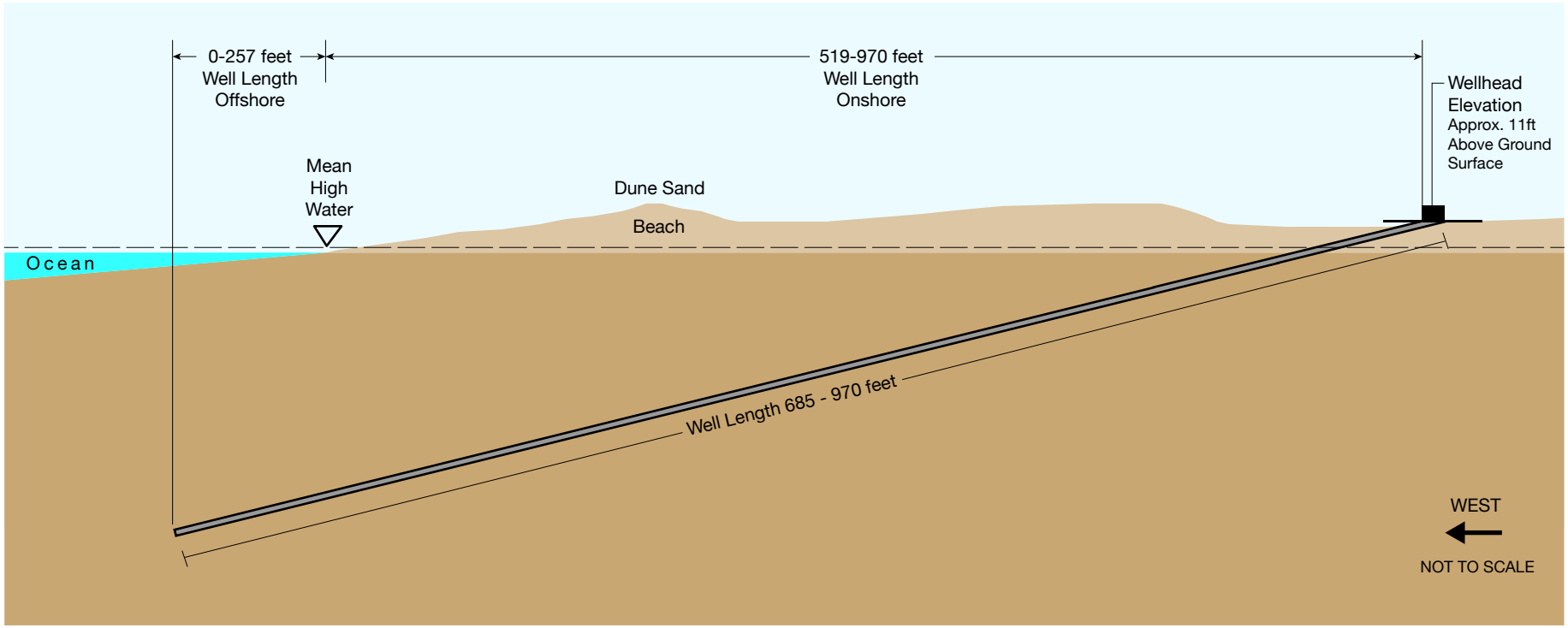
The lengths provided in this table indicate the total length of the well casing extending seaward of the MHW line. Because the slant wells would be drilled at an approximately 14-degree angle, the total horizontal distance seaward of the MHW line would be slightly shorter than the length of the well casing. The total horizontal distance seaward of the MHW line can be determined by dividing the length by 1.03.

SOURCE: Geoscience, 2017

well sites. Each site would also have a pump-to-waste basin for the percolation of turbid water produced during slant well startup and shutdown. The pump-to-waste basin would be constructed of rip rap material, approximately 1 to 2 feet deep and 12 feet by 8 feet in size. The new permanent slant wells and associated infrastructure at Sites 2 through 6 would be constructed on a 5,250- to 6,025-square-foot graded pad. A 750-foot-long, 42-inch-diameter buried pipe would collect the source water pumped from Sites 2 to 6 and convey it to the proposed buried Source Water Pipeline located at the existing CEMEX access road.

3.2.1.2 Source Water Pipeline

The approximately 2.2-mile-long, 42-inch-diameter buried Source Water Pipeline would convey the source water from the well sites to the MPWSP Desalination Plant at Charles Benson Road. From the slant wells, the proposed Source Water Pipeline would generally follow the CEMEX access road and would run parallel to the MRWPCA's existing outfall pipeline for approximately 0.7 mile (see **Figure 3-3a**). Approximately 500 feet east of Highway 1, the Source Water Pipeline would veer northeast along a dirt path for roughly 1,000 feet to Lapis Road. There, a jack and bore method would be used to install the pipeline under the existing railroad tracks. The alignment would continue north within the Transportation Agency for Monterey County (TAMC) right-of-way (ROW), along Lapis Road for about 0.5 mile. Just south of where Lapis Road meets Del Monte Boulevard, the pipeline would turn east across Del Monte Boulevard and continue east



SOURCE: Geoscience, 2017

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Figure 3-3b

Illustrative Cross-Sectional View of Subsurface Slant Wells

for 0.8 mile to the MPWSP Desalination Plant site at the east end of Charles Benson Road. This 0.8-mile-long segment of pipe would be installed parallel to, and north of, the Charles Benson Road right-of-way (i.e., outside of the paved road). The land that borders Charles Benson Road to the north is separated from Charles Benson Road by a row of mature Monterey cypress and eucalyptus trees and a portion of this land is currently under agricultural production. The pipeline would be installed east-to-west along the north side of the row of trees and along the southern boundary of the agricultural land (see **Figures 3-4** and **3-5a**). CalAm is negotiating an easement with the landowners for installation of the Source Water Pipeline, as well as the new Desalinated Water Pipeline and the Castroville Pipeline, outside of the paved roadway.

Source Water Pipeline – Optional Alignment

In case CalAm is unable to secure an easement from the landowners along the north side of Charles Benson Road, this EIR/EIS also evaluates an optional alignment for the Source Water Pipeline. The optional alignment would be identical to the alignment described above, except that the 0.8-mile-long segment along Charles Benson Road would be installed within the paved Charles Benson Road right-of-way (as opposed to north of and outside of the right-of-way) (see **Figures 3-4** and **3-5a**). Construction activities within Charles Benson Road would be limited to after-hours/ nighttime construction, to avoid conflicts with the operations of the Waste Management District.

3.2.2 MPWSP Desalination Plant

CalAm would build the MPWSP Desalination Plant in unincorporated Monterey County, on the upper terrace (approximately 25 acres) of a 46-acre vacant parcel on Charles Benson Road, northwest of the MRWPCA Regional Wastewater Treatment Plant and the Monterey Regional Environmental Park (see **Figure 3-5a**). In 2012, CalAm bought this parcel for the MPWSP Desalination Plant. The facilities to be built at the MPWSP Desalination Plant include a pretreatment system, an RO system, a post-treatment system, backwash supply and filtered water equalization tanks, desalinated product water storage and conveyance facilities, brine storage and disposal facilities, and an administration building and laboratory facility. Existing roads would provide access to the site. The proposed project would create approximately 15 acres of impervious surfaces associated with the desalination facilities, buildings, driveways, parking, and maintenance areas. The subsections that follow describe these facilities. **Figure 3-5b** presents the preliminary site plan.

The MPWSP Desalination Plant would have a rated production capacity of 9.6 mgd and a maximum production capacity[5] of 11.2 mgd.

3.2.2.1 Pretreatment System

Source water from the subsurface intake wells would be conveyed directly to the pretreatment system. The purpose of the pretreatment system would be to improve the quality of source water

[5] Maximum production capacity (11.2 mgd) is the full physical capacity of the MPWSP Desalination Plant with all seven RO modules in service. As described in Section 3.4.1, after shutdown periods, CalAm may need to operate the desalination plant at maximum production capacity of 11.2 mgd to catch up on production; however, the total annual production would not exceed an average of 9.6 mgd (Svindland, 2014).

being treated by the RO system, described in Section 3.2.2.2, below, in order to increase the efficiency of RO treatment. The pretreatment requirements for seawater collected by the proposed slant wells will be determined through the operation of the test slant well and pilot program, and would include pressure filters or multimedia gravity filters, a backwash supply storage tank, and backwash settling basins. The pretreatment system could also include coagulation, flocculation,[6] or membrane filtration. The pretreatment system would have the capacity to process 24.1 mgd of seawater.

The pressure filters or multimedia gravity filters would be located within the MPWSP Desalination Plant site. If pressure filters are used, multiple parallel fiberglass or lined steel tanks would be partially enclosed in a 30-foot-tall, 4,000-square-foot building. If gravity filters are used, they would be installed in below-grade, multi-cell concrete structures. A low dosage of chlorine would be added to the source water to separate out iron and manganese, and the precipitate would be removed by the filters. In addition, the pretreatment system could play an important role in pathogen removal. Because a portion of the source water supply would be groundwater under the influence of surface water as defined under the U.S. Environmental Protection Agency (USEPA) Surface Water Treatment Rule,[7] the source water would be subject to the Surface Water Treatment Rule and the Long-Term 2 Enhanced Surface Water Treatment Rule.

The pretreatment process would produce approximately 23.6 mgd of pretreated, filtered source water. The pretreated source water would be conveyed to two 300,000-gallon backwash supply and filtered water equalization tanks. The majority of the pretreated source water would then be pumped directly to the RO system (see Section 3.2.2.2, below).

Pretreatment filters would require backwashing about once each day. A portion of the pretreated source water would be used for this purpose. The backwash supply water would be conveyed from the backwash supply and filtered water equalization tanks to the pretreatment filters by gravity flow. Chlorine may be added to the backwash supply to control bacterial growth on the filters.

Waste effluent produced during routine backwashing would flow via gravity from the pretreatment filters to two 0.25-acre, 6-foot-deep open backwash settling basins with impermeable liners to prevent the waste effluent from infiltrating into the ground. Suspended solids in the waste effluent would settle to the bottom of the basins, and the clarified water would be decanted. Approximately 0.4 mgd of decanted and dechlorinated backwash water would be blended with brine produced by the RO system, and discharged to the existing MRWPCA ocean outfall and diffuser for disposal into the waters of MBNMS. The decanted backwash water could be blended with source water before undergoing pretreatment and the RO process. Sludge formed by the solids in the waste effluent would be periodically removed from the backwash settling basins and disposed of at a sanitary landfill.

6 Flocculation is a process used to separate suspended solids from water. Flocculation involves the addition of an agent to water to promote the aggregation of suspended solids into particles large enough to settle or be removed.

7 The USEPA Surface Water Treatment Rule (40 CFR 141.70-141.75) seeks to prevent waterborne diseases caused by viruses, *Legionella*, and *Giardia lamblia*. The rule requires that water systems filter and disinfect water from surface water sources to reduce the occurrence of unsafe levels of these microbes.

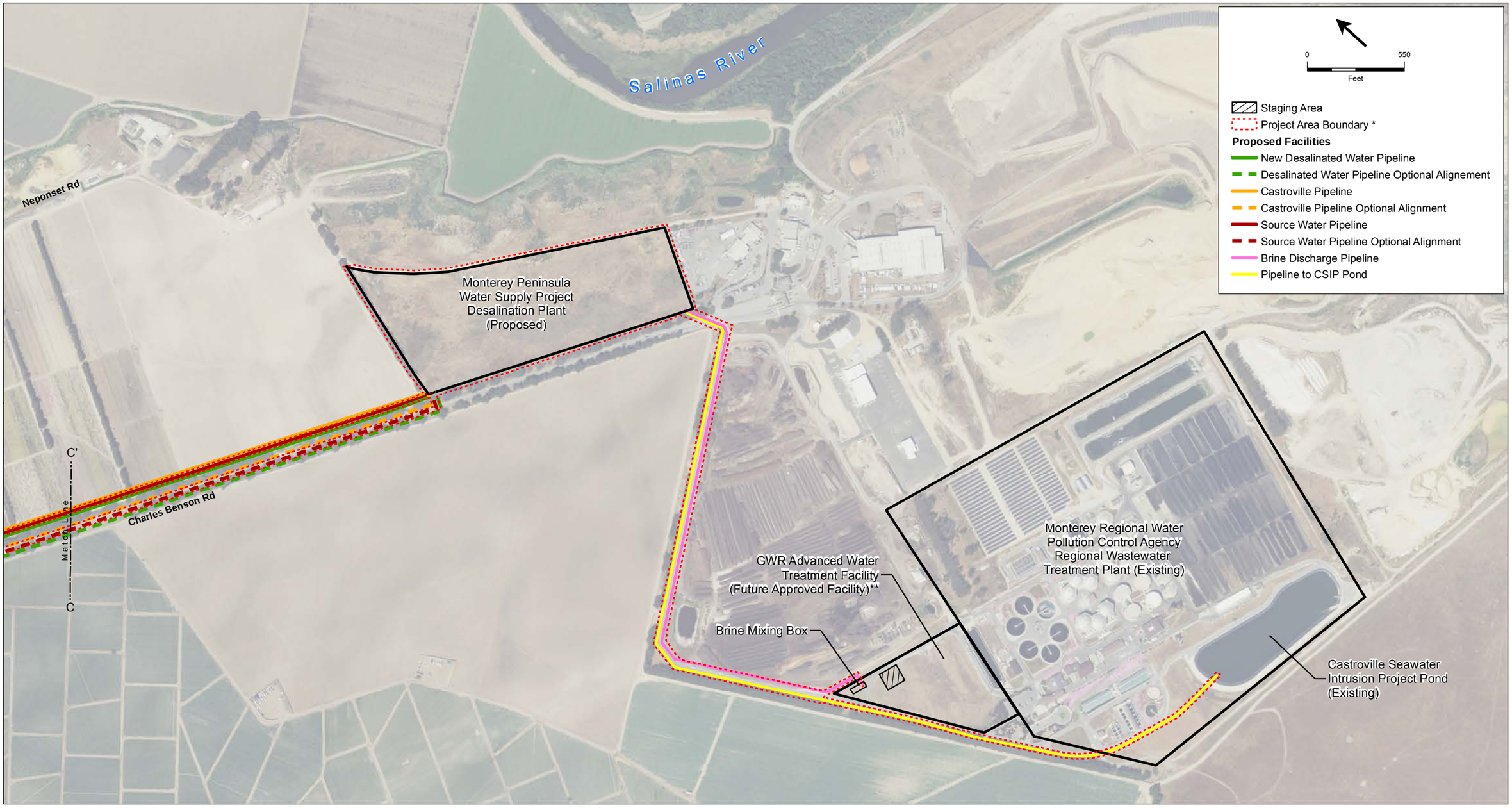
NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 3-4

Proposed Pipelines - Lapis Road and Neponset Road Vicinity

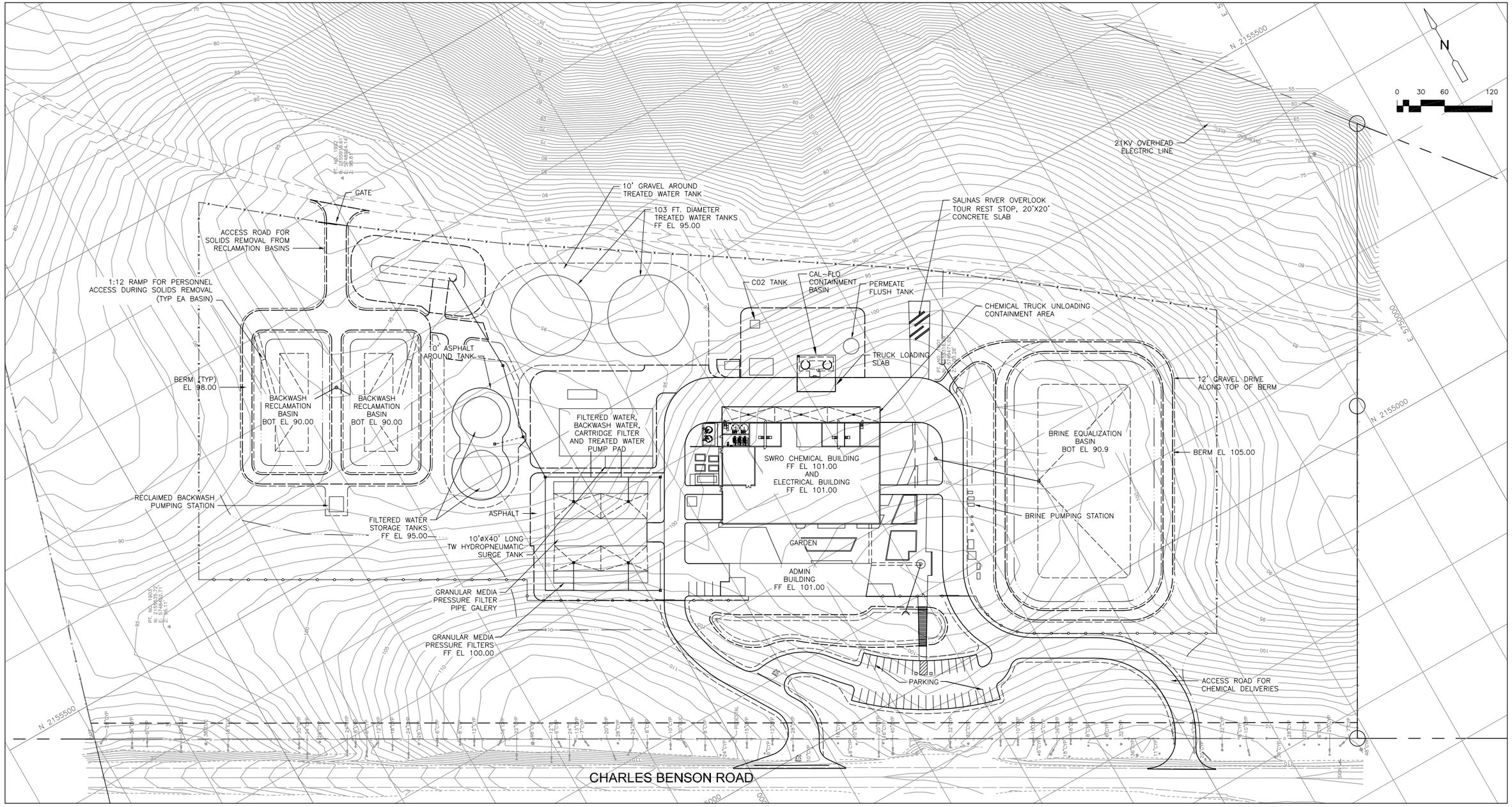


NOTES:
*Project area boundary refers to the area within which all construction related disturbance would occur.
** This facility was approved by MRWPCA & MPWMD in October 2015 as part of the Pure Water Monterey Groundwater Replenishment Project. The Construction schedule for this facility is currently unknown.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 3-5a
MPWSP Desalination Plant



SOURCE: CDM Smith, 2014

205335.01 Monterey Peninsula Water Supply Project

Figure 3-5b

MPWSP Desalination Plant–Site Plan

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A multi-purpose pump station located near the center of the MPWSP Desalination Plant would be built on an outdoor concrete pad with an approximate area of 8,000 square feet. The pump station would include pumping equipment related to pretreatment as well as other processes described later in this section (e.g., treated water and Salinas Valley return water conveyance). Equipment would include seven cartridge filters; four filtered water pumps (two 12 mgd and 350 hp each; and two 6 mgd and 200 hp each); two backwash supply pumps (16 mgd and 150 hp each); four treated water pumps (two 4.8 mgd and 600 hp each; and two 2.4 mgd and 300 hp each); two Salinas Valley return pumps (1.4 mgd and 10 hp each); and associated piping, valves, and instruments.

3.2.2.2 Reverse Osmosis System

RO is an ion separation process that uses semipermeable membranes to remove salts and other minerals from saline water. Pretreated source water is forced at very high pressures through RO membranes. Water molecules, which are smaller than salt and many other impurities, are able to pass through the membranes. A portion of the source water passes through the RO membranes to produce "permeate," or desalinated water; the source water that does not pass through the membranes increases in salt concentration and is discharged as brine, as described in more detail below.

The RO system would be housed in an approximately 30-foot-tall, 30,000-square-foot membrane process building located in the central portion of the MPWSP Desalination Plant site. This building would also house the UV disinfection system (if required) and the cleaning system for the RO membranes (see descriptions below).

The RO process would consist of a first-pass system and a partial (40 to 50 percent) second-pass system. The first-pass RO system would comprise RO modules (six active and one standby), each sized to produce 1.6 mgd of permeate. Variable-speed, low-pressure pumps would pump pretreated source water to variable-speed, high-pressure, first-pass RO feed pumps. The high-pressure RO feed pumps would deliver flow to the first-pass membrane arrays.

Low-pressure, variable-speed pumps would be used to pump the 40 to 50 percent of the first-pass permeate that has a higher concentration of dissolved solids than the rest of the permeate to the second-pass membrane arrays. The second-pass system would reduce the concentrations of these dissolved solids (boron, chloride, and sodium) and would comprise four RO modules (three active and one standby), each sized to produce 1.3 mgd of permeate. The second-pass permeate would then be blended with the bypassed portion of the first-pass permeate to meet required desalinated water quality standards. Approximately 23.6 mgd of pretreated source water would be needed to produce 9.6 mgd of desalinated water.

The RO process would incorporate an energy recovery system that uses pressure-exchange technologies. The use of high-pressure pumps to force saline water through the RO membranes would produce a concentrated brine solution, known as RO concentrate, in a continuous high-pressure stream. Pressure exchangers would be employed to transfer the energy from the high-pressure brine stream to the source water stream to reduce energy demand and operating costs.

The accumulation of salts or scaling (from to microbial contamination, turbidity, and other contaminants such as iron and manganese) on the RO membranes causes fouling, which reduces membrane performance. The pretreatment system described above would reduce fouling of the RO membranes, increasing the efficiency of the RO system and extending the useful life of the RO membranes. However, the RO system still would require cleaning two to three times per year. The RO cleaning system would be housed in the same building as the RO system and would include chemical storage, chemical feedlines, and a collection tank. System operators would clean the RO membranes by circulating a cleaning solution, made of strong bases or acids, through the membranes and then flushing the membranes with clean water to remove the spent cleaning solution and waste effluent from the RO system. The spent cleaning solution and waste effluent would be discharged into a collection tank, chemically neutralized, and discharged to the sanitary sewer system at the eastern portion of the MPWSP Desalination Plant site.

CalAm would install a 750-kilowatt (kW) (1,000 hp) emergency diesel fuel-powered generator and a 2,000-gallon, double-walled, aboveground diesel storage tank next to the process building. The generator would provide backup power for critical desalination plant facilities (e.g., lights, electrical controls, and high-service pumps to empty the clearwells) during power outages. Electrical power service and facilities for normal (non-emergency) operations are described below in Section 3.2.5.

3.2.2.3 Post-treatment System

After leaving the RO system, the desalinated water would pass through a post-treatment system to make the water more compatible with the other water supply sources in the CalAm system and provide adequate disinfection prior to distribution to customers. Facility operators would use metering pumps and chemical feedlines to dose the post-treatment chemicals through the proper injection points along the post-treatment system. Post-treatment facilities would include chemical feedlines and injection systems for lime and carbon dioxide. Carbon dioxide would be added to adjust alkalinity; lime would be added to adjust calcium hardness; sodium hydroxide would be used to adjust pH; and sodium hypochlorite would be added for disinfection. In addition, an ultraviolet disinfection system may be required to comply with pathogen removal/inactivation standards established by the Surface Water Treatment Rule and Long Term 2 Enhanced Surface Water Treatment Rule. If required, the ultraviolet disinfection system would comprise three reactors, two active and one standby, housed in the membrane process building. The final design of post-treatment facilities would be based on the water quality data collected during operation of the test slant well and pilot program and the results of a geochemical mixing study.[8] Any adjustments made to the post-treatment system during final design of the MPWSP Desalination Plant within the 25-acre development area would not affect any of the analyses or conclusions in this EIR/EIS. All treatment chemicals would be transported, stored and used in accordance with regulatory requirements.

[8] The geochemical mixing study will identify water quality parameters for the desalinated product water to ensure that any desalinated product water injected into underground storage via the ASR system would not adversely affect groundwater quality in the Seaside Groundwater Basin. Refer to Impact 4.4-4 in Section 4.4, Groundwater Resources, for additional discussion of the geochemical mixing study.

3.2.2.4 Chemical Use and Storage

As noted in previous sections, facility operators would use various chemicals to treat the water as it passes through the pretreatment, RO, and post-treatment processes to ensure the water meets drinking water quality requirements and is compatible with native groundwater in the Seaside Groundwater Basin.[9] The chemicals used during the desalination process would be stored onsite in accordance with applicable regulatory requirements. Chemical storage facilities would include secondary concrete containment, alarm notification systems, and fire sprinklers. **Table 3-3** summarizes the chemicals that would be used during the desalination process and the projected annual usage amounts. The pre-treatment and post-treatment chemicals would be housed in various 5,000- to 10,000-gallon bulk storage tanks located inside or next to the membrane process building. RO cleaning chemicals would be stored in smaller containers. Sumps and sump pumps within the chemical containment area and loading areas would collect and contain any chemicals accidentally released during operations.

TABLE 3-3
DESALINATION CHEMICALS AND ANNUAL USAGE

Chemical	Application	Annual Usage (pounds)
Sodium Hypochlorite	Pretreatment / post-treatment	140,000 / 55,000
Sodium Bisulfite	Pretreated source water	85,000
Carbon Dioxide	Post-treatment	420,000
Lime	Post-treatment	960,000
Sodium Hydroxide	Post-treatment	55,000
Zinc Orthophosphate	Post-treatment	30,000
RO Cleaning Chemicals (various)	RO membrane cleaning	To be determined
Coagulant (if needed)	Pretreatment	To be determined

SOURCE: RBF Consulting, 2013b; CalAm, 2014a.

3.2.2.5 Brine Storage and Disposal

The RO process would generate approximately 14 mgd of brine, including 0.4 mgd of decanted backwash water as noted in Section 3.2.2.1, Pretreatment System. The brine storage and disposal system would consist of an uncovered 3-million-gallon brine storage basin with two impermeable liners; two 6 mgd, 40 hp brine discharge pumps; and a brine aeration system to maintain dissolved oxygen concentrations in the brine at 5 mg/L. When full, the brine storage basin would have a surface area of about 1.25 acres. Brine from the RO system would be conveyed through the 1-mile-long, 36-inch-diameter Brine Discharge Pipeline to a new connection with the existing MRWPCA ocean outfall that discharges into the waters of MBNMS. When temporary storage is needed, brine would be directed to the brine storage basin where it could be stored for up to 6 hours, then pumped to the Brine Discharge Pipeline.

[9] As discussed in Section 3.4.2, below, during periods of low demand, desalinated product water could be injected into the Seaside Groundwater Basin for storage. The post-treatment system would be designed to ensure that desalinated product water that is injected into underground storage would not adversely affect groundwater quality.

During some times of the year, brine would be mixed with varying volumes of treated wastewater from the MRWPCA Regional Wastewater Treatment Plant before being discharged through the ocean outfall. During the irrigation season, April through October, the treated wastewater is diverted to the Salinas Valley Reclamation Project's tertiary treatment facility for additional advanced treatment and then used to irrigate crops as part of the Castroville Seawater Intrusion Project (CSIP). During this time period, as long as MRWPCA treated wastewater flows are equal to or less than the CSIP demand for irrigation water, the project's brine stream would be discharged to Monterey Bay without dilution. During the non-irrigation season, November through March, when the CSIP is not operating, the brine stream would at all times be mixed with treated wastewater from the MRWPCA Regional Wastewater Treatment Plant before being discharged to the ocean.

Proper disposal of waste streams requires that the different type of flows be thoroughly mixed prior to discharge to the outfall to prevent stratification in the outfall and to optimize the mixing of the discharge with ocean water. In addition to brine generated by the MPWSP Desalination Plant, the proposed Brine Mixing Box would accept secondary effluent from the MRWPCA Regional Wastewater Treatment Plant, and trucked brine waste collected from individual water softeners and private desalination facilities. The proposed Brine Mixing Box and appurtenances would be located at the southern terminus of the proposed Brine Discharge Pipeline, in a currently undeveloped portion of the MRWPCA property, approximately 0.5 acre in size as shown on Figure 3-5a. The principal components include a diversion structure, piping between the diversion structure and the brine mixing basins, four below-grade mixing basins with mechanical mixers, a laboratory and control building, and a flow meter to measure the total mixed flow returned from the mixing basins to the diversion structure and outfall. Proposed ancillary facilities include a flow bypass system to carry wastewater flows in the outfall during construction of the diversion structure, and to enable future maintenance, a trucked brine station and access road, sampling pumps, a flow bypass system for the brine waste streams in the event the diversion structure is out of service for maintenance, and a fresh water pipeline and appurtenant facilities. The only aboveground components include the laboratory and control building, and a new 22-foot-wide access road (MRWPCA, 2017). A range of possible mixtures of brine and treated wastewater is described in Section 4.3, Surface Water Hydrology and Water Quality.

The existing 2.1-mile-long MRWPCA outfall pipeline ends with a 1,100-foot-long, underwater diffuser that rests on ballast rock. The ports are approximately 6 inches above the ballast rock and nominally 54 inches above the seafloor, although this varies. For the dilution calculations, they are assumed to be 4 feet above the seafloor at approximately 90 to 110 feet below sea level. The diffuser is equipped with 172 ports (129 open and 43 closed), each 2 inches in diameter and spaced 8 feet apart.

3.2.2.6 Administrative Building

A 4,000- to 6,000-square-foot single-story administrative building at the MPWSP Desalination Plant site would house visitor reception, offices, restrooms, locker rooms, break rooms, conference rooms, a control room, a laboratory, an equipment storage and maintenance area, and

monitoring and control systems for the RO system, post-treatment system, chemical feed systems, and related facilities.

3.2.3 Desalinated Water Conveyance

Desalinated product water from the MPWSP Desalination Plant would flow south through a series of proposed pipelines (i.e., the new Desalinated Water Pipeline and new Transmission Main), including surface equipment such as valves and blowoffs, to existing CalAm water infrastructure, as described in Sections 3.2.3.3 through 3.4.3.9.

3.2.3.1 Treated Water Storage Tanks

Following post-treatment, desalinated product water would flow to two covered, aboveground tanks. Each tank would be approximately 103 feet in diameter and 35 feet tall, constructed of steel or concrete, and provide 1.75 million gallons of storage, for a total storage volume of 3.5 million gallons.

3.2.3.2 Desalinated Water Pumps

The proposed desalinated water pumps would be located at the multi-purpose pump station described in Section 3.2.2.1, near the center of the MPWSP Desalination Plant. Separate systems would pump desalinated product water to the CalAm water system and to the Salinas Valley. Consistent with the capacity of the MPWSP Desalination Plant, a 9.6 mgd capacity pump system would pump desalinated product water to the CalAm water system. There would be two 4.8 mgd, 600 hp treated water pumps and two 2.4 mgd, 300 hp treated water pumps. Unless the final results of the aquifer pump tests at the existing test slant well dictate otherwise, two 1.4 mgd, 10 hp Salinas Valley return flow pumps would pump desalinated product water (i.e., Salinas Valley return flows) to the Castroville Community Services District (CCSD) and CSIP water distribution systems as described in Sections 3.2.3.6 and 3.2.3.7.

3.2.3.3 New Desalinated Water Pipeline

For conveyance to the CalAm water system, the desalinated water pump station would pump desalinated water through the new Desalinated Water Pipeline and new Transmission Main. From the pump station, the 3.3-mile-long, 36-inch-diameter buried new Desalinated Water Pipeline would extend west for approximately 0.8 mile parallel to the north side of the Charles Benson Road right-of-way. As described above in Section 3.2.1.2, the new Desalinated Water Pipeline would be installed alongside the Source Water Pipeline on the north side of the row of trees and would traverse agricultural land. At Del Monte Boulevard, the new Desalinated Water Pipeline would turn north on Del Monte Boulevard for approximately 800 feet to Lapis Road, and continue south within TAMC right-of-way along Lapis Road for approximately 1.3 mile to another Lapis Road/Del Monte Boulevard intersection. From this intersection of Lapis Road and Del Monte Boulevard, the new Desalinated Water Pipeline would be built under the Monterey Peninsula Recreational Trail and TAMC right-of-way using trenchless construction, then continue south along the west side of the Monterey Peninsula Recreational Trail and TAMC right-of-way for approximately 1.4 mile to Reservation Road (see **Figures 3-4** through **3-7**). For

the purposes of this EIR/EIS, south of Reservation Road this pipeline is referred to as the new Transmission Main (see Section 3.2.3.4).

New Desalinated Water Pipeline – Optional Alignment

Similar to the optional alignment for the Source Water Pipeline (see Section 3.2.1.2), the optional alignment for the new Desalinated Water Pipeline would be identical to the alignment described in the paragraph above, except that the 0.8-mile-long segment along Charles Benson Road would be installed within the Charles Benson Road paved right-of-way (as opposed to north of and outside of the right-of-way, along private agricultural lands) (see **Figure 3-4**). Construction activities within Charles Benson Road would be limited to after hours/nighttime construction, to avoid conflicts with the operations of the Waste Management District.

3.2.3.4 New Transmission Main

At Reservation Road, water in the new Desalinated Water Pipeline would enter the 6-mile-long, 36-inch-diameter new Transmission Main and continue south along the west side of the Monterey Peninsula Recreational Trail and TAMC right-of-way. At a point approximately 750 feet north of Highway 1, it would cross east under the Monterey Peninsula Recreational Trail and TAMC right-of-way using trenchless construction and continue south on the west side of Del Monte Boulevard and beneath the Highway 1 overpass where it would follow between the Monterey Peninsula Recreational Trail and TAMC right-of-way for approximately 2 miles. At approximately 1,000 feet north of the Lightfighter Drive overpass, the new Transmission Main would cross under Highway 1 and continue southeast for approximately 1,400 feet, making two turns before reaching the south side of Lightfighter Drive, just east of the intersection of Lightfighter Drive and 1st Avenue. The Highway 1 crossing would require an entry pit at the Monterey Peninsula Recreational Trail and TAMC right-of-way, and an egress pit on the opposite side of Highway 1, between the highway and 1st Avenue. Each of these pits would be approximately 150 feet long by 50 feet wide. The new Transmission Main would continue east along Lightfighter Drive for approximately 0.4 mile to General Jim Moore Boulevard, turn south along the east side of General Jim Moore Boulevard to Normandy Road. South of Normandy Road the pipeline would be located along the west side of General Jim Moore Boulevard for approximately 1.9 miles, ending at the existing Phase I ASR Facilities (see **Figures 3-7** through **3-9a**) where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection.

New Transmission Main – Optional Alignment

The optional alignment for the new Transmission Main would slightly modify the Highway 1 crossing. Roughly 1,200 feet of the new Transmission Main Optional Alignment would be installed beneath Highway 1 via horizontal directional drilling. The entry pit would be located at the Monterey Peninsula Recreational Trail and TAMC right-of-way, approximately 415 feet north of the Highway 1 and Lightfighter Drive interchange, and an egress pit at the southeast corner of Lightfighter Drive and 1st Avenue (see **Figure 3-8**).

NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

Figure 3-6
New Desalinated Water Pipeline

NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

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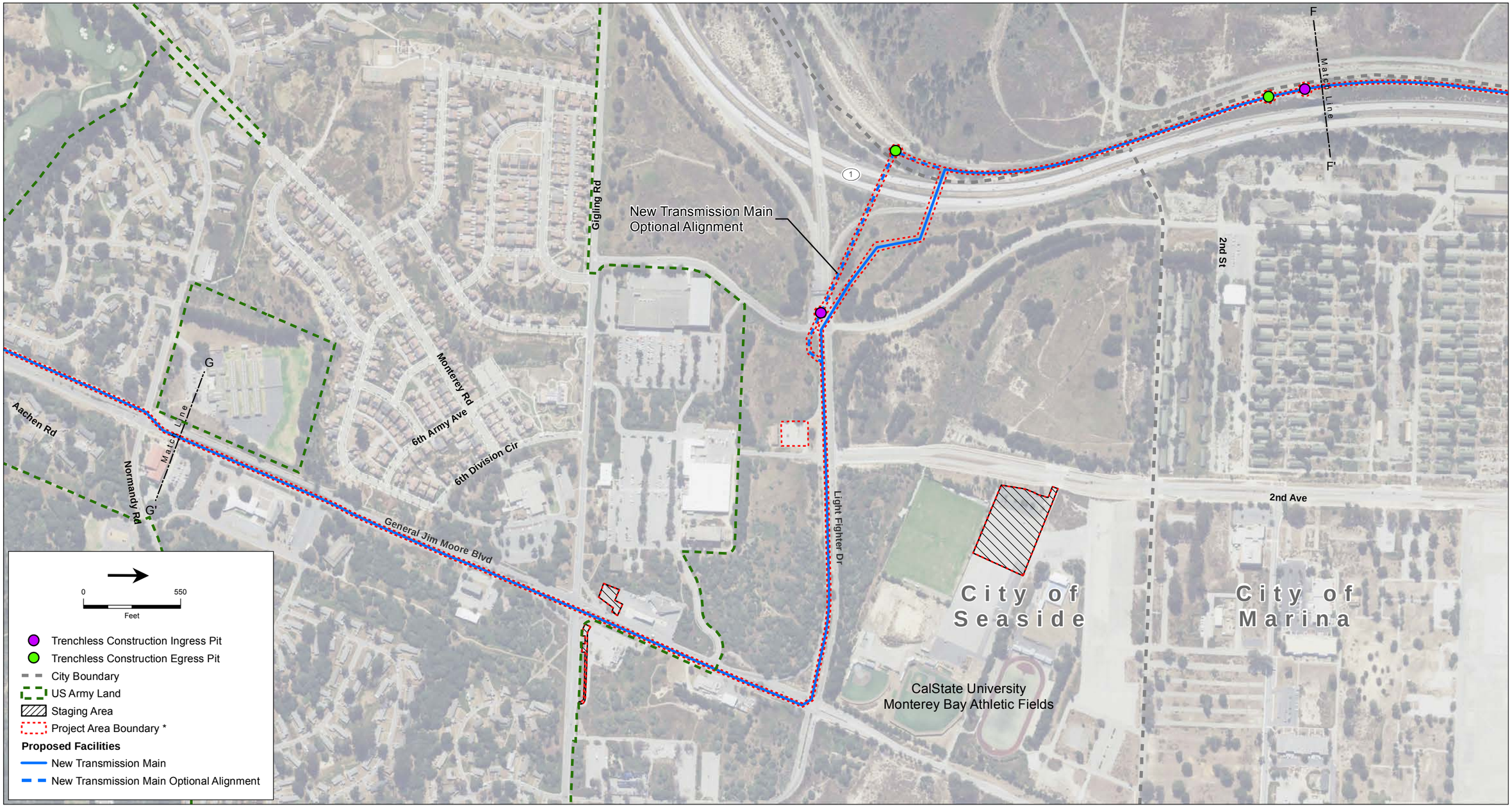
Figure 3-7

New Transmission Main - City of Marina



NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016; US ARMY, 2016

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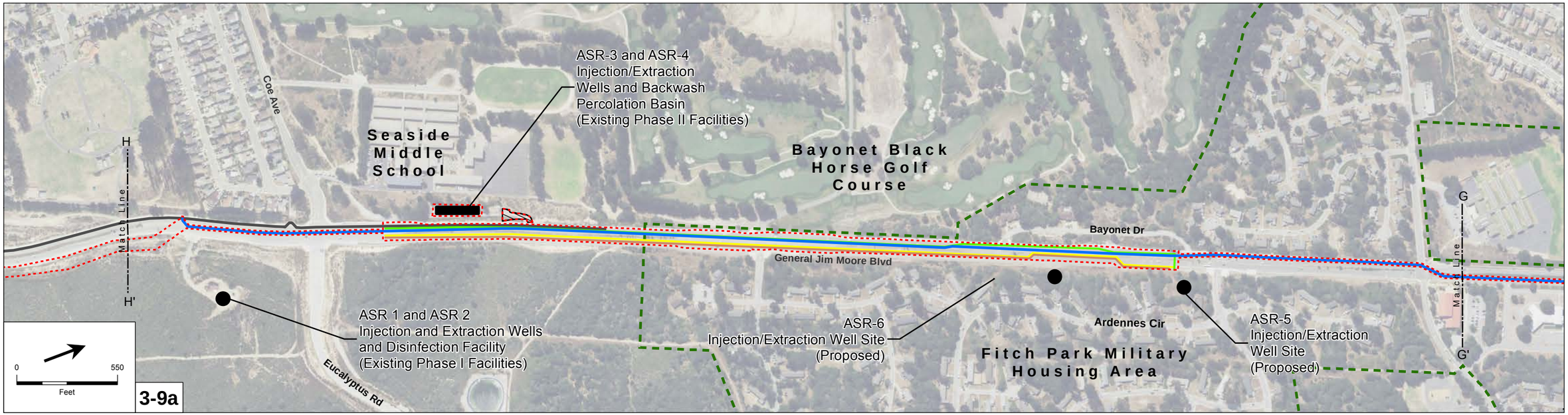
Figure 3-8

New Transmission Main - Light Fighter Drive to General Jim Moore Boulevard



NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016; US ARMY, 2016

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Figure 3-9

ASR Facilities and Terminal Reservoir

3.2.3.5 Carmel Valley Pump Station

The Valley Greens pressure zone, in Carmel Valley south of the Segunda Reservoir, does not have sufficient hydraulic head to fill the existing Segunda Reservoir, which is located at the southern end of the existing Segunda Pipeline. The proposed Carmel Valley Pump Station, with a pumping capacity of 3 mgd (2,100 gpm), would provide the additional pressure needed to fill Segunda Reservoir. The pump station would be enclosed in a 500-square-foot, single-story building on a site located approximately 240 feet south of Carmel Valley Road near the intersection of Rancho San Carlos Road (see **Figure 3-10c**). A 50 kW (68 hp) portable diesel-fuel powered generator would be stored onsite for use in the event of a power outage. A separate 100-square-foot electrical control building would be constructed outside of the pump station building.

3.2.3.6 Castroville Pipeline

The 4.5-mile-long, 12-inch-diameter Castroville Pipeline would convey desalinated Salinas Valley return water from the MPWSP Desalination Plant to the CSIP distribution system and the CCSD Well #3. As described in Chapter 2, Water Demand, Supplies and Water Rights, the portion of the water drawn from the subsurface slant wells that is determined to be groundwater originating from the Salinas Valley Groundwater Basin, would be delivered to CCSD as desalinated water in lieu of CCSD pumping an equivalent amount of groundwater. Under the proposed project, the first 800 afy would go to the CCSD and the remaining water would go to the CSIP.

From the MPWSP Desalination Plant, the Castroville Pipeline would head west along the north side (outside of the paved roadway, through agricultural land) of Charles Benson Road to Del Monte Boulevard, at which point the pipeline would head north. The pipeline would be installed along Del Monte Boulevard to Lapis Road and then along the west side of Lapis Road within the TAMC right-of-way and along Monte Road, and would cross over the Salinas River at Monte Road by being attached to the underside of the Monte Road Bridge. On the north side of the Salinas River bridge, the pipeline would continue northeast along the TAMC right-of-way and Monte Road to Nashua Road. A new pipe connection to the CSIP distribution system would be built at the northern end of Monte Road, where it meets Nashua Road. The Castroville Pipeline would continue north along a dirt agricultural road and the Union Pacific Railroad, crossing under Tembladero Slough to Highway 183 (Salinas Road). From Highway 183, the pipeline would continue north between Del Monte Avenue and Union Pacific Railroad, turn west across Del Monte Avenue and connect to CCSD Well #3 at the north corner of Del Monte Avenue and Merritt Street (see **Figures 3-4**, **3-5**, **3-11**, and **3-12**).

Castroville Pipeline – Optional Alignment 1

Optional Alignment 1 would provide an alternate pipeline route from the intersection of Monte Road and Nashua Road to CCSD Well #3. From the intersection of Monte Road and Nashua Road, Optional Alignment 1 would turn northwest along Nashua Road to the Monterey Peninsula Recreational Trail. It would continue northeast along the Monterey Peninsula Recreational Trail on the east side of Highway 1 for approximately 1.5 mile to Merrit Way and continue southeast on Merritt Street for 0.5 mile to CCSD Well #3 (see **Figures 3-11b**, **3-12**, and **3-13**).

Castroville Pipeline – Optional Alignment 2

Similar to the way it evaluates the optional alignments for the Source Water Pipeline and new Desalinated Water Pipeline in Sections 3.2.1.2 and 3.2.3.3, above, this EIR/EIS also evaluates an alternate route for the 0.8-mile-long segment of the Castroville Pipeline along Charles Benson Road to provide a backup plan in the event that CalAm is unable to secure an easement from the agricultural land owners. Under Optional Alignment 2, the segment along the Charles Benson Road would be installed within the paved Charles Benson Road right-of-way, instead of north of and outside of the paved road right-of-way, on private agricultural land (see **Figure 3-4**). Construction activities within Charles Benson Road would be limited to after hours/nighttime construction, to avoid conflicts with the operations of the Waste Management District.

3.2.3.7 Pipeline to CSIP Pond

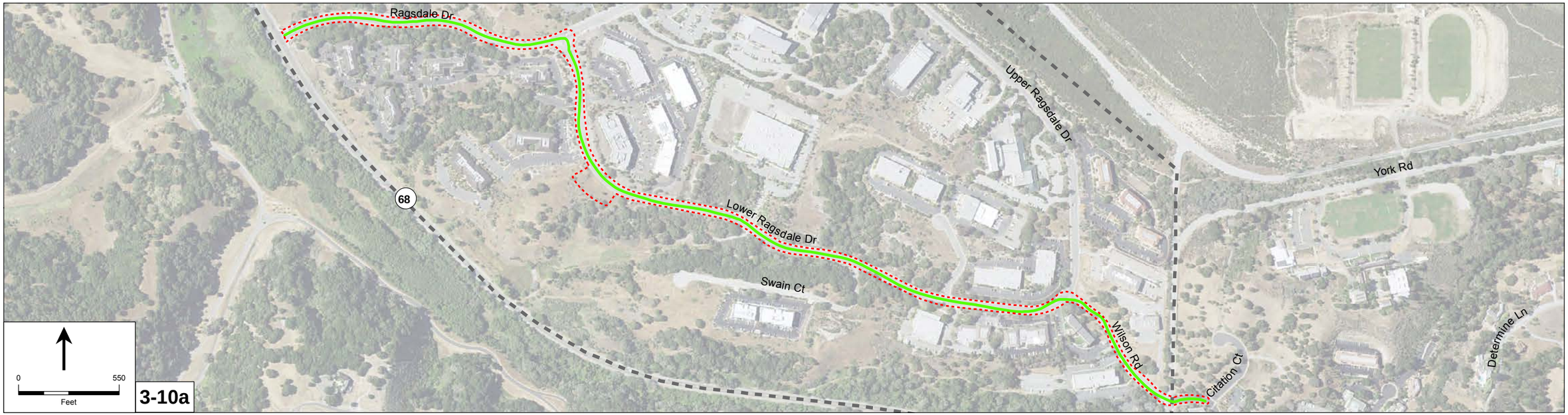
As described in Chapter 2, Water Demand, Supplies and Water Rights, and Section 3.2.3.6 above, the portion of the water drawn from the subsurface slant wells that is determined to be groundwater originating from the Salinas Valley Groundwater Basin, would be delivered to agricultural users in the Salinas Valley Groundwater Basin in lieu of an equal amount of groundwater pumping. The portion of the Salinas Valley return water destined for the CSIP would be delivered via a new connection along the Castroville Pipeline at Nashua Road and Monte Road, this EIR/EIS also evaluates a Pipeline to the CSIP Pond if engineering constraints preclude the new Castroville Pipeline connection. Note that only the return flows to the CSIP pond may have constraints; no issues are anticipated for the connection to the CCSD distribution system. For purposes of CEQA/NEPA environmental review, this analysis conservatively assumes that CalAm would build both the Castroville Pipeline and the Pipeline to CSIP Pond. If CalAm does so, it would pump some of the Salinas Valley return water from the MPWSP Desalination Plant through a new 1.2-mile-long, 12-inch-diameter pipeline to the existing CSIP pond at the southern end of the MRWPCA Regional Wastewater Treatment Plant. The CSIP pond holds 80 af. From the CSIP pond, water would be delivered to agricultural users in the Salinas Valley through existing infrastructure (see **Figures 3-4** and **3-5a**).

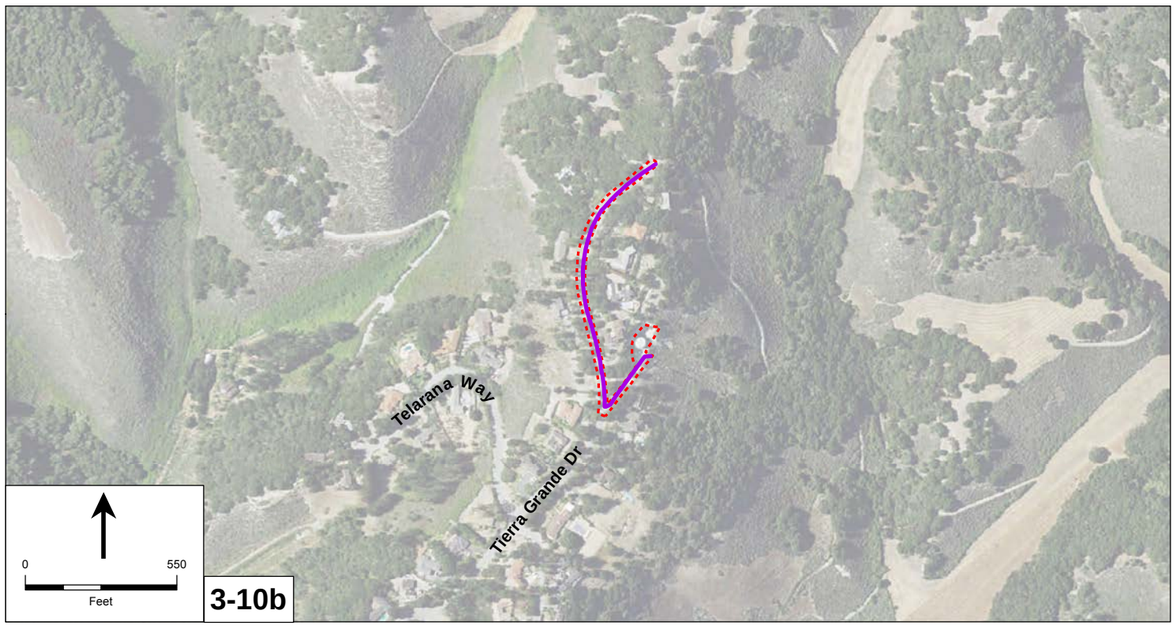
3.2.3.8 Interconnections with Highway 68 Satellite Systems

The proposed project would also improve existing interconnections at three satellite water systems in the unincorporated communities of Ryan Ranch, Bishop, and Hidden Hills, which are located along the Highway 68 corridor (see **Figure 3-10**).

Ryan Ranch–Bishop Interconnection Improvements

Project improvements to the interconnection between the main system and the Ryan Ranch and Bishop systems would involve building a 1.1-mile-long, 8-inch-diameter pipeline from an existing interconnection between the main system and Ryan Ranch at Highway 68 and Ragsdale Drive, through the Ryan Ranch community, to a new connection with the Bishop system. The pipeline would be installed within the rights-of-way of Ragsdale Drive, Lower Ragsdale Drive, and Wilson Drive.





NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

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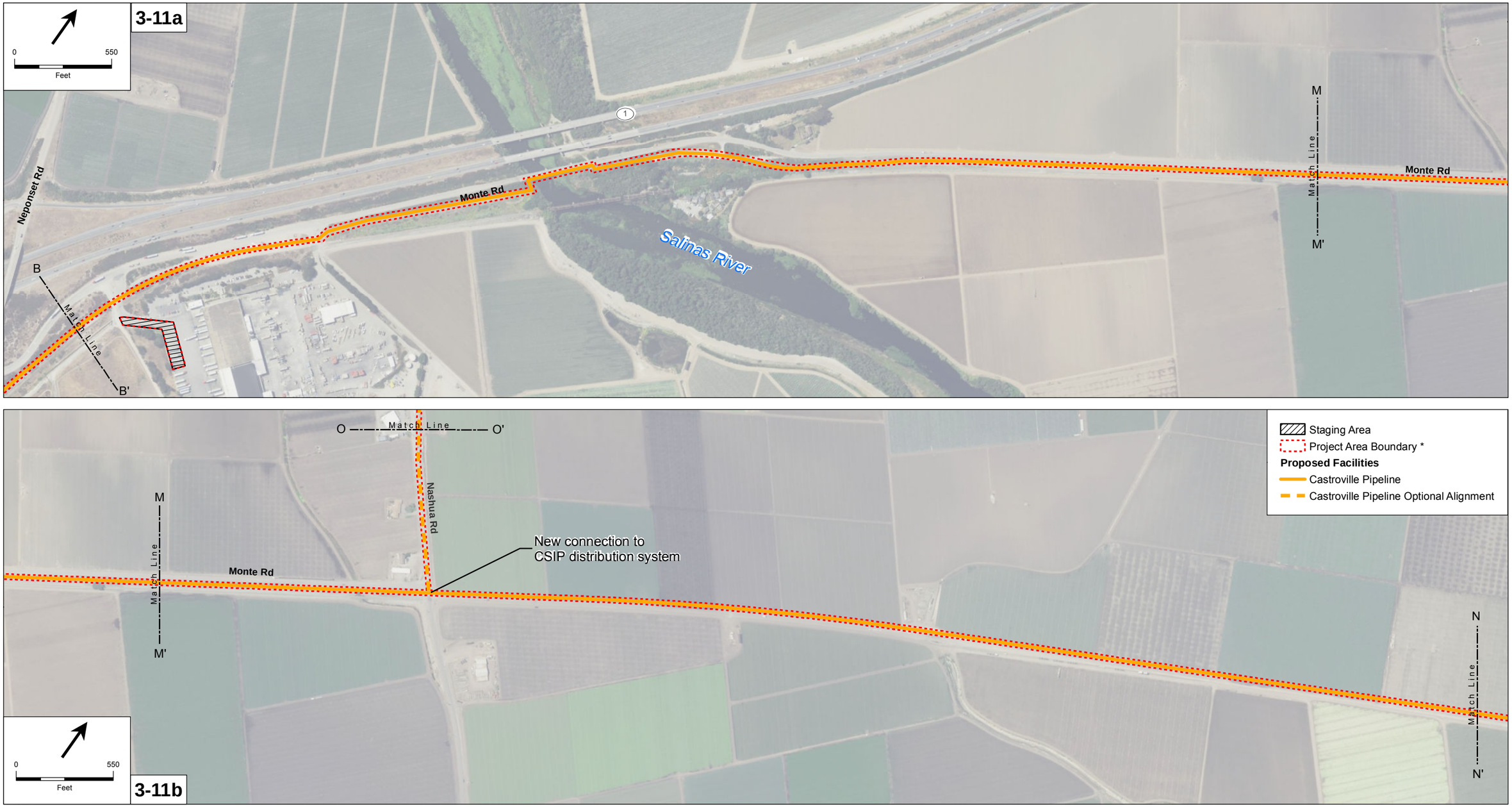
Figure 3-10

Highway 68 Interconnection Improvements and Carmel Valley Pump Station

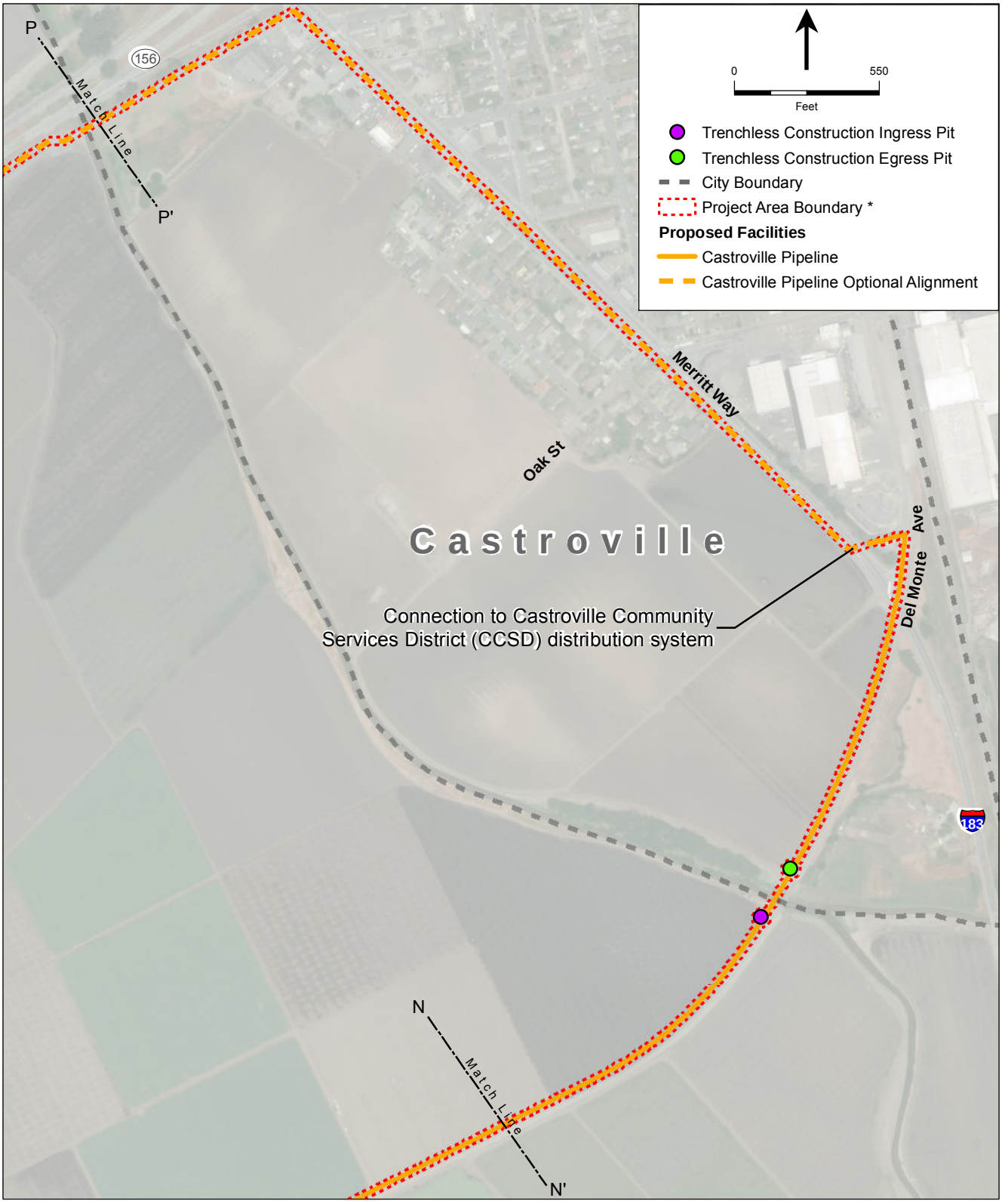


NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 3-11
Castroville Pipeline



205335.01 Monterey Peninsula Water Supply Project

NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016

Figure 3-12
Castroville Pipeline - Connection to CCSD Distribution System

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SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 3-13

Castroville Pipeline Optional Alignment

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Main System–Hidden Hills Interconnection Improvements

The existing interconnection between the main CalAm distribution system and the Hidden Hills system would be improved by installing approximately 1,200 feet of 6-inch-diameter pipeline along Tierra Grande Drive. In addition, the existing pump capacity of the Middle Tierra Grande Booster Station, located on lower Casiano Drive, would be upgraded from 161 gpm to 400 gpm by adding a new 350 gpm pump (CalAm, 2013a).

3.2.4 Proposed ASR Facilities

As part of the MPWSP, CalAm proposes to expand the existing Seaside Groundwater Basin ASR system to provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies, and to increase system reliability.

ASR is the storage of water in an aquifer during times when water is available, and recovery of the stored water from the same aquifer when it is needed. ASR provides a storage solution for the project, storing water during times of excess Carmel River flow as well as desalinated water in excess of customer demand, and recovering it later to meet peak summer water demands when the excess flow is not available. Water is stored in an existing groundwater aquifer, reducing or eliminating the need to construct large and expensive surface reservoirs. The ASR system comprises water transmission facilities, aquifer storage and recovery facilities including four existing injection/extraction wells (ASR-1 through ASR-4), storage reservoirs, and booster pump stations.

The proposed improvements to the ASR system include adding two injection/extraction wells, ASR-5 and ASR-6 Wells, and adding three parallel 0.9-mile-long ASR pipelines. With the addition of these two wells, the ASR system would consist of a total of six injection/extraction wells. The proposed ASR-5 and ASR-6 Wells would be located along General Jim Moore Boulevard on U.S. Army owned property, currently under lease to Monterey Bay Military Housing (MBMH), north of the Phase I and Phase II ASR facilities in Seaside (see **Figure 3-9**). These improvements would not affect CalAm's maximum allowable surface water diversions from the Carmel River for injection into the groundwater basin.

3.2.4.1 ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells)

CalAm would build two additional injection/extraction wells (ASR-5 and ASR-6 Wells) on two U.S. Army-owned parcels located east of General Jim Moore Boulevard and south of its intersection with Ardennes Circle, in the Fitch Park MBMH area (see Figure 3-9a). The new injection/extraction wells would be drilled to a depth of approximately 1,000 feet and screened in the Santa Margarita sandstone aquifer. Each well would have a permanent 500 hp multi-stage vertical turbine pump, Supervisory Control and Data Acquisition (commonly called SCADA)[10] controls for remote operation, and various pipes and valves. Each well pump and electrical control system would be housed in a 900-square-foot concrete pump house. A low-voltage, 480-volt, three-

[10] SCADA (Supervisory Control And Data Acquisition) is a system for remote monitoring and operations of water supply facilities.

phase electrical transformer would be installed at each well site to power the electrical control system. Pacific Gas & Electric Company (PG&E), the local electrical utility, would own and operate the electrical transformers. Security fencing would encompass an approximately 0.4- and 0.5-acre area around the ASR-5 and ASR-6 Wells, respectively (RBF Consulting, 2010). One 20-foot-wide access driveway would be constructed within currently undeveloped land between General Jim Moore Boulevard and each of these fenced areas, as shown in **Figure 3-14**.

The existing ASR disinfection system is housed within the chemical/electrical control building at the site of the existing ASR-1 and ASR-2 Wells.[11] The existing disinfection system has sufficient capacity to treat ASR product water extracted from all six ASR injection/extraction wells (i.e., the four Phase I and Phase II wells and the two new wells proposed under the MPWSP). The disinfection system consists of a 5,000-gallon bulk sodium hypochlorite storage tank, chemical metering pumps, and chlorine residual analyzer. The disinfection system includes double containment for all chemical storage and dispensing equipment, protective vent-fume neutralizers, safety showers for operations personnel, and a forced-air ventilation system.

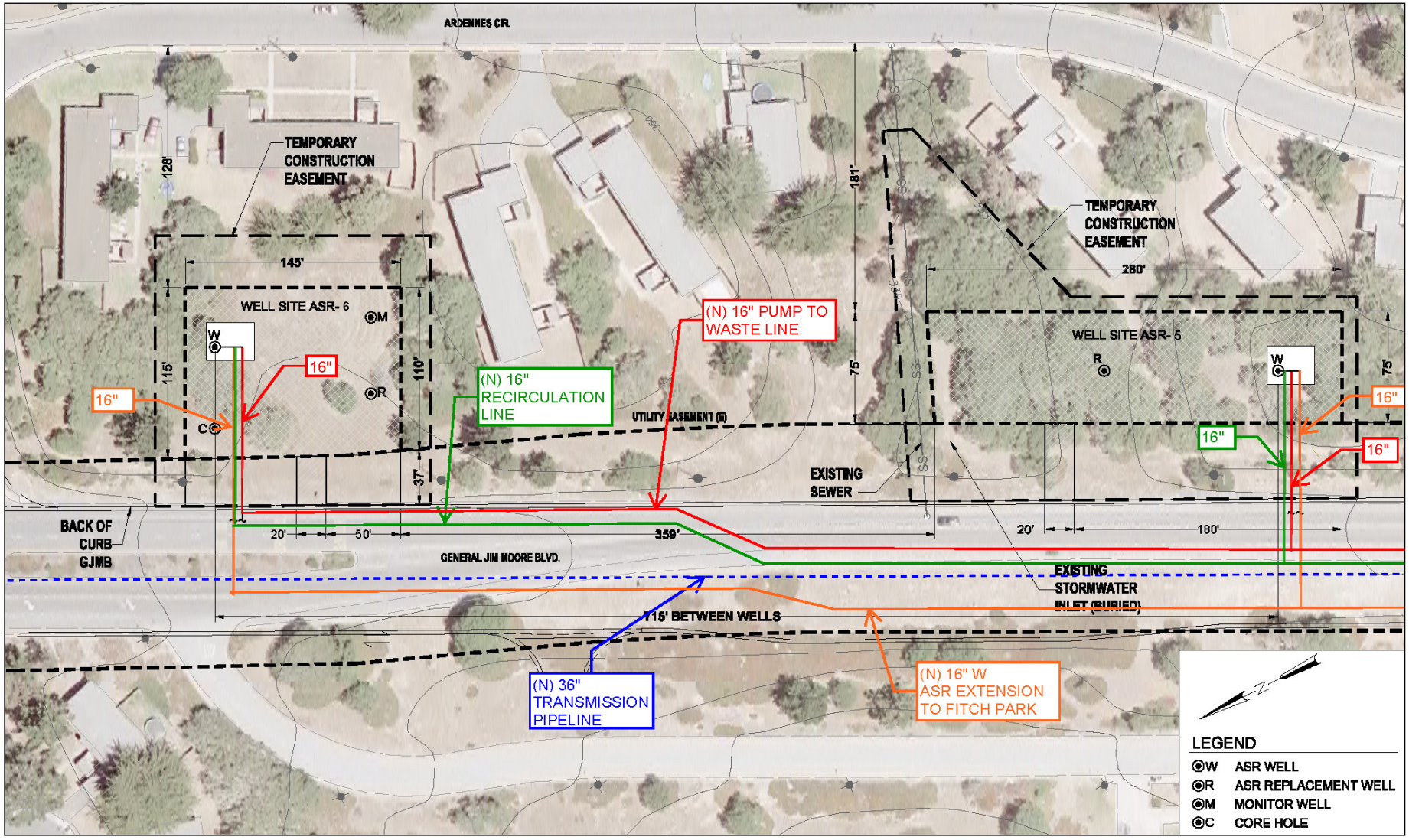
The ASR-5 and ASR-6 Wells would have a combined injection capacity of 4.3 mgd (3,000 gpm) and the same combined extraction capacity (approximately 4.3 mgd). The ASR-5 and ASR-6 Wells would operate in conjunction with the existing ASR-1, ASR-2, ASR-3, and ASR-4 Wells. With implementation of the MPWSP, any of the six ASR injection/extraction wells could be used to inject desalinated product water and Carmel River supplies.

Maintenance of the ASR-5 and ASR-6 Wells would involve routine backflushing of the two wells. Backwash effluent containing elevated levels of sediment and turbidity would be conveyed through the proposed ASR Pump-to-Waste Pipeline (see description below) to the existing settling basin for the Phase I facilities at the intersection of General Jim Moore Boulevard and Coe Avenue, and would infiltrate into the ground. As part of ongoing operations of the ASR system, sediment that accumulates in the settling basin is periodically removed and disposed of at an appropriate disposal site to prevent the settling basin from clogging.

3.2.4.2 ASR Pipelines

Three parallel 0.9-mile-long, 16-inch-diameter ASR pipelines – the ASR Recirculation Pipeline, the ASR Conveyance Pipeline, and the ASR Pump-to-Waste Pipeline – would extend along General Jim Moore Boulevard between the proposed ASR-5 and ASR-6 Wells at the Fitch Park MBMH area and the intersection of Coe Avenue and General Jim Moore Boulevard. The ASR Recirculation Pipeline would convey water between existing conveyance pipelines and infrastructure at Coe Avenue and General Jim Moore Boulevard to the ASR-5 and ASR-6 Wells for injection. The ASR Conveyance Pipeline would convey water that is extracted from the ASR-5 and ASR-6 Wells to the same facilities at the intersection of Coe Ave and General Jim Moore Boulevard. The ASR Pump-to-Waste Pipeline would convey backflush effluent from the

[11] The existing ASR-1 and ASR-2 Wells are also known as Santa Margarita Wells #1 and #2 in other information sources.



SOURCE: RBF Consulting

205335.01 Monterey Peninsula Water Supply Project

Figure 3-14

Site Plan: ASR-5 Well and ASR-6 Well

ASR-5 and ASR-6 Wells to the existing settling basin for the ASR-1 and ASR-2 Wells, which is about 2 miles south of the intersection of General Jim Moore Boulevard and Coe Avenue (see Figure 3-9a). Each of the three 16-inch-diameter ASR pipelines would connect to each of the two new ASR wells; the 36-inch diameter Transmission Main would also connect to each of the two new ASR wells with 16-inch diameter connector pipes (see **Figure 3-14**).

3.2.5 Electrical Power Facilities

Although CalAm may eventually use renewable energy sources to power the MPWSP Desalination Plant (see Section 4.18, Energy Conservation, for a description), this EIR/EIS assumes that all electrical power for the proposed facilities would be provided via new connections to the local PG&E grid. New underground and aboveground power lines would be installed at CEMEX for the subsurface slant wells, at the MPWSP Desalination Plant site, the ASR-5 and ASR-6 Well sites, and Carmel Valley Pump Station to connect the new facilities to the existing power grid.

3.3 Construction

3.3.1 Site Preparation and Construction Staging

3.3.1.1 Site Clearing and Preparation

Construction workers would clear and prepare the construction work areas in stages as construction progresses. Before construction starts, the contractor would clear and grade portions of the project area, removing vegetation and debris, as necessary, to provide a relatively level surface for the movement of construction equipment. After construction, the contractor would contour the construction work areas to their original profile, and hydroseed or pave the areas, as appropriate.

3.3.1.2 Staging Areas

Construction equipment and materials would be stored within the construction work areas to the extent feasible. Construction staging for the subsurface slant wells at CEMEX, the MPWSP Desalination Plant, and the ASR-5 and ASR-6 Wells would be accommodated entirely within the project area boundary shown in **Figures 3-3**, **3-5**, and **3-9a**. For construction of all other facilities and pipelines, construction workers would use nine strategically located staging areas in the project area vicinity. The proposed staging areas are sited with the intent of avoiding sensitive riparian areas or critical habitat for protected species. With the exception of the staging areas at Seaside Middle School and the MRWPCA property, the designated staging areas are primarily paved, gravel, or dirt parking lots located in highly disturbed areas. **Table 3-4** summarizes the staging area locations and current site conditions. The staging areas are shown as hatched polygons in **Figures 3-3** through **3-12**.

TABLE 3-4
CONSTRUCTION STAGING AREAS

Location	Site Description
Monte Road/Neponset Road in unincorporated Monterey County	Paved parking lot (semi-trucks) at Dole Vegetable Processing Plant
MRWPCA Property	In open area to the east of the proposed Brine Mixing Box
Beach Road in Marina	Paved parking lot at Walmart
Highway 1/1st Street in Marina	Gated paved parking lot
2nd Avenue, between Lightfighter Drive and Divarty Street, in Seaside	Paved parking lot at the Cal State University at Monterey Bay Athletic Fields
2nd Avenue/Lightfighter Drive in Seaside	Paved parking lot
West side of General Jim Moore Boulevard, near Gigling Road, in Seaside	Paved parking lot
East side of General Jim Moore Boulevard, near Gigling Road, in Seaside	Paved parking lot
West side of General Jim Moore Boulevard, near Seaside Middle School, in Seaside	Sandy area

Because all of the staging areas are paved, gravel, or dirt, CalAm's contractors would not need to remove trees or vegetation to use the sites for staging. They would not lay gravel in dirt staging areas. Except for heavy machinery that is operated solely to move lighter-duty machinery in and out of the staging area, and for the use of a front-loaded backhoe to load and unload material onto transportation vehicles for delivery to the construction sites, heavy machinery would not be operated at the staging areas. Only motion-sensored nighttime lighting would be installed at staging areas.

3.3.2 Well Drilling and Development and Related Site Improvements

3.3.2.1 Subsurface Slant Wells

Well installation consists of a two-part process: well drilling and well development. Well development occurs after the wells have been drilled, and is the process of optimizing the water quality and flow into the well. Both are described below.

All construction activities associated with the subsurface slant wells would occur several hundred feet inland of the maximum high-tide elevation and in previously disturbed areas. Surface construction activities would occur outside of MBNMS. Slant well construction would take approximately 15 months to complete, and could take place anytime throughout the overall 24-month construction duration for the proposed project. Construction activities associated with installation of the nine additional subsurface slant wells, including staging, materials storage, and stockpiling, would temporarily disturb approximately 9 acres of land (approximately 1 acre of disturbance per slant well) within the project area boundary shown in **Figure 3-3a**. Construction activities would occur 24 hours per day, 7 days per week, with multiple slant wells being built simultaneously. Construction-related trucks and vehicles would access the slant well site via

Del Monte Boulevard, Lapis Road, and existing access roads in the CEMEX active mining area. The construction contractor would use a temporary field office (mobile trailer) in the southern portion of the project area throughout slant well construction activities. The field office and materials receiving and storage would be contained within the 9-acre construction disturbance area.

The proposed slant wells would be built using a dual rotary drilling rig, pipe trailers, portable drilling fluid tanks, Baker tanks (portable holding tanks), haul trucks, flatbed trucks, pumps, and air compressors. The slant wells would be drilled at approximately 14 degrees below horizontal.

Drilling fluids, such as water, bentonite mud, or environmentally inert biodegradable additives, would be used to drill through the first 100 feet or so of the dry dune sands to prevent the sand from locking up the drill bit inside the conductor casing. The bentonite mud used in this initial portion of the borehole would be recirculated into and out of the boring using a mud tank located next to the drill rig. Drill cuttings would be removed from the drilling mud using a shaker table and then the drilling mud would be re-used. Once the drill bit reaches groundwater, the construction contractor would pump out all of the sand-bentonite mud slurry and put it in a storage container for off-site hauling and disposal. The elevation of the groundwater surface will be determined from the existing monitoring wells (MW-1S and MW-3S).

Below the top of the groundwater table, the remaining 900 feet of borehole would be drilled using water already present in the sand and some potable water; no bentonite mud or other additives would be used to drill this portion. The water and sediment mixture generated during the lower portion of slant well drilling and construction would be placed in settling tanks, as necessary, to allow sediment to settle out. The volume of water produced during this drilling phase would be small enough that the construction contractor would dispose of the clarified effluent by percolating it into the ground at the CEMEX retired mining area. Drilling spoils generated during the lower portion of slant well drilling (i.e., not containing bentonite mud or other additives) would be spread within the construction disturbance area and would not require offsite disposal.

The slant wells would be completed using telescoping casing ranging from 22 to 36 inches in diameter and super-duplex 12- to 20-inch diameter stainless steel well screens. A submersible pump would be lowered several hundred feet into each well. To develop the slant wells, each well would be pumped for 2 to 6 weeks during slant well completion and initial well testing. The water pumped from the wells during well development would be discharged to the ocean within the waters of MBNMS via the test slant well discharge pipe and the existing MRWPCA ocean outfall. CalAm would need to obtain permission from the MRWPCA to accept the well development water (a combination of brackish groundwater and seawater) into its outfall during this time, since use of the outfall may be precluded during relocation of the existing beach junction structure (see cumulative Project No. 61 in Table 4.1-2). This well development process would produce a volume of water too great to percolate into the ground at the CEMEX mining area, as compared to the drilling phase described above. Once built, each well would include up to 12-inch-diameter mechanical discharge piping (i.e., flow meter, isolation valve, check valve, pump control valve, air release valve, and pressure gauge). This discharge mechanical piping would be located in a below ground vault (12 feet by 6 feet). The electrical controls would be located in a fiberglass enclosure. The discharge piping would then transition underground via

trenching and connect to the buried source water pipeline. The wellheads would be accessible at grade level once completed.

3.3.2.2 ASR Injection/Extraction Wells

Construction activities for new ASR injection/extraction wells would include grading, installation and removal of temporary sound walls; well drilling, installation of pipeline connections to the proposed ASR Conveyance Pipelines along General Jim Moore Boulevard, and installation of electrical equipment and pumps. Construction equipment would include drill rigs, water tanks, pipe trucks, flatbed trucks, and several service vehicles. The new ASR injection/extraction wells would be drilled using the reverse rotary drilling method. Bentonite drilling fluids would not be used during well drilling, but non-corrosive, environmentally inert, biodegradable additives might be used to keep the borehole open if necessary. Construction of the ASR-5 and ASR-6 Wells and associated facilities would take approximately 12 months. Most construction activities would extend from 7 a.m. to 7 p.m., 5 days per week, with the exception of 4 weeks of 24-hour construction for each new ASR injection/extraction well during well development and completion (total of 8 weeks of 24-hour construction), until final depth is reached and the borehole is stabilized. This would prevent the borehole from potentially collapsing in on itself, filling the borehole with the surrounding geologic materials, and/or binding up the drill bit and trapping it in the borehole.

Water produced during development of the ASR-5 and ASR-6 Wells at the Fitch Park MBMH housing area would be conveyed to a 1.4-acre natural depression located east of the intersection of San Pablo Avenue and General Jim Moore Boulevard via the pump to waste pipeline and percolated into the ground. The well development water would be disposed of in accordance with Central Coast Regional Water Quality Control Board (RWQCB) Resolution No. R3-2008-0010, General Waiver for Specific Types of Discharges (RWQCB, 2008). Any waste material generated during construction of the proposed ASR facilities that requires off-site disposal would be transported to an approved landfill facility.

3.3.3 Desalination Plant Construction

Construction workers would access the MPWSP Desalination Plant site via Charles Benson Road and existing access roads. Construction activities would include cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, tanks, and other support equipment; building walls and roofs; assembling and installing major desalination process components; installing piping, pumps, storage tanks, and electrical equipment; testing and commissioning facilities; and finish work such as paving, landscaping, and fencing the perimeter of the site. Construction equipment would include excavators, backhoes, graders, pavers, rollers, bulldozers, concrete trucks, flatbed trucks, boom trucks, cranes, forklifts, welding equipment, dump trucks, air compressors, and generators. Pretreatment, RO, and post-treatment facilities would be prefabricated and delivered to the site for installation. Approximately 25 acres of the 46-acre site would be disturbed during construction (see **Figure 3-5**). No import or export of fill material would be necessary. Construction activities at the desalination plant site are expected to occur over 24 months.

3.3.4 Pipeline Installation

Approximately 21 miles of pipelines would be installed within the paved roadway or adjacent to roads and the Monterey Peninsula Recreational Trail. Most pipeline segments would be installed using conventional open-trench technology; however, where it is not feasible or desirable to perform open-cut trenching, trenchless methods would be used.

Typical construction equipment for pipeline installation would include flatbed trucks, backhoes, excavators, pipe cutting and welding equipment, haul trucks for spoils transport, trucks for materials delivery, compaction equipment, Baker tanks, pickup trucks, arch welding machines, generators, air compressors, cranes, drill rigs, and skip loaders. Pipeline segments would typically be delivered and installed in 6- to 40-foot-long sections. Soil removed from trenches and pits would be stockpiled and reused, to the extent feasible, or hauled away for offsite disposal. Under typical circumstances, the width of the disturbance corridor for pipeline construction would vary from 50 to 100 feet, depending on the size of the pipe being installed. Trenchless technologies could require wider corridors at entry and exit pits. Multiple pipelines would be built simultaneously. Although most pipeline construction would occur over a 15-month period, pipeline construction could occur any time throughout the entire 24-month construction period. As shown in **Table 3-5**, the construction durations for most individual pipelines would be much shorter than 15 months. Pipeline installation would be sequenced to minimize land use disturbance and traffic disruption to the extent possible.

3.3.4.1 Open-Trench Construction

For pipeline segments to be installed using open-trench methods, the construction sequence would typically include:

- clearing and grading the ground surface along the pipeline alignments;
- excavating the trench;
- preparing and installing pipeline sections;
- installing vaults, manhole risers, manifolds, and other pipeline components;
- backfilling the trench with non-expansive fills;
- restoring preconstruction contours; and
- revegetating or paving the pipeline alignments, as appropriate.

A conventional backhoe, excavator, or other mechanized equipment would be used to excavate trenches. The typical trench width would be 6 feet; however, vaults, manhole risers, and other pipeline components could require wider excavations. Work crews would install trench boxes or shoring or would lay back and bench the slopes to stabilize the pipeline trenches and prevent the walls from collapsing during construction. After excavating the trenches, the contractor would line the trench with pipe bedding; that is, sand or other appropriate material shaped to support the pipeline. Construction workers would then place pipe sections (and pipeline components, where applicable) into the trench, weld the sections together as trenching proceeded, and then backfill the trench. Most pipeline segments would have 8 feet of cover. Open-trench construction would generally proceed at a rate of about 150 to 250 feet per day. Steel plates would be placed over trenches to maintain access to private driveways. Some pipeline installation would require construction in existing roadways and could result in temporary lane closures or detours.

TABLE 3-5
CONSTRUCTION ASSUMPTIONS FOR THE PROPOSED PROJECT

Project Component(s)	Total Excess Spoils and Construction Debris (cubic yards)	Construction Equipment		Construction Durations and Work Hours
Subsurface Slant Wells (drilling and development of nine permanent wells, conversion of test slant well to permanent well, and construction of supporting infrastructure in the CEMEX active mining area)	100 cy	• Drilling rig • Pipe trailers • Portable drilling fluid tanks • Flatbed trucks • Haul trucks	• Baker tank(s) • Cranes • Air compressors • Pipe cutting and welding equipment	Construction of the nine permanent slant wells and associated facilities could occur anytime during the 24-month construction duration but would take approximately 15 months total. Slant well construction would require 24-hour construction activities.
MPWSP Desalination Plant	0 cy	• Excavators • Backhoes • Air compressors • Loaders • Boom trucks • Cranes • Pavers and rollers • Bulldozers	• Concrete transport trucks • Concrete pump trucks • Flatbed trucks • Generators • Pickup trucks • Trucks for materials delivery	The MPWSP Desalination Plant would be constructed over a 24-month period, and would require 24-hour construction activities.
Pipelines: a) Source Water Pipeline b) New Desalinated Water Pipeline and new Transmission Main c) Castroville Pipeline d) Pipeline to CSIP Pond e) Brine Discharge Pipeline and Brine Mixing Box and appurtenances f) ASR Pipelines	a) 1,735 cy b) 15,400 cy c) 600 cy d) 785 cy e) 3,575 cy f) 4,540 cy Total for all pipelines = 24,135 cy	• Flatbed trucks • Backhoes • Excavators • Pipe cutting and welding equipment • Haul trucks for spoils transport • Trucks for materials delivery • Compaction equipment	• Baker tank(s) • Pickup trucks • Arc welding machine • Generators • Air compressors • 80-ton crane • Skip loader • Pavers and rollers	Multiple pipelines, sometimes in the same roadway, would be built simultaneously. To the extent feasible, pipeline installation and associated construction activities would occur during the day. This EIR/EIS assumes that the installation of the Transmission Main and three ASR pipelines within the General Jim Moore Boulevard road right-of-way would occur during the day. At other locations, pipeline installation may require nighttime construction to meet the project schedule. Pipeline installation would occur at a rate of approximately 150 to 250 feet per day. The expected construction duration for each pipeline is as follows: a) Source Water Pipeline – 6 months b) New Desalinated Water Pipeline and new Transmission Main – 15 months c) Castroville Pipeline – 4 months d) Pipeline to CSIP Pond – 2 months e) Brine Discharge Pipeline and Brine Mixing Box and appurtenances – 3 months, and 9 months, respectively f) ASR Pipelines – 5 months

TABLE 3-5 (Continued)
CONSTRUCTION ASSUMPTIONS FOR THE PROPOSED PROJECT

Project Component(s)	Total Excess Spoils and Construction Debris (cubic yards)	Construction Equipment		Construction Durations and Work Hours
ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells)	280 cy	• Drill rig • Boom truck or crane • Backhoe • Air compressor • Electrical generator • Baker tank	• Excavator • Concrete pumper, concrete truck • Paving equipment • Flatbed trucks • Haul trucks • Welding equipment	Construction of the ASR-5 and ASR-6 Wells at Fitch Park MBMH area would take approximately 12 months. With the exception of 4 weeks of 24-hour construction for each new ASR injection/extraction well during well development and completion (total of 8 weeks of 24-hour construction), construction of these facilities would occur during the day.
Highway 68 Interconnection Improvements a) Ryan Ranch–Bishop b) Main System–Hidden Hills	a) 295 cy b) 100 cy	• Flatbed trucks • Backhoes • Excavators • Pipe cutting and welding equipment • Haul trucks for spoils transport • Trucks for materials delivery • Compaction equipment	• Baker tank(s) • Pickup trucks • Arc welding machine • Generators • Air compressors • 80-ton crane • Drill rig • Skip loader • Pavers and rollers	Construction of these facilities would occur during the day. a) Ryan Ranch–Bishop Interconnection Improvements – 4 months b) Main System–Hidden Hills Interconnection Improvements – 3 months
Carmel Valley Pump Station	200 cy	• Excavator • Backhoe • Air compressor • Boom truck or small crane • Generator	• Concrete pump truck • Paving equipment • Flatbed truck • Pavers and rollers • Welding equipment • Baker tank	The Carmel Valley Pump Station would be built over a 6-month period. Construction at this site would occur during the day.
Total Excess Spoils and Construction Debris =	**Approximately 27,610 cy**			**Overall Construction Schedule = July 2018 through June 2020 (24 months total)**

3.3.4.2 Trenchless Technologies

Where it is not feasible or desirable to perform open-cut trenching, workers would use trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, or microtunneling. Pipeline segments located within heavily congested underground utility areas or in sensitive habitat areas would likely be installed using horizontal directional drilling or microtunneling. Jack-and-bore methods would likely be used beneath railroad crossings. Horizontal directional drilling would likely be used for pipeline segments that cross beneath Highway 1 (new Transmission Main) and beneath drainages (Castroville Pipeline). Trenchless methods of pipeline installation would be required at five identified locations (additional locations may be identified during final pipeline design):

1. Installation of the Source Water Pipeline beneath the TAMC right-of-way at Lapis Road, just north of the CEMEX access Road
2. Installation of the new Desalinated Water Pipeline beneath the TAMC right-of-way near the southern intersection of Lapis Road/Del Monte Boulevard
3. Installation of the new Transmission Main beneath the TAMC right-of-way near Marina Drive/Del Monte Boulevard/Reindollar Avenue
4. Installation of the new Transmission Main (and new Transmission Main Optional Alignment) at Highway 1 and Lightfighter Drive
5. Installation of the Castroville Pipeline under Tembladero Slough

Jack-and-Bore and Microtunneling Methods

The jack-and-bore and microtunneling methods entail excavating an entry pit and a egress pit at either end of the pipe segment. A horizontal auger is used to drill a hole, and a hydraulic jack is used to push a casing through the hole to the egress pit. As the boring proceeds, a steel casing is jacked into the hole and pipe is installed in the casing.

Drill-and-Burst Method

The drill-and-burst method involves drilling a small pilot hole at the desired depth through a substrate, and then pulling increasingly larger reamers through the pilot hole until the hole reaches the desired diameter.

Horizontal Directional Drilling

Horizontal directional drilling requires the excavation of a pit on either end of the pipe alignment. A surface-launched drilling rig is used to drill a small horizontal boring at the desired depth between the two pits. The boring is filled with drilling fluid and enlarged by a back reamer or hole opener to the required diameter. The pipeline is then pulled into position through the boring. Entry and receiving pits range in size depending on the length of the crossing, but typically have dimensions of approximately 50 by 50 feet.

3.3.4.3 Disinfection of Existing and Newly Installed Pipelines

Before connecting existing and new pipelines, CalAm would drain and disinfect the existing pipe segments before putting them into service. Similarly, upon completing construction activities, facility operators would disinfect the newly installed pipelines and pipeline connections before bringing the pipes into service. Effluent produced during the pipeline disinfection process would be discharged to the local stormwater drainage system in accordance with the Central Coast RWQCB *General Waste Discharge Requirements for Discharges with Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001) (RWQCB, 2011), or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., as directed by U.S. Army approvals on Army-owned property). See Impact 4.3-3 in Section 4.3, Surface Water Hydrology and Water Quality, for additional information.

3.3.5 Carmel Valley Pump Station

Construction crews would prepare the Carmel Valley Pump Station site by removing vegetation and grading the sites to create a level work area. Construction activities would include pouring concrete footing for foundations; assembling and installing piping, pumps, and electrical equipment; building concrete enclosures and roofs; and performing finish work such as paving, landscaping, and fencing the perimeter of the pump station site. Construction access would be provided via existing access roads and roadways. Construction of the Carmel Valley Pump Station would result in approximately 40,000 square feet (or 0.9 acre) of temporary disturbance, and 1,300 square feet (0.03 acre) of permanent disturbance.

3.3.6 Installation of Powerlines

New underground and aboveground powerlines would be built between existing powerlines in the area and the proposed facilities. For installation of overhead powerlines, power poles would be sited approximately 300 feet apart. Installation of overhead powerlines would occur in two phases: (1) installing the poles, and (2) installing and tensioning the powerline. Access to each pole would be needed at least twice. The poles would probably be set by digging a hole up to 10 feet deep, placing the pole in the hole, and backfilling. At each of the pole locations, an approximately 50-by-50-foot area would be needed for laydown and assembly, and a limited amount of vegetation might require removal, but grading would not be needed. Construction workers would use standard rubber-tired line trucks to access the alignment and to install and tension the new overhead powerlines. The puller/tensioner would be mounted on a utility truck or on a double-axle trailer. Workers might need to trim or remove some vegetation along the alignment to keep vegetation away from the overhead powerlines.

Installation of the new underground powerlines would require excavation of an approximately 1-foot-wide, 3-foot-deep trench along their alignments. After installing each underground powerline in the trench, construction workers would backfill the trench and restore the ground surface.

3.3.7 Spoils Management and Disposal

Excavation and construction activities would generate excess soil, rock, and construction material and debris. Although suitable topsoil and subsoils excavated during construction would be used to backfill excavations and restore work areas, project construction is projected to generate approximately 27,610 cubic yards of excess material requiring offsite disposal at the Monterey Peninsula Landfill and Monterey Materials Recycling Facility. The average capacity of haul trucks is assumed to be 10 cubic yards. Spoils hauling and placement would occur throughout the 24-month construction schedule.

3.3.8 Construction Schedule

The proposed project facilities would be built over approximately 24 months, with an expected construction period of July 2019 through June 2021. Construction activities associated with installation of the nine permanent subsurface slant wells and conversion of the test slant well into a permanent well at the CEMEX retired mining area would occur over approximately 15 months. Construction activities for the slant wells could occur 24 hours per day, 7 days per week, except for holidays.

Construction activities at the MPWSP Desalination Plant site would take place over 24 months, and could occur up to 24 hours per day, 7 days per week.

Installation of pipelines and construction of the associated conveyance facilities would occur over 15 to 18 months, with multiple pipelines being installed simultaneously. If possible, the pipeline will be installed during the day and within noise ordinance time limits. However, some pipelines or sections of pipeline could require nighttime construction to meet the schedule. Installation of pipelines within the city of Seaside, including all or portions of the three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) and the sections of the new Transmission Main would occur only during the day. All pipeline components installed within property owned by the U.S. Army (pipelines connected to ASR-5 and ASR-6 Wells) would be constructed only during the day.

Construction of the ASR-5 and ASR-6 Wells would take approximately 12 months. Except for the ASR-5 and ASR-6 Wells, everything else being built at the Fitch Park MBMH in the former Fort Ord area would be built during the day. Each ASR injection/extraction well would require continuous 24-hour construction for up to 4 weeks during well completion and development, for a total of 8 weeks of 24-hour construction.

Construction of the Ryan Ranch–Bishop Interconnection Improvements and Main System–Hidden Hills Interconnection Improvements would take approximately 3 and 4 months, respectively.

Construction of the Carmel Valley Pump Station would take approximately 6 months, and would occur during the day.

3.4 Operations and Maintenance

3.4.1 Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges

CalAm would operate the subsurface slant wells and MPWSP Desalination Plant 24 hours a day, 365 days per year. It would usually operate the seawater intake wells remotely using SCADA systems. Up to eight subsurface slant wells would run at any given time, with each well producing approximately 3 mgd of source water for the MPWSP Desalination Plant, for a combined total of up to 24.1 mgd of source water. At least two wells would stay on standby. Approximately 25 to 30 facility operators and support personnel would be on site 24 hours a day to operate the desalination facilities.

The MPWSP Desalination Plant would operate at an overall recovery rate of 42 percent. Approximately 24.1 mgd of raw seawater would be needed to produce 9.6 mgd of desalinated product water. The RO process would generate approximately 13.98 mgd of brine (including 0.4 mgd of decanted waste effluent). The salinity of the brine is expected to range between 57 and 58 ppt,[12] which is roughly 71 to 74 percent higher than seawater (Flow Science Inc., 2014). The brine stream would be discharged to Monterey Bay via the existing MRWPCA ocean outfall and diffuser. During wet periods, the brine stream would be blended with treated wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant before discharge. The brine stream could be discharged without dilution for extended periods during dry months when all of the treated wastewater effluent is reclaimed for agricultural irrigation. The amount of treated wastewater effluent available for blending would vary throughout the year.

The MRWPCA's diffuser would disperse the brine stream at the discharge point, thereby minimizing salinity differences between the discharges and the surrounding seawater. Sections 4.3, Surface Water Hydrology and Water Quality, and 4.5, Marine Resources, describe the modeling and analysis performed for brine discharges under the proposed project.

Table 3-6 provides an overview of typical facility operations under the proposed project.

TABLE 3-6
OVERVIEW OF TYPICAL FACILITY OPERATIONS FOR THE PROPOSED PROJECT

	Operations Schedules
Subsurface Intake System and MPWSP Desalination Plant	24 hours a day, 365 days per year
Conveyance of Salinas Valley Return Flows to CCSD and CSIP	Dry season (typically May through November)
ASR – Injection of Desalinated Product Water	Wet season (typically November through April)
ASR – Injection of Carmel River Supplies	Wet season (typically December through May)
ASR – Extraction	Typically May through November

SOURCE: RBF Consulting, 2013a.

[12] Based on ocean ambient salinity levels ranging from 33.36 to 33.8 ppt (Flow Science, Inc., 2014).

Over the life of the project, for a host of reasons (e.g., mechanical or electrical problems, water quality issues[13], loss of power, etc.), there would be periods when CalAm would need to shut down the MPWSP Desalination Plant. After a shutdown, CalAm might operate the plant with all RO modules in service (at the plant's maximum production capacity of 11.2 mgd) to catch up on production; however, the total annual production would not exceed 9.6 mgd (Svindland, 2014).

Table 3-7 provides a comparative example of MPWSP Desalination Plant typical daily versus operations following a 2-day shutdown. As shown in the example, any fluctuations in daily production would not affect total monthly production.

TABLE 3-7
MPWSP DESALINATION PLANT OPERATIONS –
NORMAL OPERATIONS VS. RECOVERY POST 2-DAY SHUTDOWN

Week	Daily Production (mgd)						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Normal Operations							
1	9.6	9.6	9.6	9.6	9.6	9.6	9.6
2	9.6	9.6	9.6	9.6	9.6	9.6	9.6
3	9.6	9.6	9.6	9.6	9.6	9.6	9.6
4	9.6	9.6	9.6	9.6	9.6	9.6	9.6
						Total Monthly Production =	**269 mgd**
Operations Before and After 2-Day Shutdown							
1	9.6	9.6	9.6	9.6	9.6	9.6	9.6
2	9.6	****2-Day Shutdown****		11.2	11.2	11.2	11.2
3	11.2	11.2	11.2	11.2	11.2	11.2	11.2
4	9.6	9.6	9.6	9.6	9.6	9.6	9.6
						Total Monthly Production =	**267 mgd**

SOURCE: Svindland, 2014.

The slant wells would require maintenance every 5 years. During maintenance, workers would access the well from the wellhead, and would lower mechanical brushes into the wells to clean the screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. The disturbance area associated with periodic maintenance of the subsurface slant wells would be roughly 6 acres. All disturbance would occur on the inland side of the dune face at the wellheads.

Accounting for all of the slant wells, maintenance activities within the beach area would last between 9 and 18 weeks every 5 years. Maintenance activities would occur between October and February to avoid the nesting season for snowy plover. Maintenance workers would access the slant wells via the existing CEMEX access road (RBF Consulting, 2013a).

[13] Hazardous Algal Blooms would not be a reason for the wells to stop operating. Subsurface intakes are not affected by algal blooms.

3.4.2 Operation of the ASR System

Carmel River supplies would be injected into the groundwater basin via ASR under the MPWMD's and CalAm's existing SWRCB Permits 20808A and 20808C. The instantaneous rate and cumulative quantity of water diverted from the Carmel River and placed into underground storage would be measured and recorded, as would the cumulative quantity of Carmel River water recovered from underground storage and placed into beneficial use.

Unlike the injection period for Carmel River supplies, which is limited to periods of high flow between December and May in the lower stretches of the Carmel River, desalinated product water supplies could be injected into the Seaside Groundwater Basin during any time of the year. Desalinated product water and Carmel River supplies would typically be pumped out of the basin during summer months and periods of peak demand.

Similar to existing operations, CalAm proposes to use the ASR system to store water supplies during wet periods. Both desalinated product water and Carmel River supplies would be chlorinated to drinking water standards at existing CalAm treatment facilities prior to injection. Desalinated product water would flow through the new Desalinated Water Pipeline and the new Transmission Main, while Carmel River supplies would be conveyed through the existing Segunda Pipeline, and injected into the northern subbasin of the Seaside Groundwater Basin (see Section 4.4, Groundwater Resources, for descriptions of groundwater basins and subbasins in the project area).

CalAm would rely primarily on any of the six ASR injection/extraction wells (Phases I, II, and III of the ASR system) to recover the banked water. Depending on demand, CalAm would also use existing groundwater production wells in the Seaside Groundwater Basin to recover the banked water. This would increase operational flexibility. CalAm would extract the water via existing production wells under the following conditions to avoid changing the hydraulic gradient or exacerbating localized depressions:

- Seaside Groundwater Basin annual monitoring reports prepared by Seaside Groundwater Basin Watermaster would be reviewed yearly to identify the current location of the groundwater depression in the Santa Margarita Formation, the aquifer unit where the ASR system water would be banked.
- CalAm's use of existing groundwater production wells to recover water stored in the ASR system would be limited to those production wells in the northern subbasin located east of the center point of the groundwater depression. Restricting extraction to the eastern side of the groundwater depression would allow CalAm to extract the banked water before it migrates into the depression and would, therefore, avoid affecting the groundwater depression.
- The order in which the groundwater production wells would be used to extract banked water depends on how close they are to the ASR injection wells. The first priority would be any of the ASR wells, followed in order by the Paralta, Ord Grove #2, Luzern #2, and Playa #3 Wells.[14]

[14] Based on the current location of the groundwater depression in 2012, and until the depression migrates to the west, the Playa #3 Well may not be used to recover water banked in the ASR system.

- Existing groundwater production wells located outside of the northern subbasin of the Seaside Groundwater Basin (Plumas #4 Well) would not be used to recover banked water because these wells are not directly connected to the aquifer where the ASR water would be stored (CalAm, 2014b).

The stored water would be pumped out of the groundwater basin and conveyed through the ASR Conveyance Pipeline to the CalAm distribution system for direct delivery to customers in Seaside and other customers in CalAm's Monterey District service area. CalAm would meet drinking water requirements by disinfecting this water before serving it to customers.

Tanker trucks would deliver sodium hypochlorite solution (12.5 percent NaOCl) to the existing ASR disinfection facility about once each month to replenish the system. With all six wells in operation, the expected chemical use would be less than 150 gallons per day of sodium hypochlorite. The ASR system would be operated remotely via SCADA.

Similar to operations for the existing ASR injection/extraction wells, facility operators would regularly backflush accumulated sediment and turbid water from the ASR-5 and ASR-6 Wells. This would take anywhere from a few minutes to 2 hours. CalAm would route the water produced during routine backflushing to the existing ASR settling basin at the ASR-1 and ASR-2 Wells site, near the intersection of General Jim Moore Boulevard and Coe Avenue.

3.4.3 Desalinated Water Conveyance Facilities

3.4.3.1 Routine Maintenance of Pump Stations and Pipelines

The proposed pump station could operate continuously for up to 24 hours a day. Although pump stations would typically be operated remotely via SCADA, facility operators would conduct routine visits to the pump station site to monitor operations, conduct general maintenance activities, and service the pumps.

General operations and maintenance activities associated with pipelines would include annual inspections of the cathodic protection system and replacement of sacrificial anodes when necessary, testing and servicing of valves, vegetation maintenance along rights-of-way, and repairs of minor leaks in buried pipeline joints or segments.

3.4.3.2 Interconnections for Highway 68 Satellite Systems

With implementation of the proposed project, the Ryan Ranch, Hidden Hills, and Bishop satellite systems would stop pumping groundwater from the Laguna Seca Subbasin and would rely on MPWSP supplies instead.

3.4.4 Payback to Seaside Groundwater Basin

As part of the adjudication of the Seaside Groundwater Basin, CalAm must provide replenishment water supplies to the basin in an amount equivalent to the quantity of water that CalAm previously

pumped in excess of the basin's natural safe yield.[15] In November 2012, the Seaside Groundwater Basin Watermaster and CalAm tentatively agreed to a replenishment schedule of 25 years at a replenishment rate of 700 afy, based on a running 5-year (water year) average. CalAm would meet its obligations via in-lieu recharge or artificial replenishment. Depending on fluctuations in precipitation and water supplies, the actual volume of water replenished during any given year would vary but would be equal to or greater than 700 afy based on a running 5-year average (Watermaster, 2012).

3.4.5 Power Demand

Under existing conditions, the electrical power needed to operate the water supply system in CalAm's Monterey District Service Area is 11,466,000 kilowatt hours per year (kWh/yr). That is the baseline electrical demand for the proposed project. With the proposed project, and accounting for the reduction in Carmel River pumping that would occur once the MPWSP Desalination Plant is brought online, the average annual power demand for the Monterey District Service Area would be 63,364,000 kWh/yr. Therefore, the net increase in annual electrical power demand for water production would be approximately 51,898,000 kWh/yr. Electrical power for all of the proposed project facilities would be provided via the PG&E power grid unless CalAm were to secure a separate renewable power source for some or all of its power needs.

The MPWSP would recover energy from the brine stream using pressure-exchanger technology.[16] Energy recovery is a process through which the energy contained in pressurized brine flow is transferred to a portion of the RO source water. This lowers source water pumping requirements and thus lowers overall energy consumption. Under the proposed project, energy recovery using pressure-exchanger technology would substantially reduce overall energy consumption during the RO process. This reduced consumption is reflected in the estimate of annual electrical power demand in the previous paragraph.

3.5 Permits, Approvals, and Regulatory Requirements

This EIR/EIS is intended to inform decision-makers of the environmental consequences associated with the proposed MPWSP. The proposed project would be subject to various regulations and could require discretionary permits from federal, state, and local jurisdictions. **Table 3-8** summarizes the permits and authorizations that would likely be required to build, operate, and maintain the proposed project. Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, explains how the project follows the applicable state, regional, and local plans relevant to each topical section in the chapter.

[15] As defined in Monterey County Superior Court's final decision in Case No. 66343, *California American Water v. City of Seaside, et al.* (Monterey County Superior Court, 2006), and as amended decision in February 2007 (Monterey County Superior Court, 2007), "natural safe yield" is the quantity of groundwater in the Seaside Groundwater Basin that occurs solely as a result of natural replenishment.

[16] Additional information on pressure-exchanger energy recovery systems is available at www.energyrecovery.com.

TABLE 3-8
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
Federal Agencies – *Consultations with federal agencies could be required if the proposed project is subject to a federal permit, such as a Clean Water Act Section 404 permit.*		
U.S. Army Corps of Engineers (Corps)	Permit under Section 404 of the Clean Water Act (33 USC §1344) Section 10 Permit of the Rivers and Harbors Act of 1899	• Projects that would discharge dredged or fill material into waters of the United States, including wetlands, require a Corps permit under Clean Water Act Section 404. • Projects that would place structures below the Ordinary High Water elevation of navigable waters of the United States require approval by the Corps.
U.S. Fish and Wildlife Service (USFWS)	For "May Affect, but May Not Adversely Affect" determinations: A letter of Concurrence is issued by USFWS to federal action agency For "May Adversely Affect" determinations: Biological Opinion under Section 7 of the Federal Endangered Species Act (FESA) (16 USC §1531 et seq.) and Incidental Take Statement in accordance with FESA Section 7, as amended (16 USC §1531 et seq.)	• The Federal Endangered Species Act (FESA) requires federal agencies to consult with the USFWS before implementing actions that may affect a federally listed species under their jurisdiction or may adversely modify designated critical habitat. MBNMS, as NEPA Lead Agency, must consult with the USFWS to determine whether the proposed action of issuing permits and authorizations for the proposed project is likely to adversely affect a federally-listed terrestrial or freshwater animal or plant species under USFWS jurisdiction, or that species' designated critical habitat; jeopardize the continued existence of species that are proposed for listing under FESA; or adversely modify proposed critical habitat. To support the USFWS determination, MBNMS prepared a Biological Assessment to initiate "formal consultation". The USFWS will issue a Biological Opinion concerning the effects of the project. If the USFWS finds that the project may jeopardize the species or destroy or modify critical habitat, reasonable and prudent alternatives to the action must be considered. • The USFWS authorizes the incidental take of federally listed species through an Incidental Take Statement that is supported by, and often attached to, the Biological Opinion, consistent with Section 7 of the FESA.
	Permit under the Migratory Bird Treaty Act (16 USC §§703–711)	• The incidental take of migratory birds or any part, nest, or eggs of a migratory bird also requires an Incidental Take Permit from the USFWS.
National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS)	For "May Affect, but May Not Adversely Affect" determinations: A letter of Concurrence is issued by NMFS to federal action agency For "May Adversely Affect" determinations: Biological Opinion under Section 7 of the Federal Endangered Species Act (FESA) (16 USC §1531 et seq.) and Incidental Take Statement in accordance with FESA Section 7, as amended (16 USC §1531 et seq.)	• The Federal Endangered Species Act (FESA) requires federal agencies to consult with the NMFS before implementing actions that may affect a federally listed species under their jurisdiction or may adversely modify designated critical habitat. MBNMS, as NEPA Lead Agency, must consult with the NMFS to determine whether the proposed action of issuing permits and authorizations for the proposed project is likely to adversely affect a federally-listed marine species under NMFS jurisdiction, or that species' designated critical habitat; jeopardize the continued existence of species that are proposed for listing under FESA; or adversely modify proposed critical habitat. To support the NMFS determination, MBNMS prepared a Biological Assessment to initiate consultation. • The NMFS issued a letter of concurrence on October 23, 2017.

TABLE 3-8 (Continued)
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
Federal Agencies (cont.)		
State Historic Preservation Office	Consultation with State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 USC §470 et seq.)	• The NHPA requires federal permitting agencies to "take into account" the effects of a federal undertaking, or a proposed project, on properties included in the National Register of Historic Places or that meet National Register criteria, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Thus, as part of the federal consultations required by NEPA, the MBNMS must consult with the SHPO or THPO on behalf of the project applicant. • The SHPO issued a letter of concurrence on May 3, 2017
National Oceanic and Atmospheric Administration (NOAA)	Under the National Marine Sanctuaries Act and regulations, a permit or other approval is required from NOAA to allow a person to conduct an activity within a sanctuary that is otherwise prohibited.	• Otherwise prohibited activities within a national marine sanctuary may be allowed via the issuance of a permit or authorization. **A special use permit** (SUP) is available pursuant to Section 310 of the NMSA for any activity that is necessary (1) to establish conditions of access to and use of any Sanctuary resource or (2) to promote public use and understanding of a Sanctuary resource; and that does not injure Sanctuary resource. **An authorization** is available to allow the conduct of an activity prohibited by sanctuary regulations if such activity is specifically authorized by any valid federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of sanctuary regulation (15 CFR 922.49).
	Consultation with NMFS under Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 USC §1855(b))	• If MBNMS approves a project that could adversely affect designated Essential Fish Habitat (EFH), it must consult with NMFS. • The NMFS issued a letter of concurrence on October 23, 2017.
U.S. Army	Real property outgrants for construction and operation for non-Army users (Army Regulation (AR) 405-80, 200-1)	• AR405-80 sets forth the authority and prescribes policies for management of the United States of America title to real property under the jurisdiction or control of the Department of the Army, granting the use of that real property to non-Army users. • Under AR200-1, real property transactions require preparation of appropriate NEPA documentation per 32 Code of Federal Regulations (CFR) 651. Should a discretionary approval be required for use of U.S. Army property, this EIR/EIS will serve as the NEPA requirement for the action.
State Agencies		
California Public Utilities Commission (CPUC)	Certificate of Public Convenience and Necessity (Cal. Pub. Util. Code §1001 et seq.)	• This allows the applicant to build and operate the proposed project, and to recover its costs.
Fort Ord Reuse Authority (FORA)	Finding of substantial conformance with the Base Reuse Plan and the FORA Master Resolution Chapter 8 consistency criteria	• Applications for local agency legislative land use planning approval (such as a proposed county general plan amendment) come before the FORA Board of Directors for a determination of consistency between the application and the Base Reuse Plan.

TABLE 3-8 (Continued)
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
State Agencies (cont.)		
Central Coast Regional Water Quality Control Board (RWQCB)	Compliance with National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity (Order 2010-0014-DWQ)	• Any discharge of stormwater to surface waters of the United States from a construction project that encompasses 1 acre or more of soil disturbance requires compliance with the General Permit. This includes: – Development and implementation of a stormwater pollution prevention plan that specifies best management practices (BMPs) to prevent construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving offsite into receiving waters – Elimination or reduction of non-stormwater discharges to storm sewer systems and other waters of the U.S. – Inspection of all BMPs
	NPDES permit under Section 402 of the Clean Water Act (33 USC §1342)	• Discharges of brine into surface waters of the United States, including wetlands and Monterey Bay National Marine Sanctuary, requires an NPDES permit. The *Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* (Order No. R3-2014-0013, NPDES Permit No. CA0048551) would be revised to include the brine discharges from the MPWSP Desalination Plant.
	Waste Discharge Requirements under the Porter-Cologne Water Quality Control Act (Cal. Water Code §13000 et seq.)	• Any activity that results or may result in a discharge of waste that directly or indirectly impacts the quality of waters of the state (including groundwater or surface water) or the beneficial uses of those waters is subject to waste discharge requirements.
	Water Quality Certification under Section 401 of the Clean Water Act (33 USC §1341)	• Under Section 401 of the Clean Water Act, the RWQCB must certify that actions authorized under Section 404 of the Clean Water Act also meet state water quality standards. Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into navigable waters, must provide the licensing or permitting agency a certification that the activity meets state water quality standards.
California Department of Fish and Wildlife (CDFW)	Incidental Take Permit under the California Endangered Species Act (CESA) (Cal. Fish and Game Code §2081)	• The take of any endangered, threatened, or candidate species may be permitted if it is incidental to an otherwise lawful activity and if the impacts of the authorized take are minimized and fully mitigated. No permit may be issued if the activity would jeopardize the continued existence of the species.
	Lake/Streambed Alteration Agreement (Cal. Fish and Game Code §1602)	• It is unlawful to substantially divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources, or to use any material from the streambeds, without first notifying the CDFW.
California Coastal Commission (CCC)	Coastal Development Permit under the California Coastal Act (Cal. Pub. Res. Code §30000 et seq.)	• Development proposed within the Coastal Zone requires a Coastal Development Permit from the CCC, except where the local jurisdiction has approved a Local Coastal Program (LCP). If so, the primary responsibility for issuing permits in coastal areas shifts from the CCC to the local government, although the CCC will hear appeals on certain local government coastal development decisions.

TABLE 3-8 (Continued)
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
State Agencies (cont.)		
California Coastal Commission (CCC) (cont.)		• Regardless of whether a Coastal Development Permit must be obtained from a local agency under an approved LCP, the CCC retains coastal development permit authority over new development proposed on the immediate shoreline, including intake and outfall structures on tidelands, submerged lands, and certain public trust lands, and over any development that constitutes a "major public works project." (Cal. Pub. Res. Code §§30601, 30600[b][2]).
	Federal Consistency Review under the Coastal Zone Management Act (16 U.S.C. §1456) and Federal Consistency regulations (15 C.F.R. Part 930, Subpart D)	• In accordance with 15 C.F.R. Part 930, Subpart D, the project applicant may be required to submit a federal consistency certification to the CCC. The CCC must then concur, conditionally concur, or object to the certification; no response from the CCC would be considered a presumed concurrence.
California Environmental Protection Agency, State Water Resources Control Board, Division of Drinking Water	Permit to Operate a Public Water System (Cal. Health and Safety Code §116525)	• The Division of Drinking Water has permitting authority over the operation of a public water system and oversees the quality of the desalinated water produced.
California Department of Transportation (Caltrans)	Encroachment Permit (Cal. Streets and Highway Code §660 et seq.)	• Caltrans has permitting authority over encroachments in, under, or over any portion of a state highway right-of-way, including Highway 156, Highway 68, and Highway 1.
California Department of Toxic Substances Control (DTSC)	DTSC hazardous waste management and disposal requirements under Title 22, Division 4.5, Chapter 11, Article 3, Soluble Threshold Limits Concentrations (STLC)/Total Threshold Limits Concentrations (TTLC); Review under local regulations for digging and excavation within certain areas of the former Ft Ord.	• DTSC would require soil management plans if contaminated soils are present along the pipeline alignment. Regulatory Requirements outline the concentrations at which soil and groundwater are a California Hazardous Waste. Title 22 would apply if contaminated soil or groundwater arising from trenching are a Hazardous Waste, subject to associated transport and disposal requirements. Under 40 CFR Part 261, concentrations of contaminated soil or groundwater may also be a Federal Hazardous Waste. • DTSC must approve digging and excavation in certain portions of the former Fort Ord military base (also see City of Seaside Digging and Excavation Permit).
California State Lands Commission (CSLC)	New Land Use Lease, for portion of the subsurface slant wells located below mean high tide, and Amended Land Use Lease, for use of the MRWPCA outfall and diffuser (Cal. Pub. Res. Code §1900)	• CSLC has jurisdiction and management authority over all ungranted tidelands and submerged lands in Monterey Bay under the Common Law Public Trust. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide elevation.
California Department of Parks and Recreation	Easement, right-of-entry (ROE) and/or lease negotiations for 0.25 mile portion of the new Transmission Main that encroaches on Fort Ord Dunes State Park	• State Parks has jurisdiction and management authority over Fort Ord Dunes State Park and any easement, ROE and/or lease if granted, will need to be appraised using DGS guidelines and be accompanied by State Parks-approved legal descriptions.
State Water Resources Control Board (SWRCB)	Order approving change in Place of Use to allow Carmel River water to be injected and/or extracted by ASR-5 and ASR-6 wells	• The SWRCB has authority over the place of injection and use of Carmel River water under Permit 20808

TABLE 3-8 (Continued)
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
Local Agencies		
Seaside Groundwater Basin Watermaster	Permit for Injection/Extraction	• The Seaside Groundwater Basin Watermaster must approve injection/extraction activities that would affect the Seaside Groundwater Basin.
City of Seaside	Digging and Excavation Permit	• Excavations of more than 10 cubic yards within an Ordnance Remediation District, in the Former Fort Ord areas require a permit under Chapter 15.34, Digging and Excavation, of the Former Fort Ord Ordinance. Permit approval is subject to requirements placed on the property by an agreement between the City of Seaside, FORA, and DTSC.
City of Marina	Coastal Development Permit in accordance with the California Coastal Act (Cal. Pub. Res. Code §30000 et seq.)	• Where the City of Marina has jurisdiction through a Local Coastal Program, it must permit development proposed in the Coastal Zone, and the CCC retains jurisdiction over appeals. Where there is no Local Coastal Program, the CCC retains primary permit authority.
Monterey County Public Works Department	Encroachment Permit (Monterey County Code [MCC] Chapter 14.04)	• Designated activities within the right-of-way of a county highway require an Encroachment Permit from the director of the Public Works Department, whose decisions may be appealed to the Monterey County Board of Supervisors.
	Tree Removal Permit	• Removal of any protected trees requires a tree removal permit under Chapter 16.60 of the County's municipal code. Removal of more than three protected trees requires a forest management plan from the Director of Planning.
Monterey County Health Department, Environmental Health Division	Well Construction Permit (MCC Chapter 15.08)	• Monterey County's health officer must issue a written permit before anyone can build new water supply wells. Those decisions may be appealed to the Board of Supervisors.
	Permit to Construct Desalination Facility (MCC Chapter 10.72)	• Monterey County's director of environmental health, or their designee, must issue a permit before anyone can build or operate a desalination treatment facility (MCC Section 10.72.010). Permit decisions may be appealed to the director of environmental health within 30 days (MCC Section 10.72.080).
Monterey County Planning and Building Inspection Department	Conditional Use Permit (MCC Chapter 21.74)	• The Monterey County Zoning Ordinance requires a conditional use permit issued by the appropriate planning authority (e.g., the zoning administrator or the Planning Commission) for certain uses in specific zones. The permit decisions may be respectively appealed to the Planning Commission or the Board of Supervisors.
	Coastal Development Permit in accordance with the California Coastal Act (Cal. Pub. Res. Code §30000 et seq.)	• Where the County has jurisdiction through a Local Coastal Program, it must permit development proposed in the Coastal Zone, and the CCC retains jurisdiction over appeals. Where there is no Local Coastal Program, the CCC retains primary permit authority.
	Grading Permit (MCC Chapter 16.08)	• Subject to certain exceptions, grading requires a permit from the Monterey County Planning and Building Inspection Department. Grading permit decisions may be appealed to the five-member Board of Appeals, and then to the Board of Supervisors.
	Digging and Excavation Permit (MCC Chapter 16.10)	• A separate permit from the Monterey County Planning and Building Inspection Department is required for any project activities within the former Fort Ord military base. Permit decisions may be appealed to the Board of Appeals and then to the Board of Supervisors.

TABLE 3-8 (Continued)
ANTICIPATED PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Discussion
Local Agencies (cont.)		
Monterey County Planning and Building Inspection Department (cont.)	Erosion Control Permit (MCC Chapter 16.12)	• The Director of Building Inspection must issue an Erosion Control Permit for any project development and construction activities (such as site cleaning, grading, and soil removal or placement) that are causing or are likely to cause accelerated erosion. Permit decisions may be appealed to the Board of Appeals and then to the Board of Supervisors.
Monterey Peninsula Water Management District (MPWMD)	Water System Expansion permit under with Ordinance 96 of the MPWMD Board of Directors	• Any project activity that would expand the water delivery system within the MPWMD's jurisdiction requires a permit.
Monterey Bay Unified Air Pollution Control District	Authority to Construct permit under Local Rule 3.1	• Projects that propose to build, erect, alter, or replace any article, machine, equipment, or other contrivance that may emit air contaminants from a stationary source or may be used to eliminate, reduce, or control air contaminant emissions require an authorization to construct permit.
	Permit to Operate under Local Rule 3.2	• Operating the diesel fuel-powered emergency generators, and any other articles, machines, equipment, or other contrivances that may emit air contaminants from a stationary source requires a permit to operate.
City of Monterey, City of Seaside, City of Marina, City of Pacific Grove	Land Use (including local coastal development permit(s), as necessary), Building, Public Health, Public Works, Tree/Vegetation Removal, and Encroachment Permits, and/or similar department approvals to those discussed above in the context of Monterey County, each issued in accordance with the applicable city's municipal code	• See related discussions provided in the context of Monterey County.
Transportation Agency for Monterey County (TAMC)	Encroachment Permit	• An encroachment permit is necessary to install conveyance pipelines along the TAMC right-of-way.

NOTES:
CFR = Code of Federal Regulations
PRC = Public Resources Code
USC = United States Code
MCC = Monterey County Code

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CHAPTER 4
Environmental Setting (Affected Environment), Impacts, and Mitigation Measures

Sections	Figures	Tables
4.1.1 Scope of Analysis 4.1.2 Resources/Issues Not Affected 4.1.3 Baseline Conditions 4.1.4 Impact Terminology 4.1.5 Project Consistency Analysis 4.1.6 Mitigation Measures 4.1.7 Cumulative Effects	4-1 Cumulative Projects	4.1-1 Overview of Alternatives Evaluated in Detail 4.1-2 Cumulative Projects

4.1 Overview

This chapter summarizes the environmental setting ("affected environment") and assesses the environmental impacts or consequences that would result from building, operating and maintaining the Monterey Peninsula Water Supply Project (MPWSP or proposed project[1]) described in Chapter 3, Description of the Proposed Project, which consists of 10 subsurface slant wells at CEMEX. This chapter provides the CEQA- and NEPA-required analysis of the physical, biological, social, and economic issues associated with implementation of the proposed project. This introductory subsection is followed by issue-specific analyses of the potential effects of the proposed project. CEQA defines "effects" or "impacts" as the "[d]irect or primary effects which are caused by the project and occur at the same time and place" or the "[i]ndirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable." (CEQA Guidelines § 15358). Further, under CEQA, the term "significant effect on the environment" means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected [directly or indirectly] by the project, including land, air, water, minerals, flora, fauna, ambient noise and objects of historic or aesthetic significance" (CEQA Guidelines § 15382).

Under NEPA, the term effects (or impacts) includes "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects,

[1] The CEQA terminology of "proposed project" is used when referring to the CalAm project and its impacts. When discussing impacts from both the federal action and CalAm project, the term "proposed project" is also used.

even if on balance the agency believes that the effect will be beneficial" (40 Code of Federal Regulations (CFR) § 1508.8).

This chapter documents the Lead Agencies' analysis of the direct, indirect, and cumulative effects that the proposed project might cause. It considers the impacts of short-term uses, such as construction-related truck traffic, air quality and noise. It also considers the impacts that would occur over the longer-term operation and maintenance period or that would persist after an initial occurrence, such as the discharge of brine into MBNMS from the desalination process. Finally, it identifies mitigation measures that could avoid or reduce adverse impacts, and summarizes the residual significant and unavoidable adverse impacts on an issue-by-issue basis.

The sections in this chapter are referred to as issue areas or topics. Each issue area section:

- defines the study area for the specific topic covered in the section;
- describes the regional and local environmental setting (the "affected environment");
- summarizes the applicable laws, regulations, plans, and standards (the "regulatory framework");
- identifies the thresholds and other criteria applied to determine whether a potential change to the environment as a result of the project would be significant;
- summarizes the analytical methodology used;
- analyzes direct, indirect, and cumulative effects;
- identifies mitigation measures to address adverse effects; and
- explains the residual impacts that would remain after the implementation of all recommended mitigation measures.

See Chapter 5, Alternatives Screening and Analysis, for descriptions and analyses of the alternatives. A summary of the alternatives is provided in **Table 4.1-1** for reference.

TABLE 4.1-1
OVERVIEW OF ALTERNATIVES EVALUATED IN DETAIL

Alternative	Components				
	Intake Facilities	**Brine Discharge/ Outfall Discharge Facilities**	**Desalination Plant**	**Conveyance Pipelines**	**Groundwater Replenishment Project Water Purchase Agreement**
Proposed Project *Described in Chapter 3*	9 new subsurface slant wells at CEMEX and conversion of test slant well to production well (10 total wells) Intake capacity of 24.1 mgd	• Brine Disposal Pipeline and Brine Mixing Box • Existing MRWPCA ocean outfall pipeline and diffuser • Ocean Outfall End Gate Modification	New 9.6 mgd desalination plant on 25 acres at Charles Benson Rd. site	Source Water pipeline, Brine Discharge pipeline, Castroville pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements. Approximately 21 total miles of pipelines.	Not part of proposed project
No Project Alternative *Described in Section 5.4.2*	No new facilities would be constructed; payback to the Seaside Groundwater Basin would not occur; reliance on existing and planned water conservation and recycling programs; likely implementation of mandatory rationing and conservation measures.				CalAm would purchase and extract 3,500 afy of GWR water from the Seaside Groundwater Basin
Alternative 1 – *Slant Wells at Potrero Road* *Described in Section 5.4.3*	10 new subsurface slant wells at Potrero Rd. Existing test slant well at CEMEX removed Same intake capacity (24.1 mgd) as proposed project.	Same as proposed project		Same as proposed project, plus a new source water pipeline between intake and desal plant that adds an additional 5.5 miles of source water pipeline. Approximately 26 total miles of pipelines.	Not part of alternative
Alternative 2 – *Open-Water Intake at Moss Landing* *Described in Section 5.4.4*	New Screened Open-Water Intake at Moss Landing – one 36" diameter intake pipeline (HDD[1] installation) Existing test slant well at CEMEX removed Same intake capacity (24.1 mgd) as proposed project			Source Water pipeline, Brine Discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an additional 6.5 miles of source water pipeline. Approximately 27 total miles of pipelines.	
Alternative 3 – *Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)* *Described in Section 5.4.5*	New Screened Open-Water Intake at Moss Landing – same location as Alt. 2; • two 42" diameter intake pipelines (HDD installation) and • a 110' L x 30' W x 12' tall intake structure Existing test slant well at CEMEX removed Larger intake capacity (49 mgd) than proposed project	New Outfall at Moss Landing; • two 36" diameter discharge pipelines (HDD installation) and • a 140'L x 10' W x 15' tall discharge structure	New 22 mgd desalination plant and co-located data center at 110-acre "East Tank Farm Parcel" off Dolan Road, Moss Landing	New Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an 8 mi source water pipeline, transfer and brine discharge pipelines, and two new pipelines to serve other areas (Salinas and Santa Cruz Co; approximately 25 miles). Approximately 48 total miles of pipelines.	Not part of alternative

TABLE 4.1-1 (Continued)
OVERVIEW OF ALTERNATIVES EVALUATED IN DETAIL

Alternative	Components				
	Intake Facilities	**Brine Discharge/ Outfall Discharge Facilities**	**Desalination Plant**	**Conveyance Pipelines**	**Groundwater Replenishment Project Water Purchase Agreement**
Alternative 4 – *People's Moss Landing Water Desalination Project (People's Project)* *Described in Section 5.4.6*	New Screened Open-Water Intake at Moss Landing – same general location as Alt. 2, but different installation • 40" diameter pipeline, combination HDD and laid on seafloor (for 1,100') • two 96" diameter screened intakes Existing test slant well at CEMEX removed Larger intake capacity (approx. 30 mgd) than proposed project	New Outfall at Moss Landing; extension of existing outfall • 36" diameter pipeline, combination HDD and laid on seafloor (for 700') • two 16" diameter diffuser ports	New 12 mgd desalination plant at former National Refractories facility in Moss Landing	New Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an alternative 8-mile-long source water pipeline. Approximately 20 total miles of pipelines.	Not part of alternative
Alternative 5a[2] – *Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at CEMEX)* *Described in Section 5.4.7*	Same as proposed project, but fewer slant wells (7) at CEMEX Smaller intake capacity (15.5 mgd) than proposed project	Same as proposed project except there would be less brine discharged.	New 6.4 mgd desalination plant at Charles Benson Rd site.	Same as proposed project, approximately 21 total miles of pipelines.	CalAm's purchase and extraction 3,500 afy of GWR water from the Seaside Groundwater Basin is considered in the cumulative analysis
Alternative 5b – *Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at Potrero Road)* *Described in Section 5.4.8*	Same as Alternative 1, but fewer slant wells (7) at Potrero Road Existing test slant well at CEMEX removed Smaller intake capacity (15.5 mgd) than proposed project			Same as proposed project, plus an additional 5.5 miles of source water pipeline, approximately 26 miles of pipelines.	

NOTES:

1 Horizontal Directional Drilling (HDD) is described in Section 3.3.4.2 in Chapter 3, Description of the Proposed Project

2 Alternative 5 includes a reduced size desalination plant. The CPUC authorized CalAm to enter into a water purchase agreement for 3,500 afy from the GWR Project, and to build the new Monterey Pipeline and associated pump station needed for the GWR project, in September 2016. As a result, the GWR project is a reasonably foreseeable future project, and the cumulative impact scenario evaluated for Alternatives 5a and 5b includes implementation of the GWR project. The GWR project is not considered for cumulative impacts in conjunction with the proposed project or Alternatives 1, 2, or 4 because if a desalination option is selected that is of a size sufficient to fully satisfy the project objectives in terms of water supply, such choice would presumably mean that the GWR project was not successful in securing funding, completing construction and undertaking operations. The GWR project is conservatively considered for cumulative impacts with Alternative 3 because under that option, CalAm could meet its full project water supply objectives via the DeepWater Desal project, or could obtain water from a combination of the DeepWater Desal project and the GWR Project. See Table 4.1-2 in Section 4.1.

4.1.1 Scope of Analysis

Chapter 4 is organized by issue area or topic, as follows:

Sections			
4.2	Geology, Soils, and Seismicity	4.11	Greenhouse Gas Emissions
4.3	Surface Water Hydrology and Water Quality	4.12	Noise and Vibration*
4.4	Groundwater Resources	4.13	Public Services and Utilities
4.5	Marine Biological Resources	4.14	Aesthetic Resources
4.6	Terrestrial Biological Resources	4.15	Cultural and Paleontological Resources
4.7	Hazards and Hazardous Materials*	4.16	Agricultural Resources*
4.8	Land Use, Land Use Planning, and Recreation*	4.17	Mineral Resources
4.9	Traffic and Transportation*	4.18	Energy Conservation*
4.10	Air Quality	4.19	Population and Housing*
		4.20	Socioeconomics and Environmental Justice

* Issue areas in which MBNMS resources would not be affected.

Each section of Chapter 4 contains the following elements:

- **Table of Contents and Introduction.** This section presents a table listing the subsections, figures, and tables within the resource section. It also briefly introduces the resource topic. During the public scoping process and during the public comment period for the April 2015 Draft EIR, comments received from parties and members of the public raised issues and concerns and made suggestions regarding the scope of the analysis. These scoping and Draft EIR comments were carefully reviewed. To the extent that the issues raised or suggestions made were relevant to the EIR/EIS, they are described in this introductory text and addressed in the analysis. Likewise, revisions made to the section as a result of authors' changes or comments received on the January 2017 Draft EIR/EIS, are also described.

- **Setting/Affected Environment.** This section presents a description of the existing environmental conditions near the project with respect to each resource topic at a level of detail that allows the reader to understand the impact analysis. This section provides the environmental baseline for the impact analysis. The focus of the affected environment description is on those resources or uses that may be affected by specific proposed project components. The study area for the EIR/EIS varies by topic, but is generally the proposed project area and adjacent properties. In some issue areas, the study area is necessarily larger than the project area because there is potential for impacts to occur beyond the project boundaries. The nature of existing conditions in the study area is interpreted from available literature and site-specific surveys, summarized in the resource sections. Where sufficient location-specific information is available, these data are primarily utilized. Where location-specific data are lacking, general conditions for the study area are utilized with appropriate qualifications.

- **Regulatory Framework.** This section describes the relevant laws and regulations that protect the environmental resources within the project area, and the governmental agencies that enforce those laws and regulations. The discussion of pertinent laws and regulations also evaluates the project's consistency with such regulatory requirements that were enacted for environmental protection purposes. Where a potential inconsistency with such regulations is identified, readers are referred to the discussion of the direct and indirect effects of the project within that topical area for further analysis of the issue.

- **Evaluation Criteria.** This section lists the specific criteria, also known as thresholds of significance, that were applied when evaluating the environmental impacts of the proposed project (10 slant wells at CEMEX) in Chapter 4, as well as the impacts of the alternatives, which are described and evaluated in Chapter 5, Alternatives Screening and Analysis. The list is based on Appendices G and F of the CEQA Guidelines with some modifications to account for NEPA considerations and to ensure that the criteria correlate to and measure the expected effects of the project. For certain resource topics, the Lead Agencies developed additional criteria to capture the environmental effects of the proposed project or its alternatives, as set forth in Chapter 5.

- **Approach to Analysis.** This section explains how the Lead Agencies applied the significance criteria to evaluate the proposed project in Chapter 4 and to the alternatives in Chapter 5. This section also describes modeling or other methodology used to quantify impacts.

- **Direct and Indirect Effects of the Proposed Project.** This section evaluates the potential for the proposed project to adversely affect the physical and human environment described in the setting, draws impact conclusions, discusses consistency with plans and policies and describes mitigation.

  CEQA and NEPA both require consideration of direct and indirect effects. Under CEQA, direct effects are those caused by the project itself and that occur at the same time and place; indirect impacts are those caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable (CEQA Guidelines § 15358). The definitions under NEPA are substantially similar (40 CFR § 1508.8). Under NEPA, direct effects “are caused by the action and occur at the same time and place" (40 CFR § 1508.8(a)); indirect effects “are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR § 1508.8(b)). The overall methodology for each issue area or topic is consistent with Council on Environmental Quality (CEQ) guidance and NOAA NEPA guidelines (NAO 216-6A, January 2017), as well as with the CEQA Guidelines.

  The impact analysis for each issue area includes a description of how the proposed project/action would result in a change in the environment relative to existing conditions, and the current regulatory framework. The analysis within each topic focuses on components of the proposed project that could result in potentially significant effects. Both adverse and beneficial impacts are identified, where relevant. For most resource topics, all construction-related impacts are discussed first, followed by all operations/facility siting impacts. For purposes of CEQA, the conclusion of each impact analysis is expressed in terms of impact significance, which is discussed further in Section 4.1.4, below.

  This section also discusses the proposed project’s consistency with plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect as well as a discussion of the possible conflicts between the proposed project and the objectives of federal, regional, state, and local land use plans and policies that are imposed for the protection of the environment, and is described in Section 4.1.5, below.

  This section also identifies mitigation measures for all of the impacts considered significant or potentially significant, as well as for some impacts that are less than significant. This is consistent with CEQA and NEPA, as discussed further in Section 4.1.6.

- **Cumulative Effects of the Project.** This section evaluates the cumulative direct and indirect impacts of the construction, operation, and maintenance of the proposed project. Details on CEQA/NEPA requirements and the cumulative effects methodology are provided in Section 4.1.7. If the proposed project/proposed action would have no direct or indirect effects on a resource, then it could not cause or contribute to potential cumulative effects on that resource. In these instances, the Lead Agencies did not perform a cumulative effects analysis. See, for example, Section 4.1.2, Resources/Issues Not Affected.

4.1.2 Resources/Issues Not Affected

Of the issues commonly analyzed in a CEQA or NEPA process, the following list summarizes issues not analyzed in this EIR/EIS, why the proposed project or alternatives would not affect these resources, and why more study in this EIR/EIS is not warranted. 40 CFR 1502.2(b). Resources that are not present on the project site, or resources that the project will not significantly affect, include Forestry Resources and Military and Homeland Security Uses. Neither the proposed project nor any of the alternatives would cause or contribute to any cumulative effects on these resources.

4.1.2.1 Forestry Resources

Implementation of the proposed project would have a significant impact on forestry resources if it:

- Conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Cal. Public Resources Code § 12220(g)), timberland (as defined by Cal. Public Resources Code § 4526), or timberland zoned Timberland Production (as defined by Cal. Government Code § 51104(g));
- Results in the loss of forest land or conversion of forest land to non-forest use; or
- Involves other changes in the existing environment that, due to their location or nature, could result in conversion of forest land to non-forest use.

None of the land in the project area is zoned as forest land, timberland, or included in a Timberland Protection Zone, and no rezoning of any kind would be required to build the proposed project. Cal. Public Resources Code § 12220(g) defines "forest land" as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Cal. Public Resources Code § 4526 defines "timberland" as "land, other than land owned by the federal government and land designated by the board [of the California Department of Forestry and Fire Protection (CAL FIRE)] as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis."

In Monterey County, CAL FIRE has designated the following as qualifying commercial timber species: coast redwood, Douglas fir, Monterey pine, Coulter pine, Ponderosa pine, Jeffrey pine, white alder, cottonwood, Pacific madrone, California black oak, and tanoak. Timberland includes areas where the qualifying species are now growing naturally or have grown naturally in the recorded past, even if they are not currently present. Cal. Government Code § 51104(g) defines

"Timberland production zone" as "an area which has been zoned pursuant to [Government Code] Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses," which include uses that do not "significantly detract from the use of the property for, or inhibit, growing and harvesting timber" (Gov't Code § 51104[g]). Because none of the project area land is zoned for forestry use, and the project needs no forestry-related rezoning, the proposed project would not conflict with such zoning. Similarly, no forest land would be lost or converted to non-forest use as a result of the proposed project, and the project would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of forest land to non-forest use. Therefore, the proposed project would not impact forestry resources.

4.1.2.2 Military and Homeland Security Uses

A portion of the new Transmission Main would be located on military lands and the ASR-5 Well and ASR-6 Well would be located in the Fitch Park military housing community. The construction impacts associated with the new Transmission Main and ASR-5 Well and ASR-6 Well are analyzed throughout this document. Construction impacts on military and homeland security uses would be temporary and negligible[2]. Furthermore, construction and operation of project components in MBNMS would not interfere with any military or homeland security uses of MBNMS. Therefore, this document does not further discuss military and homeland security uses.

4.1.3 Baseline Conditions

The baseline for this EIR/EIS is the existing condition on or about October 5, 2012, updated with new data as appropriate, which is when the CPUC issued a Notice of Preparation (NOP) for the proposed project to local, state, and federal agencies, Native American tribal organizations, and other interested parties. Although the Notice of Intent for the NEPA review contained within this document was issued in 2015, use of the 2012 baseline is appropriate and reasonable because (i) 2012 is a very recent point in time; (ii) the CPUC invested considerable resources amassing 2012 background/baseline data for the April 2015 Draft EIR; and (iii) environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions. The environmental baseline reflects the pre-project environmental conditions to which the potential impacts of the proposed project and all alternatives are compared.

Since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate. This document notes those updates in its discussions of the Setting/Affected Environment for the various resource areas and applies them in the pertinent analyses. For instance, in Section 4.6,

[2] When reaching significance conclusions, the analysis also adopts the definition of "negligible" used under NOAA NEPA policy, which is a level of impact that is below minor to the point of being barely detectable and therefore discountable. (NOAA NAO 216-6A Companion Manual Appendix A).

Terrestrial Biological Resources, updates to survey information for biological resources are described in Section 4.6.1.2, Information Sources and Survey Methodology.

4.1.4 Impact Terminology

CEQA requires agencies to use their best judgment to determine whether an impact is significant; it's not a mechanical process. The agency must base its decision in light of the whole record, and must consider the impact's setting: "For example, an activity which may not be significant in an urban area may be significant in a rural area." (CEQA Guidelines § 15064(a)(1), (b)). Similarly, to determine whether an impact is significant, CEQ regulations (40 CFR § 1508.27) require the consideration of the context and intensity of potential impacts. Context normally refers to the setting, whether local or regional, and intensity refers to the severity of the impact. Also, the analysis includes a discussion of the possible conflicts between the proposed project and the objectives of federal, regional, state, and local land use plans and policies for the area concerned (40 CFR § 1502.16(c)).

Consistent with both CEQA and NEPA requirements and guidance, determinations regarding an impact's significance in this EIR/EIS are made on the basis of high quality, credible scientific information and professional judgment. Where a significant impact is reasonably expected to occur, this analysis discloses that information. All impact determinations are projections based on the expectation that the described impacts, or lack thereof, will occur if the proposed project is approved and implemented. Therefore, the impacts are conditioned upon approval and implementation of the project, and the term "would/would not occur" is used to describe the reasonable expectation of the impacts of the project.

The categories used to designate impact significance are:

- **No Impact (NI).** There would be no impact if there is no potential for impacts, or if the environmental resource does not occur within the project area or the area of potential effect. For example, there would be no impact related to tree removal if no tree removal is proposed in the project area.
- **Less than Significant impact (LS).** This determination applies if there is a potential for some limited impact, but not a substantial adverse (or beneficial) effect that qualifies under the applicable significance criterion as a significant impact.
- **Less than Significant impact with Mitigation (LSM).** This determination applies if the project would result in an adverse effect that exceeds/qualifies under the applicable significance criterion, but feasible mitigation is available that would eliminate any adverse impact or reduce it to a less-than-significant level.
- **Significant and Unavoidable impact even with implementation of Mitigation (SU).** This determination applies if the proposed project would result in an adverse effect that exceeds/qualifies under the applicable significance criterion and even with mitigation implemented to lessen the impact, if available, the residual effect would remain significant. Therefore, the impact would be significant and unavoidable.

In accordance with NEPA, 40 C.F.R. 1508.8, beneficial environmental impacts of the proposed action are also discussed in the analysis.[3] Beneficial impacts are incorporated into the above impact significance categories as "less than significant". Beneficial impacts are also depicted in green shading in Table 5.6-1.

Within each issue area section in this chapter, there is a table at the beginning of the impact discussion that summarizes the potential impacts and indicates the level of impact significance. Environmental impacts are numbered throughout this EIR/EIS, using the section number followed by sequentially numbered impacts. Mitigation measures are numbered to correspond with the impact numbers; for example, Mitigation Measure 4.3-1 addresses Impact 4.3-1. In some cases, mitigation measures are used again to address sequentially later impacts. When this occurs, the measures are not renumbered or repeated in full; rather, the reader is directed to review the mitigation measure where it is first introduced.

4.1.5 Project Consistency Analysis

Consistent with CEQA, the EIR/EIS includes a discussion of any inconsistencies between the project and applicable general plans, specific plans, and regional plans and any conflicts between the project and applicable plans, policies, and regulations of agencies with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect (CEQA Guidelines section 15125 and Appendix G). Also, per NEPA, the analysis includes a discussion of the possible conflicts between the proposed project and federal, regional, state, and local land use laws, requirements, policies, and/or plans for the area concerned that are imposed for the protection of the environment (40 CFR § 1502.16(c) and 40 CFR § 1508.27(b)(10)).

The discussion of project consistency appears within each topical section's Regulatory Framework subsection. Federal and state requirements related to the subject topic are presented in a narrative format, followed by the analysis of project consistency. Owing to their relatively larger number of specific requirements, regional and local plans, policies, and regulations, and the associated consistency analyses, are presented in a table format. The table appears after the discussion of federal and state requirements within each topical section.

Where the consistency analysis concludes the MPWSP would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes that the MPWSP may conflict with the applicable plan, policy, or regulation, the reader is referred to the respective topic's Direct and Indirect Effects of the Project subsection, where the issue is discussed further. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

The proposed project's consistency with the full set of MBNMS Desalination Guidelines is addressed separately in Section 6.4 since the Guidelines are relevant to multiple issue areas.

[3] Under CEQA, significant environmental impacts are limited to adverse (not beneficial) impacts. CEQA defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment." 14 Cal. Code R. 21068.

4.1.6 Mitigation Measures

This chapter identifies feasible mitigation measures to avoid, minimize, or compensate for impacts of the proposed project consistent with CEQA and NEPA requirements. Regardless of the effect of the measure – whether to avoid, minimize, or mitigate for an impact – this document uses the term "mitigation measure" to label these measures, consistent with CEQA and NEPA guidance described below.

CEQA Guidelines Section 15126.4(a)(1) states that an EIR "shall describe feasible measures which could minimize significant adverse impacts." Section 15041 describes the authority of a CEQA lead agency to "require feasible changes in any or all activities involved in the project in order to substantially lessen or avoid significant effects on the environment, consistent with applicable constitutional requirements such as the 'nexus' and 'rough proportionality' standards established by case law (*Nollan v. California Coastal Commission* (1987) 483 U.S. 825, *Dolan v. City of Tigard*, (1994) 512 U.S. 374, *Ehrlich v. City of Culver City*, (1996) 12 Cal. 4th 854.)." Section 15092(b)(2) states that a public agency shall not decide to approve or carry out a project for which an EIR was prepared unless the agency has "Eliminated or substantially lessened all significant effects on the environment where feasible" and determined that any remaining significant and unavoidable impacts are acceptable due to overriding considerations. Thus, a CEQA lead agency must describe and adopt all feasible mitigation measures for impacts found to be significant, but is limited to requiring mitigation only for significant impacts and within the limitations of the nexus and rough proportionality standards.

CEQ NEPA guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation (76 FR 3843, Jan. 21, 2011) clarifies that when an agency premises its environmental analysis on a commitment to mitigate the environmental impacts of a proposed action, it should adhere to those commitments, monitor how they are implemented, and monitor the effectiveness of the mitigation. For example, the agency could impose appropriate conditions on permits or other agency approvals, or could make approvals contingent on implementation of the mitigation commitments. Although NEPA does not impose a similar procedural obligation on federal agencies as CEQA requires, the practice to adopt feasible mitigation whenever possible to reduce a project's significant impact is consistent with NEPA's intent that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated. Consistent with the federal agency's authority and responsibility under NEPA, this chapter identifies some feasible mitigation measures to lessen impacts that are adverse but do not rise to the level of being classified as significant impacts.

Mitigation measures included in this EIS/EIR are considered to be potentially feasible by the authors of the document; however, the ultimate determination of feasibility can be made only by agency decision-makers. This EIS/EIR addresses whether mitigation presented would reduce an impact to a less-than-significant level, based on the thresholds of significance presented in each resource chapter, except in those cases where the NEPA lead agency identifies feasible mitigation for adverse impacts that are not significant.

The Lead Agencies will prepare a Mitigation, Monitoring, Reporting, and Compliance Program (MMRCP)/ Environmental and Construction Compliance Monitoring Plan (ECCMP) prior to approval of the proposed project or an alternative analyzed in Chapter 5. This will ensure that any mitigation measures are effectively implemented. Such document will be prepared at or after the time that the Final EIR/EIS is published so as to capture all mitigation measures, but before the Record of Decision is made, and it would be made available to the public prior to adoption.

4.1.7 Cumulative Effects

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are "considerable," or that compound or increase other environmental impacts. Cumulative impacts can result from projects that are individually minor but collectively significant when added to the impacts of other closely related past, present, or reasonably foreseeable future projects. Section 15130 of the CEQA Guidelines states:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effects are "cumulatively considerable" (i.e., the incremental effects of an individual project are considerable when viewed in combination with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).
- An EIR should not discuss impacts that do not result in part from implementation of the project being evaluated in the EIR.
- A project's contribution is less than cumulatively considerable, and thus ultimately less than significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of cumulative impact severity and likelihood of occurrence need not be as detailed as that presented for effects attributable to the project alone.
- The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

The CEQ's NEPA regulations also require agencies to assess a proposed action's cumulative impacts (40 CFR Parts 1500-1508). Both CEQ regulations and NOAA Administrative Order Series (NAO) 216-6A define a cumulative impact as an "impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7, NAO 216-6). Cumulative impacts can result from individually minor but collectively significant actions taking place over time (40 CFR § 1508.7).

The CEQ states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ, 1997). Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be countervailing, where the adverse cumulative effect is less than the sum of the individual effects, or synergistic, where the net adverse effect is greater than the sum of the individual effects (CEQ, 1997).

This section presents the methods used to evaluate cumulative impacts, and lists projects that may have cumulative effects when combined with the impacts from the proposed project or alternatives discussed in this EIR/EIS. The MPWSP's cumulative effects analysis is provided by topical section throughout Chapter 4. Where appropriate, additional measures are identified to mitigate potentially significant cumulative impacts. The cumulative effects of project alternatives are analyzed in Chapter 5, Alternatives Screening and Analysis, Sections 5.5 and 5.6.

4.1.7.1 Approach to the Analysis of Cumulative Effects

CEQ's cumulative effects guidance sets out several different assessment methods, such as checklists, modeling, forecasting, and economic impact assessment, that evaluate changes in employment, income and population (CEQ, 1997).

This EIR/EIS uses a variety of methods, depending on the resource, to determine cumulative effects. Consistent with CEQA and NEPA, this EIR/EIS considers the direct and indirect effects of the proposed project[4] combined with the effects of the other projects that could combine geographically and temporally (i.e., would be causing accumulation of similar effects or synergistic interaction of different impacts in the same area at the same time as the proposed project) and, thereby, cause or contribute to a cumulative effect. For each resource or issue considered in this chapter, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then considers existing conditions (which are the combination of the natural condition and the effects of past projects). Then, as the first part of the two-step cumulative impact process, the analysis describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. Where relevant, the cumulative effects analysis also describes the relationship of the cumulative effects to any established thresholds. A quantitative analysis is provided where possible; where quantification is infeasible, qualitative effects are described. Where the analysis finds that the cumulative effects of past, present and future projects plus the proposed project would be significant and adverse, the analysis then embarks upon the second step of the cumulative impact process. That step identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature (referred to as a "cumulatively considerable contribution" under CEQA) such that the project's contribution to cumulative effects in that area is deemed significant. In essence, it is only if the answer is affirmative in both steps of the analytical process that the project's contribution to the overall significant adverse cumulative effect is deemed a significant effect associated with the project. If the proposed project would make a meaningful contribution to the adverse cumulative effect so as to be considered a significant effect associated with project implementation, mitigation measures are explored and identified.

[4] An example of indirect effects of the proposed project is the impacts stemming from implementation of mitigation measures set forth in this EIR/EIS. The cumulative analyses within each topic area treat the project contribution to cumulative impacts as that of the project directly and all indirect effects identified in the EIR/EIS.

4.1.7.2 Cumulative Scenario

CEQA Guidelines Section 15130(b)(1) discusses two approaches to a cumulative effects analysis. First, the analysis can be based on a list of past, present, and probable future projects producing related or cumulative impacts. Second, a summary of projections contained in a general plan or related planning document or in an adopted or certified environmental document that described or evaluated regional or area-wide conditions contributing to the cumulative impact can be used to determine cumulative impacts. This EIR/EIS employs the list-based approach, except where specifically discussed in individual resource sections in Chapter 4, where a summary of projections approach is more appropriate. To determine an appropriate list of projects for the cumulative analyses, the Lead Agencies considered three factors: similar environmental impacts, geographic scope and location, and timing and duration of implementation. The effects of relevant projects (e.g., short-term construction or demolition, or long-term operations) could happen at the same time as the MPWSP's effects.

The projects that could contribute to cumulative impacts are listed in **Table 4.1-2**. The projects in Table 4.1-2 have occurred[5] or are anticipated to occur in the reasonably foreseeable future within the study area. This list was compiled from several sources. Only those projects that might contribute to cumulative impacts are listed. These projects are similar in scope to the proposed project, have similar types of impacts within the study area, affect similar resources, or are large enough to have far-reaching effects on a resource. This approach includes both projects for which detailed descriptions and expected impacts are known, as well as projects that have less defined impacts but may contribute to the regional impacts. The Lead Agencies have considered the effects of these projects along with the proposed project's impacts to determine the overall cumulative impact on the resources in the study area. The numbering of projects in Table 4.1-2 provides a key to the locations of the projects shown in **Figure 4-1**; some projects are listed out of numeric order in Table 4.1-2 due to additions throughout the preparation of this EIR/EIS.

Within the project vicinity, there are several other substantial water supply projects that are proposed or are under construction. Details concerning the manner in which each of these projects is addressed in the cumulative analysis in this EIR/EIS are set forth below.

Pure Water Monterey Groundwater Replenishment Project

The Pure Water Monterey (PWM) Groundwater Replenishment (GWR) Project has a unique treatment in this EIS/EIR in that it is both a project component and is included in the cumulative impact scenario, depending on the alternative being addressed. As described in Chapters 1 and 3, CalAm's application includes two capacity options or build-out scenarios: the "Proposed Project" is a full capacity (9.6 mgd) option and presumes that GWR will not be built. Alternatives 1 and 2 are variations of the full capacity option. Alternative 5a, also proposed by CalAm as an alternative to the full capacity option, combines a reduced-capacity desalination plant (6.4 mgd)

[5] While a cumulative analysis includes past, present and reasonably foreseeable future projects, the category of past projects is captured within the existing setting, or baseline, against which impacts are judged throughout the EIR/EIS, including the cumulative analysis. However, where projects were implemented after 2012 (the baseline year), those projects are set forth within Table 4.1-2 and included in the cumulative analysis.

with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from the GWR project. A water purchase agreement for the GWR project water had been approved by the CPUC and executed by CalAm and the MRWPCA, making the reduced capacity desalination plant a more likely option than the full capacity desalination plant. Alternative 5b is a variation of the reduced capacity option (it places the intake in a different location).

The Proposed Project and Alternatives 1 and 2 assume that GWR would not be operational, and as such, GWR is not considered in the cumulative impacts scenario for these alternatives. The basis for this assumption is that, given the structure of CalAm's proposal and the fact that the water purchase agreement has been approved, the full capacity desalination plant would not be pursued if the GWR water is available to CalAm. On the other hand, the reduced capacity option reflected in Alternatives 5a and b assumes that GWR would be operational; therefore, the GWR project is assumed to occur in the cumulative impacts scenario for the reduced capacity options and is treated as a cumulative project for those analyses.

The project proponent for Alternative 3, Deepwater Desalination, has publicly stated that it would continue to pursue a 22 mgd capacity desalination plant regardless of other project proposals, and as such, GWR is assessed in the cumulative scenario for this alternative. Alternative 4, the People's Project, is proposed as a 12 mgd capacity desalination plant to provide 13,400 afy to meet both projected demand and future needs primarily for CalAm to meet the project objectives of the MPWSP. The 12 mgd capacity proposal does not presume that GWR will be built because if GWR is operational and providing water to CalAm under the approved water purchase agreement, CalAm would not need the capacity of supply proposed by the People's Project. Since the GWR project and the People's Project appear to be mutually exclusive (absent a reduced capacity People's Project, which is not envisioned by its proponents, see Section 5.2) the GWR project is not considered in the cumulative scenario for Alternative 4.

Other Cumulative Scenarios

As stated in Section 4.1.7, the cumulative impact analysis focuses on the impacts on the environment which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. As explained in Section 5.1.1, under CEQA and NEPA, the EIR/EIS must identify and analyze the impacts of reasonable alternatives that would also meet the purpose and need, and would avoid or minimize adverse impacts. The DeepWater Desal (Alternative 3) and the People's Project (Alternative 4) are best understood as alternatives to the MPWSP because they each are desalination projects being separately proposed to provide water supply for the region.

The DeepWater Desal Project (Alternative 3) is also considered in the cumulative impacts analysis for each of the alternatives because the project proponent has indicated that it intends to proceed even if another desalination plant is selected to serve the Monterey Bay region. Alternative 3 would include the construction and operation of a seawater desalination facility and co-located data center to provide up to 25,000 afy of potable water and data transmission and storage services. Alternative 3 would be developed to meet a regional need for water, and CalAm

would be one of several customers of the supply. As such, Alternative 3 is considered in the cumulative effects scenario for the proposed project and all alternatives.

The primary purpose of the People's Moss Landing Project (Alternative 4) as described in the Moss Landing Harbor District's June 2015 Notice of Preparation (NOP), is to rehabilitate existing facilities at the Moss Landing Green Commercial Park to develop 12 mgd (13,400 afy) of desalinated water to meet the current and future needs of the Monterey Peninsula and/or the North Monterey County area. As stated in the NOP, the People's Project applicant has used CalAm's required need for replacement supplies, and water needs of the General Plan Build-out and/or for serving water demands in North Monterey County to size this alternative; therefore, a smaller capacity People's Project has not been considered in this EIR/EIS. Since the People's Project and the MPWSP would both serve the same customers, this EIR/EIS considers the People's Moss Landing Project as an *alternative* to the MPWSP (see Chapter 5). Unlike the DeepWater Desal Project, whose proponent has publicly stated its intent to proceed even if the MPWSP is built and whose business model and design includes a co-located data center, no available information indicates that the People's Project would be built *in addition* to the proposed MPWSP or other alternative if it is selected. Therefore, it is not a reasonably foreseeable project in the cumulative scenario for the proposed project or any of the alternatives. Similarly, if the DeepWater Desal Project were selected instead of the MPWSP, the People's Project would not be a reasonably foreseeable project in the cumulative scenario, because Alternative 3 assumes that all of the Monterey Peninsula's water supply needs would be met by the DeepWater Desal Project and no demand (and therefore, no market) would remain in the Monterey Peninsula for the People's Project to serve. As noted above, however, if the People's Project were approved to serve the water needs of the Monterey Peninsula, the EIR/EIS cumulative analysis does assume that the DeepWater Desal project would be a cumulative project along with the People's Project.

Furthermore, the California Ocean Plan requires that desalination project applicants document the need for water. The Ocean Plan states that the regional water board shall require the owner to: "Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with California Water Code Section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan." If any project is approved to serve demand in the Monterey Peninsula, it is unlikely that another project with the intent to serve this same population would be able to provide the necessary documentation of the need for water. Despite this, and in light of DeepWater Desal's stated intention, this EIR/EIS takes a conservative approach and considers DeepWater Desal in the cumulative scenarios as described above.

Similar Environmental Impacts

Projects that are relevant to the cumulative analysis include those that could incrementally affect the same environmental resources that the MPWSP would directly or indirectly affect. The cumulative impact discussions in the issue area sections of Chapter 4 analyze the cumulative impacts that could occur when the effects of the MPWSP combine with the effects of other past, present, and reasonably foreseeable future projects. Because these other projects are subject to

independent environmental review and approval processes, funding constraints, or other challenges, it is possible that some of the projects identified as reasonably foreseeable future projects will not be approved (or if already approved, will not be implemented) or will be modified prior to approval. To assess worst-case cumulative impacts, however, the cumulative impact analysis in this EIR/EIS assumes that all of the reasonably foreseeable projects identified in this analysis will be approved and built.

Geographic Scope and Location

For each affected resource, the geographic scope of the cumulative impacts analysis depends on the natural boundaries and physical conditions relevant to the resource, rather than jurisdictional boundaries. The geographic scope of cumulative effects often extends beyond the scope of the direct impacts, but not beyond the scope of the indirect impacts of the proposed project and alternatives.

Timing and Duration of Implementation

Potential temporary (e.g., construction-related noise and vibration) and permanent (e.g., visible permanent structures) MPWSP impacts are considered in the cumulative impacts analysis if they could combine in space and time with similar impacts of cumulative projects identified in Table 4.1-2.

Because of the limited water supply available in the CalAm Monterey District, many development projects in the service area have been put on hold until supplemental supplies can be secured. As discussed in Chapter 2, Water Demand, Supplies, and Water Rights, there is a moratorium on new water service connections. Because of the moratorium, some of the reasonably foreseeable future projects may not be approved or built until the moratorium is lifted. Therefore, with the moratorium in place, the potential for simultaneous construction-related impacts is less likely. However, because the timing of construction for many cumulative projects is unknown, and because some of the cumulative projects may have water allocations, this analysis conservatively assumes that the incremental impacts of the construction, operation, and maintenance of some of these projects may overlap with those of the MPWSP. As a result, the cumulative impacts analysis and conclusions presented in each section may overstate some potentially cumulatively considerable impacts.

TABLE 4.1-2
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Monterey County			
1	Salinas River near the City of Marina	**Salinas Valley Water Project Phase II –** The project would allow the Monterey County Water Resources Agency (MCWRA) to further offset groundwater pumping by delivering additional surface water to the Pressure and East Side subareas. The project would divert up to 135,000 acre-feet per year (afy) of water from the Salinas River for municipal, industrial, and/or agricultural uses in the Pressure and East Side subareas. Continued reductions in groundwater pumping through use of the diverted surface water would help combat seawater intrusion in Monterey County. The project proposes two new surface water diversion points and related facilities to capture, convey, and deliver the water. The capture and diversion facilities would consist of either a surface water diversion facility, similar to the Salinas River Diversion Facility, or subsurface collectors, such as radial arm wells. The conveyance facilities would be composed of pipelines and pump stations. The pipeline diameter, length, destination, number and location of turnouts, locations of pump stations, and physical layout of the conveyance facilities have not been determined. The delivery facilities may consist of injection wells for aquifer storage and recovery (ASR), percolation ponds, turnouts for direct use of the water, or other options. The design and location of the delivery facilities would depend on the type of facility, the end-users' intended application of the water (agricultural versus urban), and the need for water treatment (MCWRA, 2014). A Notice of Preparation to prepare an EIR was issued by MCWRA in June 2014, but a Draft EIR has not yet been prepared or published.	Construction start unknown; Project operation anticipated 2026
2	Former Fort Ord Military Base, East Garrison Area	**East Garrison Specific Plan** – Mixed-use development project comprising residential, commercial, office, institutional, and recreational uses on approximately 244 acres. The project includes the construction of up to 1,470 dwelling units, 75,000 square feet of commercial uses, 11,000 square feet of public and institutional uses, 100,000 square feet of art/cultural/educational uses, and approximately 50 acres of open space. Development under the Specific Plan will be implemented in three phases. (Michael Brandman Associates, 2004; FORA, 2013; East Garrison, 2015).	Ongoing / Full Build-out Scheduled for 2025
3	24491 Citation Court	**Laguna Seca Villas** – Construction of 20,306 square feet of professional office space on the Laguna Seca Office Park subdivision (Monterey County Planning Department, 2015, 2016a).	Unknown. Permit extended for three years in September 2015.
4	5 Corral De Tierra Road at Highway 68	**Omni Enterprises, LLC** – Development of a new 99,970-square-foot shopping center on 11 acres that includes retail and office space. Construction would start following demolition of an existing gas station on the site and cleanup of contaminated soils. (Monterey County Planning Department, 2016b; Monterey Herald, 2015).	Construction anticipated to begin in 2017.
5	South side of State Highway 68, between River Road and San Benancio Road	**Ferrini Ranch Subdivision** – Subdivision of an approximately 866-acre property into 212 residential lots, including 146 market rate single-family residential lots, 23 clustered market rate residential lots, and 43 lots for inclusionary housing units; three open space parcels of approximately 600 acres; and one agricultural-industrial parcel (Monterey County Planning Department, 2016e).	Unknown
33	Monterey County Water Resources Agency / Prunedale	**Granite Ridge Water Supply Project** – Includes a new 1,000 gallons per minute groundwater production well and associated backup well near Manzanita Regional Park, both drilled to a depth of up to 635 feet; up to 87,700 linear feet of 6- to 12-inch-diameter water transmission pipelines; two booster pump stations; two water storage tanks (350,000 and 250,000 gallons); and associated facilities. The project would consolidate existing water distribution infrastructure, including up to 119 existing water systems and 500 individual well users (MCWRA, 2010a; 2010b).	Unknown
24	Monterey County Water Resources Agency / southern Monterey County and northern San Luis Obispo County	**Interlake Tunnel -** The MCWRA Interlake Tunnel Project would build an 11,000-foot-long tunnel to divert approximately 50,000 afy of water from Nacimiento Reservoir to San Antonio Reservoir that would have otherwise been spilled at Nacimiento Dam. The Nacimiento River basin produces nearly three times the average annual flow of the San Antonio River basin. During the winter season, the Interlake Tunnel would transfer excess Nacimiento River flows to San Antonio Reservoir, thereby increasing the overall storage capacity of the system (MCWRA, 2016). The water stored in San Antonio Reservoir would then be used for downstream groundwater recharge and abatement of saltwater intrusion in the Salinas Valley Groundwater Basin (RWMG, 2014).	Construction anticipated to begin in early 2019 (MCWRA, 2017).

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Monterey County (cont.)			
48	Congress Road and SFB Morse Drive, Pebble Beach	**Pebble Beach Company Inclusionary Housing Project –** The project would involve the construction of 24 affordable housing units, ranging in size from 1,078 square feet to 1,343 square feet (Monterey County Planning Department, 2016g).	Approved August 2016
49	Highway 68 at Corral de Tierra Road	**State Route 68/Corral de Tierra Road Intersection Improvement Project** – The project would widen the approaches to the Highway 68/Corral de Tierra Road intersection to accommodate a second left turn lane from westbound Highway 68 to southbound Corral de Tierra Road by shifting the through lane to the north. A second southbound receiving lane would also be built on Corral de Tierra Road departing the intersection to receive traffic from the second left-turn lane (Caltrans, 2015).	Construction anticipated to start fall of 2017 and be completed 2018
City of Sand City			
6	330 Shasta Street	**City of Sand City Coastal Desalination Plant** – This existing desalination facility can produce 300 afy of potable water supplies. Four seawater extraction wells pump brackish water to the plant, where reverse-osmosis technologies desalinate the water. Brine concentrate is disposed of by injecting the concentrate into a subsurface slant well beneath the coastal bluff (City of Sand City, 2016). Two additional extraction wells planned for installation in 2018 to maintain the appropriate level of TDS in the brackish feedwater supply.	Original facility completed in 2010; two new wells to be installed late 2018
19	Former Sand Mine site, near the Fremont / Highway 1 interchange.	**Monterey Bay Shores Resort** – The project consists of a 341-unit "eco-resort" on 39 acres approved. The proposal calls for 161 hotel rooms, 180 condominiums, a restaurant, conference center, spa, and three swimming pools (SNG, 2008).	Unknown
43	Redwood Avenue and John Street	**90-Inch Bay Avenue Outfall Phase 1 –** Improvement project involving: (1) installation of a discharge valve at the Bay Avenue outfall; (2) maintenance and manual breaching of the sand bar to allow gravity flow through the culvert; (3) creation of an infiltration basin at John Street and Redwood Avenue to mitigate flooding; (4) reconstruction of the existing elevated emergency outlet structure, including doubling the size of the box to increase the width of the emergency outlet structure; and (5) building a curb channel along the top of the existing 90-inch-diameter culvert from the emergency outlet to the check valve (MPWMD, 2014).	Unknown
56	Highway 1 between Tioga Avenue and Playa Avenue	**The Collection at Monterey Bay Resort** – Approved 340-room visitor-serving coastal resort on a 26.46-acre site located west of Highway and north of Tioga Avenue, that may be built in two phases. Phase I is a 135 hotel room on a 7.9-acre parcel known as the "Sterling" Site. Phase II is a coastal resort on the 16.25 acre "McDonald" site consisting of 205 visitor rooms, a restaurant with banquet facilities, a health/wellness spa, parking, and other related improvements. Primary access will be via Tioga Avenue for Phase I and Playa Avenue and an extension of Sand Dunes Drive for Phase II access. (Sand City, 2012)	Unknown
City of Marina			
7	Former Fort Ord Military Base Highway 2 / Imjin Parkway	**The Dunes on Monterey Bay** – Mixed-use development project comprising 1,237 residential units, 500 hotel rooms, and retail and office space on 297 acres. Phase 1 (378,000-square-foot retail center) built in 2007-2008. Phase 2 includes the following: (1) South County Housing to develop and build 108 low- and very low-income affordable apartments, many of which were completed by spring/summer 2014; (2) Cinemark multiple screen movie theater completed 2015; (3) Plans approved for two approximately 15,000 square foot retail buildings to be built near the movie theater; (4) Veterans Affairs Monterey Health Care Center located on a 14.31-acre project site within the Dunes on Monterey Bay Specific Plan area completed 2016; and (5) Springhill Suites, a 67,328-square-foot, 4-story hotel with 106 hotel rooms (under construction). The hotel includes a 1,750-square-foot meeting room and guest parking and is scheduled to open in April 2017 (City of Marina, 2015, 2016f; FORA, 2013; FORA, 2015; Marriott, 2016).	Under construction / Full Buildout Scheduled for 2020

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
City of Marina (cont.)			
8	Former Fort Ord Military Base 3rd Avenue / Imjin Parkway	**Cypress Knolls Senior Residential Project** – Senior residential community with active-adult housing, care services, senior community center, and supportive amenities and services on 188 acres (City of Marina, 2012; City of Marina, 2016b).	Unknown; project on hold
9	Former Fort Ord Military Base Imjin Parkway / California Avenue	**Marina Heights** – Removal of 828 abandoned residential units and replacement with a combination of 1,050 new townhouse, cottage, estate homes, and single-family residential units. The project also includes 35 acres of parks, greenbelts, and open space (City of Marina, 2010; City of Marina, 2016d).	Phase I Under Construction
10	Reservation Road between Del Monte Boulevard and De Forest Avenue	**Marina Downtown Vitalization Specific Plan** – Redevelopment plan for Marina's 225-acre downtown area comprising mixed-use commercial, residential, educational, and civic uses (City of Marina, 2011b; City of Marina, 2016c).	Unknown / Full Buildout Scheduled for 2040
11	Marina Airport Reservation Road / Blanco Road	**Marina Airport Economic Development Area** – Airport development project aimed at promoting growth of the airport. Individual projects include: • Airfield Electrical System Upgrades • Runway Rehabilitation and Extension • Taxiway Rehabilitation and Extension • Airfield NAVAIDS Improvements (City of Marina, 2011a; City of Marina 2016a).	Completed
39	3012-3032 Lexington Court, Marina (east of Abrams Drive on the former Fort Ord Military Base)	**Rockrose Gardens** – 20 units of permanent, affordable, supportive housing for people with psychiatric disabilities (FORA, 2013; FORA, 2015).	Completed
12	Armstrong Ranch, Marina (Along the northern limits of the city of Marina, on either side of Del Monte Avenue)	**Marina Station** – Development project comprising 1,360 residential units, approximately 60,000 square feet of retail space, 144,000 square feet of office space, and 652,000 square feet of business park/industrial uses. The 1,360 residential units comprise approximately 887 single-family lots and 473 multi-family units (City of Marina, 2011c; City of Marina, 2016e).	Unknown
13	California State University Monterey Bay Campus	**CSUMB North Campus Housing Master Plan** – Includes 583 student housing units, leasing office, community center on 8 acres (more recently known as the Promontory Housing Project) (City of Marina, 2015; FORA, 2013; FORA, 2015).	Competed
40	California State University Monterey Bay Campus (Divarty Street, east of General Jim Moore Boulevard)	**ITCD Academic Building (CSUMB) –** New 58,000-square-foot Information Technology and Communications Design (ITCD) and the School of Business academic building (FORA, 2013; CSUMB, 2016).	Completed
47	CEMEX Sand Mining Facility (east of Highway 1 on Lapis Road)	**CalAm Slant Test Well at CEMEX –** Construction and operation of a test slant well and associated monitoring wells. The project purpose is to develop the geologic, hydrologic, and water quality data needed to confirm the feasibility of using slant wells in the CEMEX active mining area as a Subsurface Intake System for the MPWSP Desalination Plant. The test slant well extends diagonally beneath the seafloor through the Dune Sand Aquifer and the 180-Foot Aquifer Equivalent and was originally permitted to operate until February 2018 (CCC, 2014) but that permit was extended to February 2019 (CCC, 2017). As explained in Chapter 3 and where relevant in Chapter 4 cumulative analyses, this test well would be incorporated into the proposed project for long-term operation; if the CPCN and MBNMS approval of the proposed project is denied, the test well would be removed consistent with the terms of the Coastal Development Permit.	April 2015 Construction completed, pilot program currently underway

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
City of Marina (cont.)			
63	CEMEX Sand Mining Facility (east of Highway 1 on Lapis Road)	**CEMEX Mining Area Removal Plan and Reclamation Plan –** Under the terms of the June 2017 Consent Cease and Desist Order (Settlement Agreement) between CEMEX, the California Coastal Commission, the California State Lands Commission, and the City of Marina, CEMEX, the owner and operator of the Lapis Sand Plant, agreed to cease and desist all sand mining operations and remove all physical structures and materials associated with the mining operations that are required to be removed by the Removal Plan, and to initiate the remaining activities required under the 1992 SMARA Reclamation Plan. Structures and facilities to be removed include the warehouse, bagging facility, screening facility, kiln factory, offices, scales, shops, wells, wet tower, dredge, anchors, mooring cables, pipelines, booster pump, and all associated equipment. Restoration of the affected area includes grading and seeding. (CCC, 2017)	Removal and reclamation activities must be completed by December 31, 2025.
City of Seaside			
14	West of Fremont Boulevard, along Broadway Avenue, Del Monte Boulevard, and Canyon Del Rey Boulevard	**The West Broadway Urban Village Specific Plan** – Mixed-use, transit-oriented development comprising residential with ground-floor retail and commercial uses along Broadway Avenue, with supporting future transit-oriented development along the west side of Del Monte Boulevard. Includes a public library and parking structure on Broadway Boulevard and a hotel/conference center mixed-use development at the southeast corner of Canyon Del Rey and Del Monte Boulevards (City of Seaside, 2016a).	Ongoing construction due to redevelopment plans
15	Broadway Avenue / Fremont Boulevard	**City Center Shopping Center Redevelopment Project** – Approximately 40,000 square feet of retail and restaurant space (City of Seaside, 2016c).	Construction completed in 2012
16	Former Fort Ord Military Base Monterey Road / Coe Avenue	**The Seaside Resort** – The first phase, completed in 2009, involved upgrades to the Bayonet and Black Horse Golf Courses. The next phase of development features a four-star hotel with approximately 275 hotel rooms, 175 timeshare units, and 125 residential units (City of Seaside, 2016c).	Stage 1 2017-2018
18	Former Fort Ord Military Base Between Highway 1 and 2nd Avenue, and Light Fighter Drive and 1st Street	**Main Gate Specific Plan** – Mixed-use development project featuring approximately 500,000 square feet of retail and entertainment space, and a 250-room hotel/conference center with spa amenities (City of Seaside, 2016b).	Unknown
41	Broadway Avenue between Del Monte Boulevard and Fremont Boulevard, and Del Monte Boulevard between Broadway Avenue and Contra Costa Street	**West Broadway Stormwater Retention** – The project involves construction of a stormwater treatment and diversion system in Broadway Avenue between Del Monte Boulevard and Fremont Boulevard and at Del Monte Boulevard. Treated water would be diverted to retention structures for groundwater recharge (MPWMD, 2014).	Unknown
42	Laguna Grande and Roberts Lake (Near the intersection of Highway 218 [aka Canyon Del Rey Boulevard] and Del Monte Boulevard)	**Dredge Laguna Grande and Roberts Lake**[6] – The project would create additional storage capacity, visitor-serving amenities, and habitat enhancements at Laguna Grande and Roberts Lake (MPWMD, 2014).	Unknown

[6] Laguna Grande and Roberts Lake are collectively referred to as Laguna del Rey throughout this EIR/EIS.

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
City of Seaside (cont.)			
44	Broadway Avenue between Del Monte Boulevard and Fremont Boulevard and at Del Monte Boulevard	**Del Monte Blvd Dry Weather Diversion** – The project consists of a dry weather runoff diversion at Del Monte Boulevard to the sanitary sewer system. Diverted water would be treated by the regional treatment plant and reused for existing non-potable and potential future potable uses (MPWMD, 2014).	Unknown
City of Monterey			
20	459 Alvarado Street	**459 Alvarado Street** – Development of 36 residential units and 12,000 square feet of commercial uses (City of Monterey, 2012).	Completed in 2016
21	480 Cannery Row	**Ocean View Plaza** – Approved mixed-use development project comprising 87,362 square feet of commercial space, 30,000 square feet of restaurant space, 8,408 square feet of coastal/community use, 38 market-rate condominiums, and 13 inclusionary housing units (City of Monterey, 2012). As of 2015, the property had gone into default and was listed for sale.	Unknown
50	200 Iris Canyon Road	**Iris Canyon Residential Care Facility for the Elderly** – The project consists of a 110-unit/136-bed residential care facility with studios, one and two bedroom rental units and services with one 114,316 square foot main building and three 2,284 square foot duplex building. The project covers a total of 46,076 square feet and the total floor area is 121,168 square feet (CEQAnet, 2014).	Construction anticipated completion in 2017
51	Throughout the City of Monterey	**Sanitary Sewer System Rehabilitation Program** – The project involves fixing 441 sewer pipes and 516 sewer manholes located in the streets throughout the City of Monterey. Repairs would begin in early 2016 and continue for 18 months (City of Monterey, 2016).	Under construction
52	Highway 68 and 17 Mile Drive	**Holman Highway 68/Highway 1 Roundabout** – The project would build a roundabout at the intersection of Holman Highway 68 and 17 Mile Drive near the entrance to Pebble Beach. (TAMC, 2016b).	Under construction
City of Pacific Grove			
22	Sunset Drive	**Pacific Grove Local Water Project** – Construction of a new local satellite recycled water treatment plant at the former Point Pinos Wastewater Treatment Plant and installation of 1,400 linear feet of conveyance pipeline. Initially, the project would provide 125 afy of non-potable recycled water to serve irrigation needs at the Pacific Grove Golf Links and the El Carmelo Cemetery. Potential expansion could increase output to 600 afy (City of Pacific Grove, 2014; City of Pacific Grove, 2015).	2017
23	Pacific Grove	**Pacific Grove Recycled Water** – Recycled water from the Pebble Beach Community Services District (PBCSD) and raw wastewater from 500 homes in the Del Monte Park area of Pacific Grove would be captured and diverted to the existing Carmel Area Wastewater District (CAWD) reclamation facility for treatment. Recycled water from CAWD would be stored in the Forest Lake Reservoir and returned to the city through existing CAWD and PBCSD recycled water systems to a delivery point near the Spanish Bay Golf Course in Pebble Beach. Approximately 10,000 to 13,500 linear feet of new 12-inch diameter recycled water pipeline would be built to deliver water to the golf links, cemetery and other irrigation demands (CPUC, 2012).	Unknown
City of Carmel			
25	2770 15th Avenue, Carmel	**Carmel Unified School District** – Construction of a 5,070-square-foot building to house six classrooms. The project also includes the removal of five onsite temporary modules and six non-native ornamental landscape trees (Monterey County Planning Department, 2016c).	Construction Complete
26	Del Monte Forest	**Pebble Beach Company Project** – The project builds out and preserves the remaining undeveloped Pebble Beach Company properties located within the Del Monte Forest. The project would renovate and expand visitor-serving uses, create 90 to 100 single-family residential lots, and preserve 635 acres as primarily forested open space. The proposed development would result in new construction at four primary sites: The Lodge at Pebble Beach, The Inn at Spanish Bay, Spyglass Hill, and the Pebble Beach Equestrian Center (Monterey County Planning Department, 2016f).	Unknown

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
City of Carmel (cont.)			
27	Carmel Valley Road	**Rancho Cañada Village Specific Plan** –A previous proposal included 281 housing units. A recirculated Draft EIR analyzes a 130-Unit Alternative that would reduce the total number of residential units to fit within the 190-unit housing cap negotiated between the Carmel Valley Association and Monterey County as part of a 2010 general plan lawsuit settlement, The Ranch Canada Village would be built within the current west course of the Rancho Canada Golf Club. (Monterey County Planning Department, 2016h).	Unknown. Recirculated DEIR
28	Carmel Valley Road	**Rancho Cañada Golf Club East Course Closure** – Closure of the Rancho Canada Golf Club's east course and transfer of 140 acres of land to the Monterey Peninsula Regional Park District. Tentative plans for the land include additional parking and access to Palo Corona Regional Park, hiking trails, and restored riparian habitat (The Trust for Public Land, 2016; The Carmel Pine Cone, 2016).	East Course closure to occur in 2017. Restoration work schedule unknown.
Monterey Peninsula Water Management District			
29	Former Fort Ord Military Base General Jim Moore Boulevard/ Eucalyptus Boulevard	**Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 1)** – Water supply project consisting of two injection/extraction wells (ASR-1 and ASR-2 wells), a backwash percolation basin, a chemical/electrical building, and conveyance pipelines. During high-flow periods in the Carmel River, river water is injected into Seaside Groundwater Basin, then extracted during dry periods or periods of high demand (MPWMD, 2005).	Construction completed in 2008
30	Seaside Middle School General Jim Moore Boulevard/ Coe Avenue	**Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 2)** – This phase includes two additional injection/extraction wells (ASR-2 and ASR-3 wells) and a backwash percolation basin (Denise Duffy & Associates, 2012).	Construction completed in 2014
Monterey Regional Water Pollution Control Agency			
59	(With Monterey Peninsula Water Management District) MRWPCA Regional Wastewater Treatment Plant	**Pure Water Monterey Groundwater Replenishment (GWR) Project** – The MRWPCA certified the Final EIR and approved the GWR project in October 2015; an Addendum was prepared and adopted in October 2017. The GWR facilities would collect a variety of source waters from several locations in Monterey County and convey that water to the MRWPCA Regional Wastewater Treatment Plant for treatment. The GWR project would then purify 5 mgd of water at a new Advanced Water Treatment Plant located at the existing wastewater treatment plant site, and convey and then inject 3,500 afy of the purified water into the Seaside Groundwater Basin for later extraction by CalAm for delivery to CalAm customers. The GWR facilities also would provide an average of 4,750 afy of recycled water for agricultural irrigation in northern Monterey County through the CSIP and 600 afy to MCWD for urban irrigation. The new source waters for the GWR project would supplement the existing incoming wastewater flows, and would include the following: 1) water from the City of Salinas agricultural wash water system, 2) stormwater flows from the southern part of Salinas and the Lake El Estero facility in Monterey, 3) surface water and agricultural tile drain water that is captured in the Reclamation Ditch and Tembladero Slough, and 4) surface water and agricultural tile drain water that flows in the Blanco Drain. The GWR project would include new pipelines and injection facilities. In September 2016, the CPUC approved a Water Purchase Agreement that allows CalAm to secure 3,500 afy of water from the GWR project to meet a portion of the project water supply needs. The GWR Project is a cumulative project in the context of Alternatives 5a and 5b, which evaluate a reduced-size (6.4-mgd) desalination plant at the Project and an Alternate site, as well as Alternative 3. This project is not considered a cumulative project for the Proposed Project, Alternatives 1 and 2 because both CalAm and the People's Project would not build a full-capacity desalination facility should GWR be completed. The GWR project is a cumulative project with the DeepWater Desal project because that project is sufficiently large and designed to serve customers in myriad geographic locations such that it could proceed even if the GWR project is implemented.	Construction anticipated complete in 2018

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Monterey Regional Wastewater Pollution Control Agency (cont.)			
61	Existing Outfall, Beach Junction Structure	The existing Beach Junction Structure and a portion of the existing outfall became exposed on the beach during the winter 2015/16 storms. Under an order from the California Coastal Commission, the MRWPCA is required to replace the exposed components, independent from and as a project separate from the MPWSP. The MRWPCA proposes to re-locate the junction structure inland by 650 to 1,000 feet and install 650 to 1,000 feet of new 60-inch diameter outfall pipe on the westward (ocean) side of the junction box, which would connect to the existing ocean outfall. That project would include using pre-lined pipe to protect the new portion of the outfall from corrosion that would be caused by the proposed MPWSP brine.	Construction anticipated complete in 2020
Other			
32	Carmel River near confluence with San Clemente Creek	**CalAm San Clemente Dam Removal Project** –This project removed the 106-foot-tall San Clemente Dam that used to be on the Carmel River, rerouted the Carmel River into San Clemente Creek, excavated and stabilized sediment that had accumulated in San Clemente Creek, and restored a half-mile reach of San Clemente Creek (San Clemente Dam Removal, 2016).	Construction completed in 2015
34	Moss Landing / Santa Cruz County	**Monterey Bay Regional Water Project (MBRWP or DeepWater Desal)** – This project includes a 23 mgd seawater desalination facility and co-located 1 million-square-foot data center on a 110-acre site in Moss Landing, on Dolan Road, approximately 1,500 feet east of the Moss Landing Power Plant. The project would serve up to 25,000 afy of potable water supply to participating communities in the Monterey Bay region, potentially including the Monterey Peninsula, Castroville, Salinas, and parts of Santa Cruz County (DeepWater Desal, 2015). As proposed by DeepWater Desal, the project would develop supplemental water supplies to serve the customers in CalAm's Monterey District service area. However, if the MPWSP is built, DeepWater Desal can provide water to other areas, as described above. Therefore, this EIR/EIS considers two reasonably foreseeable scenarios that include development of the DeepWater Desal Project: 1) Development of the DeepWater Desal Project as an alternative to the MPWSP, as described in Chapter 5 (serving CalAm's Monterey District service area). This is Alternative 3 described and analyzed in Chapter 5. 2) Development as a separate project in addition to the MPWSP or another alternative that would serve CalAm's Monterey District service area. In this case, the impacts of the DeepWater Desal Project are considered in the cumulative scenario as they relate to the provision of water to Santa Cruz County and the City of Salinas. The DeepWater Desal Project with provision of water to Santa Cruz County and the City of Salinas is a reasonably foreseeable project in the cumulative scenario relevant to the proposed project and Alternatives 1, 2, 4, and 5a and 5b.	Beyond 2017
57	Moss Landing Green Commercial Park/ Santa Cruz County	**People's Moss Landing Water Desal Project** – The 12 mgd desalination project would provide 13,400 afy of desalinated water supply to meet the current and future needs of the Monterey Peninsula area. The People's Project applicant has used CalAm's required need for replacement supplies and water needs of the General Plan Build-out and/or the water demands of North Monterey County to size this alternative. The project would rehabilitate existing pipelines for an open-water intake and the discharge of effluent, a new pump house, desalination plant, and desalinated water conveyance and storage facilities (Moss Landing Harbor District, 2015). As proposed by its applicant, the People's Project would develop supplemental water supplies to serve customers in CalAm's Monterey District service area and North Monterey County. Since the People's Project and the MPWSP would not both be implemented to serve the same customers, this EIR/EIS assumes the People's Moss Landing Project is an alternative to the MPWSP (see Chapter 5, Alternative 4). Therefore, it is not a reasonably foreseeable project in the cumulative scenario relevant to the MPWSP. It would also not be a reasonably foreseeable project in the cumulative scenario for any of the alternatives aimed at meeting the objectives of the MPWSP. Therefore, although acknowledged here as a reasonably foreseeable alternative to the proposed project (as described in Chapter 5), this project's contributions to cumulative impacts are not considered as part of the cumulative scenario relevant to the proposed project or another alternative.	Unknown

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Marina Coast Water District			
31	Marina Coast Water District, Monterey County	**Regional Urban Water Augmentation Project (RUWAP) Desalination Element** – On March 1, 2016, in response to a request for information, MCWD stated that the RUWAP Desalination Plant would produce up to 2,700 acre-feet per year (AFY) of potable water supply; 2,400 AFY would be for the former Fort Ord, as identified in the Fort Ord Reuse Authority (FORA) Base Reuse Plan (BRP) and 300 AFY would be for the District's Central Marina service area, as a replacement for the existing pilot (non-operating) desalination plant (MCWD, 2016). However, MCWD reported that the water source for the proposed desalination project has not yet been determined; it may be seawater-intruded groundwater from the 180-Foot Aquifer, or it may be seawater from shallow wells located along the coast. The location of the wells and pipelines must also be addressed in a feasibility study. The desalination plant site last studied was located in North Marina on a parcel owned by MCWD, adjacent to the MRWPCA Regional Wastewater Treatment Plant. In any event, a feasibility study is needed to determine the actual component sizes and the timing of this project is dependent upon the redevelopment water demands within the former Fort Ord. Subsequent to that March 2016 response, the MCWD Board of Directors adopted by unanimous vote on May 2, 2016, Resolution 2016-26 approving a Memorandum of Understanding regarding Fort Ord water augmentation and a three party effort (MCWD, FORA and MRWPCA) to study alternatives. The resolution was prompted by the MCWD and MRWPCA entering into an agreement dated April 8, 2016 for the joint Pure Water Delivery and Supply Project, which will provide 1,427 AFY, leaving an unmet need for 973 AFY to support the FORA BRP. The three party planning (TPP) effort will explore the most cost effective and technically efficient mix of advanced treated water, conservation, desalination, groundwater recharge and recovery, and other water sources, options, and alternatives to provide the 973 AFY of augmented water, and whether more or less than 1,427 AFY of advanced treated water is necessary to serve the Ord Community. The FORA Board will utilize the TPP study in developing a preferred water augmentation mix and deciding which additional water augmentation project(s) should be developed by MCWD. Based on these current events and actions, it is speculative to assume that MCWD will implement a 2,700 AFY desalination facility, or what the size, timing or configuration of that facility will be. This EIR/EIS thus does not generally include the RUWAP Desalination Plant. Making conservative assumptions, however, Section 4.4, Groundwater Resources, does analyze as a cumulative project the development of a 1,000 AFY desalination plant on MCWD land in the event that such an option is chosen to make up the shortfall needed to provide a total of 2,400 AFY of water augmentation to support the FORA BRP.	Unknown
35	Marina Coast Water District, Monterey County	**Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project** – The Recycled Water Project includes construction of a recycled water distribution system to provide up to 1,727 afy of recycled water to urban users in the MCWD service areas, including the former Fort Ord. The water would be recycled at the existing Salinas Valley Reclamation Plant. This project includes the following facilities: a new pipeline connection to the Salinas Valley Reclamation Plant; one pump station; 40,000 linear feet of distribution pipelines; and a 2-million-gallon storage tank known as Blackhorse Reservoir. MCWD now proposes to combine conveyance facilities with the approved Pure Water Monterey Project for a shared pipeline (MCWD, 2016a).	August 2017 through September 2018
Moss Landing			
37	Moss Landing	**Moss Landing Community Plan** – Revised draft plan issued May 2015: • Revx-173 LLC – Demolition of an existing facility and construction of a 70,000-square-foot industrial warehouse on 189 acres. • Monterey Bay Aquarium Research Institute – Removal of a finger pier; construction of a 58,655-square-foot research facility; demolition of an existing building and construction of a 34,000-square-foot replacement facility; and construction of a 30-foot dock extension (Monterey County Planning Department, 2013). In addition, construction of a 66,500-square-foot building to support science and engineering research activities. • 30-Unit Hotel	Unknown

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Moss Landing (cont.)			
37 cont.		• Pisto Restaurant – Construction of a 6,000-square-foot restaurant • Moss Landing Marine Laboratories – Development of a 36,000-square-foot warehouse and 15,000-square-foot dock/wharf area at 7539 Sandholdt Road. At 7544 and 7722 Sandholdt Road, development of a 2,600-square-foot mixed-use facility, a 7,400-square-foot research building, 8,520-square-foot concrete slab for aquaculture, and a 300-foot pier. • Gregg Drilling – Development of an 8,000- to 9,000-square-foot building for high-tech operations (Monterey County Planning Department, 2015).	
62	Moss Landing	**Moss Landing Power Plant Retrofit** – Through a settlement agreement executed on October 9, 2014 between the SWRCB and the current owner of the power plant, the Moss Landing Power Plant must reduce its intake of cooling water to meet an 83.7 percent or greater reduction in mortality from entrainment and impingement impacts beginning with reductions on December 31, 2016 and achieving full compliance by December 31, 2020. The Moss Landing Power Plant owner has indicated its intention to retrofit the power plant's four generating units to reduce entrainment and impingement impacts in compliance with the Once-Through-Cooling (OTC) policy and this would likely occur prior to the operation of any desalination project in Moss Landing.	Began in 2016, full compliance by end of 2020
Castroville			
36	Transportation Agency for Monterey County Between Salinas Street and Castroville Boulevard	**Castroville Bicycle and Pedestrian Overcrossing** – The project would build a bicycle and pedestrian path connecting the Community of Castroville to Castroville Boulevard. The project starts on Salinas Street at McDougall and parallels Axtell Street with an overcrossing at the Union Pacific tracks and a Class 1 path to Castroville Boulevard. The overcrossing structure would be approximately 1,400 feet long (TAMC, 2016a)	Construction anticipated to start in 2016
53	Caltrans Highway 156 between Castroville Boulevard and U.S. 101	**Route 156 West Corridor Project** – The project would build a new four-lane highway parallel to the existing Highway 156 with new interchanges built at Castroville Boulevard and at U.S. 101. The current two-lane highway would be converted into a frontage road serving the local community. A supplemental Environmental Impact Report is in preparation (TAMC, 2016c).	Unknown
Other Projects			
45	Cities of Monterey and Pacific Grove (David Avenue Reservoir, Pine Avenue, Ocean View Boulevard, former wastewater treatment plant site)	**Monterey-Pacific Grove Area of Special Biological Significance (ASBS) Stormwater Management Project** – The project includes diverting both wet weather and dry weather flows from the Greenwood Park and Congress Storm Drain Watersheds to the David Avenue Reservoir site, and treating and delivering of recycled water to irrigation sites throughout the city (CPUC, 2012). The project also revises the existing storm drain system in Pacific Grove to retain or treat stormwater flows. These retention facilities will help to meter or treat flows into either treatment facility thereby allowing up to a 90 percent reduction in pollutant loading during storm events. Diverted flows would ultimately be directed to either the rebuilt Pacific Grove Water Treatment Plant or the Monterey Regional Water Pollution Control Agency Regional Water Treatment Plant in Marina (MPWMD, 2014).	2018-2020
38	Cities of Castroville, Marina, Monterey, Seaside, Sand City, and County of Monterey.	**TAMC Monterey Peninsula Light Rail Project** – Construction of commuter light rail service, mostly along the Transportation Agency for Monterey County's (TAMC's) existing Monterey Branch Line right-of-way, from House Plaza in the city of Monterey to Blackie Road in Castroville. This 15.2-mile-long project would involve improvements to existing rail, construction of new rail, and 12 new stops (one in Castroville, five in Marina, three in Seaside and Sand City, and three in the city of Monterey). Approximately 860 new parking spaces would be built at these stations. The project would also include a new maintenance facility; this facility would be located at one of three sites, all of which are near Highway 1 on lands formerly associated with the Fort Ord military base (TAMC, 2011). TAMC has placed this project on hold indefinitely until the agency can secure funding for environmental review, design, and construction.	Unknown

TABLE 4.1-2 (Continued)
CUMULATIVE PROJECTS

No.	Planning Jurisdiction/ Location	Project Description	Estimated Construction Schedule
Other Projects (cont.)			
46	Fort Ord Dunes State Park (immediately west of the TAMC rail corridor and State Highway 1, west of the former Fort Ord Military Base)	**Fort Ord Dunes State Park Campground** – Construction and operation of a campground facility and associated infrastructure within Fort Ord Dunes State Park, including 45 RV sites and two host sites with electrical and water hookups, 10 hike/bike sites, and 43 tent sites; parking for 40 vehicles; restrooms with showers; a multi-purpose building; an outdoor campfire center; interpretation/ viewing areas; renovated bunkers; an entrance station near the 1st Street underpass; modular structures; storage yard and maintenance shop; improved beach access/trails; one plumbed restroom with outdoor shower for beach use; a 200-foot wildlife/habitat corridor; internal campground trail network, trail improvements, and roadway improvements; and offsite utilities (Denise Duffy & Associates, 2013).	Unknown
54	California State University Trustees Colonel Durham Street and 6th Avenue	**Monterey Bay Charter School New School Project** – Phase I includes the construction of 19 K-8 classrooms; work rooms for administrators, teachers and custodians; resource and remedial instruction rooms; and storage. Phase II includes additional support facilities. Phase I is projected to accommodate approximately 430 students; full enrollment of 508 students is expected to be reached by Phase II (Denise Duffy & Associates, 2016).	Phase I construction anticipated 2018. Phase II construction anticipated 2020
55	Monterey Regional Waste Management District 14201 Del Monte Boulevard, Marina	**Monterey Regional Waste Management District Truck Yard Facility Project** – The project would include a 7,200-square-foot office/ administration building, a 11,300-square-foot maintenance building, a 5,000-square-foot truck wash and repair building, as well as collection truck parking and steel bin storage areas, Compressed Natural Gas equipment, and associated employee parking (Denise Duffy & Associates, 2014).	Construction underway
58	Monterey Regional Waste Management District 14201 Del Monte Boulevard, Marina	**Landfill-Gas-to-Energy Facility Phased Capacity Improvements** – Although it is not evaluated in this EIR/EIS, CalAm is actively pursuing a renewable energy source option with Monterey Regional Waste Management District (MRWMD) that would allow CalAm to meet a portion of the MPWSP Desalination Plant operational energy requirements with methane gas from the existing MRWMD landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site. The MRWMD LFGTE facility produces 5.07 megawatts (MW) of continuous electricity that is sold to PG&E. MRWMD wishes to increase the electric generation capacity of the LFGTE facility by 3.2 MW in two stages, with the first phase of improvements increasing the capacity by 1.6 MW, followed by an additional 1.6 MW increase in 6 to 8 years. Once such an expansion were complete, the total generation capacity of the LFGTE facility would be 8.27 MW (ESI, 2014). If this renewable energy source option were implemented, about half of the MPWSP Desalination Plant operational energy requirements could be met with methane gas from the LFGTE facility; the remainder would come from the local PG&E grid. Overhead powerlines, electrical transformers, metering devices, and switchgear would be needed to connect the MRWMD LFGTE facility with the MPWSP Desalination Plant. Implementation of this option and the construction of the associated interconnection improvements would require separate environmental review. These possible LFGTE improvements have not been proposed and are not actively under environmental review and consideration; for these reasons, they are not evaluated in the cumulative analyses in this EIR/EIS.	Phase 1: Unknown Phase 2: 6 to 8 years after Phase 1
60	Cities of Seaside, Monterey, and Pacific Grove	**Monterey Pipeline and ASR Pump Station** – The new 5.4-mile-long, 36-inch-diameter Monterey Pipeline would allow for bi-directional flows and would convey potable water supplies from the GWR project (No. 59) to the Monterey Peninsula. The Monterey Pipeline would utilize the pressure (called “hydraulic head”) provided by CalAm extraction operations to convey water to the Monterey Peninsula cities. The Monterey Pipeline would connect two pressure zones in the CalAm system (one in the area of the City of Pacific Grove and one in the area of the City of Seaside). Water stored in Forest Lake Tanks could flow via gravity to the lower Carmel Valley or be pumped to the upper Carmel Valley. In September 2016, the CPUC approved the Monterey Pipeline and ASR Pump Station along with the Water Purchase Agreement described for the GWR Project (No. 59). The MPWMD approved a Water Distribution System Permit and Pipeline Alignment modification that included the approval of two addenda to the Pure Water Monterey GWR Project Final EIR.	Under construction

NOTES: Project 17, Monterey Downs and Horse Park and Central Coast Veteran’s Cemetery Specific Plan, is no longer being considered by the planning agency.

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Cumulative Projects

1 Salinas Valley Water Project (Phase 2)
2 East Garrison Specific Plan
3 Laguna Seca Villas
4 Omni Enterprises LLC
5 Ferrini Ranch Subdivision
6 City of Sand City Coastal Desalination Plant
7 The Dunes on Monterey Bay (Phases 2 and 3)
8 Cypress Knolls Senior Residential Project
9 Marina Heights
10 Marina Downtown Vitalization Specific Plan
11 Marina Airport Economic Development Area
12 Marina Station
13 CSUMB North Campus Housing Master Plan
14 The West Broadway Urban Village Specific Plan
15 City Center Shopping Center Redevelopment Project
16 The Seaside Resort
18 Main Gate Specific Plan
19 Monterey Bay Shores Resort
20 459 Alvarado Street
21 Ocean View Plaza
22 Pacific Grove Satellite Recycled Water Treatment
23 Pacific Grove Recycled Water
24 Interlake Tunnel Project
25 Carmel Unified School District
26 Pebble Beach Company Project
27 Rancho Cañada Village Specific Plan
28 Rancho Cañada Golf Club East Course Closure
29 Seaside Groundwater Basin Storage and Recovery (Phase 1)
30 Seaside Groundwater Basin Storage and Recovery (Phase 2)
31 Regional Urban Water Augmentation Project - Desalination Element
32 San Clemente Dam Removal Project
33 Granite Ridge Water Supply Project
34 DeepWater Desal
35 Regional Urban Water Augmentation Project - Recycled Water Element
36 Castroville Bicycle and Pedestrian Overcrossing
37 Moss Landing Community Plan
38 Monterey Peninsula Light Rail Project
39 Rockrose Gardens
40 ITCD Academic Building
41 City of Seaside West Broadway Stormwater Retention
42 Dredge Laguna Grande and Roberts Lakes
43 City of Seaside 90-inch Bay Avenue Outfall Phase 1
44 City of Seaside Del Monte Boulevard Dry Weather Diversion
45 Monterey-Pacific Grove ASBS Stormwater Management Project
46 California State Parks - Fort Ord Dunes State Park Campround
47 Slant Test Well Project
48 Pebble Beach Company Inclusionary Housing Project
49 State Route 68/Corral de Tierra Road Intersection Improvement Project
50 Iris Canyon Residential Care Facility for the Elderly
51 Sanitary Sewer System Rehabilitation Program
52 Holman Highway 68/Highway 1 Roundabout
53 Route 156 West Corridor Project
54 Monterey Bay Charter School New School Project
55 Monterey Regional Waste Management District Truck Yard Facility Project
56 The Collection at Monterey Bay Resort
57 The People's Moss Landing Water Desalination Project
58 Landfill-Gas-to-Energy Facility Phased Capacity Improvements
59 Pure Water Monterey GWR Project
60 Monterey Pipeline and Pump Station
61 Beach Junction Structure
62 Moss Landing Power Plant
63 CEMEX restoration

Cumulative Project

Proposed Project Facilities

- Slant Well
- New Transmission Main
- Source Water Pipeline
- HWY 68 Interconnection Improvements
- New Desalinated Water Pipeline
- Castroville Pipeline
- Castroville Pipeline Optional Alignment
- Brine Discharge Pipeline
- Pipeline to CSIP Pond
- ASR Pipelines *

0 2 Miles

Connection to Existing CCSD Water Distribution System

Approximate Location of Subsurface Slant Wells (Proposed)

MPWSP Desalination Plant (Proposed)

CSIP Pond (Existing)

MRWPCA Regional Wastewater Treatment Plant (Existing)

ASR Injection/ Extraction Wells (Proposed)

Phase II ASR Facilities (Existing)

Phase I ASR Facilities (Existing)

Ryan Ranch-Bishop Interconnection Improvements (Proposed)

Carmel Valley Pump Station (Proposed)

Main System-Hidden Hills Interconnection Improvements (Proposed)

24 65 Miles Southeast

32 8 Miles South

Monterey Bay

Salinas River

Carmel River

Carmel Valley Rd

Laureles Grade

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: ESA, 2013

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Figure 4-1
Cumulative Projects

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4.2 Geology, Soils, and Seismicity

Sections

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4.2.2 Regulatory Framework
4.2.3 Evaluation Criteria
4.2.4 Approach to Analysis
4.2.5 Direct and Indirect Effects of the Proposed Project
4.2.6 Cumulative Effects of the Proposed Project

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4.2-2 Generalized Geologic Cross-Section
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4.2-1 Summary of Geologic Units and Project Component Locations
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4.2-5 Summary of Estimated Peak Ground Accelerations at Proposed Facility Locations
4.2-6 Applicable Regional and Local Plans and Policies Relevant to Geology, Soils, and Seismicity
4.2-7 Summary of impacts – Geology, Soils, and Seismicity
4.2-8 Comparison of Jet Plume and Ambient Ocean Currents at Monterey

This section evaluates the potential for construction and operation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to result in adverse impacts associated with geologic, soils, and seismic hazards, including faulting, seismically-induced ground failures (e.g., landslides, liquefaction), erosion, expansive or corrosive soils, and coastal retreat. The analysis is based on review of available geologic and geotechnical maps and reports of the project area and vicinity, including reports and information published by the U.S. Geological Survey (USGS) and the California Geological Survey (CGS), the *Monterey County General Plan*, and site-specific investigations conducted for various project components.

Comments received on the April 2015 Draft EIR requested analysis of the slant wells electrical panel (see Section 4.2.5.2, Impact 4.2-10), and clarifications regarding geologic units and soils (see Section 4.2.1.1), LCPLUP Planning Guidelines (see Section 4.2.2.3, Local Regulations), slant well angles (see Section 3.2.1 in Chapter 3, Description of the Proposed Project), the slant well abandonment mitigation measure (see Section 4.2.5.2, Impact 4.2-10), subsidence (see Section 4.2.5.2, Impact 4.2-8), corrosion prevention measures (see Section 4.2.5.2, Impact 4.2-7), and the Reliz (Blanco Section) fault (see Section 4.2.1.2, Seismicity and Faults).

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Revisions to Mitigation Measure 4.2-10 (formerly 4.2-9), Slant Well Abandonment Plan, to include reporting requirements, coordination with the property owner, and consideration of the snowy plover nesting season.*

- *Addition of Secondary Impacts of Mitigation Measure 4.2-10, which would be similar to the impacts associated with other project-based construction activities.*

4.2.1 Setting/Affected Environment

The study area for the evaluation of impacts on geology, soils, and seismicity includes the project components and general vicinity, except for the issue of coastal erosion where the study area extends south from the slant well locations to include the sandy beaches of southern Monterey Bay. The study area includes the submerged lands of Monterey Bay National Marine Sanctuary (MBNMS), as the proposed slant wells would extend under the seabed in MBNMS.

4.2.1.1 Geologic Conditions

Topography

Figures 3-2 through **3-15** in Chapter 3, Description of the Proposed Project, show the locations of the proposed MPWSP components, which extend approximately 18 miles, from the connection to the Castroville Community Services District (CCSD) water distribution system located in unincorporated Monterey County in the north to the unincorporated community of Hidden Hills along Highway 68 in the south. In addition to unincorporated areas, project components are also proposed in the cities of Monterey, Marina, and Seaside. Although the topography of the project area is variable, the majority of the project components would be constructed in coastal dune areas or in low-lying inland areas within 2 miles of the coast.

The northern and coastal dune areas are characterized by gently to moderately rolling dunes with elevations ranging from sea level at the coast to 100 feet above mean sea level (msl) at the proposed MPWSP Desalination Plant. Along the shoreline, the coastal dune slopes can be steep and have a high potential for erosion (Ninyo & Moore, 2005, 2014). East of the coastline, the dune deposits have gentle slopes (0 to 10 percent) with increased stability and vegetation cover. Fill embankments up to approximately 30 feet high are located throughout the area with road cuts up to approximately 20 feet high within the dune sands. West of the coastline, the existing MRWPCA ocean outfall pipeline extends about 2.1 miles into waters of MBNMS to a depth of about 90 to 110 feet below mean sea level. The bathymetry[1] in the vicinity of the MRWPCA outfall structure is relatively flat with an average slope of 1 percent to the west of the diffuser for 5 miles. The rim of the Monterey Submarine Canyon, one of the deepest submarine canyons on the west coast of the United States, is less than 4 miles to the northwest of the proposed location of the slant wells at the CEMEX facility.

The topography of the more urbanized southern coastal portion of the project area ranges from rolling coastal dunes to older, more stable dunes and terrace deposits. The topography in this portion of the project area varies, and elevations range from 0 feet msl at the coast to about 340 feet above msl at the proposed ASR injection/extraction wells (ASR-5 and ASR-6 Wells).

The proposed Ryan Ranch–Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements would be located 3 and 6 miles southeast of the coastline in a

[1] National Oceanic and Atmospheric Administration (2014) refers to bathymetry as the ocean's depth relative to sea level, although it has come to mean "submarine topography," or the depths and shapes of underwater terrain.

relatively rugged mountainous area with elevations of about 200 and 1,000 feet above msl, respectively. The proposed location for the Carmel Valley Pump Station is on the south side of Carmel Valley Road about 3 miles east and inland of the coastline at an elevation of about 80 feet above msl.

Regional Geology

The study area lies within the geologically complex region of California referred to as the Coast Ranges Geomorphic Province.[2] The Coast Ranges province lies between the Pacific Ocean and the Great Valley Geomorphic Province (Sacramento and San Joaquin Valleys) and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. This province is marked by northwest-trending elongated ranges and narrow valleys that roughly parallel the coast and the San Andreas Fault Zone. Much of the Coast Ranges province is composed of marine sedimentary deposits, metamorphic rocks, and volcanic rocks. The project area is also underlain by the "Salinian Block," a continental fragment of the granitic Sierra Nevada that was pushed northward by tectonic forces along the western side of the San Andreas Fault Zone (Tavarnelli, 1998). The tectonics of the San Andreas Fault and other major faults in the western part of California have played a major role in the geologic history of the area. The drainages south of San Francisco Bay are strongly influenced by tectonic-related faults and folds that typically trend parallel to the coast, although some drainages run perpendicular to the coast. The Salinas River, whose course largely lies within a synclinal trough,[3] exemplifies this pattern.

The Santa Lucia Range, the Salinas Valley, and the Santa Cruz Mountains are the prominent geologic features of the region. The rugged Santa Lucia Range generally runs from the Monterey Peninsula southeast to San Luis Obispo; the proposed Ryan Ranch–Bishop and Main System-Hidden Hills Interconnection Improvements, and the Carmel Valley Pump Station would be located in this area. The Salinas Valley is northeast of the Santa Lucia Range and roughly parallels these northwest-southeast-trending mountains. The geologic development of the Salinas Valley, which runs from Monterey Bay southeast into San Luis Obispo County, is largely the result of folding, although the valley also shows characteristics of stream erosion and faulting. The subsurface slant wells, MPWSP Desalination Plant, improvements to the Seaside Groundwater Basin ASR System and conveyance pipelines would be constructed within the Salinas Valley. The Santa Cruz Mountains extend from the San Francisco Peninsula south to the Pajaro River, near Watsonville, where they merge with the Gabilan Range. These mountains help define the northern end of Monterey Bay.

Geologic Units

The discussion of geologic units is based on the geologic mapping compilation prepared by the CGS (2002b; which is based largely on Clark et al. [1997] and Dupre and Tinsley [1980]); geotechnical field reconnaissance conducted in June and November 2004 during which various geologic units within the project area were observed and described (Ninyo & Moore, 2005); and

[2] A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces (CGS, 2002a).

[3] A syncline or synclinal trough is a geologic feature where stratified bedrock has been folded into a concave upward form.

subsurface investigations consisting of soil borings and analytical testing at the proposed (CEMEX facility) and alternate (Potrero Road parking area) slant well locations (Geoscience, 2016). **Figure 4.2-1** presents the regional surface geology from the CGS's compilation for the project area. **Figure 4.2-2** presents a north to south regional geologic cross-section along the coast (HydroMetrics, 2009). **Figure 4.2-3** presents a west to east local geologic cross section extending from the coastline, through the proposed slant wells, and to about 2 miles inland.

The Salinas Valley extends about 80 miles inland and is filled with recent to Tertiary (65 million years ago [mya] to 1.6 mya) river and estuary deposits of the current and ancestral Salinas River and regional eolian[4] and marine sediments over the Mesozoic Salinian Block granitic basement (Kennedy Jenks, 2004). Based on a review of geologic literature combined with the field observations, it is expected that fill, active and older coastal dune sands, and terrace deposits would be encountered during construction of the project components. Deeper subsurface geologic units that were not encountered at the surface but are known to be present in the project area include the Aromas Sand, Paso Robles Formation, Purisima Formation, Santa Margarita Formation, and Monterey Formation, as well as an underlying, unnamed sandstone and the granodiorite[5] of the Salinian Block.

Table 4.2-1 summarizes the geologic units and the project components, which are discussed below.

TABLE 4.2-1
SUMMARY OF GEOLOGIC UNITS AND PROJECT COMPONENT LOCATIONS

Geologic Unit	Project Component
Fill	Some pipeline segments
Dune Sands	Subsurface slant wells; westernmost portion of Source Water Pipeline
Older Dune Sands	Subsurface slant wells; most pipeline segments; MPWSP Desalination Plant; Castroville Pipeline, all ASR facilities along General Jim Moore Boulevard
Floodplain Deposits	Castroville Pipeline
Terrace Deposits	Subsurface slant wells; portions of the Ryan Ranch–Bishop Interconnection Improvements
Carmel Valley Floodplain	Carmel Valley Pump Station
Aromas Sand	ASR-5 and ASR-6 Wells[a]
Paso Robles Formation	ASR-5 and ASR-6 Wells[a]
Purisima Formation	ASR-5 and ASR-6 Wells[a]
Santa Margarita Formation	ASR-5 and ASR-6 Wells[a]
Monterey Formation	Main System–Hidden Hills Interconnection Improvements

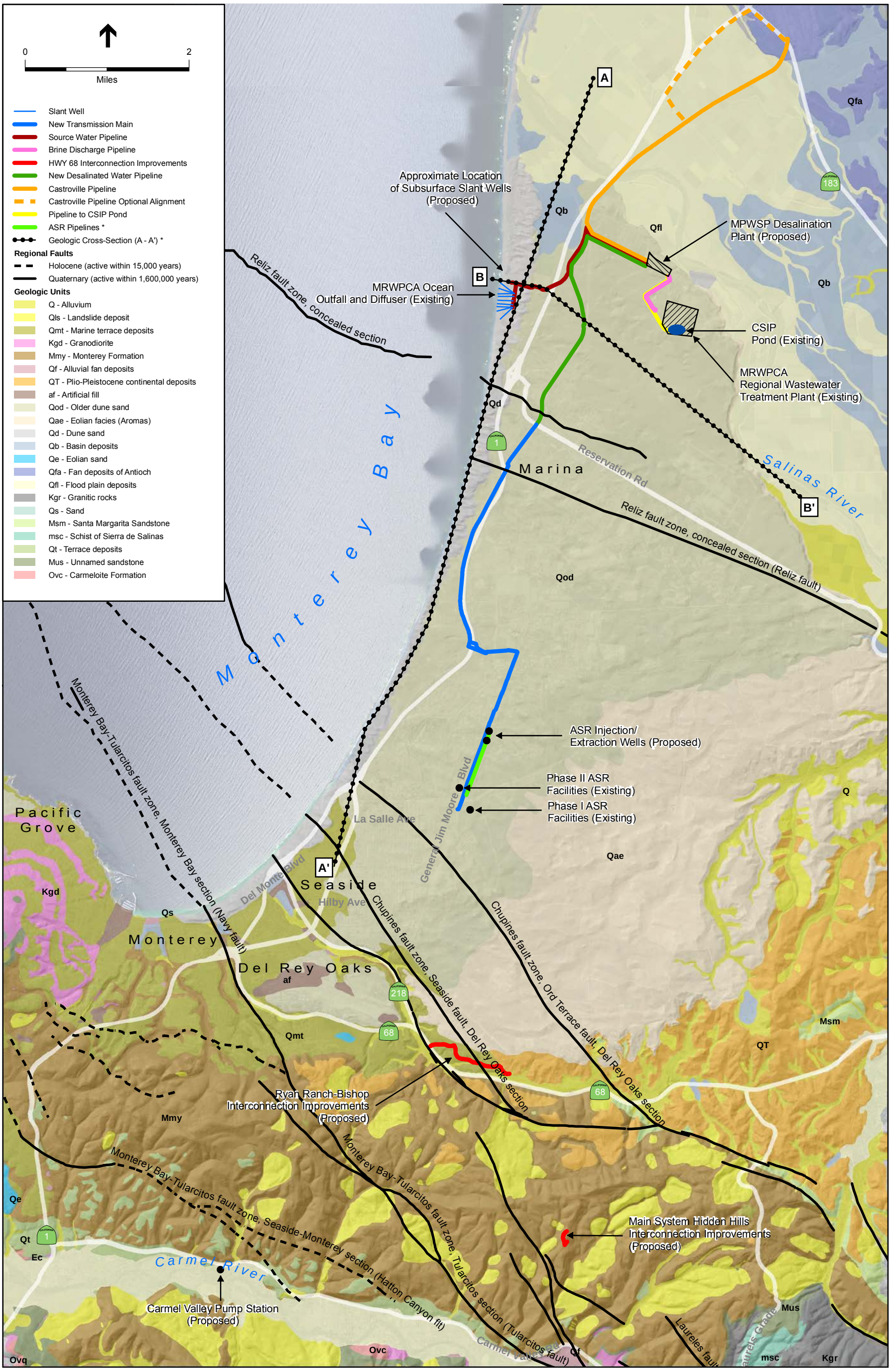
NOTES:

[a] The ASR-5 and ASR-6 Wells would be drilled through the Aromas Sand, Paso Robles, and Purisima Formations, and screened in the Santa Margarita Formation.

SOURCE: CGS, 2002b

[4] Eolian deposits are borne, deposited, produced, or eroded by wind.

[5] Granodiorite is a granular, igneous rock intermediate between granite and quartz-diorite. Igneous rock is produced by fire, great heat, or the action of a volcano, and has been solidified from a molten state.



NOTE:
*Refer to figure 4.2-2 for "A" geologic cross-section information and 4.2-3 for "B" geologic cross-section information.

SOURCE: CGS, 2002

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Figure 4.2-1

Geologic Map of Project Area

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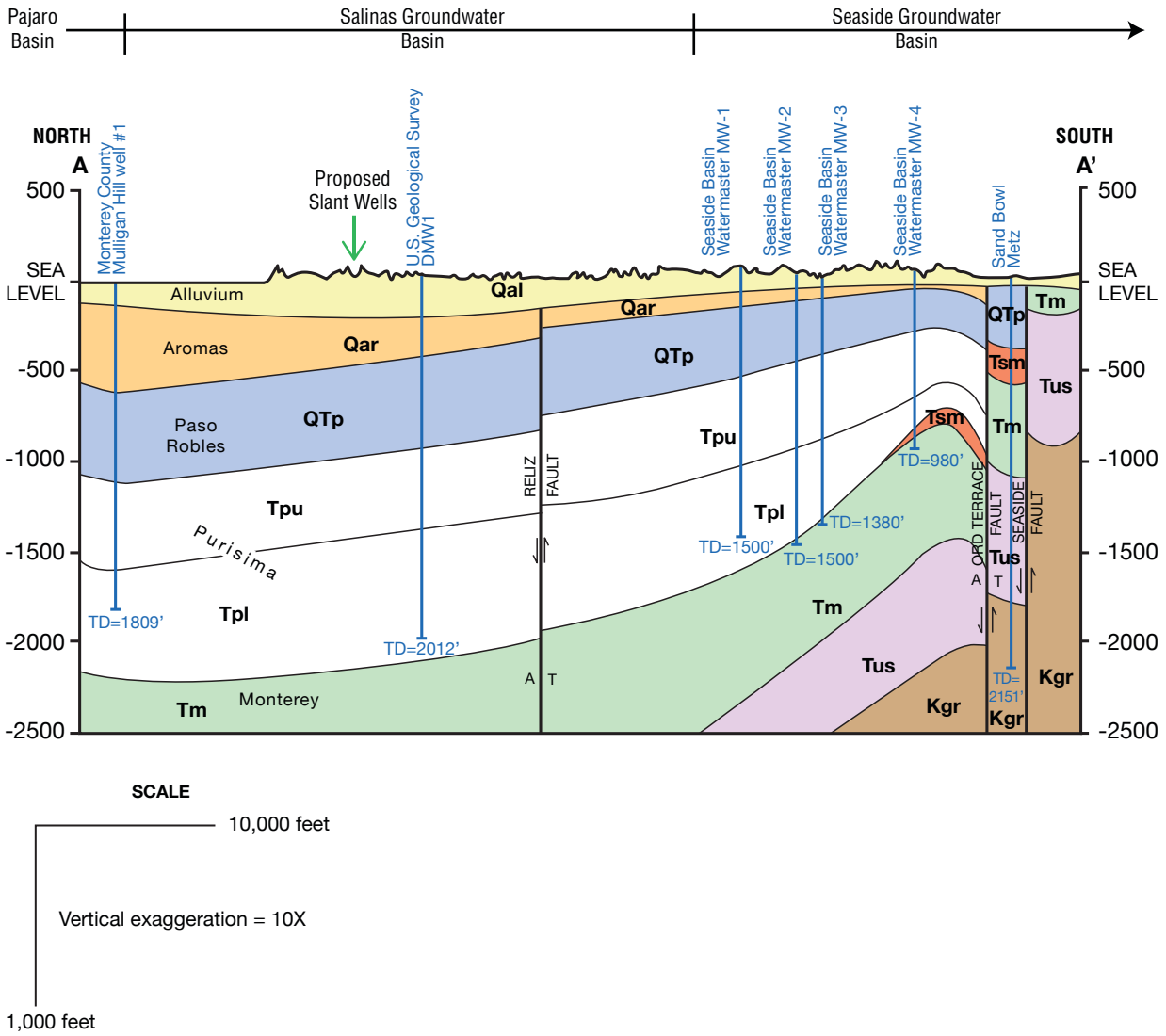


Qal Alluvium (Holocene)

Qar Aromas Sand (Pleistocene)

QTp Paso Robles Formation (Pleistocene-Pliocene?)

Tp Purisima Formation (Pliocene), subdivided into upper unit (TPu) and lower unit (Tpl)

Tsm Santa Margarita Sandstone (late Miocene)

Tm Monterey Formation (middle Miocene)

Tus Unnamed sandstone (middle Miocene)

Kgr Granitic rocks (late Cretaceous)

Fault, half arrows show direction of vertical separation; A indicates horizontal movement away from viewer, T indicates movement toward viewer

SCALE

10,000 feet

Vertical exaggeration = 10X

1,000 feet

SOURCE: HydroMetrics, 2009

NOTES: TD = Total depth in feet

Figure 4.2-2
Generalized Geologic Cross-Section

Fill Materials

Fill materials are located throughout the project area (Ninyo and Moore, 2005, 2014). The fill is associated with previous grading for roads, bridges, railroad corridors, agricultural uses, and commercial, residential, and military land developments. The thicknesses of the fill deposits range from relatively shallow fills (a few feet thick) along roadways and railroad alignments in relatively flat, low-lying areas to deeper fills along bridge-approach embankments and in developed hillside areas. Most of the fill materials in the project area were likely derived from local native soils and would be similar in composition to the native soils described in the following sections.

Dune Sand Deposits

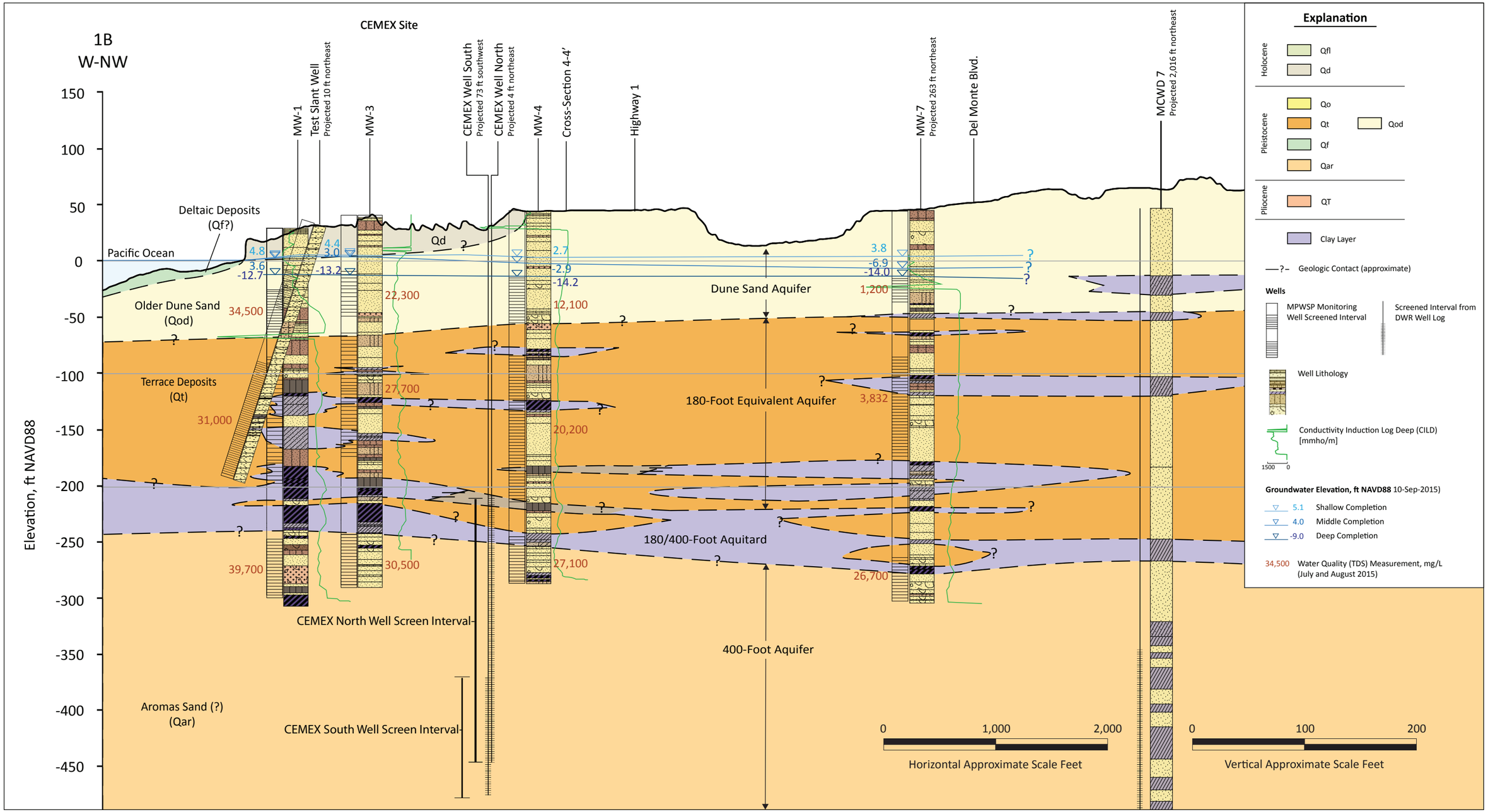
Dune sand deposits are present along the coastal areas from the proposed Seawater Intake System in the north to the eastern area of the city of Monterey in the south where the proposed pipeline additions would connect to the existing system (CGS, 2002b). Active, wind-blown dunes generally extend less than 0.5 mile inland, and older, more stabilized dunes extend up to 4 miles inland as well as offshore. Most of the project components would be located on or within dune deposits, except for the deeper portions of the proposed ASR injection/extraction wells, the Ryan Ranch–Bishop and Main System–Hidden Hills Interconnection Improvements, and the Carmel Valley Pump Station. The proposed subsurface slant wells would be partially screened within the dune sand deposits and some of the source water would be pumped from this unit.

The dune areas typically consist of elevated rolling hills composed of loose to moderately consolidated, fine sand (Ninyo & Moore, 2005; PCE, 2014). Younger, sparsely vegetated, active[6] dunes are present along the coastline. Older dune deposits[7] with more established vegetation are present in the inland areas and underlie the locations of most of the proposed project components. During the geologic reconnaissance, dune deposits were observed in existing cut slopes and excavations and ranged from loose to weakly cemented sands. Shallow groundwater is not expected within the elevated dune deposits, except in localized low-lying areas along the coastline.

Terrace Deposits

Pleistocene-age (1.6 mya to 11,000 years ago [ya]) terrace deposits are present beneath the CEMEX mining facility and the sea floor of MBNMS where the proposed slant wells would be constructed (Geoscience, 2016). The deeper portions of the proposed subsurface slant wells would be screened across these terrace deposits and some of the source water would be pumped from this unit. These terrace deposits are former alluvial fan and river floodplain deposits—which may also include marine terrace deposits—that generally consist of sand with some gravels. Uplifted Pleistocene marine terrace deposits are also present within the southern portion of the project area from Sand City to the city of Monterey (CGS, 2002b; Clark et al., 1997; Ninyo & Moore, 2014). These deposits are fine-grained sands and silts with locally thin, discontinuous gravel layers. The terrace deposits are typically dissected by streams and lie on the Aromas Sand. The deposits are variable in thickness, typically from up to 50 feet to a maximum of 200 feet (Muir, 1977). Terrace deposits at the CEMEX mining facility range from about 140 to 170 feet in thickness (Geoscience, 2016).

6 Active dunes are composed of loose sand shifting in real time.
7 Older dunes are inactive in that much of the sands have become weakly cemented, limiting active movement.



SOURCE: Geoscience, 2016

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Figure 4.2-3

Local Geologic Cross-Section

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Carmel Valley Floodplain Deposits

At the proposed Carmel Valley Pump Station sites, the Quaternary (1.6 mya to present) floodplain deposits along the Carmel River consist of a mixture of unconsolidated sand and silt deposits, commonly including relatively thin layers of clay (Clark et al., 1997). The older floodplain deposits are nearly flat to gently sloping and fill an irregularly shaped valley beneath the Carmel River. The Monterey Formation underlies these floodplain deposits.

Aromas Sand

The Pleistocene-age (1.6 mya to 11,000 ya) Aromas Sand consist of both older river deposits and younger eolian (windblown) deposits of unconsolidated, brown to red sands with interbeds of clay and poorly sorted gravels (Muir, 1977; Hanson, 2003). The eolian portion of the Aromas Sand crops out just east of the central and southern portion of the project area and extends beneath the project area to offshore on the continental shelf and in the Monterey submarine canyon (CGS, 2002b). In addition, the surface outcrops of the Aromas Sand have been mapped about 1 mile east of the CSIP Pond beneath the older dune sands to the west, as shown on **Figure 4.2-1**. The Aromas Sand overlies the Paso Robles Formation north of the east-to-west Ord Terrace Fault in Seaside, but is not present south of the fault (HydroMetrics, 2009). The proposed new ASR injection/extraction wells would be drilled to about 1,000 feet below the surface through the Aromas Sand into the deeper Santa Margarita Sandstone.

Paso Robles Formation

The Plio-Pleistocene-age (about 5.3 mya to 11,000 ya) Paso Robles Formation is a series of fine-grained, oxidized sand and silt beds that contain gravel beds (Clark et al., 1997) interbedded with some less-prevalent calcareous[8] beds (DWR, 2004). The Paso Robles Formation is interfingered[9] with the lower portion of the Aromas Sand and the upper portion of the Purisima Formation (HydroMetrics, 2009). The Paso Robles Formation is present beneath the northern portion of the project area at depths ranging from less than 100 feet to 600 feet (HydroMetrics, 2009). The proposed new ASR injection/extraction wells would be drilled to about 1,000 feet below the ground through the Paso Robles Formation into the deeper Santa Margarita Sandstone.

Purisima Formation

The mostly marine Miocene-age (24 mya to 5.3 mya) to Pliocene-age (5.3 mya to 1.8 mya) Purisima Formation underlies the project area at depths ranging from about 400 feet below the surface in Seaside to as much as 1,100 feet in the northern part of the project area (Powell et al., 2007; HydroMetrics, 2009) and extends westward under Monterey Bay (Muir, 1977). The Purisima Formation consists of layered sand, silt, clay, shale, and some gravel deposited in near-shore and far-shore marine environments. The basal, or lowermost, unit of the Purisima Formation consists of relatively impermeable clay and shale (Muir, 1977; HydroMetrics, 2009).

8 Mostly or partly composed of calcium carbonate i.e. containing lime or being chalky.
9 Pertains to the lateral change from one rock or sediment type to another in a zone where the two types form interpenetrating wedges.

The proposed new ASR injection/extraction wells would be drilled through this unit, into the deeper Santa Margarita Sandstone.

Santa Margarita Formation

The late Miocene-age (24 mya to 5.3 mya) to Pliocene-age (5.3 mya to 1.8 mya) Santa Margarita Sandstone is a marine, coarse-grained sandstone that overlies the Monterey Formation (Clark et al., 1997; MCWRA, 2006). Relatively small pieces of this unit are present beneath the project area in the Seaside vicinity at depths of about 800 feet deep just north of the Ord Terrace Fault and about 500 feet below ground surface (bgs) in between the Ord Terrace and Seaside Faults (HydroMetrics, 2009), as shown on **Figure 4.2-2**. The unit has surface outcrops east of the project area (CGS, 2002b) and is up to 400 feet thick in places (Durbin, 2007). The proposed new ASR injection/extraction wells would be drilled to about 1,000 feet below the surface and screened within the Santa Margarita Sandstone.

Monterey Formation

The Tertiary-age (65 mya to 1.6 mya) Monterey Formation is a marine sedimentary unit generally consisting of siliceous and diatomaceous[10] interbedded layers of mudstone, siltstone, sandstone, and claystone (Clark et al., 1997). Seams of the expandable clay bentonite are also present (Ninyo & Moore, 2005, 2014). This unit is present at the proposed Main System–Hidden Hills Interconnection Improvements. The Monterey Formation is at the surface on both sides of the Carmel Valley and underlies the Carmel Valley floodplain deposits beneath the proposed Carmel Valley Pump Station. The unit extends beneath the remainder of the project area to the north, as well as west into Monterey Bay.

4.2.1.2 Seismicity and Faults

This section characterizes the region's existing faults, describes historical earthquakes, estimates the likelihood of future earthquakes, and describes probable groundshaking effects.

Earthquake Terminology and Concepts

Earthquake Mechanisms and Fault Activity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves that propagate through the earth's crust, producing the groundshaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

Geologists commonly use the age of offset rocks as evidence of fault activity—the younger the displaced rocks, the more recently earthquakes have occurred. To evaluate the likelihood that a fault would produce an earthquake, geologists examine the magnitude and frequency of recorded

[10] Diatomaceous deposits consist of fossilized amorphous silica remains of diatoms, a type of hard-shelled algae.

earthquakes and evidence of past displacement along a fault. The State of California defines an active fault as one that has had surface displacement within Holocene time (the CGS defines this as within last 11,000 years; the USGS uses 15,000 years). A Quaternary fault is defined as a fault that has shown evidence of surface displacement during the Quaternary period (the last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not mean that a fault lacking evidence of surface displacement is necessarily inactive. The term "sufficiently active" is also used to describe a fault if there is some evidence that Holocene displacement has occurred on one or more of its segments or branches (Hart, 1997).

For the purpose of delineating fault rupture zones, the CGS historically sought to identify faults defined as potentially active, which are faults that have shown evidence of surface displacement during the Quaternary period. Older maps still use the "potentially active" term. However, under the Alquist-Priolo Earthquake Fault Zoning Act, usage of this term was discontinued when it became apparent that the sheer number of Quaternary-age faults in the state made it meaningless to zone all of them (Bryant and Hart, 2007). In late 1975, the state geologist made a policy decision to zone only those faults that had a relatively high potential for ground rupture, determining that a fault should be considered for zoning only if it was sufficiently active and "well defined."[11] Blind faults do not show surface evidence of past earthquakes, even if they occurred in the recent past; and faults that are confined to pre-Quaternary rocks (more than 1.6 million years old) are considered inactive and incapable of generating an earthquake.

Earthquake Magnitude

When an earthquake occurs along a fault, its size can be determined by measuring the energy released during the event. A network of seismographs records the amplitude and frequency of the seismic waves that an earthquake generates. The Richter magnitude (ML) of an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole-number step, representing a tenfold increase in the amplitude of the recorded seismic waves and 32 times the amount of energy released. While Richter magnitude was historically the primary measure of earthquake magnitude, seismologists now use Moment Magnitude (Mw) as the preferred way to express the size of an earthquake. The Moment Magnitude scale is related to the physical characteristics of a fault, including the rigidity of the rock, the size of fault rupture, and the style of movement or displacement across the fault. Although the formulae of the scales are different, they both contain a similar continuum of magnitude values, except that Mw can reliably measure larger earthquakes and do so from greater distances.

Peak Ground Acceleration

A common measure of ground motion at any particular site during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of

[11] A fault is considered well defined if its trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The fault may be identified by direct observation or by indirect methods (e.g., geomorphic and geophysical evidence). The critical consideration is that the fault, or some part of it, can be located in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile acceleration, one "g" of acceleration is equivalent to the motion of a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum PGA value recorded during the Loma Prieta earthquake in the vicinity of the epicenter, near Santa Cruz, was 0.64 g. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills).

Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale assigns an intensity value based on the observed effects of groundshaking produced by an earthquake. Unlike measures of earthquake magnitude and PGA, the Modified Mercalli Intensity Scale is qualitative in nature in that it is based on actual observed effects rather than measured values. Similar to PGA, Modified Mercalli values for an earthquake at any one place can vary depending on the earthquake's magnitude, the distance from its epicenter, the focus of its energy, and the type of geologic material. The Modified Mercalli values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X can cause moderate to significant structural damage. Because the Modified Mercalli scale is a measure of groundshaking effects, intensity values can be correlated to a range of average PGA values, as shown in **Table 4.2-2**.

Faults and Historical Earthquake Activity

The project area is located in a seismically active region of California. The Coast Ranges geomorphic province is composed of a series of parallel, northwest-trending mountain ranges and valleys that are generally controlled by faults. These faults juxtapose blocks of geologic units of different origins called belts. The Monterey Bay region is located within the Salinian Block, which is a northwest-trending belt bounded to the east by the San Andreas Fault and to the west by the San Gregorio (Sur) Fault. Major earthquakes have affected the region in the past and are expected to occur in the near future on one of the principal active faults in the San Andreas Fault System.

The Monterey Bay region contains both active and potentially active faults, and is considered a region of high seismic activity. Throughout the project area, there is the potential for damage resulting from movement along any one of a number of the active faults that are oriented generally perpendicular to the coastline. In 2007, the USGS, the CGS, and the Southern California Earthquake Center formed the Working Group on California Earthquake Probabilities (WGCEP) to evaluate the probability of one or more earthquakes of Mw 6.7 or higher occurring in the state of California over the next 30 years. Accounting for the wide range of possible earthquake sources, it is estimated that the San Francisco and Monterey Bay areas as a whole have a 72 percent chance of experiencing an earthquake of Mw 6.7 or higher in the next 30 years; among the various active faults in the region, the San Andreas Fault System is the most likely to cause such an event (WGCEP, 2015a).

TABLE 4.2-2
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt	< 0.0017 g
II	Felt by people sitting or on upper floors of buildings	0.0017 to 0.014 g
III	Felt by almost all indoors. Hanging objects swing. Vibration like passing of light trucks. May not be recognized as an earthquake.	0.0017 to 0.014 g
IV	Vibration felt like passing of heavy trucks. Stopped cars rock. Hanging objects swing. Windows, dishes, doors rattle. Glasses clink. In the upper range of IV, wooden walls and frames creak.	0.014 to 0.039 g
V (Light)	Felt outdoors. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing. Pictures move. Pendulum clocks stop.	0.035 to 0.092 g
VI (Moderate)	Felt by all. People walk unsteadily. Many frightened. Windows crack. Dishes, glassware, knickknacks, and books fall off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster, adobe buildings, and some poorly built masonry buildings cracked. Trees and bushes shake visibly.	0.092 to 0.18 g
VII (Strong)	Difficult to stand or walk. Noticed by drivers of cars. Furniture broken. Damage to poorly built masonry buildings. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices, unbraced parapets and porches. Some cracks in better masonry buildings. Waves on ponds.	0.18 to 0.34 g
VIII (Very Strong)	Steering of cars affected. Extensive damage to unreinforced masonry buildings, including partial collapse. Fall of some masonry walls. Twisting, falling of chimneys and monuments. Wood-frame houses moved on foundations if not bolted; loose partition walls thrown out. Tree branches broken.	0.34 to 0.65 g
IX (Violent)	General panic. Damage to masonry buildings ranges from collapse to serious damage unless modern design. Wood-frame structures rack, and, if not bolted, shifted off foundations. Underground pipes broken.	0.65 to 1.24 g
X (Very Violent)	Poorly built structures destroyed with their foundations. Even some well-built wooden structures and bridges heavily damaged and needing replacement. Water thrown on banks of canals, rivers, lakes, etc.	> 1.24 g
XI (Very Violent)	Few, if any, masonry structures remain standing. Bridges destroyed. Rails bent greatly. Underground pipelines completely out of service.	> 1.24 g
XII (Very Violent)	Damage nearly total. Practically all works of construction are damaged greatly or destroyed. Large rock masses displaced. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown into the air.	> 1.24 g

NOTES:

[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCES: ABAG, 2016; CGS, 2003.

Several active and potentially active faults have been mapped within or close to the project area. **Figure 4.2-4** shows the approximate locations of the major faults in the region and their geographic relationship and orientation to the project area. **Table 4.2-3** lists the principal active and potentially active faults in the region that could affect the project components; the type of the faults; and the estimated maximum Moment Magnitude of earthquakes that could occur on each fault. The approximate distance to each fault is based on estimated distances from the nearest proposed project component. None of the faults cross, nor are they located near the proposed slant wells or the existing outfall, located within submerged lands and waters of MBNMS.

Regional Faults

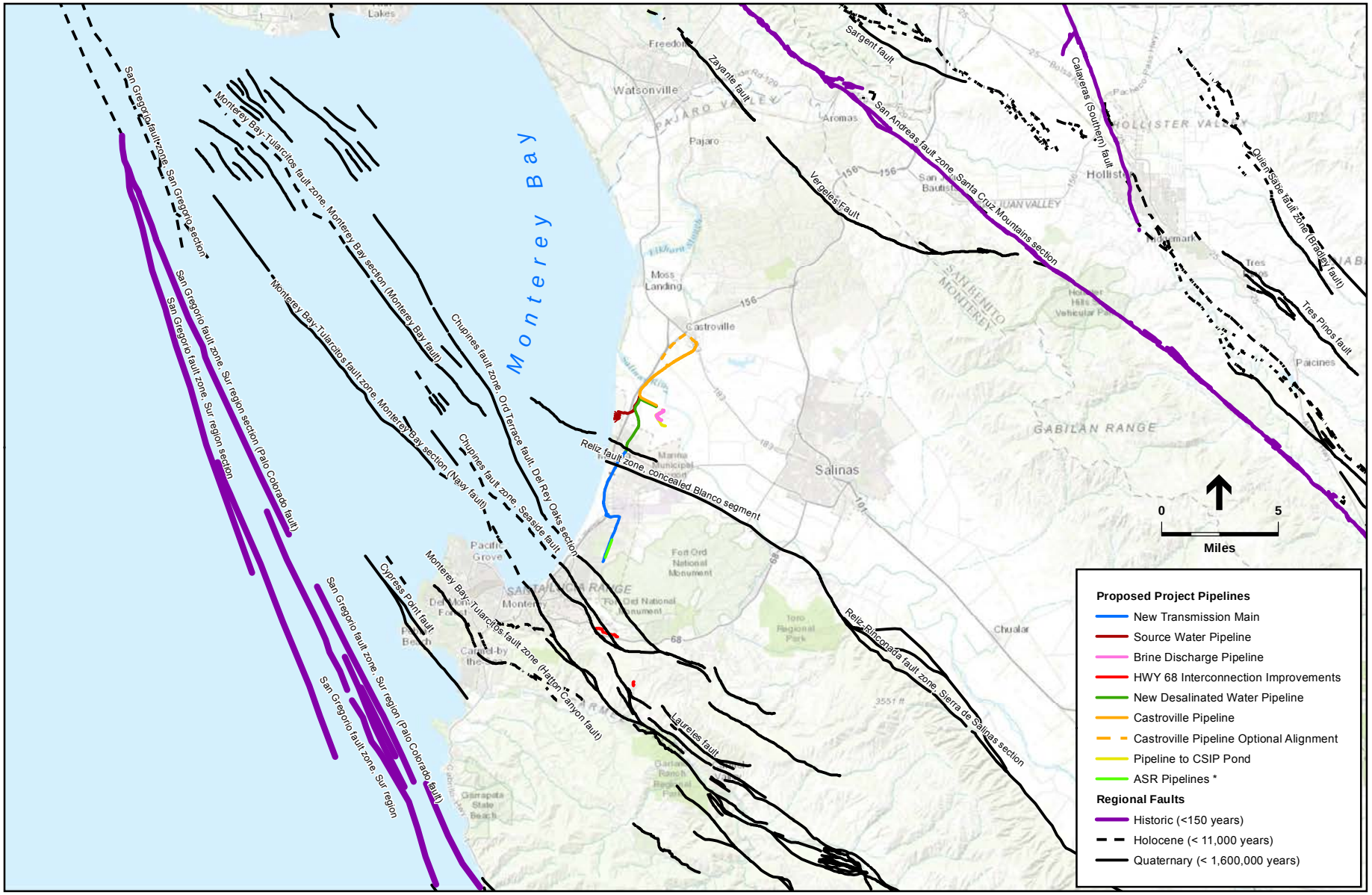
San Andreas Fault Zone

The San Andreas Fault Zone is a major structural feature in the region and forms a boundary between the North American and Pacific tectonic plates (Bryant and Lundberg, 2002). The San Andreas Fault is a major northwest-trending, right-lateral,[12] strike-slip[13] fault. The fault extends for about 600 miles from the Gulf of California in the south to Cape Mendocino in the north. The San Andreas is not a single fault trace but rather a system of active faults that diverges from the main fault south of San Jose. Regional faults that are subparallel to the San Andreas Fault, such as the Hayward, Calaveras, and San Gregorio Faults, are within the broader San Andreas Fault System (see **Figure 4.2-4**).

The San Andreas Fault has produced numerous large earthquakes, including the 1906 San Francisco earthquake. That event had an estimated ML 8.3, or Mw 7.8 (WGCEP, 2008a, 2008b) and was associated with up to 21 feet of displacement and widespread ground failure, including several hundred miles of surface fault rupture (Lawson, 1908). In the Watsonville area and to the east, reports of strong groundshaking, toppled chimneys, ground cracks, broken pipes, and twisted and sunken railroad tracks (Lawson, 1908) indicate that groundshaking intensities reached IX on the Modified Mercalli scale.

Numerous moderate-sized earthquakes (approximately magnitude 5.2) in Watsonville (in 1954 and again in 1964 and 1969) resulted in broken irrigation lines, ruptured water mains, and cracked plaster and stucco (PVWMA, 2001). The magnitude 6.9 Loma Prieta earthquake of October 1989, centered in the Santa Cruz Mountains, caused strong groundshaking and ground failure throughout the San Francisco and Monterey Bay areas. Major damage was experienced in downtown and residential Watsonville, Castroville, Gilroy, and Hollister (McNutt and Toppozada, 1990). In the project area, the Loma Prieta earthquake produced a PGA of 0.39 g and groundshaking with a Modified Mercalli intensity of VIII.

[12] To an observer straddling a right-lateral fault, the right-hand block or plate would move towards the observer.
[13] A strike-slip fault creates vertical (or nearly vertical) fractures (i.e., the blocks primarily move horizontally). If the block opposite an observer looking across the fault moved to the right, the slip style is termed "right lateral;" if the block moved to the left, the motion is termed "left lateral."



NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: USGS/CGS, 2010

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Figure 4.2-4

Active and Potentially Active Regional Faults

TABLE 4.2-3
ACTIVE AND POTENTIALLY ACTIVE FAULTS

Fault or Fault Zone	Location Relative to Project Components	Recency of Faulting	Slip Rate (millimeters/ year)	Maximum Moment Magnitude (Mw)	Historical Seismicity[a]
Monterey Bay – Tularcitos Fault Zone[b]	Beneath Main System–Hidden Hills Interconnection Improvements	Late Quaternary with evidence of Holocene activity (Potentially Active)	0.2 to 1.0	7.3	
Reliz–Rinconada Fault Zone (Blanco Section)	Beneath new Transmission Main	Late Quaternary (Potentially Active)	0.2 to 1.0	7.5	
Hatton Canyon Fault	0.5 miles northeast of Carmel Valley Pump Station	Quaternary with evidence of Holocene Activity (Potentially Active)	0.2 to 1	not estimated	
Laureles Fault	1.5 miles southwest of Main System–Hidden Hills Interconnection Improvements	Late Quaternary (Potentially Active)	Unknown	5.5	
San Gregorio Fault (Sur Region)	5 miles southwest of Carmel Valley Pump Station	Historical (<200 years ago) (Active)	1 to 7	7.0	6+, 1926
Zayante–Vergeles Fault Zone	12 miles northeast of MPWSP Desalination Plant and 8.5 miles northeast of northern terminus of Castroville Pipeline	Holocene (Active)	0.1	7.0	
San Andreas Fault	16 miles northeast of MPWSP Desalination Plant and 13 miles northeast of northern terminus of Castroville Pipeline	Historical (Active)	13 to 21	6.2 to 7.0	6.9, 1989 7.8, 1906 6.7, 1898 6.5, 1885
Sargent Fault Zone	19 miles northeast of MPWSP Desalination Plant and 16 miles northeast of northern terminus of Castroville Pipeline	Late Quaternary (Potentially Active)	1 to 5	6.8	
Calaveras Fault (southern)	25 miles northeast of MPWSP Desalination Plant and 22 miles northeast of northern terminus of Castroville Pipeline	Historical (Active)	10 to 20	5.8	6.3, 1897 6.5, 1911

NOTES:

[a] Richter Magnitude (M_L) or Moment Magnitude (Mw) and year of recent or large events. References that cite earthquake magnitudes do not always specify whether the measurement used the Richter or Moment Magnitude scale; however, the M_L and Mw values are similar up to about 7.

[b] Includes the Chupines, Seaside, Ord Terrace, and Navy Faults.

SOURCES: CGS, 2003; USGS, 2010; Johnson, 2004; Clark et al., 1997; Field, et.al., 2013

The San Andreas Fault, which has experienced multiple large earthquake events resulting in large surface fault rupture, is a designated earthquake fault zone under the Alquist-Priolo Earthquake Fault Zoning Act (see Section 4.2.2.2, State Regulations). According to the WGCEP, the Northern California portion of the San Andreas Fault has a 16 percent of producing a Mw 6.7 or larger earthquake during the next 30 years (WGCEP, 2015b). The CCSD connection is located about 12.5 miles southwest of the San Andreas Fault.

San Gregorio Fault Zone

The San Gregorio Fault Zone is a complex of faults that skirt the coastline north of Big Sur and run northwestward across Monterey Bay, briefly touching the shoreline of the San Mateo County coastline at Point Año Nuevo and at Seal Cove, just north of Half Moon Bay (Bryant and Cluett, 1999b). This fault is active and was recently recognized as capable of producing large earthquakes. Studies have shown Holocene displacement on the San Gregorio Fault as recently as 1270 AD to 1400 AD (Bryant and Cluett, 1999b). Additionally, a 1926 earthquake with a Richter magnitude above 6.0—previously thought to have occurred on the Monterey Fault—may have actually ruptured an offshore segment of the San Gregorio Fault Zone (Johnson, 2004). According to the WGCEP, the San Gregorio Fault has a 1.34 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The closest portion of the fault to a proposed project component is approximately 10 miles southwest of the Highway 68 Interconnection Improvement.

Calaveras Fault Zone

The Calaveras Fault Zone, a major right-lateral, strike-slip fault, extends for about 100 miles from Dublin to Hollister, where it merges with the San Andreas Fault (Bryant and Cluett, 1999a). The Calaveras Fault is designated as an earthquake fault zone under the Alquist-Priolo Act. The Calaveras Fault is most active on its southern segment; the magnitude 6.2 Morgan Hill earthquake (April 1984) originated on this fault. Tectonic creep[14] has been documented along the Calaveras Fault in the vicinity of Hollister. According to the WGCEP, the Calaveras Fault has a 17.09 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The CCSD connection is located about 20 miles west of the Calaveras Fault Zone.

Sargent Fault Zone

The Sargent Fault Zone branches from the San Andreas Fault and extends for about 34 miles, from the Lexington Reservoir in the north to just north of Hollister in the south (Bryant, 2000a). The Sargent Fault is a reverse-oblique,[15] right-lateral, strike-slip fault zone that dips steeply to the west and is seismically active. The fault is considered to be capable of surface rupture and is designated as an Alquist-Priolo earthquake fault zone. According to the WGCEP, the Sargent Fault Zone has a 0.82 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The CCSD connection is located about 16.25 miles southwest of this fault.

[14] Tectonic creep is the slow, apparently continuous movement on a fault (Bates and Jackson, 1980).
[15] In a reverse fault, the block above the fault moves up relative to the block below the fault. This fault motion is caused by compressional forces and results in shortening. Oblique-slip faulting suggests both dip-slip faulting (vertical movement) and strike-slip faulting (horizontal movement).

Zayante-Vergeles Fault Zone

The Zayante-Vergeles Fault Zone is approximately parallel with and about 5 miles west of the San Andreas Fault (Bryant, 2000b). The Zayante Fault is considered to be a late Pleistocene-age (1.6 mya to 11,000 ya), and possibly Holocene, potentially active Quaternary fault. Some portions of the Zayante Fault may be active, and some scientists believe its southern section may be indirectly connected to the San Andreas Fault Zone. Following recent investigations of the Vergeles Fault, the CGS designated portions of the fault as a fault rupture hazard zone USGS Watsonville East and Watsonville West 7.5-minute topographic map). However, other portions of the Vergeles are classified as potentially active and are not designated under the Alquist-Priolo Act. According to the WGCEP, the Zayante-Vergeles Fault Zone has a 0.10 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The CCSD connection is located about 8.25 miles southwest of this fault.

Local Faults

Several Quaternary faults intersect the project area. Additionally, several potentially active faults cross, or are located in close proximity to components of the proposed project.

Reliz-Rinconada Fault Zone

The Reliz-Rinconada Fault Zone runs parallel to Highway 101 along the Salinas River Valley at the base of the Santa Lucia Mountains. This high-angle, reverse fault offsets Salinian Block basement rocks and locally juxtaposes the Pliocene-Pleistocene-age (5.3 mya to 11,000 ya) Paso Robles Formation against basement rocks (Rosenberg and Bryant, 2003). The Reliz Fault has been projected crossing northwest-southeast through the central portion of the project area in the vicinity of Marina (Ninyo & Moore, 2005). The fault trace in this area is concealed by fluvial deposits of the Salinas River Valley and coastal dunes, causing uncertainty as to the precise location of the fault. Geologic evidence indicates that this fault system has displaced materials that are between 50,000 to 100,000 years old and is considered potentially active (Rosenberg and Bryant, 2003; Rosenberg and Clark, 2009). According to the WGCEP, the Reliz-Rinconada Fault Zone has a 0.31 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The new Transmission Main would cross this fault; the slant wells at CEMEX would be north of this fault.

Monterey Bay–Tularcitos Fault Zone

The Monterey Bay–Tularcitos Fault Zone extends for about 52 miles, from Santa Cruz to the crest of the Sierra de Salinas. The onshore portion of the fault zone includes the Chupines, Seaside, Tularcitos, Navy, Ord Terrace, and Hatton Canyon Faults (Bryant, 2001). These faults create an approximately 6- to 9-mile-wide zone of short in-echelon, northwest-striking faults that are related. The activity and locations of these faults are not well defined. Data presented by Jennings (2010) show that no active portions of the Monterey Bay–Tularcitos Fault Zone extend onshore into the southern portion of the project area. Jennings classifies the Ord Terrace, Seaside, Chupines, and Tularcitos Faults as Quaternary. However, Bryant (2001), citing Rosenberg and Clark et al. (1997), provides evidence of Holocene displacement along the Hatton Canyon, and Tularcitos Faults, which are located close to the proposed Carmel Valley Pump Station. The

Monterey section of the Monterey Bay-Tularcitos Fault Zone also crosses the route of the new Transmission Main. Additionally, there is evidence of a probable offshore extension of the Chupines Fault displacing Holocene-age (less than 11,000 years old) deposits and sea floor sediments (Ninyo & Moore, 2014). There is evidence for recent (less than 11,000 ya) displacement on the individual faults of the Monterey Bay-Tularcitos Fault Zone and therefore, considering the proximity of these active strands to project components, these faults should be considered active for planning purposes. According to the WGCEP, the Monterey Bay–Tularcitos Fault Zone has a 0.64 percent chance of producing a MW 6.7 or larger earthquake in the next 30 years (WGCEP, 2015b). The Highway 68 Interconnection Improvements would be about 2 miles northwest of this fault zone.

Laureles Fault Zone

The northwest-striking, nearly vertical, reverse[16] Laureles Fault Zone extends approximately 4 miles along the north side of Carmel Valley and is up to 0.2 mile wide (Clark et al., 1997). The northeast side is upthrown and displaces Pleistocene-age (5.3 mya to 11,000 ya) terrace gravels, suggesting the latest movement to be middle to late Pleistocene. The Laureles Fault is about 1.5 miles southwest of Main System–Hidden Hills Interconnection.

4.2.1.3 Geologic Hazards

Based on the geologic data reviewed during preparation of this EIR/EIS, the potential geologic hazards at the proposed project sites include soil erosion, slope instability, and soils hazards. These geologic hazards are discussed below.

Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind, and underground water. Excessive soil erosion can eventually damage infrastructure such as pipelines, wellheads, building foundations, and roadways. In general, granular soils with relatively low cohesion and soils located on steep topography have a higher potential for erosion. The *Monterey County General Plan* (Monterey County, 2010) includes a soil erosion hazard map showing relative erosion hazards within the county. Soils are classified based on the soil surveys consolidated for the soil survey geographic database for Monterey County prepared by the National Resources Conservation Service (NRCS, 2014). In the project area, the steep coastal dune slopes have a high potential for erosion. The dune deposits east of the coastline, where the topography is not as steep, are considered to have a moderate potential for erosion. The soil erosion potential is typically reduced or eliminated once the soil is graded and covered with concrete, structures, asphalt, vegetation, or other slope protection measures are implemented.

[16] A geologic fault in which the hanging wall (the upper block) has moved upward relative to the footwall (the lower block). Reverse faults occur where two blocks of rock are forced together by compression.

Sea Level Rise and Coastal Erosion

Monterey Bay is a large, lowland coastal embayment, with rocky headlands at the north and south and a sweeping arc of sandy, dominantly dune- and cliff-backed shoreline in between. The shoreline of south Monterey Bay (from the Salinas River south to Del Monte Beach in the city of Monterey) includes an 11-mile stretch of continuous sandy beach that is wider at the southern end than at the northern end. The morphology of beaches in this region varies from season to season, with beaches generally being wider and gently sloping in summer and narrower and steeper in winter. The dunes at the back edge of the beach have an average height of 34 feet but can be as high as 151 feet. Some of the dune surfaces that are not directly exposed to wave energy are vegetated, indicating that the dunes are stabilized in some areas.

The topographic surface, including the dunes, beach, and undersea nearshore areas, can be affected by coastal retreat in four ways.

1. **Long-term erosion.** Over time, the dunes and surrounding area have been and will continue to erode as a result of rain and wind.

2. **Sea level rise.** As sea level rises, the shoreline area affected by wave action will migrate inland and will erode the sand dunes. As a result, the dunes and the shoreline will also retreat inland. In addition, the surge from storm events, discussed below, would push further inland.

3. **Storm events.** Storm events also erode sand from the coastal dunes and shoreline areas. Typically, a storm event moves sand out to sea during the event. The strongest of these events are referred to as the 100-year storm event. Similar to the 100-year flood event, the 100-year storm event is the storm that has a 1 percent chance of occurring in a given year. After the storm passes and over the following year, some and possibly most of the sand re-accumulates along the shore and dune areas. However, at the time of that storm event, any structures present within that scoured area would be exposed. For example, a winter storm surge in early March 2016 exposed the buried MRWPCA ocean outfall pipe. Up to 15 feet of scour was observed around the exposed section of the outfall. The last time the outfall pipe was exposed was in 1997. The 2016 storm surge also broke the discharge pipe from the Test Slant Well to the outfall.

4. **Rip embayments.** Rip embayments are caused by the erosive action of cross-shore rip currents and affect an area from just offshore to the toe of the sand dunes closest to the shoreline. As this sand is removed, sand from the shore area and ultimately the dunes can erode seaward to fill in the void. Rip embayments tend to be stronger in the winter and weaker in the summer. After the rip embayment passes by a particular shoreline location, some of the sand re-accumulates.

The northwestern Marina area, including the proposed location of the subsurface slant wells, is characterized by extensive sand dunes. These dunes vary in height and are composed entirely of unconsolidated, highly erodible sand. The erosion of dunes by waves occurs more often in winter months, when the active beach area is narrow and storms are stronger and more frequent. Erosion in this region is highly episodic, occurring in steps when high tides coincide with large, storm-generated waves. The steep to near-vertical bluffs in the vicinity of the CEMEX active mining area indicate that rapid erosion has taken place in this area (see **Figure 4.3-3**, Areas Subject to Sea Level Rise in the Project Area in Section 4.3, Surface Water Hydrology and Water Quality).

The existence of wide sandy beaches throughout the area, as well as the flanking sand dunes, indicate that past sand supply was in excess of sand loss. However, the shoreline of southern Monterey Bay has been retreating for a number of years. Dam impoundments have decreased the historical sediment yield of the Salinas River, thus reducing a major source of sediment for the beaches in the Marina area. The Nacimiento Dam (completed in 1957) and the San Antonio Dam (completed in 1967) have impounded about 15 percent of the Salinas River Watershed, thereby trapping sand that would have been delivered to the beach, as well as reducing peak flow rates that transport the bulk of the river sediments. Additionally, sand mining in the region has increased sediment and sand loss and has contributed to disequilibrium, thus increasing the rate of coastal retreat in the southern Monterey Bay south of the Salinas River (Thornton et. al., 2006).

As discussed in the *Analysis of Historic and Future Coastal Erosion with Sea Level Rise* (ESA, 2014), various studies conducted over the period between 1930 to 2006 indicate sea level is rising at a rate of approximately 5.3 to 7.6 inches per century. With sea level rise, the coastline is expected to retreat inland and has the potential to intersect project components if they are constructed within the extent of that retreat.

Corrosive or Expansive Soils

Table 4.2-4 identifies the soil types and soil properties at proposed facility locations. The subsurface slant wells would be constructed in subsurface dune sands, which are not considered soil because the sand lacks sufficient humus; therefore, information regarding soil properties at the subsurface slant well site is not included. Potential impacts related to problematic soil conditions include corrosivity and expansion (linear extensibility or shrink-swell potential). Drainage pertains to soils that are unable to adequately percolate or shed surface water away from a development site, leading to flooding and water-related damage. Poorly drained soils can increase the risks of corrosion, linear extensibility, differential settlement, and other water-related issues.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical actions that corrode or weaken concrete or uncoated steel, once placed. The rate of concrete corrosion is based mainly on the sulfate, sodium, and chloride content, texture, moisture content, and acidity of the soil. The rate of uncoated-steel corrosion is related to such factors as the moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Steel installations that intersect soil boundaries or soil layers are more susceptible to corrosion than the steel installations that are entirely within one kind of soil or within one soil layer. The risk of corrosion is expressed as low, moderate, or high.

Linear extensibility or shrink-swell potential refers to the change in volume of soil as moisture content is increased or decreased between a moist and dry state. The volume change is reported as a percent change for the whole soil. The amount and type of clay minerals in the soil influence changes in soil volume.

The soil properties listed above are general properties for soil types. A site-specific geotechnical investigation was conducted at the proposed desalination plant (PCE, 2014). Soil samples were analyzed for soil resistivity, chloride, sulfate, and pH. The results indicate the soil to be non-corrosive.

TABLE 4.2-4
SUMMARY OF GENERAL SOIL PROPERTIES

Proposed Project Component	Soil	Drainage	Concrete Corrosion Potential	Unprotected Steel Corrosion Potential	Linear Extensibility[a]
MPWSP Desalination Plant, and Most Pipelines[b]	Oceano Loamy[c] Sand (OaD) or similar	Excessively	Moderate	Moderate	Low (1.5%)
Castroville Pipeline	Pacheco Clay Loam	Poorly Drained	Low	High	Moderate (3 to 6%)
ASR Injection/ Extraction Wells and Pipelines[b,d]	Oceano Loamy Sand (OaD)	Excessively	Moderate	Moderate	Low (1.5%)
Carmel Valley Pump Station	Dissected xerorthents[e]	Excessively	Low	Low	Low to moderate (1.5 to 4.5%)
Main System–Hidden Hills Inter-connection Improvements	Santa Ynez Fine Sandy Loam (ShE)	Moderately well	Low	Low	Moderate (4.5%)
Ryan Ranch–Bishop Interconnection Improvements	Santa Ynez Fine Sandy Loam (ShE); Narlon Loamy Fine Sand (NcC); and badland weathered bedrock (Ba)	Moderately well to somewhat poorly	Low (ShE and Ba); High (NcC)	High (NcC); no data for other units	Moderate to high (4.5 to 7%)

NOTES:
[a] Also known as shrink-swell potential or expansion potential.
[b] All pipelines except the ASR Conveyance Pipelines, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline.
[c] Loamy soils are composed of sand, silt, and clay in relatively even concentrations (about 40-40-20 percent concentration, respectively). Loam soils generally contain more nutrients and humus than sandy soils, have better drainage and infiltration of water and air than silty soils, and are easier to till than clay soils.
[d] These are the ASR Conveyance Pipelines and the ASR Pump-to-Waste Pipeline.
[e] Dissected xerorthents are deposits located on alluvial fans and terraces with steeper slopes such that the alluvial deposits do not have sufficient time to develop into soils.

SOURCE: NRCS, 2014.

4.2.1.4 Seismic Hazards

Seismic hazards are generally classified into two categories: primary seismic hazards (surface fault rupture and groundshaking) and secondary seismic hazards (liquefaction and other types of seismically induced ground failure, along with seismically induced landslides).

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Although future earthquakes could occur anywhere along the length of an active fault, only regional strike-slip earthquakes of magnitude 6.0 or greater are likely to be associated with significant surface fault rupture and offset (CDMG and USGS, 1996). It is also important to note that unmapped subsurface fault traces could experience unexpected and unpredictable earthquake activity and fault rupture.

Ground rupture is considered more likely along active faults, which are referenced above in **Figure 4.2-4** and **Table 4.2-3** and described in Section 4.2.1.2. The highest potential for surface faulting is along existing fault traces that have had Holocene displacement. The closest known active faults with historical earthquake events are the San Gregorio, Zayante-Vergales, and San Andreas at 5, 11, and 15 miles, respectively, from components of the proposed project. The onshore portions of potentially active faults in the Monterey-Tularcitos and the Reliz-Rinconada Fault Zones pass beneath the proposed new Transmission Main. These potentially active faults or segments of faults are not zoned under the Alquist-Priolo Earthquake Fault Zone (see Section 4.2.2, Regulatory Framework, below).

Seismic Groundshaking

As discussed above (Section 4.2.1.2), the WGCEP estimated that a major earthquake has a 72 percent chance of affecting the project vicinity in the next 30 years and would produce strong groundshaking throughout the region (WGCEP, 2015a, b). Earthquakes on active or potentially active faults, depending on magnitude and distance from the project area, could produce a range of groundshaking intensities at the project area. Historically, earthquakes have caused strong groundshaking and damage in the San Francisco Bay Area. However, disregarding local variations in ground conditions, the intensity of shaking at different locations within the area can generally be expected to decrease with distance from an earthquake source.

The primary tool that seismologists use to describe groundshaking hazard is a probabilistic seismic hazard assessment (PSHA). The PSHA for the State of California takes into consideration the range of possible earthquake sources (including such worst-case scenarios as described above) and estimates their characteristic magnitudes to generate a probability map for groundshaking. The PSHA maps depict PGA value of that have a 10 percent probability of being exceeded in 50 years (i.e., a 1 in 475 chance of occurring each year). Use of this probability level allows engineers to design structures to withstand ground motions that have a 90 percent chance of *not* occurring in the next 50-year interval, thus making buildings safer than if they were designed only for the ground motions that are expected within the next 50 years.

In 2008, the USGS and the CGS updated the model by introducing new parameters and updated fault locations (CGS, 2008a). **Table 4.2-5** summarizes the estimated PGAs (10 percent probability of being exceeded in 50 years) at various project components.

As shown on Figure 4.2-1, the majority of the project components would be constructed on fill or alluvial materials; PGAs for fill and alluvial materials were estimated to range from 0.361 g to 0.418 g. The Main System-Hidden Hills Interconnection Improvements would be located in a largely bedrock area with a PGA of 0.320. Using American Society of Civil Engineers (ASCE) Standard 7-10 design criteria, the geotechnical investigation for the desalination plant estimated the PGA could be as high as 0.562 (Zinn, 2014). As listed in **Table 4.2-2**, the estimated range of PGAs equates to Modified Mercalli groundshaking intensities of VII (strong) to VIII (very strong).

TABLE 4.2-5
SUMMARY OF ESTIMATED PEAK GROUND ACCELERATIONS AT PROPOSED FACILITY LOCATIONS

Proposed Project Component	PGA
Subsurface slant wells	0.390 g
MPWSP Desalination Plant	CGS estimate: 0.398 g Zinn calculation; 0.562 g
Northern terminus of Castroville Pipeline	0.418 g
ASR-5 and ASR-6 Wells	0.371 g
Ryan Ranch-Bishop Interconnection Improvements	0.362 g
Main System-Hidden Hills Interconnection Improvements	0.320 g
Carmel Valley Pump Station	0.361 g

NOTE: g = percentage of the acceleration due to gravity

SOURCE: CGS, 2008b; Zinn, 2014

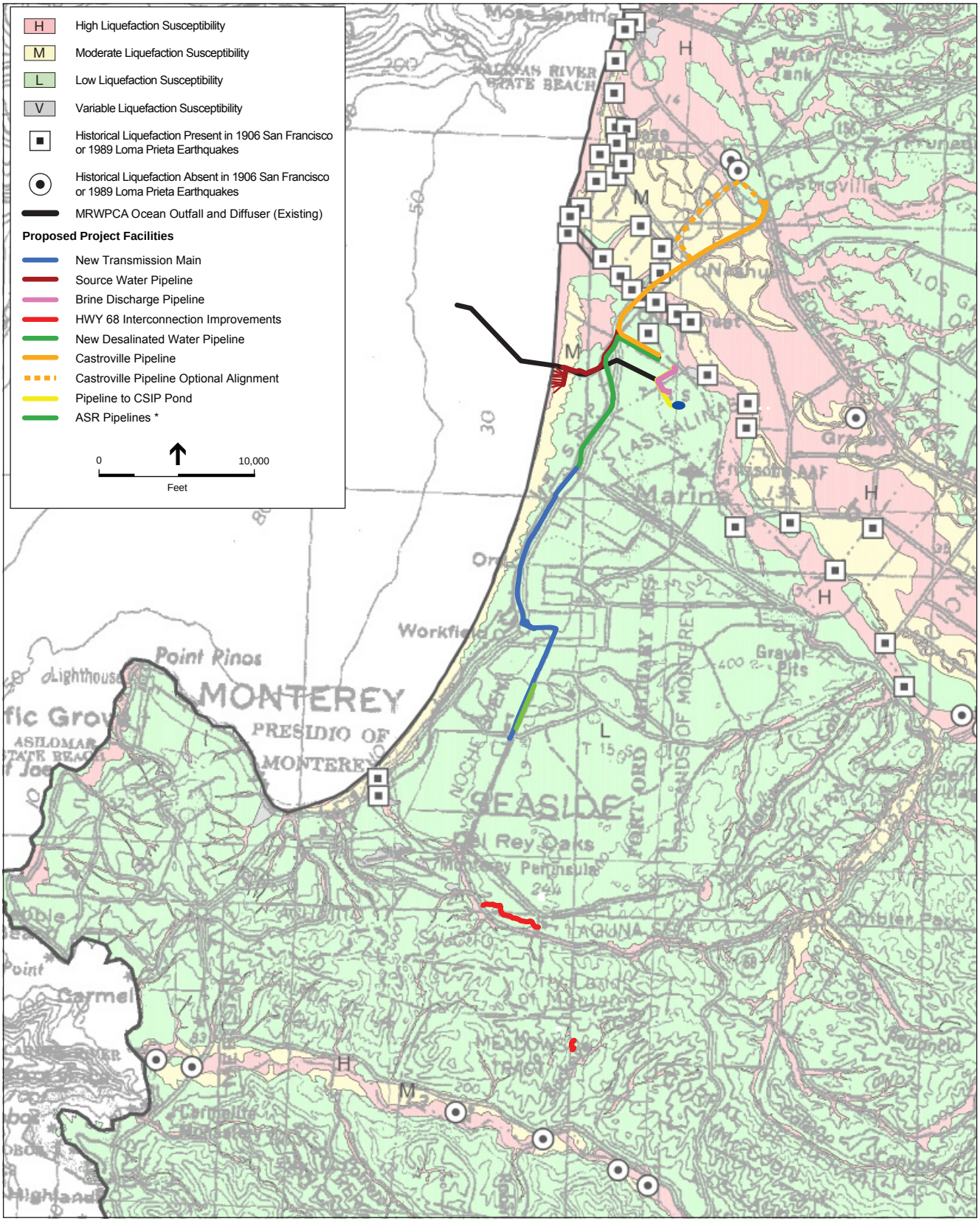
Liquefaction and Lateral Spreading

Liquefaction is the rapid loss of shear strength experienced in saturated, predominantly granular soils below the groundwater level during strong earthquake groundshaking and occurs due to an increase in pore water pressure. Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake (VT, 2013). The occurrence of this phenomenon is dependent on many complex factors, including the intensity and duration of groundshaking, particle-size distribution, and density of the soil.

The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling[17], and buckling of deep foundations due to ground settlement. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) may also occur in loose, dry sands above the water table, resulting in settlement of and possible damage to overlying structures. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table). Lateral spreading can move blocks of soil, placing strain on buried pipelines that can lead to leaks or pipe failure (VT, 2013).

Figure 4.2-5 presents the relative liquefaction hazard potential in Monterey County in the vicinity of the proposed project, with liquefaction susceptibility designations (high, moderate, low, and variable) adapted by Ninyo & Moore (2005) from the *Monterey County General Plan*. Sites with a designation of "low" are considered to have the lowest potential for liquefaction hazards, and sites with a designation of "high" are considered to have the highest potential for liquefaction because of the soil type (sand) and probable groundwater depths.

[17] Sand boiling occurs when water pressure caused by an earthquake causes sand and water to "boil" to the surface.



SOURCE: Ninyo & Moore, 2005

205335.01 Monterey Peninsula Water Supply Project

Figure 4.2-5

Liquefaction Potential

Some locations in the project area, including the floodplain of the Salinas River and other smaller drainage areas, have a moderate to high liquefaction potential. During the 1989 Loma Prieta earthquake, liquefaction caused settlement and ground cracking in the Moss Landing area about 2 miles north of the proposed MPWSP Desalination Plant site, damaging roads and the approach to the bridge linking Moss Landing to the mainland. Over 30 separate locations of historical liquefaction incidents have been documented in the project vicinity, the majority of which were in the northern portion of the project area near the Salinas River. The proposed Castroville Pipeline crosses into the larger Salinas floodplain area, passing through an area of moderate to high potential for liquefaction. The proposed location for the Carmel Valley Pump Station is mapped as having a moderate to high liquefaction potential. The areas mapped with a moderate to high potential for liquefaction are also in drainage areas where the water table could be seasonally higher during the rainy season, which contributes to the increased potential.

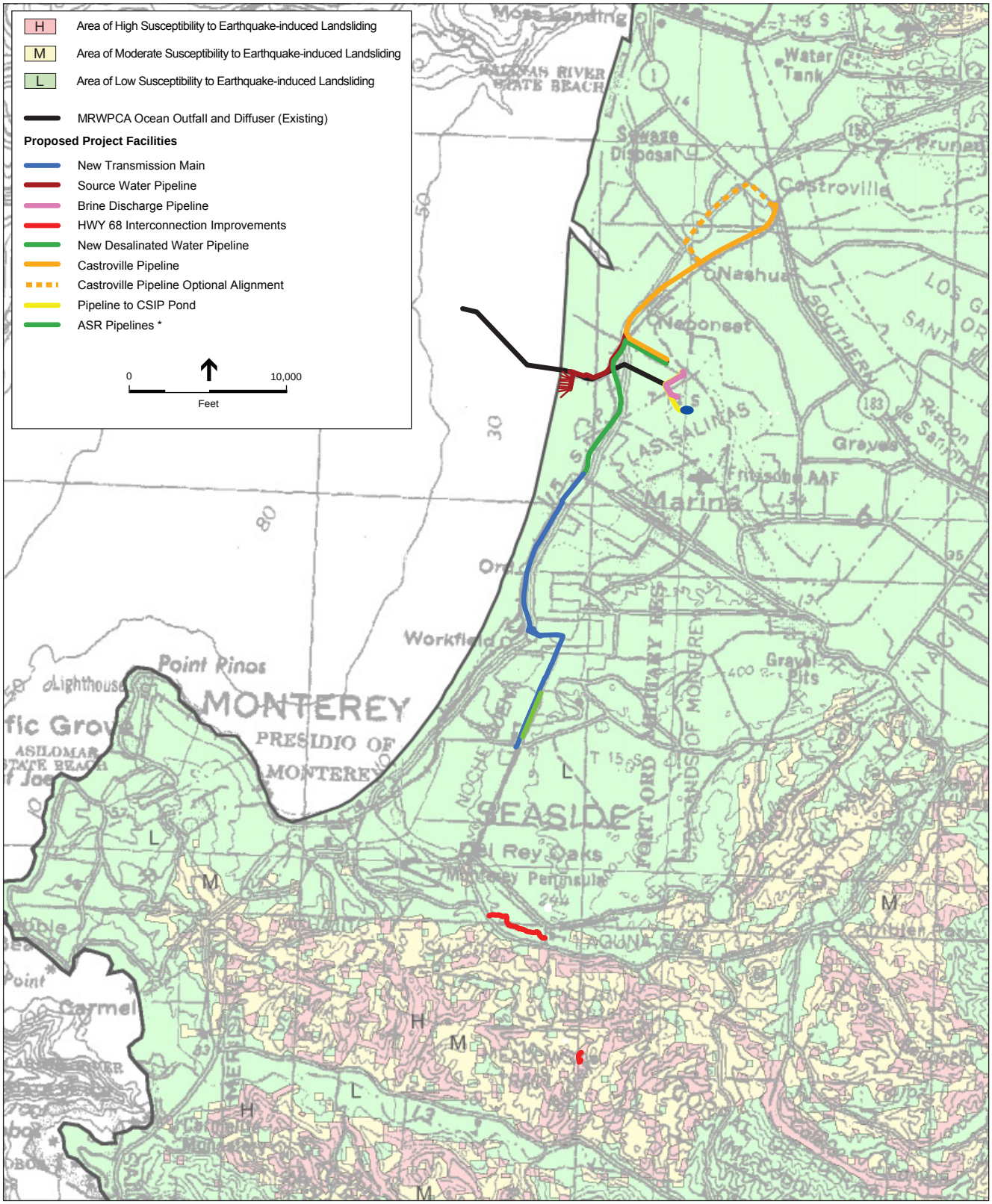
Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials, particularly loose, non-compacted, and variable sandy sediments (PCE, 2014). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill. Earthquake-induced settlement could occur in the event of an earthquake and is a potential seismic hazard discussed further in Section 4.2.5, Direct and Indirect Effects of the Proposed Project.

Landslides and Ground Cracking

Earthquake motions can induce substantial stresses on slopes and can cause earthquake-induced landslides or ground cracking if the slope fails. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake. The 1989 Loma Prieta earthquake on the San Andreas Fault triggered thousands of landslides over an area of 5,400 square miles. **Figure 4.2-6** presents the seismically-induced landslide hazard potential in the project vicinity based on a map from the *Monterey County General Plan*, as adapted by Ninyo & Moore (2005). The figure characterizes landslide susceptibility as high, moderate, and low. Because the steepness of topography is a major factor in the potential for landslides, **Figure 4.2-6** provides insight into areas prone to non-seismically induced landslides. Non-seismically induced landslide can be caused by the force of gravity on steep unstable slopes, by construction activities that disturb soil conditions and create unstable slopes, and by water leaks or breaks in pipelines or pumps.

Potential landslide hazards are present in the hillside terrain on and east of the Monterey Peninsula. All but one of the project components would be located in relatively flat to gently sloping topography and would therefore have a low susceptibility to landslides; the proposed Main System-Hidden Hills Interconnection Improvements are located in an area mapped as having a moderate to high susceptibility to landslides.



SOURCE: Ninyo & Moore, 2005

205335.01 Monterey Peninsula Water Supply Project

Figure 4.2-6

Landslide Hazard Map

4.2.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to geology, soils, and seismicity. A brief summary of each is provided, along with a finding regarding the project's consistency with those regulatory requirements. The consistency analysis is based on the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to the specific impact discussion in Section 4.2.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.2.5 identifies feasible mitigation that would resolve or minimize the potential inconsistency.

4.2.2.1 Federal Regulations

Federal Occupational Safety and Health Administration Regulations

The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area. These regulations apply to the project because of the proposed construction and trenching activities. All contractors are required to comply with OSHA regulations, which would make the proposed project consistent with OSHA.

4.2.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to geology, soils, and seismicity are Coastal Act policies concerning construction altering natural shorelines and minimizing risk to life and property in areas of high geologic, flood, and fire hazard. A preliminary assessment of project consistency with these priorities is provided below. Final determinations regarding project consistency are reserved for the Coastal Commission. MPWSP subsurface slant wells would be potentially inconsistent with Coastal Act policies. The slant wells would be located along the coast within an area that is subject to erosion which, when considered in the context of sea level rise, will ultimately cause shoreline retreat to the location of the above-ground portions of the MPWSP subsurface slant wells. Exposure of these project components on the beach could alter natural shoreline processes, which would be inconsistent with Coastal Act policies. Similarly, such exposure would subject these project components to increased risk of

damage due to flood and wave action, and contribute to beach erosion, which would also be inconsistent with Coastal Act policies. These issues are discussed further in Impact 4.2-10.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to protect structures for human occupancy from the hazard of surface faulting. In accordance with the Act, the State Geologist has established regulatory zones—called earthquake fault zones—around the surface traces of active faults, and has published maps showing these zones. Buildings for human occupancy cannot be constructed across surface traces of faults that are determined to be active. Because many active faults are complex and consist of more than one branch that may experience ground surface rupture, earthquake fault zones extend approximately 200 to 500 feet on either side of the mapped fault trace. Although a number of faults in the area are known to be active, as discussed above in Section 4.2.1.2, none of the faults passing beneath project components have been formally mapped by the state as being within an Alquist-Priolo Earthquake Fault Zone. The Alquist-Priolo Earthquake Fault Zoning Act does not apply to the proposed project because the State of California has not zoned under the Alquist-Priolo Act, the active and potentially active faults that intersect the project components.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. For projects that would locate structures for human occupancy within designated Zones of Required Investigation, the Seismic Hazards Mapping Act requires project applicants to perform a site-specific geotechnical investigation to identify the potential site-specific seismic hazards and corrective measures, as appropriate, prior to receiving building permits. The *CGS Guidelines for Evaluating and Mitigating Seismic Hazards* (Special Publication 117A) provides guidance for evaluating and mitigating seismic hazards (CGS, 2008). The CGS is in the process of producing official maps based on USGS topographic quadrangles, as required by the Act. To date, the CGS has not completed delineations for any of the USGS quadrangles in which project components are proposed.

California Building Code

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, means of egress to facilities (entering and exiting), and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they

are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The 2016 edition of the CBC is based on the 2015 International Building Code (IBC) published by the International Code Council. The code is updated triennially, and the 2016 edition of the CBC was published by the California Building Standards Commission on July 1, 2016, and takes effect starting January 1, 2017. The 2016 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standard ASCE/SEI 7-10, *Minimum Design Loads for Buildings and Other Structures*, provides requirements for general structural design and includes means for determining earthquake loads[18] as well as other loads (such as wind loads) for inclusion into building codes. Seismic design provisions of the building code generally prescribe minimum lateral forces applied statically to the structure, combined with the gravity forces of the dead and live loads of the structure, which the structure then must be designed to withstand. The prescribed lateral forces are generally smaller than the actual peak forces that would be associated with a major earthquake. Consequently, structures should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse, but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake. However, it is reasonable to expect that a structure designed in-accordance with the seismic requirements of the CBC should not collapse in a major earthquake.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a seismic design category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site; SDC ranges from A (very small seismic vulnerability) to E/F (very high seismic vulnerability and near a major fault). Seismic design specifications are determined according to the SDC in accordance with Chapter 16 of the CBC. Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (1806), as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). For Seismic Design Categories D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

[18] A load is the overall force to which a structure is subjected in supporting a weight or mass, or in resisting externally applied forces. Excess load or overloading may cause structural failure.

Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. Expansive soils are defined in the CBC as follows:

> **1803.5.3 Expansive Soil**. In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1,2 and 3 shall not be required if the test prescribed in Item 4 is conducted:
>
> 1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318
> 2. More than 10 percent of the soil particles pass a No. 200 sieve (75 micrometers), determined in accordance with ASTM D 422
> 3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422
> 4. Expansion index greater than 20, determined in accordance with ASTM D 4829

The design of the proposed project is required to comply with CBC requirements, which would make the proposed project consistent with the CBC.

California Excavation Notification Requirements

California Code of Regulations Section 4216 requires that construction contractors report a project that involves excavation 48-hours prior to breaking ground. This program allows owners of buried installations to identify and mark the location of its facilities before any nearby excavation projects commence. Adherence to this law by contractors of projects reduces the potential of inadvertent pipeline and utility damage and leaks. All contractors are required to comply with California excavation notification requirements, which would make the proposed project consistent with California excavation notification requirements.

California Occupational Safety and Health Administration Regulations

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. In California, the California Division of Occupational Safety and Health (Cal/OSHA) and the federal OSHA are the agencies responsible for ensuring worker safety in the workplace.

The OSHA Excavation and Trenching standard (29 CFR 1926.650), described above in Section 4.2.2.1, Federal Regulations, covers requirements for excavation and trenching operations, which are among the most hazardous construction activities. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area. Cal/OSHA is the implementing agency for both state and federal OSHA standards. All contractors are required to comply with OSHA regulations, which would make the proposed project would be consistent with OSHA.

NPDES Construction General Permit

Construction associated with the proposed project would disturb more than one acre of land surface potentially affecting the quality of stormwater discharges into waters of the U.S. The proposed project would therefore be subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002, Construction General Permit; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ). The Construction General Permit regulates discharges of pollutants in stormwater associated with construction activity to waters of the U.S. from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground projects (LUP), including installation of water pipelines and other utility lines.

Portions of the proposed project would fall under the Type 1 LUP category if the following conditions are met:

a) Construction occurs on unpaved improved roads, including their shoulders or land immediately adjacent to them;

b) The areas disturbed during a single construction day are returned to their preconstruction condition, or to an equivalent condition (i.e., disturbed soils such as those from trench excavation are hauled away, backfilled into the trench, and/or placed in spoils piles and covered with plastic), at the end of that same day;

c) Vegetated areas disturbed by construction activities are stabilized and revegetated at the end of the construction period; and

d) When required, adequate temporary soil stabilization best management practices (BMPs) are installed and maintained until vegetation has reestablished to meet the permit's minimum cover requirements for final stabilization.

The Construction General Permit requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. The Construction General Permit contains requirements for Risk Levels 1, 2 and 3, and the LUP Type 1, 2, and 3 categories. If a project does not meet any one or more of the aforementioned conditions under the Type 1 LUP category, depending on its location within a sensitive watershed area or floodplain, the level of receiving water risk could be considered low, medium, or high. Depending on the Risk Level, the construction projects could be subject to the following Construction General Permit requirements:

- Effluent standards
- Good site management "housekeeping"
- Non-stormwater management
- Erosion and sediment controls
- Runon and runoff controls
- Inspection, maintenance, and repair
- Monitoring and reporting requirements

The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving offsite into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the offsite migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

The SWPPP must be prepared before the construction begins. The SWPPP must contain a site map(s) that delineates the construction work area, existing and proposed buildings, parcel boundaries, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project area. The SWPPP must list BMPs and the placement of those BMPs that the applicant would use to protect stormwater runoff. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations and vehicle and equipment washing and fueling. The Construction General Permit also sets post-construction standards (i.e., implementation of BMPs to reduce pollutants in stormwater discharges from the site following construction).

In the project area, the Construction General Permit is implemented and enforced by the Central Coast RWQCB, which administers the stormwater permitting program. Dischargers are required to electronically submit a notice of intent (NOI) and permit registration documents (PRDs) in order to obtain coverage under this Construction General Permit. Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

The permit contains several additional compliance items, including: (1) additional mandatory BMPs to reduce erosion and sedimentation, which may include vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/sediment/spill control plans, training, and other structural and nonstructural actions; (2) sampling and monitoring for non-visible pollutants; (3) effluent monitoring and annual compliance reports; (4) development and adherence to a Rain Event Action Plan; (5) requirements for post-construction; (6) numeric action levels and effluent limits for pH and turbidity; (7) monitoring of soil characteristics onsite; and (8) mandatory training under a specific curriculum.

The proposed project would be required to comply with the permit requirements to control stormwater discharges from the construction sites. To obtain coverage under the Construction General Permit, CalAm would be required to electronically file the NOI along with the PRDs, the SWPPP, risk assessment, site map, signed certification statement, and other compliance-related documents required by the Construction General Permit using the Stormwater Multiple Applications and Report Tracking Systems, along with the appropriate permit fee to State Water Resources Control Board (SWRCB). The risk assessment and SWPPP must be prepared by a state-qualified SWPPP Developer and implementation of the SWPPP must be overseen by a state-qualified SWPPP Practitioner. The proposed project would be required to obtain coverage under the Construction General Permit and therefore the proposed project would be consistent.

4.2.2.3 Applicable Land Use Plans, Policies, and Regulations

Table 4.2-6 summarizes the pertinent regional and local land use plans, policies, and regulations that were adopted for the purpose of avoiding or mitigating an environmental effect and indicates project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project is consistent with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project is potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to the specific impact discussion in Section 4.2.5, Direct and Indirect Effects of the Project (Proposed Action). In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

TABLE 4.2-6
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone & inland area)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.99:*** New development shall be permitted in areas of high seismic risk only when adequate engineering and design measures can be implemented in accordance with a geotechnical investigation and report.	This policy is intended to reduce risks to people and property associated with seismic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
City of Marina (coastal zone & inland area)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.102.1:*** Ensure that critical or sensitive facilities, e.g., hospitals, fire and police stations, schools, major transportation links, high-occupancy structures, emergency communication facilities, utility lines, and sites containing or storing hazardous materials, are located, designed and operated to maximize their ability to remain functional after the expected or maximum credible event on any of the local active fault systems. Critical facilities shall not be located in areas of high to very high seismic shaking hazard.	This policy is intended to ensure that emergency or vital public facilities are able to withstand a major seismic event.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
City of Marina (coastal zone & inland area)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.102.2:*** Require that new development be sited and designed to conform to site topography and to minimize grading wherever possible. Recommendations to developers as to how to mitigate geologic or seismic hazards should include mention of the need to avoid massive grading or excavation or structures that might require substantial alteration of natural landforms.	This policy is intended to minimize topographic alteration that could increase risks of geologic or seismic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
City of Marina (coastal zone & inland area)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.102.4:*** Where new development is proposed within 300 feet of active dune fields, require that the geotechnical report include an assessment of dune migration rates and recommend appropriate setbacks.	This policy is intended to ensure that development would neither contribute to dune erosion nor encroach on migrating dunes.	Potentially Inconsistent: The slant wells would be located along the coast within an active dune area that will over time be eroded by sea level rise. This issue is addressed in **Impact 4.2-10**.
City of Marina (coastal zone & inland area)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.124.1:*** The City shall continue to require erosion-control and landscape plans for all new subdivisions or major projects on sites with potentially high erosion potential. Such plans should be prepared by a licensed civil engineer or other appropriately certified professional and approved by the City Public Works Director prior to issuance of a grading permit. All erosion control plans shall incorporate Best Management Practices to protect water quality and minimize water quality impacts and shall include a schedule for the completion of erosion- and sediment-control structures, which ensures that all such erosion-control structures are in place by mid-October of the year that construction begins. Site monitoring by the applicant's erosion-control specialist should be undertaken, and a follow-up report should be prepared that documents the progress and/or completion of required erosion-control measures both during and after construction is completed.	This policy is intended to minimize new development soil erosion and associated water quality impacts.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion, and the project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
City of Marina (coastal zone)	City of Marina Local Coastal Program Land Use Plan	Planning Guidelines, Geotechnical	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Geotechnical:*** ● Structural development shall not be allowed on the ocean-side of the dunes, in the area subject to wave erosion in the next 50 years, or in the tsunami run-up zone. The only exception to this would be essential support facilities to a coastally dependent industry, and in these areas the City will not undertake any liability for property damage due to hazards. ● Because of the fragile character of the dune vegetation, new development in this area shall be restricted to already-disturbed areas. Development in areas where the natural dune remains shall not alter the basic configuration of the natural dune landform, and shall provide for site reclamation. ● To reduce wind erosion, disturbed areas not being actively used by coastal dependent industries should be revegetated with native plants. Revegetation will be required of all new development on the dunes. ● Before development is permitted in the Coastal Zone, a geotechnical report appropriate to the specific proposal shall be prepared for that development in the dunes or in the vicinity of any vernal pond. The report shall include at least geologic and seismic stability, liquefaction potential, identification of an appropriate hazard setback to protect the economic life of structures, and specific recommendations on drainage, irrigation and mitigation of identified problems.	This policy is intended to protect life and property from wave erosion, wind erosion, tsunami inundation, and shaking from earthquakes.	Potentially Inconsistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes. However, the construction of the slant wells and Source Water Pipeline could affect dune vegetation. This issue is addressed in Impact 4.2-1. In addition, the slant wells would be located along the coast within an active dune area that will over time be eroded by sea level rise. This issue is addressed in **Impact 4.2-10**.

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Dunes State Park	Fort Ord Dunes State Park General Plan and Environmental Impact Report	Physical Resources	New Transmission Main	**GEO-1:** Exclude construction of new facilities and permanent structures in areas expected to be subject to coastal erosion within 100 years of construction (a maximum of approximately 700 feet). Exceptions may be allowed for roads, trails, and other facilities that may be considered expendable. Existing facilities may remain in use subject to periodic health and safety inspections.	This policy is intended to protect new development from coastal erosion.	Consistent: The new Transmission Main would not be located within the area anticipated to be subject to coastal erosion over the next 100 years.
City of Seaside (coastal zone & inland area)	Seaside General Plan	Safety	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy S.1-1:*** Reduce the risk of impacts from seismic and geologic hazards. *Implementation Plan S-1.1.1: CEQA:* Assess development proposals for potential seismic and geologic hazards pursuant to the California Environmental Quality Act (CEQA). Require studies of soil and geologic conditions by state licensed Engineering Geologists and Civil Engineers where appropriate. When potential geologic impacts are identified, require project applicants to mitigate the impacts per the recommendations contained within the soil and geologic studies. If substantial geologic/seismic hazards cannot be mitigated, require the development to be relocated or redesigned to avoid the significant hazards. *Implementation Plan S-1.1.2: Building Codes.* As new versions of building and construction codes are released, adopt and enforce the most recent codes. Specifically, to minimize damage from earthquakes and other geologic activity, implement the most recent State and seismic requirements for structural design of new development and redevelopment.	This policy is intended to protect people and property from seismic and geologic hazards.	Consistent: The EIR/EIS assesses seismic and geologic hazards and identifies mitigation measures. As discussed in the Regulatory Framework, project components must be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
City of Seaside	Seaside Municipal Code	Title 15 Buildings and Construction	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Chapter 15.32 Standards to Control Excavation, Grading, Clearing and Erosion:*** When required by the city engineer, each application for a permit shall be accompanied by two sets of supporting data consisting of a soil and/or civil engineering report and/or engineering geology report, and/or any other reports necessary. B. The civil engineering report shall include hydrological calculations of runoff for ten-year and one-hundred year storm frequencies; conclusions and recommendations for adequate erosion control and grading procedures, comparison of runoff without and with project; design criteria for corrective measures, including the existing and/or required safe storm drainage capacity outlet of channels both onsite and offsite; and opinions and recommendations covering adequacy of the site to be developed by the proposed grading. The City shall require developers to prepare and implement erosion control plans prepared by a registered civil engineer or an approved erosion controls specialist" means a person who has a certificate of qualifications and is recognized by the city engineer as capable of preparing erosion control and grading plans and shall be subject to the approval of the City Engineer. The erosion component of the plan must at least meet the requirements of Storm Water Pollution Prevention Plans (SWPPPs) required by the California State Water Resources Control Board.	These standards are intended to minimize erosion resulting from excavation, grading, and clearing.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
County of Monterey (coastal zone & inland area)	Monterey County Code	Chapter 16.08 – Grading	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Chapter 16.08:*** The Monterey County Grading Ordinance generally regulates grading activities that involve more than 100 cubic yards of excavation and fill. Minor fills and excavations ("cuts") of less than 100 cubic yards that are not intended to provide foundations for structures, or that are very shallow and nearly flat, are typically exempt from the ordinance, as are shallow footings for small structures. Submittal requirements for a County grading permit include site plans, existing contours and proposed contour changes, an estimate of the volume of earth to be moved, and geotechnical (soils) reports. Grading activities that involve over 5,000 cubic yards of soil must include detailed plans signed by a state-licensed civil engineer. Grading is not allowed to obstruct storm drainage or cause siltation of a waterway. All grading requires implementation of temporary and permanent erosion-control measures. Grading within 50 feet of a watercourse, or within 200 feet of a river, is regulated in the Monterey County Zoning Ordinance floodplain regulations. The Monterey County Grading Ordinance requires a soil engineering and engineering geology report (Section 16.08.110: Permit – Soil Engineering and Engineering Geology Reports [Ordinance 4029, 1999; Ordinance 2534, Section 110, 1979], unless waived by the Building Official because information of record is available showing such data is not needed. The soil engineering and engineering geology report must include the following: a. Data regarding the properties, distribution and strength of existing soils	This ordinance is intended to minimize soil erosion, and loss of topsoil, and associated environmental effects.	Consistent: As discussed in the Regulatory Framework, project components must be constructed in compliance with the California Building Code, county codes, and city codes, which require soils and geologic reports and grading permits. The Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion. Water conveyance pipelines would be constructed using standards from the American Water Works Association.

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone & inland area) (cont.)				b. Recommendations for grading and corrective measures for project design, as appropriate c. An adequate description of the geology of the site and potential hazards. The recommendations from the soil engineering and engineering geology report must be incorporated in the grading plans and construction specifications.		
County of Monterey (coastal zone & inland area)	Monterey County Code	Chapter 16.12 – Erosion Control	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Section 16.12:*** The Monterey County Erosion Control Ordinance requires project applicants to implement runoff control measures and avoid creek disturbance; regulates land clearing; and prohibits grading activities during winter. The ordinance generally prohibits development on slopes greater than 30 percent. The Monterey County Director of Building Inspection enforces the ordinance, under which applicants must complete an erosion control plan.	This section is intended to minimize erosion and soil loss, and associated water quality impacts, among other environmental effects.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-3.1:*** Best Management Practices (BMPs) to prevent and repair erosion damage shall be established and enforced.	This policy is intended to minimize erosion and soil loss, and associated water quality impacts, among other environmental effects.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-3.3:*** Criteria for studies to evaluate and address, through appropriate designs and BMPs, geologic and hydrologic constraints and hazards conditions, such as slope and soil instability, moderate and high erosion hazards, and drainage, water quality, and stream stability problems created by increased stormwater runoff, shall be established for new development and changes in land use designations.	This policy is intended to minimize development-related impacts on people, property, and water quality associated with hydrologic and geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components must be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. The Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.1:*** Land uses shall be sited and measures applied to reduce the potential for loss of life, injury, property damage, and economic and social dislocations resulting from groundshaking, liquefaction, landslides, and other geologic hazards in the high and moderate hazard susceptibility areas.	This policy is intended to protect people and property from seismic and geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components must be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-	***Policy S-1.3:*** Site-specific geologic studies may be used to verify the presence or absence and extent of the hazard on the property proposed for new development and to identify mitigation measures for any development proposed. An ordinance including permit requirements relative to the siting and design of structures and grading relative to seismic hazards shall be established.	This policy is intended to protect people and property from seismic and geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
			Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station			
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.4:*** The Alquist-Priolo Earthquake Fault Zoning Act shall be enforced.	This policy is intended to protect people and property from seismic hazards, such as those resulting from fault rupture.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.5:*** Structures in areas that are at high risk from fault rupture, landslides, or coastal erosion shall not be permitted unless measures recommended by a registered engineering geologist are implemented to reduce the hazard to an acceptable level.	This policy is intended to protect people and property from hazards associated with fault rupture, landslides, or coastal erosion.	Potentially Inconsistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. However, the slant wells would be located along the coast within an active dune area that will over time be eroded by sea level rise. This issue is addressed in **Impact 4.2-10**.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.6:*** New development shall not be permitted in areas of known geologic or seismic hazards unless measures recommended by a California certified engineering geologist or geotechnical engineer are implemented to reduce the hazard to an acceptable level. Areas of known geologic or seismic hazards include: a. Moderate or high relative landslide susceptibility. b. High relative erosion susceptibility. c. Moderate or high relative liquefaction susceptibility. d. Coastal erosion and sea cliff retreat. e. Tsunami run-up hazards.	This policy is intended to protect people and property from geologic and seismic hazards.	Potentially Inconsistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. However, the slant wells would be located along the coast within an active dune area that will over time be eroded by sea level rise. This issue is addressed in **Impact 4.2-10**.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.7:*** Site-specific reports addressing geologic hazard and geotechnical conditions shall be required as part of the planning phase and review of discretionary development entitlements and as part of review of ministerial permits in accordance with the California Building Standards Code as follows: a. Geotechnical reports prepared by State of California licensed Registered Geotechnical Engineers are required during building plan review for all habitable structures and habitable additions over 500 square feet in footprint area. Additions less than 500 square feet and non-habitable buildings may require geotechnical reports as determined by the pre-site inspection. b. A Registered Geotechnical Engineer shall be required to review and approve the foundation conditions prior to plan check approval, and if recommended by the report, shall perform a site inspection to verify the foundation prior to approval to pour the footings. Setbacks shall be identified and verified in the field prior to construction. c. All new development and subdivision applications in State- or County designated Earthquake Fault Zones shall provide a geologic report addressing the potential for surface fault rupture and secondary fracturing adjacent to the fault zone before the application is considered complete. The report shall be prepared by a Registered Geologist or a Certified Engineering Geologist and conform to the State of California's most current guidelines for evaluating the hazard of surface fault rupture.	This policy is intended protect people and property from geologic hazards, such as fault rupture, secondary fracturing, landslides, or liquefaction.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. Water conveyance pipelines would be constructed using standards from the American Water Works Association.

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone & inland area) (cont.)				d. Geologic reports and supplemental geotechnical reports for foundation design shall be required in areas with moderate or high landslide or liquefaction susceptibility to evaluate the potential on- and offsite impacts on subdivision layouts, grading, or building structures. e. Where geologic reports with supplemental geotechnical reports determine that potential hazards affecting new development do not lead to an unacceptable level of risk to life and property, development in all Land Use Designations may be permissible, so long as all other applicable General Plan policies are complied with. f. Appropriate site-specific mitigation measures and mitigation monitoring to protect public health and safety, including deed restrictions, shall be required.		
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.8:*** As part of the planning phase and review of discretionary development entitlements, and as part of review of ministerial permits in accordance with the California Building Standards Code, new development may be approved only if it can be demonstrated that the site is physically suitable and the development would neither create nor significantly contribute to geologic instability or geologic hazards.	This policy is intended to protect people and property from geologic hazards (e.g., liquefaction, landslides).	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy S-1.9:*** A California licensed civil engineer or a California licensed landscape architect can recommend measures to reduce moderate and high erosion hazards in the form of an Erosion Control Plan.	This policy is intended to minimize erosion hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
County of Monterey (coastal zone)	North County Land Use Plan	Geologic Hazards	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.8.3.A1:*** All development shall be sited and designed to conform to site topography and to minimize grading and other site preparation activities.	This policy is intended to minimize landform alteration and associated environmental effects.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports, which would include measures to minimize hazards caused by grading and other site activities. Water conveyance pipelines would be constructed using standards from the American Water Works Association.
County of Monterey (coastal zone)	North County Land Use Plan	Geologic Hazards	Source Water Pipeline and new Desalinated Water Pipeline	**Policy *2.8.3.A2*:** All structures, with the exception of utility lines where no alternative route is feasible, shall be sited a minimum of 50 feet from an active fault or potentially active fault. Greater setbacks may be required where it is warranted by local geologic conditions.	This policy is intended to minimize impacts on utility infrastructure from seismic hazards.	Consistent: The Source Water Pipeline does not cross or come within 50 feet of a potentially active fault. There are no alternative routes for the new Desalinated Water Pipeline that would not cross the trace of a potentially active fault.
County of Monterey (coastal zone)	North County Land Use Plan	Geologic Hazards	Source Water Pipeline, new Desalinated Water Pipeline,	***Policy 2.8.3.A4:*** Soils and geologic reports shall be required for all new land divisions and for construction of structures and roads on slopes exceeding 30 percent or in areas of known or suspected geologic hazards. Evaluations of potential onsite and offsite impacts shall be included in the report.	This policy is intended to protect people and property from geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports
County of Monterey (coastal zone)	North County Land Use Plan	Geologic Hazards	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.8.3.A5:*** Where soils and geologic reports are required, they should include a description and analysis of the following items: a. geologic conditions, including soil, sediment, and rock types and characteristics in addition to structural features, such as bedding, joints, and faults; b. evidence of past or potential landslide conditions, the implications of such conditions for the proposed development, and the potential effects of the development on landslide activity;	This policy Is intended to protect people and property from geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone) (cont.)				c. impact of construction activity on the stability of the site and adjacent area; d. ground and surface water conditions and variations, including hydrologic changes caused by the development (i.e., introduction of sewage effluent and irrigation water to the groundwater system; alterations in surface drainage); e. potential erodibility of site and mitigating measures to be used to minimize erosion problems during and after construction (i.e., landscaping and drainage design). f. potential effects of seismic forces resulting from a maximum credible earthquakes; g. any other factors that might affect slope stability.		
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Soils and Geology Policy A-4:*** The City shall continue to enforce the Uniform Building Code to minimize erosion and slope instability problems.	This policy is intended to minimize erosion and slope instability.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Soils and Geology Policy A-5:*** Before issuing a grading permit, the City shall require that geotechnical reports be prepared for developments proposed on soils that have limitations as substrates for construction or engineering purposes, including limitations concerning slope and soils that have piping, low-strength, and shrink-swell potential. The City shall require that engineering and design techniques be recommended and implemented to address these limitations.	The policy is intended to protect people and property from geologic hazards, including soil instability.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Soils and Geology Policy A-6:*** The City shall require that development of lands having a prevailing slope above 30% include implementation of adequate erosion control measures.	This policy is intended to minimize the erosion impacts of new development.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Safety	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Seismic and Geologic Hazards Policy A-2:*** The City shall use the development review process to ensure that potential seismic or geologic hazards are evaluated and mitigated prior to construction of new projects. ***Program A-2.1:*** The City shall require geotechnical reports and seismic safety plans when development projects or other area plans are proposed within zones that involve high or very high seismic risk. Each plan shall be prepared by a certified geotechnical engineer and shall be subject to the approval of the Planning Director for the City of Seaside. ***Program A-2.2:*** Through site monitoring, the City shall ensure that all measures included in the project's geotechnical and seismic safety plans are properly implemented and a report shall be filed and on public record prepared by the Planning Director and/or Building Inspector confirming such. ***Program A-2.3:*** The City shall continue to updated and enforce the Uniform Building Code to minimize seismic hazards impacts from resulting from earthquake induced effects such as groundshaking, ground rupture, liquefaction, and or soils problems.	This policy is intended to protect people and property from seismic and geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy A-2:*** The County shall require developers to prepare and implement erosion control and landscape plans for projects that involve high erosion risk. Each plan shall be prepared by a registered civil engineer or certified professional in the field of erosion and sediment control and shall be subject to the approval of the public works director for the City of Marina. The erosion component of the plan must at least meet the requirements of Storm Water Pollution Prevention Plans (SWPPPs) required by the California State Water Resources Control Board.	This policy is intended to minimize erosion resulting from new development.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy A-3:*** Through site monitoring, the County shall ensure that all measures included in the developer's erosion control and landscape plans are properly implemented.	The policy is intended to minimize erosion resulting from new development.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy A-4:*** The County shall continue to enforce the Uniform Building Code to minimize erosion and slope instability problems.	This policy is intended to minimize erosion and slope instability.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which are based on the Uniform Building Code.

TABLE 4.2-6 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GEOLOGY, SOILS, AND SEISMICITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy A-5:*** Before issuing a grading permit, the County shall require that geotechnical reports be prepared for developments proposed on soils that have limitations as substrates for construction or engineering purposes, including limitations concerning slope and soils that have piping, low-strength, and shrink-swell potential. The County shall require that engineering and design techniques be recommended and implemented to address these limitations.	The policy is intended to protect people and property from geologic hazards, including soil instability.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy A-6:*** The County shall require that development of lands having a prevailing slope above 30% include implementation of adequate erosion control measures.	This policy is intended to minimize the erosion impacts of new development.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the Construction General Permit that requires the implementation of a SWPPP that would reduce and control erosion.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Safety	Ryan Ranch–Bishop Interconnection Improvements	***Seismic and Geologic Hazards Policy A-2:*** The County shall use the development review process to ensure that potential seismic or geologic hazards are evaluated and mitigated prior to construction of new projects. ***Program A-2.1:*** The County shall require geotechnical reports and seismic safety plans when development projects or other area plans are proposed within zones that involve high or very high seismic risk. Each plan shall be prepared by a certified geotechnical engineer and shall be subject to the approval of the Planning Director for the County of Monterey. ***Program A-2.2:*** Through site monitoring, the County shall ensure that all measures included in the project's geotechnical and seismic safety plans are properly implemented and a report shall be filed and on public record prepared by the Planning Director and/or Building Inspector confirming such. ***Program A-2.3:*** The County shall continue to update and enforce the Uniform Building Code to minimize seismic hazards impacts from resulting from earthquake induced effects such as groundshaking, ground rupture, liquefaction, and or soils problems.	This policy is intended to protect people and property from seismic and geologic hazards.	Consistent: As discussed in the Regulatory Framework, project components would be constructed in compliance with the California Building Code, county codes, and city codes, which require the preparation of soils and geologic reports, and are based on the Uniform Building Code.

SOURCES: California State Parks, 2004; City of Marina, 2006, 2013; City of Seaside, 2004, 2013; FORA, 1997; Monterey County, 1999, 2010.

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4.2.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to geology, soils, and seismicity if it would:

- Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic groundshaking;
  - Seismic-related ground failure, including liquefaction and lateral spreading;
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the MPWSP, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on problematic soils such as expansive or corrosive soils;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;
- Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment; or
- Degrade the physical structure of any geologic resource, or alter any oceanographic process, such as sediment transport, such that it is measurably different from pre-existing conditions.

CEQA requires analysis of a project's effects on the environment; consideration of the potential effects of a site's environment on a project are outside the scope of required CEQA review (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369). As stated in *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473: "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." The impacts discussed in this section related to increased exposure of people or structures to risks associated with seismic occurrences and location of people or structures on unstable geologic units are effects on users of the project and structures in the project of preexisting environmental hazards, and therefore "do not relate to environmental impacts under CEQA and cannot support an argument that the effects of the environment on the project must be analyzed in an EIR." (*Id.* at p. 474.) Nonetheless, an analysis of these impacts is provided for information purposes.

4.2.4 Approach to Analysis

Geologic and seismic information for the project area was derived from various sources and compiled in this chapter to develop a comprehensive understanding of the potential constraints and hazards associated with project construction and operations. Information sources include regional geologic maps prepared by the CGS and USGS, the PSHA of California, and earthquake rupture forecasts developed by the WGCEP, all of which reflect the most up-to-date understanding of the regional geology and seismicity. In addition, geologic and seismic analysis relied on project-specific geotechnical studies and a project-specific coastal erosion study that was designed to evaluate the risk of coastal erosion that would result from future sea level rise and 100-year storm events.

As described in more detail below, the analysis of geologic and seismic impacts in this section takes into account that CalAm would incorporate into their facility designs the engineering recommendations provided by the various geotechnical studies conducted for the proposed project. The analysis also considers the various existing state and local regulations that apply to geotechnical design and construction, which include the CBC and the Monterey County ordinances for building and grading. Through compliance with the existing ordinances, CalAm would be required to demonstrate that the proposed site uses are compatible with the subsurface geology and local seismic conditions; this must occur before building permits are issued. Additionally, CalAm would require its pipeline engineers and construction contractors to adhere to the American Water Works Association (AWWA) standards for pipeline design and construction; this analysis considers that in evaluating potential geologic and seismic impacts.

4.2.4.1 Geotechnical Investigations for Project Facilities

This analysis used geotechnical information and data derived from project-specific geotechnical studies, including geotechnical investigations conducted for the proposed MPWSP Desalination Plant at Charles Benson Road (PCE, 2014; Zinn, 2014) and the conveyance pipelines (AECOM, 2015), as well as a geotechnical investigation conducted to support CalAm's previously proposed Coastal Water Project (Ninyo & Moore, 2005). This analysis also utilized information from the preliminary geotechnical study completed by Ninyo & Moore (2014) for the Groundwater Replenishment Project EIR.

Geotechnical studies are essential for facility and pipeline design because it is the information that informs the structural design of the project components and determines whether the geologic materials underlying the project components are capable of supporting the proposed uses without risk of detrimental effects from potential hazards associated with problematic soils, liquefaction, or excessive seismic shaking. Geotechnical investigations are required under the CBC for most structures intended for human occupancy and by the Monterey County Grading Ordinance. Based on field observation and laboratory testing, the geotechnical engineer can assess whether the soils are adequate to support the structure under static (non-earthquake) or earthquake conditions. If corrective work is necessary to remedy the problem soils or otherwise unstable ground condition, the geotechnical engineer would recommend approaches to correct the condition. Geotechnical engineering recommendations are typically standard engineering practices that have been proven

elsewhere to increase the geotechnical performance of an underlying soil or bedrock material. CalAm would incorporate all geotechnical recommendations set forth by the project geotechnical engineer.

4.2.4.2 American Water Works Association Standards for Proposed Pipelines

Pipelines are constructed to various industry standards. The AWWA is a worldwide nonprofit scientific and educational association that, among its many activities, establishes recommended standards for the construction and operation of public water supply systems, including standards for pipe and water treatment facility materials and sizing, installation, and facility operations. While the AWWA's recommended standards are not enforceable code requirements, they nevertheless can dictate how pipelines for water conveyance are designed and constructed. CalAm has committed to requiring its contractors to incorporate AWWA Standards into the design and construction of the proposed pipelines.

4.2.4.3 Seismic Considerations

In California, an earthquake can cause injury or property damage by: (1) rupturing the ground surface, (2) violently shaking the ground, (3) causing the underlying ground to fail due to liquefaction, or (4) causing enough ground motion to initiate slope failures or landslides, any of which could damage or destroy structures.

State and local code requirements ensure buildings and other structures are designed and constructed to withstand major earthquakes, thereby reducing the risk of collapse and the associated risks to human health and safety and private property. The code requirements have been developed through years of study of earthquake response and the observed performance of structures during significant local earthquakes (e.g., the 1989 Loma Prieta Earthquake) and others around the world. As discussed in Section 4.2.2, Regulatory Framework, the proposed project would be required to comply with federal, state, and local laws regulating construction. The laws ensure that proposed development sites are adequately investigated and that seismic hazards are evaluated and addressed in the project design and construction. These laws include the Seismic Hazards Mapping Act, the California Building Code, and Monterey County ordinances pertaining to excavation, grading, and site development in geologic hazard zones. The *CGS Guidelines for Evaluating and Mitigating Seismic Hazards* (Special Publication 117A) (CGS, 2008b) provides guidance for evaluating and mitigating seismic hazards as required by the Public Resources Code Section 2695(a).

Site-specific geotechnical investigations are conducted to determine the presence of problematic soils and identify seismic hazards on a subject site. These investigations identify the geologic and seismic setting of a subject site and provide feasible engineering recommendations to remedy potentially adverse soil and seismic conditions. For projects whose grading activities would move over 5,000 cubic yards of soil, the Monterey County Grading Ordinance requires that a site-

specific geotechnical investigation (i.e., soil engineering and engineering geology report) be completed prior to final design in order to obtain a building or grading permit.[19]

Site-specific geotechnical investigations also provide the necessary soil information required by structural engineers to ensure structures and buildings are designed appropriately to withstand earthquake ground motion. Grading plans, foundation designs, and structural designs are prepared based on the geotechnical recommendations presented in the site-specific geotechnical investigation and other pertinent requirements of the CBC.

4.2.4.4 Site-Specific Soil Borings and Monitoring Wells

CalAm consultants drilled several exploratory borings at the CEMEX mining facility to depths of 306 to 350 feet below ground surface, logged the subsurface materials encountered, and collected soil and groundwater samples for laboratory testing. The exploratory boring logs, field screening tests results, and laboratory analytical results are presented in *Technical Memorandum (TM 1) - Summary of Results - Exploratory Boreholes* (Geoscience, 2014). The exploratory work, as described in the Setting above and in Section 4.4, Groundwater Resources, further defined the subsurface geology in the CEMEX active mining area (the proposed site for the subsurface slant wells). While this work was intended to refine groundwater modeling parameters, it also benefits the geology impact analysis.

CalAm consultants installed Monitoring Wells MW-1, and MW-3 through MW-7 at the locations shown on **Figure 4.4-9** and presented the results in *Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update, Monterey Peninsula Water Supply Project, Hydrogeologic Investigation* (Geoscience, 2016).[20] These are nested wells with screened intervals in the Dune Sand Aquifer, 180-Foot Equivalent Aquifer, and the 400-Foot Aquifer. The exploratory work, as described in detail in Section 4.4, Groundwater Resources, further defined the subsurface geology and aquifers at the proposed site for the subsurface slant wells. While this work was also intended to refine groundwater modeling parameters, it similarly benefits the geology impact analysis.

The pertinent data gathered from the exploratory work is incorporated, where appropriate, into Sections 4.2.5.1 and 4.2.5.2, below.

4.2.4.5 Coastal Retreat Study

The proposed project would place the seawater intake system along the Monterey Bay coastline. Sea level is predicted to rise over the next century and, in response, coastal erosion is expected to accelerate. The rise in sea level and the resultant increased coastal erosion rate would migrate the beach inland. Depending on the rate of coastal erosion and beach migration, the beach could migrate inland to the locations of the well heads for the slant wells within the project lifetime. The well heads and upper portions of the slant wells would then be exposed to wave action, storm events, and rip embayments, processes that are described above in Sea Level Rise and Coastal

[19] Unless the investigation is deemed unnecessary by the Building Official due to existing information.
[20] The consultant concluded that the planned Monitoring Well MW-2 was unnecessary and not installed.

Erosion. See also **Figure 4.3-3**, Areas Subject to Sea Level Rise in the Project Area, in Section 4.3, Surface Water Hydrology and Water Quality, for more information. The presence of structures on the beach changes the beach dynamics and can result in scour and erosion in the localized area. In turn, these changes can affect the volumes of sand on beaches both at the structure locations and at other beach locations in areas where the coastal drift would otherwise provide sand and maintain sandy beaches. In the case of Monterey Bay, coastal drift is typically to the south and this process provides sand to maintain the sand supply on those beaches.

To evaluate coastal erosion impacts associated with project components proposed in the coastal zone, a project-specific coastal retreat study — *Analysis of Historic and Future Coastal Erosion with Sea Level Rise* — was conducted by a team of licensed coastal engineers and coastal geomorphologists (ESA, 2014). The findings and recommendations of the study inform the analysis of Impact 4.2-10, below. The coastal retreat study is included as **Appendix C2** of this EIR/EIS.

The coastal retreat study examined coastal processes to determine the likelihood for the slant wells and their well heads to become exposed before the end of their usable lifespan. The study estimated coastal retreat both laterally and vertically. The lateral extent of erosion was evaluated using coastal erosion hazard zones; the vertical extent was evaluated using coastal profiles. Both of these methods are described in more detail below.

Coastal Erosion Hazard Zones (Lateral Erosion Estimates)

A coastal erosion hazard zone represents an area where erosion (caused by coastal processes) has the potential to occur over a certain time period. Within any area of such a zone, there is a risk of damage due to erosion during a major storm event. Actual locations of erosion during a particular storm depend on the unique characteristics of that storm (e.g. wave direction, surge, rainfall, and coincident tide). The coastal hazard zones are developed from three components: historic erosion, additional erosion due to sea level rise, and the potential erosion impact caused by a large storm wave event (e.g., 100-year storm event). As sea level rises, higher mean sea level will increase the frequency of wave run-up, thereby undercutting the dune toe and increasing erosion.

The most important variables in the coastal erosion model are the historic erosion trend, backshore toe elevation, and the total water level. The historic erosion rate was applied to a planning horizon through 2100 to determine the erosion rates that would occur without the project. The erosion model does not account for shore management actions, such as sand placement, that could potentially mitigate future shore recession. In this region, where beaches are controlled in part by sand mining, the study assumed there would be no changes to existing sand mining practices.

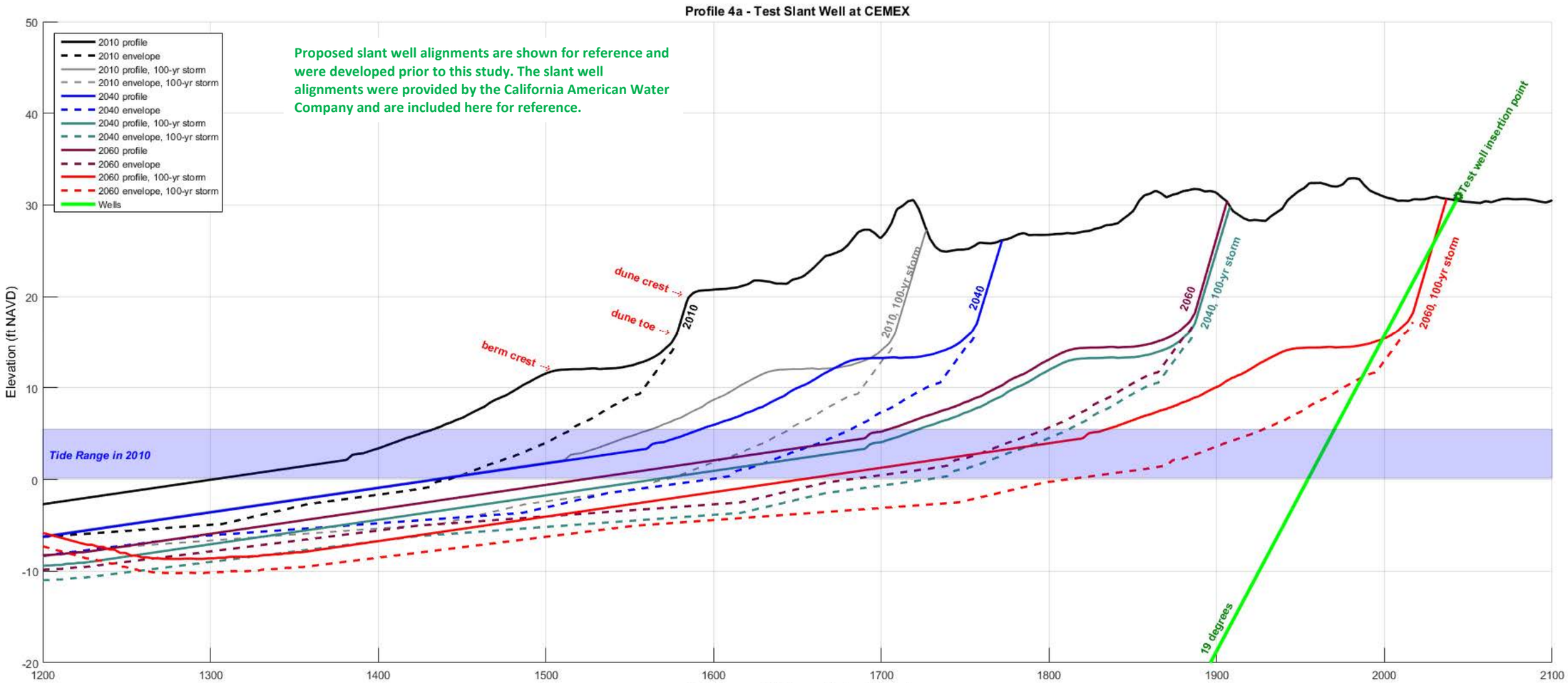
The potential for shoreline retreat caused by sea level rise and the impact from a large storm event was estimated using a geometric model of dune erosion and applied with different slopes to make the model more applicable to sea level rise. This method is consistent with the Federal Emergency Management Agency (FEMA) Pacific Coast Flood Guidelines. The potential

shoreline retreat estimates account for uncertainty in the duration of future storm events. Instead of predicting storm-specific characteristics and response, the method assumes that the coast would erode or retreat to a maximum storm wave event with unlimited duration. This is a conservative approach to estimating the impact of a 100-year storm event.

Coastal Profile (Vertical Erosion Estimates)

The coastal profile analysis developed a set of representative profiles that show how the shoreline is likely to evolve from the present to 2040 and 2060, and shows the locations of selected project components relative to those profiles. As previously discussed, the Monterey Bay shoreline is affected by seasonal changes, localized erosion (rip currents), long-term erosion, and sea level rise. Each of these factors is important in defining the profile shape and location at a given time. For this reason, the analysis identified a projected future profile and an extremely eroded profile (lower envelope) for each future time horizon. The future profile is the current profile eroded at the historic rate, with added erosion caused by sea level rise. The lower profile envelope represents a highly eroded condition, which could occur from a combination of localized erosion (rip currents), a large winter storm, and seasonal changes. The upper envelope (a highly accreted profile) was not analyzed because the key concern for the project is that buried or inland project components would become exposed over time. There are two profile/envelope combinations for each time step: one to represent long term profile evolution (historic erosion and accelerated erosion from sea level rise) and another that adds potential erosion from a 100-year storm event, which could be as high as much as 100 feet.

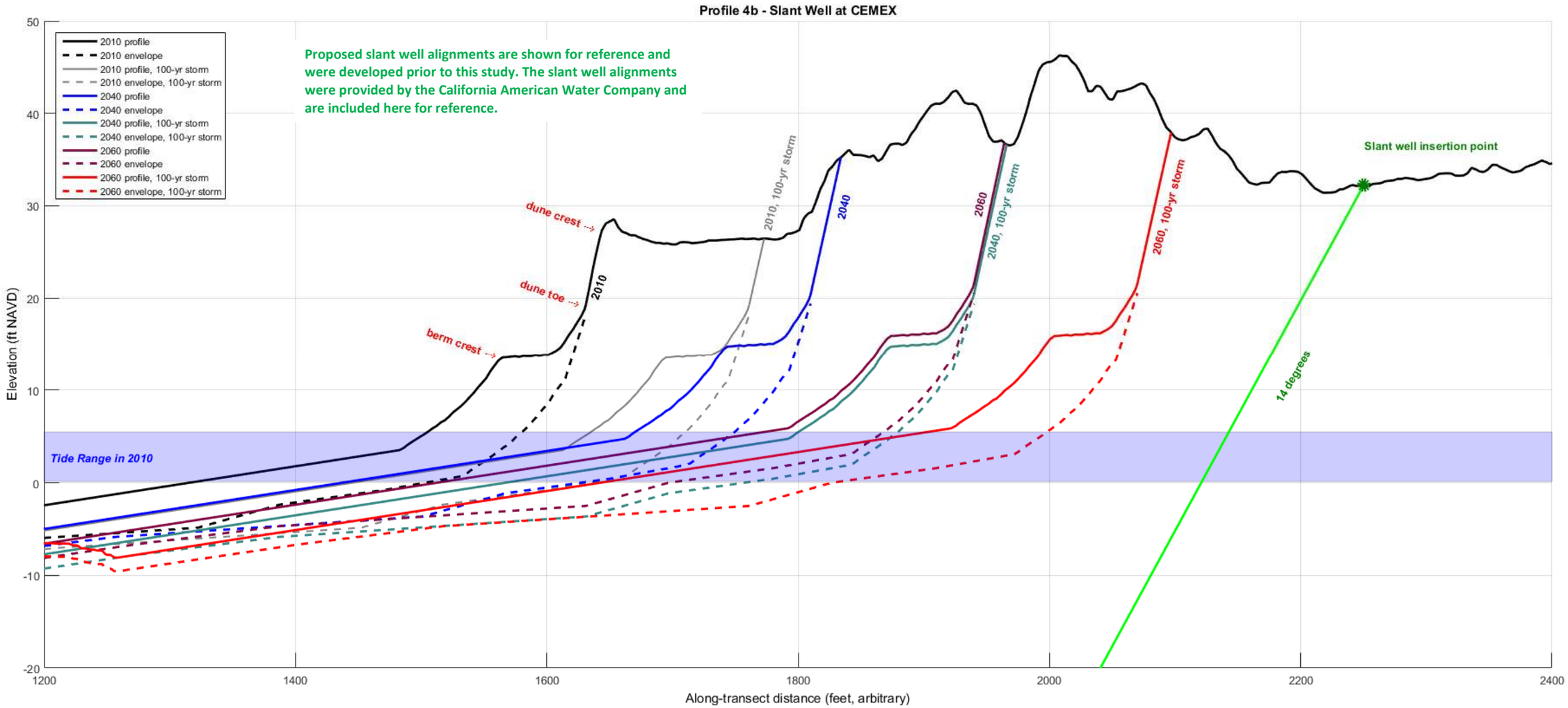
The high and low rates of sea level rise were estimated for each year from 2012 to 2073, the time period for which input data was needed by the groundwater modeling efforts discussed in Section 4.4, Groundwater Resources. The coastal erosion hazard zones maps delineate the estimated areas along the coast expected to be at or below sea level by the years 2030, 2040, 2050, 2060, and 2100, and thus subject to erosive wave action. Coastal profiles were then prepared at various locations to show the current (2010) profile and estimate the coastal profiles in 2040 and 2060, where project components would be close to the coastline and potentially subject to the damage that would be the result of coastal retreat. The test slant well would be exposed as a result of the 100-year storm event in the year 2060, as shown on **Figure 4.2-7**. The initially-proposed locations for the other nine slant wells would have been about the same distance from MHW and would have been within the anticipated extent of coastal retreat. These initial slant well locations are shown on the coastal profiles in Appendix C2. To avoid this condition, the well heads for the other nine slant wells were relocated to a line south of the existing test slant well, so that the proposed new slant wells would be located inland of the effects of the 100-year storm event in the year 2060, as shown on **Figure 4.2-8**.



Notes:

1. These envelopes of erosion consider seasonal changes in beach width, localized erosion (rip currents), long-term erosion, and accelerated erosion caused by sea level rise.
2. The profile shape is linearly interpolated between the bathymetry data and the topography data (between x = 919 ft and x = 1385).
3. This profile is located immediately south of the CEMEX Pacifica Lapis sand mining plant. No data is available to quantify the uncertainty in adjacent beach and dune erosion related to sand mining activities. The potential for fluctuations in beach width associated with sand mining were not considered in this analysis.
4. Slant well location and angle are based on the “Geological Cross Section through Test Slant Well” drawing provided by Geoscience on January 7 2016.

Figure 4.2-7
Representative Profile at Test Slant Well



Notes:

1. These envelopes of erosion consider seasonal changes in beach width, localized erosion (rip currents), long-term erosion, and accelerated erosion caused by sea level rise.
2. The profile shape is linearly interpolated between the bathymetry data and the topography data (between x = 820 ft and x = 1480).
3. This profile is located immediately south of the CEMEX Pacifica Lapis sand mining plant. No data is available to quantify the uncertainty in adjacent beach and dune erosion related to sand mining activities. The potential for fluctuations in beach width associated with sand mining were not considered in this analysis.
4. Slant well location and angle are based on the “Cross-Section SW-3” drawing provided by Geoscience on January 7, 2016.

Figure 4.2-8
Representative Profile at Proposed Slant Wells

4.2.5 Direct and Indirect Effects of the Proposed Project

Table 4.2-7 summarizes the impacts and significance determinations related to geology, soils and seismicity that could result from implementation of the proposed project (10 slant wells at CEMEX). Due to the nature of the proposed project, the following criterion is not addressed in the impact analysis sections for the reasons described below:

> ***Degrade the physical structure of any geologic resource or alter any oceanographic process, such as sediment transport, such that it is measurably different from pre-existing conditions.*** Construction, operations, and maintenance of the components of the proposed project (10 wells at CEMEX) would not affect onshore or offshore geologic resources, and would not alter oceanographic processes because construction would be below the seabed; the seabed would not be altered and would not be disturbed during operations or maintenance activities.

TABLE 4.2-7
SUMMARY OF IMPACTS – GEOLOGY, SOILS, AND SEISMICITY

Impacts	Significance Determinations
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction.	LSM
Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.	LS
Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically-induced groundshaking.	LS
Impact 4.2**-4**: Exposure of people or structures to substantial adverse effects related to seismically-induced ground failure, including liquefaction, lateral spreading, or settlement.	LS
Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures.	LS
Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils.	LS
Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils.	LS
Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.	NI
Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems.	LS
Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.	LSM
Impact 4.2-C: Cumulative impacts related to geology, soils, and seismicity.	LSM

NOTES:
NI = No Impact
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation

4.2.5.1 Construction Impacts

Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction. (*Less than Significant with Mitigation*)

Soil Erosion

All Proposed Project Components

Project construction would involve localized ground disturbance activities (e.g., grading, excavation, drilling, and the construction of structures and pipelines) associated with drilling of the subsurface slant wells and ASR injection/extraction wells, installation of pipelines, and construction of buildings and structures. These activities could result in substantial soil erosion.

The construction activities would involve short-term ground disturbance. As described above in Section 4.2.1, Setting/Affected Environment, many of the project facilities and all conveyance pipelines would be constructed in relatively flat areas with little topographic relief. The gentle topographic relief would minimize the potential for soil erosion during construction.

Because the overall footprint of construction activities would exceed 1 acre, the proposed project would be required to comply with the *NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit), the Monterey County Grading Ordinance, and Monterey County Erosion Control Ordinance, all of which are described in Section 4.2.2, Regulatory Framework. These state and local requirements were developed to ensure that stormwater is managed and erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a SWPPP, also described in Section 4.2.2, which requires applications of BMPs to control run-on and runoff from construction work sites. The BMPs would include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of bio-infiltration swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction. The Monterey County Grading Ordinance, as well as similar city grading and erosion ordinances, requires implementation of temporary construction and permanent post-construction erosion control measures. The applicable erosion control ordinances restrict grading activities during winter months and require preparation of an erosion control plan prior to issuance of building permits.

Because project construction activities would be subject to the numerous requirements noted above and in Section 4.2.2, impacts associated with substantial increases in soil erosion during construction would be less than significant for all project components.

Loss of Topsoil

Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline, ASR-5 and ASR-6 Wells, and the Carmel Valley Pump Station

Several of the project-related construction activities would disturb vegetated areas, including sensitive natural vegetation communities. Grading, excavation, and backfill activities in these areas could result in the loss of topsoil (a fertile soil horizon that typically contains a seed base) if there is a well-developed topsoil horizon and it is mixed with other soil horizons or otherwise lost during excavation and backfilling. Impacts related to the loss of topsoil during construction of these components would be significant. However, the impact associated with loss of topsoil in sensitive natural communities would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. The impact associated with loss of topsoil on agricultural lands would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)**. These measures require that topsoil be salvaged, stockpiled separately from subsoils, and returned to its appropriate location in the soil profile during backfilling activities.

Subsurface slant wells, MPWSP Desalination Plant, Pipeline to CSIP Pond, Brine Discharge Pipeline/Brine Mixing Box, pipelines south of Reservation Road, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements

Surface soils at the subsurface slant wells and MPWSP Desalination Plant site are sandy and do not have a well-developed soil horizon. The site is covered in ruderal and disturbed habitat and does not support sensitive natural communities or crop production. The pipelines and interconnection improvements south of Reservation Road would be constructed within existing roadways and highly disturbed areas and would have no effect related to the loss of topsoil. Therefore, construction of the subsurface slant wells, MPWSP Desalination Plant and pipelines and interconnection improvements south of Reservation Road would have no impact related to loss of topsoil and no mitigation is necessary.

Consistency with Plans & Policies

As discussed above, the construction of the project has the potential to result in the loss of topsoil. This results in a potential inconsistency with the City of Marina Local Coastal Program Land Use Plan, as discussed above in Table 4.2-6. However, with implementation of **Mitigation Measure 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** and **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)**, and through compliance with applicable laws and regulations, the potential for loss of topsoil during construction would be reduced to a less-than-significant level and the MPWSP would be brought into conformance with the above-noted plan.

Impact Conclusion

Impacts associated with soil erosion during construction would be less than significant for all project facilities. Impacts associated with loss of topsoil during construction would be significant for the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline, ASR-5

and ASR-6 Wells, and the Carmel Valley Pump Station. Implementation of **Mitigation Measures 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** and **4.16-1 (Minimize Disturbance on Farmland)** would reduce this impact to a less-than-significant level. No impact related to the loss of topsoil would result from construction of the subsurface slant wells, the MPWSP Desalination Plant or pipelines south of Reservation Road.

Mitigation Measures

Mitigation Measure 4.6-2b applies to the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline, ASR-5 and ASR-6 Wells, and the Carmel Valley Pump Station.

> **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.**
>
> (See Impact 4.6-2 in Section 4.6, Terrestrial Biological Resources, for the description.)

Mitigation Measure 4.16-1 applies to the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline.

> **Mitigation Measure 4.16-1: Minimize Disturbance to Farmland.**
>
> (See Impact 4.16-1 in Section 4.16, Agriculture and Forestry Resources, for the description.)

4.2.5.2 Operational and Facility Siting Impacts

The proposed project would not result in erosion-causing activities such as stormwater discharges to vegetated areas during project operations and maintenance because the project operations would be conducted entirely within the areas previously disturbed by construction of the project facilities and would not disturb any new areas. Therefore, project operations and maintenance would have no effect on erosion and topsoil.

Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture. (*Less than Significant*)

New Transmission Main and Ryan Ranch-Bishop Interconnection Improvements

The proposed project would not alter the seismic environment or increase the risk of fault rupture. None of the proposed facilities are located within an Alquist-Priolo Earthquake Fault Zone (i.e., on a State-recognized active fault trace). Although there is evidence of Holocene movement along some of the faults that cross the project area, these faults are unlikely to generate an earthquake or result in surface fault rupture because the segments with Holocene movement are concealed, do not exhibit any surface expression of fault movement, and/or are comparatively short (i.e., in comparison to an active fault such as the San Andreas Fault).

As shown on **Figures 4.2-1** and **4.2-4** and discussed in Section 4.2.1.2, the Monterey Bay–Tularcitos Fault Zone passes through the project area in Monterey, Del Rey Oaks, and Seaside. This fault zone creates a 6- to 9-mile wide zone of short in-echelon, northwest striking faults. These faults are not zoned under the Alquist-Priolo Earthquake Fault Zoning Act (see Regulatory Framework, Section 4.2.2) because they do not exhibit surface displacement that is younger than 11,000 years and are not considered sufficiently active or well defined. This distinction is discussed in more detail above in Section 4.2.1.2. From east to west, the individual faults in the Monterey Bay–Tularcitos Fault Zone are referred to as the:

- Chupines Fault Zone, Ord Terrace Fault, Del Rey Oaks section
- Chupines Fault Zone, Seaside Fault, Del Rey Oaks section
- Monterey Bay-Tularcitos Fault Zone, Monterey Bay section (Navy Fault)
- Monterey Bay-Tularcitos Fault Zone, Monterey Bay section (Hatton Canyon Fault)

Although these faults are not zoned by the State of California as active and the Fault Activity Map of California (Jennings, 2010) identifies these faults as older Quaternary-age faults (i.e. displacement between 1.6 mya to 11,000 ya or older), there has been evidence (Bryant, 2001) of Holocene displacement along the Hatton Canyon and Tularcitos Faults. Additionally, there is evidence of a probable offshore extension of the Chupines Fault displacing Holocene-age (less than 11,000 years old) deposits and sea floor sediments (Ninyo & Moore, 2014). Therefore, because there is evidence of Holocene–age displacement on certain segments of these otherwise Quaternary-aged and older faults, the potential for earthquake activity and possible ground surface displacement (ground rupture) cannot be dismissed. However, because the majority of these faults have not exhibited Holocene displacement and are not considered sufficiently active or well-defined, the potential is very low that the individual traces of these faults could generate an earthquake and result in surface fault rupture.

New Transmission Main

The proposed new Transmission Main would cross over the Reliz Fault Zone (Blanco Segment). The Reliz Fault Zone, Blanco Segment, is concealed and covered with dune sands along the coast and there is no reported evidence of Holocene-age fault displacement in this area.

In the event of an earthquake along the Reliz Fault Zone, groundshaking could occur, but because there has not been historic (less than 200 years) or Holocene (less than 11,000 years) activity on this fault, the active trace would be buried beneath sand and marine terrace deposits. In addition, because the fault segments are comparatively short (i.e., in comparison to an active fault such as the San Andreas Fault), any surface expression of fault movement would be minor if it would occur at all. In the unlikely event that the Reliz Fault Zone, Blanco Segment, generated earthquake activity or surface fault displacement along the New Transmission Pipeline, the pipeline would likely accommodate the lateral movement and not be damaged. If damage did occur, it would amount to a pipe break and possibly leakage that would be readily repaired, as previously explained. This impact is considered less than significant.

Ryan Ranch-Bishop Interconnection Improvements

The Ryan Ranch-Bishop Interconnection Improvements across the southern portion of the Chupines Fault Zone, Seaside Fault, and Del Rey Oaks section. The Chupines Fault in this area is mapped as a Quaternary fault with no evidence of recent or Holocene displacement. Considering its age and lack of recent activity, the potential for this fault to generate a damaging earthquake or rupture at the surface is considered low. In the unlikely event that the Hatton Canyon Fault generated earthquake activity or surface fault displacement, the pump station and pipeline would likely accommodate the lateral movement and not be damaged. If damage did occur, it would amount to a pipe break and possibly leakage that would be readily repaired, as previously explained. This impact is considered less than significant.

All Other Proposed Components

None of the other project components, including the subsurface slant wells and desalination plant, are close enough to known active faults to be vulnerable to surface fault rupture. Therefore, no impact would occur from implementation of the other project components.

Impact Conclusion

Mapped faults intersect the proposed new Transmission Main and the Ryan Ranch-Bishop Interconnection Improvements. These faults are not mapped as active by the State of California because they do not display evidence of recent displacement. However, past studies have identified that certain segments of these faults do exhibit Holocene-age displacement leading to the conclusion that certain segments could be considered active. While it is possible that these faults could generate an earthquake and rupture at the surface, the potential for such an occurrence to expose people or structures to substantial adverse effects related to fault rupture is low because the faults are either concealed beneath sediments or at a sufficient distance from the project components. In the unlikely event that one of the faults crossing the project components did generate an earthquake and cause surface rupture, the rupture area would be localized, resulting in a minor offset associated with a low level groundshaking. Damage could include localized pipeline leaks that would be immediately repaired. Considering the low potential for fault rupture on the project area faults, this impact is considered less than significant for the new Transmission Main and Ryan Ranch-Bishop Interconnection Improvements. For all other components of the proposed project, no impact would result because mapped faults do not occur at or near to the locations of the other components.

Mitigation Measures

None proposed.

Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically-induced groundshaking. (*Less than Significant*)

All Proposed Project Components

As discussed in Section 4.2.1, Setting, Monterey County will likely experience a large regional earthquake within the operational life of the MPWSP. There is a potential for high-intensity groundshaking associated with a characteristic earthquake in this region. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, the duration of shaking, and the nature of the geologic materials on which the MPWSP components would be constructed. Intense groundshaking and high ground accelerations would affect the entire area around the proposed facilities and associated pipelines. The primary and secondary effects of groundshaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure.

The MPWSP Desalination Plant would be staffed full-time, and the Carmel Valley Pump Station would be staffed on an as-needed maintenance schedule. During operations, intense groundshaking could cause damage to these facilities, facility outages, and temporary water service disruptions in the CalAm Monterey District service area. Pumps could be rendered inoperable. Broken pipelines could result in soil washout and sinkholes that could damage nearby non-project facilities or the environment. Locating and repairing damaged pipelines and the pumps could require a cessation of operation of the facilities for a period of time. The 1989 Loma Prieta earthquake reportedly caused more than 60 water pipeline breaks in Santa Cruz, the nearest urbanized area to the epicenter (McNutt and Toppozada, 1990). As the proposed project would be part of an essential public utility (public water supply), repairs would be made promptly.

The structural elements of the proposed project would undergo appropriate design-level geotechnical evaluations prior to final design and construction. Implementing the regulatory requirements in the CBC and County ordinances and ensuring that all buildings and structures constructed in compliance with the law is the responsibility of the project engineers and building officials. The geotechnical engineer, as a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care for the particular region in California, which, in the case of the proposed MPWSP, is the Monterey Bay area.[21] The California Professional Engineers Act (Building and Professions Code Sections 6700-6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provides the basis for regulating and enforcing engineering practice in California. The local Building Officials are typically with the local jurisdiction (i.e. Monterey County) and are responsible for inspections and ensuring CBC and local code compliance prior to approval of the building permit.

[21] A geotechnical engineer (GE) specializes in structural behavior of soil and rocks. GEs conduct soil investigations, determine soil and rock characteristics, provide input to structural engineers, and provide recommendations to address problematic soils.

Impact Conclusion

It is likely that the structural elements of the proposed project would be subjected to a moderate to strong earthquake at least once during their operational life. Damage from an earthquake could result in temporary water service disruptions. However, because of the location of project facilities relative to the faults and the limited potential for ground surface rupture associated with these faults, there is a low potential for the groundshaking associated with an earthquake to cause injury, loss of life, or substantial property damage. Completion of a comprehensive design-level geotechnical investigation, adherence to the current CBC and local ordinances regulating construction, and the application of proven seismic design criteria that are standard engineering practice would ensure that structures are designed to withstand seismic events without sustaining substantial damage or collapsing. Therefore, this impact is considered less than significant.

Mitigation Measures

None proposed.

Impact 4.2-4: Exposure of people or structures to substantial adverse effects related to seismically-induced ground failure, including liquefaction, lateral spreading, or settlement. (*Less than Significant*)

Castroville Pipeline, Source Water Pipeline, and Carmel Valley Pump Station

The potential for liquefaction is higher in areas composed of granular soils with a shallow depth to groundwater. The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to liquefaction-induced ground settlement. The placement of structures on such soils could place the public at risk of injury or structures at risk of damage. Lateral spreading is the movement of blocks of soil on liquefiable soils.

Figure 4.2-5 shows the liquefaction hazard potential in Monterey County. As shown on the figure, most of the project components would be located in areas with a low susceptibility. However, the Castroville Pipeline would be constructed in areas of the Salinas River floodplain that have experienced documented historic liquefaction during the 1906 San Francisco and 1989 Loma Prieta earthquakes and are mapped with a moderate to high potential for liquefaction. The Source Water Pipeline is partially located on soils with a moderate to high potential for liquefaction. The Carmel Valley Pump Station is located on soils with a moderate liquefaction potential. Those project components located on or in soils with a moderate to high potential for liquefaction that could experience damage or failure as a result of liquefaction are discussed below.

The water conveyance pipelines would consist of 6- to 42-inch diameter pipelines buried from about 4 to 8 feet below the ground surface. Most of the conveyance pipelines would be underlain by deposits and fill materials consisting of dune sand and most of these deposits are anticipated to

consist of dry sand and silt mixtures (Ninyo and Moore, 2005, 2014; AECOM, 2015). Fill materials likely consist of compacted mixtures of sand and silt generated locally from the natural dune deposits. Portions of the Source Water Pipeline close to and under the coastal areas could have shallow depths to groundwater; in this case seawater intruded from the ocean, and thus could be susceptible to liquefaction damage. Although not located in the coastal zone, the Carmel Valley Pump Station would be located on similarly sandy deposits near enough to the Carmel River to seasonally have shallow groundwater conditions.

As discussed above in the Section 4.2.3, Approach to Analysis, the proposed project components would undergo a final geotechnical investigation and be designed to resist damage from seismic shaking. CalAm would implement all geotechnical recommendations provided by the project geotechnical engineer if liquefiable soils are identified. Solutions to rectify liquefaction are modern engineering approaches used throughout California and are considered standard industry practice. Methods to correct liquefiable soils include removal and replacement of problematic soils, the use of pile foundations, and drainage columns to reduce saturated conditions. The geotechnical investigation and corrective actions for potential liquefiable soils, where needed, would be based on the CGS Special Publication 117A (see Section 4.2.2).

In comparison to aboveground structures, underground pipelines, and buried structures are generally less susceptible to liquefaction damage because they are embedded in compacted backfill that can tolerate more seismic wave motion. While this practice would not completely eliminate the potential for damage to the facilities, it would ensure that the resultant improvements would have the structural fortitude to withstand anticipated groundshaking and seismically induced ground failures without significant damage.

All Other Project Components

The potential for liquefaction is higher in areas composed of granular soils with a shallow depth to groundwater. As shown on Figure 4.2-5, the other project components would not be located in areas susceptible to liquefaction-induced ground settlement.

Impact Conclusion

With implementation of standard engineering practices, compliance with Monterey County requirements for geotechnical study, implementation of the design recommendations from the geotechnical engineer, and standard construction methods, this impact would be less than significant for all components of the proposed project.

Mitigation Measures

None proposed.

Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures. (*Less than Significant*)

Figure 4.2-6 shows the locations of the proposed project components and the potential slope stability hazards associated with seismically-induced landslides. The designation of a given area as having high landslide susceptibility does not necessarily mean that an active landslide is present at that location, only that the steepness of the topography and soil type renders that location more susceptible to landslides. Because steep topography increases landslide risk, the map also shows areas prone to non-seismically induced landslides. Non-seismic slope movement can be caused by the force of gravity on steeper unstable slopes, construction activities that change the existing surface water drainage and create unstable slopes, or the addition of water into the slope material through leaks or breaks in pipelines in steeper landslide prone areas.

Main System-Hidden Hills Interconnection Improvements

The steep hillside terrain on and east of the Monterey Peninsula has an elevated susceptibility to landslides. All but one of the project components would be located in relatively flat to gently-sloping topography and would therefore have a low susceptibility to landslides. Only the Main System-Hidden Hills Interconnection Improvements would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides.

The Main System-Hidden Hills Interconnection Improvements consist of a 100-foot long, 6-inch-diameter pipeline to connect the Hidden Hills section of the system with the main distribution system. The entire pipeline section would be buried from about 4 to 8 feet below the surface in the Tierra Grande Drive road right-of-way, as shown in Chapter 3, Description of the Proposed Project, Figure 3-10b. Upon the completion of construction activities, the surface would be restored to the original existing paved condition. This existing road would continue to be maintained with curbs and gutters to collect and control surface water runoff. Although the Main System-Hidden Hills Interconnection Improvements would be placed in an area with a moderate to high landslide susceptibility, there are no existing active landslides in the area and the project does not include activities that would exacerbate an otherwise unstable slope condition. Furthermore, this area would be evaluated during the project geotechnical evaluation and if potentially unstable slope conditions exist, the geotechnical recommendations that would be developed through that study would be implemented by CalAm to diminish the potential for slope failure. Therefore, the potential impact related to landslide susceptibility is considered less than significant.

All Other Project Components

All other project components would be located in relatively flat to gently-sloping topography and would therefore have a low to no susceptibility to landslides. Therefore, there would be no impact for all other project components.

Impact Conclusion

Impacts associated with landslides would be less than significant for the Main System–Hidden Hills Interconnection Improvement. For all other project components, no impact would occur.

Mitigation Measures

None proposed.

Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils. (*Less than Significant*)

Unless properly removed or reconditioned during construction, expansive soils could exert additional pressures on foundations and below-grade facilities, producing shrinkage cracks that allow water infiltration and compromise the integrity of backfill material. Depending on the depth of buried pipelines, soil in expansion or contraction could lead to lateral pipeline stress and stress of structural joints. Lateral stresses could, over time, lead to pipeline rupture or leaks in the coupling joints. Shrinkage cracks could form in native soils adjacent to the pipeline trench or in backfill material if expansive soils are used. If shrinkage cracks extend to sufficient depths, groundwater can infiltrate into the trench, causing piping (progressive erosion of soil particles along flow paths) or settlement failure of the backfill materials. Settlement failure can also occur if expansive soils are used in backfill and undergo continued expansion and contraction. Over time these soils could settle, resulting in misalignment or damage to buried facilities.

The effects of expansive soils could damage foundations of aboveground structures, paved service roads, and concrete slabs. Surface structures with foundations constructed in expansive soils would experience expansion and contraction depending on the season and the amount of surface water infiltration. The expansion and contraction, also referred to as linear extensibility, could exert enough pressure on the structures to result in cracking, settlement, and uplift.

Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills Interconnection Improvements, and Ryan Ranch–Bishop Interconnection Improvements

Table 4.2-4 lists the properties of all of the soil units on or within which project components would be constructed. Proposed components that would be placed on or in soils with moderate to high expansion or linear extensibility potential include the Castroville Pipeline, Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch–Bishop Interconnection Improvements.

As discussed in Section 4.2.3, Approach to Analysis, the project geotechnical engineer for CalAm has completed a preliminary geotechnical assessment of the pipeline route and project facility sites and would complete a final geotechnical design investigation prior to project construction. The geotechnical evaluation of the project sites includes field sampling and testing of surface soils to determine the presence of expansive soils. The investigation of and treatment for expansive soils is considered standard engineering practice for most development projects. Completion of a geotechnical evaluation and implementation of its recommendations reduces the likelihood that expansive soils could impact project components. In addition, all project elements and pipeline facilities would be designed consistent with AWWA standards for pipelines

(discussed in the Approach to Analysis, Section 4.2.3), which account for problematic soils and require remedies for adverse soils in order to adhere to specific standards for pipeline trench excavation, pipe bed material, and backfill. Methods to address expansive soils include removal of the expansive soils or treating the expansive soils by mixing the soil with lime or other additives that reduce the potential for expansion. Given all of these requirements and compliance with standards, the potential for expansive soils to adversely impact project components is low and therefore this impact is less than significant.

All Other Project Components

All other project components would be located in soils with a low linear extensibility potential. Therefore, there would be no impact.

Impact Conclusion

With compliance with applicable construction requirements and design criteria, this impact would be less than significant for the Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills Interconnection Improvements, and Ryan Ranch–Bishop Interconnection Improvements. There would be no impact for the other project components.

Mitigation Measures

None proposed.

Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils. (*Less than Significant*)

Soils with a high conductivity can corrode unprotected underground metal pipes and electrical conduits. Over time, pipe corrosion could lead to pipeline failure, resulting in localized surface flooding of water or localized settlement of surface soils at the location of the failure. Failed subsurface electrical conduits could result in electrical short-circuiting. Soils with an acidic pH can corrode unprotected concrete. Over time, concrete corrosion could lead to the degradation of concrete resulting in the cracking and failure of concrete foundations and other support structures. Failed foundations and support structures could result in the breakage of equipment or pipelines and possibly result in temporary shutdown of operations interrupting the public water supply.

MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, ASR Pipelines, and Ryan Ranch–Bishop Interconnection Improvements

Table 4.2-4 lists the properties of all of the soil units within which project components would be constructed. Clayey soils are potentially corrosive. Project components that would be located on or in soils with moderate to high concrete and unprotected steel corrosion potential include the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, ASR Pipelines, and the Ryan Ranch–Bishop Interconnection Improvements.

As discussed in Section 4.2.3, Approach to Analysis, the project geotechnical engineer for CalAm has completed a preliminary geotechnical assessment of the pipeline route and would complete a final geotechnical design investigation prior to project construction. The geotechnical evaluation of the project area boundaries includes an evaluation for the presence of corrosive soils. Managing corrosive soils is standard engineering practice especially for pipeline projects. If corrosive soils are identified during the final geotechnical design study, the project geotechnical engineer would recommend remedies to eliminate damage from corrosive soils, and those recommendations would be implemented by CalAm. Methods to reduce corrosion of metal and concrete caused by soils include avoidance and removal or the use of cathodic protection. In addition, all project elements and pipeline facilities would be designed consistent with AWWA standards for pipelines (discussed in the Approach to Analysis, Section 4.2.3), which account for problematic soils and require remedies for adverse soils in order to adhere to specific standards for pipeline trench excavation, pipe bed material, and backfill.

All Other Project Components

All other project components would be located in sandy soils with a low corrosivity potential. Therefore, there would be no impact.

Impact Conclusion

The presence of corrosive soils would be evaluated and addressed through the final geotechnical investigation prior to project construction. As previously discussed, the CBC and local permitting regulations require a geotechnical investigation. If the investigation finds corrosive soils, the geotechnical engineer would recommend avoidance, removal, or cathodic protection, and CalAm would be required to implement those recommendations. Therefore, the impact of corrosive soils is considered less than significant for the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, ASR Pipelines, and the Ryan Ranch–Bishop Interconnection Improvements. There would be no impact for the other project components.

Mitigation Measures

None proposed.

Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence. (*No Impact*)

When groundwater is extracted from a confined aquifer, subsidence of the overlying land surface can occur. This type of subsidence is usually associated with severe, long-term withdrawal in excess of recharge that eventually leads to overdraft of the aquifer. As groundwater is pumped out, water is removed from the soil pore spaces leading to a reduction in soil strength. The subsurface conditions more conducive to subsidence include clay or organic-rich soils. Sand- and gravel-rich soils are less prone to subsidence because the larger grains comprise a skeleton less dependent on water pressure

for support. The subsidence can result in damage to infrastructure such as buildings or pipelines, or can result in a decrease in the volume of available aquifer storage.

Subsurface Slant Wells

Overdrafting of the Salinas Valley Groundwater Basin has taken place over an extended time, and saltwater has replaced the freshwater in those affected areas, thereby preventing subsidence (Monterey County, 2010). According to the *Monterey County General Plan*, subsidence is not a critical hazard in the county. As described in Section 3.2.1.1 of Chapter 3, Description of the Proposed Project, the subsurface slant wells would be 900 to 1,000 feet long and extend offshore. The slant wells would be screened at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. These aquifer units are composed predominantly of sand and gravel. Geologic units composed of sands and gravels are less prone to subsidence because the granular structure is better able to support the overlying weight of soil. In addition, because the subsurface slant wells would draw water from the offshore coastal aquifers, seawater would replace the water pumped from the slant wells, as discussed in Section 4.4, Groundwater Resources. The continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would be unable to subside as a result of pumping and there would be no impact from subsidence impacts associated with the subsurface slant wells.

ASR-5 and ASR-6 Wells

The screened sections of the proposed ASR-5 and ASR-6 Wells would be located about 1,000 feet bgs in the sandstone portions of the Santa Margarita Formation in the Seaside Groundwater Basin. The sandstone structure of the geologic unit would be expected to support the granular structure during groundwater pumping, especially considering the depth. In addition, the proposed project would typically extract water injected and stored in the ASR system in the same water year. Therefore, the water pumped into the system during the winter and spring would be extracted during the following summer or fall. Furthermore, for the first 25 years of the proposed project, 700 acre-feet annually would be left in the Seaside Groundwater Basin to restore water extracted in years prior to this project. This means that the overall groundwater levels in the Seaside Groundwater Basin would increase as a result of the proposed project. This would result in a decreased potential for surface ground subsidence and there would be no subsidence impacts associated with the ASR-5 and ASR-6 Wells. Also note that the ASR wells are proposed to be located at least 2 miles away from the active, offshores traces of the Chupines Fault Zone, as shown on EIR/EIS Figure 4.2-4. Therefore, the injection of water would not have the potential to activate movement on an active fault.

All Other Project Components

None of the other project components would extract groundwater. Therefore, there would be no impact for all other project components.

Impact Conclusion

Given the existing lack of clay in the aquifer units to be pumped and the management of groundwater levels to reduce or eliminate overdraft, there would be no impacts related to subsidence caused by the ASR injection/extraction wells. Given the continuous recharge of seawater to the slant wells, there would be no impact related to subsidence caused by the slant wells. For all other project components, there would be no impacts.

Mitigation Measures

None proposed.

Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems. (*Less than Significant*)

This impact analyzes alternate wastewater locations relative to the physical suitability of the proposed locations to infiltrate water. The potential impacts relative to water quality are discussed in Section 4.3, Surface Water Hydrology and Water Quality.

Subsurface Slant Wells

After completing the construction of the subsurface slant wells, the wells would be developed to remove sand, silt, and clay from the well and clean out the well screen and sand pack[22] around the well screen. As described in Section 3.2.1.1, subsurface slant wells, the development water would be discharged to pump-to-waste vaults located at the well heads for the percolation of turbid water back into the sand (see **Figure 3-3**) or conveying it to the existing discharge pipeline for the test slant well and discharging it to the ocean via the MRWPCA ocean pipeline and outfall. The pump-to-waste vault would be a precast 12-foot-long, 8-foot-wide, and 1-foot-tall concrete vault covered with a metal grate and underlain by clean gravel and permeable geotextile fabric. The sand, silt and clay would remain in the pit; the water would infiltrate back down to groundwater. If the materials at and beneath were to have low permeability, the water would not be able to infiltrate back into the underlying aquifer.

The area where the water would be placed is composed of Oceano Loamy Sand (see **Table 4.2-4**). However, in the specific area of the slant wells, the materials are dune sands with little to no fine-grained components (silt and clay) or soil components (organic materials) that would impede infiltration. The high permeability of the dune sand would be suitable for the infiltration of water.

ASR-5 and ASR-6 Wells

After completing the construction of the ASR wells, the wells would be developed to remove sand, silt, and clay from the well and clean out the well screen and sand pack around the well

[22] Sand or gravel packs are sand or gravel installed between the well casing and the surrounding native materials and filters out finer-grained materials from entering the well.

screen. The development water would be discharged to the natural depression shown on **Figure 3-9b**. The sand, silt and clay would remain in the depression; the water would infiltrate back down to groundwater. If the materials at and beneath were to have low permeability, the water would not be able to infiltrate back into the underlying aquifer.

The area where the water would be placed is composed of Baywood Sand (see **Table 4.2-4**). The materials are predominantly sands with little fine-grained components (silt and clay) or soil components (organic materials) that would impede infiltration. The high permeability of the sandy materials would be suitable for the infiltration of water.

All Other Project Components

None of the other project components would require the disposal of wastewater. Therefore, there would be no impact for all other project components.

Impact Conclusion

The alternate wastewater disposal locations for the subsurface slant wells and the ASR wells are sandy areas that would be suitable for the infiltration of water and potential impacts related to the suitability of the locations for wastewater disposal would be less than significant. For all other project components, there would be no impacts. The potential impacts relative to water quality are discussed in Section 4.3, Surface Water Hydrology and Water Quality.

Mitigation Measures

None proposed.

Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment. (*Less than Significant with Mitigation*)

The sea level in Monterey Bay has been rising for years and is expected to continue rising over the next several decades (ESA, 2013). The Monterey Bay coastline is expected to retreat inland due to the rising sea level and the resulting erosion (ESA, 2014). Erosion and bluff retreat would result in a beach and surf zone that is inland of its current location. The primary concern associated with the proposed project is that coastal retreat could migrate the beach inland such that the subsurface slant well casings, concrete well head vaults, electrical panels, and certain sections of conveyance pipelines would become located on the beach within the project lifetime. As discussed above in the Coastal Retreat Study section, the exposure of the project components to wave action, storm events, and rip embayments could alter the existing natural beach dynamics and the coastal environment, resulting in an increase in beach erosion and/or an interruption in the sand supply to other beaches along the Monterey Bay that would be considered an impact of the proposed project. In addition, beach erosion and bluff retreat caused by the rise in sea level would be a predicted environmental condition that could adversely affect certain components of the project sometime in the future.

The project components that could become located on the beach due to coastal retreat are the subsurface slant wells and associated infrastructure (e.g., well heads, pipelines, and electrical control panels) in the CEMEX active mining area. The area of the slant wells is within the coastal erosion hazard zones that were delineated in the coastal retreat study prepared to evaluate potential coastal erosion hazards associated with the proposed project. The assumptions and methodologies used in the coastal retreat study are discussed above in Section 4.2.3, Approach to Analysis.

Subsurface Slant Wells

The coastal retreat study (ESA, 2014) anticipated that the subsurface slant wells in the CEMEX active mining area could become located on the beach within the project lifetime. It is important to note that predicting the future rate of coastal retreat is an approximation based on anticipated future climate conditions that may vary substantially from actual climate conditions. The coastal retreat study assumes a worst case scenario for planning purposes; the actual amount or rate of coastal retreat could be less.

As described in Sections 3.2.1.1, the seawater intake system would include 10 subsurface slant wells: the existing test slant well, which would be converted to a production well, and the 9 additional new slant wells that would be constructed as part of the proposed project. The subsurface slant wells would originate at an above-ground well head vault behind the beach and radiate out a distance of between 900 and 1,000 feet at an angle of 19 degrees off the horizontal for the existing test slant well and about 14 degrees for all other slant wells off the horizontal toward the Monterey Bay. As shown in **Figure 3-3**, some wells would radiate out in clusters and other wells would be single wells. However, all of the slant wells to be installed would originate from a line about 800 feet back from the shoreline. The wells would extend to the west beneath the sea floor and be screened in the Dune Sand Aquifer and the 180-Foot Equivalent Aquifer.

Figures 4.2-7 and **4.2-8** are coastal profiles developed from the coastal retreat study that show the predicted cross-sectional profile of the coastal bluffs at the CEMEX mining facility through 2060. The methodology and assumptions applied to developing these erosion profiles are discussed above in Section 4.2.3, Approach to Analysis, and in the coastal retreat study (see **Appendices C1 and C2**). The cross-sectional profiles in **Figures 4.2-7** and **4.2-8** show a projected future profile (solid line) and an extremely eroded profile or "lower profile envelope" (dashed line) for the time horizons of 2010, 2040, and 2060. These modeled erosion profile envelopes account for long-term erosion and sea level rise, additional seasonal scour from rip embayments that would predominantly occur in winter, and the additional erosion that would occur from a 100-year storm event.

As originally proposed by CalAm, some slant well clusters were considered in preliminary locations that the coastal retreat study conservatively indicated could either be undermined or exposed, or undergo damage during a large storm event. Consequently, the final design locations for these wells were relocated approximately 400 feet further inland from the originally proposed locations to the locations shown on **Figures 4.2-7**, **4.2-8**, and **3-3**.

Based on the profile, the proposed slant wells would now be located behind the predicted 2060, 100-year lower profile envelope. The coastal retreat study determined that under a conservative predicted erosion rate and considering the additional scour caused by a 100-year storm event in that time horizon, the proposed slant wells would remain buried in the dunes and would not become exposed on the beach until sometime after 2060. The rate of bluff retreat used in the coastal retreat study is conservative in that it may not account for natural accretion of sand on the beach and bluffs that could occur during years of below normal storm activity. As a result, it is possible that the 2060 bluff retreat envelope shown on the profile may not be realized until years after 2060. According to the evaluation criteria for coastal erosion (see Section 4.2.4, Evaluation Criteria, above), the proposed project would cause a significant impact if it accelerated and/or exacerbated natural rates of coastal erosion, scour, or dune retreat resulting in a substantial adverse change in the coastal environment. The proposed slant wells would not be exposed during the useful life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment. Therefore, the proposed location of the proposed slant wells would not represent a potential erosion hazard and would not contribute to a significant impact of the proposed project.

Based on the profile, the well head and insertion point for the existing test slant well is about 300 feet closer to the ocean than the nine proposed subsurface slant wells. The test slant well is anticipated to be within the 2060 future 100-year storm coastal erosion profile and lower profile envelope. As noted above, the modeled coastal retreat rate is conservative and the actual rate of coastal retreat may be less.

The coastal erosion modeling anticipates that the beach could migrate inland to the location of the test slant well by the year 2060. Assuming the pilot program being conducted for the test slant well confirms the CEMEX active mining area to be a viable location for the Seawater Intake System, the test slant well would be converted into a permanent well and incorporated into the seawater intake system with a well head vault. Given the test slant well's forward location on the beach at the estimated 2060 future 100-year storm coastal erosion profile and lower profile envelope, it is possible that the well casings and concrete wellhead vault might become exposed on the beach sometime during the operational life of the project. If exposed, the subsurface slant well could contribute to accelerated and/or exacerbated natural rates of coastal erosion, scour, and dune retreat that could alter the natural coastal environment. In addition, exposure of these structures could adversely affect scenic resources and recreational uses on the beach.

All Other Proposed Facilities

None of the other project components are close enough to the coast to be vulnerable to coastal retreat. Therefore, there would be no impact on coastal erosion. But the brine generated by the desalination plant could scour the seafloor as it is released from the existing outfall diffuser. A comparison of the jet plume velocity with oceanic current measurements and estimates based on ocean circulation models at Monterey Bay, indicate that the currents produced by the jet plumes are on the same order of magnitude and similar to the ambient ocean currents for average values and considerably smaller when compared to the maximum currents estimated and observed in Monterey Bay and at the outfall location. **Table 4.2-8** summarizes the ambient ocean currents at

Monterey Bay at a 30m depth and the estimated current velocities of the jet plume at the moment it touches the sea floor for the worst case scenario discussed Section 4.3, Surface Water Hydrology and Water Quality. This impact would be less than significant.

TABLE 4.2-8
COMPARISON OF JET PLUME AND AMBIENT OCEAN CURRENTS AT MONTEREY

	Mean (ft/s)	Maximum (ft/s)
Ocean Currents – ROMS[a]	0.13	0.76
Ocean Currents – ADCP[b]	0.16	
Wave Induced Currents[c]	0.3	1.87
Jet Plume Centerline[d]		0.4
Jet Plume - 3 ft from centerline[e]		0.02

NOTES:
[a] Ocean currents from ROMS model from January 2011 to March 2012 at the outfall location 30 m depth
[b] ADCP measurements of Tenera (2014) at a depth of 30 m near the mouth of Monterey Cannon
[c] Wave induced currents at 30 m depth based on 5 years of wave measurements from January 2007 to December 2012 (NDBC, 2013, ID buoy 46236).
[d] Visual plume results for scenario P2 at the centerline.
[e] From Phillip Roberts Appendix D1. The entrained velocity of the jet plume decreases rapidly with distance from the jets in inverse proportion to the distance r. So at a distance of 3 ft from the jet centerline, the velocity will fall to about 0.02 ft/s

Consistency with Plans & Policies

In addition to the physical impacts described above, as noted in **Table 4.2-6**, the MPWSP could conflict with applicable land use plans, policies, or ordinances related to coastal erosion that were adopted for the purpose of avoiding or mitigating an environmental effect. Specifically, coastal-erosion-induced exposure of the subsurface slant wells would conflict with California Coastal Act Sections 30235 and 30253; Marina General Plan Policy 4.102.4; Marina Local Coastal Land Use Plan Geotechnical Guidelines; Monterey Harbor Land Use Plan Policies 3.b, 3.c, and 3.d; Del Monte Beach Land Use Plan Policies 3.1, 3.3, 3.4, 3.7, and 3.11; and Monterey County General Plan Policy S-1.6. As discussed in the subsequent paragraphs, **Mitigation Measure 4.2-10 (Slant Well Abandonment Plan)** would require abandonment of the subsurface slant wells before coastal retreat migrates the beach inland to the location of the subsurface slant wells. With these measures implemented, the MPWSP would be brought into conformance with the above-noted policies.

Impact Conclusion

The anticipated future presence of the test slant well on the beach due to coastal retreat would result in a significant impact. **Mitigation Measure 4.2-10 (Slant Well Abandonment Plan)** would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissioning before the beach migrates inland to the location of the subsurface slant wells. As previously discussed, the proposed new slant wells would be located inland of the modeled anticipated inland extent of coastal retreat. However, the rate of coastal retreat may vary due to unforeseen changes in climate change. Therefore, this mitigation measure shall also apply to all of the slant wells.

Mitigation Measures

Mitigation Measure 4.2-10 applies to all slant wells.

Mitigation Measure 4.2-10: Slant Well Abandonment Plan.

CalAm shall monitor and report the rate of coastal retreat and implement the following corrective measure:

1. CalAm shall conduct annual monitoring of the rate of coastal retreat relative to the slant wells at the CEMEX site by measuring the distance from the wellhead to the western dune face. The data shall be reported no later than June 30 each year to the agency issuing the Coastal Development Permit and shall establish an annual erosion rate to be used to estimate the year at which the wells and associated pipelines have 5 years before exposure, assuming that at least one 100-year storm event will have occurred within that exposure timeframe.

2. Beginning at least 5 years prior to the anticipated exposure of the slant wells, CalAm shall implement the planning and permitting necessary to abandon the slant wells in accordance with state well destruction standards. An application to destroy the slant well would be submitted to the Monterey County Environmental Health Bureau, Drinking Water Protection Services Unit, for approval. The abandonment plans shall be prepared in coordination with the property owner.

3. Once an estimated exposure window is established through annual monitoring and a removal date is identified, CalAm shall remove the slant wells from service prior to their exposure. Slant well abandonment activities would be restricted to the snowy plover non-nesting season (October 1 through February 28) to avoid impacts on nesting plovers and other sensitive species. The wellhead vault, electrical panel, buried electrical conduit, and discharge piping would all be excavated and removed, followed by backfilling and compaction of the excavated vault location and trenches. The well abandonment shall be conducted in coordination with the property owner.

4. The slant well casing shall be pressure grouted such that the screened section is sealed, pursuant to the requirements of State of California Well Standards Bulletin 74-81 and 74-90, Part III Section 23. The section of well casing and pipelines at risk of exposure shall be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (ESA, 2014) or as directed by any permit condition.

Secondary Impacts of Mitigation Measure 4.2-10

Slant well abandonment would take approximately 4 weeks and all abandonment activities would occur within the original construction footprint. Re-grading of the CEMEX access road would be necessary at the conclusion of abandonment activities, consistent with property owner requirements.

Potential secondary impacts associated with implementation of **Mitigation Measure 4.2-10 (Slant Well Abandonment Plan)** would be similar to the impacts associated with construction activities such as mobilization, site clearance, grading, excavation, and other earthmoving

activities in the original construction footprint. However, slant well abandonment would not involve drilling or excavation but would involve cutting and removing the well casing.

Slant well abandonment could result in secondary impacts on water quality, including:

- Increased soil erosion and the potential for a hazardous chemical release. See Impact 4.3-1, in Section 4.3.5.1. Mandatory compliance with the NPDES Construction General Permit requirements would require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would prevent significant construction-related impacts on water quality. The Plan would be required to identify standard Best Management Practices to be implemented to control erosion and reduce sedimentation. Site monitoring by the applicant's erosion-control specialist would be undertaken and a follow-up report would be prepared that documents the progress and/or completion of required erosion-control measures both during and after slant well abandonment activities. No synthetic plastic mesh products could be used in any erosion control materials. All plans would be required to show that sedimentation and erosion control measures are installed prior to any other ground disturbing work.

Slant well abandonment could result in potentially significant but mitigable secondary impacts on terrestrial biological resources, including:

- Special-Status Species. See Impact 4.6-1 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, and 4.14-2 would reduce impacts to a less-than-significant level.
- Sensitive natural communities and critical habitat. See Impact 4.6-2 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b would reduce impacts to a less-than-significant level.
- Introduction or spread of invasive non-native species. See Impact 4.6-5 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a and 4.6-1p would reduce impacts to a less-than-significant level.

Slant well abandonment could result in potentially significant but mitigable secondary impacts related to hazards and hazardous materials, including:

- The potential to encounter contaminated soil/and or groundwater. See Impact 4.7-2 in Section 4.7.5.1. Implementation of Mitigation Measures 4.7-2a and 4.7-2b would reduce the impacts to a less-than-significant level.

Slant well abandonment could result in potentially significant but mitigable secondary impacts on air quality, including:

- The potential to violate ambient air quality standards associated with ozone, NO_2, and, PM_{10}. See Table 4.10-5, Estimated Maximum Daily Construction Emissions, which includes the estimated emissions for construction of the slant wells. Slant well abandonment would produce a fraction of the emissions associated with the slant well construction period since abandonment would take 4 weeks rather than 15 or more months, and because there would be no drilling; construction emissions would only occur as a result of grading, excavation, and earth moving activities. Since slant well abandonment is

projected to occur decades after the completion of construction, it would not contribute to total maximum daily project construction emissions, and impacts would be less than significant with mitigation for PM_{10}. Mitigation Measures 4.10-1a through 4.10-1c would apply to slant well abandonment.

Slant well abandonment could result in potentially significant but mitigable secondary impacts on greenhouse gas (GHG) emissions, including:

- The potential to incrementally contribute to climate change from GHG emissions. See Table 4.11-3, Total GHG Emissions from Project Construction, which includes the estimated emissions for construction of the slant wells. Slant well abandonment would produce a fraction of the emissions associated with the slant well construction period since abandonment would take 4 weeks rather than 15 or more months, and because there would be no drilling; construction emissions would only occur as a result of grading, excavation, and earth moving activities. Although slant well abandonment would contribute to overall project (lifetime) emissions, when amortized over the 40-year period described in Impact 4.11-1, these emissions would add only marginally to total annual amortized emissions shown in Table 4.11-5. Impacts would be less than significant with implementation of Mitigation Measure 4.18-1, which would apply to slant well abandonment.

Slant well abandonment could result in potentially significant but mitigable secondary impacts on aesthetic resources, including:

- Nighttime lighting. See Impact 4.14-2 in Section 4.14.6.1. Slant well abandonment could adversely affect nighttime views of this mostly undeveloped stretch of coastline from the viewpoint of Highway 1 motorists and coastal Marina residents. If slant well abandonment involves nighttime lighting, implementation of Mitigation Measure 4.14-2 would reduce impacts to a less-than-significant level.

4.2.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.2-C: Cumulative impacts related to geology, soils, and seismicity. (*Less than Significant with Mitigation*)

Although the Monterey Bay area is located within a seismically active region with a wide range of geologic and soil conditions, these conditions can vary greatly within a short distance. Accordingly, geologic, soils, and seismic impacts tend to be site-specific and depend on the local geology and soil conditions. For these reasons, the geographic scope for potential cumulative geologic and seismic impacts consists of the project component locations and the immediate vicinity. The timeframe during which the MPWSP could contribute to cumulative geology, soils, and seismicity effects includes the construction and operations phases.

Cumulative Impacts during Project Construction

As described in Impact 4.2-1, construction activities have the potential to cause soil erosion and loss of topsoil. Two of the MPWSP's water conveyance pipelines (Castroville and New Desalinated Water Pipelines) and TAMC's Monterey Peninsula Light Rail Project (No. 38 in Table 4.1-2 in Section 4.1) would be constructed adjacent to each other and within the same alignment. The alignments may cross each other at the northern end of the Castroville Pipeline. The Marina Station project (No. 12) would be constructed on either side of Del Monte Boulevard where the new Desalinated Water Pipeline would be constructed. The new Transmission Main would cross through the southwest portion of the area that may be redeveloped as part of the Main Gate Specific Plan (No. 18).

If the projects are constructed at the same time, the erosion effects could be cumulatively significant. However, the state Construction General Permit would require each project to prepare and implement a SWPPP. The SWPPPs would describe BMPs to control runoff and prevent erosion for each project. Through compliance with this requirement, the potential for erosion impacts would be reduced. The Construction General Permit has been developed to address cumulative conditions arising from construction throughout the state, and is intended to maintain cumulative effects of projects subject to this requirement below levels that would be considered significant. For example, two adjacent construction sites would be required to implement BMPs to reduce and control the release of sediment and/or other pollutants in any runoff leaving their respective sites. The runoff water from both sites would be required to achieve the same action levels, measured as a maximum amount of sediment or pollutant allowed per unit volume of runoff water. Thus, even if the runoff waters were to combine after leaving the sites, the sediments and/or pollutants in the combined runoff would still be at concentrations (amount of sediment or pollutants per volume of runoff water) below action levels and would be cumulatively less than significant. Similarly, the impacts of the MPWSP water conveyance pipelines combined with TAMC's Monterey Peninsula Light Rail Project, the Marina Station, the Main Gate Specific Plan, and/or Sanitary Sewer System Rehabilitation Program would not cause a significant cumulative impact related to soil erosion (Impact 4.2-1) and the proposed project's contribution to cumulative impacts on soil erosion would be less than significant.

Two of the MPWSP's water conveyance pipelines (Castroville and New Desalinated Water Pipelines) and TAMC's Monterey Peninsula Light Rail Project (No. 38) would be constructed adjacent to each other and within the same alignment adjacent to active farmland and potentially in areas of sensitive natural communities dependent on the topsoil. If the projects are constructed at the same time, the loss of topsoil impacts could be cumulatively significant, and the proposed project would have a significant contribution to this significant cumulative loss of topsoil. The proposed project's contribution to this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts on Sensitive Communities Environmentally Sensitive Habitat Areas)** and **Measure 4.16-1 (Minimize Disturbance on Farmland**) because these measures require that topsoil be salvaged, stockpiled separately from subsoils, and returned to its appropriate location in the soil profile during backfilling activities. Thus, after mitigation, topsoil would be replaced and there would be no substantial residual contribution to a cumulative impact. It is unknown

whether the TAMC's Monterey Peninsula Light Rail Project would implement similar mitigation measures, although it is likely that existing regulations would require mitigation measures for sensitive natural communities. In any case, with implementation of the mitigation measures for the proposed project, the proposed project's contribution to a significant cumulative impact would be reduced to a level that is less than significant.

Cumulative Impacts during Project Operations

With the exception of the existing Slant Test Well project (No. 47), which is assumed to become a component of the proposed project, and TAMC's Monterey Peninsula Light Rail Project (No. 38), none of the other projects listed in **Table 4.1-2** would have a footprint that overlaps with that of a proposed project component. The Test Slant Well and TAMC's Monterey Peninsula Light Rail Project are not located on known active faults. The Test Slant Well is not located on expansive soils. Because of the localized nature of the anticipated project impacts, the other projects listed in **Table 4.1-2** would not combine with those of the proposed project to cause or contribute to potential cumulative geologic, soil, or seismic impacts associated with fault rupture (Impact 4.2-2) or expansive soils (Impact 4.2-6) (*no impact*).

As described in Impacts 4.2-3, 4.2-4, and 4.2-7, seismically induced groundshaking, liquefaction and lateral spreading, and corrosive soils could cause pipeline leaks or ruptures. State and local building regulations and standards, described in Section 4.2.2, Regulatory Framework, have been established to address and reduce the potential for such impacts to occur. The proposed project and cumulative projects identified in **Table 4.1-2** would be required to comply with applicable provisions of these laws and regulations. Through compliance with these requirements, the potential for impacts such as pipeline leaks or ruptures would be reduced. As explained in Section 4.2.2, the purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction; by design, it is intended to reduce the cumulative risks from buildings and structures. Therefore, based on compliance with these requirements, the incremental impacts of the proposed project combined with impacts of other projects in the area would not cause a significant cumulative impact related to seismically induced groundshaking (Impact 4.2-3), liquefaction and lateral spreading (Impact 4.2-4), or corrosive soils (Impact 4.2-7) and the proposed project's contribution to cumulative effects would be less than significant.

As discussed in Impact 4.2-5, the Main System-Hidden Hills Interconnection Improvements are proposed for an area with high to moderate landslide susceptibility. As indicated on **Figure 4-1**, there are no cumulative projects in the vicinity of the Main System-Hidden Hills Interconnections Improvements site. Moreover, as discussed in Impact 4.2-5, upon completion of construction activities, the pipeline would be buried below the street, the surface would be restored to the approximate pre-construction paved condition (e.g., slope and drainage), and the risk of the proposed project initiating ground movement would be the same as pre-construction conditions. As a result, the proposed project would not cause or contribute to any potential cumulative effect related to landslide (Impact 4.2-5) (*no impact*).

As discussed in Impact 4.2-8, the proposed project would have no impact related to subsidence caused by the ASR injection/extraction wells or the subsurface slant wells. Because the Slant Test Well would become permanent and operated as part of the MPWSP seawater intake system during proposed project operations, its operational extraction of water is considered as part of the impact analysis for the proposed project and is not an additional extraction within the cumulative scenario. Therefore, the proposed project would not cause or contribute to a cumulative subsidence impact (*no impact*).

As discussed in Impact 4.2-9, the proposed project would have no impact related to exposing people or structures to substantial adverse effects related to alternative wastewater disposal systems. Therefore, the use of alternate wastewater disposal would not cause or contribute to a cumulative alternate wastewater disposal impact (*no impact*).

As discussed in Impact 4.2-10, coastal retreat due to sea level rise is anticipated to result in coastal erosion and bluff retreat. Over time, coastal retreat is anticipated to migrate beaches inland, and structures located within the areas of coastal retreat could become located on beaches. The presence of structures on beaches could exacerbate shoreline erosion and scour and/or be subject to damage or failure associated with severe storm events. Several cumulative projects are located at the coast, particularly the sandy beach areas of Monterey Bay: Fort Ord Dunes State Park Campground (No. 46), Monterey Bay Shores Resort (No. 19), The Collection at Monterey Bay Resort (No. 56), City of Seaside 90-inch Bay Avenue Outfall Phase 1 (No. 43), and City of Sand City Coastal Desalination Plant (No. 6). The exposure of structures on the beach from one or more of these sites could result in increased scour and erosion that could be cumulatively significant. Because over the project lifetime, the subsurface slant well casings, concrete well head vaults, electrical panels, and certain sections of conveyance pipelines could become located on the beach and therefore could exacerbate shoreline erosion and scour, the proposed project would have a significant contribution to this significant cumulative impact. The proposed project's contribution would be reduced to a less-than-significant level through implementation of **Mitigation Measure 4.2-10 (Slant Well Abandonment Plan)**, which would require CalAm to monitor coastal retreat rates and initiate well decommissioning before the subsurface slant wells become located on the active beach. Thus, after mitigation, no project structures would become located on the active beach, and the residual contribution to a cumulative impact related to coastal erosion would be negligible. One project, the CEMEX Removal Plan and Reclamation Plan (No. 63), would end sand mining at the CEMEX site, remove structures from the beach, and implement reclamation practices that may slow coastal retreat at this location compared to rates of retreat with sand mining, though to an unknown extent. It is unknown whether the other listed cumulative projects also have plans to remove structures from the beach prior to exposure or install protective structures in the event that coastal retreat reaches their structures. In any case, with implementation of the mitigation measure, the proposed project's contribution to a significant cumulative impact related to coastal erosion would be reduced to a level that is less than significant.

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4.3 Surface Water Hydrology and Water Quality

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This section analyzes the potential for the Monterey Peninsula Water Supply Project (MPWSP or proposed project) which includes 10 slant wells at CEMEX, to adversely affect surface water hydrology and water quality in inland freshwater bodies and in Monterey Bay National Marine Sanctuary (MBNMS) ocean waters[1] in the southern portion of Monterey Bay. Impacts on groundwater resources are evaluated in Section 4.4, Groundwater Resources. The secondary effects of potential project-related changes in ocean water quality on marine biological resources are evaluated in Section 4.5, Marine Biological Resources. Impacts related to coastal erosion are evaluated in Section 4.2, Geology, Soils, and Seismicity.

Comments received on the April 2015 Draft EIR expressed concerns over the potential for hypoxia[2] to occur near the seabed as a result of proposed MPWSP operational discharges. Specifically, there was concern that high salinity discharges from the MRWPCA outfall would restrict oxygen supply near the seabed and result in stress or mortality to benthic organisms and other marine resources. Additionally, comments raised concerns regarding the adequacy of model analyses related to salinity and water quality; the travel path of the operational discharge plume; salinity levels within and beyond the area of initial dilution following discharge; and the potential for a dense operational discharge plume to travel along the sea floor and result in impacts on marine resources as a result of elevated salinity and associated toxic effects to habitat and wildlife. These issues are addressed in Section 4.3.5.2 under Impact 4.3-4 and Impact 4.3-5. Comments related to impacts on marine biological resources resulting from operational discharges are addressed in Section 4.5, Marine Biological Resources and are based, in part, on the water quality analyses presented in Impacts 4.3-4 and 4.3-5. Additional sampling and modeling were conducted to address many of these concerns and are addressed in Section 4.3.5.2.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Clarifications and revisions to Setting/Affected Environment and Regulatory Setting sections.*
- *Additional dilution model analysis to assess dilution and water quality impacts for a wider range of potential operational discharge scenarios.*
- *Incorporation of additional water quality data into the assessment of potential water quality impacts from operational discharges.*
- *Revisions relating to compliance with Ocean Plan water quality objectives for two constituents for certain operational discharge scenarios based on revised model analysis and additional water quality data.*
- *Removal of biologically active filtration from Mitigation Measure 4.3-5.*
- *Addition of end gate modification for the existing diffuser outfall structure in Mitigation Measure 4.3-5.*

1 "Ocean water" is defined as water located above the seafloor.
2 Hypoxia, or oxygen depletion, is an environmental phenomenon where the concentration of dissolved oxygen in the water column decreases to a level that can no longer support living aquatic organisms. The impacts of hypoxia are often described as creating a so-called "dead zone" in the marine environment.

- *Addition of an assessment of the efficacy of end gate modification to increase dilution for operational discharges.*
- *Addition of an assessment of secondary impacts from implementing end gate modification under Mitigation Measure 4.3-5.*
- *Additional model assessment to determine the feasibility of retrofitting the existing outfall diffuser with incline jets to achieve compliance with all Ocean Plan water quality objectives.*
- *Revision of Mitigation Measure 4.3-5 such that retrofit of the diffuser is elevated to the primary mitigation strategy for mitigating water quality impacts based on model assessment.*

4.3.1 Setting/Affected Environment

The study area for evaluation of surface water hydrology and water quality impacts is the Salinas River watershed, Carmel River watershed, and the southern portion of Monterey Bay south of Elkhorn Slough within MBNMS.

4.3.1.1 Climate and Topography

The climate in the study area is moderate throughout the year with warm, dry summers and cool, moist winters. The average temperature is approximately 60 degrees Fahrenheit (°F) (Monterey County, 2008). Rainfall occurs primarily between November and April. Average annual rainfall in the county is approximately 18 inches.

The study area lies within the southern portion of the Coast Ranges province. The topography in the study area is dominated by a rugged coastline and the Diablo, Gabilan, and Santa Lucia mountain ranges with peaks of up to 5,844 feet above mean sea level (msl). Elevations in the project area range from approximately 10 feet above msl in the CEMEX active mining area to roughly 300 feet above msl along General Jim Moore Boulevard in Seaside. The topography of the project area results in part from the gently to moderately rolling sand dunes that are present along the coastal areas in the north to the city of Monterey in the south. Active, wind-blown dunes generally extend less than a 0.5-mile inland, and older, more stabilized dunes extend up to 4 miles inland.

4.3.1.2 Regional Surface Water Hydrology

The project area is located in the Salinas River and Carmel River watersheds (see **Figure 4.3-1**), which are discussed below. The headwaters of the Salinas and Carmel Rivers, the primary watercourses in the region, originate in the Santa Lucia and Gabilan Mountains (Monterey County, 2008). In general, the overall drainage pattern in the county is from southeast to northwest. The Salinas River drains into Monterey Bay and the Carmel River drains into Carmel Bay both of which are within MBNMS. A third major watershed in the region, the Pajaro River watershed, lies north of the project area and includes the Elkhorn Slough subwatershed. The Pajaro River enters Monterey Bay at the northern tip of Monterey County. The Pajaro River Watershed lies north of and outside of the project area and is not discussed further.

Salinas River Watershed

With the exception of the Main System-Hidden Hills Interconnection Improvements and the Carmel Valley Pump Station, all of the proposed project facilities would be located in the Salinas River watershed. The Salinas River drains approximately 3,950 square miles and has the largest drainage area in Monterey County. The Salinas River watershed is bounded by the Santa Lucia Mountains to the west and the Gabilan Mountains to the east (Monterey County, 2008). Historically, the Salinas River joined with Elkhorn Slough in Moss Landing prior to discharging into Monterey Bay; this river segment is now referred to as the Old Salinas River. Today, the Salinas River drains directly into Monterey Bay approximately 4 miles south of Moss Landing (CCoWS, 2006). In the project area, within the Salinas River watershed, the Canyon del Rey subwatershed extends east of Monterey and Seaside (see **Figure 4.3-1**). The Canyon del Rey subwatershed covers approximately 13.8 square miles and is located along the Seaside/Del Rey Oaks/Highway 68 corridor (Monterey County, 2010b). Canyon Del Rey Creek discharges seasonally to Monterey Bay via Laguna del Rey.

Average annual flows to the ocean from the Salinas River are around 282,000 acre-feet per year, most of which occurs from November through March. This period corresponds to the months of peak seasonal rainfall and coincides with a seasonal drop in irrigation in the valley (Monterey County, 2008). The Salinas River hydrology during the dry season is largely determined by water releases from the Nacimiento and San Antonio reservoirs. During spring and summer, operation of the two reservoirs regulates flow to minimize ocean outflow and maximize groundwater recharge through the Salinas River bed (Kozlowski et al., 2004). Water from the reservoirs[3] is used for groundwater recharge and managed so that the flows reach the lower Salinas River and percolate without being lost to the ocean (Kozlowski et al., 2004).

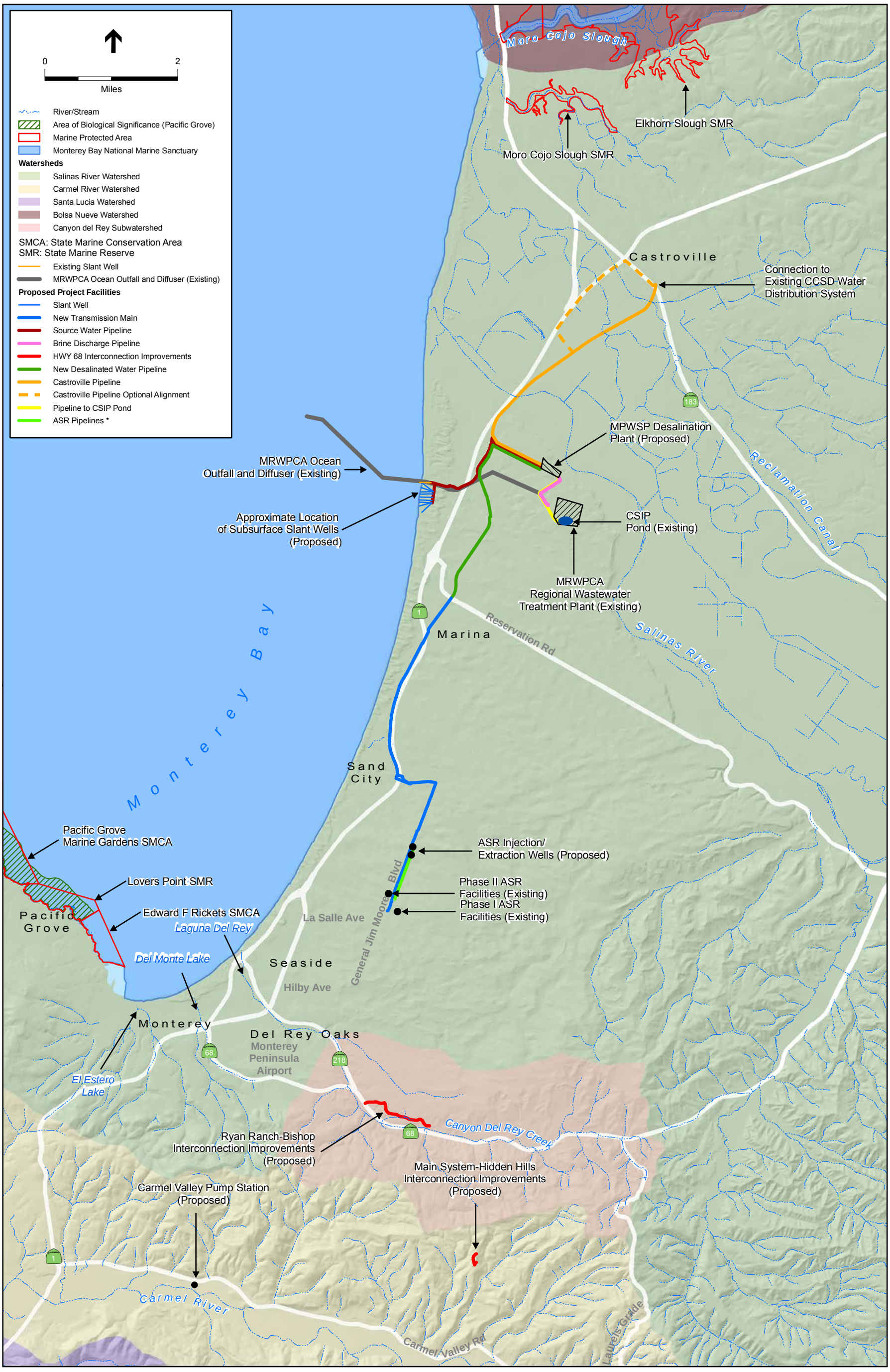
Carmel River Watershed

The Carmel River watershed covers an area of 255 square miles. From its headwaters in the Santa Lucia Mountains, the Carmel River flows for 36 miles, draining into Carmel Bay just south of the city of Carmel-by-the-Sea (Monterey County, 2010b). The larger tributaries of the Carmel River include Garzas Creek, San Clemente Creek, Tularcitos Creek, Pine Creek, Danish Creek, Cachagua Creek, and Miller Fork. The Main System-Hidden Hills Interconnection Improvements and the Carmel Valley Pump Station would lie within the Carmel River watershed.

Monterey Bay

Monterey Bay is a bay of the Pacific Ocean on California's Central Coast within MBNMS. The bay extends between the city of Santa Cruz and the Monterey Peninsula. MBNMS was designated in 1992 as a federally protected marine area off of California's Central Coast. It stretches from Marin to Cambria, encompasses a shoreline length of 276 miles and 4,601 square nautical miles of ocean, and extends an average distance of 30 miles from shore. The shoreline of Monterey Bay is composed primarily of less resistant sand dune and sedimentary deposits that form the ancient sand dune terraces and provide the opportunity for farmland around the communities of Watsonville,

[3] This does not include the modifications to the Nacimiento Dam spillway and operation of the rubber dam associated with the Salinas Valley Water Project.



SOURCE: DWR, 2004; SWRCB, 2005; NOAA, 2012

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

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Figure 4.3-1

Surface Water Resources in the Project Area

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Castroville, Marina, Sand City, and Seaside. The primary freshwater inputs to Monterey Bay are through the San Lorenzo, Pajaro, Salinas and Carmel Rivers but other water bodies such as the Moro Cojo Slough feed into the Monterey Bay (see **Figure 4.3-1**). Beneath Monterey Bay is the Monterey Submarine Canyon, one of the deepest submarine canyons on the west coast of the United States (MBARI, 2016). The canyon head lies just offshore of Moss Landing. From there, the main channel meanders 470 kilometers (292 miles) seaward and is approximately 12 kilometers at its widest point, with a maximum rim to floor relief of 1,700 meters (5,577 feet) (MBNMS, 2016a). The Monterey Canyon system includes two additional canyon heads, Soquel Canyon and Carmel Canyon, which flank Monterey Canyon to the north and south, respectively.

The oceanographic features primarily affecting waters of Monterey Bay are seasonal upwelling and the California Current System, which consists of the California Current, the California Undercurrent, and the Davidson Current. The California Current is a large scale upper ocean current that transports cold, subarctic water with lower salinity from the North Pacific south along the North American coast where it mixes with warm, saltier equatorial water (ESA, 2015). Beneath this near-surface current and relatively close inshore (within 100 kilometers or 62 miles), is the California Undercurrent that transports warm subtropical water northward. During winter months the California Undercurrent becomes the inshore countercurrent or Davidson current (Flow Science Inc., 2014). Seasonal upwelling and the California Current System and its influence on Monterey Bay water quality is discussed further in Section 4.3.1.3 (below).

4.3.1.3 Surface Water Quality

The quality of surface water is primarily a function of land uses in the project area. Pollutants and sediments are transported in watersheds by stormwater runoff that reaches streams, rivers, storm drains, and reservoirs. Local land uses influence the quality of the surface water through point source discharges (i.e., discrete discharge from a wastewater treatment plant) and nonpoint source discharges (e.g., storm runoff). Some of the most prominent water quality problems in the project area are erosion and sedimentation, pollutants in urban runoff, nitrate contamination, and inorganic constituents (Monterey County, 2010b). Surface water quality for the two primary watersheds in the project area and Monterey Bay is described below.

Salinas River and Carmel River Watersheds

Urban runoff has the potential to directly affect water quality in the Salinas River and in Monterey Bay (Monterey County, 2008). As further discussed in Section 4.3.2.1, below, the lower Salinas River water quality is impaired by pesticides and nutrients. Relatively less urbanization has occurred in the Carmel River watershed as compared to the Salinas River watershed. However, because most of the urban uses are close to the Carmel River, they present the potential for direct impacts on surface water quality. According to a Carmel River Watershed Conservancy[4] monitoring report (2004), excess sediment in the Carmel River occurs due to various land uses and road designs.

[4] The Carmel River Watershed Conservancy monitors the health of the Carmel River watershed resources including creeks, streams, and wildlife habitat.

Monterey Bay

This section characterizes baseline water quality conditions in Monterey Bay/MBNMS with a focus on salinity and temperature (which can affect ocean water density and receiving water mixing dynamics) as well as water quality constituents that are regulated by the State Water Resources Control Board (SWRCB) and the Central Coast Regional Water Quality Control Board (RWQCB) (see Section 4.3.2, Regulatory Framework, below, for additional information regarding water quality regulations). Ocean climate, a physical driver that affects water quality in Monterey Bay, is also described here. When turbulence associated with ocean currents or surface waves exceed the threshold required for initiating motion of seabed materials, the resuspension of bottom sediments, which occurs naturally, can affect water quality by producing short-term and localized increases in suspended sediment concentrations and turbidity levels in near bottom waters. Suspended sediments also occur in surface waters following storm events that result in discharges from coastal rivers. Ocean currents may transport these river-derived sediments substantial distances alongshore or offshore from the origin. For additional details related to sediment dynamics and physical processes in Monterey Bay, see Section 4.5, Marine Biological Resources.

Salinity and Temperature

The seawater in Monterey Bay is a mixture of water masses from different parts of the Pacific Ocean with warmer, saltier water from the equatorial zone and colder, fresher water from the arctic regions. Near-shore surface temperatures vary from 46.4°F (8°C) during winter and early spring to 62.6°F (17°C) during fall. Near-shore surface salinities vary from 33.2 practical salinity units (psu) to 34.0 psu[5] when upwelling[6] is strong. Streams and rivers can locally affect salinity, but even during flood conditions, when freshwater inputs to Monterey Bay peak, the salinity of Monterey Bay surface waters does not fall below 31 psu (MBNMS, 2013b). Salinity tolerances of organisms present in Monterey Bay are discussed in detail in Section 4.5, Marine Biological Resources. In general, as discussed in detail in Section 4.5.5.2, the species present in the study area are tolerant of differing ranges of salinities depending on the organism and the life-stage in question. As an example, most cephalopods (e.g. squid) have an ideal range of salinity of 32 to 38 ppt, and are tolerant of salinities at levels outside this range. For general context, marine organisms in the study area have been demonstrated to tolerate salinities up to 36 ppt with no adverse effects on survival, growth, and behavior (see Table 4.5-9).

Bograd and Lynn (2003) compared nearshore salinity and temperatures in Monterey Bay during two periods: 1950-1976 and 1977-1999 and found very little variation. The difference in nearshore salinities between the periods was approximately 0.2 parts per thousand (ppt) or psu[7] and the difference in nearshore temperatures was approximately 1.4 °F. As such, the reported seasonal salinity and temperature is provided here as representative of baseline conditions. Additional temperature and salinity data is presented below as part of the characterization of

5 Unit used to measure salinity in terms of the concentration of dissolved salts in water. Equivalent to parts per thousand (ppt).
6 Upwelling is the process by which the warmer water at the ocean surface is pushed away by wind and replaced by colder, denser water that rises up from the subsurface.
7 The unit ppt is equivalent to psu.

ocean climate, seasonal ocean water density and physical processes (such as waves and currents) that influence water quality.

Dissolved Oxygen

Dissolved Oxygen (DO) is typically used as a general index for the health of receiving waters (such as in the *Water Quality Control Plan for Ocean Waters of California* or Ocean Plan, discussed below in Section 4.3.2.2). Adequate DO is vital for aquatic life and higher concentrations are generally considered to be desirable. Dissolved oxygen content in water is, in part, a function of water temperature and salinity (discussed above). The ability of oxygen to dissolve in water decreases as the temperature and salinity of water increases. As the temperature and/or salinity of water increases, water loses the ability to hold dissolved oxygen and the concentration goes down. Salinity also has properties that can facilitate the creation of hypoxic[8] zones. Because salt water is more dense than fresh water, under certain conditions (typically observed in estuaries and coastal lagoons), a less dense layer of fresh or low salinity water can form on top of a denser layer of high salinity water on the bottom. Such a scenario can prevent adequate mixing of the water column and prevent oxygenated water from getting to the lower depths, resulting in the heavier, saltier layer at the bottom to become oxygen-depleted. However, DO varies according to many other factors, including photosynthesis and biological and chemical oxygen demand associated with decomposition of organic material. Monterey Bay is a dynamic environment that includes variable concentrations of DO. Ambient DO levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 milligrams per liter (mg/L) to 8.00 mg/L (KLI, 1998; KLI, 1999); typically, DO in the range of 5 to 8 mg/L is considered protective of fish and marine biota depending on the species and life-stage.

Other Constituents

The water quality of Monterey Bay is a function, in part, of different constituents present in the water, as well as the seasonal ocean climate (discussed below) in the Bay that affects the concentration of the constituents present. The waters of Monterey Bay contain numerous legacy pesticides[9] such as organochlorine pesticides, Dieldrin and dichloro-diphenyl-trichloroethane (DDT), as well as chemical products in current use such as organophosphate pesticides, polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs).[10] The largest source of contaminants is agricultural runoff into the Pajaro and Salinas Rivers. Seasonal data collected by the Central Coast Long-term Environmental Assessment Network[11] (CCLEAN) between 2001 and 2013 indicate numerous instances where water quality objectives and human health alert levels in Monterey Bay were exceeded due to the presence of contaminants (CCLEAN, 2011 and

8 Hypoxia occurs when the amount of dissolved oxygen in water becomes too low to support most aquatic life (typically below 2 mg/l).

9 Legacy pesticides are persistent pesticides that have been banned from use but are still commonly found in the environment.

10 PCBs are also legacy contaminants.

11 CCLEAN is a long-term water quality monitoring program designed to help municipal agencies and resource managers protect the quality of the nearshore marine waters in the Monterey Bay. CCLEAN is a collaborative program between the cities of Watsonville and Santa Cruz, MRWPCA, Carmel Area Wastewater District, Dynegy Moss Landing Power Plant, and Central Coast Regional Water Quality Control Board (CCLEAN, 2013).

2014). Nearshore waters of Monterey Bay have failed to meet the Ocean Plan water quality objective for the protection of human health (i.e., concentrations are higher than numeric water quality objectives) for PCBs, Dieldrin, chlordanes, and DDTs. PCBs in the northern portion of Monterey Bay have increased significantly since 2006 and annual average concentrations across all samples have increased exponentially (CCLEAN, 2014). Annual data reported indicate that waters of Monterey Bay exceeded the Ocean Plan 30-day average PCB water quality objective of 1.9×10^{-5} micrograms per liter (µg/L)[12] for most of the years between 2004 and 2013. Additional details related to water quality objectives and Monterey Bay water quality is provided in Section 4.3.2.2, below, under the subsection California Ocean Plan Water Quality Objectives.

Monterey Bay also receives point source discharges from pipelines and other structures. These permitted discharges are subject to prohibitions and water quality requirements established by the Central Coast RWQCB such as effluent limitations, periodic monitoring, annual reporting, and other requirements designed to protect the overall water quality of Monterey Bay. (see Section 4.3.2, Regulatory Framework, below, for additional information regarding water quality regulations pertaining to MBNMS). In the project area, some of these permitted discharges include stormwater discharges from the cities of Sand City, Seaside, Monterey, Del Rey Oaks, and Pacific Grove, and unincorporated portions of Monterey County, and treated wastewater from the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant located on Charles Benson Road in Marina. Another permitted point discharge in Monterey Bay is located 7 miles north of the project area in Moss Landing associated with a natural gas power plant operated by Dynegy, whose cooling water is discharged.[13]

Monterey Bay Ocean Climate

Ocean climate refers to oceanographic conditions, including temperature, salinity, current, and wave patterns prevailing over a period of time. An understanding of the ocean climate in Monterey Bay is important because the climatic conditions within the Bay influences the seasonal density of Bay receiving waters. The seasonal density of receiving waters is an important consideration related to the proposed operational discharges of the MPWSP and the mixing and dilution mechanics associated with such discharges that can influence receiving water quality. There are three known ocean climate seasons in Monterey Bay (Roberts, 2016):

- Upwelling Period: a wind-induced upwelling period that is characterized by strong currents, high salinities and cooler surface waters. Typically occurs March to September when steady northwesterly/westerly winds cause offshore transport of surface waters, resulting in deep, colder, nutrient-rich water to rise to the surface (upwelling).
- Oceanic or California Current Period: characterized by average currents, low salinity and warmer water. Typically occurs September to November when winds relax and upwelling ceases, allowing previously upwelled water to sink and be replaced by warm oceanic waters from offshore.

[12] This objective for protection of human health is listed in the Ocean Plan and is discussed further in Section 4.3.2.2, State Regulatory Framework, below.

[13] Based on *Waste Discharge Requirements Order No. 00-041 NPDES No. CA0006254* issued to Duke Energy North America Moss Landing Power Plant (RWQCB, 2000).

- Davidson Current Period (also called the "low thermal gradient phase"): characterized by slow currents and freshwater inputs (lower salinity). Typically occurs November to March when winter storm conditions prevail, causing downwelling in Monterey Bay and lower currents in the nearshore area.

These three individual seasons overlap extensively and do not recur with exact consistency. For more information on ocean climate seasons as they relate to water quality in Monterey Bay, see **Appendix D1** (Roberts, 2017) **and D2** (Flow Science Inc., 2014). Besides the ocean climate seasons, the physical mixing of the ocean water is influenced by the ocean water density, physical processes such as waves and currents, and physical features on the ocean floor. Baseline conditions characterizing each of these factors are described below.

As described above, the salinity and temperature of the ambient receiving ocean water determines its density, which in turn affects the mixing and dilution dynamics of discharges or surface waters (such as rivers, streams and stormwater) flowing into the ocean. Monthly measurements of conductivity-temperature-depth (CTD) were collected at four locations proximate to the MRWPCA outfall (see Figure 1 in **Appendix D1**) between February 2014 and December 2015 to document baseline ocean conditions. The profiles were averaged by ocean climate season (described above) to obtain representative water column densities, as well as salinity and temperature conditions near the seabed where the existing MRWPCA diffuser is located (**Table 4.3-1**).

TABLE 4.3-1
SEASONAL AVERAGE TEMPERATURE, SALINITY, AND DENSITY PROPERTIES AT MRWPCA OUTFALL DIFFUSER

Ocean Season	Temperature (°C)	Salinity (ppt)	Density (kg/m3)
Davidson	14.46	33.34	1024.8
Upwelling	11.48	33.89	1025.8
Oceanic	13.68	33.57	1025.1

SOURCE: Roberts, 2016.

The processes influencing the physical mixing of Bay receiving waters with inputs from other sources is enhanced by turbulence induced by currents and waves. Current velocities can be different throughout the water column. Tidally-driven currents can cause large pulses of water movement along the Monterey Submarine Canyon. Wave action, particularly during stormy periods, can vertically stir the water. The ocean water density and the physical processes (waves and currents) vary as a result of seasonal weather cycles and can also be severely modified by global ocean climate events, such as the Pacific Decadal Oscillation (SWRCB, 2012a).

Physical features on the ocean floor, such as regional bathymetry[14] and structures such as pipelines (which can influence localized mixing and dilution) also influence mixing and dilution

[14] National Oceanic and Atmospheric Administration (2014) refers to bathymetry as the ocean's depth relative to sea level, although it has come to mean "submarine topography," or the depths and shapes of underwater terrain.

dynamics. The bathymetry in the vicinity of the MRWPCA outfall structure is relatively flat with an average slope of 1 percent to the west of the diffuser for 5 miles. The rim of Monterey Submarine Canyon is less than 4 miles to the northwest of the project area.

4.3.1.4 Flooding

Flooding can occur when excessive precipitation generates stormwater runoff that exceeds the carrying capacity of the drainage system. Flooding can also occur due to dam or levee failure, tsunamis, especially high tides, coastal storms, and/or sea level rise.

Flood Hazard Zones

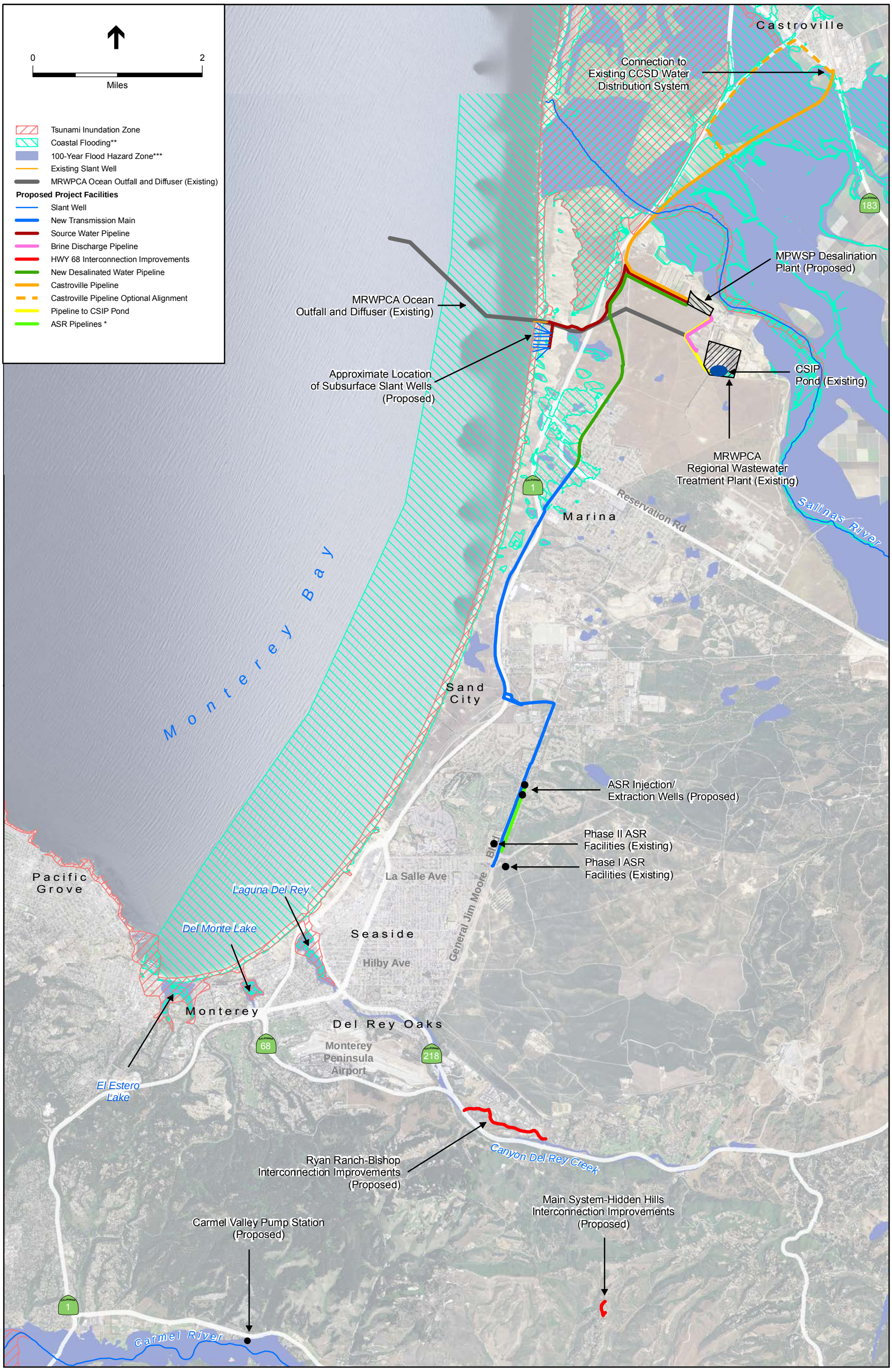
The Federal Emergency Management Agency (FEMA) delineates regional flooding hazard areas in Monterey County as part of the National Flood Insurance Program. Official Flood Insurance Rate Maps (FIRMs) for the project area indicate areas that have a 1 percent chance of flooding in any given year (100-year flood hazard zone). The 100-year flood hazard zones along the coast experience flooding coincident with high tide events typically combined with a wintertime storm surge. Significant flood events occurred in Monterey County in January 1995, March 1995, and February 1998 (MCWRA, 2013). During these events, major water bodies, including the Salinas River and Carmel River, experienced flooding and Monterey County was declared a federal disaster area.

The FEMA 100-year flood hazard zone in the project vicinity is shown in **Figure 4.3-2**. Portions of the proposed Source Water Pipeline and new Transmission Main in Marina; most of the Castroville Pipeline and Castroville Pipeline Optional Alignment 1 located north of the Salinas River, and the Carmel Valley Pump Station in unincorporated Monterey County are sited within a FEMA 100-year flood hazard zone. None of the other proposed facilities would be located within designated flood hazard areas.

Dam or Levee Failures

Dams located within the project vicinity include Los Padres Dam on the Carmel River; and Nacimiento and San Antonio Dams on the Salinas River. Historically, CalAm diverted surface water supplies from the Carmel River at Los Padres and San Clemente Dams to serve CalAm's Monterey District service area (Monterey District). However, the storage capacity of both dams was reduced substantially by the gradual accumulation of sediment over the years of operation (CCoWS, 2009; DWR, 2012). Los Padres Dam, built in response to an increase in sediment accumulation behind the downstream San Clemente Dam, has been reduced to 60 percent of original capacity. Removal of San Clemente Dam was completed in summer of 2015 (CalAm, 2016). Nacimiento and San Antonio Dams are owned and operated by the Monterey County Water Resources Agency (MCWRA).

The three remaining dams—Los Padres, Nacimiento, and San Antonio Dams—are regulated by the design and operational requirements established by the California Division of Safety of Dams (DSOD) and are administered by Monterey County. California Water Code Section 6000, et seq.



SOURCE: DWR, 2004; SWRCB, 2005; NOAA, 2012

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

**Represents the extent of a 100-year coastal flood under current projections (year 2010) from Monterey Bay SLR study (ESA PWA 2014).

***Represents the 100-year FEMA floodplain.

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Figure 4.3-2
Flood Hazards in the Project Area

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and 23 California Code of Regulations (CCR) 301, et seq. establish the authority and responsibility of the DSOD, including periodic safety inspections of dams, completion of studies that predict the flood zones created by sudden dam failure, and development of emergency response plans in the advent of pending dam failure, including a program for emergency warning and evacuation prepared by the Monterey County Office of Emergency Services (Monterey County, 2007). The DSOD requires the determination of a dam inundation area, which is an area downstream of a dam that would be inundated or otherwise affected by the failure of the dam and accompanying large flood flows (California Office of Emergency Services, 2011). Based on the County-wide dam inundation map, the Castroville Pipeline and Castroville Pipeline Optional Alignment 1 would be located within the dam inundation zone for Nacimiento and San Antonio Dams (Monterey County, 2010b).

In Monterey County, levees along portions of the Salinas and Carmel Rivers were constructed as part of U.S. Army Corps of Engineers or U.S. Department of Agriculture flood control projects, or by local flood control programs administered by the MCWRA and other stakeholders. All of these levees and floodwalls are required to undergo periodic inspections for safety and performance as part of routine maintenance plans (Monterey County, 2007).

Tsunami Hazards

A tsunami is a large wave or series of waves generated by an earthquake, volcanic eruption, or coastal landslide. Tsunami damage is typically confined to low-lying coastal areas. The United States Geologic Survey (USGS) evaluated the potential community exposure to tsunami hazards along the California coastline, including Monterey Bay (Wood et. al., 2013). The report estimated the maximum onshore wave run-up[15] from a tsunami would reach an elevation of 18.37 feet[16] in the city of Monterey. This degree of run-up would inundate a large portion of the city. Seaside and the unincorporated areas near the mouth of the Salinas River could also be subject to large areas of inundation (see **Figure 4.3-2**). Following the tsunami in Japan in 2011, the maximum wave height at Monterey Harbor was recorded at 2.4 feet (Monterey County, 2014).

The Monterey County Office of Emergency Services (OES) is responsible for developing and maintaining a state of readiness in preparation of any emergency, including tsunamis that could adversely affect any part of Monterey County (OES, 2010). According to the *Tsunami Incident Response Plan* prepared by the Monterey County OES and incorporated cities in the county, a locally generated tsunami may occur if a large enough earthquake occurs in or near Monterey Bay (OES, 2007). Such an earthquake could produce a tsunami that reaches shore in a matter of minutes. The plan states that within Monterey County, there is a low likelihood of experiencing a tsunami. The most likely tsunami, though still relatively unlikely compared to other hazards, is from a distant event, where there would be more than one hour to respond to a tsunami warning. The Tsunami Incident Response Plan lists individual response areas along the Monterey County

15 *Wave run-up* refers to the maximum vertical extent of a wave up rush on a beach or a structure.
16 The maximum onshore run-up elevation presented in the 2013 USGS report (Wood et. al., 2013) is based on modeled scenarios (for distant sources) and past events (for local sources).

and outlines the response agencies, evacuation routes, routes to avoid, safe areas, and special considerations for neighboring areas.

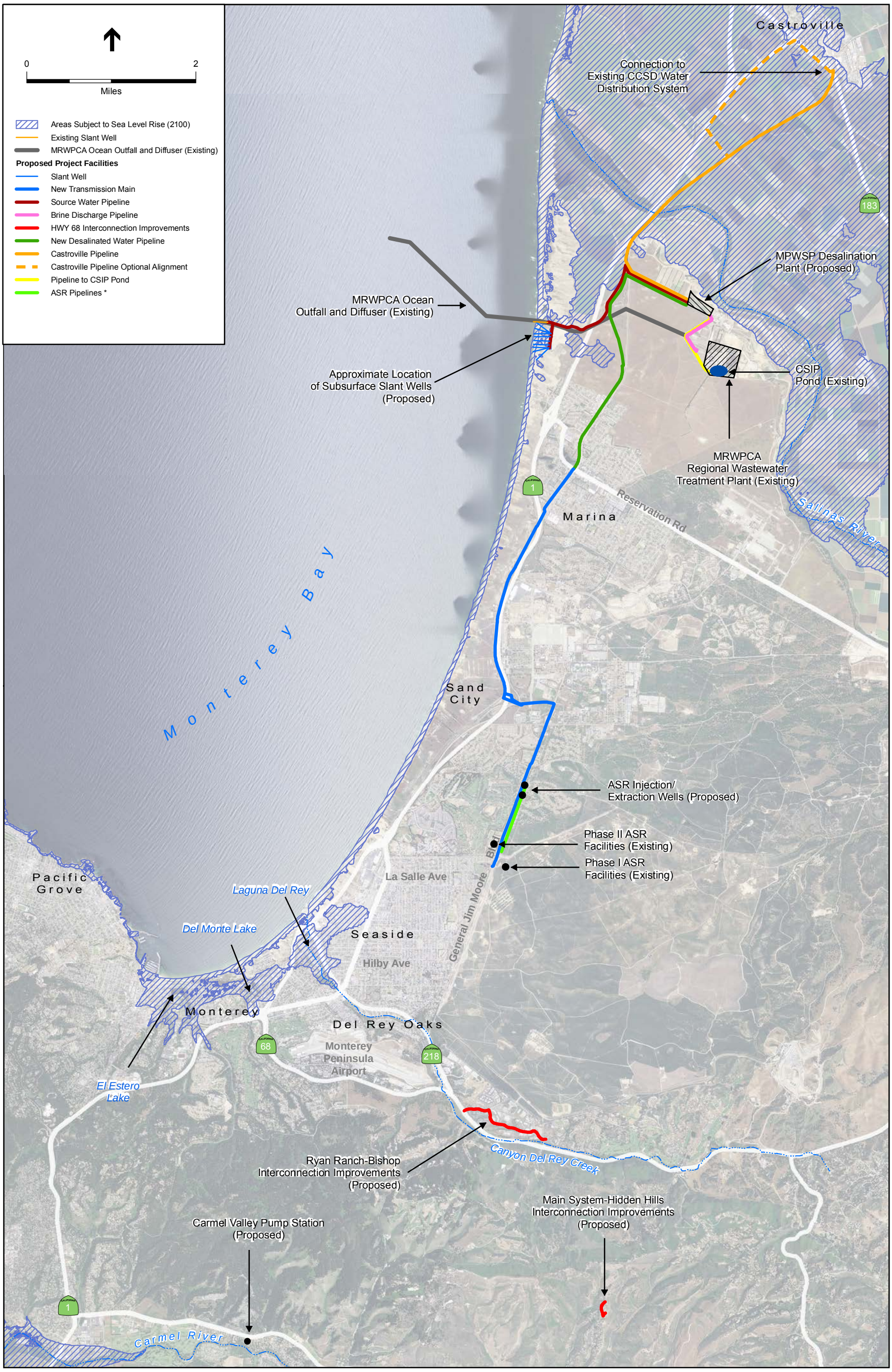
Coastal Flooding and Sea Level Rise

Coastal flooding can occur when there is a short- or long-duration increase in sea level during a period of extreme precipitation and runoff. Wave run-up along the coastal areas of Monterey County also contributes to coastal flooding. Wave run-up may cause coastal erosion by directly impacting coastal bluffs, dislodging material, and redistributing it to the foreshore and nearshore. Storms in the Pacific Ocean in the months of November through February, in conjunction with high tides and strong winds, can cause significant wave run-up.

Coastal flooding can be exacerbated by the physical characteristics of the continental shelf and shoreline. As part of the California Coastal Analysis and Mapping Project, FEMA is performing the Open Pacific Coast Study, a detailed coastal engineering analysis and mapping of the Pacific Coast of California. The results of the study will be used to remap the coastal flood risk and wave hazards for the California coastline, including Monterey County (FEMA, 2016).

Sea level rise at a global level is a phenomenon generally attributed to global climate change. Climate change is expected to result in more extreme weather events, both heavier precipitation events that can lead to flooding as well as more extended drought periods. According to a report by the Intergovernmental Panel on Climate Change (IPCC), the global average sea level rose at an average rate of 1.8 millimeters (0.07 inch) per year from 1961 to 2003 and at an average rate of about 3.1 millimeters (0.12 inch) per year from 1993 to 2003 (IPCC, 2007). The more recent Assessment Report predicts mean sea level could, depending on future emissions, rise by up to 7 meters (23 feet) over a millennium or more, assuming near-complete loss of the Greenland ice sheet (IPCC, 2014, p. 12).

The National Research Council estimates sea level in California to rise by 4.6 to 24 inches by 2050 and 17 to 66 inches by 2100 (NRC, 2012). The Pacific Institute report (2009) predicts that sea level rise along the California coast could increase by 55 inches by 2100. This projection may be an underestimation because the climate models used did not account for ice-melt from Antarctica and Greenland (Pacific Institute, 2009). Based on monthly mean sea level data from 1973 to 2006, the mean sea level in Monterey Bay is increasing by approximately 1.35 millimeters (0.053 inches) per year (NOAA, 2013a). Sea level rise will likely increase the rate of coastal erosion and related coastal hazards (see Section 4.2, Geology, Soils, and Seismicity for more information regarding coastal erosion and coastal hazards). As shown in **Figure 4.3-3**, within the project area, portions of the subsurface slant wells and Source Water Pipeline in Marina and the Castroville Pipeline in unincorporated Monterey County would lie in areas that would be subject to coastal flooding and sea level rise.



SOURCE: Pacific Institute, 2009

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

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Figure 4.3-3
Areas Subject to Sea Level Rise in the Project Area

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4.3.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to surface water hydrology and water quality. A brief summary of each is provided, along with a finding regarding the project's consistency with those regulatory requirements. The consistency analysis is based on the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to the specific impact discussion in Section 4.3.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.3.5 identifies feasible mitigation that would resolve or minimize the potential inconsistency.

4.3.2.1 Federal Regulations

Clean Water Act

Under the Clean Water Act (CWA) of 1977, the United States Environmental Protection Agency (USEPA) seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters by implementing water quality regulations. The National Pollutant Discharge Elimination System (NPDES) permit program under section 402 of the CWA controls water pollution by regulating sources that discharge pollutants into waters of the United States. The USEPA has delegated authority of issuing NPDES permits in California to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The Central Coast RWQCB regulates water quality in the project area (further discussion of the NPDES program and permits in California relevant to the proposed project is provided in Section 4.3.2.2, below). Additionally, determinations of consistency of the proposed MPWSP with specific applicable SWRCB regulations, plans and policies are provided in Section 4.3.2.2, below.

Section 303(d) List of Impaired Water Bodies and Total Maximum Daily Loads

Section 303(d) of the CWA requires that each State identify water bodies or segments of water bodies that are "impaired" (i.e., do not meet one or more of the water quality standards established by the state, even after point sources of pollution have been equipped with the minimum required levels of pollution control technology). Inclusion of a water body on the Section 303(d) List of Impaired Water Bodies triggers development of a Total Maximum Daily Load (TMDL) for that water body and a plan to control the associated pollutant/stressor on the list. The TMDL is the maximum amount of a pollutant/stressor that a waterbody can assimilate and still meet the water quality standards. Typically, a TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources.

Table 4.3-2 lists the impaired water bodies in the project area, including the pollutants that cause the impairments, and the potential sources of the pollutants.

TABLE 4.3-2
303(D) LIST OF IMPAIRED WATER BODIES IN THE PROJECT VICINITY

Water Body	Impairments/Pollutants
Salinas River	
Old Salinas River Estuary	Pesticides, Nutrients
Salinas Reclamation Canal	Ammonia (unionized), Chlorpyrifos, Copper, Diazinon, E. coli, Fecal Coliform, Low Dissolved Oxygen, Nitrate, Pesticides, pH, Priority Organics, Sediment Toxicity, Turbidity, Unknown Toxicity
Salinas River (Lower estuary to Gonzales Road crossing)	Chlordane, Chloride, Chlorpyrifos, DDD (Dichlorodiphenyldichloroethane), Diazinon, Dieldrin, Electrical Conductivity, E. coli, Fecal Coliform, Nitrate, PCBs, Pesticides, pH, Sodium, Total Dissolved Solids, Toxaphene, Turbidity, Unknown Toxicity
Salinas River Lagoon (North)	Nutrients, Pesticides
Tembladero Slough	Chlorophyll-a, Chlorpyrifos, Diazinon, Enterococcus, E. coli, Fecal Coliform, Nitrate, Nutrients, Pesticides, pH, Sediment Toxicity, Total Coliform, Turbidity, Unknown Toxicity
Carmel River	None
Lake El Estero	None
Del Monte Lake	None
Laguna del Rey	None
Monterey Bay	
Monterey Bay South (Coastline)	None
Monterey Harbor	None

SOURCE: RWQCB, 2015.

National Marine Sanctuaries Act, MBNMS Regulations and Desalination Guidelines

Pursuant to the National Marine Sanctuaries Act (NMSA or Act), originally referred to as the Marine Protection, Research, and Sanctuaries Act of 1972, the primary purpose of the NMSA is to identify, designate and manage areas of the marine environment of special national significance due to their conservation, recreational, ecological, historical, research, educational, or aesthetic qualities. Under the NMSA, it is unlawful for any person to destroy, cause the loss of, or injure any sanctuary resource managed under law or regulations for that sanctuary. NMSA general regulations define sanctuary resource as any living or nonliving resource that contributes to the conservation, recreational, ecological, historical, research, educational or aesthetic value of the sanctuary, including any algae and other marine plants, marine invertebrates, brine-seep biota, phytoplankton, zooplankton, fish, seabirds, sea turtles, and marine mammals.

MBNMS was designated in 1992 in recognition that the area provides a highly productive ecosystem and a wide variety of marine habitat, including outstanding concentrations of pinnipeds, whales, otters, and seabirds, abundant fish stocks, a variety of crustaceans, and invertebrates.

In addition to the statute, each sanctuary has unique regulatory prohibitions codified within a separate subpart of 15 CFR Part 922. Subpart M contains the regulations specific to MBNMS. The importance of sanctuary resources relevant to water quality is emphasized among the MBNMS statutory, regulatory, and management priorities. The importance of water quality to sanctuary resources is further emphasized in the 2008 MBNMS *Final Management Plan*, which includes a desalination action plan (MBNMS 2008). The desalination action plan details numerous strategies for the protection of MBNMS resources, including one to develop specific guidelines for desalination projects to be sited in MBNMS (discussed below).

MBNMS regulations that are relevant to the construction and operation of desalination plants include a prohibition on discharging material or other matter into the sanctuary and a prohibition on activities that alter the submerged lands (aka seabed) as a result of the installation of desalination facility structures on or beneath the ocean floor (e.g. an intake or outfall pipeline). In particular, MPWSP activities that would be subject to MBNMS approval include the seawater intake from aquifers below the ocean floor, and the discharge of brine into sanctuary ocean waters from an existing ocean outfall, approximately two miles off shore and 90-110 feet below sea level. Any actions that have the potential to alter the seabed would require an MBNMS Authorization of a Coastal Development Permit issued by the CCC. Operational discharges into sanctuary waters would require MBNMS authorization of an NPDES permit issued by the RWQCB (see Section 1.3.2 for additional information). NOAA may also issue Special Use Permits to establish conditions of access to, and use of, any sanctuary resource or to promote public use and understanding of a sanctuary resource. Special Use Permits may only be authorized if that activity is compatible with the purposes for which the sanctuary is designated and with protection of sanctuary resources; and that activities carried out under the permit be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources. (See Section 1.3.2 for additional information.)

Guidelines for Desalination Plants in MBNMS

In 2010, MBNMS in collaboration with the California Coastal Commission, California Central Coast Regional Water Quality Control Board, and NOAA Fisheries, published a report titled *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* (MBNMS 2010), which implements the desalination action plan included in the MBNMS *Final Management Plan* (described above). These include non-regulatory guidelines that were developed to help ensure that any future desalination plants in the sanctuary would be sited, designed, and operated in a manner that results in minimal impacts on the marine environment. The Guidelines address numerous issues associated with desalination including site selection, construction and operational impacts, monitoring and reporting, plant discharges, and intake systems.

The following guidelines are pertinent to the analysis of impacts presented in Section 4.3.5:

- All desalination plants should be designed to minimize impacts from the discharge. Desalination project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges. The proponent should evaluate the use of

measures to minimize the impacts from desalination plant discharges including discharging to an area with greater circulation or at a greater depth, increasing in the number of diffusers, increasing the velocity while minimizing the volume at each outlet, diluting the brine with seawater or another discharge, or use of a subsurface discharge structure. The project proponent should provide a detailed evaluation of the projected short-term and long-term impacts of the brine plume on marine organisms based on a variety of operational scenarios and oceanographic conditions. Modeling should address different types of seasonal ocean circulation patterns, including consideration of "worst case scenarios."

- Results of accepted plume models should be included, to illustrate how the plume will behave during variable oceanographic conditions. The plume model should estimate salinity concentrations at the discharge point, as well as where and when it would reach ambient ocean concentrations. The extent, location, and duration of the plume where the salinity is 10 percent above ambient salinity should also be provided.
- The project proponent should provide information on the physical and chemical parameters of the brine plume including salinity, temperature, metal concentrations, pH, and oxygen levels. These water quality characteristics of the discharge should conform to California Ocean Plan requirements and should be as close to ambient conditions of the receiving water as feasible.
- A continuous monitoring program should be implemented to verify the actual extent of the brine plume, when deemed necessary (see Monitoring on page 4.3-13) and to determine if the plume is impacting Essential Fish Habitat (EFH), critical habitat, or sanctuary resources. If it is, then mitigation for the EFH impact will be required.

The issues discussed in the Guidelines relating to siting, constructing, and operating a desalination facility within MBNMS and the recommendations for reducing, avoiding, and minimizing impacts on sanctuary resources are reflected in the requirements of the California Ocean Plan (described in detail under State Regulations in Section 4.3.2.2, below). The Ocean Plan was recently amended (effective January, 2016) to specifically control potential adverse impacts on marine life associated with desalination facility intakes using seawater as source water and brine discharges. Further, the Ocean Plan includes specific enforceable numeric water quality objectives and other requirements pertaining to siting, constructing, and operating a desalination facility that are consistent with the Guidelines. The requirements set forth in the Ocean Plan were informed by the SWRCB collaborating with the Southern California Coastal Water Research Project to evaluate methods of brine disposal and monitoring strategies. Additionally, the amendments to the Ocean Plan were assessed in a SWRCB staff report analyzing desalination facility intakes and brine discharges which provides the rationale for how implementing such measures reduce potential environmental impacts from desalination facilities (SWRCB, 2015). To reflect this evolution of regulatory requirements supported by evidence based research, the Ocean Plan requirements are used, in part, as key thresholds of significance in the evaluation criteria for assessing impacts. The Ocean Plan requirements are generally more stringent and have more specificity regarding assessment and monitoring requirements than the Guidelines. As such, the Ocean Plan requirements are substantially consistent with the Guidelines. Section 6.4 includes a comprehensive list of Guideline recommendations and summarizes the proposed project's consistency with those guidelines.

As proposed, the MPWSP would involve water quality and marine biological resource impacts that could indirectly affect Sanctuary managed resources in a manner that would be potentially inconsistent with the provisions of the National Marine Sanctuaries Act as well as the guidelines (MBNMS, 2010) that relate to water quality and associated MBNMS managed resources for desalination plants in MBNMS. Impacts on sanctuary resources from brine discharges, and mitigation measures to avoid the impacts, are discussed in detail in Impact 4.3-4 and Impact 4.3-5 as well as in Section 4.5, Marine Biological Resources.

NOAA (MBNMS) Memorandum of Agreement with State and Federal Agencies

NOAA (MBNMS) entered into a Memorandum of Agreement (MBNMS, 2016e) with the State of California, USEPA, and the Association of Monterey Bay Area Governments, which addresses the process for implementing the following water quality regulations applicable to State waters within MBNMS (MBNMS, 2013a):

- NPDES permits issued by the State of California under Section 13377 of the California Water Code; and
- Waste Discharge Requirements issued by the State of California under Section 13263 of the California Water Code.

The Memorandum of Agreement specifies how the review process for applications for leases, licenses, permits, approvals, or other authorizations will be administered within State waters in MBNMS in coordination between the State and the Sanctuary's permit programs. The MBNMS Superintendent develops and follows a management plan that ensures protection of these resources, provides for research and education, and facilitates recreational and commercial uses that are compatible with the primary goal of resource protection. MBNMS also implements the Water Quality Protection Program to enhance and protect the chemical, physical, and biological integrity of the sanctuary. The program is a partnership of many local, state, and federal government agencies and calls for education, funding, monitoring, and development of treatment facilities and assessment programs to protect water quality (MBNMS, 2016c). The MPWSP would be consistent with the requirements outlined above because, prior to issuance of any permits or licenses, a review and authorization process by MBNMS is required to ensure such permits and licenses are protective of MBNMS resources and are consistent with relevant plans, policies, and guidelines.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. In 1990, Congress passed the Coastal Zone Act Reauthorization Amendments (CZARA) to address nonpoint source pollution problems in coastal waters. The California Coastal Commission has jurisdiction for CZMA implementation throughout the state.[17]

[17] Except within the San Francisco Bay-Delta where the Bay Conservation and Development Commission has authority for implementation of CZMA within its jurisdictional area.

Section 6217 of CZARA and Section 319 of the CWA require California and 28 other states to develop coastal nonpoint source pollution control programs that incorporate required management measures to reduce or prevent polluted runoff to coastal waters from specific sources. Management measures are defined in Section 6217 of the CZARA as economically achievable measures to control the addition of pollutants to coastal waters, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. These management measures are incorporated by states into their coastal nonpoint source pollution programs (USEPA, 1993) and coastal management programs. (See Section 4.3.2.2, below, for additional discussion of how the CZMA is regulated at the state level.)

The California Coastal Act contains numerous enforceable policies that are directed at protecting and, where feasible, restoring coastal water quality. The California Coastal Commission applies the Coastal Act's water quality policies when reviewing applications for coastal development permits in California state waters. The Coastal Commission also applies the water quality policies when reviewing federally licensed and permitted activities to ensure they are consistent with the State's coastal management program in accordance with the CZMA federal consistency provision.

The Coastal Commission considers an application for a coastal development permit to cover the requirement for an applicant submitting a consistency certification to the Coastal Commission if the activity is located in state waters. Typically, the Coastal Commission will provide its response (concurrence, conditional concurrence, or objection) in its staff report for the coastal development permit.

Executive Order 11988 and National Flood Insurance Program

Under Executive Order 11988, Floodplain Management of May 24, 1977, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year. Also, FEMA administers the National Flood Insurance Program, which requires that local governments covered by federal flood insurance enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year flood zone (one percent chance of occurring in a given year). FEMA prepares Flood Insurance Rate Maps (FIRMs) that that indicate areas prone to flooding. MCWRA is responsible for issuing permits within designated flood zones in the project area and would ensure consistency with requirements for development within a floodplain. Local municipalities are responsible for permitting development on floodplains within their jurisdictions.

4.3.2.2 State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. The Porter-

Cologne Act allows the California SWRCB to adopt statewide water quality control plans (such as "Basin Plans" as well as the California Ocean Plan) which serve as the legal, technical, and programmatic basis of water quality regulation for a region or along the coast. The Act also authorizes the NPDES program under the CWA, which establishes effluent limitations and water quality requirements for discharges to waters of the state. The California Ocean Plan, Basin Plan for the Central Coast and the NPDES permits relevant to the proposed MPWSP are discussed further below, as well as determinations of consistency of the MPWSP with these regulatory requirements.

California Toxics Rule

Under the California Toxics Rule (CTR), the USEPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria create water quality standards for California waters. The CTR satisfies CWA requirements and protects public health and the environment. The USEPA and the SWRCB have the authority to enforce these standards, which are incorporated into the NPDES permits (discussed below) that regulate existing discharges in the project area. The MPWSP would be consistent with the CTR requirements because such requirements would be incorporated into NPDES permits applicable to construction and operation of the MPWSP and CalAm would be required to comply with the permit requirements.

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone. Of primary relevance to surface water hydrology and water quality are Coastal Act policies concerning protection of the biological productivity and quality of coastal waters. For example, Article 4 of the Act details policies related to the marine environment, such as biological productivity and water quality. Specifically, and relevant to surface water hydrology and water quality, the Act requires the quality of coastal waters, streams, wetlands, estuaries appropriate to maintain optimum populations of marine organisms and for the protection of human health, to be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges, controlling runoff, and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams (Cal. Pub. Res. Code §§ 30231).

A preliminary assessment of project consistency with these priorities is provided here. Final determinations regarding project consistency are reserved for the Coastal Commission. Operational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds. Exceedances of these thresholds would be potentially inconsistent with Coastal Act policies. This issue is discussed further in Impact 4.3-5.

State Marine Protected Areas

Within Monterey Bay, there are three conservation areas relevant to the study area (shown in **Figure 4.3-1**): Pacific Grove State Marine Conservation Area, Edward F. Ricketts State Marine Conservation Area, and Lovers Point State Marine Reserve, designated as such under the Marine Life Protection Act and administered by the California Department of Fish and Wildlife. These designated areas are further discussed in Section 4.5, Marine Biological Resources.

California Ocean Plan

The *Water Quality Control Plan for Ocean Waters of California* (or Ocean Plan; SWRCB, 2016), adopted by the SWRCB in May 2015 and effective January 2016, establishes water quality objectives and beneficial uses for waters of the Pacific Ocean adjacent to the California Coast outside of estuaries, coastal lagoons, and enclosed bays. The Ocean Plan establishes effluent quality requirements and management principles for specific waste discharges. The Ocean Plan was recently amended to establish a receiving water limitation for brine discharges from desalination facilities (discussed in detail under Salinity, below), and to ensure the protection of beneficial uses by establishing a consistent statewide analytic framework for new desalination facilities for the best available site, design, technology, and mitigation measures feasible in order to minimize intake and mortality of all forms of marine life. The water quality requirements and objectives of the Ocean Plan are incorporated into NPDES permits for ocean discharges, such as the *Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* (Order No. R3-2014-0013, NPDES Permit No. CA0048551) for discharges of treated wastewater from the MPWPCA Regional Wastewater Treatment Plant to Monterey Bay (MRWPCA's NPDES permit is discussed in more detail below).

The 2016 Ocean Plan includes the following provisions that are applicable to the proposed project:

- Waste management systems that discharge into the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.
- Waste discharged to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments or biota.
- Waste effluents must be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in treatment.

The Ocean Plan prohibits discharges into Areas of Special Biological Significance (ASBS), except with an approved exception. ASBS are designated by the SWRCB (**Figure 4.3-1**) and require protection of species or biological communities to the extent that alteration of natural water quality is undesirable. In the Monterey region, Old Salinas River Estuary, Pacific Grove, Carmel Bay, and Point Lobos are designated as ASBS and are located near Monterey Bay within the boundaries of MBNMS (SWRCB, 2013a). **Table 4.3-3** below lists the water bodies in the project area described above along with beneficial uses identified by the Central Coast RWQCB.

TABLE 4.3-3
DESIGNATED BENEFICIAL USES OF SURFACE WATER BODIES IN THE PROJECT VICINITY

Water Bodies	Beneficial Uses																			
	MUN	AGR	GWR	IND	COMM	SHELL	COLD	EST	MIGR	RARE	SPWN	BIOL	WARM	WILD	REC-1	REC-2	NAV	MAR	FRSH	ASBS
Salinas Reclamation Canal					X								X	X	X	X				
Tembladero Slough					X	X		X		X	X		X	X	X	X				
Old Salinas River Estuary					X	X	X	X	X	X	X	X	X	X	X	X				
Salinas River Lagoon (North)					X	X	X	X	X	X	X	X	X	X	X	X				
Pacific Ocean (Monterey Bay)				X	X	X			X	X	X			X	X	X	X	X		X
Carmel River	X	X	X	X	X		X		X	X	X	X	X	X	X	X			X	
Carmel River Estuary			X		X	X	X	X	X	X	X	X		X	X	X				
Carmel Bay				X	X	X				X					X	X		X		X

ACRONYMS:

MUN – Municipal and Domestic Supply
AGR – Agricultural Supply
GWR – Groundwater Recharge
IND – Industrial Service Supply
COMM – Ocean, Commercial, and Sport Fishing
SHELL – Shellfish Harvesting
COLD – Cold Freshwater Habitat
MIGR – Migration of Aquatic Organisms,
EST – Estuarine Habitat
REC-2 – Non-Contact Water Recreation
RARE – Preservation of Rare and Endangered Species
WILD – Wildlife Habitat
FRSH – Freshwater Replenishment
ASBS – Areas of Special Biological Significance
NAV – Navigation
REC-1 – Water Contact Recreation
WARM – Warm Freshwater Habitat
SPWN – Spawning, Reproduction, and/or Early Development
BIOL – Preservation of biological Habitats of Special Significance

SOURCE: RWQCB, 2011b; 2014.

The recently amended Ocean Plan also contains the following four primary components intended to control potential adverse impacts on marine life associated with desalination facility intakes using seawater as source water and brine discharges (SWRCB, 2015; 2016):

1. Clarify SWRCB's authority over desalination facility intakes and discharges;

2. Provide guidance to the regional water boards regarding the determination required by Water Code section 13142.5 (b) for the evaluations of the best available site, design, technology, and mitigation measures to minimize the intake and mortality of marine life at new or expanded desalination facilities.

3. A narrative receiving water limitation for salinity applicable to all desalination facilities to ensure that brine discharges to marine waters meet the biological characteristics' narrative water quality objective[18] and do not cause adverse effects to aquatic life beneficial uses.

4. Monitoring and reporting requirements that include effluent monitoring, as well as monitoring of the water column bottom sediments and benthic community health to ensure that the effluent plume is not harming aquatic life beyond the brine mixing zone (BMZ).

[18] The 2016 Ocean Plan Section II. E (biological characteristics water quality objective) requires that, "marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded."

To inform the recent amendments to the Ocean Plan, the SWRCB contracted with the Southern California Coastal Water Research Project to evaluate methods of brine disposal and monitoring strategies, which resulted in a technical report on *Management of Brine Discharges to Coastal Waters* (SWRCB, 2012a). Additionally, the amendments to the Ocean Plan were assessed in a SWRCB staff report analyzing desalination facility intakes and brine discharges (SWRCB, 2015). The SWRCB (2015) staff report assessed the proposed Ocean Plan amendments and provides the rationale for how implementing such measures reduce potential environmental impacts from desalination facilities. As discussed in Section 4.3.2.1, above, the Ocean Plan requirements pertaining to desalination facilities are substantially consistent with the recommendations described in the *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* (MBNMS 2010) for siting and operating a desalination facility within MBNMS to reduce, avoid, and minimize impacts on sanctuary resources.

The SWRCB (2015) states, "subsurface intakes extract marine water from beneath the ground, filtering the seawater through the geological features of the sea floor. Because the water is naturally filtered as it moves through sediments, it generally contains lower levels of contaminants such as suspended solids, silts, organic contaminants, oil, and grease. Similarly, subsurface intakes provide a natural barrier to suspended sediments … dissolved or suspended organic compounds …debris, or oil or chemical spills…. This gives subsurface intakes a significant environmental advantage over surface water intakes because mitigation for surface intake entrainment has to occur throughout the operational lifetime of the facility." Such findings are also relevant to the water quality or the constituent concentrations found in Monterey Bay where the seawater extracted from the bay through the subsurface intakes would be used as source water for the MPWSP Desalination Plant. The SWRCB acknowledges that slant wells also minimize aboveground shoreline structures and can provide substantially greater length of well screen in the target aquifer, an important advantage when there is limited aquifer thickness (SWRCB, 2015). The SWRCB recommends the option of using subsurface intakes as its preferred technology and allowing surface water intakes where subsurface intakes are found infeasible (SWRCB, 2015). These recommendations are reflected in the current requirements of the 2016 Ocean Plan for new desalination facilities along the California coast (discussed below).

Concerning brine discharge from a desalination plant, the Ocean Plan requires an owner or operator to first evaluate the availability and feasibility of diluting brine by commingling it with wastewater. If wastewater is unavailable, then multiport diffusers are the next preferred method of brine disposal (SWRCB, 2016). Consistent with such measures, the brine discharge from the MPWSP Desalination Plant is proposed to be discharged through a multiport diffuser of an existing outfall and commingled with the MRWPCA wastewater that is currently discharged through the outfall whenever the wastewater is available (see the water quality impact related to the brine discharge in Section 4.3.5 Direct and Indirect Effects of the Proposed Project).

Ocean Plan Water Quality Objectives

To protect the beneficial uses of the surface water bodies shown in **Table 4.3-3**, the Ocean Plan establishes water quality objectives for bacterial, physical, chemical, biological, and radioactive

constituents (**Table 4.3-4**). The Ocean Plan water quality objectives are to be met after the initial dilution of a discharge into the ocean. The Ocean Plan defines initial dilution as the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge. Initial dilution occurs in an area known as the zone of initial dilution (ZID), within which the density of the discharge is substantially different from that of the receiving water. Typically, constituent concentrations are permitted to exceed water quality objectives within the ZID, which is limited in size. Thus, in the case of MPWSP, the Ocean Plan water quality objectives would apply to the edge of the ZID (Flow Science, Inc., 2014 in **Appendix D2**). Dilution occurring within the ZID from an operational discharge is conservatively calculated as the minimum probable initial dilution (Dm). The water quality objectives established in the Ocean Plan are considered in the context of the calculated Dm to derive the NPDES effluent limits for a wastewater discharge in-pipe (i.e., prior to ocean dilution).

For typical wastewater discharges, the ZID is the zone adjacent to the discharge point where momentum and buoyancy-driven mixing produces rapid dilution of the discharged effluent (Flow Science, Inc., 2014; SWRCB, 2012a). Municipal wastewater effluent, being effectively freshwater, is less dense than seawater and thus rises (due to buoyancy) while it mixes with ocean water, whereas desalination brine, when discharged directly, is more dense than seawater and thus sinks while it mixes with ocean water. The mixing and dilution are also affected by the density of the effluent being discharged. **Figure 4.3-4** illustrates the likely trajectories of positively and negatively buoyant effluent plumes from a horizontal discharge (such as that proposed as part of the MPWSP) for illustrative purposes. As effluent travels away from the discharge port, it entrains ambient seawater, which increases the diameter of the plume and decreases the plume concentration. Thus, the edge of the ZID depends, in part, on the discharge plume density. If the effluent density is lower than the ambient salinity, it rises and becomes a buoyant plume (see **Figure 4.3-4a**). Here, the edge of the ZID is located at the point where the effluent plume reaches the water surface or attains a depth level where the density of the diluted effluent plume becomes the same as the density of ambient water (i.e., the "trap" level). The effluent plume spreads within and beyond the trap level and forms a rising plume. If the effluent density is greater than the ambient salinity, it produces a negatively buoyant plume that sinks toward the seabed (see **Figure 4.3-4b**). In this case, the edge of the ZID is located at the point where the discharge plume contacts the sea floor.

In addition to establishing water quality objectives, the Ocean Plan lays out the implementation provisions with an equation to derive constituent concentrations that are compared with the water quality objectives. The constituent concentrations are calculated using the background concentrations of the constituents as one of the factors.[19] The background concentrations are provided for only five constituents: arsenic, copper, mercury, silver, and zinc; and for other constituents it is assumed to be zero (SWRCB, 2016).

[19] The calculation also uses the constituent concentrations and dilution factor estimated for the discharge that is studied.

TABLE 4.3-4
WATER QUALITY OBJECTIVES IN THE 2016 OCEAN PLAN

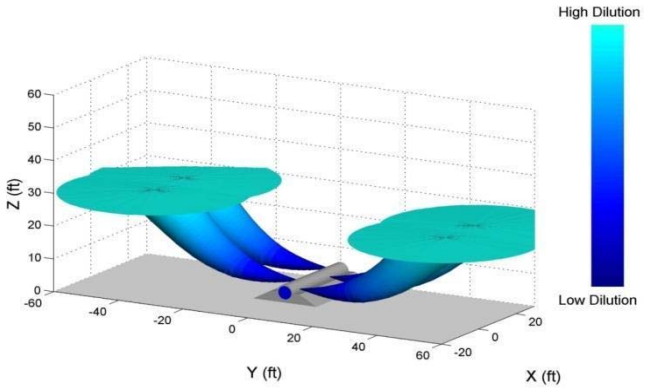
Water Quality Objectives for Protection of Marine Life				
		Limiting Concentrations		
	Units of Measurement	**6-month Median**	**Daily Maximum**	**Instantaneous Maximum**
Arsenic	µg/L	8	32	80
Cadmium	µg/L	1	4	10
Chromium (Hexavalent)	µg/L	2	8	20
Copper	µg/L	3	12	30
Lead	µg/L	2	8	20
Mercury	µg/L	0.04	0.16	0.4
Nickel	µg/L	5	20	50
Selenium	µg/L	15	60	150.
Silver	µg/L	0.7	2.8	7
Zinc	µg/L	20	80	200
Cyanide	µg/L	1	4	10
Total Chlorine Residual	µg/L	2	8.0	60
Ammonia (expressed as Nitrogen)	µg/L	600	2400	6000
Acute Toxicity	TUa	N/A	0.3	N/A
Chronic Toxicity	TUc	N/A	1	N/A
Phenolic Compounds (non-chlorinated)	µg/L	30	120	300
Chlorinated Phenolics	µg/L	1	4	10
Endosulfan	µg/L	0.009	0.018	0.027
Endrin	µg/L	0.002	0.004	0.006
HCH	µg/L	0.004	0.008	0.012
Radioactivity	Not to exceed limits specified in Tile 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations.			

Water Quality Objectives for Protection of Human Health-Noncarcinogens		
	30-day Average (micrograms per liter or µg/L)	
Chemical	**Decimal Notation**	**Scientific Notation**
acrolein	220	2.2×10^{2}
antimony	1,200	1.2×10^{3}
bis(2-chloroethoxy) methane	4.4	4.4×10^{0}
bis(2-chloroisopropyl) ether	1,200	1.2×10^{3}
chlorobenzene	570	5.7×10^{2}
chromium (III)	190,000	1.9×10^{5}
di-n-butyl phthalate	3,500	3.5×10^{3}
dichlorobenzenes	5,100	5.1×10^{3}
diethyl phthalate	33,000	3.3×10^{4}
dimethyl phthalate	820,000	8.2×10^{5}
4,6-dinitro-2-methylphenol	220	2.2×10^{2}
2,4-dinitrophenol	4.0	4.0×10^{0}
ethylbenzene	4,100	4.1×10^{3}
fluoranthene	15	1.5×10^{1}
hexachlorocyclopentadiene	58	5.8×10^{1}
nitrobenzene	4.9	4.9×10^{0}
thallium	2	$2. \times 10^{0}$
toluene	85,000	8.5×10^{4}
tributyltin	0.0014	1.4×10^{-3}
1,1,1-trichloroethane	540,000	5.4×10^{5}

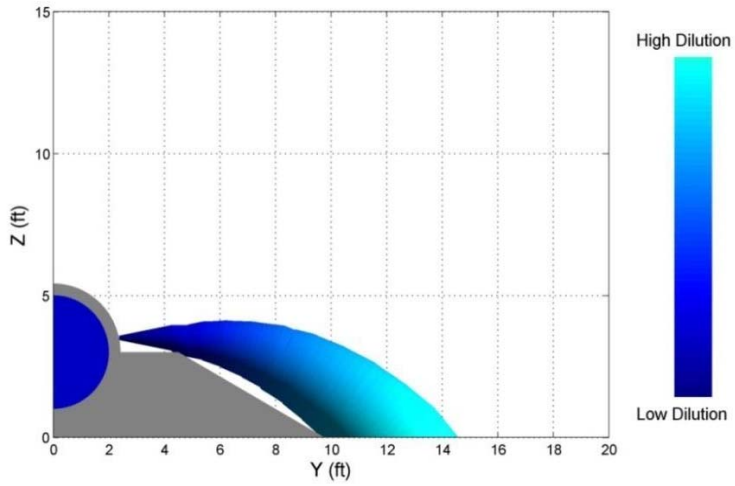
TABLE 4.3-4 (Continued)
WATER QUALITY OBJECTIVES IN THE 2016 OCEAN PLAN

Water Quality Objectives for Protection of Human Health-Carcinogens		
Chemical	**30-day Average (micrograms per liter or µg/L)**	
	Decimal Notation	**Scientific Notation**
acrylonitrile	0.10	1.0×10^{-1}
aldrin	0.000022	2.2×10^{-5}
benzene	5.9	5.9×10^{0}
benzidine	0.000069	6.9×10^{-5}
beryllium	0.033	3.3×10^{-2}
bis(2-chloroethyl) ether	0.045	4.5×10^{-2}
bis(2-ethylhexyl) phthalate	3.5	3.5×10^{0}
carbon tetrachloride	0.90	9.0×10^{-1}
chlordane	0.000023	2.3×10^{-5}
chlorodibromomethane	8.6	8.6×10^{0}
chloroform	130	1.3×10^{2}
DDT	0.00017	1.7×10^{-4}
1,4-dichlorobenzene	18	1.8×10^{1}
3.3'-dichlorobenzidine	0.0081	8.1×10^{-3}
1,2-dichloroethane	28	2.8×10^{1}
1,1-dichlorethylene	0.9	9×10^{-1}
dichlorobromomethane	6.2	6.2×10^{0}
dichloromethane	450	4.5×10^{2}
1,3-dichloropropene	8.9	8.9×10^{0}
dieldrin	0.00004	4.0×10^{-5}
2,4-dinitrotoluene	2.6	2.6×10^{0}
1,2-diphenylhydrazine	0.16	1.6×10^{-1}
halomethanes	130	1.3×10^{2}
heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
hexachlorobenzene	0.00021	2.1×10^{-4}
hexachlorobutadiene	14	1.4×10^{1}
hexachloroethane	2.5	2.5×10^{0}
isophorone	730	7.3×10^{2}
N-nitrosodimethylamine	7.3	7.3×10^{0}
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
N-nitrosodiphenylamine	2.5	2.5×10^{0}
Polyaromatic hydrocarbons (PAHs)	0.0088	8.8×10^{-3}
Polychlorinated biphenyls (PCBs)	0.000019	1.9×10^{-5}
TCDD equivalents	0.0000000039	3.9×10^{-9}
1,1,2,2-tetrachloroethane	2.3	2.3×10^{0}
tetrachloroethylene	2.0	2.0×10^{0}
toxaphene	0.00021	2.1×10^{-4}
trichloroethylene	27	2.7×10^{1}
1,1,2-trichloroethane	9.4	9.4×10^{0}
2,4,6-trichlorophenol	0.29	2.9×10^{-1}
vinyl chloride	36	3.6×10^{1}

SOURCE: SWRCB, 2016.



(a) Illustration of a Rising Plume



(b) Illustration of a Sinking Plume

SOURCE: Flow Science, Inc., 2014 (see Appendix D2)

Figure 4.3-4
Illustrations of the Trajectory and Behavior of a Brine Discharge Plume

As discussed under Other Constituents in Section 4.3.1.3, Surface Water Quality, above, near-shore water quality in Monterey Bay is monitored by the Central Coast Long-term Environmental Assessment Network (CCLEAN). The CCLEAN program design includes some, but not all constituents that are regulated by the Ocean Plan (listed in **Table 4.3-4**). A review of the most recent monitoring data reported under CCLEAN for the past 8 years (2008-2015) indicates exceedances of maximum concentrations of several constituents over the water quality objectives listed in **Table 4.3-4**. **Table 4.3-5** below summarizes exceedances (denoted in bold) of Ocean Plan water quality objectives listed in **Table 4.3-4** documented under baseline conditions under CCLEAN. Aldrin was not detected.

TABLE 4.3-5
WATER QUALITY IN MONTEREY BAY
(CONSTITUENT CONCENTRATIONS REPORTED UNDER CCLEAN 2008-2015)

Constituent	Reported Average Concentration (µg/L)*	Reported Maximum Concentration (µg/L)*	Ocean Plan Water Quality Objectives (µg/L)
Endosulfan	0.0000039	0.0000390	0.009 (6-month median)
Endrin	0.0000006	0.0000160***	0.002 (6-month median)
HCH	0.0001679	0.0003930	0.004 (6-month median)
Fluoranthene	0.0003068	0.0010800	15 (6-month median)
Aldrin**	0.0000000	0.0000000**	0.000022 (30-day average)
Chlordane	0.0000155	**0.0001140**	0.000023 (30-day average)
DDT	0.0000548	**0.0003190**	0.00017 (30-day average)
Dieldrin	0.0000168	**0.0000510**	0.00004 (30-day average)
Heptachlor	0.0000003	0.0000050	0.00005 (30-day average)
Polyaromatic hydrocarbons (PAHs)	0.0000007	0.0000050	0.0088 (30-day average)
Polychlorinated biphenyls (PCBs)	**0.0023236**	**0.0069071**	0.000019 (30-day average)
Toxaphene**	0.0001414	**0.0012139*** **	0.00021 (30-day average)

NOTES:

* Concentrations higher than the Ocean Plan water quality objectives in Table 4.3-4, above, **are shown in bold**.
** Aldrin was not detected.
*** Endrin and Toxaphene were detected in 1 and 2 samples, respectively.

SOURCE: CCLEAN, 2016.

As shown in **Table 4.3-5**, maximum concentrations detected in Monterey Bay for chlordane, dieldrin, DDT, and both average and maximum concentrations of PCBs currently exceed the Ocean Plan water quality objectives. In the case of endrin, aldrin, and toxaphene, the actual average and maximum concentrations are shown. In the case of toxaphene, the average value of the range of reporting limits used also exceeded the water quality objectives. In summary, the background concentrations or ambient levels of constituents in Monterey Bay vary with time. The exceedances in **Table 4.3-5** are used as a conservative estimate using representative data and are considered as baseline or existing water quality conditions in the bay in the impact analysis discussed in Section 4.3.5 Direct and Indirect Effects of the Proposed Project, below. Operational discharges of the MPWSP under certain scenarios would be potentially inconsistent with the provisions of the Ocean Plan water quality objectives because, in the absence of mitigation measures, the brine may exceed water quality objective thresholds at the edge of the ZID. This issue is discussed further in Impact 4.3-5.

Ocean Plan Salinity Requirements

The current Ocean Plan includes new requirements to address brine discharges from desalination facilities along the California coast. The most relevant of these to the proposed MPWSP is contained in Section III.M.3, "Receiving Water Limitation for Salinity". The receiving water

limitation for salinity requires that discharges not exceed a daily maximum of two (2) parts per thousand (ppt) above natural background salinity measured no further than 100 meters (328 ft) horizontally from each discharge point, representing the Brine Mixing Zone (BMZ)[20] the actual shape of which is determined by the diffuser. The value of 2 ppt represents the maximum incremental increase above natural background salinity allowed at the edge of the BMZ. There is no vertical limit to this zone and to determine the effluent limit necessary to meet the receiving water limitation, the Ocean Plan includes a required methodology for brine discharges. In addition, the owner or operator of a desalination facility must meet the dilution standard at the edge of the BMZ or minimum initial dilution (Dm; discussed above), whichever is smaller. Dilution must be determined using applicable water quality models that have been approved by the regional water boards in consultation with State Water Board staff. Operational discharges of the MPWSP would be consistent with the provisions of the Ocean Plan salinity requirements because all operational discharge scenarios would be below the specified maximum incremental increase of 2 ppt above natural background salinity allowed at the edge of the BMZ (see **Impact 4.3-4** for details).

Ocean Plan Monitoring Requirements

Included in the recent amendments to the Ocean Plan is the requirement for a monitoring and reporting program (Section III.M.4, "Monitoring and Reporting Program"; SWRCB, 2016). The monitoring requirements for operation of a new desalination facility are such that the owner or operator of a desalination facility must submit a Monitoring and Reporting Program to the regional water board for approval. The Monitoring and Reporting Program must include provisions for monitoring of effluent and receiving water characteristics and impacts on all forms of marine life. The Monitoring and Reporting Program must, at a minimum, include monitoring for benthic community health, aquatic life toxicity, hypoxia, and receiving water characteristics. Further, the Monitoring and Reporting Program must be consistent with the standard monitoring procedures detailed in Appendix III of the Ocean Plan, which specifies monitoring plan framework, scope, and methodological design and additional details for determining compliance with the receiving water limitation in chapter III.M.3. Additionally, receiving water monitoring for salinity must be conducted at times when the monitoring locations detailed in the Monitoring and Reporting Program are most likely affected by the discharge.

Monitoring requirements in the Ocean Plan that are relevant to the operation of the MPWSP also require an owner or operator to perform facility-specific monitoring to demonstrate compliance with the receiving water limitation for salinity (described above), and to evaluate the potential effects of the discharge within the water column, bottom sediments, and the benthic communities. Baseline biological conditions must be established at the discharge location as well as at a reference location outside the influence of the discharge prior to commencement of construction. To achieve this requirement, the owner or operator is required to conduct biological surveys (e.g.,

[20] At the time of publication of the April 2015 Draft EIR the Ocean Plan did not include a water quality objective for elevated salinity levels from operation of a desalination facility. As such, the analysis of salinity related water quality impacts was based on determining salinity increases at the edge of the ZID, as is done for other water quality constituents. Subsequent to the publication of the April 2015 Draft EIR, the Ocean Plan was amended to include a salinity standard, compliance with which is determined at the edge of the BMZ.

Before-After Control-Impact studies) that evaluate the differences between biological communities at a reference site and at the discharge location before and after the discharge commences. The pertinent regional water board uses the data and results from the surveys and any other applicable data for evaluating and renewing the requirements set forth in a facility's NPDES permit (in the case of the proposed project, the MRWPCA's outfall). Such monitoring is required to continue until the RWQCB and MBNMS determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation. The Monitoring and Reporting Plan would require review and approval by the RWQCB and MBNMS prior to implementation of the MPWSP, and would be revised if necessary, as part of the NPDES permit process. The MPWSP would be consistent with the Monitoring and Reporting Plan requirements of the Ocean Plan because such requirements form a part of the NPDES permit process and, further, CalAm would submit and, once approved by the RWQCB and MBNMS, execute a facility-specific Monitoring and Reporting Plan.

Thermal Plan

The *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (or Thermal Plan) adopted by the SWRCB in 1995 establishes temperature requirements for existing and new discharges in California coastal waters, interstate waters, enclosed bays, and estuaries. Water quality objectives for existing discharges into coastal waters require that wastes with elevated temperature comply with limitations necessary to assure protection of the beneficial uses and ASBSs (see also the discussion of the Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant [Order No. R3-2014-0013, NPDES Permit No. CA0048551], below, for discharges of treated wastewater from the Regional Wastewater Treatment Plant to Monterey Bay). The Thermal Plan defines new discharges as "discharges that are not presently taking place" and elevated-temperature wastes as "liquid, solid, or gaseous material including thermal waste[21] discharged at a temperature higher than the natural temperature of receiving water". The Thermal Plan establishes the following standards for all new discharges (SWRCB, 1995):

- The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.
- The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at the shoreline, the surface of any ocean substrate, or the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

During the non-irrigation season, the brine from the MPWSP Desalination Plant could be blended with treated wastewater from the MRWPCA's Regional Wastewater Treatment Plant, if available, prior to discharge via the MRWPCA outfall into Monterey Bay. The temperature requirements above are included in the MRWPCA's NPDES Permit (R3-2014-0013), discussed below, and would apply to brine-only discharges from the MPWSP Desalination Plant (during

[21] Cooling water and industrial process water used for the purpose of transporting waste heat.

periods when there is no wastewater available for blending), as well as combined discharges (when the brine would be blended with the treated wastewater). Operational discharges of the MPWSP would be consistent with the provisions of the thermal plan because MPWSP operational discharges would not operate in combination with a power plant or other operation requiring use of ocean waters for cooling for thermal control. As such, there would be no heating mechanism or any process that would increase the temperature of the source water as it passes through the treatment units.

Anti-Degradation Policy

The SWRCB Anti-Degradation Policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Water in California (SWRCB Resolution No. 68-16), restricts degradation of surface and ground waters. Specifically, this policy protects water bodies where existing quality is higher than necessary for the protection of beneficial uses and requires that existing high quality be maintained to the maximum extent possible.

Under the Anti-Degradation Policy, any actions that can adversely affect water quality in all surface and ground waters must: (1) be consistent with maximum benefit to the people of California; (2) not unreasonably affect present and anticipated beneficial use of the water; and (3) not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Anti-Degradation Policy (40 CFR Section 131.12) developed under the CWA. Operational discharges of the MPWSP would be consistent with the provisions of the SWRCB Anti-Degradation Policy because discharges from the proposed project that could affect surface water quality would be required to comply with the Anti-Degradation Policy, which is included as part of the NPDES permit requirements for point discharges (discussed below).

Nonpoint Source Pollution Control Program

In accordance with Section 319 of the Clean Water Act and Section 6217 of the CZARA of 1990, SWRCB and the California Coastal Commission jointly submitted the Plan for California's Nonpoint Source (NPS) Pollution Control Program to the USEPA and NOAA on February 4, 2000. The NPS Pollution Control Program provides a single unified, coordinated statewide approach to address nonpoint source pollution (USEPA, 2012). A total of 28 state agencies are working collaboratively through the Interagency Coordinating Committee to implement the NPS Pollution Control Program. California's Critical Coastal Areas (CCA) Program is a non-regulatory planning tool to foster collaboration among local stakeholders and government agencies, to better coordinate resources and focus efforts on coastal-zone watershed areas in critical need of protection from polluted runoff. A coastal area is designated as a CCA if it: has a 1998 303(d)-listed impaired coastal water body that flows into a Marine Managed Areas; flows into a Wildlife Refuge or Waterfront Park/Beach; flows into an Area of Special Biological Significance;[22] or was on the original 1995 CCA list, which is comprised of watersheds that flow into an 1994 303(d)-listed

[22] There are 34 ASBS ocean areas along the California coast monitored and maintained for water quality under the regulatory authority of the SWRCB.

impaired bay or estuary. The CCAs in the project area and vicinity include the Old Salinas River Estuary, Salinas River, Carmel Bay, Point Lobos, and Pacific Grove (CCC, 2012).

Central Coast Water Quality Control Plan (Basin Plan)

The *Water Quality Control Plan for the Central Coast* (or Basin Plan) prepared by the Central Coast RWQCB (2011b) identifies the designated beneficial uses of surface waters in the Central Coast region (see **Table 4.3-3**). The Basin Plan establishes quantitative and qualitative water quality objectives for protection of the beneficial uses, and establishes policies to guide the implementation of these water quality objectives. In addition to the water quality objectives in the Ocean Plan (see **Table 4.3-4**, above), the following objectives of the Basin Plan apply to all ocean waters, including Monterey Bay and Carmel Bay:

- **Dissolved Oxygen:** The mean annual dissolved oxygen concentration shall not be less than 7.0 mg/L, nor shall the minimum dissolved oxygen concentration be reduced below 5.0 mg/L at any time.
- **pH:** The pH value shall not be depressed below 7.0, nor raised above 8.5.
- **Radioactivity:** Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life.

The water quality objectives are incorporated in the individual NPDES permits. For example, the MRWPCA's NPDES Permit No. CA0048551 (Order No. R3-2014-0013) for discharges of treated wastewater from the Regional Wastewater Treatment Plant to Monterey Bay would be amended to include the brine discharge resulting from the proposed project.

NPDES Waste Discharge Program

In California, administration of the NPDES program has been delegated by the US EPA to the State Board. Through the RWQCBs, point source dischargers are required to obtain NPDES permits (or, in California under authority of Porter-Cologne, Waste Discharge Requirements). Point sources include municipal and industrial wastewater facilities and stormwater discharges. There are two types of NPDES permits: individual permits tailored to an individual facility and general permits that cover multiple facilities within a specific category. Effluent limitations serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. When developing effluent limitations for an NPDES permit, a permit applicant must consider limits based on both the technology available to control the pollutants (i.e., technology-based effluent limits) and limits that are protective of the water quality standards of the receiving water (i.e., water quality-based effluent limits if technology-based limits are not sufficient to protect the water body). For inland surface waters and enclosed bays and estuaries, the water-quality-based effluent limitations are based on criteria in the National Toxics Rule and the California Toxics Rule, and objectives and beneficial uses in the Basin Plan. For ocean discharges, the Ocean Plan contains beneficial uses, water quality objectives, and effluent limitations (described in detail above). NPDES permits for discharges into Monterey Bay must be authorized by MBNMS.

NPDES Construction General Permit

The State of California adopted a revised Construction General Permit on September 2, 2009 (Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ) (General Construction NPDES Permit). The General Construction NPDES Permit regulates construction site storm water management. Dischargers whose projects disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the general permit for discharges of stormwater associated with construction activity. The proposed project would be required to comply with the permit requirements to control stormwater discharges from the construction sites. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, as well as construction of buildings and linear underground projects (LUP), including installation of water pipelines and other utility lines. Portions of the proposed project would fall under the Type 1 LUP category if the following conditions are met:

a) Construction occurs on unpaved improved roads, including their shoulders or land adjacent to them;

b) The areas disturbed during a single construction day are returned to their preconstruction condition, or to an equivalent condition (i.e., disturbed soils such as those from trench excavation are hauled away, backfilled into the trench, and/or placed in spoils piles and covered with plastic), at the end of that same day;

c) Vegetated areas disturbed by construction activities are stabilized and revegetated at the end of the construction period; and

d) When required, adequate temporary soil stabilization best management practices (BMPs) are installed and maintained until vegetation has reestablished to meet the permit's minimum cover requirements for final stabilization.

In the project area, the Construction General Permit is implemented and enforced by the Central Coast RWQCB, which administers the stormwater permitting program. To obtain coverage under this permit, project operators must electronically file Permit Registration Documents, which include a Notice of Intent, a Stormwater Pollution Prevention Plan (SWPPP), and other compliance-related documents. An appropriate permit fee must also be mailed to SWRCB. The SWPPP identifies BMPs that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. In addition, the SWPPP is required to contain a visual monitoring program and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases have been

completed at the site (post-construction BMPs). Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

The Construction General permit includes several new requirements (as compared to the previous Construction General Permit, 99-08-DWQ), including risk-level assessment for construction sites, an active storm water effluent monitoring and reporting program during construction (for Risk Level II and III sites), rain event action plans for certain higher risk sites, and numeric effluent limitations (NELs) for pH and turbidity as well as requirements for qualified professionals that prepare and implement the plan. The risk assessment and SWPPP must be prepared by a state-qualified SWPPP Developer and implementation of the SWPPP must be overseen by a state-qualified SWPPP Practitioner.

RWQCB Dewatering Requirements

NPDES General Permit for Discharges with Low Threat to Water Quality

Construction of the proposed facilities would require excavation and trenching activities. Such activities in areas with shallow groundwater or that are located adjacent to surface water bodies could require dewatering to create a dry area. Discharges of dewatering effluent to the local stormwater drainage system or to vegetated upland areas are conditionally exempt provided they meet the water quality criteria in the General Waste Discharge Requirements (General WDRs). The RWQCB requires that the dewatering effluent be tested for possible pollutants; the analytical constituents for these tests are generally determined based on the source of the water, the land use history of the construction site, and the potential for the effluent to impact the quality of the receiving water body.

The *General WDRs NPDES General Permit for Discharges with Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES No. CAG993001) (RWQCB, 2011a) applies to low-threat discharges, which are defined as discharges containing minimal amounts of pollutants and posing little or no threat to water quality and the environment. Discharges that meet the following criteria are covered under this permit:

a) Pollutant concentrations in the discharge do not: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable water quality objectives, including prohibitions of discharge;

b) The discharge does not include water added for the purpose of diluting pollutant concentrations;

c) Pollutant concentrations in the discharge will not cause or contribute to degradation of water quality or impair beneficial uses of receiving waters;

d) Pollutant concentrations in the discharge do not exceed the limits in the permit unless the Executive Officer determines that the applicable water quality control plan (i.e., Ocean Plan and/or State Implementation Policy) does not require effluent limits;

e) The discharge does not cause acute or chronic toxicity in receiving waters; and

f) The discharger demonstrates the ability to comply with the requirements of this General Permit.

The project-related discharges that could fall under the General WDRs include: discharges of dewatering effluent; water produced from one-time draining of existing pipelines to construct new connections; and disinfection water from these same existing pipelines and newly constructed pipelines before being put into service, all of which could be discharged to vegetated upland areas or to the local stormwater drainage system. These discharges may be treated and discharged on a continuous or a batch basis. For discharges from construction sites smaller than one acre that are part of a larger common plan of development or that may cause significant water quality impacts, the discharge may require coverage under the construction stormwater permit or an individual NPDES permit.

Waiver of Waste Discharge Requirements

California Water Code Section 13269 authorizes the Central Coast RWQCB to waive WDRs for specific discharges or specific types of discharges where such a waiver is consistent with any applicable state or regional water quality control plan and is in the public interest. The *General Waiver of WDRs for Specific Types of Discharges* (Resolution R3-2014-0041) (General Waiver) (RWQCB, 2014) contains specific conditions for the specific discharges and is consistent with the Central Coast Basin Plan. Waivers may be granted for discharges to land and may not be granted for discharges to surface waters or conveyances there to that are subject to the federal CWA requirements for NPDES permits.

Under the MPWSP, drilling fluids, such as water, bentonite mud, or environmentally inert biodegradable additives, would be used for well construction. The threat to water quality of such materials depends primarily on the additives used. If the drilling fluids are free of appreciable additives (additive quantities in conformance with industry standards), the used slurry may be spread on pastures or fields, provided that contact with surface water is avoided and runoff is prevented (RWQCB, 2014). The muds and clay slurry generated during the drilling and development of the subsurface slant wells and the proposed ASR-5 and ASR-6 Wells in the Fitch Park military housing area would fall under the category of "Water Supply Well Drilling Muds" in the General Waiver.

The water extracted during well development falls under the category of "water supply discharges" in the General Waiver (RWQCB, 2014). Water supply discharges that would occur under the proposed project include all water produced during drilling and development of the subsurface slant wells and ASR-5 and ASR-6 Wells. Under the General Waiver, these discharges would be waived from WDRs and from the requirement of submitting a waste discharge report; however, they would be subject to the following conditions (RWQCB, 2014).

Water Supply Well Drilling Muds:

a) The discharge shall be spread off-site on Army property over an undisturbed, vegetated area capable of absorbing the top-hole water and filtering solids in the discharge, and spread in a manner that prevents a direct discharge to surface waters.

b) The pH of the discharge shall be between 6.5 and 8.3.

c) The discharge shall not contain oil or grease[23].

d) The discharge area shall not be within 100 feet of a stream, body of water, or wetland, nor within streamside riparian corridors.

Water Supply Discharges:

a) The discharger shall implement appropriate management practices to dissipate energy and prevent erosion.

b) The discharger shall implement appropriate management practices to preclude discharge to surface waters and surface water drainage courses. The discharger shall immediately notify the Central Coast RWQCB staff of any discharge to surface waters or surface water drainage courses.

c) The discharge shall not have chlorine or bromine concentrations that could impact groundwater quality.

d) The discharge area shall not be located within 100 feet of a stream, body of water, or wetland, nor within streamside riparian corridors.

However, the MPWSP would not be inconsistent with such requirements as all drilling fluids would be recirculated into and out of the borings using a mud tank located next to the drill rig. Drill cuttings would be removed from the drilling mud using a shaker table and then the drilling mud would be re-used. Once the drill bit reaches groundwater, the construction contractor would pump out all of the drilling fluid slurry and put it in a storage container for offsite hauling and disposal.

NPDES Municipal Stormwater Permit

The NPDES General Permit for (WDRs for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) (Order No. 2013-0001-DWQ, NPDES No. CAS000004) regulates stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4) into waters of the U.S. (SWRCB, 2013b). An "MS4" is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): (i) designed or used for collecting or conveying stormwater; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works as defined at Title 40 of the Code of Federal Regulations (CFR) Section 122.2 (MRSWMP, 2011).

The Phase II Municipal General Permit requires regulated small MS4s to develop and implement BMPs, measurable goals, and timetables for implementation, designed to reduce the discharge of pollutants to the maximum extent practicable and to protect water quality.[24] The permittees under

[23] Oil and grease includes hydraulic fluids.
[24] Phase I stormwater permits provide permit coverage for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities.

the small MS4 (Phase II) General Permit[25] in the project area include Monterey County and cities therein. Additionally, the Presidio of Monterey is a Phase II non-traditional MS4 permittee with requirements applicable within the Ord Military Community in Seaside. Each permittee is required to prepare and implement a stormwater management plan (SWMP) and regulate stormwater runoff from development and redevelopment projects through post-construction stormwater management requirements (RWQCB, 2013).

Several of the proposed facilities such as the subsurface slant wells at CEMEX, the MPWSP Desalination Plant in unincorporated Monterey County, and the ASR-5 and ASR-6 Wells and ASR Conveyance Pipelines in the Presidio of Monterey – Ord Military Community in Seaside would be subject to the stormwater control requirements in the respective local jurisdictions.

A Memorandum of Agreement for the Monterey Regional Stormwater Pollution Prevention Program was prepared and executed by MRWPCA and by the entities in the southern Monterey Bay area (Monterey County and cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside) to form the Monterey Regional Stormwater Management Program (MRSWMP). MRWPCA acts as the administrative agent for the MRSWMP. The purpose of the MRSWMP is to implement and enforce a series of BMPs to reduce the discharge of pollutants from the MS4s to the "maximum extent practicable," to protect water quality, and to satisfy the appropriate water quality requirements of the CWA (City of Monterey, 2011). The Phase II Program contains six Minimum Control Measures (MRSWMP, 2011):

- Public Education and Outreach;
- Public Participation/Involvement;
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post-Construction Runoff Control; and
- Pollution Prevention/Good Housekeeping.

The MRSWMP lists BMPs and associated Measurable Goals for the six Minimum Control Measures. The Measurable Goals must include, as appropriate, the months and years for scheduled actions, including interim milestones and frequency of the action. It is through the implementation and evaluation of these BMPs and Measurable Goals that the permittees ensure that the objectives of the Phase II NPDES Program are met (MRSWMP, 2011).

In July 2013, the Central Coast RWQCB adopted Resolution No. R3-2013-0032, which prescribes new Post-Construction Requirements for projects that create or replace 2,500 square feet or more of impervious area and receive their first discretionary approval for design elements after March 6, 2014. **Table 4.3-6** summarizes the new post-construction requirements for different categories of projects, which would include the MPWSP.

[25] Phase II stormwater permits provide permit coverage for smaller municipalities (populations less than 100,000), including non-traditional Small MS4s, which are facilities such as military bases, public campuses, prisons, and hospital complexes.

TABLE 4.3-6
OVERVIEW OF POST-CONSTRUCTION REQUIREMENTS FOR STORMWATER MANAGEMENT

Project Categories	Performance Requirements
Tier 1 Projects Projects that create or replace 2,500 square feet or more of impervious surface.	**Implement One or More Low Impact Design (LID) Measures:** Limit disturbance of natural drainage features. Limit clearing, grading, and soil compaction. Minimize impervious surfaces. Minimize runoff by dispersing runoff to landscape or using permeable pavements.
Tier 2 Projects Projects that create or replace 5,000 square feet or more net impervious surface.	**Tier 1 requirements, plus treat site runoff:** Treat runoff generated by the 85th percentile 24-hour storm event with an approved and appropriately sized LID treatment system prior to discharge from the site.
Tier 3 Projects Projects that create or replace 15,000 square feet or more of impervious surface.	**Tier 2 requirements, plus:** Prevent offsite discharge from events up to the 95th percentile rainfall event using Stormwater Control Measures.
Tier 4 Projects Projects that create or replace 22,500 square feet of impervious surface.	**Tier 3 requirements, plus:** Control peak flows to not exceed pre-project flows for the 2-year through 10-year events.

SOURCE: MRSWMP, 2014.

NPDES Permit for MRWPCA Regional Wastewater Treatment Plant

MRWPCA provides wastewater treatment, disposal, and reclamation services for the cities of Monterey, Pacific Grove, Del Rey Oaks, Sand City, Marina, and Salinas; the Seaside Sanitation District; Castroville, Moss Landing, and Boronda Community Service Districts; and the former Fort Ord military base. Residential, commercial, and industrial wastewater is conveyed to the MRWPCA Regional Wastewater Treatment Plant in Monterey County located 2 miles north of Marina. The MRWPCA Regional Wastewater Treatment Plant has an average dry weather design treatment capacity of 29.6 million gallons per day (mgd) and peak wet weather design capacity of 75.6 mgd (RWQCB, 2014).

In winter months, secondary treated wastewater from the MRWPCA Regional Wastewater Treatment Plant is discharged to Monterey Bay through a diffuser positioned 11,260 feet offshore at a depth of approximately 100 feet. The diffuser is designed to convey ultimate wet weather flows of 81.2 mgd, which is the permitted rate of discharge through the outfall. The treated wastewater discharge is regulated by the RWQCB (2014) under the *Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* (Order No. R3-2014-0013, NPDES Permit No. CA0048551). The minimum initial dilution (Dm) established in the NPDES permit at the point of discharge for operations by the MRWPCA is 1:145 (parts effluent to seawater). The Dm is used by the RWQCB to determine compliance with the water quality effluent limitations established in the NPDES permit for in-pipe water quality (i.e., prior to discharge) that are based on water quality objectives contained in the Ocean Plan.

The effluent limitations in the permit are based on and are consistent with the water quality objectives contained in the Ocean Plan.

In the summer months, up to 29.6 mgd of the secondary treated wastewater from the Regional Wastewater Treatment Plant is conveyed to the Salinas Valley Reclamation Project (SVRP) recycled water plant, where it is tertiary treated[26] and subsequently used for irrigation of 12,000 acres of farmland in the northern Salinas Valley. This reclaimed water is distributed to farmland via the Castroville Seawater Intrusion Project (CSIP) distribution system. The SVRP and CSIP reduce the region's dependence on local groundwater, thereby controlling saltwater intrusion.

The NDPES permit incorporates the Ocean Plan water quality objectives established by the SWRCB in order to ensure the protection of the beneficial uses of Monterey Bay. An amendment to the MRWPCA NPDES Permit to include discharges of brine would be required prior to the implementation of the MPWSP and operation of the MPWSP Desalination Plant. The amendment process for the NPDES Permit would require an extensive water quality assessment, which would involve MRWPCA (as the discharger defined in the current NPDES Permit) and/or CalAm (as a contributor of a new discharge) to perform testing and monitoring of the water quality of the discharges, including the testing of the source water drawn from the subsurface water intake wells and piped to the MPWSP Desalination Plant and assessing the resulting water quality of the discharges from the MPWSP Desalination Plant. Any discharge from the operation of the MPWSP Desalination Plant to Monterey Bay through the MRWPCA outfall would be subject to the Amended NPDES Permit.

As per Section 2c of the NPDES Permit, "prior to increasing the volume of brine waste discharged through the ocean outfall beyond 375,000 gallons average daily flow, the Discharger [i.e., MRWPCA] shall submit a brine waste disposal study to the Executive Officer for approval. The study shall include, at a minimum, the following elements: (1) a projection of the brine volume and characteristics, (2) an assessment of the impact of the increased brine volume on permit compliance, (3) an assessment of the impact of the increased brine volume on the minimum probable initial dilution at the point of discharge, (4) a detailed description of the brine waste disposal facilities which are proposed to accommodate the increased brine volume and facilitate blended secondary effluent and brine wastes flow metering and sampling, and (5) a schedule for the design and construction of the new brine disposal facilities."

Section VII B.1 of the NPDES Permit includes the "Reopener Provisions" which state that the [NPDES Permit] Order may be modified in accordance with the requirements set forth at 40 C.F.R. parts 122 and 124, to include appropriate conditions or limits based on newly available information, or to implement any, new State water quality objectives that are approved by the USEPA. As effluent is further characterized through additional monitoring, and if a need for

[26] Tertiary treatment is an advanced level of treatment provided to secondary treated wastewater prior to use for irrigation under Title 22 regulations.

additional effluent limitations becomes apparent after additional effluent characterization, the Order will be reopened to incorporate such limitations."

Further, the NPDES Permit accounts for a potential exceedance of any constituent over the effluent limitation. "An existing effluent limitation for the pollutant shall remain in the permit, otherwise the permit shall include a reopener clause to allow for subsequent modification of the permit to include an effluent limitation if the monitoring establishes that the discharge causes, has the reasonable potential to cause, or contribute to an excursion above a Table 1 water quality objective" (RWQCB, 2014).

4.3.2.3 Applicable Regional and Local Land Use Plans and Policies

Table 4.3-7 presents the regional and local land use plans, policies, and regulations pertaining to surface water hydrology and water quality that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. Project consistency with such plans, policies, and regulations is also indicated in the table. Where the analysis concludes the proposed project would be consistent with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project would be potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to Section 4.3.5 Direct and Indirect Effects of the Proposed Project, for additional discussion. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.3-7
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.125:*** Approval of all future uses and construction within the Marina Planning Area shall be contingent upon compliance with the following policies and conditions intended to protect the quality of the area's water resources, avoid unnecessary consumption of water, and ensure that adequate water resources are available for new development.	This policy is intended to protect water quality, minimize unnecessary consumption, and provide for future resource needs.	Consistent: The project would be constructed in conformance with the State Construction General Permit and WDRs, which require specific construction-related BMPs to prevent concentrated stormwater run-on/runoff, soil erosion, and release of construction site contaminants. The project would be operated in conformance with State WDRs under the NPDES Phase II Permit (Order No. 2013-0001-DWQ, NPDES No. CAS000004), which regulates stormwater discharge into storm sewer systems. Mandatory compliance with these permits would protect water quality during construction and operation. The project would not increase water consumption and would develop supplemental water supplies for the Monterey Peninsula.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Storm Drainage	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 3.57 (1):*** All storm water runoff shall continue to be retained onsite and accommodated by localized retention basins. Retention basins associated with a particular project shall be landscaped with appropriate plant materials and shall be designed wherever possible as integral parts of a development project's common open space or parks, or to create new or enhance existing habitat. All onsite drainage facilities shall be designed to convey runoff from a 10-year frequency storm at minimum. In areas of the City where recycled water will not be readily available, the City encourages the provision of storm water reuse facilities of sufficient size to provide for landscape irrigation of development in proximity to retention basins. The adequacy of onsite and offsite drainage facilities shall be determined through the preparation of storm drainage reports and plans, approved by the City Public Works Director; such reports and plans shall be required for all new subdivisions and new commercial/industrial development proposed in Marina.	This policy is intended to minimize adverse effects of uncontrolled stormwater runoff.	Consistent: The project would conform to the State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004) which require specific BMPs and measures to manage stormwater. The project would be subject to MRSWMP, which requires stormwater control requirements under the MS4 permit and implementation of erosion and stormwater control measures. The State requirements are incorporated in the municipal stormwater permit.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Storm Drainage	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 3.57 (2):*** Pretreatment of stormwater runoff from roads, large parking areas, and other extensive paved areas used by vehicles shall be provided using appropriate means such as primary settlement structures, routing through settlement ponds, or routing through adequately long natural swales or slopes. In addition, all development plans shall conform to the requirements of the City's National Pollution Discharge Elimination System permit and City ordinances, and all subdivisions and new commercial/industrial development shall identify Best City of Marina General Plan 74 Management Practices (BMP's) appropriate or applicable to uses conducted onsite to effectively prevent the discharge of pollutants in stormwater runoff. 3. Stormwater systems shall be constructed in a manner which prevents soil erosion. Appropriate measures to avoid such impacts include the dispersal of runoff, installation of energy dissipaters where dispersal is not practical and concentration of runoff water is necessary, and retention of vegetation or revegetation of affected surfaces.	This policy is intended to minimize adverse effects of uncontrolled stormwater runoff.	Consistent: The project would conform to the State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004) which require specific BMPs and measures to manage stormwater. The State requirements are incorporated in the municipal stormwater permit. The project would be subject to the MRSWMP requirements under the MS4 permit and would be required to implement erosion and stormwater control measures.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 15.48 – Flood Damage Prevention	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Chapter 15.48 - Flood Damage Prevention*** states provisions for flood prevention and reduction of flood hazards. A special flood hazard area is an area that is subject to one percent or greater change of flooding in a given year, which is the FEMA 100-year floodplain. The code also sets requirements for new storm drainage facilities.	This section is intended to prevent and reduce damage from floods.	Consistent: Within the city of Marina, portions of the Source Water Pipeline and new Transmission Main would be constructed in a 100-year flood hazard area. However, these underground pipelines would not impede or redirect flood flows. None of the aboveground facilities in the city of Marina would be located in the 100-year floodplain.
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 16.08 – Design Requirement by Type of Subdivision	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main Pipeline	***Section 16.08.080 (F) Erosion Control.*** [Implement] silt basins, structures, planting or other forms of erosion control when necessary in the opinion of the Planning Commission.	This section is intended to control erosion.	Consistent: The project conforms to the State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004) which require specific BMPs and measures to manage stormwater and control erosion. The State requirements are incorporated in the municipal stormwater permit. The project would be subject to the MRSWMP, which requires stormwater control requirements under the MS4 permit and implementation of erosion control measures.
City of Marina (coastal zone & inland area)	Marina Municipal Code	Title 8 - Health and Safety	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Section 8.46.130 Requirement to prevent, control, and reduce storm water pollutants (b) Responsibility to Implement Best Management Practices.*** Notwithstanding the presence or absence of BMP requirements promulgated pursuant to subparagraphs (a), (b), (c), and (d) of this section, each person engaged in activities or operations, or owning facilities or property which will or may result in pollutants entering storm water, the storm drain system, or waters of the U.S. shall implement best management practices to the extent they are technologically achievable to prevent and reduce such pollutants. The owner or operator of each commercial or industrial establishment shall provide reasonable protection from accidental discharge of prohibited materials or other wastes into the city storm drain system and/or watercourses. Facilities to prevent accidental discharge of prohibited materials or other wastes shall be provided and maintained at expense of the owner or operator.	This section is intended to protect water quality by preventing, controlling, and reducing pollutants (including sediment) from entering stormwater, the storm drain system, and waters of the U.S.	Consistent: The project would conform to the State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004) that require specific BMPs and measures to manage stormwater. The State requirements are incorporated in the municipal stormwater permit. The project would be subject to the MRSWMP, which requires stormwater control requirements under the MS4 permit and implementation of erosion and stormwater control measures to protect water quality.
City of Marina (coastal zone & inland area)	Marina Municipal Code	Title 8 - Health and Safety	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Section 8.46.130 Requirement to prevent, control, and reduce storm water pollutants (c) Construction Sites.*** The city's BMP Guidance Series will include appropriate best management practices to reduce pollutants in any storm water runoff from construction activities. The city shall incorporate such requirements in any land use entitlement and construction or building-related permit to be issued relative to such development or redevelopment. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and building permits as required in this chapter and the city storm water utility ordinance. Construction activities subject to BMP requirements shall continuously employ measures to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts on water quality, contamination, or unauthorized discharge of pollutants.	This section is intended to protect water quality by preventing, controlling, and reducing pollutants (including sediment) from entering stormwater, the storm drain system, and waters of the U.S.	Consistent: The project would conform to the State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004) that require specific BMPs and measures to manage stormwater. The proposed project would be subject to the MRSWMP, which requires stormwater control requirements under the MS4 permit and implementation of erosion and water quality control measures.
City of Marina (coastal zone)	Marina Local Coastal Program Land Use Plan	Policy	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	**Policy 17.** To insure protection and restoration of ocean's water quality and biological productivity.	This policy is intended to protect ocean water quality and biological productivity.	Consistent: The project would conform to the State Construction General Permit and WDRs (the NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004), which require i specific construction-related BMPs to prevent concentrated stormwater run-on/runoff, soil erosion, and release of construction site contaminants to protect water quality.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Monterey (inland area)	Monterey City Code	Chapter 31.5 - Storm Water Management	Ryan Ranch–Bishop Interconnection Improvements	***Section 31.5-12. Prohibitions of Illegal Discharges.*** No person or entity shall discharge or cause to be discharged into the municipal Storm Drain System or waters of the state, any materials, including but not limited to Pollutants or waters containing any Pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.	This section is intended to prevent discharges into the municipal Storm Drain System or waters of the state that could affect water quality.	Consistent: The project would conform to the State Construction General Permit and the Chapter 31.5 of the City Code, which require specific construction-related BMPs to prevent erosion and the release of contaminants to protect water quality.
City of Monterey (inland area)	Monterey City Code	Chapter 31.5 - Storm Water Management	Ryan Ranch–Bishop Interconnection Improvements	***Section 31.5-12. Requirement to Prevent, Control, and Reduce Storm Water Pollutants***. (c) Construction Sites. BMPs to reduce pollutants in any storm water runoff activities shall be incorporated in any land use entitlement and/or construction or building-related permit. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and/or building permits as required by the City and as required by the NPDES General Permit and as amended thereto.	This section is intended to prevent pollutants (including sediment) from entering stormwater runoff.	Consistent: The project would conform to the State Construction General Permit and the Chapter 31.5 of the City Code, which require specific construction-related BMPs to prevent erosion and the release of contaminants.
City of Monterey (inland areas)	Monterey City Code	Chapter 31.5 – Storm Water Management	Ryan Ranch-Bishop Interconnection Improvements	***Section 31.5-15 - Requirement to Prevent, Control, and Reduce Storm Water Pollutants. (b) New Development and Redevelopment.*** The City may require any owner or person developing real property to identify appropriate BMPs to control the volume, rate, and potential pollutant load of stormwater runoff from new development and redevelopment projects as may be appropriate to minimize the generation, transport and discharge of pollutants. The City shall incorporate such requirements in any land use entitlement and construction or building-related permit to be issued relative to such development or redevelopment. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and building permits as required in this Article and the City Stormwater Utility Ordinance, Chapter 31.5, Article 1. The requirements may also include a combination of structural and non-structural BMPs along with their long-term operation and maintenance.	This section is intended to protect stormwater quality from pollutants associated with new development.	Consistent: Within the city of Monterey, the project would conform to the State Construction General Permit and WDRs, which require BMPs and measures to prevent water pollution and control any pollutant discharge so as to protect water quality.
City of Monterey (inland areas)	Monterey City Code	Chapter 9 – Building Regulations	Ryan Ranch-Bishop Interconnection Improvements	***Section 9-70.1- Establishment of Development Permit.*** A Development Permit shall be obtained before construction or development begins within any area of special flood hazards established in Section 9-69. Application for a Development Permit shall be made on forms furnished by the Floodplain Administrator and may include, but not be limited to plans prepared by a registered civil engineer in duplicate drawn to scale showing the nature, location, dimensions, and elevation of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities; along with their locations.	This section is intended to protect people and property from flood hazards.	Consistent: No new habitable development or redevelopment is proposed under the MPWSP within the city of Monterey.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Policy COS.3-2:*** Work with all local, regional, State, and federal agencies to implement mandated water quality programs and regulations to improve surface water quality. *Implementation Plan COS-3.2.1: NPDES Requirements:* To reduce pollutants in urban runoff, require new development projects and substantial rehabilitation projects to incorporate Best Management Practices (BMPs) pursuant to the National Pollutant Discharge Elimination System (NPDES) permit to ensure that the City complies with applicable state and federal regulations.	This policy is intended to protect surface water quality from pollutants (including sediment) in urban runoff.	Consistent: The pipelines would be constructed below grade and would not increase the amount of impervious surfaces, or release pollutants. In addition, the project would conform to the State Construction General Permit and the Seaside Municipal Code, which require specific construction-related BMPs to prevent stormwater pollutants from leaving the construction sites. Once installed, the proposed pipelines would have no effect on stormwater quality or runoff.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Policy COS-4.2*****:** Protect and enhance the creeks, lakes, and adjacent wetlands for their value in providing visual amenity, habitat for wildlife, and recreational opportunities.	This policy is intended to protect beneficial uses of creeks, lakes, and adjacent wetlands.	Consistent: The project would conform to State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ), which require BMPs and measures to control and minimize any stormwater runoff and prevent water pollution so as to protect water quality. The project would conform with State WDRs under the NPDES Phase II Permit (Order No. 2013-0001-DWQ, NPDES No. CAS000004), which regulates stormwater discharge into storm sewer systems. For impacts related to wetlands, please refer to Section 4.6, Terrestrial Biological Resources. As discussed for wetlands in Section 4.6, Terrestrial Biological Resources, for wetlands, the project would have a less than a significant impact with mitigation.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Safety	New Transmission Main, ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Policy S-1.2*****:** Protect the community from flooding hazards. *Implementation Plan S-1.2.1*: Project Flood Control. Require developers to provide flood control systems in new development areas that mitigate potential onsite flooding hazards and also avoid increasing flood hazards elsewhere.	This policy is intended to protect people and property from flood hazards.	Consistent: None of the MPWSP components proposed for Seaside would be located in a flood hazard area. All MPWSP facilities in Seaside would be buried below ground surface and would not present a risk of flood hazard.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Land Use	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy LU-8.2:*** Ensure that developers provide stormwater retention/detention facilities and institute Best Management Practices that regulate runoff and siltation that meets local, State, and federal standards.	This policy is intended to ensure that developers provide stormwater retention/detention facilities.	Consistent: None of the MPWSP components proposed for Seaside would be located in a flood hazard area. All MPWSP facilities in Seaside would be buried below ground surface and would not present a risk of flood hazard.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.46 – Urban Storm Water Quality Manage Surface management and Discharge Control	New Transmission Main, ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Chapter 8.46 Urban Storm Water Quality Manage Surface Management and Discharge Control.*** Urban Stormwater Quality Management and Discharge Control would apply to all water entering the storm drain system generated on any developed and undeveloped lands lying within the city. The chapter lists requirements to prevent, control, and reduce stormwater pollutants, protection of water courses, and notification to emergency response officials in the event of a chemical release.	This guideline is intended to manage stormwater quality and control stormwater discharges.	Consistent: The proposed project would be constructed and operated in conformance with State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ, NPDES No. CAS000004 and Order No. R3-2014-0013), which require implementation of BMPs and measures to control and minimize stormwater discharges into nearby water bodies. The State requirements are incorporated in the local municipal code and the municipal stormwater permit.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.46 - Health and Safety	New Transmission Main ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Section 8.46.130 Requirement to prevent, control, and reduce storm water pollutants (B) Responsibility to Implement Best Management Practices***. Notwithstanding the presence or absence of BMP requirements promulgated pursuant to subparagraphs A, B, C, and D of this section, each person engaged in activities or operations, or owning facilities or property which will or may result in pollutants entering storm water, the storm drain system, or waters of the U.S. shall implement best management practices to the extent they are technologically achievable to prevent and reduce such pollutants. The owner or operator of each commercial or industrial establishment shall provide reasonable protection from accidental discharge of prohibited materials or other wastes into the city storm drain system and/or watercourses. Facilities to prevent accidental discharge of prohibited materials or other wastes shall be provided and maintained at expense of the owner or operator.	This section is intended to protect surface water quality from pollutants (including sediment) associated with development.	Consistent: The pipelines would be constructed below grade and would not increase the amount of impervious surfaces, or releasing pollutants. In addition, the proposed project would be subject to the State Construction General Permit, and the Seaside Municipal Code, which require the implementation of specific construction-related BMPs to prevent stormwater pollutants from leaving the construction sites.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.46 - Health and Safety	New Transmission Main, ASR Conveyance Pipeline, ASR Pump to Waste Pipeline, and ASR Recirculation Pipeline	***Section 8.46.130 Requirement to prevent, control, and reduce storm water pollutants (C) Construction Sites***. The city's BMP Guidance Series includes appropriate best management practices to reduce pollutants in any storm water runoff from construction activities. The city shall incorporate such requirements in any land use entitlement and construction or building-related permit to be issued relative to such development or redevelopment. The owner and developer shall comply with the terms, provisions, and conditions of such land use entitlements and building permits as required in this chapter and the city storm water utility ordinance. Construction activities subject to BMP requirements shall continuously employ measures to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts on water quality, contamination, or unauthorized discharge of pollutants.	This section is intended to protect surface water quality from pollutants (including sediment) associated with development.	Consistent: The pipelines would be constructed below grade and would not increase the amount of impervious surfaces, or release pollutants. In addition, the proposed project would be subject to the State Construction General Permit and Seaside Municipal Code, which require the implementation of specific construction-related BMPs to prevent stormwater pollutants from leaving the construction sites.
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-1.20:*** Design ("D") and site control ("S") overlay district designations shall be applied to the Carmel Valley area. Design review for all new development throughout the Valley, including proposals for existing lots of record, utilities, heavy commercial, and visitor accommodations, but excluding minor additions to existing development where those changes are not conspicuous from outside of the property, shall consider the following guidelines: f. Minimize erosion and/or modification of landforms.	This policy is intended to minimize erosion.	Consistent: The proposed project would be constructed and operated in conformance with State Construction General Permit, which requires implementation of BMPs and measures to control and minimize erosion.
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-4.1:*** In order to reduce potential erosion or rapid runoff: a. The amount of land cleared at any one time shall be limited to the area that can be developed during one construction season. b. Motorized vehicles shall be prohibited on the banks or in the bed of the Carmel River, except by permit from the Water Management District or Monterey County. c. Native vegetative cover must be maintained on areas that have the following combination of soils and slope: 1. Santa Lucia shaly clay loam, 30-50% slope (SfF) 2. Santa Lucia-Reliz Association, 30-75% slope (Sg) 3. Cieneba fine gravelly sandy loam, 30-70% slope (CcG) 4. San Andreas fine sandy loam, 30-75% slope (ScG) 5. Sheridan coarse sandy loam, 30-75% slope (SoG) 6. Junipero-Sur complex, 50-85% slope (Jc)	This policy is intended to reduce potential erosion or rapid runoff.	Consistent: The proposed project would be constructed and operated in conformance with State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ), which require implementation of BMPs and measures to control and reduce erosion and stormwater runoff. The State requirements are incorporated in the municipal stormwater permit.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 16.08 –Grading	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements	***Chapter 16.08 -*** The Monterey County Grading Ordinance generally regulates grading activities that involve more than 100 cubic yards of excavation and fill. Minor fills and excavations ("cuts") of less than 100 cubic yards that are not intended to provide foundations for structures, or that are very shallow and nearly flat, are typically exempt from the ordinance, as are shallow footings for small structures. Submittal requirements for a County grading permit include site plans, existing contours and proposed contour changes, an estimate of the volume of earth to be moved, and geotechnical (soils) reports. Grading activities that involve over 5,000 cubic yards of soil must include detailed plans signed by a state-licensed civil engineer. Grading is not allowed to obstruct storm drainage or cause siltation of a waterway. All grading requires implementation of	This ordinance is intended to minimize soil erosion, and loss of topsoil, and associated environmental effects.	Consistent: As noted in Chapter 3, Description of the Project (Proposed Project), CalAm would be required to obtain a grading permit prior to project construction. As part of the grading permit review process, CalAm would have to demonstrate conformity with the requirements of the Monterey County Grading Ordinance, including specific provisions designed to minimize soil erosion, loss of topsoil, and associated environmental effects. In addition, the proposed project would be subject to the State Construction General Permit and the Monterey County Erosion Control Ordinance, which also require the implementation of specific construction-related BMPs to minimize erosion and soil loss, and prevent stormwater pollutants from leaving the construction sites.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas) (cont.)				temporary and permanent erosion-control measures. Grading within 50 feet of a watercourse, or within 200 feet of a river, is regulated in the Monterey County Zoning Ordinance floodplain regulations. The Monterey County Grading Ordinance requires a soil engineering and engineering geology report (Section 16.08.110: Permit – Soil Engineering and Engineering Geology Reports [Ordinance 4029, 1999; Ordinance 2534, Section 110, 1979], unless waived by the Building Official because information of record is available showing such data is not needed. The soil engineering and engineering geology report must include the following: a. Data regarding the properties, distribution and strength of existing soils b. Recommendations for grading and corrective measures for project design, as appropriate c. An adequate description of the geology of the site and potential hazards. The recommendations from the soil engineering and engineering geology report must be incorporated in the grading plans and construction specifications.		
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 16.12 -Erosion Control	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Chapter 16.12 - Erosion Control.*** Requires that specific design considerations be incorporated into projects to reduce the potential of erosion and that an erosion control plan be approved by the County prior to initiation of grading activities.	This ordinance is intended to minimize erosion and soil loss, and associated water quality impacts, among other environmental effects.	Consistent: As noted in Chapter 3, Description of the Project (Proposed Project), CalAm would be required to obtain a grading permit prior to project construction. As part of the grading permit review process, CalAm would have to demonstrate conformity with the requirements of the Monterey County Erosion Control Ordinance, including through preparation of an erosion control plan indicating proposed methods for the control of runoff, erosion, and sediment movement. In addition, the proposed project would be subject to the State Construction General Permit, which also requires the implementation of specific construction-related BMPs to minimize erosion and soil loss, and prevent stormwater pollutants from leaving the construction sites.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 16.16 - Development of Floodplains	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Chapter 16.16 - Development of Floodplains.*** Establishes methods of reducing flood losses such as controlling the alteration of natural floodplains and requiring new construction in the floodplain to incorporate flood-proofing measures (Floodplain regulations in the county extend to areas within 200 feet of rivers or within 50 feet of watercourses).	This ordinance is intended to protect people, property, and the environment from the effects of development in flood hazard areas.	Consistent: The Carmel Valley Pump Station and Castroville Pipeline would be located in a floodplain. Once constructed, the Castroville Pipeline would be underground and would have no effect on flooding. The Carmel Valley Pump Station would be constructed in accordance with Chapter 16.16 of the Monterey County Code. None of the other proposed aboveground facilities would be constructed in a floodplain.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy OS-3.3:*** Criteria for studies to evaluate and address, through appropriate designs and BMPs, geologic and hydrologic constraints and hazards conditions, such as slope and soil instability, moderate and high erosion hazards, and drainage, water quality, and stream stability problems created by increased stormwater runoff, shall be established for new development and changes in land use designations.	This policy is intended to protect people, property, and the environment from the effects of development in geologic and hydrologic hazard areas.	Consistent: The proposed project would be constructed and operated in conformance with State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ and NPDES General Permit for Discharges with Low Threat to Water Quality and the General Waiver of WDRs for Specific Types of Discharges [Resolution R3-2014-0014]), which require implementation of BMPs and measures to control and reduce erosion and pollutant discharge, thus both stormwater runoff and quality. The State requirements are incorporated in the County's Municipal Code and the municipal stormwater permit.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy OS-4.2:*** Direct and indirect discharges of harmful substances into marine waters, rivers or streams shall not exceed state or federal standards.	This policy is intended to protect the quality of marine waters, rivers, and streams.	Inconsistent: The project would conform with State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ and NPDES General Permit for Discharges with Low Threat to Water Quality and the General Waiver of WDRs for Specific Types of Discharges [Resolution R3-2014-0041], NPDES No. CAS000004 and Order No. R3-2014-0013, NPDES Permit No. CA0048551 for the Monterey Regional Water Pollution Control Agency Treatment Plant), which require BMPs and measures to control and reduce pollutants in the point and nonpoint discharges (e.g., stormwater runoff and brine discharge) from project facilities. The State requirements are incorporated in the County's Municipal Code and the municipal stormwater permit, and would be incorporated into any new permits obtained prior to project operation such as the amendment to the NPDES permit for discharging brine from the MPWSP Desalination Plant into Bay through the existing MRWPCA outfall. Operational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds. This issue is discussed in Impact 4.3-5.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy OS-4.3:*** Estuaries, salt and fresh water marshes, tide pools, wetlands, sloughs, river and stream mouth areas, plus all waterways that drain and have impact on State Monterey County General Plan designated Areas of Special Biological Significance (ASBS) shall be protected, maintained, and preserved in accordance with state and federal water quality regulations.	This policy is intended to protect and maintain the quality of coastal waterways and designated ASBSs.	Inconsistent: The project would conform with State Construction General Permit and WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ and NPDES General Permit for Discharges with Low Threat to Water Quality and the General Waiver of WDRs for Specific Types of Discharges [Resolution R3-2014-0041], NPDES No. CAS000004 and Order No. R3-2014-0013, NPDES Permit No. CA0048551 for the Monterey Regional Water Pollution Control Agency Treatment Plant), which require BMPs and measures to control and reduce pollutants in the discharges from project facilities, which eventually drain into the designated ASBSs. The State requirements are incorporated in the County's Municipal Code and the municipal stormwater permit, and would be incorporated into any new permits obtained prior to project operation such as the amendment to the NPDES permit for discharging brine from the MPWSP Desalination Plant into Bay through the existing MRWPCA outfall. Operational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds. This issue is discussed in Impact 4.3-5.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-2.3:*** All new development, including filling, grading, and construction, within designated 100-year floodplain areas shall conform to the guidelines of FEMA and the National Flood Insurance Program and ordinances established by the County Board of Supervisors. With the exception of the construction of structures, Routine and Ongoing Agricultural Activities shall be exempt from this policy.	This policy is intended to protect people and property from flood hazards.	Consistent: The Carmel Valley Pump Station and Castroville Pipeline would be located in a floodplain. Once constructed, the Castroville Pipeline would be underground and would have no effect on flooding. The Carmel Valley Pump Station would be constructed in accordance with Chapter 16.16 of the Monterey County Code and FEMA requirements for construction in the flood plain. None of the other proposed aboveground facilities would be constructed in a floodplain.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-2.6:*** Drainage and flood control improvements needed to mitigate flood hazard impacts associated with potential development in the 100-year floodplain shall be determined prior to approval of new development and shall be constructed concurrently with the development.	This policy is intended to protect people and property from flood hazards.	Consistent: The Carmel Valley Pump Station and Castroville Pipeline would be located in a floodplain. Once constructed, the Castroville Pipeline would be underground and would have no effect on flooding. The Carmel Valley Pump Station would be constructed in accordance with Chapter 16.16 of the Monterey County Code and FEMA requirements for construction in the flood plain. None of the other proposed aboveground facilities would be constructed in a floodplain.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-2.8:*** Alternative project designs and densities to minimize development in the floodplain shall be considered and evaluated.	This policy is intended to protect people and property from flood hazards.	Consistent: The Carmel Valley Pump Station and Castroville Pipeline would be located in a floodplain. Once constructed, the Castroville Pipeline would be underground and would have no effect on flooding. The Carmel Valley Pump Station would be constructed in accordance with Chapter 16.16 of the Monterey County Code and FEMA requirements for construction in the flood plain. None of the other proposed aboveground facilities would be constructed in a floodplain.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-3.1:*** Post-development, offsite peak flow drainage from the area being developed shall not be greater than pre-development peak flow drainage. Onsite improvements or other methods for storm water detention shall be required to maintain post-development, offsite, peak flows at no greater than predevelopment levels, where appropriate, as determined by the Monterey County Water Resources Agency.	This policy is intended avoid potential adverse effects of increased surface runoff from new development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs (NPDES Phase II Permit, Order No. 2013-0001-DWQ and NPDES General Permit for Discharges with Low Threat to Water Quality and the General Waiver of WDRs for Specific Types of Discharges [Resolution R3-2014-0041], NPDES No. CAS000004 and Order No. R3-2014-0013) which are set forth in the local municipal stormwater permit and which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-3.2:*** Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.	This policy is intended to protect groundwater and surface water quality from pollutants associated with development.	Consistent: The proposed project would be constructed and operated in conformance with State Construction General Permit and WDRs, which require implementation of BMPs and measures to control and reduce pollutants in the discharges from project facilities that could affect water quality. The State requirements are incorporated in the County's Municipal Code and the municipal stormwater permit, and would be incorporated into any new permits obtained prior to project operation. The issue of groundwater quality is addressed further in Section 4.7, Hazards and Hazardous Materials. As discussed in Section 4.7, groundwater quality issues would be addressed through implementation of mitigation measures, thereby resolving potential conflicts with applicable groundwater quality protection policies.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-3.3:*** Drainage facilities to mitigate the post-development peak flow impact of new development shall be installed concurrent with new development	This policy is intended avoid potential adverse effects of increased surface runoff from new development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-3.5:*** Runoff Performance Standards that result in an array of site planning and design techniques to reduce storm flows plus capture and recharge runoff shall be developed and implemented, where appropriate, as determined by the Monterey County Water Resources Agency.	This policy is intended to protect groundwater and surface water quality from pollutants associated with development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-3.9:*** In order to minimize urban runoff affecting water quality, the County shall require all future development within urban and suburban areas to implement Best Management Practices (BMPs) as approved in the Monterey Regional Storm Water Management Program which are designed to incorporate Low Impact Development techniques. BMPs may include, but are not limited to, grassy swales, rain gardens, bioretention cells, and tree box filters. BMPs should preserve as much native vegetation as feasible possible on the project site.	This policy is intended to protect surface water quality from pollutants that may be present in stormwater runoff.	Consistent: The proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control and treatment measures (including LID measures where necessary) to control any pollutant discharges through the runoff and to minimize site runoff such that the post-project flow drainage from the site must match pre-project flows.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Key Policy 4.3.4:*** All future development within the North County coastal segment must be clearly consistent with the protection of the area's significant human and cultural resources, agriculture, natural resources, and water quality.	This policy is intended to provide long-term management and protection of the County's coastal resources.	Consistent: The proposed project would be implemented in conformance of State Construction General Permit and WDRs set forth in the local municipal code and stormwater permit. The WDR requirements would be incorporated into any new permits obtained prior to project operation, such as minimizing erosion and sediment control and runoff. The project's implications for cultural, agricultural, and terrestrial biological resources are discussed in EIR Sections 4.15, Cultural Resources, 4.16, Agriculture and Forestry Resources, and 4.6, Terrestrial Biological Resources, respectively, which present additional discussion of the project's conformity with applicable North County Land Use Plan policies governing these resource areas, respectively.
County of Monterey (inland areas)	North County Area Plan	Seismic, Geologic, Flood, and Fire Hazards	Castroville Pipeline	***16.2.1.1 (NC):*** Site plans for new development shall indicate all perennial or intermittent streams, creeks, and other natural drainages. Development shall not be allowed within these drainage courses, nor shall development be allowed to disturb the natural banks and vegetation along these drainage courses, unless such disturbances are with approved flood or erosion control or water conservation measures.	This policy is intended to protect streams, creeks, and natural drainages from development disturbances.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows. The requirements are also aimed at minimizing soil erosion and protecting water quality.
County of Monterey (inland areas)	North County Area Plan	Seismic, Geologic, Flood, and Fire Hazards	Castroville Pipeline	***16.2.11 (NC):*** New development in North County shall be required to limit peak storm runoff to pre-project or pre-soil disturbance levels, unless otherwise dictated by the Monterey County Flood control and Water Conservation District (MCFCWCD). Runoff shall be limited by construction of detention ponds or other approved measures. In areas where the potential for erosion also exists, detention ponds shall be constructed for the dual process of storm water detention and sediment control.	This policy is intended to limit peak storm runoff to pre-project or pre-soil disturbance levels for new development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows. The requirements are also aimed at minimizing soil erosion and protecting water quality.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Hydrology and Water Quality Policy A-1:*** At the project approval stage, the City shall require new development to demonstrate that all measures will be taken to ensure that runoff is minimized and infiltration maximized in groundwater recharge areas.	This policy is intended to control runoff from new development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows. The requirements are also aimed at minimizing soil erosion and protecting water quality.

TABLE 4.3-7 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS, POLICIES, AND REGULATIONS PERTAINING TO SURFACE WATER HYDROLOGY AND WATER QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Hydrology and Water Quality Policy C-2:*** At the project approval stage, the City shall require new development to demonstrate that all measures will be taken to ensure that onsite drainage systems are designed to capture and filter out urban pollution.	This policy is intended to control runoff from new development.	Consistent: Within the county of Monterey, the proposed project would be subject to State WDRs set forth in the local municipal stormwater permit, which require implementation of site design and stormwater control measures such that post-project flow drainage from the site must match pre-project flows. The requirements are also aimed at minimizing soil erosion and protecting water quality.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Hydrology and Water Quality Policy A-1:*** At the project approval stage, the County shall require new development to demonstrate that all measures will be taken to ensure that runoff is minimized and infiltration maximized in groundwater recharge areas.	The intent of this policy is for new development to demonstrate implementation of measures to minimize and allow infiltration of the runoff.	Consistent: There would be no aboveground improvements that would constitute new development and increase in runoff. The proposed pipelines as part of the interconnections would be located underground and the surface along the pipeline alignments would be restored to pre-construction conditions.
Fort Ord Reuse Authority (County of Monterey)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Hydrology and Water Quality Policy C-2*:** At the project approval stage, the County shall require new development to demonstrate that all measures will be taken to ensure that onsite drainage systems are designed to capture and filter out urban pollution.	The intent of this policy is for new development to demonstrate that onsite drainage systems are implemented such that they capture and filter out urban runoff.	Consistent: There would be no aboveground improvements that would constitute new development and increase in runoff. The proposed pipelines as part of the interconnections would be located underground and the surface along the pipeline alignments would be restored to pre-construction conditions.

SOURCE: City of Marina, 2000, 1982; City of Seaside, 2004b; FORA, 1997; Monterey County 1982, 1985, 1999, 2010a, 2010b 2013.

4.3.3 Evaluation Criteria

Implementation of the proposed project (MPWSP), which would include 10 slant wells at CEMEX, would have a significant impact related to surface water hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation on- or offsite;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increasing the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche,[27] tsunami, or mudflow;
- Exceed the numeric water quality objectives established in the Ocean Plan, including those for salinity that require discharges not to exceed 2 ppt over ambient salinity levels at the edge of the regulatory Brine Mixing Zone (BMZ) associated with operation of new desalination facilities or cause dissolved oxygen concentration to be depressed more than 10 percent from that which occurs naturally as the result of the discharge of oxygen demanding waste materials; or,
- Expose people or structures to a significant risk of loss, injury, or death involving coastal flooding from sea level rise.

Based on the nature of the proposed project, there would be no impacts related to the following evaluation criteria for the reasons described below:

- ***Place Housing within a 100-Year Flood Hazard Zone.*** The proposed project would not involve construction of new housing or structures for human occupancy within a 100-year flood hazard zone. Therefore, the evaluation criterion related to the placement of housing

[27] A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by earthquakes, landslides, tsunamis, or local changes in atmospheric pressure.

within a 100-year flood hazard zone is not applicable to the proposed project and is not discussed further.

- ***Expose People or Structures to Inundation by Seiche or Mudflow.*** The proposed project would have no effect on the frequency or probability of seiches (i.e., earthquake-induced oscillating waves in an enclosed water body such as the Del Monte Lake, Laguna del Rey, or El Estero Lake in the project area) because the proposed project would not create new enclosed water bodies or affect the frequency of earthquakes (see Section 4.2.5.2). Further, as the proposed project would not include construction of habitable structures, there would be no impacts related to property loss, injury, or death from a seiche. Due to the relatively flat topography of the project area, project implementation would not expose people or property to increased mudflow hazards. Therefore, no impact related to inundation by seiche or mudflow would result from the proposed project, and this topic is not discussed further.

- ***Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam.*** There are no dams or levees adjacent to the project area. Dams that are located in the region include Los Padres Dam on the Carmel River and Nacimiento and San Antonio Dams on the Salinas River. The Castroville Pipeline and Castroville Pipeline Optional Alignment 1 would be located within the dam inundation zone for Nacimiento and San Antonio Dams, but would be located below ground and, as such, are unlikely to become damaged during such an event and would not redirect flood flows in a manner that causes increased flood hazard offsite. None of the other proposed facilities would lie within a predicted dam inundation zone. Implementation of the proposed project would not affect reservoir operations. Therefore, the proposed project would not expose people or structures to flooding damages due to failure of a dam or levee. There would be no impact associated with potential flooding from levee or dam failure. Relevant flooding-related issues are addressed under Impacts 4.3-8 through 4.3-10 in Section 4.3.5.2, below.

- ***Violate any water quality standards or waste discharge requirements, or substantially degrade water quality, as a result of increased temperatures from operational discharges.*** Based on published literature on desalination plant discharges, temperature is a commonly studied parameter due to the commingling of the brine streams from desalination plants with power plant discharges of cooling water that have high temperatures (Roberts et al., 2010; Dawoud and Al Mulla, 2012). Such commingling of brine and power plant thermal discharges increase the temperature of operational discharges as a result of processes inherent to power plant cooling operations that involve high temperatures (Dawoud and Al Mulla, 2012). However, the proposed MPWSP Desalination Plant would not operate in combination with a power plant or other facility that uses ocean waters for cooling purposes. There would be no heating mechanism or any process that would increase the temperature of the source water as it passes through the treatment units. Therefore, the desalination process under the MPWSP would not substantially increase the temperature of the discharged effluent, and thermal impacts on receiving waters are not discussed further.

4.3.4 Approach to Analysis

This analysis evaluates the potential effects of the MPWSP (proposed project/10 slant wells at CEMEX) on surface water hydrology and water quality during project construction and operations. The reported ambient water quality parameters and constituent levels described in

Section 4.3.1.3, above, are considered to be representative of baseline concentrations; these are used, in part, to assess the proposed project's impacts on water quality. Construction-related effects on surface water hydrology and water quality relate to direct and indirect impacts that could occur during construction activities, including site preparation and clearing, excavation, dewatering, and demobilization and site restoration. Operational impacts involve long-term effects related to facility siting, operational discharges, and maintenance activities. The impact analysis is organized by construction impacts and operational impacts.

The discussion of construction impacts presented in Section 4.3.5.1, below, is based on conservative assumptions regarding project construction activities, existing site conditions, and the applicable water quality objectives established by the Construction General Permit and the local ordinances.

The discussion of operational impacts presented in Section 4.3.5.2 is based on conservative assumptions regarding operational discharges and any potential post-construction or long-term effects from building the new facilities (such as increases in storm runoff from addition of impervious surfaces). Additionally, the assessment of long-term operational discharges of desalination brine is based on analyzing adverse impacts on water quality and the environment, including consideration of the risk of hypoxia, or so-called "dead zones," occurring in the marine environment as a result of increased salinity and/or decreased dissolved oxygen. To assess these risks, model analyses were conducted to characterize projected salinity increases in the immediate vicinity of the discharge point (diffuser port upon discharge) or near-field, as well as farther away from the discharge at the regulatory compliance point represented by the edge of the BMZ, which is 100 meters (348 feet) from the discharge point (far-field). Modeling analyses were conducted for a number of likely discharge scenarios, including brine-only discharges and combined discharges where the brine effluent may be mingled with secondary treated wastewater with different seasonal characteristics during a typical operational year. Additionally, model analyses were conducted to determine whether discharges would be in compliance with numeric Ocean Plan water quality objectives. Specifically, the in-pipe concentration of a broad suite of water quality constituents was calculated. Following such calculation, a dilution model was applied to determine each water quality constituent's concentration at the regulatory point of compliance to determine Ocean Plan compliance and identify potential impacts related to water quality.

The impact analysis describes if, and to what degree, the MPWSP would change the existing hydrology, water quality, and flooding conditions described in Section 4.3.1 and how the MPWSP would comply with or exceed any regulatory requirements described in Section 4.3.2 (for certain regulations, compliance determinations are discussed in Section 4.3.2 only). The severity of an impact is determined using the evaluation criteria identified in Section 4.3.4. Impacts on water quality associated with the brine discharge are evaluated in the context of and against the requirements specified in the recently amended Ocean Plan water quality objectives (SWRCB, 2016). In response to public comments, specific analyses were conducted to address risks related to the occurrence of hypoxia, or so-called "dead zones," in the proximity of the discharge point.

4.3.5 Direct and Indirect Effects of the Proposed Project

Table 4.3-8 summarizes the significance determinations related to surface water hydrology and water quality impacts of the proposed project (10 slant wells at CEMEX).

TABLE 4.3-8
SUMMARY OF IMPACTS –
SURFACE WATER HYDROLOGY AND WATER QUALITY

Impacts	Significance Determinations
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	LS
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development.	LSM
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	LS
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR-5 and ASR-6 Wells.	LS
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff.	LS
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded.	LS
Impact 4.3-9: Impedance or redirection of flood flows following construction due to the siting of project facilities in a 100-year flood hazard area.	LS
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	LS
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	LS
Impact 4.3-C: Cumulative impacts related to surface water hydrology and water quality.	LSM

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation

4.3.5.1 Construction Impacts

Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities. (*Less than Significant*)

General Construction Activities (Applies to All Project Components)

Project construction activities would involve site clearing and earthmoving activities, excavation and soil stockpiling, and temporary storage and use of chemicals such as fuel. Earthmoving activities associated with project construction would include vegetation removal, grading,

excavation, soil stockpiling, and backfilling. Prior to construction mobilization, the contractor(s) would prepare construction work areas and staging areas by removing vegetation and debris, and grading these areas to provide a relatively level surface for the movement of construction equipment.

Soil disturbing activities could result in soil erosion and the migration of soil and sediment in stormwater runoff to downgradient water bodies and storm drains. Sediment from project-related construction activities could degrade the water quality of receiving water bodies such as the Salinas River and Monterey Bay.

As part of project construction, workers would install approximately 21 miles of pipelines. Most pipeline segments would be installed using conventional open-trench construction methods. Open excavations would also be required for construction of buildings and aboveground structures, including the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station. Grading and earthwork would be required for foundations, parking areas, and access road improvements. The combination of all project construction activities would generate an estimated 25,110 cubic yards of excess spoils and construction debris. If not properly managed, stockpiled spoils could migrate offsite during precipitation events and could result in increased sedimentation in downstream receiving waters bodies.

Construction activities could also result in the accidental release of hazardous construction chemicals such as adhesives, solvents, fuels, and petroleum lubricants that, if not managed appropriately, could adhere to soil particles, become mobilized by rain or runoff, and degrade water quality.

Project construction activities would disturb more than one acre of soil, and therefore would be subject to the NPDES Construction General Permit requirements. As required under the Construction General Permit, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared by a Qualified SWPPP Developer and a Qualified SWPPP Practitioner would oversee its implementation. The SWPPP, which would include specific measures and conditions to reduce or eliminate stormwater flow carrying any pollutants or sediment from the drilling and related construction activities, would be implemented throughout the duration of construction activities. As discussed in Section 4.3.2, Regulatory Framework, above, the SWPPP is required to include specific elements such as erosion and stormwater control measures that would be implemented onsite. At a minimum, the SWPPP must include the following:

- A description of construction materials, practices, and equipment storage maintenance;
- A list of pollutants likely to contact stormwater and site specific erosion and sedimentation control practices;
- A list of provisions to eliminate or reduce discharge of materials to stormwater;
- BMPs for fuel and equipment storage;
- Non-stormwater management measures to manage pollutants generated by activities such as paving operations and vehicle and equipment washing and fueling;

- The requirement that the appropriate equipment, materials, and workers be available to respond rapidly to spills and/or emergencies. All corrective maintenance or BMPs must be performed as soon as possible, depending upon worker safety; and
- Onsite post-construction controls.

Examples of typical construction Best Management Practices (BMPs) include scheduling or limiting certain activities to dry periods of the year, installing sediment barriers such as silt fencing and fiber rolls, maintaining equipment and vehicles used for construction, and tracking controls such as stabilization of construction access points. The development and implementation of BMPs such as overflow structures designed to capture and contain any materials that are inadvertently released from the storage containers on the construction site is also required. In accordance with the Construction General Permit, a Rain Event Action Plan would be required to ensure that active construction sites have adequate erosion and sediment controls in place prior to the onset of a storm event, even if construction is planned only during the dry season.

The construction contractor(s) would also be required to develop and implement a monitoring program as required under the NPDES Construction General Permit. The contractor would be required to conduct inspections of the construction site(s) prior to anticipated storm events and after the actual storm events. During extended storm events, the inspections would be conducted after every 24-hour period. The inspections would be conducted to: identify areas contributing to stormwater discharge; evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, were properly installed, and are functioning in accordance with the Construction General Permit; and determine whether additional control practices or corrective measures are needed. Mandatory compliance with the NPDES Construction General Permit requirements would prevent significant construction-related impacts on water quality during general construction activities.

In addition to the NPDES Construction General Permit requirements, construction contractor(s) would be required to comply with the local City municipal codes and the County code, depending on the construction activities and the pertinent jurisdictions. For example, construction of the subsurface slant wells in the CEMEX active mining area and approximately 0.25 mile (1,320 feet) of the Source Water Pipeline would be subject to the City of Marina Municipal Code, which requires the installation of erosion control measures such as sediment fencing and adequate set back from the shoreline to withstand erosion to the extent that the reasonable economic life of the use would be guaranteed without need for shoreline protection structures. (Refer to Section 4.2, Geology, Soils, and Seismicity, for a discussion of effects associated with coastal erosion.) Mandatory compliance with the water quality protection requirements of the Construction General Permit and the accompanying regulatory process would ensure that the necessary controls to minimize soil erosion, manage runoff, and protect water quality are in place during general construction activities. Therefore, the water quality impact associated with general construction activities would be less than significant.

Impact Conclusion

For all project facilities, mandatory compliance with NPDES Construction General Permit requirements would involve implementation of erosion and stormwater control measures, which would prevent substantial adverse effects on water quality during construction. The impact on water quality associated with increased soil erosion and sedimentation, and inadvertent releases of hazardous chemicals during general construction activities, would be less than significant for all project components. No mitigation is necessary.

Mitigation Measures

None proposed.

Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development. (*Less than Significant with Mitigation*)

Discharges of Water Produced during Well Drilling and Development (Subsurface Slant Wells and ASR-5 and ASR-6 Wells)

Construction activities associated with the subsurface slant wells and ASR-5 and ASR-6 Wells would involve: drilling the borehole (well drilling); constructing the well inside the borehole by installing the well casing and well screens and filling the annulus around the casing with a gravel (filter) pack and cement seal (well construction); and then surging water in and out of the well screen openings to clean the borehole and properly settle the gravel pack (well development).

Subsurface Slant Wells

Drilling of the subsurface slant wells would involve the use of water, bentonite mud, and/or the use of environmentally-inert biodegradable additives to push the drill rig through the uppermost layer of dry dune sands (the uppermost 100 feet so, when drilling at an angle). Once the drill bit reaches groundwater, the mud slurry from the upper 100 feet of drilling would be pumped out and put it in a storage container for offsite hauling and disposal. Beyond this point only the water already present in the sand and potable water would be used to circulate the drill cuttings. Once the borehole and the casing and gravel pack have been installed, potable water would be circulated through the well casing to develop the well. The effluent produced during well development, which may contain soil cuttings and formation water (water present at depth in geologic materials), would be pumped to baker tanks to allow sediment to settle out. The clarified effluent would then either be conveyed to the existing discharge pipeline for the test slant well and discharged to the ocean waters of MBNMS via the MRWPCA ocean pipeline and outfall in accordance with the MRWPCA's NPDES permit, or percolated into the ground at the CEMEX active mining area. The muds generated during drilling in the wet dune sands (beyond the first 100 feet) and development of the subsurface slant wells would fall under the category of "Water Supply Well Drilling Muds" in the General Waiver. The water produced during slant well drilling and development would be considered a "water supply discharge" under the General Waiver of

WDRs for Specific Types of Discharges (General Waiver) (RWQCB Resolution R3-2014-0041), discussed above in Section 4.3.2, Regulatory Framework. CalAm would not be required to submit a waste discharge report. However, the following conditions of the General Waiver would apply:

- The discharge shall be spread over an undisturbed, vegetated area capable of absorbing the top-hole water and filtering solids in the discharge, and spread in a manner that prevents a direct discharge to surface waters;
- The pH of the discharge shall be between 6.5 and 8.3;
- The discharge shall not contain oil or grease;
- The discharge area shall not be within 100 feet of a stream, water body, wetland, or streamside riparian corridor;
- The discharger shall implement appropriate management practices to dissipate energy and prevent erosion;
- The discharger shall implement appropriate management practices to preclude discharge to surface waters and surface water drainage courses; and
- The discharger shall immediately notify the Central Coast RWQCB staff of any discharge to surface waters or surface water drainages. The discharge shall not have chlorine or bromine concentrations that could impact groundwater quality.

Because the disposal of water produced during well drilling and development activities would comply with the conditions of the MRWPCA's NPDES permit and General Waiver, which are set to prevent impacts on water quality, there would be no injury to sanctuary resources, so the impact would be less than significant and no mitigation is proposed.

ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells)

As described in Section 3.5.7 of Chapter 3, Description of the Proposed Project, the ASR injection/extraction wells would be drilled without the use of drilling muds containing bentonite clays. However, when necessary and depending on the formation material encountered, certain commercially available additives could be combined with the drilling water to increase fluid viscosity and stabilize the walls of the boring to prevent reactive shale and clay from swelling and caving into the hole. Other products used to enhance the drilling performance help reduce the buildup of solids, decrease friction, and aid in reducing solids suspension. Drilling mud additives are commonly used by the well drilling industry for the drilling and installation of groundwater wells. Because the additives are combined with the water and are circulated through the borehole annulus during drilling, they react locally within the borehole and do not migrate into the surrounding groundwater formation. The additives are noncorrosive, biodegradable and do not contain chemicals that would contaminate the groundwater supply.

The muds and clay slurry generated during the drilling and development of the proposed ASR-5 and ASR-6 Wells in the Fitch Park military housing area would fall under the category of "Water Supply Well Drilling Muds" in the General Waiver. Water extracted during drilling and development of the ASR-5 and ASR-6 Wells would be placed in portable holding tanks to settle

out solids, conveyed to a 1.4-acre natural depression located east of the intersection between San Pablo Avenue and General Jim Moore Boulevard, and subsequently percolated into the ground. Similar to the subsurface slant wells, it is anticipated that discharges of water produced during the drilling and development of the ASR-5 and ASR-6 Wells would be conducted in accordance with the General Waiver. Thus, the same conditions of the General Waiver described above for the slant wells would also apply to the ASR-5 and ASR-6 Wells.

Adherence to the conditions of the General Waiver would prevent significant adverse effects on water quality from discharges of water produced during drilling and development of the ASR-5 and ASR-6 Wells. The impact would be less than significant.

Dewatering Discharges (All Other Project Facilities)

Dewatering could be required during construction to create a dry work area if surface water or groundwater is encountered in excavations. Project construction activities, particularly open-cut trenching, jack-and-bore, and microtunneling for the installation of pipelines, could intercept shallow or perched groundwater and require temporary localized dewatering to facilitate construction.

Most of the dewatering effluent produced during construction and excavation is considered a low threat and could be discharged to land or the stormwater drainage system provided it complies with the *General WDRs for Discharges with a Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001) (RWQCB, 2011a). The construction contractor(s) would be required to control, test, and treat the extracted water as needed to minimize or avoid water quality degradation, erosion, and sedimentation in the receiving waters. To receive coverage under the General WDRs, CalAm would submit a NOI along with the following materials to the Central Coast RWQCB (2011a):

- A list of all chemicals (including Material Safety Data Sheets) added to the water and the concentrations of such additives in the discharged effluent;
- Certified analytical results of the effluent for all priority toxic pollutants listed in Attachment D of the General WDRs. These analyses would fulfill the requirements set forth in the California Toxics Rule to evaluate the potential for water quality degradation and establish effluent limits, unless the discharge meets all requirements for a conditional exception;
- Certified analytical results of representative samples of the receiving surface water collected 50 feet upstream and 50 feet downstream from the point of discharge, respectively. Alternately, if access is limited, the samples can be collected at the first point upstream and downstream of the discharge, respectively, that is accessible for the following constituents: pH, temperature, color, turbidity, and dissolved oxygen;
- For low-threat discharges from proposed facilities, CalAm would provide analytical data for discharges from similar existing facilities, or information regarding the anticipated discharge characteristics of the proposed facility based on the specific facility design. As part of facility startup, CalAm would submit all analytical results required in Section A of the General WDRs; and

- If the concentration of any constituent in the effluent sampled under the second bullet above exceeds the applicable criterion listed in Attachment D of the General WDRs, CalAm may submit a Reasonable Potential Analysis[28] consistent with Section 1.3 of the State Implementation Policy or Appendix VI of the Ocean Plan, as applicable.

As discussed in Section 4.3.2, Regulatory Framework, and in the bulleted list above, CalAm would be required to test the dewatering effluent for possible pollutants. The analytical constituents for such tests are generally based on the source of the water, the land use history of the construction site, and potential impacts on the quality of the receiving water. If the dewatering effluent meets the water quality requirements of the General WDRs, CalAm's construction contractor(s) would discharge the dewatering effluent to vegetated upland areas or the local storm drain system in accordance with the General WDRs. It is assumed most dewatering effluent would be disposed of in accordance with the General WDRs.

As described in detail under **Impact 4.7-2**, sites with known soil and/or groundwater contamination are located close to or extend into the proposed construction alignments for pipelines. The contaminants with the potential to be encountered during project construction activities include petroleum hydrocarbons, VOCs, PAHs, and metals from gasoline service stations, and dry cleaners. The dewatering of contaminated groundwater during construction excavation activities would be considered a significant impact if the contaminated groundwater (i.e., dewatering effluent) were not handled properly and released into the environment. The impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.7-2b (Soil and Groundwater Management Plan)**, which requires CalAm or its contractor to develop a groundwater dewatering control and disposal plan that identifies locations where groundwater dewatering is likely to be required, the method to analyze groundwater for hazardous materials, and appropriate treatment and/or disposal methods. If the dewatering effluent contains contaminants that exceed the requirements of the *General WDRs for Discharges with a Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001), the construction contractor shall contain the dewatering effluent in a portable holding tank for appropriate offsite disposal or discharge.

Impact Conclusion

The water extracted during drilling and development of the subsurface slant wells and ASR-5 and ASR-6 Wells would be disposed of in accordance with the MRWPCA's NPDES permit (for discharges via the ocean outfall) and General Waiver (RWQCB Resolution R3-2014-0041) for clarified effluent that is percolated into the ground. All discharges of water produced during well drilling and development would occur in compliance with regulatory requirements that are protective of the receiving waters. Therefore, the impact associated with discharges of water produced during drilling and development of the subsurface slant wells and ASR-5 and ASR-6 Wells would be less than significant.

With respect to general construction dewatering, it is anticipated that most dewatering effluent would be disposed of in accordance with the General WDRs (Central Coast RWQCB Order R3-

[28] A Reasonable Potential Analysis is the process for determining whether any of the constituents in a discharge causes, has reasonable potential to cause, or contributes to an exceedance of a water quality standard.

2011-0223). However, discharges of dewatering effluent exceeding the water quality limitations in the General WDRs would result in a significant impact. This impact would be reduced to a less-than-significant level with implementation of the **Mitigation Measure 4.7-2b**. Thus, for all project facilities except the subsurface slant wells and ASR-5 and ASR-6 Wells, the impact associated with discharges of dewatering effluent would be less than significant with implementation of mitigation.

Mitigation Measures

Mitigation Measure 4.7-2b applies to all project components except the subsurface slant wells and the ASR-5 and ASR-6 Wells.

Mitigation Measure 4.7-2b: Soil and Groundwater Management Plan.

(See Section 4.7, Hazards and Hazardous Materials, for the description.)

Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction. (*Less than Significant)*

Prior to constructing the connections between existing and new pipelines, segments of existing pipelines would need to be drained and disinfected before being returned to service. Newly installed pipelines (i.e., the Source Water Pipeline, new Desalinated Water Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Brine Discharge Pipeline, new Transmission Main, ASR pipelines [ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline], and the pipelines associated with the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements) would also be disinfected before being put into service. It is anticipated that chlorine would be used for disinfection. The treated water generated from the draining of existing pipelines and the effluent generated from disinfection of newly installed pipelines would be discharged to the local storm drainage system or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., to percolation ponds as may be directed by U.S. Army approvals on Army-owned property). Without proper controls, these discharges could adversely affect water quality in downstream receiving water bodies by increasing turbidity (if discharged directly without appropriate treatment) or due to high chlorine (the primary disinfectant used for drinking water) concentrations. However, the discharges would be subject to the *General WDRs for Discharges with Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001). The General WDRs require that CalAm neutralize the residual chlorine remaining in disinfection effluent such that detectable chlorine levels are less than 0.02 mg/L, and require that the total dissolved solids be within surface water and groundwater quality objectives (RWQCB, 2011a). Compliance with the General WDRs and the conditions therein would protect water quality in receiving water bodies. Therefore, the impact would be less than significant.

All Other Proposed Facilities

None of the other proposed facilities (i.e. the Slant Wells, Desalination Plant, and Carmel Valley Pump Station) are anticipated to require flushing and generate disinfection effluent prior to being brought online. Thus, no impact would result.

Impact Conclusion

Adherence to the General WDRs (Order No. R3-2011-0223, NPDES Permit No. CAG993001) would ensure this impact is less than significant for the Source Water Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Brine Discharge Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR pipelines, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements. Construction of all other proposed project facilities would have no impact on water quality associated with discharges of treated water or disinfection effluent.

Mitigation Measures

None proposed.

4.3.5.2 Operational and Facility Siting Impacts

Impact 4.3-4: Violate water quality standards or waste discharge requirements for salinity, or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant. (*Less than Significant with Mitigation*)

Operational discharges from the MPWSP would locally increase salinity levels and thus could violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving waters in Monterey Bay, within MBNMS. As described in Section 4.3.2.2, the Ocean Plan establishes receiving water salinity limitations for brine discharges from desalination facilities to protect the quality of ocean waters for beneficial uses (such as aquatic habitat). This impact analysis uses the Ocean Plan's receiving water salinity limitations as significance thresholds, incorporates the Ocean Plan's requirements relating to water quality, and is consistent with the methods prescribed in the Ocean Plan for assessing increased salinity from the operation of desalination plants. In response to public comments, additional analysis is provided to address risks of increased salinity causing hypoxia, or so-called "dead zones" in the marine environment.

The Ocean Plan limits the increase of salinity of receiving water from desalination plant discharges to a daily maximum of 2 parts per thousand (ppt) above natural background salinity as measured no further than 100 meters (328 ft) horizontally from each discharge point (known as the brine mixing zone [BMZ]). For the MPWSP, the BMZ represents an area of approximately 27 acres based on the existing outfall diffuser structure (see Figure 4.3-7). While salinity increment limitations of 2 ppt must be met at the boundary of the BMZ, the Ocean Plan also requires that dischargers estimate

salinity levels within the BMZ, where salinity may exceed 2.0 ppt above natural background salinity, to determine the potential frequency and intensity of impacts on marine biological resources and beneficial uses. As described in Section 4.3.3, a significant impact related to water quality, water quality standards or waste discharge requirements would occur if operational discharges from the MPWSP resulted in salinity greater than 2 ppt over ambient salinity levels at the edge of the BMZ. Consistent with Ocean Plan and MBNMS requirements, this impact analysis also evaluates the salinity and dilution dynamics of operational discharges within the BMZ by determining the Zone of Initial Dilution (ZID) for each discharge scenario and describes areas where salinity would exceed 2 ppt. The determination of the dilution dynamics, extent of the ZID, and determination of areas where salinity exceeds 2 ppt supports water quality analyses for other constituents (i.e., in addition to salinity) listed in the Ocean Plan (see Impact 4.3-5) and analysis of impacts on marine habitat and wildlife presented in Section 4.5, Marine Biological Resources. Additionally, the analysis addresses comments received during the public comment period for the April 2015 DEIR, on the fate and travel path of the discharge plume beyond the BMZ and the potential for hypoxia[29] to occur near the seabed. The Ocean Plan limits dissolved oxygen decreases as a result of operational discharges to no more than 10 percent from that which occurs naturally. Exceeding this standard for dissolved oxygen would result in a significant impact related to water quality, water quality standards or waste discharge requirements.

Introduction to the Impact Analysis for Salinity

To comprehensively assess and describe the water quality effects associated with operational discharges and increased salinity of the proposed project (10 Slant Wells at CEMEX), Impact 4.3-4 is structured as follows:

- **Operational Discharge Scenarios**: The impact analysis first describes the range of operational discharges that could occur with implementation of the MPWSP to provide context for the modeling completed in support of the project analyses.
- **Approach to Analysis**: This subsection describes the various studies and model analyses related to plume dynamics, dilution, and salinity that were completed in support of the analysis of impacts related to the Project.
- **Dense Operational Discharges - Salinity Impact Analysis**: The analysis presents an assessment of effects on receiving water salinity levels for operational discharges that are denser than the ambient receiving sea water. Sinking plumes have substantially lower initial dilution from turbulent mixing than positively buoyant, or rising, plumes (i.e., discharges with densities less than the receiving seawater). As such, the evaluation of potential salinity impacts from MPWSP operational discharges focuses on negatively buoyant discharges.
- **Dense Operational Discharges - Areas Exceeding 2 ppt Salinity**: Consistent with Ocean Plan requirements, this analysis evaluates the plume dynamics of dense, negatively buoyant operational discharges to quantify areas where salinity would exceed 2 ppt above natural background salinity around the outfall diffuser. Areas determined to exceed 2 ppt above natural background salinity are considered further in Section 4.5, Marine Biological

[29] Hypoxia, or oxygen depletion, is an environmental phenomenon where the concentration of dissolved oxygen in the water column decreases to a level that can no longer support living aquatic organisms (so-called “dead zones”)

Resources, in the context of assessing and quantifying potential for mortality of aquatic wildlife and loss of habitat from operational discharges.

- **Dense Operational Discharges – Additional Considerations**: This subsection addresses concerns raised during the public comment period for the April 2015 DEIR. The comments received involved the brine discharge and its travel path beyond the BMZ, concerns relating to the propagation of a dense saline plume along the sea floor, and the potential for hypoxia to occur near the seabed as a result of extremely elevated salinity levels adjacent to the outfall diffuser.
- **Buoyant Operational Discharges – Analysis and Discussion**: The analysis evaluates positively buoyant operational discharges (i.e., that have densities less than the receiving seawater) using model analyses to determine salinity, dilutions, and plume behavior.
- **Impact Summary and Conclusion**: The above-described analyses are followed by a summary analysis that characterizes the entire range of results for the project. This section provides an impact statement and conclusion in the context of the relevant significance criteria.

Operational Discharge Scenarios

Described here is the range of operational discharge scenarios that could occur with implementation of the MPWSP to provide context for the modeling completed in support of the project impact analyses. The scenarios include brine-only discharges and combined discharges, which occur during certain times of the year when the brine would be blended with secondary treated wastewater (when available) from the MRWPCA Regional Wastewater Treatment Plant.

The Desalination Plant of the proposed project would treat the source water drawn from the slant wells at a 42 percent recovery rate, and approximately 14 mgd of brine would be generated, consisting of concentrates from the pretreatment and reverse osmosis (RO) processes as well as waste effluent produced during routine backwashing and operation and maintenance of the pretreatment filters (see Section 3.2.2 for details). The brine generated in the desalination process would be discharged into MBNMS through the MRWPCA's existing ocean outfall (see **Figure 3-2**). The MRWPCA outfall consists of a 2.1-mile-long pipeline that terminates at a 1,100-foot-long diffuser resting above the ocean floor at approximately 90 to 110 feet below sea level. The outfall pipe consists of a 60-inch internal diameter (ID) reinforced concrete pipe (RCP), and the diffuser consists of 480 feet of 60-inch RCP with a single taper to 840 feet of 48-inch ID. The diffuser has 172 2-inch diameter ports: 65 in the 60-inch section, 106 in the 48-inch section and an opening at the end of the diffuser pipe (Figure A-4, Appendix D; the "end gate"). The ports discharge horizontally, alternating on both sides of the diffuser, at a spacing of 16 ft on each side except for one port in the taper section that discharges vertically for air release. The 42 ports closest to shore are presently closed, so there are 129 open ports distributed over a length of approximately 1,024 ft (312 m). The 129 open ports are fitted with 4-inch Tideflex "duckbill" check valves (the "4-inch" refers to the flange size, not the valve opening). Because the valves open as the flow through them increases, the cross-sectional area is variable. The opening at the bottom of the end gate (from which flows exit the diffuser for flushing purposes) is about two inches high. **Appendix D1** discusses the effect of the valves on the flow distribution in

the diffuser as well as the procedure used for analyzing the internal hydraulics of the outfall and diffuser for the dilution modeling completed as part of the salinity impact assessment**.** The diffuser, representing the brine discharge point, would disperse the brine stream, thereby minimizing differences in salinity and other water quality parameters between the discharged brine and the surrounding seawater (see Section 3.2.2.5 for additional information).

During certain times of the year, the brine would blend with secondary treated wastewater (when available) from the MRWPCA Regional Wastewater Treatment Plant, forming a combined discharge (discussed in Section 3.2.2). **Table 4.3-9** shows the monthly projected brine flows from the MPWSP Desalination Plant and the 1998-2012 average monthly wastewater flows from the MRWPCA as well as the estimates for 2017 maximum and minimum that were developed in early 2017.

TABLE 4.3-9
MONTHLY AVERAGE FLOWS OF SECONDARY-TREATED WASTEWATER FROM THE MRWPCA REGIONAL WASTEWATER TREATMENT PLANT (1998–2012 AND PROJECTED 2017) AND THE ESTIMATED BRINE STREAM UNDER THE MPWSP (MGD)

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
MPWSP Brine	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98
1998–2012 Average Treated Wastewater from MRWPCA[1]	19.78	18.41	14.68	7.02	2.40	1.89	0.90	1.03	2.79	9.89	17.98	19.27
2017 Max. Treated Wastewater[2]	18.8	13.7	16.2	8.68	1.12	0.83	0.91	0.88	2.38	12.29	18.5	19.5
2017 Min. Treated Wastewater[2]	2.8	5.0	0.5	0	0	0	0	0	0	1.49	5.5	16.5

SOURCES: [1]MRWPCA, 2013; [2]Brown and Caldwell, 2017.

As shown in **Table 4.3-9**, the treated wastewater flow varies throughout the year, with the highest flows observed during the non-irrigation season (November through March) and the lowest flows observed during the irrigation season (April through October), when the treated wastewater is processed through the SVRP for tertiary treatment and distributed to irrigators through the CSIP. Based on the monthly projected brine flows from the MPWSP Desalination Plant and the average monthly wastewater flows from the MRWPCA, the following discharge scenarios were assessed (summarized in **Table 4.3-10**):

- **Scenario 1:** Baseline condition – current operational discharges of secondary treated MRWPCA wastewater without desalination brine.
- **Scenario 2:** Desalination brine only – proposed discharge of project brine without wastewater into Monterey Bay/MBNMS through the outfall. This scenario would occur during the irrigation season as a result of the MRWPCA wastewater flows being provided to irrigators. To conservatively assess the potential impacts from operational discharges, it is assumed for this analysis that the discharge of brine occurs without dilution by wastewater during the entire irrigation season (April - October).

TABLE 4.3-10
PROPOSED PROJECT DISCHARGE SCENARIOS MODELED

Scenario No.	Discharge Scenario	Constituent Flows[a] (mgd)	
		Secondary Effluent	Desal Brine
Typical Discharge Scenarios			
1	Secondary Effluent (SE) Only	19.78	0
2	Brine only	0	13.98
3	Brine + Low (1) SE	1	13.98
4	Brine + Low (2) SE	2	13.98
5	Brine + Low (3) SE	3	13.98
6	Brine + Low (4) SE	4	13.98
7	Brine + Moderate (5) SE	5	13.98
8	Brine + Moderate (6) SE	6	13.98
9	Brine + Moderate (7) SE	7	13.98
10	Brine + Moderate (8) SE	8	13.98
11	Brine + Moderate (9) SE	9	13.98
12	Brine + High (10) SE	10	13.98
13	Brine + High (15) SE	15	13.98
14	Brine + High (19.78) SE	19.78	13.98
High Brine Discharge Scenarios (post-shutdown operations)			
15	High Brine only	0	16.31
16	High Brine + Low (1) SE	1	16.31
17	High Brine + Low (2) SE	2	16.31
18	High Brine + Low (3) SE	3	16.31
19	High Brine + Low (4) SE	4	16.31
20	High Brine + Moderate (5) SE	5	16.31
21	High Brine + Moderate (6) SE	6	16.31
22	High Brine + Moderate (7) SE	7	16.31
23	High Brine + Moderate (8) SE	8	16.31
24	High Brine + Moderate (9) SE	9	16.31
25	High Brine + High (10) SE	10	16.31
26	High Brine + High (12) SE	12	16.31
27	High Brine + High (14) SE	14	16.31
28	High Brine + High (16) SE	16	16.31

NOTES:

[a] MRWPCA also accepts 0.01mgd of trucked brine waste for ocean disposal ("hauled waste"), which is stored in a pond and mixed with secondary effluent prior to being discharged. This "hauled brine" is included in all model analyses for dilution predictions.

SE= Secondary Effluent (MRWPCA wastewater).

SOURCE: Roberts 2017 (Appendix D1).

- **Scenarios 3 through 14**: Desalination brine with wastewater – proposed discharge of project brine with varying amounts of wastewater. These scenarios would occur during the non-irrigation season (November - March). For the combined discharge scenario, the analysis accounted for different wastewater flows ranging from 15 mgd to 19.78 mgd that result in a positively buoyant plume to a range of lower documented wastewater flow rates of 1 mgd to 10 mgd that result in a negatively buoyant plume.

- **Scenario 15**: Increased volumes of desalination brine only – as described in Section 3.4.1, following a shutdown of the desalination facility for repair or routine maintenance, CalAm may temporarily (up to 11 days) operate the desalination facility with one additional reverse osmosis module in service to catch up on production; however, the total annual production would not be increased. As with Scenario 2, brine would be discharged without wastewater into Monterey Bay/MBNMS through the outfall during the irrigation season as a result of the MRWPCA wastewater flows being provided to irrigators.

- **Scenarios 16 through 28**: High desalination brine volumes with wastewater – as with Scenarios 3 through 14, the analysis accounted for different wastewater flows being combined with the higher volume brine discharges.

The combined discharge during the non-irrigation season would be consistent with the recommendations in the SWRCB's technical report on discharges of brine from desalination plants[30] and with the amendments to the Ocean Plan (SWRCB, 2015; 2016) by "co-discharging it with municipal wastewater" and discharging it "through a multiple-port diffuser system" (SWRCB, 2016). The proposed brine-only discharge during the irrigation season would adhere to the panel's recommendation for discharge through a multiple-port diffuser system.

Approach to Analysis

Described here are the various studies and model analyses related to plume dynamics, dilution, and salinity that were completed in support of the analysis of impacts related to the proposed project.

Based on the amended Ocean Plan (SWRCB, 2016) described in Section 4.3.2, Regulatory Framework, the MPWSP Desalination Plant would result in a significant water quality impact if operational discharges would exceed a daily maximum of 2 ppt above natural background salinity as measured at the BMZ (328 ft horizontally from the discharge point). Discharges that are denser than the receiving seawater would result in a sinking plume that impacts the sea floor at some distance from the diffuser nozzle (**Figure 4.3-5**). Because of its high exit velocity, the jet of effluent discharged from the diffuser port entrains seawater that mixes with and dilutes the effluent. Because sinking plumes have substantially lower initial dilutions than positively buoyant or rising plumes, the evaluation of potential salinity impacts from operational discharges focuses on sinking plumes (i.e., those plumes comprised mainly of brine). However, the analysis also addresses the dilution dynamics and salinity of rising plumes.

[30] The recommendations were made as part of the Southern California Coastal Water Research Project, discussed in Section 4.3.2, Regulatory Framework.

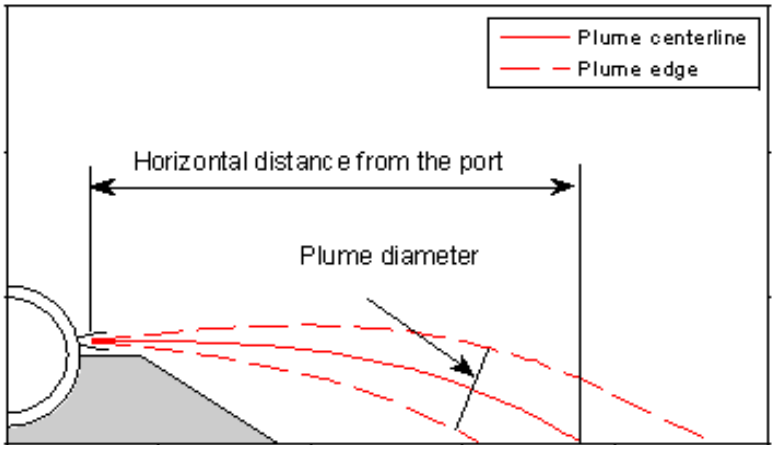


Figure 4.3-5
Illustrations of the Trajectory
of a Dense Brine Discharge Plume

Flow Science, Inc. (2014; see **Appendix D2**) conducted near-field (within the BMZ) modeling of the proposed MPWSP discharge through the existing MRWPCA outfall in Monterey Bay. Input to the model included temperature and salinity levels derived from within the ambient water column at Monterey Bay Aquarium Research Institute Monitoring Station C1 (see Figure 3 in **Appendix D2**) during the period from 2002 to 2012. This monitoring station is located approximately 5 miles northwest of the MRWPCA outfall at the head of the Monterey Submarine Canyon in an area considered representative of ambient conditions for the proposed discharge. The salinity and temperature of ocean water determine its density (discussed in detail in Section 4.3.1.3), which in turn affects the movement, dilution, and mixing of the brine plume upon discharge. Based on data (2010–2012) from Monterey Bay, a temperature, salinity, and density profile was developed for the upper 98 feet of the water column (the outfall diffuser is located at a depth of approximately 100 feet) for the three oceanic conditions (upwelling, oceanic, and Davidson, described in detail in Section 4.3.1.3, above). However, as described below, the temperature, salinity, density profile was subsequently updated to include more recent and site specific data from recent monitoring efforts. As discussed in Section 4.3.1, Setting / Affected Environment, salinity in Monterey Bay in the project vicinity, as monitored by the Monterey Bay Aquarium Research Institute, ranges between 33.1 and 34.2 ppt, with a natural variability of 3.3 percent or approximately 1.1 ppt and a temperature range from 47.5°F to 59.4°F. More recently, monthly measurements of salinity and temperature were collected between February 2014 and December 2015 by Applied Marine Sciences (Appendix D1) around the MRWPCA outfall at varying depths and locations. The purpose of this monitoring effort was to gather data over a nearly two-year period that reflected ocean conditions in the immediate vicinity of the outfall structure and to support model analyses. Seasonal average temperatures ranged between 52.7°F and 58.1°F and seasonal salinity levels ranged from 33.3 to 33.9 ppt at the depth of the diffuser.

An ocean current velocity of zero was used for the near-field modeling. This represents a worst-case (conservative) assessment scenario for dilution and mixing as it assumes no additional mixing or dilution from wave or tidal currents occurs in addition to that resulting from the momentum of the discharged plume (Flow Science, Inc., 2014; SWRCB, 2012a). A wastewater-only discharge scenario (Scenario 1) was modeled for the Davidson oceanic condition to understand the dynamics of the baseline non-irrigation-season condition. The brine-only discharge scenario (Scenario 2) was modeled for all three oceanic climate conditions,[31] and combined discharge scenarios (Scenarios 3 through 6) with varying amounts of wastewater were modeled for the non-irrigation season. For the combined discharge scenarios, the analysis incorporated data on salinity, temperature, and total dissolved solids (representative of salinity) measured in the treated wastewater from the MRWPCA Regional Wastewater Treatment Plant.[32]

Consistent with the recommendations in the SWRCB's technical report on discharges from desalination plants (SWRCB, 2012a), the near-field modeling analysis (Flow Science, Inc., 2014) studied the plume behavior in terms of the density (a function of temperature and salinity) and flow rate of the discharge. The differences between the salinity levels in the discharge stream and in the ambient (or receiving) water were calculated by determining the size of the brine plume, its trajectory in the ocean and the dilution of the brine with the ambient seawater within the ZID (which occurs within the BMZ for all discharge scenarios assessed, as described below). As in Section 4.3.2, Regulatory Framework, under the Ocean Plan, the ZID (or the regulatory mixing zone) is defined as the zone adjacent to a discharge where momentum and buoyancy-driven mixing produces rapid dilution of the discharge (Flow Science, Inc., 2014). The size of the plume and the extent of dilution depends in part on whether the plume is positively buoyant (rising) or negatively buoyant (dense or sinking) (**Figure 4.3-4**). In the near-field analysis for a sinking plume, the edge of the ZID would be located at the point where the plume contacts the sea floor. The edge of the ZID for a buoyant plume would be located at the point where the plume reaches the water surface or attains a depth level at which the density of the diluted effluent plume becomes the same as the density of ambient water (i.e., the "trap" level).

Flow Science, Inc. (2014) used two analytical methods — the Semi-Empirical Analysis (SEA) and the mathematical model UM3 in the US EPA model suite Visual Plumes (VP) — to characterize and understand the range of dilution that might be expected to occur for the operational discharges from the MRWPCA outfall diffuser; both methods are consistent with the regulatory approach recommended by the SWRCB for analyzing the brine discharge (Flow Science, Inc., 2014; SWRCB, 2012b). The model represents a constant discharge for each of the defined scenarios, and the discharge continues to move away from the port. The VP method is widely used in diffuser discharge analyses; however, data from the SEA method is presented to provide redundancy in the analysis and confirmation of the results (Flow Science, Inc., 2014; Roberts, 2016).

[31] The brine-only discharge during the non-irrigation season (January) is a less likely operating scenario because at least some wastewater would flow through the outfall, along with the brine, throughout the year. Nonetheless, this scenario was evaluated during the Davidson condition (January), as was the MRWPCA wastewater-only discharge, to understand how the brine would influence existing conditions.

[32] Wastewater monitoring data from the MRWPCA Regional Wastewater Treatment Plant for salinity and total dissolved solids (1998–2012) and for temperature (2006–2012).

In response to public comments on the 2015 Draft EIR and at the request of MBNMS, the modeling analysis completed by Flow Science, Inc. (2014; **Appendix D2**) was peer reviewed and updated by Roberts[33] (2016; **Appendix D1**), as described below (and discussed in detail in **Appendix D1**) to:

- Update the assessed operational discharge scenarios to ensure consistency with proposed operations (summarized in **Table 4.3-10**).
- Update in the model the number of open diffuser ports (129 versus 120) and the height of the ports off the ocean floor (4 feet versus 3.5 feet) to reflect current baseline conditions regarding the status of the outfall diffuser.
- Update data on density stratification at the MRWPCA diffuser to reflect more recently collected site-specific data (discussed in Section 4.3.1.3 and summarized in **Table 4.3-1**).
- Include detailed computations of the internal flow hydraulics of the diffuser to address the variation in flow along the diffuser outfall pipe and the subsequent effect on dilution.
- Update the Semi-Empirical Analysis (SEA) to use the Cederwall formula and provide validation of the applicability of Visual Plumes (VP) modeling methodologies for dense negatively buoyant discharge plumes (discussed in detail in Section 4 of **Appendix D1**).
- Update the analysis of plume dynamics and dilution for positively buoyant discharge plumes using two mathematical models within the US EPA model suite Visual Plumes: UM3 (described above) and NRFIELD. NRFIELD is specifically designed for conditions typical of very buoyant discharges of domestic effluent from multiport diffusers into stratified oceanic waters (discussed in detail in Section 5 of **Appendix D1**).
- Compute salinity within the BMZ (328 feet from point of discharge, as required by the Ocean Plan) and at its boundary for dense negatively buoyant discharges.
- Compute minimum dilution and plume behavior for positively buoyant discharges utilizing the site specific oceanic density stratification data.
- Estimate regions within the BMZ where salinity would exceed 2 ppt above background salinity.

To revise the near-field brine discharge model analysis completed by Flow Science, Inc. (2014, see Appendix D2), Roberts (2017, see Appendix D1) combined the updated and site-specific environmental baseline conditions from **Table 4.3-1**, the updated discharge flows from the scenarios summarized in **Table 4.3-10**, and the effluent water quality characteristics of the brine and the MRWPCA wastewater and hauled brine (**Table 4.3-11**) to calculate flow, salinity, and density for all possible flow scenarios (**Table 4.3-12**, discussed in detail below). The values calculated for flow, salinity, and density for all possible discharge scenarios were then utilized for the near-field brine discharge model analysis to compute minimum dilution ratios (Dm) at the edge of the ZID, estimate the gradient of salinity between the diffuser ports and the edge of the ZID, and calculate the salinity beyond the ZID but within the regulatory mixing zone (BMZ). These results are presented below.

[33] Dr. Philip J. Roberts has extensive international experience in marine wastewater disposal including the design of ocean outfalls and numerical modeling. Dr. Roberts' mathematical models and methods have been adopted by the USEPA and are widely used around the world.

TABLE 4.3-11
EFFLUENT WATER QUALITY CHARACTERISTICS ASSUMED FOR ALL MODELED SCENARIOS

Constituent	Temperature (°C)	Salinity (ppt)	Density (kg/m^3)
Secondary effluent	20.0	0.80	998.8
Brine	9.9	58.23	1045.2
Hauled brine	20.0	40.00	1028.6

Dense Operational Discharges - Salinity Impact Analysis

Presented here is an assessment of effects on receiving water salinity levels for operational discharges that are denser than the ambient receiving sea water. Sinking plumes have substantially lower initial dilution from turbulent mixing than positively buoyant, or rising, plumes (i.e., discharges with densities less than the receiving seawater). As such, the evaluation of potential salinity impacts from MPWSP operational discharges focuses in this section on negatively buoyant discharges.

As discussed in Section 4.3.4, Approach to Analysis, the potential water quality impact resulting from the brine-only and combined discharges was analyzed for the near field (the immediate vicinity of the diffuser port upon discharge) and beyond (the edge of the BMZ as the plume travels away from the diffuser port). The near-field analysis for salinity was based on modeling conducted within the mixing zone (i.e., the ZID). Of the assessed discharge scenarios (**Table 4.3-10**), discharges of brine only, Scenario 2, or low volumes of wastewater, Scenarios 3 through 12 (typical operations) and 15 through 26 (temporary post-shutdown operations) were determined to be dense (i.e., with salinity levels in excess of ambient conditions and thus negatively buoyant). When the MPWSP brine is combined with high volumes of wastewater (Scenarios 13, 14, 27, and 28), the plume is positively buoyant because the salinity of the effluent is substantially lower than that of ambient conditions (**Table 4.3-11** and **Table 4.3-12**). Dilution values and plume dynamics for the positively buoyant plumes (operational discharges during the non-irrigation months) are further discussed below under Buoyant Discharge Model Results and Discussion.

A typical jet trajectory output from Visual Plumes (for the pure brine case, Scenario 2, **Table 4.3-10**) is shown in **Figure 4.3-6**. In the case of Scenario 2, the centerline of the plume discharged from each of the 129 diffuser jets makes contact with the seabed approximately 10 ft from the nozzle (with a plume diameter of approximately 5 ft). Similar simulations were run for all discharge scenarios for which the operational discharge plume was dense and negatively buoyant. Additionally, simulations were run using the SEA method for redundancy and validation. The results of salinity predictions and minimum dilution values for each discharge scenario are summarized in **Table 4.3-13**. The distance from each diffuser port at which the dense discharge plume makes contact with the seabed (from the VP model) is also shown in **Table 4.3-13** for all dense discharge scenarios. The distance between the diffuser port and the point where the plume contacts the seabed can be interpreted as the ZID, with the point of contact with the seabed representing the edge of the ZID.

TABLE 4.3-12
OPERATIONAL DISCHARGE FLOW, SALINITY, AND DENSITY

Scenario No.	Discharge Scenario	Combined effluent		
		Flow (mgd)	Salinity (ppt)[1]	Density (kg/m3)
Typical Discharge Scenarios				
1	SE Only	19.88	1.00	999.0
2	Brine only	14.08	58.10	1045.1
3	Brine + Low (1) SE	15.08	54.30	1042.0
4	Brine + Low (2) SE	16.08	50.97	1039.4
5	Brine + Low (3) SE	17.08	48.04	1037.0
6	Brine + Low (4) SE	18.08	45.42	1034.9
7	Brine + Moderate (5) SE	19.08	43.08	1033.0
8	Brine + Moderate (6) SE	20.08	40.98	1031.3
9	Brine + Moderate (7) SE	21.08	39.07	1029.7
10	Brine + Moderate (8) SE	22.08	37.34	1028.3
11	Brine + Moderate (9) SE	23.08	35.76	1027.1
12	Brine + High (10) SE	24.08	34.30	1025.9
13	Brine + High (15) SE	29.08	28.54	1021.2
14	Brine + High (19.78) SE	33.86	24.63	1018.1
High Brine Discharge Scenarios (post-shutdown operations)				
15	High Brine only	16.41	58.12	1045.1
16	High Brine + Low (1) SE	17.41	54.83	1042.5
17	High Brine + Low (2) SE	18.41	51.89	1040.1
18	High Brine + Low (3) SE	19.41	49.26	1038.0
19	High Brine + Low (4) SE	20.41	46.89	1036.1
20	High Brine + Moderate (5) SE	21.41	44.73	1034.3
21	High Brine + Moderate (6) SE	22.31	42.78	1032.7
22	High Brine + Moderate (7) SE	23.31	40.98	1031.3
23	High Brine + Moderate (8) SE	24.31	39.33	1030.0
24	High Brine + Moderate (9) SE	25.31	37.81	1028.7
25	High Brine + High (10) SE	26.31	36.40	1027.6
26	High Brine + High (12) SE	28.31	33.89	1025.6
27	High Brine + High (14) SE	30.31	31.70	1023.8
28	High Brine + High (16) SE	32.31	29.79	1022.2

NOTES: SE = Secondary Effluent (MRWPCA wastewater)

[1] Unit used to measure salinity in terms of the concentration of dissolved salts in water. Equivalent to practical salinity units (PSU).

SOURCE: Roberts, 2017 (Appendix D1).

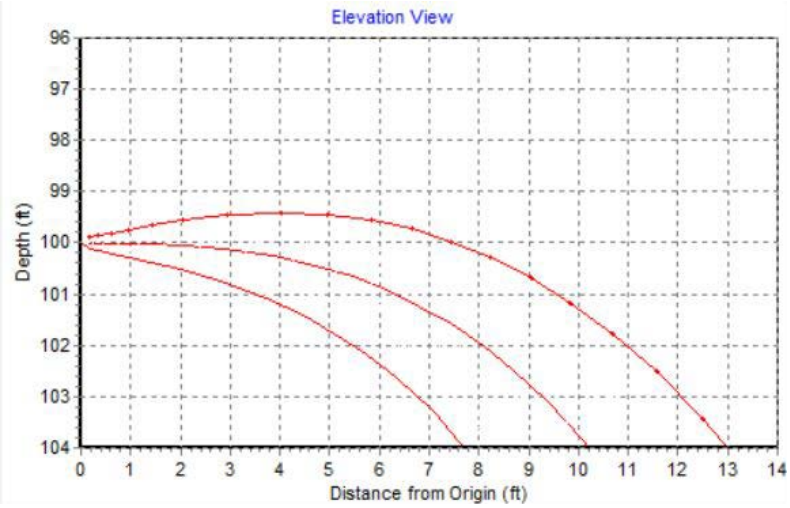


Figure 4.3-6
Typical Graphics Output of Jet Trajectory
from VP Method: Brine Only Discharge (Scenario 2)

The dilution predictions from the VP and SEA model analysis methods presented in **Table 4.3-13** are consistent, providing validation for the model results. The worst case for typical operations, as expected, is the pure brine discharge scenario during the irrigation season (Scenario 2). For Scenario 2, the minimum dilution at the plume centerline is 1:15.4 (effluent : seawater) and the salinity increment above ambient at the edge of the ZID, located approximately 10 feet from the diffuser port, is 1.61 ppt. In all cases, the Ocean Plan salinity limit of 2 ppt is met at the edge of the ZID, the length of which ranges from approximately 10 to 39 feet for the dense discharge scenarios (**Figure 4.3-7**), well within the Ocean Plan receiving water limitation for salinity of 2 ppt at a distance of 328 feet from the diffuser (the BMZ). Therefore, for all discharge scenarios, the Ocean Plan water quality standard for salinity is met. Further, the standard is demonstrated to be met at a maximum distance from the diffuser (33 feet for typical operations, 39 feet for post-shutdown operations) which is much smaller than that allowed under the Ocean Plan (328 feet).

The subsequent increase in dilution from the edge of the ZID to the edge of the BMZ cannot be predicted using model analysis as no experimental data are available for these horizontal dense jet flows. Roberts (2016, 2017) conservatively calculates the increase in dilution of the dense discharges up to the edge of the BMZ using guidance obtained from experiments on buoyant jets and inclined dense jets which estimate dilution increases of between 60 percent and 22 percent, respectively, for non-merging and merging plumes. Because the diameters of individual discharge jets from the diffuser ports are generally much smaller than the port spacing of 16 ft, the plumes are not expected to merge before impacting the sea floor (**Figure 4.3-8**), thus allowing for maximum dilution at each diffuser port (Roberts, 2016; Geosyntec, 2015). As the dense discharge plumes from the diffuser jets contact the seabed, they would continue to dilute and ultimately merge beyond the edge of the ZID. For this analysis, it was conservatively assumed that the dense discharge plumes from the diffuser jets will merge within the BMZ and that the increase in dilution from the edge of the ZID to the BMZ would be 20 percent (see Appendix D1 for details). This increase was

TABLE 4.3-13
DILUTION MODEL RESULTS FOR DENSE DISCHARGE SCENARIOS

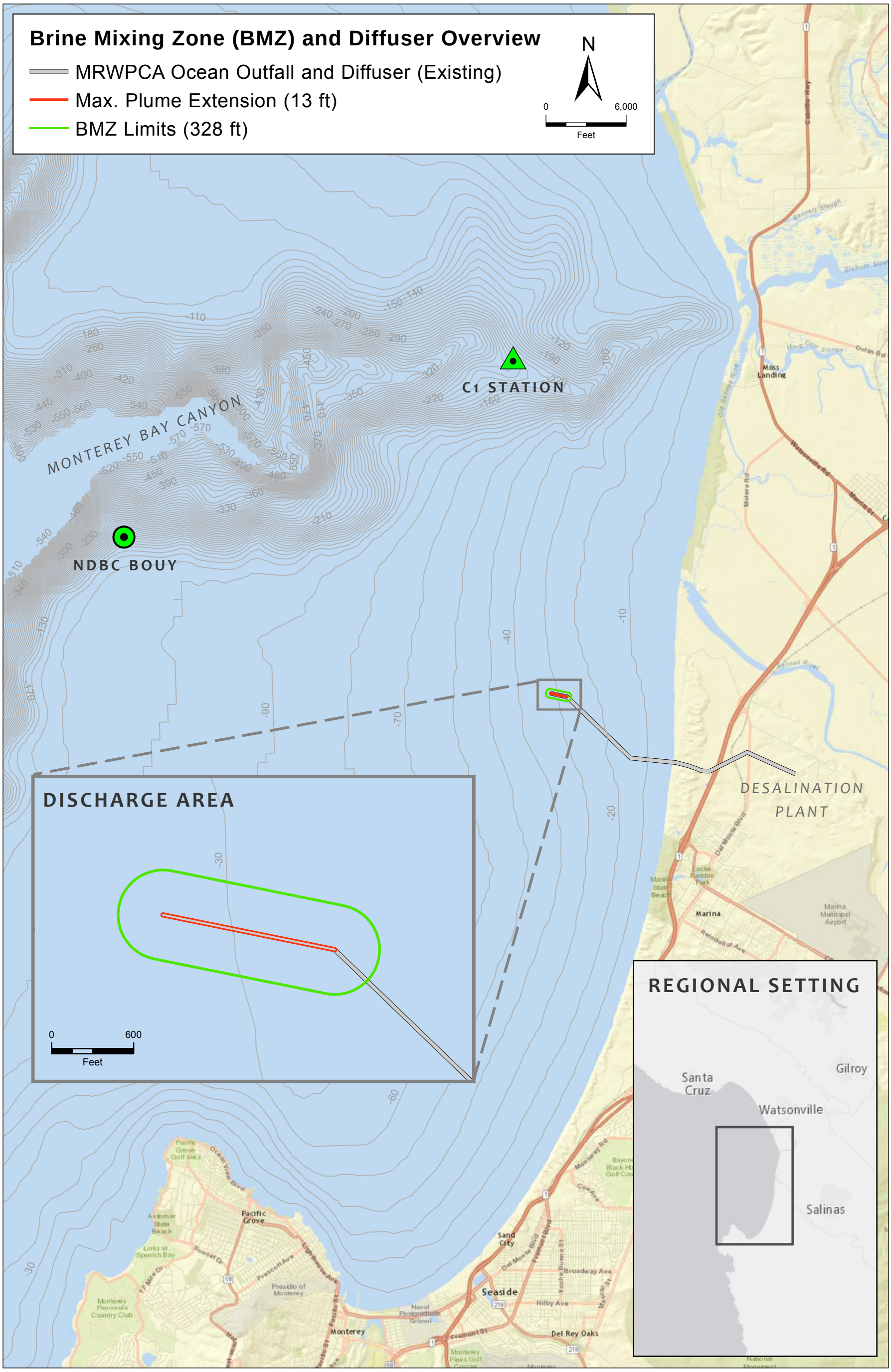
Scenario No.	Scenario	Predictions			At impact (ZID)		At BMZ	
		SEA	VP					
		Dilution	Dilution	Distance (ft)	Dilution[a]	Salinity increment (ppt)	Dilution	Salinity increment (ppt)
Typical Discharge Scenarios								
1	SE Only	-	-	-	-	-	-	-
2	Brine only	15.4	16.2	10.2	15.4	1.61	18.5	1.34
3	Brine + Low (1) SE	16.0	16.1	10.4	16.0	1.31	19.2	1.09
4	Brine + Low (2) SE	16.8	17.6	11.6	16.8	1.05	20.1	0.88
5	Brine + Low (3) SE	17.7	18.5	12.7	17.7	0.83	21.2	0.69
6	Brine + Low (4) SE	18.8	19.5	13.8	18.8	0.64	22.5	0.54
7	Brine + Mod (5) SE	20.1	20.9	15.3	20.1	0.48	24.2	0.40
8	Brine + Mod (6) SE	21.9	22.2	16.8	21.9	0.35	26.3	0.29
9	Brine + Mod (7) SE	24.8	24.9	19.2	24.8	0.23	29.7	0.19
10	Brine + Mod (8) SE	28.2	27.5	21.9	27.5	0.15	33.0	0.12
11	Brine + Mod (9) SE	34.2	27.7	22.3	27.7	0.09	33.2	0.07
12	Brine + High (10) SE	46.7	39.2	33.0	39.2	0.02	47.0	0.02
13	Brine + High (15) SE	-	-	-	-	-	-	-
14	Brine + High (19.78) SE	-	-	-	-	-	-	-
High Brine Discharge Scenarios (post-shutdown operations)								
15	High Brine only	15.5	16.3	10.5	15.5	1.60	18.6	1.33
16	High Brine + Low (1) SE	16.1	16.9	11.3	16.1	1.34	19.3	1.11
17	High Brine + Low (2) SE	16.7	17.5	12.1	16.7	1.11	20.1	0.92
18	High Brine + Low (3) SE	17.5	18.4	13.1	17.5	0.91	21.0	0.76
19	High Brine + Low (4) SE	18.6	19.3	14.2	18.6	0.73	22.3	0.61
20	High Brine + Mod (5) SE	19.6	20.4	15.4	19.6	0.58	23.6	0.48
21	High Brine + Mod (6) SE	22.1	21.4	16.6	21.4	0.42	25.7	0.35
22	High Brine + Mod (7) SE	22.8	22.8	18.1	22.8	0.34	27.4	0.28
23	High Brine + Mod (8) SE	25.0	24.5	19.8	24.5	0.24	29.4	0.20
24	High Brine + Mod (9) SE	28.2	27.2	22.3	27.2	0.16	32.6	0.14
25	High Brine + High (10) SE	32.5	30.2	25.3	30.2	0.10	36.2	0.08
26	High Brine + High (12) SE	58.6	44.9	39.0	44.9	0.01	53.9	0.01
27	High Brine + High (14) SE	-	-	-	-	-	-	-
28	High Brine + High (16) SE	-	-	-	-	-	-	-

NOTES:

[a] The lowest dilution value was selected from the two model (SEA and VP) analysis results to calculate incremental salinity increases at the edge of the ZID and BMZ to provide the most conservative assessment of potential salinity increases.

SE = Secondary Effluent (MRWPCA wastewater)

SOURCE: Roberts, 2017 (Appendix D1).



Basemap Sources: ESRI, USGS

Figure 4.3-7
Brine Mixing Zone (BMZ) and Diffuser Overview

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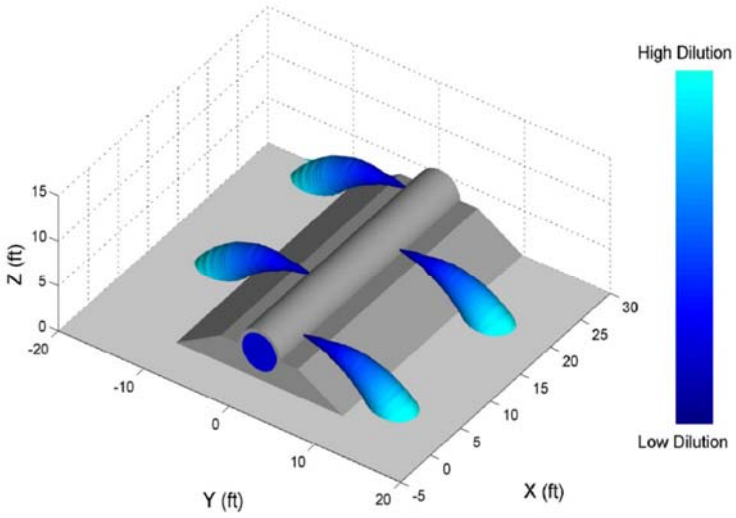
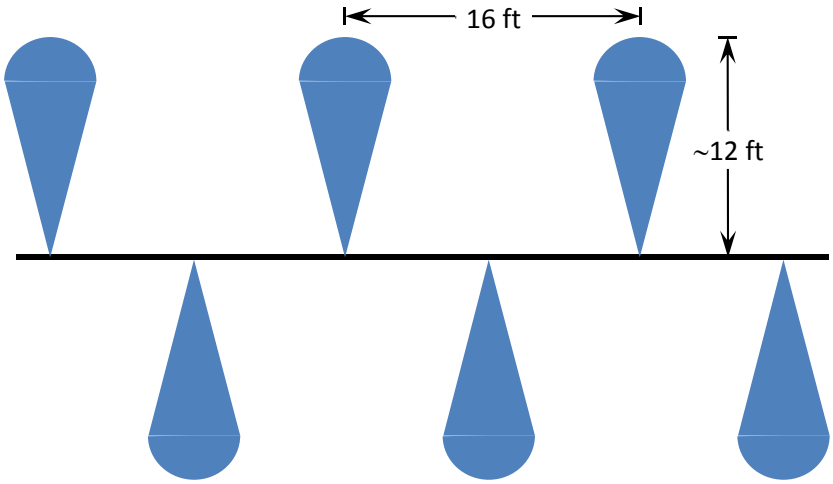


(a) Illustration of non-merging discharge plumes from VP (3D view, only 4 of the 129 open ports are shown).



(b) Illustration of non-merging discharge plumes (2D plan view)

Figure 4.3-8
Non-merging Dense Discharge Plumes from Diffuser Ports (near field)

used to predict the BMZ dilutions and incremental salinity above baseline conditions for each dense discharge scenario, as shown in **Table 4.3-13**. It is expected that dilution would actually be much greater than the assumed 20 percent (Roberts, 2016). As discussed above, the worst case for typical operations is Scenario 2, the pure brine discharge scenario during irrigation months. For Scenario 2, the incremental increase in salinity above background conditions at the edge of the BMZ was conservatively calculated to be 1.34 ppt, which is below the Ocean Plan salinity limit of 2 ppt. Scenarios 3, 4, and 5 have incremental salinities at the edge of the BMZ of 1.09, 0.88, and 0.69 respectively, demonstrating incremental salinity reductions as increasing wastewater flows are combined with the brine.

When brine discharges are increased following a shutdown, the minimum dilution ratios of brine to seawater and associated incremental salinity increases would not be substantially altered as compared to typical operations (**Table 4.3-13**). For example, when the densest discharges of brine only (most conservative scenarios with lowest minimum dilution values) are compared for typical operations (13.98 mgd of brine) and for post-shutdown operations (16.31 mgd of brine), the minimum dilution achieved at the edge of the ZID and BMZ are not measurably different in regards to incremental salinity. For typical operations, minimum dilution at the edge of the ZID and BMZ would be 15.4 and 18.5, respectively, with associated incremental salinity increases of 1.61 ppt and 1.34 ppt. When the same values are compared for post-shutdown operations, the minimum dilution at the edge of the ZID and BMZ would be 15.5 and 18.6, respectively, with associated incremental salinity increases of 1.60 ppt and 1.33 ppt above ambient. Overall, the minimum dilution results and increases above ambient salinity are very similar for all discharge scenarios for both typical and post-shutdown operations. This is due, in part, to the diffuser ports being fitted with duckbill valves that change in diameter as flows increase or decrease.

The model results are conservative. The dilution calculations presented above assume that discharges are made from round nozzles whose area is the same as the effective opening of the check valves (described under Operational Discharge Scenarios Modeled and Assessed, above). No existing models predict the dilution from elliptically-shaped check valves, but experiments show that the centerline dilutions from elliptical nozzles are greater than from equivalent round nozzles due to the larger surface area available for entrainment (see **Appendix D1** for details). Furthermore, the computed salinities presented in **Table 4.3-13** occur only along the seabed. Salinities decrease with height in the water column and would be above ambient only near to the seabed. For most of the water column, incremental salinities would be much less than the conservative values shown in **Table 4.3-13**. Finally, the model conservatively assumed no additional mixing of the discharge would occur as a result of tidal or wave related currents.

Operational discharges from the MPWSP would not violate water quality standards or waste discharge requirements or otherwise substantially degrade the water quality of receiving waters in Monterey Bay by increasing salinity levels. Therefore, this impact would be less than significant.

Dense Operational Discharges - Areas Exceeding 2 ppt Salinity

Consistent with Ocean Plan requirements, the analysis presented in this section evaluates the plume dynamics of dense, negatively buoyant operational discharges to quantify areas where salinity would exceed 2 ppt above natural background salinity around the outfall diffuser. Areas determined to exceed 2 ppt above natural background salinity are considered further in Section 4.5, Marine Biological Resources, in the context of assessing and quantifying the potential for mortality of aquatic wildlife and loss of habitat from operational discharges as well as the potential for operational discharges to injure sanctuary resources. While no significance threshold or regulatory standard exists for the exceedance of 2 ppt salinity within the BMZ related to water quality, the following assessment is presented to further support the assessment of impacts on marine biological resources within the BMZ from operational discharges (see Section 4.5, Marine Biological Resources). Additionally, the assessment and disclosure of areas

exceeding 2 ppt salinity is required by the Ocean Plan and MBNMS guidelines for desalination facilities (MBNMS, 2010). For dense discharges around the outfall diffuser, exceedances of the 2-ppt salinity threshold would be restricted to small areas adjacent to the diffuser ports. To estimate the area around the diffuser ports where salinities could exceed 2 ppt, Roberts (2016) presents three-dimensional, laser-induced fluorescence (3DLIF) images of a horizontal, negatively buoyant jet representative of those assessed in this impact analysis (**Figure 4.3-9**; see **Appendix D1** for additional details). The images were obtained by scanning a laser sheet horizontally through the dense discharge flow, to which a small amount of fluorescent dye was added. The fluoresced light was captured and converted to tracer concentrations and dilution and imaged by computer graphics techniques. The image in **Figure 4.3-9** shows the outer surface of a dense discharge plume as semi-transparent, with concentrations depicted in various colors through the jet centerline. High salinity concentrations (i.e., exceeding 2 ppt) would be confined to a relatively small area (by water volume) adjacent to the diffuser port and would attenuate rapidly with distance from the nozzle. Using **Figure 4.3-9** to represent a negatively buoyant plume similar to those assessed in this analysis and scaling up to be consistent with the proposed project, the region of a salinity exceeding 2 ppt threshold would be represented by the area contained within the first three color contours (red, orange, and yellow contours). **Figure 4.3-10** presents a graphical output from Visual Plumes UM3 model (described above) for Scenario 2 (brine only discharge, the worst case scenario for salinity increases). Visual Plumes computes a constant salinity contour (blue line) representing a salinity increment of 2 ppt; within this contour, the salinity increment is greater than 2 ppt, and outside this line it is less than 2 ppt. The area where salinity exceeds the 2 ppt threshold under the worst case scenario (brine only) around each of the 129 outfall diffuser jets is a conical area with a volume on the order of 8.5 cubic feet (approximately 8 feet long by 2 feet in diameter), located approximately 2 feet above the sea floor (**Figure 4.3-10**). As discussed above, the brine plumes do not merge prior to contacting the sea floor, and so there would not be a contiguous area around the diffuser where salinity exceeds the 2 ppt salinity threshold. When the brine plume for Scenario 2 contacts the sea floor, the salinity would be 1.56 ppt above ambient (Table 4.3-13) and would pose no risk for the occurrence of hypoxia. For all discharge scenarios, the discharge plume contacts the sea floor and is less than 2 ppt above ambient at a distance ranging from 10 feet to 33 feet from the outfall diffuser for typical operations, representing an area of the sea floor of 0.6 to 1.8 acres respectively (for context the total area within the BMZ represents a sea floor area of 27 acres). For additional discussion of the areas exceeding 2 ppt salinity levels in the context of potential impacts on marine organisms and sanctuary resources, see Section 4.5, Marine Biological Resources.

Dense Operational Discharges - Additional Considerations

This impact analysis addresses concerns raised during the public review of the April 2015 DEIR. The comments received involved the brine discharge and its travel path beyond the BMZ, concerns relating to the propagation of a dense saline plume along the sea floor, and the potential for hypoxia to occur near the seabed as a result of extremely elevated salinity levels adjacent to the outfall diffuser. Each of these concerns is addressed briefly below.

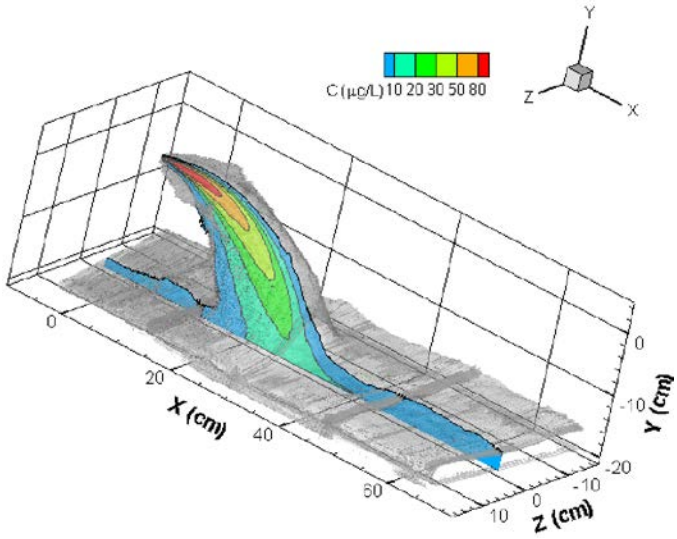
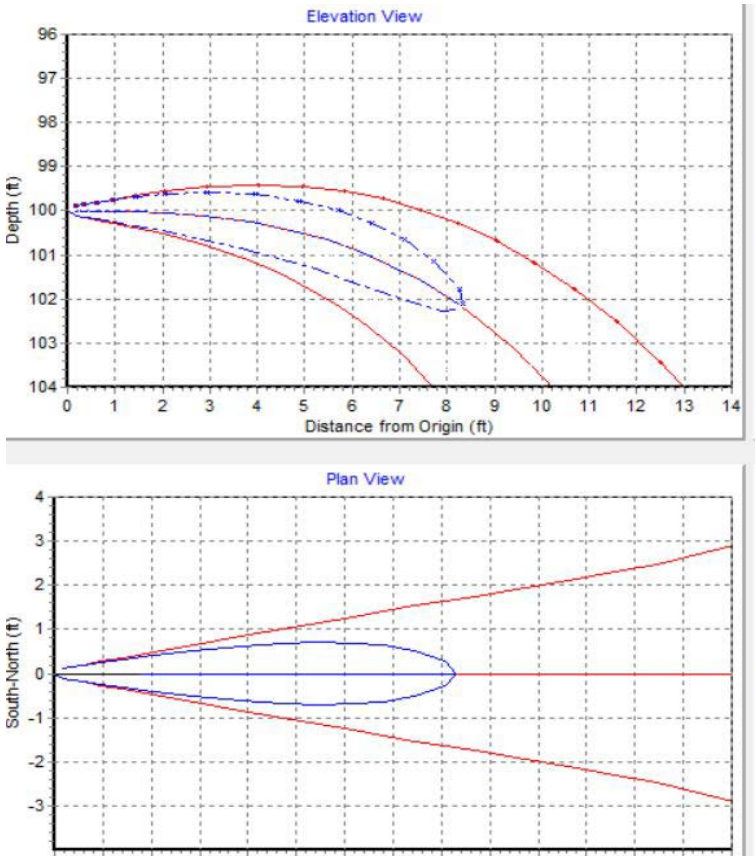


Figure 4.3-9
3DLIF Image of a Laboratory-generated Generic Horizontal Dense Jet



NOTES: Red line is the outer boundary of the jet. Blue line is contour of 2 ppt salinity increment.
SOURCE: Roberts, 2016

Figure 4.3-10
UM3 Graphical Output for Scenario 2 (pure brine at 13.98 mgd)

While there are no significance thresholds for salinity limitations beyond the BMZ boundary (328 ft), as discussed above, operational discharges would be less than 2 ppt above ambient salinity levels at the edge of the ZID, which ranges between 10 and 33 feet from the diffuser depending on discharge scenario (and up to 39 feet for temporary post-shutdown operations). Further, the model analysis presented in **Appendix D1** demonstrates that, as the brine plume travels away from the point of discharge, salinity levels associated with the discharge would progressively decrease with time and distance from the point of discharge, approaching background salinity levels beyond the BMZ through dispersion and dilution with the ocean currents.

Mixing and dilution of horizontal dense plumes from the diffuser jets could be affected by proximity to a local boundary, such as the sea floor (Roberts, 2016). As a fluid moves across a surface a certain amount of friction occurs between the fluid and the surface, which tends to slow the moving fluid. This resistance to the flow of the fluid pulls the fluid towards the surface. Thus, a fluid emerging from a nozzle (such as a dense plume from a diffuser) could potentially follow a nearby curved surface (such as the sea floor) if the curvature of the surface, or the angle the surface makes with the fluid stream, is not too sharp (i.e., acute). This effect (known as Coanda attachment), could result in substantially reduced dilution, or as public commenters suggested, result in creating a dense saline plume that forms a connection to and travels along the sea floor. In response to this concern, Roberts (2016) modeled the anticipated discharge to see if this effect was likely to occur. He determined that conditions of the discharge, namely, the expected negatively buoyant, density characteristics, were not likely to result in a Coanda effect of plume attachment to the sea floor (for details regarding methods and results see **Appendix D1**). Based on published research in the scientific literature on plume experiments relevant to desalination outfall facilities, a Coanda attachment to the sea floor will not occur for a negatively buoyant dense discharge when the parameter "z_o/dF" is greater than 0.12[34] (**Table 7** of **Appendix D**). The parameter "z_o/dF" represents a function of the internal hydraulics of the outfall and diffuser ports and was modeled as part of the dilution analyses described in **Appendix D**. Roberts (2016) concluded that, because "z_o/dF" is substantially greater than 0.12 for all discharge scenarios involving a dense negatively buoyant plume, a Coanda attachment would not occur, and that there would be no significant impairment to the dynamics or mixing of the discharges with receiving waters.

Comments received on the April 2015 DEIR expressed concerns over the potential for areas of hypoxia to form beneath dense discharges. Adequate DO is vital for aquatic life and higher concentrations are generally considered to be desirable. Dissolved oxygen content in water is, in part, a function of water temperature and salinity, which affect the point at which water becomes saturated with DO. As described in Section 4.3.1.3, the ability of oxygen to dissolve in water decreases as the temperature and salinity of water increases. As the temperature and/or salinity of water increases, water loses the ability to hold dissolved oxygen and the concentration goes down. Salinity also has properties that can facilitate the creation of hypoxic[35] zones. Because salt water is more dense than fresh water, under certain conditions, a less dense layer of fresh or low

[34] Table 7 of Appendix D1 (Roberts, 2017) includes the model results for calculation of the internal hydraulics of the outfall and diffuser ports under "Port Conditions" used as part of the dilution analyses.

[35] Hypoxia occurs when the amount of dissolved oxygen in water becomes too low to support most aquatic life (typically below 2 mg/l).

salinity water can form on top of a denser layer of high salinity water. Such a scenario can prevent adequate mixing of the water column and prevent oxygenated water to get to the lower depths resulting in the heavier, saltier layer at the bottom to become oxygen-depleted.

However, DO varies per many other factors, including photosynthesis and biological and chemical oxygen demand associated with decomposition of organic material. Monterey Bay is a dynamic environment that includes variable concentrations of DO. Ambient DO levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 milligrams per liter (mg/L) to 8.00 mg/L (KLI, 1998; KLI, 1999); typically, DO in the range of 5 to 8 mg/L is considered protective of fish and marine biota depending on the species and life-stage. Under the Ocean Plan, a discharge may not increase DO more than 10 percent of ambient levels at the edge of the BMZ.

Comments specifically expressed concern that, due to sediment oxygen demand and potential limited mixing due to dense discharges forming Coanda attachments, limited dilution and mixing could restrict oxygen supply. As described above, Coanda attachments would not occur, and modeled salinity levels are less than 2 ppt above ambient salinity at the edge of the ZID. Further, to evaluate the potential for hypoxia, Geosyntec (2015) performed a mass-balance analysis (a mass-balance analysis accounts for a given material entering and leaving a system) based on dilution and dispersion analyses for operational discharges completed by ESA (ESA, 2015). The analysis applied a mass-balance approach to a conservative areal extent of a brine-only plume (i.e., the most dense of the proposed operational discharges) to derive estimates of oxygen demand in local sediments (70 to 180 kilograms/day) and estimates of oxygen supplied (less than 5,600 kilograms/day) by the operational discharges (including entrained seawater). Based on the results of the mass-balance analysis, the amount of oxygen supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution is more than 30 times greater than that consumed by the sediments. As such the concentration of dissolved oxygen in receiving ocean waters would not become depressed by more than 10 percent from that which occurs naturally, hypoxia is unlikely to occur as a result of proposed operational discharges and impacts would be less than significant.

Buoyant Operational Discharges - Analysis and Discussion

The analysis presented in this section evaluates positively buoyant operational discharges (i.e., that have densities less than the receiving seawater) using model analyses to determine salinity, dilutions, and plume behavior.

Positively buoyant discharge plumes (i.e., those with densities less than the receiving water) require different analytical procedures than are used for negatively buoyant plumes. Only five discharge scenarios involve a positively buoyant discharge: Scenario 1, the baseline consisting only of MRWPCA wastewater and Scenarios 13, 14, 27, and 28, MPWSP brine combined with high flows of wastewater during the non-irrigation season (**Table 4.3-10** and **Table 4.3-13**). The plume dynamics for these scenarios were simulated with two models in Visual Plumes: UM3 and NRFIELD (**Appendix D1**). UM3 is an entrainment model that was previously described above. NRFIELD is based on experiments on multiport diffusers discharging from two sides (Roberts, 2016). NRFIELD is specifically designed for conditions typical of very buoyant discharges of

domestic effluent from multiport diffusers into stratified oceanic waters, and as such, is considered applicable to this analysis. The primary outputs from NRFIELD are the minimum (centerline) dilution, the plume rise height, and thickness at the end of the near field.

The following procedure was used for the buoyant plume dilution simulations. The internal hydraulics of the outfall diffuser were computed for each of the discharge scenarios (described in detail in **Appendix D1**) and the average port diameter and flows were obtained for each diffuser port. The UM3 and NRFIELD model suites in Visual Plumes were then run for each oceanic season: Upwelling, Davidson, and Oceanic. The seasonal average density stratifications (**Table 4.3-1**) were used, and zero current speed was conservatively assumed.

The results are summarized in **Table 4.3-14**. For UM3, the average dilutions at the terminal rise height are given along with the centerline rise heights of the plume; for NRFIELD, the near field (minimum) dilution is given along with the height of the near field (centerline) dilution and the height to the top of the spreading plume. The average dilution predicted by UM3 is very close to the minimum (centerline) dilution predicted by NRFIELD. The reason for this is that the increase in mixing and dilution in the transition from vertical to horizontal flow and merging of the plumes from both sides, neither of which are incorporated into UM3, are accounted for in the ratio of average to the minimum dilutions (Roberts, 2017). Therefore, while the average dilution predicted by UM3 is presented as a model output, it is interpreted here as the minimum centerline dilution (see **Appendix D1** for details). The near field dilution is synonymous with the minimum initial dilution in the ZID, as defined in the California Ocean Plan.

However, the results for UM3 and NRFIELD diverge as the effluent becomes only slightly buoyant (i.e. the effluent density approaches the ambient density), with UM3 dilutions being considerably higher. NRFIELD is based on experiments conducted for parameters typical of domestic wastewater discharges into coastal waters and estuaries. For this situation, dilution and mixing are mainly dependent on the source buoyancy flux with momentum flux playing a minor role. NRFIELD is the preferred model for this case. As the effluent density approaches the background density, buoyancy becomes less important and the mixing becomes dominated by momentum. UM3 is the preferred model for this case. In that situation, NRFIELD continues to give predictions but issues a warning that "The results are extrapolated" when the parameters are outside the range of the original experiments. Therefore, the NRFIELD results were utilized in the impact assessment when the results are within the experimental range, and UM3 when extrapolated.

The model output showed that the dilutions of project-related discharges would be high for all of the buoyant plume scenarios evaluated. The lowest is a minimum initial dilution of 88 for Scenario 7. The highest dilution was 349 for Scenario 1 (pure secondary effluent) during the Davidson season. As demonstrated by model analysis, when the MPWSP brine is combined with high volumes of wastewater, the plume is positively buoyant because the salinity of the effluent is substantially lower than that of ambient conditions (**Table 4.3-12**). Operational discharges that are buoyant would not exceed the significance threshold of 2 ppt at the BMZ; the salinity of the buoyant discharges is already lower than that of the receiving waters, and impacts would be less than significant.

TABLE 4.3-14
DILUTION RESULTS FOR BUOYANT DISCHARGE SCENARIOS

Scenario No.	Scenario	Season	Effluent conditions			UM3 simulations		NRFIELD simulations		
			Flow (mgd)	Salinity (ppt)	Density (kg/m^3)	Average dilution	Rise height (centerline) (ft)	Minimum dilution	Rise height (centerline) (ft)	Rise height (top) (ft)
1	SE Only	Upwelling	19.88	1.00	999.0	-	-	179	41	57
		Davidson				-	-	349	100	100
		Oceanic				-	-	238	50	72
13	Brine + High SE	Upwelling	29.08	28.54	1021.2	93	28	-	-	-
	(15 mgd)	Davidson				127	57	-	-	-
		Oceanic				94	27	-	-	-
14	Brine + High SE	Upwelling	33.86	24.63	1018.1	99	36	-	-	-
	(19.78 mgd)	Davidson				147	76	-	-	-
		Oceanic				104	41	-	-	-
27	High Brine + High SE	Upwelling	30.31	31.70	1023.8	88	19	-	-	-
	(14 mgd)	Davidson				120	45	-	-	-
		Oceanic				90	17	-	-	-
28	High Brine + High SE	Upwelling	32.31	29.79	1022.2	90	26	-	-	-
	(16 mgd)	Davidson				118	53	-	-	-
		Oceanic				88	23	-	-	-

NOTES:
SE = Secondary Effluent (MRWPCA wastewater)

SOURCE: Roberts, 2017 (Appendix D1).

Impact Summary and Conclusion

The analysis of salinity levels indicates that for all scenarios, and assuming a continuous discharge stream, the MPWSP brine only discharges and discharges of brine combined with varying amounts of waste water will meet Ocean Plan salinity and dissolved oxygen standards and will not result in hypoxia on the ocean floor. Specifically, the discharges would result in salinity levels that would not exceed 2 ppt above ambient salinity at the edge of the ZID (the edge of which is 10 feet to 39 feet from the diffuser depending on discharge scenario), which means that salinity levels would not exceed 2 ppt above ambient salinity at the edge of the BMZ (328 ft from the diffuser) since the edge of the ZID is well within the BMZ under all scenarios. The proposed action would therefore not exceed or violate the Ocean Plan salinity standards or degrade water quality in terms of salinity.

As the plumes discharged from each of the 129 outfall diffuser jets travel away from the ZID, they continue to dilute (further reducing salinity levels) and ultimately merge within the BMZ boundary. Salinity levels would exceed 2 ppt in a relatively small area, approximately 8.5 cubic feet, adjacent to each of the 129 diffuser ports in an area 2 feet above the sea floor, after which the discharge plumes would attenuate rapidly with distance from each port. The combined area of exceedances of 2 ppt is not likely to adversely impact the marine environment because it is a relatively small volume in the water column when considered in the context of the total volumes of Monterey Bay. Also, the salinity increases presented in the analysis represent conservative values and would occur only along the seabed. Modeling demonstrates that salinity plumes are not likely to travel, or become trapped, along the sea floor due to the Coanda effect. Hypoxia from salinity near the sea floor was determined to be unlikely based on a mass-balance analysis, which demonstrated that the amount of oxygen supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution is more than 30 times greater than that consumed by the sediments. As such, the concentration of dissolved oxygen in receiving ocean waters would not become depressed by more than 10 percent from that which occurs naturally under baseline conditions. For the majority of the water column, incremental salinities would be much lower than the reported values. Additionally, the analysis assumed zero ocean current; however, under actual ocean conditions, waves, tidal forces, and seasonal currents would increase mixing and dilution, thus reducing these assessed salinity levels. Therefore, operational discharges from the MPWSP would not increase salinity levels or impact DO in a manner that violates water quality standards or waste discharge requirements or otherwise degrades the water quality of receiving waters in Monterey Bay and MBNMS. Environmental impacts and impacts on MBNMS resources would be less than significant.

The current NPDES permit (Order No. R3-2014-0013, NPDES Permit No. CA0048551), which regulates the wastewater discharge from the outfall, would be amended before the MPWSP Desalination Plant begins operation to incorporate the brine-only and combined discharges. Under the amended NPDES permit, the discharges would be subject to the Ocean Plan water quality objectives, which would be incorporated into the permit in the form of specific effluent limitations as water quality requirements. Further, the amended NPDES permit would require

approval by MBNMS to ensure discharges would not impair or degrade the resources of the Sanctuary.

As described in Section 4.3.2.2, the Ocean Plan includes monitoring and reporting requirements for the operation of new desalination facilities (Section III.M.4, "Monitoring and Reporting Program"; SWRCB, 2016). The monitoring requirements for the operation of a new desalination facility are such that the owner or operator of a desalination facility must submit a Monitoring and Reporting Plan to the RWQCB for approval. The Monitoring and Reporting Plan must include provisions for monitoring of effluent and receiving water characteristics and impacts on all forms of marine life. The Monitoring and Reporting Plan must, at a minimum, include monitoring for benthic community health, aquatic life toxicity, hypoxia, and receiving water characteristics. Additionally, receiving water monitoring for salinity must be conducted at times when the monitoring locations detailed in the Monitoring and Reporting Plan are most likely affected by the discharge. Additionally, as described in Section 4.3.2.2, MBNMS has established non-regulatory guidelines (MBNMS, 2010) for the construction and operation of desalination facilities to ensure that desalination plants in the sanctuary would be sited, designed, and operated in a manner that results in minimal impacts on the marine environment. The proposed project is substantially consistent with the guidelines relating to operational discharges regarding water quality and salinity. However, the guidelines also specify that a monitoring program should be developed to evaluate the extent of impacts from the plant's discharge operations on marine resources. The guidelines for developing a monitoring program are largely consistent with those described for the Ocean Plan with the addition that any proposed mitigation should be monitored for unavoidable impacts to ensure the mitigation is performing as intended.

A monitoring and reporting plan, consistent with the Ocean Plan requirements and MBNMS Guidelines for operation of a new desalination facility, has not been defined and proposed as part of the project. Several of the parties to the CPUC proceeding have agreed upon terms of the brine discharge that establishes, in part, a detailed monitoring and reporting program that includes the collection of relevant, long-term water quality data. The intent of the monitoring program is to determine compliance with defined water quality standards and to implement specific corrective actions when non-compliance is determined to occur. While the monitoring plan defined by the settling parties is consistent with portions of the Ocean Plan (SWRCB 2016) requirements and the MBNMS Desalination Guidelines (MBNMS 2010), it does not include biological monitoring to determine impacts on marine life. Further, while the Ocean Plan requires implementation of a monitoring plan for operation of a desalination facility, the requirement is new and, as such, is not well tested. Additionally, the monitoring requirements defined in the Ocean Plan are broadly described and do not include specific thresholds, performance standards, or corrective actions.

While impacts related to water quality from increased salinity have been determined to be less than significant based on model analyses, and although it is likely that monitoring would occur based on the Settlement Agreement and the Ocean Plan requirements, implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** would ensure compliance with the Ocean Plan monitoring requirements and consistency with MBNMS guidelines for operation of desalination facilities that are protective of

the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. Further, Mitigation Measure 4.3-4 would ensure that monitoring data considers impacts on marine resources and that all collected data is assessed against defined performance standards and that corrective actions are implemented in the case that performance standards are not met. For these reasons, the following mitigation measure is proposed.

Mitigation Measure 4.3-4 requires CalAm to implement a comprehensive Monitoring and Reporting Plan (Plan), following review and approval by the RWQCB and MBNMS that is consistent with the requirements and monitoring guidelines of the Ocean Plan and the MBNMS Guidelines for desalination plants. The monitoring program set forth in the Plan would ensure that adequate water quality and marine resource data are gathered to determine baseline conditions and compliance with Ocean Plan water quality limitations related to salinity. The Plan shall include, at a minimum, the water quality performance standard that operational discharges must comply with the 2 ppt salinity limitation at the BMZ compliance point. The Plan shall also include the performance standard that no statistically significant changes in benthic community composition occur within the maximum extent of the ZID, as compared to reference and baseline conditions that are directly and statistically associated with changes in salinity resulting from operational discharges (with consideration given to natural and seasonal variations and long-regional trends). The Plan shall also include corrective actions that would be required to be implemented if the acquired data indicated deleterious effects to receiving water quality or marine biological resources in the context of the performance standards resulting from operational discharges.

Mitigation Measures

Mitigation Measure 4.3-4 applies only to the operational discharges associated with the MPWSP Desalination Plant through the existing MRWPCA outfall.

> **Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance.**
>
> To ensure that the operational discharges from the MPWSP are in compliance with the 2 ppt receiving water salinity limitation at the BMZ compliance point required by the California Ocean Plan, the discharger(s) shall implement a Monitoring and Reporting Plan (Plan). The Plan shall, at a minimum, include protocols for monitoring of effluent and receiving water salinity characteristics as well as protocols for determining statistically significant changes in benthic community composition within the maximum extent of the ZID as compared to baseline conditions (established a minimum of one year prior to operations) that is directly associated with changes in salinity resulting from operational discharges (with consideration given to natural and seasonal variations and long-regional trends). Such protocols shall include, but not be limited to, monitoring for benthic community health, aquatic life toxicity, and hypoxia, within the ZID. The Plan shall be consistent with the standard monitoring procedures detailed in Appendix III of the Ocean Plan. Such monitoring protocols specify monitoring plan framework, scope, and methodological design for determining compliance with the Ocean Plan defined receiving water limitations relating to salinity. Prior to implementation, the Plan shall be approved by the RWQCB and MBNMS. Following implementation, the Plan shall be reviewed by the RWQCB, and revised if necessary, as part of the NPDES permit renewal process.

As part of the Plan, receiving water monitoring for salinity shall be conducted at times when the monitoring locations are most likely to be potentially adversely affected by the discharge. The Plan shall establish protocols to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge for at least one year prior to commencement of project construction. To determine impacts on marine biological resources against baseline biological conditions, the discharger(s) shall conduct biological surveys (e.g., Before-After Control-Impact studies), that evaluate and quantify the differences between biological communities at a reference site and at the discharge location before and after the discharge(s) commence. All monitoring data, results, and analyses shall be compiled and submitted to the RWQCB and MBNMS for review. Such monitoring shall continue until the RWQCB and MBNMS determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation.

Water Quality Monitoring. At a minimum, the Plan shall include the following water quality monitoring protocols and monitoring frequencies to assess baseline conditions and to track the compliance of the Project with the performance standard of ensuring operational discharges do not exceed ambient salinity by more than 2 ppt at the edge of the BMZ, as well as to assess the efficacy of any operational or design features implemented:

A. At least one year prior to implementing operational discharges, the discharger(s) shall install continuously recording automated water quality monitoring equipment, such as automatically recording water quality data sondes (water quality monitoring instrument), to monitor salinity and dissolved oxygen levels at one hour intervals in the receiving waters of Monterey Bay. The discharger(s) shall install water quality monitoring equipment at a minimum of four locations within 3 meters of the ocean floor as follows:

    a. 1 monitoring station at the edge of the Zone of Initial Dilution, but not more than 10 meters from the outfall diffuser.

    b. 1 monitoring station at the edge of the Brine Mixing Zone, representing the point of compliance with the Ocean Plan salinity standard (not more than 100 meters from the outfall diffuser).

    c. A representative reference location at least 1000 meters from the outfall diffuser, situated on the same elevation contour as that of the outfall diffuser, in an area outside the influence of operational discharges or other inputs to Monterey Bay, such as operational discharges from other facilities or fresh water inputs in the form of major surface water inputs.

B. Monitoring will be conducted for one year prior to the commencement of operational discharges to confirm baseline conditions.

C. Once operational discharges commence, the discharger(s) shall continue monitoring (for a minimum of five years, as described below) to confirm compliance of operational discharges with the Ocean Plan receiving water salinity limitation, which specifies discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity, as measured no further than 100 meters (328 ft) horizontally from the discharge point.

The discharger(s) shall retrieve all data from deployed water quality monitoring instrumentation at least four times a year at quarterly annual intervals during both the one year period of baseline monitoring and during the salinity standard compliance monitoring associated with operations. Following data collection, data shall be analyzed for compliance with the receiving water salinity standard defined in the Ocean Plan. Additionally, the salinity and dissolved oxygen data retrieved shall be used, in conjunction with biological survey data, to assess changes to benthic community composition within the ZID. The analyses and monitoring data shall be summarized and submitted to the RWQCB and MBNMS as annual reports as well as made publicly available via the project website. Reports shall include summary graphs of all quality assured/quality controlled data as well as statistical analyses of the data relative to historic baselines. Reports shall assess water quality data within the context of relevant water quality standards. The reports shall describe any measured adverse water quality related changes, such as high salinity or low dissolved oxygen levels that potentially impact marine habitat quality or benthic communities. The reports shall include assessment of the extent to which any measured changes were attributable to controllable factors, such as the variation of combined flows as part of operational discharges.

The analysis and reporting conducted as part of the Plan shall determine the need for corrective actions to be implemented in the form of the design features and operational measures prescribed in **Mitigation Measure 4.3-5** to reduce identified impacts to less-than-significant levels. As part of such a determination for implementation of corrective actions, a schedule for implementation shall be provided, as well as rationale for how such design features and/or operational measures were selected and the expected results following implementation. All analysis and reporting, including determinations for the need for corrective actions to be implemented, the schedule for implementation, and the rationale for selected corrective actions shall be approved by the RWQCB and MBNMS. If at the end of five complete years of monitoring operational discharges, the 24-hour average salinity measured at the edge of the BMZ is less than 75% of the salinity performance standard for 45 days without interruption under all discharge scenarios representative of typical operations (i.e. irrigation season and non-irrigation season operations), and with approval by the RWQCB and MBNMS, the discharger(s) may terminate the monitoring and reporting specified as part of this mitigation measure (but not terminate monitoring and reporting required as part of compliance with NPDES permit conditions or Ocean Plan monitoring and reporting requirements for discharges into California ocean waters).

Impact 4.3-5: Violate water quality standards or waste discharge requirements, or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant. (*Less than Significant with Mitigation*)

Operational discharges may contain a variety of water quality constituents that, in high enough concentrations, could degrade water quality and adversely affect the beneficial uses of the receiving waters in Monterey Bay and MBNMS resources. The concentrations of water quality constituents present in the operational discharges are determined and impacts on water quality are assessed based on compliance with the Ocean Plan water quality objectives. Depending upon the time of the year and the quantity of wastewater flows released, the operation of the MPWSP Desalination Plant

would result in a brine-only discharge or a combined discharge (brine blended with varying flows of treated wastewater). Operational discharges from the MPWSP could violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving waters in Monterey Bay.

Treated wastewater from the existing MRWPCA Regional Wastewater Treatment Plant is currently discharged through the MRWPCA outfall and is subject to the provisions and effluent limitations of an NPDES permit (Order No. R3-2014-0013, NPDES Permit No. CA0048551). Under the proposed MPWSP, the current NPDES permit would need to be amended to incorporate the brine-only and combined discharges before the MPWSP Desalination Plant commences operation. Under the amended NPDES permit, the discharges would be subject to the Ocean Plan water quality objectives, which would be incorporated into the permit as specific effluent limitations.

Compliance with water quality objectives other than salinity (see Impact 4.3-4 for assessment of salinity-related impacts) is assessed here. Noncompliance with the Ocean Plan water quality objectives could degrade water quality and adversely affect the beneficial uses of the receiving waters in Monterey Bay. When treated wastewater is discharged, it enters ocean waters into an area known as the zone of initial dilution (ZID). As prescribed in the Ocean Plan, the discharge must meet the water quality objectives at the outer boundary of the ZID, after the wastewater has undergone a period of initial dilution (i.e., mixing of the discharge with the receiving water). Discharge limitations for the NPDES permit (i.e., the permitted in-pipe concentration of water quality constituents) are obtained by quantifying the degree of dilution that occurs within the ZID, referred to as the minimum probable initial dilution (Dm). The water quality objectives established in the Ocean Plan are adjusted by the project-specific Dm to derive the NPDES permit limits on in-pipe constituent concentrations for a wastewater discharge prior to ocean dilution. Determination of a significant impact related to water quality, water quality standards, and waste discharge requirements is based on compliance with the Ocean Plan water quality objectives (see Section 4.3.3).

Introduction to the Impact Analysis of Other Ocean Plan Constituents

Impact 4.3-5 is structured as follows:

- **Operational Discharge Scenarios**: To provide context for the water quality analysis, this section describes the operational discharge scenarios that could occur as a result of implementing the MPWSP.
- **Approach to Analysis**: This section describes the methodologies used in the impact analysis to determine compliance with Ocean Plan water quality objectives.
- **Results and Impact Discussion:** In this section, concentrations of constituents regulated under the Ocean Plan are discussed for each evaluated discharge scenario. First, the concentrations at the edge of the ZID are presented in the context of the minimum dilution values assessed for each discharge scenario. The resulting concentrations are then compared to the Ocean Plan objectives to assess operational water quality impacts and regulatory compliance.

- **Consistency with Regulatory Requirements**: This section assesses the proposed project's consistency with applicable regulatory requirements adopted for the purpose of avoiding or mitigating environmental effects; these requirements are described above in Section 4.3.2, Regulatory Framework. Where the proposed project conflicts with applicable plans or policies, a significant impact would result.
- **Impact Summary and Conclusion**: This section summarizes the results of the comprehensive analysis of water quality impacts in the context of the evaluated operational discharge scenarios. An impact conclusion is provided that considers the results of the analysis in the context of proposed operations, the relevant described significance criteria, and applicable regulations.

Operational Discharge Scenarios

Table 4.3-10 summarizes the operational discharge scenarios evaluated for the MPWSP (described in detail under Impact 4.3-4). Predictive models were used to determine the potential water quality impacts under each discharge scenario.

Approach to Analysis

Potential water quality impacts were identified by determining whether operational discharges would exceed the water quality objectives established in the Ocean Plan. As discussed in detail in Section 4.3.2, Regulatory Framework, the Ocean Plan establishes objectives for a wide range of constituents and also forms the basis of NPDES permit effluent quality requirements for waste discharges to ocean waters. **Table 4.3-4** provides the suite of constituents and their Ocean Plan water quality objectives.

Initial Dilution of Discharges and the "Zone of Initial Dilution"

For typical wastewater discharges, when released from an outfall, the wastewater and ocean water undergo rapid mixing. The mixing of the discharge with receiving ocean waters is affected by the buoyancy and momentum of the discharge plume, a process referred to as initial dilution. Compliance with the Ocean Plan water quality objectives summarized in **Table 4.3-4** is required after the initial dilution of the discharge into the ocean is completed. The initial dilution occurs in an area known as the zone of initial dilution (ZID). The ZID is defined as the zone where buoyancy- and momentum-driven mixing produces rapid dilution of the discharge. Compliance was determined by comparing water quality parameters measured at the edge of the ZID with Ocean Plan objectives, an approach to identifying impacts that is consistent with the requirements outlined in the Ocean Plan.

Data Sources

The impact analysis relies on a compilation of the most recent and best available water quality data from several sources. The MRWPCA wastewater constituent concentrations were determined using historical NPDES compliance data collected by the MRWPCA, results from secondary effluent water quality monitoring conducted between July 2013 and June 2014, and water quality data collected by CCLEAN. The constituent concentrations in the brine were

determined using available data from CalAm's temporary test subsurface slant well[36] on the CEMEX property in Marina, California, as well as consideration of the 42 percent efficacy of the treatment process at the MPWSP Desalination Plant. A summary of the estimated water quality for the MPWSP brine and the MRWPCA wastewater is presented in **Appendix D3** (Table 4).

Ocean Plan Discharge Compliance

Trussell Tech conducted the evaluation to determine compliance of the operational discharges with Ocean Plan objectives. This section provides a summary of the data sources and specific methodologies for each step of the model analysis (see **Appendix D3** for details). **Figure 4.3-11** illustrates the approach to analysis.

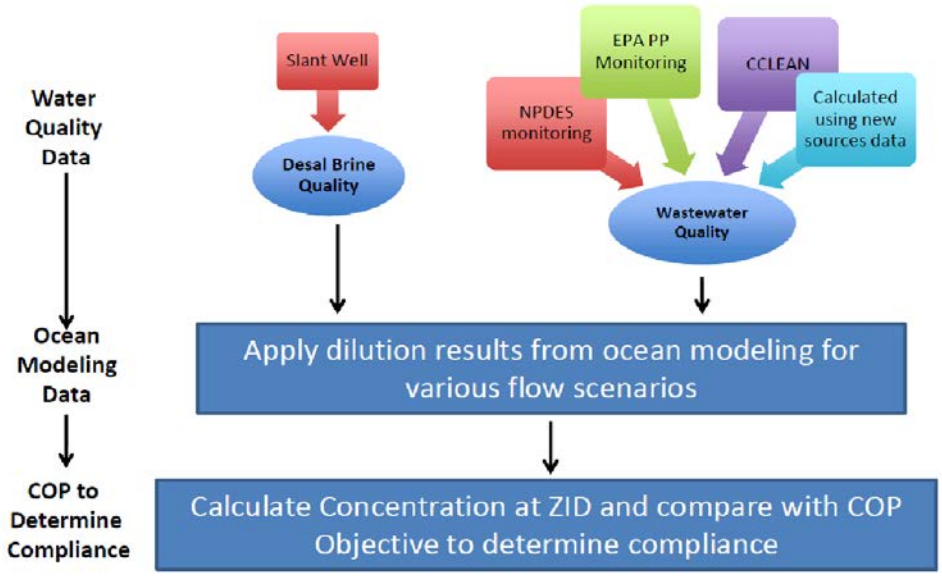


Figure 4.3-11
Summary of Approach to Analysis
for Determining Ocean Plan Compliance

After compiling water quality data for the desalination brine and MRWPCA wastewater (described above), Trussell Tech (2017; **Appendix D3**) combined the data for the evaluated discharge scenarios. Specifically, Trussell Tech calculated the combined in-pipe concentration of water quality constituents prior to discharge. This in-pipe concentration of constituents was calculated using a flow-weighted average of each discharge component for each of the flow scenarios described in **Table 4.3-10**.

The minimum dilution ratios (Dm) developed by Roberts (2017; **Appendix D1**) and summarized in **Tables 4.3-13** and **4.3-14** were then applied to the average flow-weighted in-pipe concentrations to determine the constituent concentrations at the edge of the ZID. The Dm value

[36] Long-term pumping and water quality sampling from this well on the CEMEX property in Marina, California began in April 2015.

calculated for each discharge scenario was applied to the in-pipe concentration of the constituents to calculate each constituent's concentration at the edge of the ZID (described in detail in **Appendix D3**). This calculation also considered the existing background concentration of the constituents present in the ocean receiving water. This approach is consistent with the Implementation Provisions set forth in the Ocean Plan (SWRCB, 2016).

Finally, to determine Ocean Plan compliance, the calculated concentrations at the edge of the ZID were compared to the Ocean Plan water quality objective for that constituent (summarized in **Table 4.3-4**). **Appendix D3** documents the data sources and provides further detail on the methodology used to perform the ocean water quality modeling analysis.

Ocean Plan Water Quality Objectives

The Ocean Plan contains three categories of objectives: (1) Objectives for Protection of Marine Aquatic Life, (2) Objectives for Protection of Human Health – Non-Carcinogens, and (3) Objectives for Protection of Human Health – Carcinogens. There are three numeric thresholds (water quality objectives) defined for each constituent in the first category: six-month median concentration, daily maximum concentration, and instantaneous maximum concentration. For the other two categories, there is one numeric threshold: 30-day average concentration. When a constituent had three numeric thresholds, the lowest—the six-month median—was used to estimate compliance. This approach was used to account for the fact that most of the operational discharge scenarios would be sustained on a seasonal basis for up to 6 months (i.e., during the irrigation and non-irrigation seasons), and therefore the 6-month median objective would need to be met. However, the scenarios in which brine is discharged with low flows of wastewater (see **Table 4.3-10**) are unlikely to be implemented in a sustained manner seasonally, but rather represent the time periods when seasonal operations change and wastewater flows are ramped up or down depending on inputs of wastewater to the Salinas Valley Reclamation Project (SVRP) via the Castroville Seawater Intrusion Project (CSIP). Therefore, these transitional scenarios provide a conservative, worst-case assessment of potential water quality impacts.

Basis for Impact Conclusion: The Zone of Initial Dilution

A conservative threshold of 80 percent or greater (≥80%) of the Ocean Plan objective was established for determining potential impacts for constituent concentrations at the edge of the ZID. For each discharge scenario, if the concentration of a constituent at the edge of the ZID was below the 80 percent Ocean Plan water quality objective threshold, then it was assumed that the discharge would comply with the Ocean Plan. However, if the concentration of a constituent at the edge of the ZID exceeded the Ocean Plan objective, then it was concluded that the discharge scenario could violate the Ocean Plan objective and result in a significant impact. If the concentration of a constituent at the edge of the ZID exceeded the conservative threshold of 80 percent or greater of the Ocean Plan objective, it was concluded that the discharge scenario could result in a significant impact unless additional analysis could provide context, such as data outliers or water quality data not representative of proposed operations, to conclude otherwise. Note that this approach could not be applied for some water quality objectives defined in the

Ocean Plan, such as acute toxicity, chronic toxicity, and radioactivity.[37] Also, reliable water quality data were not available for several Ocean Plan constituents, in which case a concentration at the edge of the ZID could not be calculated. This lack of information regarding certain constituents is conservatively addressed in the analysis and impact conclusion presented below.

Results and Impact Discussion

The first step in the Ocean Plan compliance analysis was to estimate the worst-case concentrations of water quality constituents present in the source water for the desalination brine and in the MRWPCA secondary effluent wastewater. The estimated water quality constituent concentrations for each discharge component are presented in **Appendix D3** (Table 4). The flow-weighted in-pipe concentration for each constituent was calculated for each modeled discharge scenario using the water quality results presented in **Appendix D3** (Table 4) and the discharge flows presented in **Table 4.3-10**. The in-pipe concentration was then used to calculate the concentration at the edge of the ZID using the Dm values presented in **Table 4.3-13** (for negatively buoyant discharge plumes) and **Table 4.3-14** (for positively buoyant discharge plumes) for each discharge scenario.

The estimated concentrations for the full suite of Ocean Plan constituents are presented as concentrations at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective in **Table A1** and **Table A2** in **Appendix D3** for the fourteen[38] operational discharge scenarios assessed for the MPWSP. As summarized in **Tables A1** and **A2** (**Appendix D3**), out of 80 constituents assessed for compliance with Ocean Plan numeric water quality objectives, the proposed project would comply with 65 objectives under all assessed operational discharge scenarios that could potentially occur. These 65 objectives are not discussed further. The remaining 15 constituents are characterized further regarding potential exceedances of the Ocean Plan objectives.

Two constituents, cyanide and ammonia, were identified as having the potential to exceed the Ocean Plan objectives under certain operational scenarios. Potential issues for cyanide and ammonia compliance were identified to occur when there would only be low volumes of secondary effluent flow mixed with desalination brine. These two constituents may exceed the Ocean Plan objective, or come close to exceeding the objective, and are shown at their estimated concentration at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective at the edge of the ZID, in **Tables 4.3-15** and **4.3-16**, respectively. Ten constituents[39]

[37] Calculating flow-weighted averages for toxicity (acute and chronic) and radioactivity (gross beta and gross alpha) is not appropriate based on the nature of the constituents. These constituents were measured individually for the secondary effluent, and these individual concentrations would comply with the Ocean Plan objectives. Current discharges of the secondary effluent and hauled waste are monitored semiannually for acute toxicity, chronic toxicity, and radioactivity per the existing NPDES permit and would continue to be monitored as part of future NPDES permit requirements. (See Appendix D3, Section 4.4 for details).

[38] The Draft EIR/EIS considered five operational discharge scenarios. This model analysis determined that MPWSP operational discharges would not exceed Ocean Plan water quality objectives for the constituents listed in Table 4.3-4 for which a compliance determination could be made. (See Draft EIR/EIS at page 4.3-100).

[39] Chlorinated phenolics, 2,4-dinitrophenol, tributyltin, aldrin, benzidine, bis(2-chloroethyl)ether, 3,3-dichlorobenzidine, 1,2-diphenylhydrazine, heptachlor, 2,4,6-trichlorophenol.

TABLE 4.3-15
MPWSP OPERATIONAL DISCHARGE SCENARIOS: ESTIMATED CONCENTRATIONS AT THE EDGE OF THE ZID FOR OCEAN PLAN CONSTITUENTS OF CONCERN

Constituent	Units	Ocean Plan Objective	Estimated Concentration at Edge of ZID by Flow Scenario Number[a,b]													
			MPWSP Typical Operations							MPWSP Post Shut-Down Operations						
			2	4	6	8	11	12	14	15	17	22	23	25	26	28
Objectives for protection of marine aquatic life - 6-month median limit																
Cyanide	µg/L	1	0.6	1.1	1.3	1.4	1.3	1.0	0.5	0.6	1.0	1.3	1.3	1.2	0.9	0.4
Ammonia (as N) - 6-mo median	µg/L	600	29	341	523	600	614	461	255	26	301	575	585	546	409	243

NOTES:
[a] Flow scenarios correspond to those scenario numbers provided in Table 4.3-10
[b] Shading indicates constituent is expected to be greater than 80 percent (orange shading) or exceed (red shading) the ocean plan objective for that discharge scenario.

SOURCE: Appendix D3.

TABLE 4.3-16
MPWSP OPERATIONAL DISCHARGE SCENARIOS: ESTIMATED CONCENTRATIONS AT THE EDGE OF THE ZID EXPRESSED AS PERCENTAGE OF OCEAN PLAN OBJECTIVE FOR OCEAN PLAN CONSTITUENTS OF CONCERN

Constituent	Units	Ocean Plan Objective[40]	Percentage of Ocean Plan Objective at Edge of ZID by Scenario[a,b]													
			MPWSP Typical Operations							MPWSP Post Shut-Down Operations						
			2	4	6	8	11	12	14	15	17	22	23	25	26	28
Cyanide	µg/L	1	59%	108%	133%	140%	134%	99%	52%	58%	101%	134%	133%	120%	88%	51%
Ammonia (as N) - 6-mo median	µg/L	600	5%	57%	87%	100%	102%	77%	43%	4%	50%	96%	97%	91%	68%	40%

NOTE: footnotes [a] and [b] provided under Table 4.3-15

SOURCE: Trussell Technologies, 2017 (Appendix D3).

[40] Objectives for protection of marine aquatic life - 6-month median limit

were not detected in any of the source waters (desalination brine or wastewater) and results for these ten constituents are summarized in **Tables A1** and **A2** (**Appendix D3**). However, for these ten constituents, the analytical Method Reporting Limit[41] (MRL) achieved by the testing laboratory was higher than the Ocean Plan numeric objective.[42] This is a typical occurrence for ocean discharges as, under certain circumstances due to the limitations of available analytic techniques, an MRL can be higher than the Ocean Plan objective for certain constituents. Three additional constituents—acrylonitrile, beryllium, and TCDD equivalents—were initially identified as having the potential to exceed water quality objectives because they were detected in either the desalination brine or wastewater, but not in both. However, there is not enough information to assess the concentrations for these three constituents in the combined discharge of wastewater and brine due to differences in MRLs applied in the brine source waters as compared to the MRWPCA wastewater.

Based on the conservative 80 percent threshold described above for assessing operational discharges for compliance with Ocean Plan objectives, implementation of the MPWSP could potentially cause exceedances of Ocean Plan water quality objectives for the measurable constituents ammonia and cyanide (see **Tables 4.3-15** and **4.3-16**) under certain operational conditions when wastewater volumes co-mingled with the brine are low. For an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)** would require CalAm to perform an extensive water quality assessment using protocols defined in Appendix II "Minimum Levels" of the 2015 California Ocean Plan prior to implementation of the MPWSP. Operational discharges that cannot be demonstrated to conform to the Ocean Plan water quality objectives, incorporated as performance standards, may only be discharged following implementation of additional design features, engineering solutions, and/or operational measures as defined in Mitigation Measure 4.3-5 that ensure compliance with objectives. Should analytical technologies be unable to achieve MRLs at or below Ocean Plan limits, it will be presumed those constituents exceed Ocean Plan water quality objectives at concentrations consistent with MRLs, and appropriate design features, engineering solutions and/or operational measures designed to mitigate the exceedance of these constituents will be implemented. With implementation of the proposed mitigation, the impact would be less than significant.

Additionally, future water quality testing and analysis, required under the NPDES permit process, would ensure that operational discharges under the MPWSP would fully comply with Ocean Plan water quality objectives and NPDES effluent limitations, including for toxicity and radioactivity.

41 The lowest amount of an analyte in a sample that can be quantitatively determined with acceptable precision and accuracy under stated analytical conditions (i.e., the lower limit of quantitation).

42 The exceptions to this statement are:2,4-dinitrophenol was not detected in the MPWSP secondary effluent, and this MRL is lower than the Ocean Plan objective (i.e., MRL = 0.5 µg/L versus 4 µg/L = objective); heptachlor was not detected above the MRL in the slant well, and this MRL is lower than the Ocean Plan objective (i.e., MRL = 0.00000069 µg/L versus 0.00005 µg/L).

Consistency with Regulatory Requirements

In addition to the impacts described above, operational discharges of the MPWSP could conflict with other applicable regulatory requirements and guidelines, as noted in Section 4.3.2, Regulatory Framework. Operational discharges resulting from implementation of the proposed MPWSP may be potentially inconsistent with provisions of the National Marine Sanctuaries Act, the California Ocean Plan, MBNMS Guidelines for operation of desalination facilities, and the City of Marina LCP (Section 30231: Biological Productivity; Water Quality). Specifically, operational discharges could conflict with requirements and guidelines which were established to avoid or mitigate impacts on water quality, aquatic wildlife, and other beneficial uses of marine waters. **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)** would require CalAm to perform an extensive water quality assessment using protocols defined in Appendix II "Minimum Levels" of the 2015 California Ocean Plan prior to implementation of the MPWSP; in addition, operational discharges that cannot be demonstrated to conform to the prescribed performance standards may only be discharged following implementation of additional design features, engineering solutions, and/or operational measures as defined in Mitigation Measure 4.3-5. With implementation of the proposed mitigation, the proposed project would be consistent with regulatory requirements and MBNMS guidelines.

Impact Summary and Conclusion – Ocean Plan Water Quality Constituents

The model-based analyses concluded constituent concentrations would become elevated for the assessed discharge scenarios to levels greater than 80 percent of the Ocean Plan objective for ammonia and cyanide. Therefore, it was concluded that the MPWSP would result in exceedances of Ocean Plan objectives, resulting in a significant impact related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. Water quality testing and analysis required under the NPDES permit process would determine whether operational discharges under the MPWSP would fully comply with Ocean Plan water quality objectives. Significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)**, which requires corrective actions be incorporated into the Project to ensure operational discharges meet all Ocean Plan water quality objectives.

Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives) (presented below) requires that, prior to implementing operational discharges via the existing outfall, CalAm must perform an extensive water quality assessment as part of a waste disposal study to demonstrate compliance with Ocean Plan water quality objectives and minimum initial dilution requirements. Specifically, CalAm (and other dischargers, if applicable) would be required to analyze MPWSP operational discharges for the full range of regulated water quality constituents specified in the Ocean Plan and NPDES water quality requirements, in accordance with protocols approved by the RWQCB. Discharges would not be allowed if they do not conform to the Ocean Plan objectives for water quality. If the water quality assessment shows that releases via the existing outfall would exceed Ocean Plan objectives, then additional design features, engineering solutions, and/or operational measures must be implemented to reduce the

concentration of water quality constituents in the operational discharges such that they conform with these objectives.

Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance), described under Impact 4.3-4, above, would further reduce and minimize potential impacts by requiring CalAm to implement a comprehensive Monitoring and Mitigation Plan (Plan), following approval by the RWQCB and MBNMS, to obtain field monitoring and marine resource data in the area affected by a project. The Plan would set forth appropriate response thresholds and corrective actions that would be required if the acquired data indicated deleterious effects on receiving water quality or marine biological resources from MPWSP operational discharges.

Additionally, as stated above, it is required by law that operational discharges from the MPWSP be incorporated into an amended NPDES Permit. Under the amended NPDES permit, MPWSP operational discharges would be subject to the permit requirements prescribed by the RWQCB as part of the permit amendment process. Such requirements would be designed to ensure that operation of the MPWSP Desalination Plant would not violate waste discharge requirements defined in the amended NPDES permit, which incorporate the Ocean Plan objectives, upon discharge of the brine.

Mitigation Measures

Mitigation Measure 4.3-5 applies only to the operational discharges associated with the MPWSP Desalination Plant through the existing MRWPCA outfall.

Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives.

Compliance with Water Quality Objectives. Prior to MPWSP operations, and as part of the MRWPCA NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551), the permitee shall complete a water quality assessment. As part of the water quality assessment, the permitee shall:

- Quantify the projected final design discharge volume(s) by month based on project design and historic and projected monthly wastewater discharge volumes.
- Collect samples of the source waters and operational discharges and analyze them in a certified laboratory for the constituents listed in Table 1 of the California Ocean Plan (Ocean Plan Water Quality Objectives). Sampling must be completed in accordance with protocols approved by the US EPA and RWQCB.
- Demonstrate compliance for the full range of regulated water quality constituents specified in the Ocean Plan and NPDES water quality requirements in the context of minimum initial dilution values at the edge of the Zone of Initial Dilution (ZID) for the point of discharge.

If the results of the water quality assessment and waste disposal study find that operational discharges will not meet the NPDES water quality requirements, including the Ocean Plan receiving water limitation for salinity, at the edge of the zone of initial dilution (ZID) and

the Brine Mixing Zone (BMZ), respectively (incorporated here as performance standards), then the MPWSP operational discharges shall not be released as proposed. Such operational discharges shall be subject to additional design features, engineering solutions, and/or operational measures to reduce the concentration of water quality constituents to be in conformance with the Ocean Plan water quality objectives and amended NPDES permit requirements at the edge of the ZID or BMZ, as applicable. Such necessary design features and operational measures shall either be implemented individually or in combination to achieve compliance (unless the RWQCB determines that different but equally effective measures be employed).

Such possible additional design features and operational measures include:

(1) *Retrofitting the existing outfall to increase dilution:* If this operational measure is implemented, the dischargers shall retrofit the outfall diffuser to include inclined diffuser jets positioned at the optimum angle to achieve maximum dilution.

(2) *Additional pre-treatment of source water to the Desalination Plant:* Feasible methods to remove polychlorinated biphenyls (PCBs) and other organic compounds from the source water include additional filtration or use of granular activated carbon (GAC) - a U.S. Environmental Protection Agency-approved method.

(3) *Treatment of discharge:* The dischargers must consider one or more of the alternative feasible methods that remove residual compounds from the discharge to meet water quality objectives at the edge of the ZID. These methods include the following:

   (a) Use of GAC (similar to that under the additional pre-treatment of source water described above, but here such treatment would be applied to the effluent following processing at the desalination facility instead of to the source water from the slant wells); or

   (b) Advanced oxidation with ultraviolet light with concurrent addition of hydrogen peroxide.

(4) *Flow Augmentation:* If this operational measure is implemented, the dischargers shall decrease the density difference of the discharge and the receiving water through the addition of up to 5 mgd of flows with densities close to freshwater to increase the minimum dilution of dense discharges.

(5) *End gate modification:* If this operational measure is implemented, the dischargers shall retrofit the outfall diffuser end gate to replace the existing opening with a minimum of one 6-inch Tideflex (or similar) check valve (Hydraulic Code 355) installed at an inclined (upward) angle greater than 20°, with an optimum angle of 60° to maximize dilution.

Determination of Efficacy of Mitigation Measures

The design features, engineering solutions, and/or operational measures required to be implemented, as necessary, either individually or as a combination, through Mitigation Measure 4.3-5 and/or Mitigation Measure 4.3-4, include a number of strategies, described below. The most effective strategy for ensuring compliance with Ocean Plan objectives, and the one most likely to be implemented, is retrofit of the existing diffuser with inclined jets. Such an option would

substantially increase dilution at the edge of the ZID, ensuring compliance with all Ocean Plan water quality objectives, and would also result in the least secondary impacts (assessed under "Secondary Impacts of Mitigation Measures", below). Additional strategies that may be employed to address water quality impacts associated with operational discharges include pre-treatment of source water, post processing treatment of discharge flows, and/or flow augmentation. While less likely to be implemented, these strategies are included here as feasible measures that may be employed to achieve the performance standards required under Mitigation Measure 4.3-5. Information is provided below regarding the feasibility for these measures to reduce constituent concentrations and/or increase minimum dilution at the edge of the ZID from operational discharges in a manner that would ensure compliance with Ocean Plan objectives:

- **Retrofitting the existing outfall to increase dilution**: Diffusers for discharging dense effluents typically consist of nozzles that are inclined upwards to increase dilution and mixing. Such methods for dilution have been extensively studied (Roberts, 2016). These studies have demonstrated that retrofitting the existing outfall to include inclined diffuser jets (jets are currently oriented horizontally) increases dilution substantially. The optimum angle to the horizontal for the discharge of dense plumes for increasing initial dilution is 60° as this maximizes the path length and dilution of the dense discharge at the point of contact on the seafloor. Inclined jets can be achieved by retrofitting the existing check valves with upwardly inclined nozzles. From model analysis, all diffuser ports would require retrofit to achieve substantially increased dilution (i.e., not a subset).

  Roberts (2017; Appendix D1) assessed a representative number of discharge scenarios to compare the minimum dilution achieved if the diffuser ports were retrofitted to be inclined at 60°. **Table 4.3-17** summarizes the results for the assessed discharge scenarios, providing dilution results for both horizontal and inclined jets for comparison. Additionally, to demonstrate the feasibility for inclined jets to successfully mitigate potential water quality impacts, Table 4.3-17 includes the minimum dilution required for the assessed discharge scenarios to achieve compliance with Ocean Plan WQOs for all water quality constituents (for additional details related to Ocean Plan compliance modeling, see Appendix D3).

TABLE 4.3-17
EFFECT OF NOZZLE ANGLE ON DILUTION FOR SELECT OPERATIONAL DISCHARGE SCENARIOS

Scenario No.	Discharge Scenario	Constituent Flows[a](mgd)		Minimum Modeled Dm		Minimum Required Dm
		Secondary Effluent	Desal Brine	Horizontal Diffusers	Inclined Diffusers (60˚)	
Typical Discharge Scenarios						
1	SE Only	19.78	0	187	180	80
2	Brine only	0	13.98	14.4	49.7	8
5	Brine + Low (3) SE	3	13.98	16.7	67.9	21
10	Brine + Mod (8) SE	8	13.98	26.5	142.7	34
13	Brine + High (15) SE	15	13.98	92	73	45
High Brine Discharge Scenarios (post-shutdown operations)						
20	High Brine + Mod (5) SE	5	16.31	18.6	84.7	25
26	High Brine + High (12) SE	12	16.31	43.9	344.6	38

SOURCE: Roberts, 2017 (Appendix D1); Trussell Tech, 2017b (Appendix D3).

- **Use of granular activated carbon (GAC):** GAC is a U.S. Environmental Protection Agency approved method. Applied as part of pretreatment of source water of post processing treatment of effluent, GAC acts as a very strong sorbent and can effectively remove PCBs and other organic compounds from the source water (Luthy, 2015). See Section 4.3.5.4 for additional information on GAC.

- **Advanced oxidation:** Advanced oxidation with ultraviolet light with concurrent addition of hydrogen peroxide is successfully used for the destruction of a variety of environmental contaminants such as synthetic organic compounds, volatile organic compounds, pesticides, pharmaceuticals and personal care products, and disinfection byproducts. This process is energy intensive, but oxidizes compounds that are difficult to adsorb with activated carbon, and requires a relatively small footprint.

- **Flow Augmentation to increase dilution**: The minimum dilution of dense discharges may be increased through the addition of flows with densities close to freshwater (such as the MRWPCA waste water), when available. The addition of such flows would decrease the density difference of the operational discharge and the receiving water. As modeled by Roberts (2016; Appendix D1), it was demonstrated that when flows with densities similar to that of freshwater were added to the dense brine discharges, the resulting discharge plumes exiting the diffuser ports had a flatter and longer trajectory due to smaller density differences of the discharge as compared to the receiving waters. The decrease in density differences resulted in increased dilution. For low added volumes (e.g. 1 mgd), the effect on dilution was determined to be minor. As the added flows are increased to where the density of the combined effluent approaches that of the background, i.e., the flow becomes neutrally buoyant, the dilution increases exponentially. Roberts (2016) demonstrated that adding 2.3 to 4.8 mgd of freshwater flows, depending on the discharge scenario, can substantially increase minimum dilution at the edge of the ZID to a degree similar to that achieved by retrofitting the diffuser ports with nozzles that are inclined upwards 60° (described above).

- **Retrofitting the end gate to increase dilution**: The minimum dilution of discharges exiting the outfall diffuser end gate would be substantially increased by modifying the existing 2-inch opening with a Tideflex check valve installed at an upward angle to maximize dilution of dense discharges, as described above for retrofitting the existing outfall to increase dilution. As modeled by Roberts (2017; Appendix D1, Supplemental Report), it was demonstrated that modifying the end gate with an inclined check valve would slightly reduce flow volume and increase exit velocity, resulting in an increased minimum dilution at the end gate, as compared to existing conditions. As described in detail in Section 3.1 of Roberts (2017), any upward angle greater than about 20° would result in dilutions that meet the BMZ salinity requirements, with an optimum angle to maximize dilution calculated as being 60° (see Figures 2 and 3, Roberts 2017, Appendix D1).

4.3.5.3 Secondary Impacts of Mitigation Measure 4.3-5

Potential secondary impacts associated with implementation of **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)** are discussed below. Secondary impacts would be associated with the treatment methods and any components that may be installed as part of **Mitigation Measure 4.3-5**.

Retrofitting the Existing Outfall to Include Inclined Diffuser Jets and/or Modified End Gate to Increase Dilution

Retrofitting the existing MRWPCA outfall diffuser would be achieved by installing inclined nozzles on the existing diffuser check valves and/or replacing the existing end gate opening with a minimum of one 6-inch Tideflex (or similar) check valve. The impacts associated with the physical construction of such a retrofit would likely be minor and temporary, consisting primarily of minor construction-related sea-bed disturbance and water quality degradation in the form of increased turbidity and disturbance of benthic organisms on and adjacent to the outfall diffuser. Such temporary disturbances to the seafloor and increases in associated turbidity would be minor, primarily occurring over several hours to a day or two, through the process of divers staging and installing equipment to complete the retrofit of the diffuser. Additionally, the use of support craft at the water surface could be used for staging equipment and construction supplies or to facilitate the removal of built up sediment from the terminus of the diffuser pipe. Water quality would rapidly return to ambient conditions following completion of the retrofit as sediments re-settle on the seabed. Similarly, any disturbance to benthic communities would consist of a minor disturbance over a small area, consisting of the outfall diffuser and seabed immediately surrounding the diffuser. Prior to implementation of the retrofit, MBNMS would review and approve design specifications and construction plans to ensure that disturbances to benthic communities are minimized or avoided. The disturbance would be short in duration and of low intensity and benthic communities would likely recover to baseline conditions. Secondary impacts from construction related to retrofitting the existing outfall to increase dilution would be less than significant.

Operation of the outfall diffuser following modification of the end gate described above was assessed by Roberts (2017; Appendix D1) to determine whether such a modification would reduce overall dilution from the outfall diffuser ports, as described under Impact 4.3-4 and in detail in Appendix D1. As demonstrated by the model analyses presented in Appendix D1, modification of the end gate would have minimal effect on the flow distribution between the diffuser ports and minimal effect on head loss. Typical flow variations with and without the end gate valve are assessed in Roberts (2017) and shown in Figure 3 of Appendix D1 (Supplemental Report). For example, discharge scenarios involving only secondary effluent (total flow of 19.88 mgd, density 999.0 kg/m3) and only brine (flow of 14.08 mgd, density 1,045.1 kg/m3) are assessed. Flow distributions with and without the Tideflex valve are virtually indistinguishable. The flow exiting from the end gate is reduced slightly from 4 percent to 3 percent of the total for the secondary effluent only scenario and from 5 percent to 4 percent for the brine only scenario. The velocity from the end gate is increased by the check valve, from 6.7 to 10.7 ft/s for the secondary effluent only scenario and from 6.1 to 9.7 ft/s for the brine only scenario. The additional total head loss through the outfall diffuser overall due to the check valve is negligible, about 0.01 ft. Therefore, modification of the end gate would have only a negligible effect on overall dilution from the outfall diffuser ports for all assessed discharge scenarios. Secondary operational impacts related to modifying the end gate to increase dilution would be less than significant.

Operation of the outfall diffuser following installation of inclined nozzles on the existing diffuser check valves was assessed by Roberts (2017) and Trussell Tech (2017) to determine whether retrofitting the diffuser would reduce overall dilution from the outfall diffuser ports for certain

operational discharge scenarios (see Appendix D1 and Appendix D3 for details). Roberts (2017) determined that orienting the nozzles upwards from horizontal would increase the dilution of brine mixtures that are denser than the receiving water (Table 4.3-17). However, for buoyant effluents, such as when brine is absent or when high volumes of MRWPCA secondary effluent are discharged with brine, dilution will become decreased. Decreasing dilution at the outfall for buoyant effluents could prevent MRWPCA from meeting NPDES discharge requirements, especially should the desalination facility be offline. To determine whether retrofitting the outfall diffuser with inclined jets could cause secondary impacts on water quality through reducing minimum dilution for buoyant discharges, the effect on dilution of varying nozzle orientations for dense and buoyant effluents was modeled (Appendix D1). As summarized in Table 4.3-17, and discussed in detail by Roberts (2017; Appendix D1), retrofitting the diffuser with inclined jets would not reduce minimum dilution to the extent that buoyant plumes would fail to conform to NPDES or Ocean Plan requirements. Secondary operational impacts related to retrofitting the existing outfall to increase dilution would be less than significant.

GAC Facility to Treat the Source Water and/or Brine:

- The GAC facility would consist of GAC adsorption equipment likely consisting of a series of pressure vessels, a building and a backwash system similar to the proposed pressure filtration pretreatment system. Based on the preliminary MPWSP Desalination Plant design, the GAC units could be accommodated within the currently proposed building footprint. The installation of the GAC facility would be a part of the construction activities associated with the MPWSP Desalination Plant site within the existing footprint and would not create new or additional impacts beyond those discussed for the construction at the site in this EIR/EIS. The impact would be less than significant.

- Treatment of the source water (as opposed to the brine) could potentially be provided by GAC filter-adsorbers that would be similar to the proposed pressure filtration pretreatment system. If GAC adsorption of the source water were to replace or supplement the proposed conventional filtration process, water quality of the drinking water delivered to the distribution system would likely improve as measured by lower concentrations of organic compounds, total organic carbon, disinfection byproducts; fewer tastes and odors; and more stable chlorine residuals. Other benefits might include reduced fouling potential at the RO membranes.

  Operation of the GAC adsorption process would generate spent GAC, which would be considered hazardous waste. Handling and disposal of the waste generated would be subject to federal and state hazardous waste regulations (discussed in Section 4.7, Hazards and Hazardous Materials). For example, the federal Toxic Substances Control Act of 1976 and the Resource Conservation and Recovery Act of 1976 authorized the USEPA to regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the “cradle to grave” system of regulating hazardous wastes. Further, the California Occupational Safety and Health Act (OSHA) of 1973 would apply to handling of spent GAC material onsite. The California OSHA addresses California employee working conditions, enables the enforcement of workplace standards, and provides for advancements in the field of occupational health and safety. Thus, handling, transportation, and disposal of the spent GAC material generated at the MPWSP Desalination Plant site would be subject to, and would adhere to, the regulations

intended to protect environmental and public health and ensure safety. Therefore, the impact would be less than significant.

- Operating the GAC adsorption system would result in an increase in energy use, in particular if there is additional pumping necessary. The system could operate using the pressure of the brine stream, or it may require an intermediate pumping station. It is anticipated that operation of the GAC adsorption system would thus increase the energy use at the proposed MPWSP Desalination Plant. The impacts resulting from energy use from the proposed project are discussed in Section 4.11, Greenhouse Gas Emissions and Section 4.18, Energy Conservation, and the secondary impacts from the operation of the GAC adsorption system are discussed below.

  – Section 4.11, Greenhouse Gas Emissions, identifies the increase in greenhouse gas emissions due to increased energy use from the proposed project as a significant yet mitigable impact. Any increase in the energy usage resulting from operating the GAC adsorption system would increase the severity of the impact but would still be mitigable. Therefore, operating the GAC adsorption system would not contribute to a significant and unavoidable impact.

  – CalAm's operational electrical power demand for water production under the proposed project (including water produced from the MPWSP Desalination Plant, Seaside Groundwater Basin production wells, ASR system, and the Carmel River) and the net increase in annual electrical power demand for water production is described in Section 4.18, Energy Conservation. The analysis in Section 4.18 determined that the proposed project would not consume energy wastefully or inefficiently. The GAC adsorption system for removing organic compounds from the source water and/or the brine would be employed to ensure that the brine discharged to the bay would comply with the water quality standards or regulatory requirements, which are protective of the beneficial uses of the bay. Therefore, electricity consumed as a result of project operations, including that from operating the GAC system, would not be wasteful or inefficient. The increase in the energy use for any GAC adsorption system would be less than significant.

    As discussed in Section 4.18, Energy Conservation, Pacific Gas and Electric (PG&E), the power provider in the project area, would have adequate capacity and infrastructure to support the proposed project. Electric power for implementation of the proposed project could be accommodated by the existing local and regional energy supplies and the impact would be less than significant. An incremental increase in the energy use from the operation of the GAC adsorption system would be accommodated within the existing capacity. Therefore, the secondary impact would be less than significant.

- Maintenance of the GAC system would involve removing and replacing the GAC, which would be accommodated within the proposed operations and maintenance of the MPWSP Desalination Plant. The impact from routine transport, use, or disposal of hazardous materials during project operations is discussed under Impact 4.7-6 in Section 4.7, Hazards and Hazardous Materials. As discussed in the section, CalAm, as required by law, would submit a Hazardous Materials Business Plan (HMBP) for the project facilities to the Monterey County Environmental Health Division prior to the start of project operations; therefore, no additional environmental impact would result from maintenance.

Advanced Oxidation System and Facility to Treat the Brine:

- The advanced oxidation system would likely include a building with a liquid hydrogen peroxide chemical storage and feed system. The building would be installed as part of the construction activities associated with the MPWSP Desalination Plant site and would not create new or additional impacts beyond those discussed for the construction at the site.

- The advanced oxidation process would generate minimal byproducts and no residuals compounds or liquid or solid waste. The quality of the brine discharged to Monterey Bay would improve as a result of the removing organic compounds. The impact related to solid or liquid waste and disposal would therefore be less than significant.

- Implementing the advanced oxidation system would result in an increase in energy use. It is anticipated that operation of the advanced oxidation system would thus increase the energy use at the proposed Desalination Plant. The impacts resulting from energy use from the proposed project are discussed in Section 4.11, Greenhouse Gas Emissions, and Section 4.18, Energy Conservation, and the secondary impacts from the operation of the advanced oxidation are discussed below:

  – Section 4.11, Greenhouse Gas Emissions, identifies the increase in greenhouse gas emissions due to increased energy use from the proposed project as less than significant with mitigation. Any additional increase in energy use resulting from operating the advanced oxidation system would increase the severity of the impact but would remain mitigable. Therefore, in this issue area, operating the advanced oxidation system would not contribute to a significant and unavoidable impact.

  – CalAm's operational electrical power demand for water production under the proposed project (including water produced from the MPWSP Desalination Plant, Seaside Groundwater Basin production wells, ASR system, and the Carmel River) is estimated in Section 4.18, Energy Conservation. The analysis in Section 4.18 determined that the proposed project would not consume energy wastefully or inefficiently. The advanced oxidation system for removing organic compounds from the source water and/or the brine would be employed to ensure that the brine discharged to the bay would comply with the water quality standards or regulatory requirements, which are protective of the beneficial uses of the bay. Therefore, electricity consumed as a result of project operations, including that from operating of the advanced oxidation system, would not be wasteful or inefficient. The increase in the energy use for any advanced oxidation system would be less than significant.

    Further, PG&E, the power provider in the project area, would have adequate capacity and infrastructure to support the proposed project. Electric power for implementation of the proposed project could be accommodated by the existing local and regional energy supplies and the impact would be less than significant. An incremental increase in energy use from the operation of the advanced oxidation system would be accommodated within the existing capacity of PG&E. Within the MPWSP Desalination Plant site, this could require increasing the capacity of the power distribution system to accommodate the additional electrical load; however, this would not entail additional construction or installation activities. The secondary impact is considered less than significant.

- The advanced oxidation system would require a liquid hydrogen peroxide chemical storage and feed system onsite. Under the proposed project, the MPWSP Desalination Plant

operations would involve the use and storage of chemicals to remove performance-reducing deposits from the pretreatment filtration system and RO membranes, as well as chemicals to adjust product water quality. The impact from routine transport, use, or disposal of hazardous materials during project operations is discussed under Impact 4.7-6 in Section 4.7, Hazards and Hazardous Materials. As discussed in the section, CalAm, as required by law, would submit a Hazardous Materials Business Plan (HMBP) for the project facilities to the Monterey County Environmental Health Division prior to the start of project operations. The HMBP is required to include information on hazardous material handling and storage, including containment, site layout, and emergency response and notification procedures in the event of a spill or release. In addition, the plan requires annual employee health and safety training. The plan must be approved by the County prior to commencement of project construction and the project facilities would be subject to post-construction compliance inspections. The HMBP would also provide the local agencies with the information they need to plan appropriately for a chemical release, fire, or other incident, which would reduce the potential for an accidental release to cause harmful health effects to workers or the public or substantial degradation to soil or water quality. Compliance with these various regulations would ensure this impact is less than significant. The hydrogen peroxide storage and feed system for the advanced oxidation system would be included as part of the HBMP and be subject to the regulatory requirements described for other chemicals proposed to be stored, used, and handled onsite and would not result in a new or significant impact. The secondary impact therefore would be less than significant.

Flow Augmentation

Flow augmentation would be achieved by the addition of flows to operational discharges with densities close to freshwater (such as the MRWPCA waste water), when available. The impacts associated with such flow augmentation would be minor, consisting of negligible increased velocities of the operational discharges. Extreme discharge velocities have the capacity to entrain aquatic wildlife, such as larval stage or planktonic stage organisms, and subject such organisms to shear stress, resulting in increased rates of mortality. As demonstrated by Roberts (2016), because the existing diffuser ports are equipped with Tideflex duckbill diffuser nozzles, the diffuser ports increase in opening diameter as flow increases. Therefore, velocity increases as a result of flow augmentation would be negligible due to the increased port opening diameter offsetting the increased jet velocity as compared to increased velocities that would occur for a fixed orifice port. Impacts relating to entrainment and shear stress are discussed in detail in Section 4.5, Marine Biological Resources. The secondary impact from flow augmentation to increase dilution would be less than significant.

Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface intake wells and ASR-5 and ASR-6 Wells. *(Less than Significant)*

This impact focuses on discharges of effluent generated during maintenance of the subsurface intake wells and ASR-5 and ASR-6 Wells. This impact does not apply to any of the other proposed facilities.

Subsurface Slant Wells

As described in Section 3.6.1 of Chapter 3, Description of the Proposed Project, the subsurface slant wells would require periodic maintenance every 5 years. Slant well maintenance activities would disturb roughly 6 acres at the CEMEX active mining area for 9 to 18 weeks during well cleaning operations. Beach sand disturbed during maintenance activities would be susceptible to erosion and could migrate outside of the work area. However, because sand migration is a natural ongoing process along the shoreline, the migration of sand within and to areas adjacent to the CEMEX active mining area would not adversely affect water quality. However, toxic chemicals used to maintain heavy maintenance equipment, such as fuels and petroleum lubricants, if not managed appropriately, could be accidentally released to sensitive beach areas and adversely affect shallow groundwater and/or water quality in Monterey Bay.

As described in Chapter 3, Description of the Proposed Project, mechanical brushes would be lowered into the slant wells to mechanically clean the well screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. However, the effluent produced during slant well cleaning could carry sediment or other contaminants that, if discharged directly to the beach area, could adversely affect water quality in Monterey Bay.

Slant well maintenance activities would be considered a "land disturbance activity" and would be subject to the water quality control requirements of the *General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009, NPDES No. CAS000002)* (Construction General Permit) (SWRCB, 2009). Similar to slant well construction activities, the contractor conducting the maintenance would be required to prepare a SWPPP that includes specific measures to manage pollutants generated during maintenance activities. These measures would address the potential adverse effects to water quality associated with equipment fueling and storage, inadvertent releases of toxic chemicals, and discharges of cleaning effluent. The cleaning effluent would be conveyed to portable holding tanks to allow chemical residuals and sediment to settle out, and the decanted water would be subsequently percolated into the ground in the CEMEX active mining area. (See Section 4.3.2.2 and Impact 4.3-1, above, for additional information regarding the Construction General Permit requirements.) Adherence to these requirements would prevent significant water quality impacts during slant well maintenance activities. The impact would be less than significant. No mitigation is necessary.

ASR-5 and ASR-6 Wells

As part of routine maintenance of the ASR-5 and ASR-6 Wells, and similar to the routine maintenance of the four existing ASR wells, CalAm facility operators would regularly backflush accumulated sediment and turbid water from the two wells. The duration of the backflushing would range from a few minutes to 2 hours. Water produced during routine backflushing would be conveyed via the new ASR Pump-to-Waste Pipeline to the existing Phase I ASR Pump-to-Waste System located at the intersection of General Jim Moore Boulevard and Coe Avenue. These discharges would be considered "water supply discharges" and would be conducted under the *General Waiver of WDRs for Specific Types of Discharges* (Resolution R3-2014-0041)

(General Waiver) (RWQCB, 2014). As such, discharges of backflush effluent would be subject to the conditions of the General Waiver, including the requirements that all discharges occur at distances greater than 100 feet from streams, wetlands, and other water bodies, and that appropriate management practices be implemented to preclude discharging to surface waters and surface water drainage courses. In addition, backflush effluent discharges would be subject to the condition that it would not have chlorine or bromine concentrations that could impact groundwater quality. Compliance with the conditions of the General Waiver would prevent the degradation of water quality during routine maintenance of the ASR-5 and ASR-6 Wells. The impact would be less than significant, and no mitigation is necessary.

Impact Conclusion

Discharges related to periodic maintenance of the subsurface slant wells and routine maintenance of the ASR-5 and ASR-6 Wells would be conducted in accordance with regulatory requirements designed to protect water quality. As a result, the impact would be less than significant for both facility components.

Mitigation Measures

None proposed.

Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff. (*Less than Significant*)

During construction of the various proposed MPWSP components, soil disturbance associated with grading and earthmoving operations could expose soils to stormwater runoff, which could result in onsite erosion and sediments being transported in stormwater runoff, subsequently resulting in downstream siltation. Following construction (operation phase), stormwater runoff volumes and rates generated from undeveloped, unpaved areas can increase considerably when drainage patterns are substantially altered, a site is paved, the impervious surface area is increased, and the ability of surface water to infiltrate the ground surface is reduced or eliminated. The addition of impervious surfaces or the alteration of drainage patterns (such as through grading) can increase peak stormwater flows, causing erosion or siltation onsite or downstream. The majority of the proposed facilities would be constructed below ground and would not increase impervious surfaces or alter long-term drainage patterns during operations in a manner that increases onsite or offsite erosion or siltation. As discussed in detail above (Impact 4.3-1), construction of the proposed project would be subject to the Construction General Permit requirements, which include preparation of a SWPPP as well as additional local requirements governing management of construction stormwater and the use of established BMPs for the management of erosion during construction activities. As described in Impact 4.3-1, preparation and approval of the SWPPP associated with the Construction General Permit would include site-specific erosion and sedimentation control practices. Incorporation of these permit requirements would ensure the implementation of BMPs and specific measures for the protection of water quality effective in minimizing the potential for erosion or siltation as a result of

altered drainage patterns. The SWPPP also includes descriptions of the BMPs required to reduce pollutants, including sediment, in stormwater discharges after all construction phases have been completed at the site (post-construction BMPs). Since the proposed project would create new impervious surfaces at the aboveground facilities located throughout the project area, impacts related to altered drainage patterns, erosion, and siltation are assessed in detail for specific project components below.

Subsurface Slant Wells

The subsurface slant wells would be constructed in a previously disturbed portion of the CEMEX active mining area in the city of Marina. The 10 slant wells would be located at six sites along the back of the dunes: four sites (the test slant well site No. 1, and three new sites) would each have one slant well and two sites would have three slant wells at each (see **Figure 3-3**). Sites 1 through 6 would include the following aboveground facilities: one wellhead vault per slant well, mechanical piping (meters, valves, gauges), electrical control cabinet, and a pump-to-waste vault. The new permanent slant wells and associated aboveground infrastructure at Sites 2 through 6 would be constructed on a 5,250- to 6,025-square-foot graded pad located above the maximum high tide elevation.

Implementation of the subsurface slant wells at the CEMEX active mining area would result in a minor increase in impervious surface area. As indicated in **Table 4.3-6**, above, the subsurface slant wells would qualify as a Tier 4 project and CalAm would be required to ensure flows for the 2-year through 10-year storm events match pre-project flows. With mandatory compliance with the post-construction stormwater requirements, alterations in drainage patterns at the CEMEX active mining area would not result in substantial increases in erosion, siltation, or the rate or amount of surface runoff. The impact would be less than significant.

MPWSP Desalination Plant

The proposed MPWSP Desalination Plant site would disturb approximately 25 acres of a 46-acre undeveloped parcel located on Charles Benson Road, northwest of the MRWPCA Regional Wastewater Treatment Plant. The proposed improvements at the MPWSP Desalination Plant site would include laboratory and administration buildings, various treatment and storage facilities, as well as paved parking, driveways, and maintenance areas. The site would add approximately 15 acres of impervious surfaces, which would reduce stormwater infiltration onsite and could increase stormwater runoff from the site. If not managed, an increase in stormwater runoff could increase erosion and/or siltation downstream.

CalAm would be required to comply with the most recent post-construction stormwater control requirements (Central Coast RWQCB Resolution No. R3-2013-0032), which are enforced by the local jurisdictions in accordance with the MRSWMP and the NPDES Municipal Stormwater Permit for MS4s (described in Section 4.3.2, Regulatory Framework, above). As indicated in **Table 4.3-6**, above, the MPWSP Desalination Plant would qualify as a Tier 4 project and CalAm would be required to: incorporate Low Impact Development (LID) measures into site design, treat stormwater runoff, retain a portion of stormwater runoff from the site, and manage flows for the 2- through

10-year storm events such that they match pre-project flows. Post construction stormwater BMPs could include, but would not be limited to, the use of pervious concrete or pavement, bioswales, vegetated swales, buffer strips, and vegetated retention ponds. CalAm would be required to prepare and implement a post-construction SWMP that details the maintenance schedule for post-construction BMPs. With mandatory compliance with the post-construction stormwater requirements, alterations in drainage patterns at the MPWSP Desalination Plant site would not result in substantial increases in erosion, siltation, or the rate or amount of surface runoff. The impact would be less than significant.

All Pipelines

Once constructed, all of the proposed pipelines would be located entirely underground and the surface along the pipeline alignments would be restored to pre-construction conditions. No substantial long-term changes in drainage patterns would result from implementation of the proposed pipelines. Therefore, no impact would result.

ASR-5 and ASR-6 Wells

The proposed ASR-5 and ASR-6 Wells at the Fitch Park military housing area would add a total of approximately 2,000 to 2,500 square feet of impervious surface due to the addition of the concrete pump houses, electrical transformer, and access driveway for maintenance vehicles. It is assumed that the ASR-5 and ASR-6 Wells would qualify as a Tier 1 project under the post-construction stormwater management requirements (see **Table 4.3-6**, above) and CalAm would be required to implement LID elements into the site design. With adherence to the post-construction stormwater management requirements, this negligible increase in impervious surfaces would not significantly impede infiltration, alter drainage patterns, or increase erosion and siltation. Therefore, the impact would be less than significant.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be enclosed in a 500-square-foot single-story building along with a 100-square-foot electrical control building outside of the pump station building. These structures would add approximately 600 feet of impervious surfaces. These negligible increases in impervious surfaces would not result in a substantial change in drainage patterns, erosion, or siltation. Therefore, the impact would be less than significant.

Impact Conclusion

The subsurface slant wells, MPWSP Desalination Plant, and ASR-5 and ASR-6 Wells would be subject to the post-construction stormwater management requirements of the municipal stormwater permit and CalAm would be required to implement post-construction stormwater BMPs into the final site designs. With adherence to the post-construction requirements, the existence and operation of these facilities would result in a less than significant impact related to changes in drainage patterns, increased soil erosion, and siltation. Implementation of the Carmel Valley Pump Station would result in a less than significant impact. No impact would result from implementation of the proposed pipelines.

Mitigation Measures

None proposed.

Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded. (*Less than Significant*)

During construction of the various components of the proposed project, grading and earthmoving operations could alter local drainage patterns and redirect or concentrate stormflows, which could result in increased risks related to onsite and/or downstream (offsite) flooding, especially if stormwater conveyance capacity is exceeded in existing or planned stormwater systems. Following construction (operation phase) stormwater runoff volumes and rates can increase significantly when drainage patterns are substantially altered or when the impervious surface area is increased.

As discussed in detail under Impact 4.3-7, implementation of the proposed facilities would not result in substantially altered drainage patterns or increased stormwater runoff as a result of increased impervious surfaces. The subsurface slant wells, and the MPWSP Desalination Plant would qualify as a Tier 4 project and CalAm would be required to ensure flows for the 2-year through 10-year storm events match pre-project flows (**Table 4.3-6**). Other project components (ASR-5 and ASR-6 Wells) would qualify as a Tier 1 project and CalAm would be required to implement LID elements into the final site design (**Table 4.3-6**), ensuring stormwater runoff is not increased such that flood risks on- or offsite are increased or stormwater conveyance structure capacity is exceeded. Further, the existing ASR settling basin at the intersection of General Jim Moore Boulevard and Coe Avenue would be used for settling of backflush effluent from the wells and would not result in flooding or affect the capacity of the stormwater drainage system. Pipelines would be located entirely underground and the surface along the pipeline alignments would be restored to pre-construction conditions. No changes in drainage patterns would result from implementation of the proposed pipelines. Implementation of the Carmel Valley Pump Station would add approximately 600 square feet of impervious surfaces and land uses in the vicinity of the pump station site include low density residential development and open space. This negligible increase in impervious surfaces would not result in substantial impacts related to changes in drainage patterns, flooding, or flows in excess of the stormwater drainage system.

With mandatory compliance with the post-construction stormwater management requirements, alterations in drainage patterns resulting from implementation of the proposed facilities would not result in substantial alterations in drainage patterns such that flooding on or offsite were increased, nor the capacity of stormwater drainage systems exceeded. The impact would be less than significant.

Mitigation Measures

None proposed.

Impact 4.3-9: Impedance or redirection of flood flows due to the siting of project facilities within a 100-year flood hazard area. (*Less than Significant*)

The subsurface slant wells and portions of the Source Water Pipeline, Castroville Pipeline, and new Transmission Main would be constructed in a 100-year flood hazard area.

Subsurface Slant Wells

As shown in **Figure 4.3-2**, the subsurface slant wells and associated structures would be located within or adjacent to the 100-year coastal flood hazard area. The subsurface slant wells would be constructed near the western terminus of the CEMEX access road and just south of the CEMEX settling ponds. The electrical control cabinet at each well site (Figure 3-3a) would be a single-story structure 16 feet long by 7 feet wide. Any flood flows associated with 100-year coastal flooding diverted by the electrical control cabinet would be diverted to the sandy areas immediately surrounding the cabinet, within the CEMEX active mining area, and would be temporary in nature, highly localized in extent, and would not affect other properties or structures or otherwise interfere with CEMEX operations. The wellheads and supporting structures would extend at a maximum height of 2 feet above the ground surface and would not impede or redirect flood flows in the area. Therefore, the impact would be less than significant.

Source Water Pipeline, Castroville Pipeline, and New Transmission Main

Portions of the Source Water Pipeline and new Transmission Main in Marina, and the Castroville Pipeline in unincorporated Monterey County would be located within 100-year coastal flood hazard areas (see **Figure 4.3-3**). However, once constructed, these pipelines would be located underground and would not impede or redirect surface flood flows in the area. The impact would be less than significant.

All Other Project Components

None of the other project components are located within a 100-year flood hazard area. Therefore, no impact related to the impedance or redirection of flood flows in a 100-year flood hazard area would result.

Impact Conclusion

Portions of the Source Water Pipeline, new Transmission Main, and Castroville Pipeline would be constructed in a 100-year flood hazard area. However, these facilities would be placed underground would not impede or redirect flood flows. The impact would be less than significant for the subsurface slant wells, and Source Water Pipeline. No impact would result from implementation of all other proposed facilities because none of the other project components are located within a 100-year flood hazard area.

Mitigation Measures

None proposed.

Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami. (*Less than Significant*)

Tsunami damage is typically confined to low-lying coastal areas. As shown in **Figure 4.3-2**, the near-shore margins of Monterey County, including coastal portions of Marina, Seaside, and Monterey, are subject to flooding in the event of a tsunami. The subsurface slant wells in Marina, and the Castroville Pipeline in unincorporated Monterey County would be located in areas subject to flooding from a tsunami.

Subsurface Slant Wells

All facilities in the CEMEX active mining area would be designed to withstand inundation. As a result, the slant wells would not be subject to a significant risk of damage from flooding in the event of a tsunami. The slant wells would be operated remotely using a SCADA system, with routine site visits by facility operators to monitor operations. Because the presence of onsite personnel would be minimal, operation of the subsurface slant wells would not expose facility operators to significant tsunami hazards. The impact would be less than significant for the subsurface slant wells.

Castroville Pipeline

Because the Castroville Pipeline would be located underground and designed to withstand inundation, the pipeline would not be subject to a significant risk of damage from flooding in the event of a tsunami.

Site visits from facility operators associated with pipeline operations and maintenance would be limited to annual inspections of the cathodic protection system, testing and servicing of valves, vegetation maintenance, and repairs of minor leaks in buried pipeline joints or segments. Pipeline operations and maintenance would not expose personnel or structures to significant risks from flooding in the event of a tsunami. The impact would be less than significant.

All Other Project Components

None of the other project components are located within a tsunami inundation zone. Therefore, no impact would result.

Impact Conclusion

The MPWSP would not expose people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami. The impact would be less than significant for the subsurface slant wells, and Castroville Pipeline. For all other facilities, no impact would result.

Mitigation Measures

None proposed.

Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise. (*Less than Significant*)

Coastal flooding impacts would be short-term (from storm tides) and long-term (from sea level rise). Short-term impacts from coastal flooding could occur during 100-year storm events and include coastal erosion, which is discussed under Impact 4.2-10 in Section 4.2, Geology, Seismicity, and Soils, and impedance or redirection of flood flows, which is discussed under Impact 4.3-9, above. This impact focuses only on the long-term impacts related to exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise. Detailed analyses of coastal surface water elevations and erosion associated with sea level rise are presented in Appendix C.

The proposed project could expose project facilities to long-term flooding from sea level rise. The subsurface slant wells, the northernmost portion of the MPWSP Desalination Plant site, and portions of the Source Water Pipeline would be located in areas that could be subject to sea level rise. However, because the subsurface slant wells and the two pipelines would be constructed underground and designed to withstand inundation, these facilities would not be subject to a significant risk of damage from flooding due to sea level rise. The proposed aboveground facilities at the 40-acre MPWSP Desalination Plant site would be constructed on the upper terrace of the site and at elevations higher than the predicted elevations associated with the 2100 sea level rise of 55 inches (Figure 4.3-3). The desalination facilities would be designed so as to minimize the risk from flooding due to sea level rise. The impact would be less than significant.

Subsurface Slant Wells

The subsurface slant wells in Marina would be located in the CEMEX active mining area. This area is subject to sea level rise as shown in **Figure 4.3-3**. All facilities in the CEMEX active mining area would be designed to withstand inundation. Therefore, the slant wells would not be subject to a significant risk of damage from flooding due to sea level rise. The impact would be less than significant.

MPWSP Desalination Plant

According to reports related to climate change and sea level rise (see the discussion of Coastal Flooding and Sea Level Rise under Section 4.3.1.4, above, for further details), during the lifetime of the desalination facilities (approximately 50 years), the sea level in the project vicinity is projected to rise by a total of 27.5 inches (2.3 feet). Further, the mean sea level rise trend in Monterey Bay is estimated to be increasing by 0.053 inches per year (NOAA, 2013b).

The MPWSP Desalination Plant site is located in close vicinity of the areas subject to flooding from sea level rise (see **Figure 4.3-3**). The MPWSP Desalination Plant would be located at elevations between 85 and 110 feet above msl, which is greater than the sea level rise of approximately 2.3 feet estimated to occur during the lifetime of the proposed project (the next 50 years). Thus, the MPWSP Desalination Plant site facilities would not be subject to flooding and would not expose people or structures to risk from flooding due to sea level rise during the lifetime of the proposed project. Therefore, the impact on proposed project facilities would be less than significant.

Source Water Pipeline and Castroville Pipeline

Portions of the proposed Source Water Pipeline in Marina and the Castroville Pipeline in unincorporated Monterey County (see **Figure 4.3-3**) would be located in areas that would be subject to flooding from sea level rise. However, once constructed, the pipelines would be located underground and would not impede or redirect flood flows, nor be subject to a significant risk of flood damage from sea level rise. The impact would be less than significant.

All Other Proposed Facilities

None of the other proposed facilities would be located in areas that would be subject to flooding from sea level rise. No impact would result.

Impact Conclusion

The MPWSP would not expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise. The impact would be less than significant for the subsurface slant wells, MPWSP Desalination Plant, and Source Water Pipeline, and Castroville Pipeline. All other proposed facilities would have no impact.

Mitigation Measures

None proposed.

4.3.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.3-C: Cumulative impacts related to surface water hydrology and water quality (*Less than Significant with Mitigation)*

The geographic scope for potential cumulative surface hydrology and water quality impacts consists of the project area and surrounding Salinas River and Carmel River watershed lands as well as marine waters in Monterey Bay. The analysis of potential cumulative impacts on hydrology and water quality considers those cumulative projects listed in **Table 4.1-2** and shown in **Figure 4-1**. The analysis focuses on cumulative adverse effects on water quality associated with construction and operations. The timeframe during which the MPWSP could contribute to cumulative surface water hydrology and water quality effects includes the 24-month construction period, as well as the estimated 40-year operations phase.

Of not, on Saturday, January 20, 2018, MBNMS was notified of a sewage spill into MBNMS from the Monterey Regional Water Pollution Control Agency (MRWPCA), the local wastewater treatment facility. The original estimate indicated a discharge from one million gallons to 4.4 million gallons. Monterey County Department of Environmental Health closed the beaches

from the Salinas River mouth to Carmel Bay due to the southerly currents and very large ocean swell at the time. Eleven samples for fecal indicator bacteria and ammonia were collected offshore at the outfall pipe and at more than seven local beaches on January 20th. All sample results were within acceptable regulatory (USEPA Ambient Water Quality Criteria) limits except for one unrelated to the discharge at Del Monte beach in the City of Monterey. MBNMS staff requested that MRWPCA submit samples for additional analysis of raw sewage for all California Ocean Plan Table 1 constituents to determine potential impacts on marine resources. MRWPCA reported that the spill resulted from the failure of an analog input card which caused alarms and bar screen rakes to fail, thus releasing sewage to overflow a 300,000-gallon sump, thereby bypassing any treatment and discharging directly into Monterey Bay for 9.25 hours. Engineering analysis later determined that approximately 2.8 million gallons of untreated sewage entered Monterey Bay. Subsequently, MRWPCA undertook multiple actions aimed at preventing future spills of this nature, including but not limited to: installing cameras, level sensors, updated software, and additional staff conducting rounds after hours. Sampling and information collection regarding the extent and potential impacts of the spill is ongoing. As noted in Section 4.3.1.3, the processes influencing the physical mixing of Bay receiving waters with inputs from other sources is enhanced by turbulence induced by currents and waves. While current velocities can be different throughout the water column, tidally-driven currents can cause large pulses of water movement. Wave action, particularly during stormy periods, can vertically stir the water. The ocean water density and the physical processes (waves and currents) vary as a result of seasonal weather cycles and can also be severely modified by global ocean climate events. As noted by MBNMS, (2018) residence times in Monterey Bay varied between 2 and 12 days, with a mean of around 6 days (which is approximately the time required for a water parcel to travel 50km at an average speed of 10cm/sec). Therefore, the incident is not anticipated to have any long-term residual impact on the water quality of Monterey Bay in the year 2021 that would affect or change the EIR/EIS conclusion of impacts on water quality resulting from implementation of the proposed project and the spill was not assessed in the cumulative scenarios.

Impacts on Surface Hydrology and Surface Water Quality during Construction

Construction activities associated with the MPWSP could result in the degradation of water quality from increased soil erosion and associated sedimentation of water bodies due to stormwater runoff, as well as accidental releases of hazardous materials (see Impact 4.3-1). In addition, discharges of dewatering effluent from excavated areas and treated water and disinfectant from pipelines could adversely affect water quality (see Impacts 4.3-2 and 4.3-3).

Nearly all the cumulative projects identified in **Table 4.1-2** involve excavation and use of heavy equipment during construction. Therefore, the cumulative projects in **Table 4.1-2** have the potential to degrade surface water quality as a result of construction-related soil erosion or accidental discharges of hazardous construction chemicals. A number of the cumulative projects could also require construction dewatering. Cumulative projects that include the installation of new pipelines, such as the Salinas Valley Water Project Phase II, Granite Ridge Water Supply Project, DeepWater Desal, RUWAP, Pacific Grove Local Water Project, Pacific Grove Recycled Water project, Monterey-Pacific Grove ASBS Stormwater Management Project, and Peoples'

Moss Landing Desal Project (Nos. 1, 33, 34, 31, 22, 23, 45, and 57), would likely involve discharges of treated water produced during pipeline draining and disinfection. In addition, the CEMEX Removal Plan (No. 63), which requires the removal of all machinery and structures associated with sand mining operations, must include a description of all temporary run-off and erosion control measures to be used during removal activities. The relevant cumulative projects would have control measures (described below) such that there would be no combined cumulative impact related to the degradation of water quality.

As described in Impact 4.3-1, projects that would disturb more than one acre of soil (including nearly every project in **Table 4.1-2**) would be subject to the National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements. The NPDES Construction General Permit requirements are themselves measures based, in part, on the consideration of cumulative effects on receiving waters. Such requirements include the preparation and implementation of project-specific Stormwater Pollution Prevention Plans (SWPPPs). The SWPPPs would include specific erosion and stormwater control measures to prevent substantial adverse effects on water quality during construction and would be implemented throughout the duration of construction activities. Nearly every project in the cumulative scenario would be required to implement a SWPPP. As a result, the effects of the MPWSP would not be expected to combine with those of cumulative projects to cause a cumulatively significant water quality impact from increased soil erosion and sedimentation, or inadvertent releases of toxic chemicals during general construction activities. Therefore, no overall cumulatively significant effect would occur and the project's contribution to the cumulative impact would be less than significant.

As with the MPWSP, the cumulative projects in **Table 4.1-2** could also require dewatering during construction to create a dry work area if groundwater is encountered in open excavations. In addition, for cumulative water supply projects, segments of existing pipelines would need to be drained and disinfected prior to being returned to service and newly installed pipelines would need to be disinfected before being put into service. The dewatering effluent from open excavations, treated water from the draining of existing pipelines, and the effluent generated from disinfection of pipelines could be discharged to the storm drainage system or to vegetated upland areas. As discussed in Impacts 4.3-2 and 4.3-3, these discharges would be regulated by the Regional Water Quality Control Board (RWQCB) and would be subject to *General Waste Discharge Requirements for Discharges with a Low Threat to Water Quality* (General WDRs). The General WDRs include measures to bring such effluent into conformance with State standards prior to discharge (e.g., neutralizing residual chlorine and reducing total dissolved solids). For the discharges of treated water and disinfection effluent, compliance with the General WDRs and the conditions therein would protect water quality in receiving water bodies. Since all other water supply projects that involve pipelines would also need to comply with the General WDRs, the effects of MPWSP treated water and disinfection effluent discharges when combined with those of cumulative projects would not cause a cumulatively significant effect on water quality. Thus, the proposed project's contribution to the cumulative impact would be less than significant.

However, if the MPWSP's dewatering effluent from open excavations were to contain materials from previous spills or leaks, discharges of contaminated dewatering effluent to vegetated upland areas or the local storm drain system would result in a significant impact, which also could result in a significant contribution to a significant cumulative surface water quality impact. To reduce the potential for residual contaminants in the MPWSP dewatering effluent to adversely affect water quality, Impact 4.3-2 calls for implementation of **Mitigation Measure 4.7-2b (Soil and Groundwater Management Plan)**, which would require construction contractors to comply with all relevant environmental regulations and plan for the safe and lawful disposal of contaminated groundwater, when encountered. With implementation of **Mitigation Measure 4.7-2b**, the residual effects of MPWSP discharges of dewatering effluent would not be expected to combine with that of projects in the cumulative scenario to cause a significant cumulative impact. Therefore, with implementation of mitigation, the proposed project's contribution to any cumulative impact would be less than significant.

The water extracted during drilling and development of the subsurface slant wells and ASR-5 and ASR-6 Wells would be disposed in accordance with the RWQCB's *General Waiver of WDRs for Specific Types of Discharges* (General Waiver). The General Waiver would allow the extracted water to be discharged to upland areas after allowing suspended solids to settle out (e.g., routing to temporary holding tank). The conditions of the General Waiver would minimize the potential for water quality degradation by regulating the types and concentrations of pollutants in the discharges, and restricting the location and method of disposal. However, dewatering of contaminated groundwater could result in a significant impact if released into the environment, which also could result in a cumulatively significant contribution to a significant cumulative surface water quality impact. With implementation of **Mitigation Measure 4.7-2b (Soil and Groundwater Management Plan)** and mandatory compliance with the NPDES Construction General Permit, General Waiver, and General WDRs, residual effects of MPWSP discharges of water extracted during well drilling and development would not be expected to combine with those of projects in the cumulative scenario to cause a significant cumulative impact. Therefore, with implementation of mitigation, the proposed project's contribution to any cumulative impact would be less than significant.

Impacts on Surface Hydrology and Surface Water Quality during Operation and Maintenance

Operation and maintenance of MPWSP facilities could degrade surface and marine water quality during the anticipated approximately 40-year operations phase as a result of altered drainage patterns, operational discharges, flooding and flood hazards.

Discharge from the Operation of the MPWSP Desalination Plant

The geographic area associated with the assessment of cumulative water quality impacts from operation of the MPWSP is Monterey Bay. For water quality impacts related to the discharge of brine from the operation of the MPWSP Desalination Plant, the cumulative projects whose water quality impacts could overlap with those of the MPWSP include the Sand City Coastal Desalination Plant (No. 6), RUWAP Desalination Element (No. 31), RUWAP Recycled Water

Project (No. 35), Monterey Bay Regional Water (DeepWater Desal) Project (No. 34), and The People's Moss Landing Water Desal Project (People's Project; No. 48). The Sand City Coastal Desalination Plant was completed in 2010. As such, the Sand City Coastal Desalination Plant represents a "past/present" project for purposes of cumulative analysis and water quality impacts relating to MPWSP operations associated with the Sand City Coastal Desalination Plant are reflected in the baseline used for the project-level and the cumulative analysis. As proposed by their respective applicants, both the DeepWater Desal Project and the People's Project would develop supplemental water supplies to serve the same customers in the Monterey Peninsula (in CalAm's Monterey District service area). The People's Project is proposed as an alternative to the MPWSP such that both the People's Project and the proposed project would not both be implemented since their purposes and customers would be largely the same. Therefore, this EIR/EIS assumes that the People's Project is not a reasonably foreseeable project in the cumulative scenario relevant to the proposed project. Further, for purposes of the analysis presented here, consideration of the DeepWater Desal project represents the more conservative worst-case cumulative scenario since this project is larger than the People's Project. However, in the case of DeepWater Desal, water could be provided to other off-takers in Santa Cruz County or the City of Salinas, and the project could be approved in addition to the proposed project. Therefore, the cumulative impacts of the DeepWater Desal Project are considered as they relate to the provision of water to Santa Cruz County and the City of Salinas.

The significance thresholds identified for the analysis of cumulative water quality impacts from the brine discharge are listed below. A cumulative impact would occur if the combined impact from the cumulative projects considered here would result in an exceedance of the following significance standards:

- Exceed the receiving water limitation for salinity of 2 ppt at the edge of the Brine Mixing Zone (BMZ) established in the Ocean Plan.
- Exceed water quality objectives established in the Ocean Plan at the edge of the zone of initial dilution (ZID).

Implementation of the MPWSP would require the MRWPCA NPDES permit to be amended to incorporate the brine discharge from the MPWSP Desalination Plant, where the brine and its combination with the wastewater would be subject to the water quality requirements in the amended NPDES Permit, which would incorporate the Ocean Plan water quality objectives and the receiving water limitation for salinity from operation of a new desalination plant. Further, operation of the MPWSP would be required to adhere to all monitoring and reporting requirements prescribed in the Ocean Plan relating to operational discharges and receiving water characteristics as well as assessments relating to impacts on all forms of marine life.

As discussed under Impact 4.3-4, modeling of the MPWSP brine discharge from the MRWPCA outfall indicates that the brine effluent would be below the 2 ppt salinity significance threshold under the worst case scenario. Additional modeling (ESA, 2015) further indicates that the brine plume would generally reach ambient salinity levels at a distance of approximately 0.26 miles from the outfall diffuser under worst case conditions. All existing and proposed outfalls

associated with the cumulative projects (listed above) are greater than 0.26 mile from the MRWPCA outfall. Therefore, the likelihood of discharge plumes from different outfalls or their ZIDs intersecting or merging and resulting in exceedances of Ocean Plan defined water quality objectives or receiving water salinity limitations and adversely affecting beneficial uses of receiving waters (Monterey Bay) is very low.

At the project level, it is conservatively determined that under the assessed discharge scenarios, operational discharges from implementation of the MPWSP could exceed Ocean Plan water quality objectives for certain constituents. This would result in a significant impact, and because the Ocean Plan water quality objectives are based on the effects of cumulative impacts on ocean water quality, an exceedance of water quality objectives also would represent a cumulatively significant contribution to a potential significant cumulative impact. The proposed project's contribution would be minimized to a less-than-significant level by implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** and **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)**.

As discussed under Impact 4.3-5, future water quality testing and analysis, required as part of the NPDES permit process, would determine whether operational discharges under the MPWSP Project comply with Ocean Plan water quality objectives. The water quality testing and analysis would be conducted as per protocol approved by the RWQCB. **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** requires CalAm to implement a comprehensive Monitoring and Mitigation Plan consistent with the requirements of the Ocean Plan (described in detail in Section 4.3.2.2) that would set forth appropriate response thresholds and corrective actions that would be required if the acquired data indicated deleterious effects to receiving water quality or marine biological resources from the proposed MPWSP operational discharges. **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)** would require data gathering to determine baseline conditions and compliance with Ocean Plan water quality objectives and would involve employing design features and/or operational measures to achieve the required minimum dilution of the discharge at the edge of the ZID to ensure compliance with Ocean Plan water quality objectives. With implementation of **Mitigation Measure 4.3-4** and **Mitigation Measure 4.3-5**, the MPWSP would comply with NPDES permit requirements as well as all water quality objectives detailed in the Ocean Plan. The requirements of NPDES permits, which incorporate the Ocean Plan water quality objectives in the case of operational discharges from the MRWPCA outfall, are designed and intended to protect beneficial uses of receiving waters (i.e., Monterey Bay) from the effects of numerous potential sources of pollution, and are therefore protective against significant adverse cumulative impacts.

The brine discharge from the operation of the proposed MPWSP Desalination Plant would be subject to water quality requirements in the amended NPDES Permit for the discharge through the MRWPCA outfall. Any new or modified waste discharges to the bay, such as those proposed as part of the DeepWater Desal Project, are subject to the water quality requirements of the NPDES permit system, administered by the Central Coast RWQCB. Thus, operation of the

cumulative projects that would result in waste discharge (listed above), including and similar to the proposed project would be subject to, and would be required to comply with, the regulatory requirements for the protection of the beneficial uses of Monterey Bay. The SWRCB establishes the regulatory limitations and guidance on compliance and continues to develop and administer regulations through the RWQCBs (the Central Coast RWQCB in the project area) to regulate the water quality of the waters of the U.S. The most recent amendment to the Ocean Plan (SWRCB, 2016) reflects the SWRCB's process of adapting to the need to regulate discharges from desalination projects. As also discussed above, the Ocean Plan objectives are incorporated into the NPDES permits issued to the dischargers by RWQCBs in the form of specific water quality requirements.

With mandatory compliance with the regulatory requirements and the NPDES effluent limitations, and implementation of mitigation measures, the cumulative impact from the discharges resulting from MPWSP and the projects in **Table 4.1-2** is therefore considered less than significant. Additionally, with implementation of mitigation measures, the proposed project's contribution to any cumulative water quality impact in Monterey Bay would be reduced to a level that is less than significant.

Discharges Related to Maintenance of Subsurface Intake Wells and ASR Wells

As discussed in Impact 4.3-6, the proposed project would require site disturbance for the slant well maintenance and routine cleaning of the ASR wells, which could result in discharges that would affect water quality. Site disturbance as part of the proposed project would occur once in five years and would be subject to the water quality control requirements of the Construction General Permit. Nearly all the cumulative projects identified in **Table 4.1-2** would involve site disturbance activities as part of construction and, as discussed above, would be subject to the Construction General Permit requirements, including implementation of a SWPPP to prevent substantial adverse effects on water quality during construction. As a result, the effects of the MPWSP would not be expected to combine with those of cumulative projects to cause a significant cumulative water quality impact from increased soil erosion and sedimentation, or inadvertent releases of toxic chemicals during general construction activities as part of the slant well maintenance. The proposed project would result in a less than significant contribution to this cumulative impact.

As discussed in Impact 4.3-6, as part of the ASR well maintenance, the proposed project would require backflushing of the accumulated sediment and turbid water in the two ASR wells. The duration of backflushing would range from a few minutes to 2 hours. The discharge of the backflushed effluent would be subject to specific requirements under the General Waiver of WDRs for Specific Types of Discharges (Resolution R3-2014-0041) to protect surface water quality. The projects in **Table 4.1-2** that would include maintenance-related discharges from water supply wells would be subject to and be required to comply with the water quality control requirements under the General Waiver. As a result, the effects of the proposed project would not be expected to combine with those of cumulative projects to cause a significant cumulative water quality impact from ASR well maintenance-related discharges. The proposed project would result in a less than significant contribution to this cumulative impact.

Alteration of Drainage Patterns and Non-point Source (Stormwater) Pollution

As discussed in Impacts 4.3-7 and 4.3-8, the MPWSP would require site disturbance in a manner that could alter drainage patterns and a net increase in impervious surface area at several project sites. Most of the projects identified in **Table 4.1-2** would also involve new impervious surfaces, which may alter site drainage. Alterations to site drainage could cause increased peak flows in creeks, exacerbate erosion and sedimentation, and result in greater non-point source pollution in downstream water bodies. Increased areas of impervious surfaces could also increase flooding of downstream waterways and cause runoff volumes to exceed stormwater conveyance system capacities.

However, operation of the proposed project would not represent a substantial land use change within the geographic scope when combined with the projects identified in **Table 4.1-2** as compared to current conditions at the site and in the surrounding area. The majority of the projects identified in **Table 4.1-2** are located within the urbanized portion of the Salinas River and Carmel River watershed lands (the geographic scope), and along the margin of Monterey Bay. The urbanized portions of these watershed lands no longer reflect natural historic conditions in terms of stormwater quality, volume, and drainage. The majority of the surfaces associated with the identified projects in the cumulative scenario, including most locations affected by the project, are covered with impervious surfaces and as a result stormwater runoff is generally rapid and surface infiltration rates are very low. Stormwater flows in the lower portions of the affected watershed lands adjacent to the proposed project are generated as runoff from paved surfaces and drain down gradient into stormwater conveyance systems and can contain pollutants typical of urbanized watersheds. While the proposed project and many of the projects identified in **Table 4.1-2** would result in some increase in impervious area, storm runoff volumes and rates as well as water quality generated during the operations phase would be similar to the existing runoff typical of urbanized watersheds.

Additionally, as discussed in Impacts 4.3-7 and 4.3-8, such developments would be required to comply with the Central Coast RWQCB Resolution No. R3-2013-0032, as implemented through the Monterey Regional Stormwater Management Program and NPDES Municipal Stormwater Permit. Adherence to these requirements would ensure potential effects of the MPWSP on site drainage would be less than significant. Projects constructed after March 6, 2014 that create or replace 2,500 square feet of impervious surface area are also subject to these requirements.

As the previously noted stormwater requirements are part of a regional program designed to address the potential cumulative effects of past, present, and foreseeable projects within the region, adherence to these requirements would ensure hydrology and water quality effects related to the alteration of drainage patterns would not cause a significant cumulative impact. The proposed project therefore would result in a less than significant contribution to any cumulative impact.

Risk of Loss, Injury, or Death due to Flooding

As discussed in Impacts 4.3-9, 4.3-10, and 4.3-11, the MPWSP would involve the siting of facilities in locations within or near areas subject to inundation due to 100-year flood, tsunami,

and sea level rise. Specifically, the subsurface slant wells, and portions of the new Transmission Main, Castroville Pipeline, and Source Water Pipeline would be located in areas subject to inundation from 100-year flood and sea level rise. The subsurface slant wells would also be subject to inundation from tsunami. However, these facilities would be operated remotely and would not be regularly manned. Further, they would be designed to withstand periods of inundation. The MPWSP Desalination Plant would be constructed at elevations between 85 and 110 feet above mean sea level, well above areas of anticipated inundation due to flood, tsunami, and sea level rise. Some of the cumulative projects identified in **Table 4.1-2** and shown on **Figure 4-1** could have significant adverse effects related to flooding, tsunami, and sea level rise inundation. However, because the MPWSP components within such areas would be below grade, and with construction areas returned to their approximate pre-construction topography, they would have a less than significant contribution to any significant cumulative impacts associated with flooding, tsunami, and sea level rise.

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4.4 Groundwater Resources

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This section analyzes the potential for the construction and operation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project), which includes 10 slant wells at CEMEX, to adversely impact local and regional groundwater resources. Specifically, this analysis focuses on how the proposed subsurface slant wells and aquifer storage and recovery (ASR) system improvements would change the groundwater aquifers adjacent to the coast and further inland beneath the Salinas Valley, and would change the groundwater levels, flow direction, and water quality within the Seaside Groundwater Basin. The analysis is based on project-specific investigations of the various project components, the review of hydrogeologic models prepared for this and other projects, maps and hydrogeologic and geotechnical reports from the California

Department of Water Resources (DWR), United States Geological Survey (USGS), and the California Geological Survey (CGS), and the general plans for Monterey County and the local cities.

The CPUC received several comments on groundwater resources during the April 2015 Draft EIR review period. Some comments focused on significance thresholds and the characterization of baseline conditions. Comments addressed the use of computer modeling and requested an explanation of modeling methodology, specifically addressing the return water component and evaluating a zero return water scenario, while other comments addressed alternate methods of returning water to the basin. Certain commenters requested consideration of more extensive aquifer testing. Where relevant, the comments are addressed in this Impacts section. Note that some groundwater resource issues relative to water supply, return water, and the Monterey County Agency Act are addressed in Section 2.6, Water Rights.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Revisions to Section 4.4.1.2 (Regional and Local Hydrogeology) to enhance the discussion of the proposed Settlement Agreement and the Hydrogeologic Working Group, to provide clarification on the confinement of the 180-FTE Aquifer, to describe the Deeper Aquifers (also referred to as the 900-Foot Aquifer) in the Salinas Valley Groundwater Basin, and to clarify hydrostratigraphy inland of the CEMEX site.*
- *Revisions to Section 4.4.1.4 (Groundwater Quality) to clarify Monterey County Water Resource Agency seawater intrusion monitoring thresholds, to include a discussion of seawater intrusion at the CEMEX site and to enhance the discussion of Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) surveys in the Salinas Valley Groundwater Basin.*
- *Revisions to Section 4.4.2.2 (Regulatory Framework – State) to add clarifying language on the Division of Water Rights Permit 20808 – Amended Permit for Diversion and Use of Water, and the Sustainable Groundwater Management Act (SGMA).*
- *Revisions to Section 4.4.3 (Evaluation Criteria) to include text to clarify the definition of a substantial net deficit in aquifer volume.*
- *Revisions to Section 4.4.4.2 (Groundwater Modeling) to include a discussion of the groundwater capture zone and update the discussion of Ocean Water Percentage.*
- *Revisions to Section 4.4.5.2 (Operations Impacts and Mitigation Measures, Impact 4.4-3) to add text with additional discussion and to include figures showing the relationship of the capture zone and cone of depression, to enhance the discussion of groundwater impacts on the deeper aquifers (also referred to as the 900-Foot Aquifer), to add clarifying text to describe MPWSP pumping effects on the CEMEX dredge pond, to add a discussion of MPWSP consistency with regulatory requirements including SGMA, and to clarify CalAm's degree of involvement with the US Army in the event that the MPWSP pumping impacts the OUCTP remediation plumes.*
- *Revisions to Applicant Proposed Measure 4.4-3 to include the 400-Foot Aquifer and the Deeper Aquifer to the monitoring program, in addition to other revisions requested by CalAm.*
- *Revisions to Section 4.4.6. (Cumulative Effects of Proposed Project) to enhance the discussion of MPWSP effects with other local and regional projects.*

4.4.1 Setting/Affected Environment

This section describes the setting for groundwater resources. The groundwater resources study area encompasses the northern portion of the Salinas Valley Groundwater Basin (SVGB) and the Seaside Groundwater Basin (SGB); specifically, the areas that could be affected by the installation and operation of the source water intake system and the ASR system (see **Figure 4.4-1**).

4.4.1.1 Terminology and Concepts

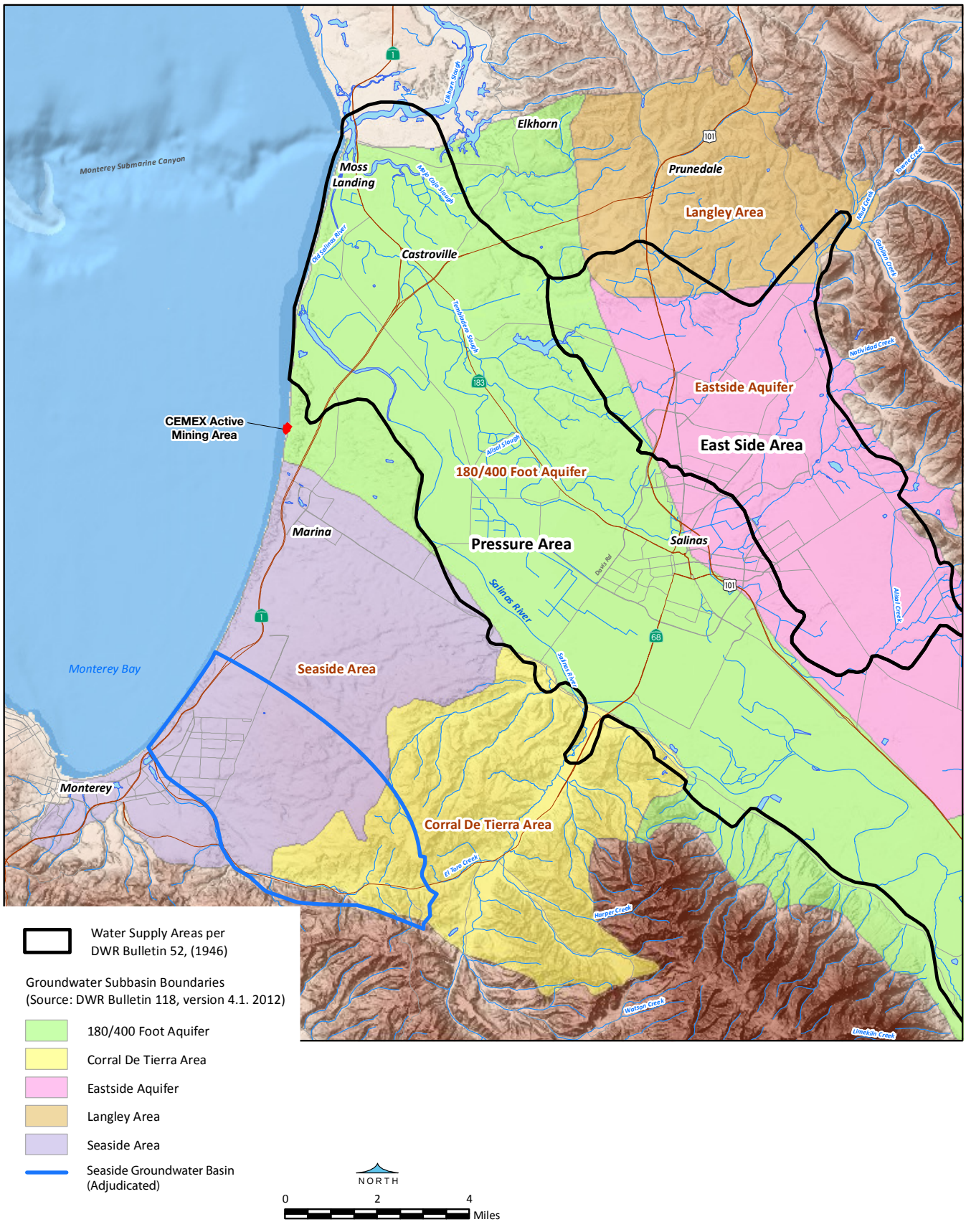
Groundwater is the water beneath the earth's surface, and hydrogeology is the study of how that water interacts with the underlying geologic units of rock and soil. Most groundwater occurs in sand and gravel units that were deposited by water (referred to as alluvium) and later covered by layers of clay, silt, sand, and gravel. Fluvial deposits refer to clay, silt, sand, and gravel that were laid down by rivers and streams as a result of bank erosion, a process in which the materials are transported and redeposited within the river system in the form of bars, points, and floodplains.

Coarse materials such as sand and gravel hold the most groundwater when saturated and are referred to as aquifers. Layers of finer-grained materials such as clay and silt restrict, but do not prevent, the flow of groundwater and are called aquitards. Aquifers can extend over many square miles and are called basins.

A groundwater basin is an aquifer or a stacked series of aquifers with reasonably well-defined boundaries in a lateral direction and a definable bottom. California's groundwater basins typically include one aquifer or a series of aquifers with intermingled aquitards. In general, groundwater basin boundaries are determined by physical attributes such as the lateral extent of aquifers, obstacles to flow such as bedrock or faults, and groundwater divides. A divide is defined by a line on either side of which groundwater moves in opposite directions. A groundwater divide, similar to a surface water divide, separates distinct groundwater flow regions within an aquifer.

Depending on the type of geologic unit overlying a water-bearing zone, groundwater can be unconfined or confined. The water table in an unconfined aquifer does not have a low-permeability aquitard lying over it, and thus pressure is exerted by the overlying water and the atmosphere. Groundwater under these unconfined conditions flows from areas of high groundwater elevation to areas of low groundwater elevation. The deeper portions of an unconfined aquifer can display the characteristics of a confined system due to the overlying thicker extent of groundwater and alluvial material. Under confined conditions, vertical flow from or to the aquifer is restricted by overlying aquitards. Groundwater under confined conditions flows from areas of higher heads[1] to areas of lower heads and is influenced by the pressure, weight, and confining nature of the overlying sediments; water entering the aquifers from areas of recharge; and water leaving the aquifers through natural discharge or through the pumping of supply wells. When a well penetrating a confined aquifer is pumped, internal aquifer pressure is reduced, which can in turn increase the flow of water towards the well.

[1] Head or hydraulic head is the fluid potential for flow through a porous media.



SOURCE: Geoscience, 2013b

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-1

Groundwater Basins and Areas in the Western Salinas Valley Groundwater Basin

4.4.1.2 Local and Regional Hydrogeology

This chapter's description of the groundwater system underlying the project area reflects the scientific community's current understanding of the subsurface geologic units and the depth and extent of the aquifers and aquitards.

Proposed Settlement Agreement and Hydrogeology Working Group

Several of the parties to the CPUC proceeding filed a motion with the CPUC in August 2012 to approve a Settlement Agreement that provides for the development, construction, operation, and financing of the Monterey Peninsula Water Supply Project (MPWSP).[2] The Settlement Agreement provided that the parties would support the issuance of a Certificate of Public Convenience and Necessity (CPCN) for the MPWSP, subject to certain conditions. Support by five of the parties depended on the resolution of certain issues. The Salinas Valley Water Coalition (SVWC), Monterey County Farm Bureau (MCFB), LandWatch Monterey County, and Citizens for Public Water were concerned about potential harm from CalAm's pumping of source water on the Salinas Valley Groundwater Basin (SVGB) and its users. Their CPCN support was therefore, contingent on resolving certain source water issues to be informed by the Hydrogeologic Study and the Technical Report provided for in the Settlement Agreement (HWG, 2017; see Appendix E3).

The settling parties agreed that hydrologists and technical teams representing CalAm and the SVWC would collaborate with other experts to develop a joint workplan, consistent with California State Water Resources Control Board (SWRCB) recommendations, for the MPWSP's proposed source water intake sites. The "Hydrogeologic Study" outlines that technical group's agreed-upon process and procedures for obtaining information on what effects the MPWSP may have on the SVGB and its users.

The technical group is referred to as the Hydrogeologic Working Group (HWG). The HWG, which was developed to serve as an internal peer review group, reviewed data and analyses and prepared investigation documents. Since its initial meeting in April 2013, the HWG has publically shared technical data (available at https://www.watersupplyproject.org/) and recommendations regarding locations of the subsurface investigations, procedures and protocols for investigation, groundwater model construction, and data analysis. The MPWSP Hydrogeologic Investigation Workplan provided a phased approach to progressively investigate the hydrogeology and the potential effects of the proposed project on aquifers from the use of subsurface slant wells for obtaining feedwater supply. Recommendations were included in the workplan. In accordance with the Settlement Agreement, the final draft of the workplan, dated December 2013, incorporated comments and recommendations by members of the HWG, and covered the investigative steps needed to evaluate the project impacts. The final workplan formed the basis of data collection and analysis of all work

[2] The settling parties include the California American Water Company (CalAm), Citizens for Public Water, City of Pacific Grove, Coalition of Peninsula Businesses, County of Monterey, Division of Ratepayer Advocates, LandWatch Monterey County, Monterey County Farm Bureau (MCFB), Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Regional Water Authority (MPRWA), Monterey Peninsula Water Management District, Monterey Regional Water Pollution Control Agency, Planning and Conservation League Foundation, Salinas Valley Water Coalition (SVWC), Sierra Club, and Surfrider Foundation. Such a proposed settlement agreement is not effective unless and until the CPUC embraces it as part of action on the project, and the CPUC may revise aspects of a proposed settlement agreement.

completed to date (see Appendix E3, Section 2.1), became the hydrogeology investigation roadmap, and resulted in the implementation of the fieldwork and modeling efforts described in the approach to analysis, Section 4.4.4.

In support of the CEQA/NEPA review process, work products developed by the HWG were peer reviewed by certified hydrogeologists from Environmental Science Associates and hydrogeologists/groundwater modelers from HydroFocus, Inc. The CEQA/NEPA team peer-reviewed all data and findings developed by the HWG, provided comments, and recommended changes prior to incorporating the hydrogeologic information and data into the body of technical information necessary to complete the groundwater analysis in the EIR/EIS.

The following sections describe the groundwater basins, the aquifers and aquitard contained within those basins, and the groundwater system underlying the subsurface intake system and the ASR system.

Salinas Valley Groundwater Basin

The Salinas Valley lies within the southern Coast Ranges, between the San Joaquin Valley and the Pacific Ocean, and is drained by the Salinas River. Extending approximately 150 miles from the La Panza Range north-northwest to its mouth at Monterey Bay, the valley is bound on the west by the Santa Lucia Range and Sierra de Salinas, and on the east by the Gabilan and Diablo Ranges. The 560-square mile Salinas Valley Groundwater Basin (SVGB)[3] underlies the Salinas Valley (MCWRA, 2006). The Monterey Bay acts as the northwestern boundary of the SVGB (Brown and Caldwell, 2015). The SVGB contains 10,000- to 15,000-foot-deep deposits of marine and terrestrial clay, sand, silt, and gravel as old as 65 million years (DWR, 2004a). The proposed project components associated with groundwater extraction would be located primarily within the 84,400-acre, 132-square-mile subarea of the SVGB known as the 180/400-Foot Aquifer Subbasin (DWR, 2004a).[4] The 180/400-Foot Aquifer Subbasin boundaries generally coincide with those of the SVGB Pressure Area (or Subbasin) traditionally recognized by the Monterey County Water Resources Agency (MCWRA) and California Department of Water Resources. The hydrologic boundaries of the Pressure Area are the Elkhorn Slough to the north, the East Side Area to the east, the Seaside Basin to the south, and the Pacific Ocean to the west. The boundaries and names of the basins have been updated to reflect the currently available information, as shown on **Figure 4.4-1**. This figure illustrates the updated basin boundaries in the western part of the SVGB, which were represented in the Salinas Valley Integrated Surface-Groundwater Model (SVIGSM) results and utilized in the modeling conducted for the proposed project (HydroFocus, 2016). Subsequent to the publication of the Draft EIR/EIS, the California Department of Water Resources made further changes by designating the area in between the Pressure Area (now called Salinas Valley Basin, Subbasin 180/400-Foot Aquifer) and the adjudicated Seaside Groundwater Basin as the Monterey Subbasin of the SVGB. In this EIR/EIS, the primary area of study within the SVGB is within the Pressure Area.

[3] The Salinas Valley Groundwater Basin is also referred to as the Salinas River Groundwater Basin.
[4] The 180/400-Foot Aquifer subbasin includes three water bearing units, the 180-Foot and the 400-Foot Aquifers, named for the average depth of each aquifer, and the deeper aquifers (see description below) (USGS, 2011).

Pressure Area Aquifers and Aquitards

Water-bearing geologic formations present within the Pressure Area include: Quaternary Alluvium (including the Dune Sands and Terrace Deposits), Aromas Sand, Paso Robles Formation, Purisima Formation, Santa Margarita Sandstone, and Monterey Formation. Not all geologic units are present in all areas. Section 4.2, Geology, Soils and Seismicity, provides a detailed description of these geologic units and **Table 4.4-1**, below, summarizes the characteristics as they relate to groundwater storage.

TABLE 4.4-1
SUMMARIZED CHARACTERISTICS OF WATER BEARING GEOLOGIC UNITS

Geologic Unit (Listed youngest to oldest)	Geologic and Groundwater Storage Characteristics
Quaternary Alluvium	The Younger and Older Dune Sands. Younger, sparsely vegetated, active dunes are present along the coastline. Older dune deposits with more established vegetation are present inland. Shallow groundwater is not expected within the elevated dune deposits, except in localized low-lying areas along the coastline.
Terrace Deposits	Former alluvial fan and river floodplain deposits — which may also include marine terrace deposits — that generally consist of sand with some gravels. Terrace deposits at the CEMEX mining facility range from 150 to 163 feet in thickness.
Aromas Sand	Both older river deposits and younger windblown deposits of unconsolidated, brown to red sands with interbeds of clay and poorly sorted gravels.
Paso Robles Formation	Series of fine-grained, oxidized sand and silt beds that contain gravel beds interbedded with some calcareous beds. The formation is inter-fingered with the lower portion of the Aromas Sand and the upper portion of the Purisima Formation. The Paso Robles Formation is present at depths ranging from less than 100 feet to 600 feet in the northern portion of the project area.
Purisima Formation	Layered sand, silt, clay, shale, and some gravel deposited in near-shore and far-shore marine environments. The basal, or lowermost, unit of the Purisima Formation consists of relatively impermeable clay and shale.
Santa Margarita Formation	Marine, coarse-grained sandstone that overlies the Monterey Formation. Relatively small pieces of this unit are present beneath the project area in the Seaside vicinity at depths of about 800 feet deep just north of the Ord Terrace Fault and about 500 feet below the ground surface in between the Ord Terrace and Seaside Faults.
Monterey Formation	Marine sedimentary unit generally consisting of siliceous and diatomaceous interbedded layers of mudstone, siltstone, sandstone, and claystone. Seams of the expandable clay bentonite are also present.

SOURCE: Geoscience, 2016b

The Pressure Area is made up of distinct aquifers and aquitards that in some cases extend across several underlying geologic formations and collectively form the groundwater system within the subbasin. **Figure 4.4-2**, a north-to-south graphic representation of the hydrogeologic setting, shows the spatial relationships of the aquifers along the coast from Moss Landing to south of the CEMEX site. As shown, the Pressure Area consists of a series of aquifers at varying depths, which in some locations are separated by laterally extensive aquitards. The Pressure Area includes three prominent water supply aquifers and two, less notable, shallower aquifers. The primary aquifers, named for the average depth at which they occur, are the 180-Foot Aquifer, the 400-Foot Aquifer, and the deeper aquifers (Kennedy/Jenks, 2004; Geoscience, 2008). The primary aquifers and aquitards in the Pressure Area are described below and additional discussion

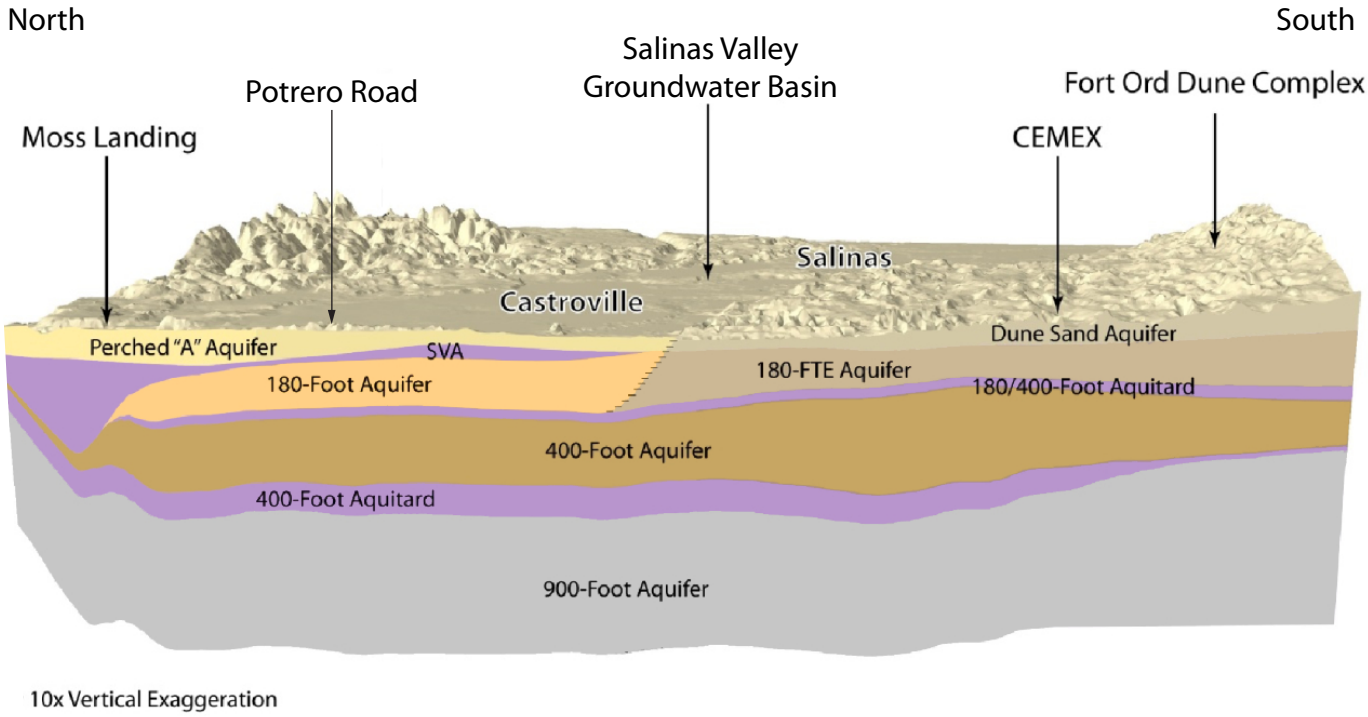
is provided in the description of the Hydrogeologic Conceptual Model (HWG 2017 Appendix E-3, TM2, section 3.0).

Dune Sand Deposits and the Dune Sand Aquifer

Shallow groundwater is present in the Pressure Area and occurs in saturated sand dune deposits above low-permeability clay units such as the Salinas Valley Aquitard where present, or directly above the 180-Foot Aquifer or 180-FTE Aquifer. The shallow groundwater is in the coastal Dune Sand units or in scattered, thin, discontinuous sandy layers both at the coast and inland. Shallow groundwater is not expected to occur within much of the upper, younger Holocene-age[5] Dune Sand deposits, except in localized low-lying areas along the coastline. There is groundwater within the underlying Pleistocene-age[6] Older Dune Sand, which extends offshore beneath the ocean and up to 4 miles inland to the north-facing bluffs of the Salinas River where it resembles a transition between older deposits near the Monterey Landfill. The Older Dune Sand, referred to as the Dune Sand Aquifer, extends to depths up to 110 feet below the ground surface beneath the CEMEX site and is about 60 feet thick at the locations of the proposed slant wells. The shallow aquifer underlying the Moss Landing Area is referred to as the Perched[7] A Aquifer of the Salinas Valley, which is underlain by a defined layer of less permeable, fine-grained sediments known as the Salinas Valley Aquitard. The Perched A Aquifer appears to be hydraulically connected with a shallow aquifer local to the Monterey Peninsula Landfill area (referred to as the "-2- Foot" Aquifer) and the Dune Sand Aquifer near CEMEX area (HWG, 2017; see Appendix E3, TM2). The Dune Sand Aquifer is at a lower elevation and not hydraulically connected to the inland perched, mounded aquifers, namely the shallow, local 35-Foot Aquifer at the Monterey Peninsula Landfill and the "A" Aquifer in the Fort Ord Area (approximately 1.5 miles inland). The "A" Aquifer near Fort Ord is at a higher elevation than the Salinas Valley A-Aquifer and is perched on the Fort Ord-Salinas Valley Aquitard (FO-SVA).

Water quality of the Perched A Aquifer and Dune Sand Aquifer along the coast is directly influenced and controlled by seawater. Because of the aquifer's proximity to the ocean, most of the water in the Dune Sand Aquifer along the coast has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004 and Appendix C3 Section 5.2).[8] The Dune Sand Aquifer has not in the past nor does it currently represent a source of potable supply because of its overall limited extent. The effects of seawater intrusion decrease inland where the infiltration of precipitation and applied agricultural water has more of an influence on groundwater quality. **Figure 4.4-3** presents a west to east geologic cross section that illustrates the relationship of the aquifers and geologic units from the CEMEX area to east of Highway 1 and Del Monte Boulevard. The upper portions of the proposed slant wells at the CEMEX site would have well screens installed across them and would draw water from these deposits.

5 Holocene time is from the present to 11,000 years ago.
6 Pleistocene time was from 11,000 to 1.6 million years ago.
7 A perched aquifer contains unconfined groundwater in a zone above the main aquifer, separated by an unsaturated zone.
8 Saline water is water that has the approximate salinity of seawater, while brackish water is more saline than fresh water, but not as saline as seawater.



SOURCE: Adapted from HydroMetric, 2009a

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Figure 4.4-2

Conceptual Model of Coastal Aquifers

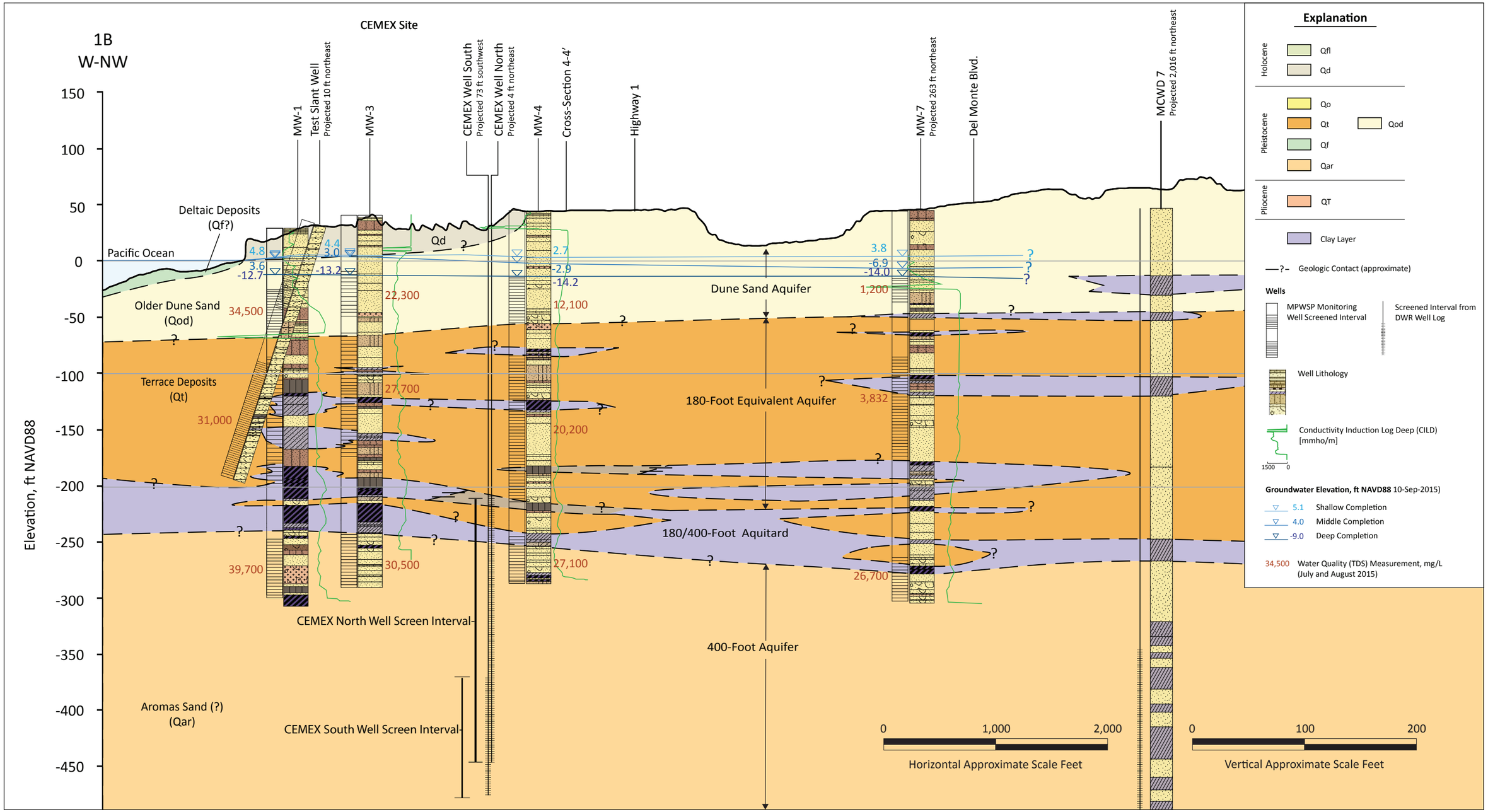
Salinas Valley Aquitard

The Salinas Valley Aquitard is a blue or yellow sandy clay formation up to 100 to 150 feet thick that lies mostly north of and generally parallel to the northwest-flowing Salinas River (MCWRA, 2006; Kennedy/Jenks, 2004; Durbin et al., 1978; Geoscience, 2013a). **Figure 4.4-4** shows the extent and thickness of the Salinas Valley Aquitard updated with information provided through the subsurface exploratory program completed at the proposed slant wells site on the CEMEX mining property. The Salinas Valley Aquitard thins and becomes discontinuous away from the centerline of the unit at the Pacific Ocean and was not observed in the exploratory borings at the CEMEX site. Consequently, the Dune Sand Aquifer deposits lie directly on top of Terrace Deposits and are thought to be hydraulically connected to the underlying aquifer. Elsewhere, the Salinas Valley Aquitard, where present, overlies the 180-Foot Aquifer, creating confined to semi-confined conditions for the underlying aquifers.

180-Foot Aquifer and 180-FTE Aquifer

The location of the 180-Foot Aquifer within the Salinas Valley is variable and extends across more than one stratigraphic or geologic unit. Various interpretations have correlated the aquifer to different combinations of stratigraphic units depending on the investigator, the area under study, and the investigator's interpretation. Consistent with the hydrogeologic understanding developed to support the impact analysis in this EIR/EIS, the 180-Foot Aquifer has been correlated with the lower portions of the Young and Older Dune Sand (Quaternary Alluvium) and the upper portions of the Aromas Sand (DWR, 2004a; Geoscience, 2008, 2013a). The lenticular (lens-shaped) sand and gravel bodies that make up the 180-Foot Aquifer indicate that they were originally deposited in a river, where the more laterally extensive units represent river channels that migrated and shifted over time (Kennedy/Jenks, 2004). The 180-Foot Aquifer has been geophysically mapped into the Monterey Bay where the unit is open to the ocean for several miles offshore (Greene, 1970; Eittreim et al., 2000).

As mentioned above, the Dune Sand Aquifer lies directly on top of the Terrace Deposits in the area along the coast with no confining layer to separate them. Based on the investigative work to correlate the hydrogeologic units of the Pressure Area, these Terrace Deposits along the coast appear to be at the same depth and have similar geologic characteristics as the inland Quaternary Alluvium of the 180-Foot Aquifer in the Salinas Valley (see **Figure 4.4-3**). Even though the Terrace Deposits are older than and lithologically different from the inland deposits of the 180-Foot Aquifer, the units are at the same depth interval and groundwater likely flows from one unit to the next. **Figure 4.4-2** identifies a "180-FTE Aquifer," which is shorthand for the 180-Foot Equivalent Aquifer; this chapter refers to it by its shorthand form. This unit is composed of terrace deposits that underwent a different depositional process than the inland 180-Foot Aquifer. However, the unit is at the same depth interval and is considered to be connected and equivalent to the 180-Foot Aquifer. Therefore, considering the level to which these units correlate, and to maintain consistency with the nomenclature used in this region, the aquifer interval is referred to as the 180-FTE Aquifer. At the CEMEX site, the Dune Sand Aquifer is unconfined and the 180-FTE Aquifer is semi-confined.



SOURCE: Geoscience, 2016

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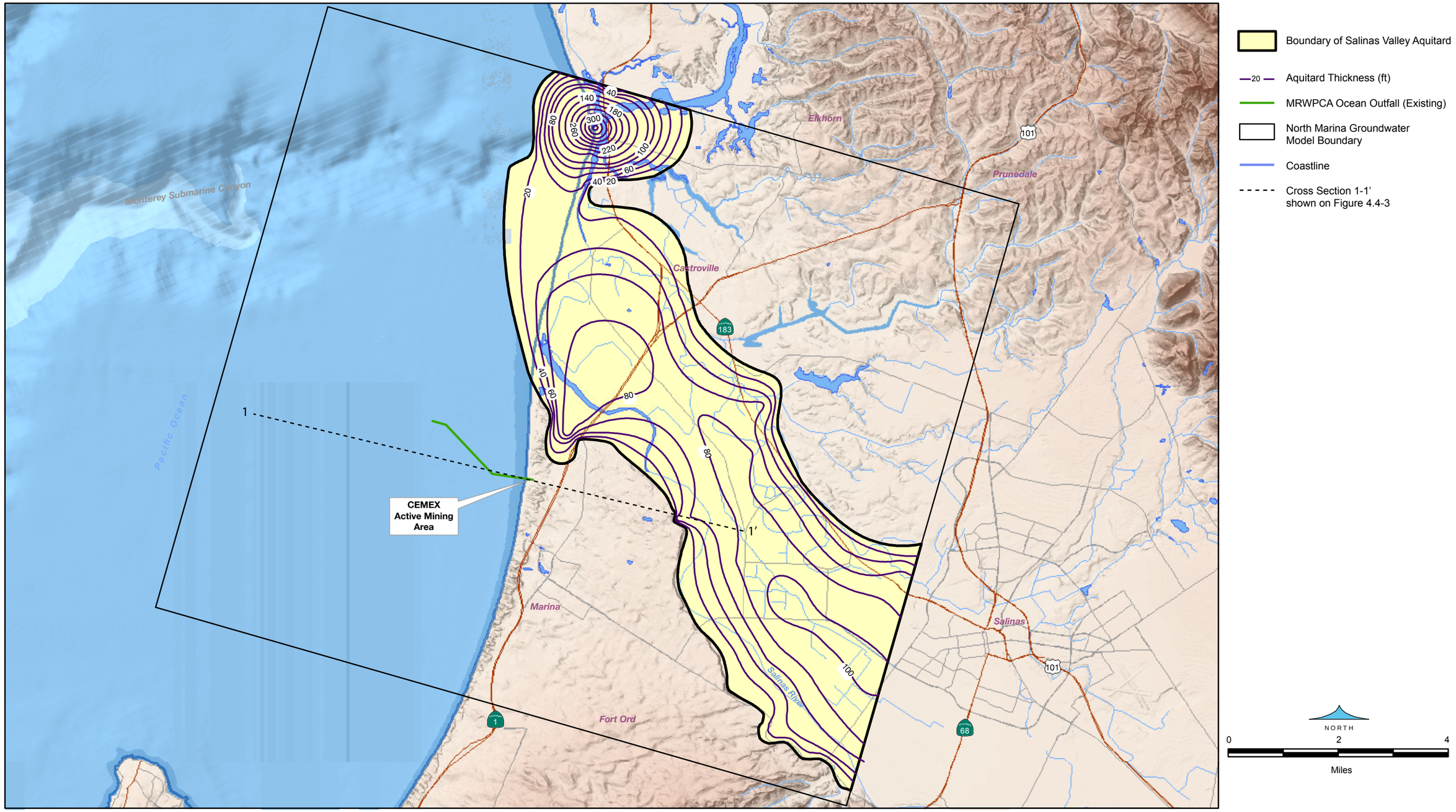
Figure 4.4-3

Project Area Hydrogeologic Cross Section



SOURCE: Geoscience, 2015c

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Figure 4.4-4
Thickness of Salinas Valley Aquitard

The Terrace Deposits of the 180-FTE Aquifer are composed of former alluvial fan and river floodplain deposits, possibly with some marine terrace deposits that contain sand, silt, and gravel now buried under the coastal dunes. There is groundwater within the Terrace Deposits, which extend to 240 to 255 feet below the ground surface beneath the CEMEX site, and are about 135 feet thick at the proposed slant well locations, thinning seaward. Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; influence of this can be observed for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits.

180/400-Foot Aquitard

As shown on **Figures 4.4-2** and **4.4-3**, the 180- and 400-Foot Aquifers are separated by the 180/400-Foot Aquitard (Kennedy/Jenks, 2004). The unit is generally 50 to 100 feet thick but can be as much as 200 to 250 feet thick and absent in some areas. This aquitard is present beneath the CEMEX site at about 220 feet below the ground surface or about 200 feet below mean sea level,) and is 10 to 70 feet thick. The slant wells at the CEMEX site would not penetrate the 180/400-Foot Aquitard.

400-Foot Aquifer

The underlying 400-Foot Aquifer correlates with the Aromas Sand and the upper Paso Robles Formation (Geoscience, 2008; Yates et al., 2005). At the CEMEX site, the 400-Foot Aquifer is within the Pleistocene Aromas Sand. The unconfined Aromas Sand consists of both older fluvial deposits and younger windblown, or eolian, deposits. The eolian portion of the Aromas Sand crops out just east of the central and southern portion of the project area and extends beneath the project area to offshore on the continental shelf and in the Monterey submarine canyon (CGS, 2002). The unit is up to about 500 feet thick in the northern area and due to its structure and orientation, ranges in depth from a few feet near the surface to several hundred feet below the ground surface (HydroMetrics, 2009a). The slant wells at the CEMEX site would not penetrate through the Aromas Sand or deeper geologic units. Based on the recent groundwater testing data, discussed in the Groundwater Quality subsection below, the 400-Foot Aquifer at the coast is directly intruded by seawater and water quality monitoring provides evidence that the influence extends for miles inland, as discussed below in the Seawater Intrusion subsection.

Deeper Aquifers

The deeper aquifer units in the SVGB have been referred to as the "Deep Zone," "900-Foot Aquifer," and "1,500-Foot Aquifer." However, these are vague definitions because the water-bearing sediments are not necessarily at specific depths. For the purpose of this EIR/EIS, and to be consistent with current findings regarding the distribution of water-bearing zones below the 400-Foot Aquifer, the term "deeper aquifers" is used to describe these units.

The deeper aquifers of the SVGB correlate with the lower Paso Robles Formation, the Purisima Formation, and the Santa Margarita Sandstone (Yates et al., 2005) and are separated from the overlying 400-Foot Aquifer by a low-permeability blue marine clay (DWR, 2004a; Geoscience,

2008). In the MPWSP area, the deeper aquifers extend to an approximate maximum depth at the contact with the underlying Monterey Formation of -2,300 feet below mean sea level (bmsl) (Feeney and Rosenberg, 2003). Based on previous groundwater investigations, the deeper aquifers are made up of two separate units, which are hydraulically isolated from each other at the coast. The uppermost unit is in the Paso Robles Formation and the lower unit is associated with the Purisima Formation (Feeney and Rosenberg, 2003, MCWRA, 2017). In the area surrounding the CEMEX site within the NMGWM^{2016} model boundary, the deeper aquifers are within the Paso Robles and Purisima Formations. The Monterey Formation underlies the Purisima Formation and is considered the minimally water-bearing, lower boundary of the deeper aquifers. Water levels in the deeper aquifer are well below sea level, but groundwater degradation due to seawater intrusion is not occurring because the deeper aquifers are not connected to the Monterey Bay. Recharge to the Paso Robles and Purisima Formations is limited and is primarily supplied by leakage from overlying, and in some cases, underlying aquifers.

Increasing seawater intrusion over the past 30 years forced groundwater users in the Marina/Castroville area to drill and develop wells below the 400-Foot Aquifer. The proximity of the Marina Coast Water District (MCWD) wells to the encroaching seawater intrusion required it to be one of the first water districts to look to the deeper aquifers for a fresh water source (Feeney and Rosenberg, 2003). The first production well in the deeper aquifers was installed in 1974. Groundwater users in the Castroville area also had to drill into the deeper aquifers to find a fresh groundwater supply, but after implementation of the CSIP in 1998, many of the groundwater users in the Castroville area began receiving recycled water and ceased using their deeper aquifer wells. There are currently 32 production wells and 8 monitoring wells installed in the deeper aquifers in the Marina/Castroville area (MCWRA, 2017).

East Side Subbasin and Aquifers

The East Side Area is located inland to the east of the Pressure Area and encompasses about 125 square miles along the north side of the Salinas Valley from Gonzales to east of Castroville. The hydrologic boundaries of the East Side Area are generally the Pressure Area to the west, the Gabilan Range along the northeast, and a subarea referred to as the Forebay Subbasin to the south and southeast. With the exception of the relatively impermeable Gabilan Range, the precise locations of the boundaries fluctuate depending on seasonal variations, longer-term climate changes, and local groundwater pumping.

The hydrogeology and groundwater behavior is markedly different in the East Side Area than the Pressure Area due to the different depositional environments and geology (Kennedy/Jenks, 2004). The transition zone between the East Side Area and Pressure Area has been defined based on the transition from predominantly alluvial deposits within the East Side Subbasin to the fluvial deposits that make up the Pressure Area. The clay layers in the Pressure Area pinch out inland into the East Side Area. As noted above, the Salinas Valley Aquitard does not extend much into the East Side Area (Durbin et al., 1978). Water-bearing formations present within the East Side Area include Quaternary Alluvium (both alluvial fan and fluvial deposits), the Aromas Sand, the Paso Robles Formation, and the Purisima Formation (DWR, 2004b).

Seaside Groundwater Basin and Aquifers

The Seaside Groundwater Basin (SGB), as defined by the California Department of Water Resources, the Seaside Watermaster, and the Monterey Peninsula Water Management District, encompasses approximately 24 square miles at the southwest corner of the Salinas Valley adjacent to the Pacific Ocean (Yates et al., 2005). The Seaside Watermaster further subdivided the SGB into the Northern and Southern Subbasins by the Laguna Seca Anticline and a segment of the Ord Terrace Fault, which restrict groundwater flow between the subbasins (HydroMetrics, 2009a). The two subbasins are further subdivided into coastal and inland subareas with the division boundary just west of General Jim Moore Boulevard.

The SGB consists of three aquifers that correspond with the sedimentary units within the basin: the surficial Aromas Sand (**Table 4.4-1**) (which includes the Dune Sands), a shallow aquifer, and a deep aquifer (HydroMetrics, 2009a). The surficial Aromas Sand Aquifer is unsaturated in many places and, therefore, not directly used to produce potable groundwater as its proximity to the Pacific Ocean makes the water saline to brackish. In 2012, the Sand City desalinization plant produced 208.37 acre-feet (af) of potable water from this saline to brackish unit (CalAm, 2013).

The shallow aquifer is in the unconfined Paso Robles Formation, (**Table 4.4-1**) and generally corresponds with the 400-Foot Aquifer to the north in the SVGB (HydroMetrics, 2009a). The thickness of the unit ranges from about 250 feet just north of the Ord Terrace Fault to over 500 feet in the central and northern portions of the project area. The Aromas Sand, Paso Robles, and Purisima Formations are not present in the project area south of the Seaside Fault. The deep aquifer is in the underlying confined Santa Margarita Sandstone (see **Table 4.4-1**) and the Purisima Formation, and generally corresponds with the deeper aquifers in the SVGB. Groundwater resources in the SGB derive from the Paso Robles Formation and Santa Margarita Sandstone; the Santa Margarita Sandstone transitions with the Purisima Formation in the northern area of the SGB. The proposed ASR injection/extraction wells would be located in the Northern Subbasin (see Appendix H Figure 2-3 rev), close to the boundary with the SVGB, and would be screened in the Santa Margarita Sandstone. The late Miocene[9] to Pliocene Santa Margarita Sandstone has surface outcrops east of the project area (CGS, 2002) and is up to 400 feet thick in places (Durbin, 2007). The proposed ASR injection/extraction wells would be drilled to about 1,000 feet below the ground surface and would be screened within the Santa Margarita Sandstone (see Figure 4.2-2, and Appendix H Figures 2-33 and 2-34).

The northern hydrologic boundary of the SGB is a flow divide as groundwater to the north of the divide flows to the SVGB and groundwater to the south flows to the SGB (HydroMetrics, 2013). The northern SGB boundary is a dynamic hydrologic divide, the location of which depends on seasonal rainfall patterns, longer-term climate variations, and pumping rates in the SVGB and the SGB. The boundary passes through the former Fort Ord military base south of the city of Marina. The northern boundaries of the shallow and the deep aquifers in the SGB are at different locations, as discussed in the Groundwater Flow and Occurrence subsection below. The approximate flow divide between the SVGB and the SGB is based on groundwater elevation data derived from sampling conducted in the Paso Robles Formation and generally correlates with the

[9] Miocene time was from 5.3 to 24 million years ago.

400-Foot Aquifer in the 180/400-Foot Aquifer Subbasin. The flow divide for the Santa Margarita Sandstone is different and appears to be located farther north due to pumping and aquifer characteristics within the Santa Margarita Sandstone and the Deep Aquifer. The basin boundary in the Dune Sands deposits is generally not defined because groundwater resources are typically not obtained from the Dune Sands within the Quaternary Alluvium, and because the Dune Sands are in direct hydraulic communication with the ocean and only saturated along the coastal margin (ICF Jones & Stokes, 2008). The other hydrologic boundaries of the SGB are the Sierra de Salinas/Santa Lucia Range to the south and east and the Pacific Ocean to the west.

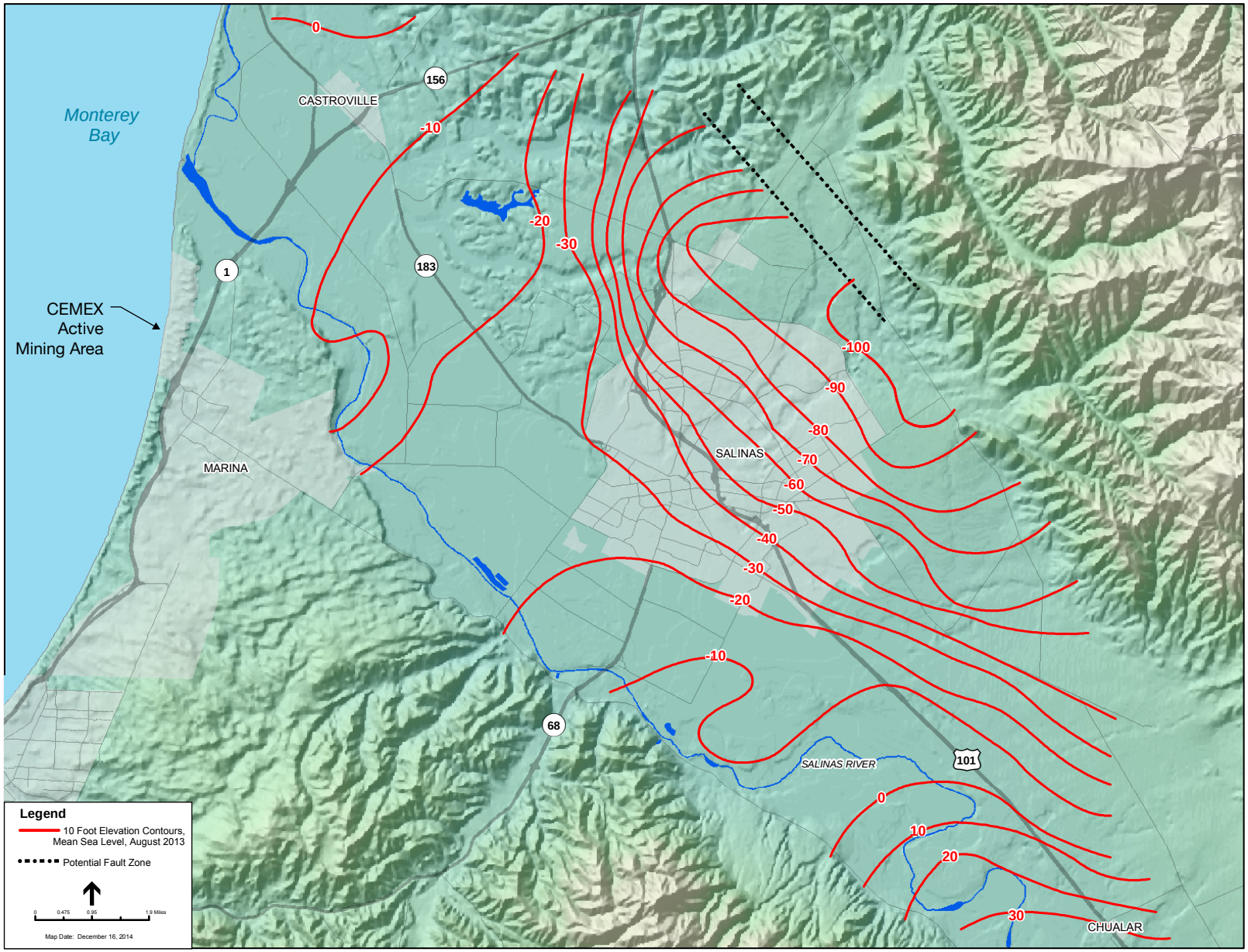
4.4.1.3 Groundwater Flow and Occurrence

A groundwater basin is much like a surface water reservoir because when water is removed from storage, the water level drops until the supply is replenished. The replenishment of the aquifer, referred to as recharge, occurs when water enters the aquifer either from the surface or from adjacent aquifers. Along the coast, the ocean can also recharge the aquifers and, in some areas, this causes the salty water from the ocean to mix with the fresh groundwater, causing seawater intrusion. This section summarizes groundwater elevations in the SVGB and SGB and describes groundwater flow patterns. The section also discusses how the groundwater inflow and outflow impact the balance – the amount of water entering a groundwater basin versus the amount of water leaving it – in the SVGB and SGB.

Groundwater Elevations and Flow Directions

Before extensive pumping began in the Salinas Valley, the regional groundwater flow was predominantly toward the coast from inland areas. Since the 1940s, hydrogeologic studies have shown a regional decline in the groundwater table, which has resulted in a sea-to-land groundwater gradient in some coastal areas. The MCWRA conducts a groundwater monitoring program throughout the Salinas Valley that for the fall 2013 monitoring event included 61 wells in the 180-Foot Aquifer and 103 wells in the 400-Foot Aquifer (Brown and Caldwell, 2015). Water-level data collected from wells in the study area indicate that the direction of groundwater flow is from the ocean to inland, as shown on **Figures 4.4-5** and **4.4-6**.

In the Pressure and East Side Areas, groundwater flows northwest from the upper reaches of the SVGB until it reaches the city of Salinas, at which point groundwater in both the 180-Foot and 400-Foot Aquifers flows towards a groundwater depression north of the city (MCWRA, 2014b). Along the coast, flow in both the 180-Foot and 400-Foot Aquifers is towards the east, or landward, and has resulted in seawater intrusion. At the proposed slant well locations, the Dune Sand and 180-FTE Aquifers along the coast are hydraulically connected to the Pacific Ocean, as verified by the saline chemistry of the groundwater samples collected from borings drilled along the coast. Groundwater flow directions in the Dune Sand Aquifer are complex due to the influence of the ocean and the Salinas River; however, Dune Sand Aquifer groundwater flow is indicated to be inland across the CEMEX site (Appendix E3, see TM2).



SOURCE: MCRWA, 2014a

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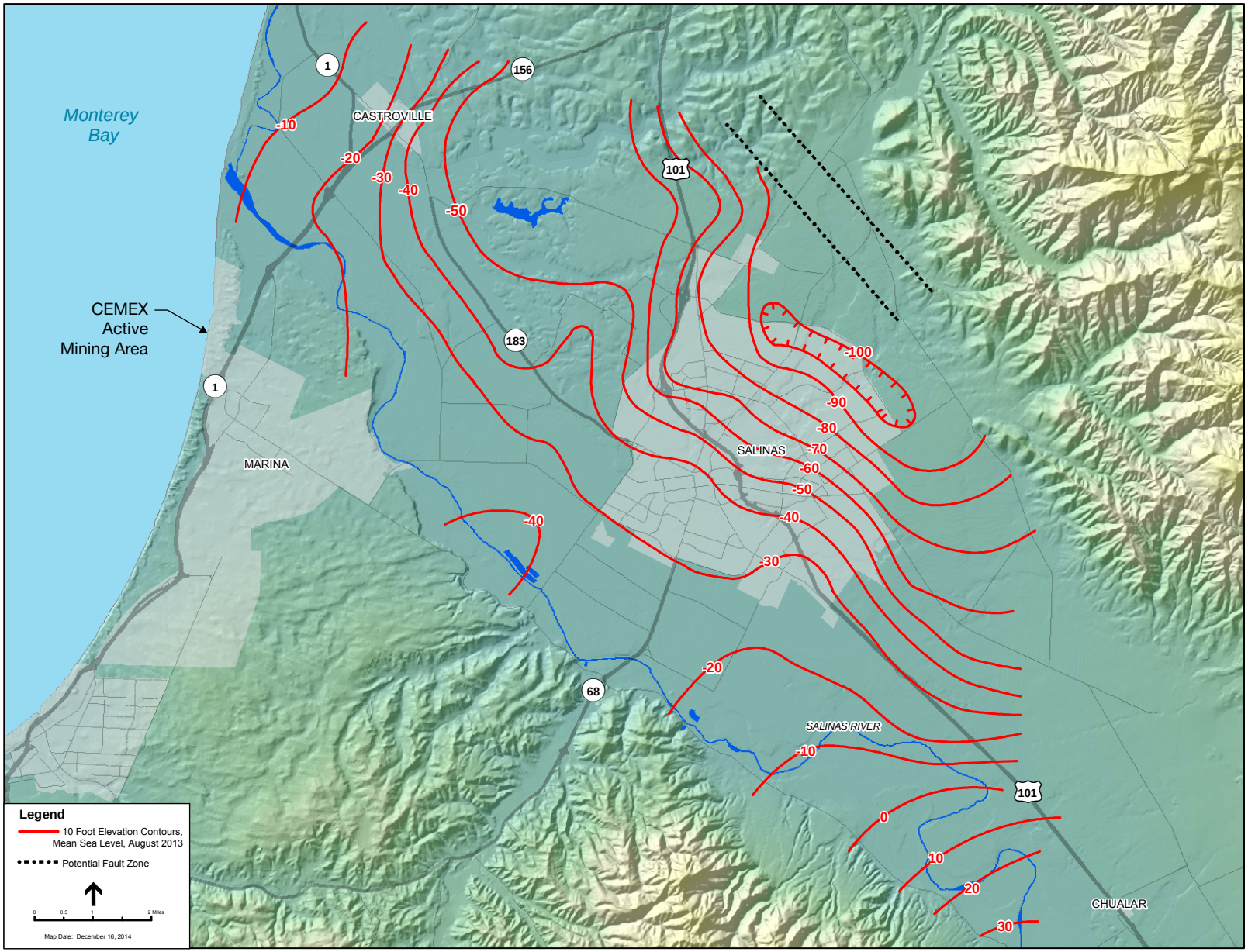
Figure 4.4-5

Salinas Valley Groundwater Basin - Groundwater Elevations in 180-Foot-Aquifer



SOURCE: MCRWA, 2014a

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Figure 4.4-6

Salinas Valley Groundwater Basin - Groundwater Elevations in 400-Foot-Aquifer

There is a groundwater divide along the north side of the SGB separating groundwater flow paths between the SGB and the SVGB in both the shallow and deep aquifers, as illustrated on **Figures 4.4-7** and **4.4-8**. The SGB has been divided into four subareas, with the northern two composing the Northern Subbasin and the southern two composing the Southern Subbasin. The proposed ASR injection/extraction wells would be located near the northern border of the Northern Subbasin. There is a groundwater depression in both the shallow and deep aquifers in the Northern Subbasin, resulting in some landward flow along the coast (HydroMetrics, 2015).

Basin Groundwater Balance

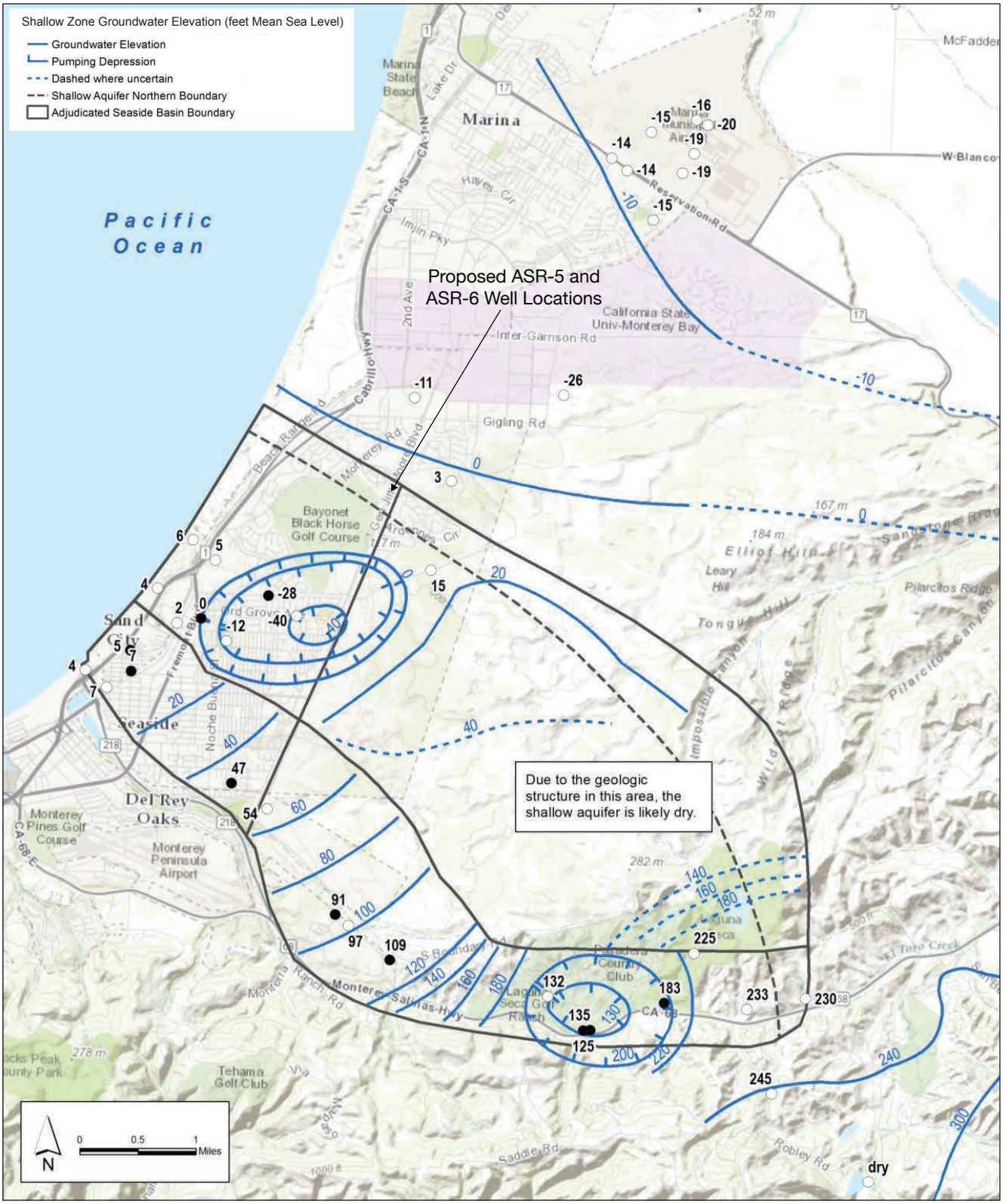
Groundwater balance is a term that describes the amount of water that enters the groundwater system versus the amount of water that leaves. Groundwater enters the system through recharge and can leave the system through groundwater pumping or natural discharge to surface streams or the ocean. Groundwater recharge occurs from the percolation of rainfall, infiltration from rivers and streams, underflow[10] originating in upper valley areas or as seawater intrusion, and agricultural irrigation and other return flow,[11] including enhanced groundwater recharge.[12] Whether an overlying formation can provide a pathway for recharge depends on numerous factors. For example, recharge from direct percolation depends on the absence of near-surface clay layers that can impede the downward flow of water, as is the case in areas where the Salinas Valley Aquitard restricts the downward migration of water (see **Figure 4.4-4**). Similarly, the amount of recharge from underflow depends on the hydrologic interconnections of the water-bearing formations, as well as any groundwater extraction occurring in upgradient areas within the basins. Historically, groundwater withdrawal within both the SVGB and the SGB has outpaced groundwater recharge of fresh water, resulting in overdraft[13] and seawater intrusion conditions (MCWRA, 2014a; Kennedy/Jenks, 2004; HydroMetrics, 2013).

Salinas Valley Groundwater Basin Balance

Inflows and Outflows

A quantitative accounting of the water balance within the SVGB was obtained from the recent study conducted for the Monterey County Resource Management Agency (MCRMA) (Brown and Caldwell, 2015). The study described the current state of the basin as well as the basin's water balance, averaged over the period from 1958 to 1994. The study estimated the overall basin inflow at 504,000 acre-feet per year (afy), of which about 50 percent occurs as stream recharge, 44 percent as deep percolation from agricultural return flows and precipitation, and 6 percent as subsurface inflow from adjacent groundwater basins. Outflow from the basin was estimated at 555,000 afy, of which about 90 percent was identified as groundwater pumping and the remainder

[10] Underflow refers to groundwater that is flowing through the subsurface aquifers from higher elevation or higher pressure areas to recharge downgradient water bearing sediments.
[11] Return flow is irrigation water that is applied to an area and which is not consumed in evaporation or transpiration and returns to a surface stream or aquifer.
[12] Enhanced recharge refers to projects intended to accelerate localized recharge such as infiltration basins. The Castroville Seawater Intrusion Project (CSIP) is an example of a recharge project.
[13] Groundwater overdraft occurs when the groundwater levels are lowered due to excessive pumping at a rate that is greater than natural recharge.



SOURCE: HydroMetrics, 2015

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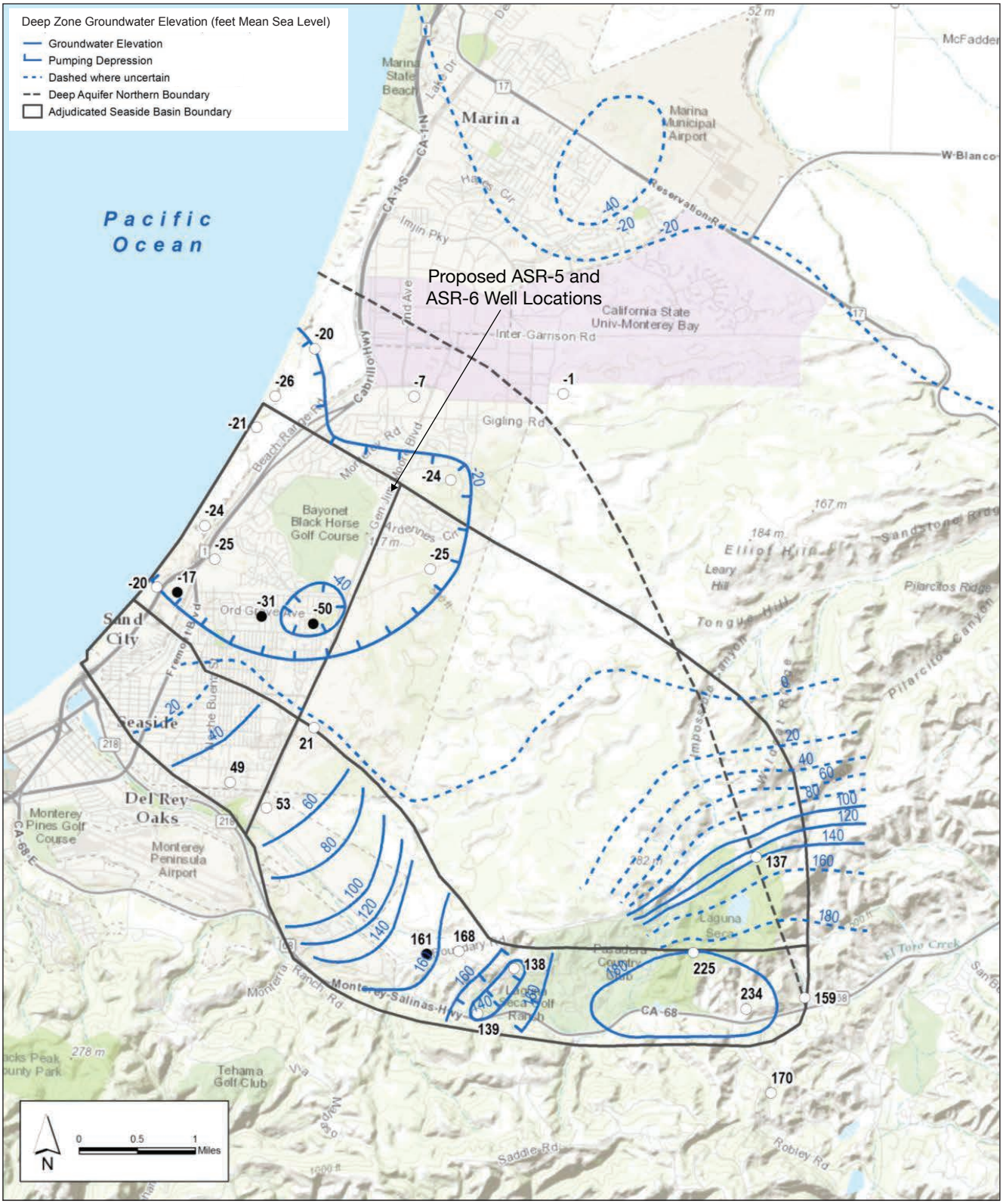
Figure 4.4-7

Groundwater Flow – Seaside Basin Shallow Zone, July/August 2015



SOURCE: HydroMetrics, 2015

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Figure 4.4-8

Groundwater Flow – Seaside Basin Deep Zone, July/August 2015

as evapotranspiration along riparian corridors.[14] The MCWRA estimated that in the lower basin portion of the Salinas Valley, recharge occurs by infiltration along the channel of the Salinas River (30 percent) and its tributaries (20 percent), irrigation return water (40 percent), and infiltration and precipitation over the valley floor, subsurface inflow, and seawater intrusion (10 percent) (MCWRA, 2006).

The estimated 555,000 afy of outflow subtracted from the estimated 504,000 afy of inflow results in basin overdraft. This imbalance is documented by seawater intrusion within the basin. Because of the current extent of seawater intrusion within the Pressure Area and the threat of additional seawater intrusion and other water quality deterioration in the SVGB, various programs have been designed to protect and restore the basin.

Groundwater Enhancement Programs in the SVGB

Numerous resource protection programs throughout the SVGB promote groundwater recharge. Specifically, the Salinas Valley Water Project (SVWP) has implemented, or has proposed to implement, various programs to stop seawater intrusion, to provide adequate water supplies to meet the current and future needs of the Salinas Valley, and to improve the hydrologic balance of the SVGB. These programs include modifications to the Nacimiento Spillway, the operation of Nacimiento and San Antonio Reservoirs, which are upstream on the Salinas River, and Salinas River recharge, conveyance, and diversion efforts. The two upstream reservoirs regulate stream flow to maximize recharge to groundwater. Lake San Antonio's capacity is 335,000 af and Lake Nacimiento's capacity is 377,900 af (MCWRA, 2007). Due to the extent of the confining layers that prevent surface infiltration within the subbasin, reservoir operators regulate flows in the Salinas River to maximize groundwater recharge before flows enter the 180/400-Foot Aquifer Subbasin boundary (RMC, 2006). The rate of recharge varies from year to year depending on the seasonal distribution of rainfall and the total annual precipitation. The operation of the reservoirs increases groundwater recharge by about 30,000 afy (RMC, 2003).

As part of the approved SVWP, changes in reservoir operations were implemented as SVWP Phase I and will continue to be made through Phase II of the SVWP to further enhance water conservation. An inflatable rubber dam diversion facility, operating on the Salinas River as part of the SVWP Phase I, captures excess river flows which are used to supplement the agricultural water supply by routing flows of 30 cubic feet per second to the Castroville Seawater Intrusion Project (CSIP). This rerouted water serves as an in-lieu groundwater supply in that it reduces agricultural pumping of groundwater. Phase II of the SVWP plans to increase the diversion at the rubber dam by 30,000 afy and to develop and implement other actions that would route 20,000 afy to the groundwater depression east of the city of Salinas.

[14] The MCWRA State of the Basin Study included the SGB within the Pressure Subarea (180-400 Foot Aquifer Subbasin).

The CSIP is a program operated in tandem with the Salinas Valley Reclamation Project (SVRP). The program has distributed recycled water through the Monterey Regional Water Pollution Control Agency (MRWPCA) service area since 1998 (MCWRA, 2006; MRWPCA, 2013). Tertiary-treated wastewater is obtained from the MRWPCA and delivered to agricultural users within the Pressure and East Side Subbasins of the SVGB, reducing groundwater extraction in those areas. This redistribution of water provides a form of in-lieu groundwater recharge by effectively reducing groundwater extraction in those areas of the basin within the CSIP delivery area. Over the past five years, the CSIP distribution system delivered between 11,400 and 15,470 afy of recycled water to farm lands in the CSIP delivery area (MRWPCA, 2017). The CSIP has a goal of increasing this volume to 22,000 afy in Phase II of the Program (MRWPCA, 2012).

Seaside Groundwater Basin Recharge

From 2003 to 2007, SGB recharge including both primary recharge components (percolation from rainfall and infiltration below stream beds) and secondary recharge components (irrigation return flows, leaks from water and sewer pipes, and septic system flows) averaged 3,570 afy (HydroMetrics, 2009a).

In addition to the basin's natural recharge, since 2006, the Monterey Peninsula Water Management District (MPWMD) has run an ASR program that actively enhances groundwater recharge **Figures 3-2** and **3-9** show the location of the existing and proposed ASR facilities, including the four existing ASR injection/extraction wells. Under the ASR program, Carmel River water is piped to the ASR wells on the former Fort Ord military base, where it is injected into the Santa Margarita Sandstone along the eastern side of the groundwater depression (shown on **Figure 4.4-8**), and is stored for later extraction and use, as needed. **Table 4.4-2** summarizes the injection volumes.

TABLE 4.4-2
SUMMARY OF ASR INJECTION VOLUMES (AF)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
2	175	168	160	351	411	12	60	182	1,111	1,117	131	295	0	215

NOTE: All injection volumes in acre-feet

SOURCE: Pueblo Water Resources, 2014, 2016

Groundwater Extraction

Groundwater is an important water supply source for municipal and agricultural use in Monterey County. Groundwater extraction is monitored closely and reported on an annual basis for both groundwater basins addressed in this EIR/EIS. **Table 4.4-3** summarizes groundwater extraction within the northern SVGB and SGB from 2008 to 2014.

TABLE 4.4-3
GROUNDWATER EXTRACTION SUMMARY FOR THE SALINAS VALLEY AND SEASIDE GROUNDWATER BASINS (AF)

	2008	2009	2010	2011	2012	2013	2014
Salinas Valley Groundwater Basin							
180/400 Foot Aquifer Subbasin	130,139	121,165	103,544	105,172	113,898	117,242	120,890
Eastside Subarea	108,696	98,988	91,300	89,052	95,543	97,622	105,644
Seaside Groundwater Basin							
Coastal Subareas	4,242.1	3,332.0	3,679.9	3,298.4	2,962.8	2,983.52	3,120.51
Laguna Seca Subarea	1,029.9	1,060.6	867.7	853.1	870.1	912.27	919.64

NOTES: All values in acre-feet

SOURCES: MCWRA, 2009, 2015; SGB Watermaster, 2008 through 2014.

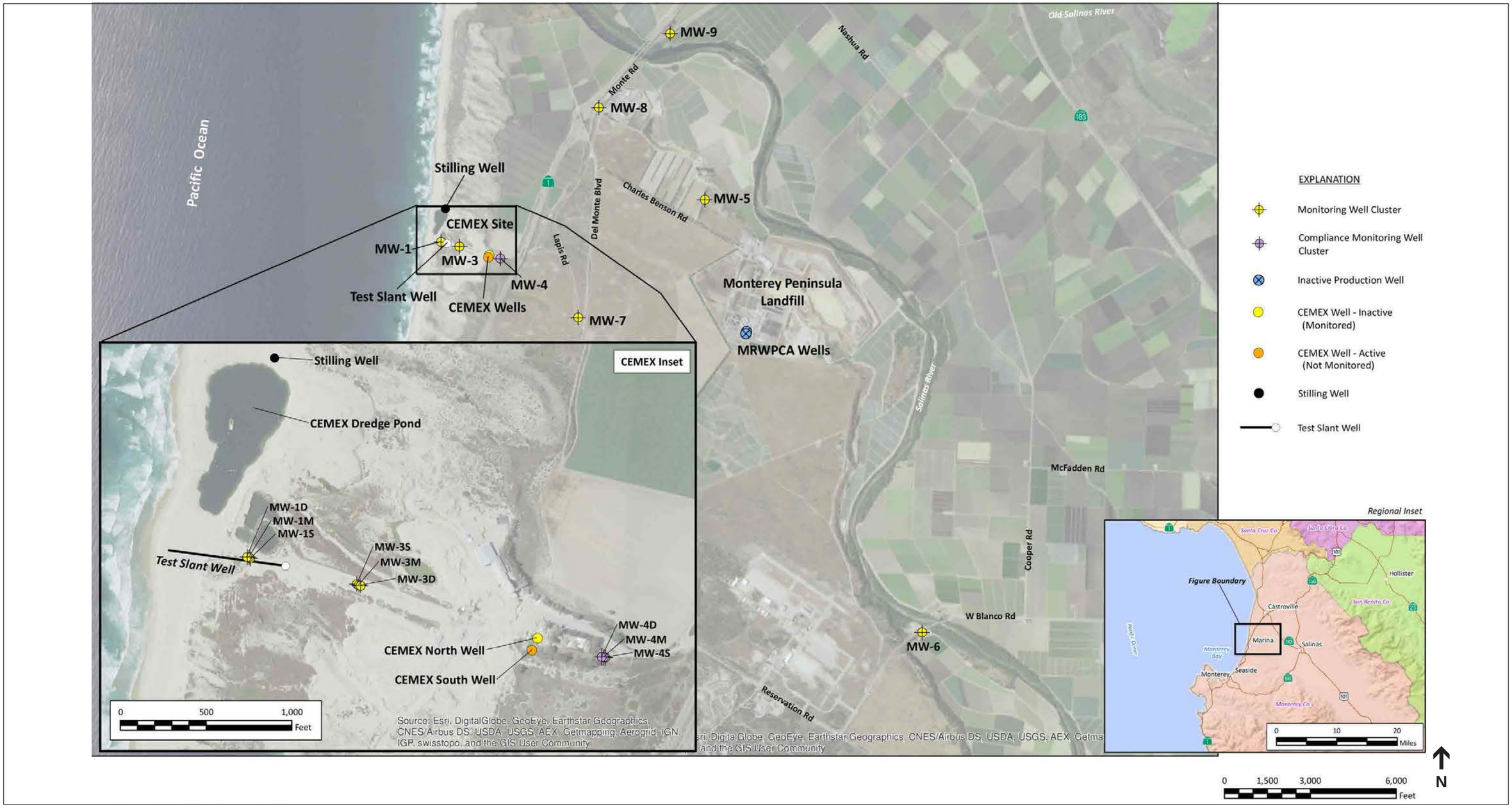
4.4.1.4 Groundwater Quality

Groundwater quality in the SVGB and SGB is influenced by natural geochemical properties and flow within the different hydrogeologic formations, groundwater pumping and induced seawater intrusion, land use practices, and accidental releases of contaminants into the environment. Additional water quality concerns for the SGB, and particularly the Santa Margarita Sandstone, include the presence of disinfection byproducts in the injected water and long-term changes in the geochemistry of the groundwater system. While this section of the EIR/EIS focuses on groundwater basin water quality, Section 4.7, Hazards and Hazardous Materials, provides additional information on areas with contaminated soil and shallow groundwater.

Groundwater Quality at the Proposed Slant Well Location

CalAm commissioned a subsurface soil and groundwater investigation to further understand the existing subsurface geologic units, aquifers, and water quality of the proposed slant well locations on the CEMEX site. The investigation included the installation of nested monitoring wells and the test slant well, subsurface lithologic logging, soil and groundwater sample analysis, aquifer testing, and aquifer conditions modeling (Geoscience, 2013c, 2016a, 2016b). **Figure 4.4-9** shows the locations of the nested monitoring wells. The nested wells have screen intervals to discretely sample the Dune Sand Aquifer, 180-FTE Aquifer, and the 400-Foot Aquifer depth intervals. The subsurface investigation provided information and data to better characterize the subsurface stratigraphy, aquifer conditions, how the aquifer responds to pumping, and groundwater chemistry at various depth intervals. Updated information on subsurface materials informed the design of the proposed slant wells, and data on groundwater flow characteristics and water chemistry facilitated further refinement of the groundwater models used to analyze project impacts. Refer to Appendix E3 for additional discussion.

The proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer from about 30 feet below msl to 200 feet below mean sea level (Geoscience, 2016b). As discussed above in Section 4.4.1.2, the Dune Sand Aquifer overlies the 180-FTE Aquifer with no aquitard/between the units. The test slant well is screened across both units and has been sampled



SOURCE: GeoScience, 2016

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Figure 4.4-9

Slant Well and Monitoring Well Locations

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on a weekly basis when operational. **Table 4.4-4** summarizes water quality results from the May 19, 2016, sampling event. The table also provides the chemical composition of seawater; as the comparison shows, the water quality from the test slant well closely resembles the average seawater TDS concentration found along the central coast of California.

TABLE 4.4-4
GROUNDWATER QUALITY OF TEST SLANT WELL

Chemical Parameter	Units	Test Slant Well	Central Coast Seawater Average
Bicarbonate as HCO_3^-	mg/L	139	103
Boron	mg/L	3.54	4.35
Bromide	mg/L	59.4	64.5
Calcium	mg/L	542	395
Chloride	mg/L	16,965	18,537
Iron	µg/L	ND	0.003
Magnesium	mg/L	1,180	1,230
Nitrate as NO_3	mg/L	3	0.67
pH (field)	pH units	7.07	7.5-8.5
Potassium	mg/L	287	382
Salinity	psu	29.4	33.69
Sodium	mg/L	9,357	10,329
Sulfate as SO_4	mg/L	2,353	2,598
Total Dissolved Solids (Lab)	mg/L	31,900	33,694

NOTES:
mg/l = milligrams per liter; µg/L = micrograms per liter
psu = practical salinity units; µmhos /cm = micromhos per centimeter

SOURCE: Geoscience, 2016a; Hem, 1989

Groundwater Quality in the Santa Margarita Sandstone and the Seaside Groundwater Basin

Santa Margarita Sandstone overlies the Monterey Formation, and sections of the unit are present beneath the project area near Seaside at depths of about 800 feet. The proposed project would install two additional ASR wells (ASR-5 and ASR-6 Wells) in the Santa Margarita Sandstone in the northern subarea of the Seaside Basin to increase the injection, storage and extraction capacity.

In 2007, the MPWMD commissioned a study that evaluated the potential geochemical effects of injecting treated drinking water into the Santa Margarita Sandstone (EcoEngineers, 2008). The water quality data for the Santa Margarita Sandstone came from that study. The study estimated the nature and magnitudes of potential dissolution and precipitation reactions, the potential for scaling or biofouling, and the post-injection concentrations of chemicals in the water as compared with drinking water standards. The study used Carmel River water treated to drinking water standards from the CalAm Begonia Iron Removal Plant and combined the treated water with rock material and native groundwater from the Santa Margarita Sandstone. After an 18-hour exposure

period, the water mixture (referred to in the study as leachate) was reanalyzed for water quality constituents and the concentrations were compared with California Primary and Secondary Maximum Contaminant Level (MCL) drinking water standards. **Table 4.4-5** summarizes the water chemistry of the initial treated water and the resulting leachates from two depth intervals. The results indicated that the leachate obtained from mixing treated water with the Santa Margarita Sandstone and its native water did not exceed drinking water standards and did not show significant differences in water quality.

Water Quality and the Existing ASR System

Pueblo Water Resources prepares annual Summary of Operations reports that document the ASR system's well performance and water quality. The ASR system discussions below draw on the water year 2015[15] monitoring activities unless otherwise cited (Pueblo Water Resources, 2016).

Annual injection operations have occurred at the ASR-1 Well since 2002, altering the groundwater quality in the local area from its pre-injection, naturally-occurring conditions. Consequently, making a clear distinction between native and non-native water quality is both complex and somewhat subjective. This change in native water quality, as confirmed by testing, was observed in distant wells such as Well PCA-E, which is located 6,200 feet west of the ASR injection/extraction wells. Well PCA-E is a monitoring well operated by the MPWMD and screened in the Santa Margarita Sandstone. For the 2015 water year, groundwater in Well PCA-E was estimated to contain about 30 percent injected potable water.

The ASR project has historically used the chloride ion to track the general mixing, dilution, and interaction between injected and native groundwater. Chloride is very stable and highly soluble and is present in both injected and native groundwater. Pueblo Water Resources continually monitors the response of the Santa Margarita Sandstone to the injection and extraction of treated water. The historical chloride concentration of the native groundwater within the Santa Margarita Sandstone has averaged approximately 120 to 130 mg/L in this area of the Seaside Basin. However, injecting treated water into the Santa Margarita Sandstone reduces chloride concentrations in the injection area. Chloride concentrations decreased to as low as 30 mg/l during the March 2015 sampling event, well below the average chloride concentration of 120 mg/L. As a result, repeated ASR injection, storage, and recovery cycles are expected to incrementally produce water that is similar in nature to the injected water, creating a buffer zone of mixed water that gradually increases over time.

Disinfection Byproducts

As part of the current ASR program, Carmel River water is treated by removing iron and manganese, disinfecting the water with sodium hypochlorite, and injecting the potable water into the Santa Margarita Sandstone (Pueblo Water Resources, 2014). The potable water undergoes a chlorination process to disinfect it of possible microbiological contamination prior to injection

[15] A water year is the 12-month period from October 1 of any given year through September 30 of the following year. The water year is designated by the calendar year in which it ends. That is, the water year that starts on October 1, 2014 and ends on September 30, 2015 is the 2015 water year.

TABLE 4.4-5
WATER CHEMISTRY RESULTS OF MIXING STUDY

Chemical Parameter	Treated Carmel River Water	Leachate 540-580 feet	Leachate 730-770 feet	California MCLs
Alkalinity as $CaCO_3$	129	130	128	NE
Aluminum	0.025	0.025	0.025	1 / 0.2 (Sec)
Ammonia Nitrogen	0.1	0.1	0.1	NE
Arsenic	ND (0.005)	ND (0.005)	ND (0.005)	0.010
Antimony	NR	ND (0.0005)	ND (0.0005)	0.006
Barium	0.056	0.039	0.043	1
Bromide	0.11	0.11	0.11	NE
Beryllium	NR	ND (0.0005)	ND (0.0005)	0.004
Cadmium	NR	ND (0.00025)	ND (0.00025)	0.005
Calcium	36	39	36	NE
Chloride	32	33	33	250 (Sec)
Dissolved Organic Carbon	1.4	1.6	3.4	NE
Chromium	NR	ND (0.0005)	ND (0.0005)	0.10
Cobalt	NR	ND (0.0005)	ND (0.0005)	NE
Dissolved Oxygen	7.43	nana	NA	NE
Electrical Conductivity	510	484	490	900 (Sec)
Fluoride	0.30	0.25	0.27	2
Iron	0.001	ND (0.02)	ND (0.02)	0.3 (Sec)
Lead	NR	ND (0.0005)	ND (0.0005)	0.015[a]
Magnesium	14	14	13	NE
Manganese	0.001	0.001	0.001	0.05 (Sec)
Mercury	NR	0.00017	0.00044	0.002
Molybdenum	NR	0.0031	0.0034	NE
Nickel	NR	0.0011	0.0014	0.10
Nitrate/Nitrite as NO_3	0.05	0.12	0.47	10
Oxygen Reduction Potential (ORP)	749	550	544	NE
pe (= ORP/59.16)	12.66	9.30	9.20	NE
Total Phosphorous	0.34	0.30	0.34	NE
Potassium	2.9	2.9	3.4	NE
pH	7.70	6.71	6.28	NE
Selenium	0.0017	0.0018	0.0021	0.05
Silicon	8.41	8.88	8.41	NE
Silver	NR	ND (0.0005)	ND (0.0005)	0.10[a]
Sodium	42	40	42	NE
Strontium	0.200	0.250	0.250	NE
Sulfate as SO_4	84.9	85.4	79.4	250 (Sec)
Thallium	NR	ND (0.0005)	ND (0.0005)	0.002
Uranium	0.0025	0.0025	0.0060	0.03
Vanadium	NR	0.00073	0.00086	0.05[a]
Zinc	0.210	0.034	0.84	0.5 (Sec)

NOTES:

MCLs = Primary Maximum Contaminant Levels also referred to as Primary Drinking Water Standards; Sec = Secondary MCLs
All concentrations in milligrams per liter (mg/L) except conductivity (micromhos per centimeter), ORP (millivolts), and pH (pH units)
NA = not analyzed ND = not detected above reporting limit NE = not established NR = not reported

[a] Lead has a regulatory action level, not an MCL

SOURCE: EcoEngineers, 2008.

into the Santa Margarita Sandstone. This chlorination process is known to produce disinfection byproducts (DBPs), including trihalomethanes (THMs)[16] and haloacetic acids (HAAs)[17] that have regulatory limits for drinking water purposes.

While it has been successfully demonstrated at the Seaside Basin ASR site, as well as at other ASR sites in California and elsewhere, that successive injection/storage/recovery cycles can yield fully potable water upon recovery, issues regarding the fate and stability of disinfection byproducts in the subsurface can also affect the potability of the recovered water. The monitoring results evaluated by Pueblo Water Resources indicate that the THMs do increase upon initial injection of treated surface water into the Santa Margarita Sandstone, but that concentrations steadily decrease with time. Groundwater monitoring results indicate that, over the course of that time, the pH has remained neutral (between 6 and 8), indicating relatively stable geochemical conditions. The DBP data collected during the 2015 water year indicated that THMs peaked approximately 30 to 90 days after injection and storage, followed by a gradual decline. After approximately 150 to 210 days of storage, THMs in four out of the five wells monitored had degraded to below the initial injection levels. Although the concentration of THMs in the ASR-3 well had not yet reached the initial injection level as of 210 days, the concentration was exhibiting a continuing downward trend, suggesting the initial injection concentration would be reached within about 240 days[18]. HAAs degraded to below reporting limits by 90 to 100 days. More importantly, throughout the 2015 water year, after the initial increase following injection, THMs were below the MCL of 80 micrograms per liter and HAAs were below the MCL of 60 micrograms per liter in all five wells monitored (Pueblo Water Resources, 2016).

During the testing of the ASR project described above, studies found that levels of hydrogen sulfide in the recovered water were much lower than the concentrations in natural groundwater prior to injection, indicating a lasting and significant improvement of water quality during subsurface water storage.[19] This suggests that conditioning the aquifer may be an ancillary benefit of the ASR in the SGB. That is, ASR may reduce hydrogen sulfide in the extracted groundwater, which would then reduce the amount of chemical treatment that needs to be performed at the Santa Margarita Chemical Building. According to a report that summarized the

16 THMs are a group of four chemicals that are formed along with other disinfection byproducts when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The THMs are chloroform, bromodichloromethane, dibromochloromethane, and bromoform. The USEPA has published the Stage 1 Disinfectants/Disinfection Byproducts Rule to regulate total THMs at a maximum allowable annual average level of 80 parts per billion (USEPA, 2012).

17 HAAs are a group of chemicals that are formed along with other disinfection byproducts when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The regulated HAAs are monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. The USEPA has published the Stage 1 Disinfectants/Disinfection Byproducts Rule to regulate HAAs at 60 parts per billion annual average (USEPA, 2012).

18 Pueblo Water Resources describes the rates and trends as "approximate" and "typical" because the actual rates and trends for an individual well during any one of the monitoring events vary and may be slightly outside of the typical trends observed since the evaluations began in 2001. Considering that the concentrations are below MCLs and the trends are always downward back to the initial injection levels, this one outlier is not considered to be significant.

19 The hydrogen sulfide reduction is likely due to the effects of the injected chlorine residual and dissolved oxygen content. These oxidizers react in the subsurface to stifle anaerobic bioactivity, which normally produces hydrogen sulfide. As the aquifer environment is altered and becomes inhospitable to anaerobes, hydrogen sulfide generation declines. This effect has also been observed in ASR wells in similar coastal aquifers in Santa Barbara, Alameda, and Ventura Counties.

pilot study results for the ASR project, the ozone treatment plant may become unnecessary with continued ASR operations over time (Padre Associates, 2004).

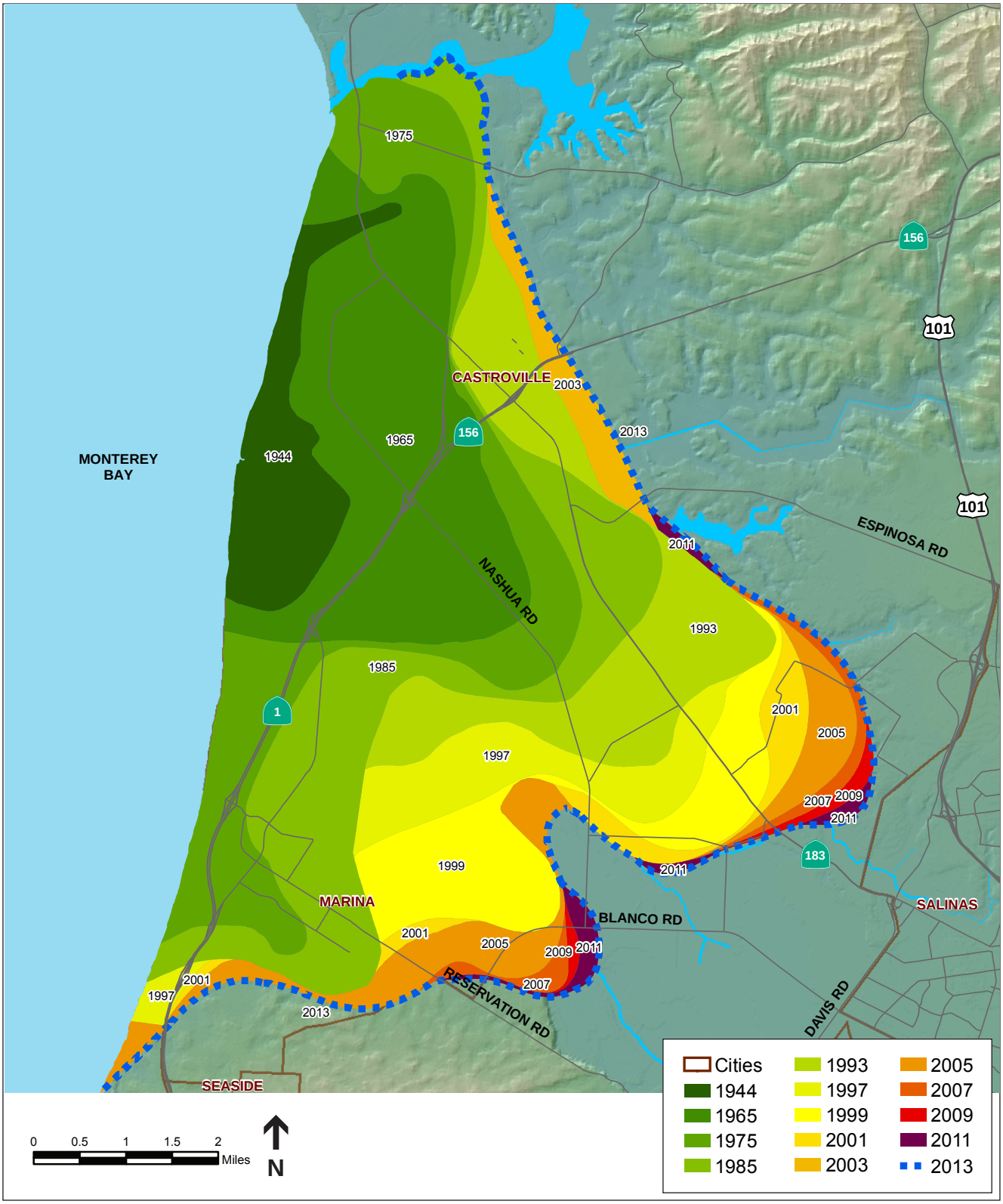
Seawater Intrusion

Seawater intrusion occurs when ocean water enters fresh groundwater aquifers at the coast and migrates inland. The salty seawater combines with the fresh groundwater to create a mixture referred to as brackish water. The current, standard practice for monitoring the inland advance of seawater intrusion involves TDS and/or chloride analysis of groundwater from a select group of monitoring wells that intersect the seawater-intruded aquifers. The concentration data are used to identify the areas of the aquifer intruded by seawater and to plot the leading edge of the inland seawater intrusion front. The more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented. Regular annual monitoring data can be used to estimate the rate at which seawater is migrating inland. The MCWRA has been conducting seawater intrusion monitoring in the 180-Foot and 400 Foot Aquifers for many years using several groundwater wells in the western end of the Salinas Valley. **Figures 4.4-10** and **4.4-11** illustrate the seawater intrusion areas as of 2015 within the 180-Foot and 400-Foot Aquifers, respectively, based on the concentrations of chloride in wells sampled by the MCWRA (MCWRA, 2015); the extent of seawater intrusion based on the concentrations of TDS or chloride would be very similar, if not identical. Brackish groundwater can contain TDS concentrations ranging from that of seawater (about 33,500 mg/L) down to 500 mg/L near the leading (inland) edge of the inland seawater intrusion front (chloride concentrations would range from 19,000 mg/L down to 500 mg/L).[20] The MCWRA defines the leading edge of inland seawater intrusion as groundwater containing chloride at 500 mg/L or more. The California Secondary Drinking Water Standard was amended in 2006 to include a Maximum Recommended Level for TDS in drinking water of 500 mg/L and chloride at 250 mg/L (Cal. Code Regs., Title 22, § 64449).

Salinas Valley Groundwater Basin

The SVGB is hydrologically connected to Monterey Bay by ocean outcrops of the 180-Foot and 400-Foot Aquifers a few miles offshore (Eittreim, et. al., 2000; Greene, 1970). The ocean outcrops provide a constant source both of pressure and of direct recharge of seawater and facilitate the recharge of seawater into those aquifers along the coast when groundwater extraction exceeds natural recharge. As a result, a landward groundwater gradient has developed along the coast and induced groundwater recharge from the ocean since the mid-20th century. Seawater intrusion in the SVGB was first documented in 1946 (DWR, 1946). The overdraft condition has degraded groundwater quality along the coast within the SVGB. Before wells extracted water from the Salinas Valley, there was a balance between the seawater in the ocean and the groundwater in the inland aquifers. Surface water within the watershed would infiltrate

[20] For the purposes of the EIR/EIS: seawater is defined as water that originated in the ocean, identified as containing 33,500 mg/L TDS, which represents current salinity levels in Monterey Bay; brackish water is a combination of seawater and fresh water with TDS concentrations between 500 mg/L and 33,500 mg/L; and fresh water is that which originated in a groundwater basin through precipitation or rivers and streams and contains TDS concentrations of less than 500 mg/L.



SOURCE: MCWRA, 2015b

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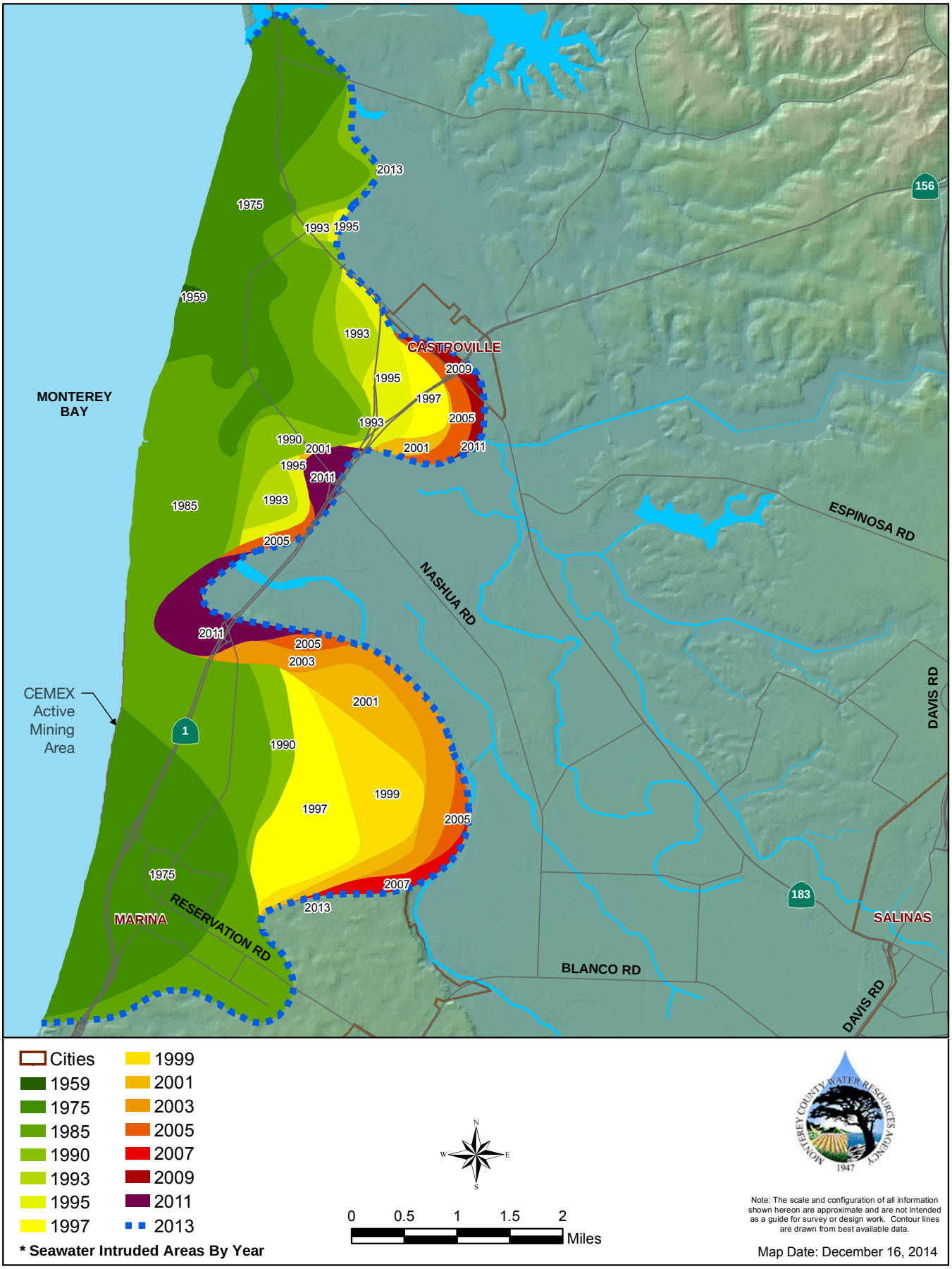
Figure 4.4-10

Historic Seawater Intrusion in the Salinas Valley Groundwater Basin - 180-Foot Aquifer



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SOURCE: MCWRA, 2014b

Figure 4.4-11

Historic Seawater Intrusion in the Salinas Valley Groundwater Basin - 400-Foot Aquifer

down into the aquifer, but it would be at a higher elevation than the surface of the ocean. Gravity requires that the difference in elevation forces the fresh water in the inland areas to migrate down and press back against the seawater. With the development of the Salinas Valley, water supply wells were installed and groundwater was extracted from the aquifer. This action reduced the weight of water on the inland side of the seawater intrusion front, creating a pressure imbalance, and resulted in the landward migration of the intrusion front to its current location.

The 2015 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, as inferred from chloride concentrations greater than 500 mg/L. The seawater intrusion degraded groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001). Increased degradation of coastal groundwater aquifers led to restrictions on drilling groundwater wells and extracting groundwater from areas affected by seawater intrusion, as discussed in Section 4.4.2, Regulatory Framework. Such restrictions are intended to reduce further inland migration of seawater and reduce the landward advance of the seawater intrusion front.

CEMEX Area

The degree of seawater intrusion varies depending on the distance from the coast and the depth of the aquifer. As discussed in detail in Section 4.4.4 below, and **Appendix E3**, CalAm installed several monitoring well clusters for the MPWSP to investigate groundwater flow and quality in the Dune Sand Aquifer, the 180-FTE aquifer and the 400-Foot Aquifer at and inland of the CEMEX site. CalAm well clusters MW-1, MW-3, MW-4, located at CEMEX, as shown on **Figure 4.4-9**, were tested in 2015 and contained TDS concentrations ranging from 11,900 mg/L to 32,600 mg/L with chloride ranging from 5,497 mg/L to 16,069 mg/L. CalAm monitoring well clusters farther afield of the CEMEX site (MW-7, MW-8, and MW-9) contained TDS concentrations ranging from 29,000 mg/L (MW-9M) to 366 mg/L (MW-9D) with chloride ranging between 16,519 mg/L to 74 mg/L in the same wells.[21] Monitoring well clusters MW-5 and MW-6, located the farthest distance from the CEMEX site, contained TDS concentration ranging from 2,616 mg/L (MW-5D) to 608 mg/L (MW-6S) with chloride ranging from 57 mg/L to 1,168 mg/L. These data indicate that the CEMEX site and areas inland have been intruded, to varying degrees, with seawater. As discussed in **Appendix E3**, the range of TDS/chloride concentrations indicate that certain areas are undergoing different stages of seawater intrusion, which has to do with an ion exchange between the soil and the incoming seawater, and the shape of the seawater intrusion wedge (seawater intrusion occurs in a wedge shape where, because of higher density seawater, the leading edge is in the lower portion of the aquifer). As discussed in detail in **Appendix E3**, Section 3.1.7.2, calcium and chloride in the groundwater concentrations can be used to evaluate the stages of seawater intrusion. For example, elevated sodium and chloride in MPWSP monitoring wells MW-1S, MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8S, MW-8M, MW-9S, and MW-9M indicate later stages of seawater intrusion, while calcium and chloride concentrations in the monitoring wells MW-6M(L), MW-7S, and MW-7M

[21] The low TDS encountered in MW-9D may represent a density differences in the upper part of the aquifer at this location or not being proximate to local pumping stresses (HWG, 2017). However, this is consistent with the seawater intrusion mapping conducted by MCWRA for the 400-Foot Aquifer in this location, as shown on Figure 4.4-11

is typical of early to middle stage seawater intrusion. As another example, the relatively low to moderate salinity reported at well MW-6M (966 mg/L TDS and 167 mg/L chloride) is likely due to the well's location towards the leading edge of seawater intrusion in the 180-Foot Aquifer and the shape of the seawater intrusion wedge causing more saline water to reside in the lower portion of aquifer.

Seaside Groundwater Basin

Groundwater pumping from aquifers in the SGB has exceeded recharge and freshwater inflows that caused pumping depressions near the coast, as shown on the groundwater flow maps for both the shallow aquifer zone (see **Figure 4.4-7**) and the deep aquifer zone (see **Figure 4.4-8**) (HydroMetrics, 2015). In addition, seawater intrusion has occurred just north of the SGB in the adjacent 180/400 Foot Aquifer Subbasin of the SVGB, as discussed above. The boundary between these two basins is a groundwater divide that migrates in response to variations in natural recharge and pumping on either side of the divide. HydroMetrics noted increased chloride concentrations in two wells along the coast, although the concentrations have not yet exceeded drinking water standards. These conditions all suggest that the SGB could be vulnerable to seawater intrusion.

Recent Geophysical Studies of Seawater Intrusion in the SVGB

Electrical Resistivity Tomography (ERT) is a geophysical survey method that measures electrical resistance through a material to create images of subsurface geologic and geochemical features and conditions. Electrical resistivity imaging uses a series of sensors (referred to as electrodes) that get placed along a transect line on the ground surface. A direct electrical current is applied to the electrodes and the resulting electrical field is measured along the ground using a second pair of electrodes, referred to as dipoles. The decrease in electrical current detected by the receiving dipoles is recorded and the resistivity is calculated based on the measured voltage, the distance between the electrodes, and the electric current flowing between electrodes. Computers then process the data to represent a two-dimensional cross-sectional image of the subsurface. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that represent variations in electrical resistivity, which can be interpreted as variations in the content of seawater, fresh water, or varying intermediate concentrations of brackish water (i.e., water with a salinity in between seawater and fresh water).

Stanford Professor Dr. Rosemary Knight's graduate and post-graduate students and staff have completed two recent ERT surveys along the beach of Monterey Bay near the proposed project site. The first study was conducted in 2011-12 and included one four-mile long line along the beach from Seaside to Marina (Pidlisecky et al., 2016), south of the location of the proposed slant wells. This pilot study was intended to demonstrate the viability of using large-offset ERT to image the distribution of subsurface freshwater and saltwater over a large area and gain insight into the distribution and geologic controls of seawater intrusion in the Monterey Bay region. In 2014-15, a second, more extensive ERT study was conducted along a 25-mile transect of Monterey Bay coastline (Goebel et al., 2017), extending from the Santa Cruz Mid-County Basin in the north, through a portion of the Pajaro Valley Groundwater Basin as well as a portion of the

Salinas Valley Groundwater Basin, to the Seaside Basin in the south.[22] The purpose of that survey was to map the salinity of groundwater and further delineate the location and extent of seawater intrusion. The study determined that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of about 500 feet in the Seaside Basin Water Master (SBWM) Monitoring Wells SBWM-1 thru SBWM-4 and supported the understanding that the deeper aquifers in the Seaside Basin have not yet been affected by seawater intrusion.

In May 2017, Dr. Knight, in conjunction with MCWD, conducted a third geophysical survey of the coastal area of the SVGB near Marina using airborne electromagnetics (AEM) (Stanford AEM study, Gottschalk and Knight, 2017, see Section 8.5.2). This survey extended inland east from the Monterey Bay to Highway 183, and north to Soquel, including portions of the Pajaro Valley and Santa Cruz Mid County groundwater basins. The survey used an antenna suspended from a helicopter to generate a magnetic field, which was detected by the receiver. The received signal was then converted to resistivity data and that data was inverted to produce output like that obtained from ERT but can be viewed as a 3-dimensional image. The Stanford AEM study data relied on subsurface information provided by geophysical borehole logs from monitoring wells drilled by CalAm in 2015 as part of the MPWSP.

The HWG overlaid the known regional hydrostratigraphy on the AEM cross sectional profile generated by the Stanford AEM study to show the perched and regional water tables (see **Appendix E3**, Section 3.1.8). The overlay showed consistency between MPWSP monitoring well data and the hydrogeologic conceptual model developed by the HWG. In addition, HWG modified the AEM resistivity profile to more correctly illustrate the distribution of water quality in the aquifers using the same control points but using known groundwater conductivity measured in the monitoring wells during May 2017. The results showed a distribution of groundwater chemistry that is consistent with the findings of the HWG hydrogeologic investigation and generally consistent with the salinity mapping for the 180-Foot and 400-Foot Aquifers published by the MCWRA. The Stanford study also provides data to help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area.

Regional Sources of Groundwater Contamination

Former industrial, commercial, and military activities in the region have resulted in soil and groundwater contamination from spills, leaking underground tanks, unlined chemical disposal sites, and inadvertent disposal of chemicals. In particular, groundwater in the aquifers located beneath the former Fort Ord military base, within two miles southeast of the proposed slant well locations at the CEMEX sand facility, are contaminated with volatile organic compounds, mostly trichloroethene (TCE) and carbon tetrachloride. Section 4.7, Hazards and Hazardous Materials, discusses these areas of contamination (see **Figures 4.7-1** and **4.7-2** for the locations of known plumes in the region). The closest of these contaminant plumes to the proposed slant wells,

[22] In both the 2011 and 2014 ERT studies, the Dr. Knight's team could not gain access to the beach within the CEMEX property and thus a data gap exists in the resistivity profiles at the CEMEX property for both studies.

known as the OUCTP A-Aquifer Plume and the OUCTP Upper 180-Foot Aquifer Plume, are present in the indicated aquifers of the SVGB in the vicinity of Reservation Road, east of Del Monte Boulevard in Marina. These plumes have undergone considerable investigation, source removal, and remedial action, and the extent of contamination and constituent concentrations have decreased over time.

4.4.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, regulations, and guidelines (referred to generally as "regulatory requirements") relevant to groundwater resources. A brief summary of each is provided, along with a finding regarding the project's consistency with those regulatory requirements. The consistency analysis is based on the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to the specific impact discussion in Section 4.5.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.5.5 identifies feasible mitigation that would resolve or minimize the potential inconsistency.

Many of the regulations described in Section 4.3, Surface Water Hydrology and Water Quality, also apply to groundwater resources, including the Porter-Cologne Water Quality Control Act and the *Water Quality Control Plan for the Central Coastal Basin* (Basin Plan). Additional information on the Basin Plan for the Central Coast Regional Water Quality Control Board (RWQCB), as it applies to groundwater resources, is provided below.

4.4.2.1 Federal

Federal Antidegradation Policy

Section 303 of the Clean Water Act (CWA) (33 U.S.C. § 1313) requires that states adopt water quality standards for waters of the United States within their applicable jurisdiction. Such water quality standards must include, at a minimum, (1) designated uses for all waterbodies within their jurisdiction, (2) water quality criteria necessary to protect the most sensitive of the uses, and (3) antidegradation provisions. Antidegradation policies and implementing procedures must be consistent with the regulations in 40 C.F.R. § 131.12. Antidegradation is an important tool that states use in meeting the CWA requirement that water quality standards protect public health and welfare, enhance water quality, and meet the objective of the Act to "restore and maintain the chemical, physical and biological integrity" of the nation's waters. The CWA requires that states adopt antidegradation policies and identify implementation methods to provide three levels of water quality protection to maintain and protect (1) existing water uses and the level of water quality, (2) high quality waters, and (3) outstanding national resource waters. The MPWSP would comply with the Federal Antidegradation Policy through the antidegradation policy implemented by California State Water Resources Control Board Resolution 68-18, as described below.

4.4.2.2 State

State Water Resources Control Board (SWRCB) Resolution 68-16 Anti-Degradation Policy

In 1968, the State Water Resources Control Board adopted an anti-degradation policy aimed at maintaining the high quality of waters in California through the issuance of Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality Waters in California"). The policy prohibits actions that tend to degrade the quality of surface and groundwater. The Regional Water Quality Control Boards oversee this policy (SWRCB, 1968). The anti-degradation policy states that:

- Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies.

- Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters must meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

SWRCB has interpreted Resolution No. 68-16 to incorporate the federal anti-degradation policy, which applies if a discharge that began after November 28, 1975 would lower existing surface and groundwater quality.

This policy would apply to the treated water to be injected into the proposed ASR injection/ extraction wells because this element would be required to comply with the state resolution maintaining the existing water quality. The RWQCB currently regulates the ASR operation under Permit 20808C, which monitors water quality of the ASR injection.[23] Through compliance with Permit 2080C, water quality would be maintained and would, therefore, be consistent with SWRCB State Water Board Resolution 68-16.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents established for the reasonable protection of beneficial uses. The SWRCB administers water rights, water pollution control, and water quality functions throughout California, while the Central Coast RWQCB conducts planning, permitting, and enforcement activities. The Porter-Cologne Act requires the RWQCB to establish a regional

[23] The RWQCB regulates ASR operations throughout California under SWRCB Order 2012-0010 General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Water into Groundwater. However, the MPWMD operates the Seaside Basin ASR wells under Permit 20808C, which predates the statewide order.

Basin Plan with water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per federal regulations. Therefore, the regional basin plans form the regulatory references for meeting state and federal requirements for water quality control. Changes in water quality are allowed if the change is consistent with the maximum beneficial use of the State waters, it does not unreasonably affect the present or anticipated beneficial uses, and it does not result in water quality less than that prescribed in the water quality control plans. The basin plan regulations also apply to groundwater. The Basin Plan for this location is discussed below in the local regulations subsection.

This Act would apply to the ASR injection/extraction wells because they would have potential to affect water quality and beneficial uses in the Basin through injection of desalinated water. Thus, the proposed project would be required to comply with the Basin Plan water quality objectives established by the Central Coast RWQCB to protect the beneficial uses of the groundwater. This is discussed in the Local Regulations subsection below. Through compliance with the Basin Plan's water quality requirements, the proposed project would be consistent with the Act.

Central Coast Regional Water Quality Control Plan (Basin Plan)

Under the Porter-Cologne Water Quality Control Act, the RWQCB is responsible for authorizing and regulating activities that may discharge wastes to surface water or groundwater resources. The California Water Code (Section 13240) requires the RWQCB to prepare and adopt water quality control plans, or Basin Plans. According to Section 13050 of the California Water Code, Basin Plans designate the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a plan to meet the objectives. One significant difference between the State and Federal programs is that California's Basin Plan established standards for groundwater in addition to surface water.

The Basin Plan for the Central Coast, originally adopted in 1971 and last amended in 2011, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Central Coast of California. The listed beneficial uses for groundwater resources are

- Agricultural water supply (AGR)
- Municipal and domestic water supply (MUN)
- Industrial use (IND)

General objectives are established for taste, odor, and radioactivity; for municipal and domestic supply, additional general objectives are established for bacteria, organic chemicals, and various chemical constituents; and for agricultural supply, general objectives follow the guidelines for water quality from the University of California Agricultural Extension Service. In addition, agriculture supply must be handled such that no controllable water quality factor shall degrade the quality of any groundwater resource or adversely affect long-term soil productivity.

The RWQCB has established water quality objectives for selected groundwater resources; these objectives serve as a basis for evaluating water quality management in the basin. Specific water

quality objectives have been defined for the 180-Foot Aquifer and 400-Foot Aquifer for the SVGB, as listed in **Table 4.4-6** below.

TABLE 4.4-6
GROUNDWATER QUALITY OBJECTIVES

Aquifer	Total Dissolved Solids	Chloride	Sulfate	Boron	Sodium	Nitrate as Nitrogen
180-Foot	1500	250	600	0.5	250	1
400-Foot	400	50	100	0.2	50	1

NOTES: All concentration are in milligrams per liter (mg/L)

SOURCE: RWQCB, 2011b.

The Basin Plan would apply to the treated water to be injected into the proposed ASR injection/extraction wells because it could affect the quality and beneficial uses of the Basin's groundwater. Accordingly, these project elements would be subject to regular water quality monitoring by the RWQCB. This water quality monitoring would ensure that any deviation from the established objectives is identified and corrected pursuant to Basin Plan requirements.

Central Coast Regional Water Quality Control Board – Resolution R3-2008-0010, General Waiver for Specific Types of Discharges

In conjunction with the SWRCB Order No. 2003-0003-DWQ, described above, Resolution No. R3-2008-0010 waives the submittal of Reports of Waste Discharge and the issuance of Waste Discharge Requirements for certain low volume discharges with minimal pollutant concentrations. The order includes well development water, monitoring well purge water, and boring waste discharge. This order would allow the listed wastes to be discharged directly to the land surface as long as the discharge is implemented in a controlled manner that does not cause erosion or other adverse effects. The RWQCB Regional Water Board's Resolution includes the injection and extraction of treated groundwater, such as with the ASR system, as long as the RWQCB Regional Water Board reviews and approves of the system design and operation. The anticipated volumes and quality of well development water, monitoring well purge water, and soil boring waste discharge generated by the proposed project would comply with the requirements of this resolution, thereby ensuring project consistency.

Division of Water Rights Permit 20808 – Amended Permit for Diversion and Use of Water

In 1995, the State Water Resources Control Board (SWRCB) issued Permit 20808 to the Monterey Peninsula Water Management District (MPWMD) for the proposed Los Padres Reservoir project. The permit was later split and modified several times, and now addresses additional requirements for the diversion of surface and under stream flow from the Carmel River, protection of the Carmel Lagoon and fish habitat, and the injection and storage of Carmel River water in the Seaside Basin using the ASR injection/extraction wells. The MPWMD and CalAm now jointly own Permits 20808A and 20808C, which total 5,326 acre feet per year. The ASR project that diverts excess water off of the Carmel River operates under Permits 20808A and 20808C.

A requirement to limit recovered water to 1,500 acre feet in any given year is associated with a side agreement between MPWMD, CalAm, and the California Department of Fish and Wildlife (CDFW) concerning recovery of water injected into the Seaside Basin under Permit 20808A. The Quarterly Water Budget Group which was set up to determine how the CalAm system should be operated, can decide to extract less. This agreement does not include water recovered under Permit 20808C. However, Condition 7 in the Cease and Desist Order (CDO) (see Section 2.2.3, State Water Board Order 95-10 and Cease and Desist Order 2016-0016, for discussion) requires that all water injected under either Permit 20808A or 20808C be recovered in the same year, unless the CDFW and the National Marine Fisheries Service (NMFS) agree to an alternate recovery plan. Under the CDO, the first 600 acre feet per year of water diverted to ASR in any water year must go toward offsetting Carmel River diversions in the water year it is diverted.

These requirements and others placed by the SWRCB on ASR recovery will be lifted once the CDO is met; thus, these limits will not be an operational or budgetary limit after replacement supplies are operational and CalAm has reduced its Carmel River diversions to authorized amounts.

MPWMD owns Permit 20808B for 18,674 acre feet per year, which is referred to as the "remainder" permit and is associated with a project to build a new main stem reservoir on the Carmel River downstream of the existing Los Padres Dam. That permit has a different set of instream flow requirements that were fixed to the permit by the SWRCB in 1995 prior to NMFS listing steelhead as a threatened species. No water has been diverted under Permit 20808B to date. Implementation of the proposed project would allow CalAm to more effectively utilize its Carmel River water rights by increasing its capacity to inject water for storage when river flows are sufficiently high to allow for diversion. CalAm is presently operating within the terms of the permit and nothing about the proposed project would change its ability to operate consistent with the permit.

State Water Resources Control Board Order No. 2003-0003-DWQ, *Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality*

SWRCB Order No. 2003-0003-DWQ established statewide Waste Discharge Requirements regulating certain low-volume discharges that contain minimal pollutant concentrations, thus allowing for their discharge to land without the preparation of a Report of Waste Discharge. The order includes provisions to address well development water, and to monitor well purge water and the discharge of material generated during drilling. This order allows discharge of the listed wastes directly to the land surface as long as the discharge is implemented in a controlled manner that does not cause erosion or other adverse effects. The Central Coast RWQCB General Order WQ-2011-0223, *Waste Discharge Requirements NPDES General Permit for Discharges with Low Threat to Water Quality*, and its Resolution R3-2008-0010, *General Waiver for Specific Types of Discharges*, provide additional details on how this order would apply to the proposed project. The anticipated volumes and quality of well development water, monitoring well purge water, and soil boring waste discharge would be in quantities typical for temporary water well drilling projects in areas with no existing groundwater contamination. Thus, the proposed project's well development discharges would be consistent with the Order.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was adopted in 2014 and became effective January 1, 2015. SGMA gives local agencies the authority to customize groundwater sustainability plans to their regional economic and environmental needs and manage groundwater in a sustainable manner to protect groundwater resources. SGMA establishes a definition of sustainable groundwater management and a framework for local agencies to develop plans and implement sustainable management strategies to manage groundwater resources, prioritizes basins (ranked as high- and medium-priority) with the greatest problems (i.e., the undesirable results as discussed below), and sets a 20-year timeline for implementation.

The DWR and the SWRCB are the lead state agencies responsible for developing regulations and reporting requirements necessary to carry out SGMA. DWR sets basin prioritization, basin boundaries, and develops regulations for groundwater sustainability. The SWRCB is responsible for fee schedules, data reporting, probationary designations and interim sustainability plans (DWR, 2016a). The State of California has designated the Salinas Valley as a priority basin and stakeholders have been working since 2015 to form a Groundwater Sustainability Agency for the Salinas Valley. The MPWMD applied to alter the boundaries of the Seaside/Corral de Tierra areas so they are similar to the adjudicated boundaries of the Seaside Basin. While SGMA does not have a direct impact on the MPWSP, it is included here as it is new legislation affecting both the Salinas Valley Groundwater Basin and the boundaries of the adjudicated Seaside Basin.

SGMA requires the creation of a Groundwater Sustainability Agency (GSA) for medium- and high-priority groundwater basins in accordance with Water Code §10723 et seq. Each GSA is to develop and implement a Groundwater Sustainability Plan (GSP) in accordance with Water Code §10727 et seq. The GSP would describe how users of groundwater within the basin would manage and use groundwater in a manner that can be sustainably maintained during the planning and implementation horizon without causing undesirable results. SGMA defines undesirable results as follows:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

The proposed project would not adversely affect groundwater management in the Basin because it would be extracting groundwater that is not presently being used as a potable or an irrigation

supply. Rather, when considering seawater intrusion and water surface elevations in the 400-Foot Aquifer, the proposed project may have a positive contribution to the sustainable management of groundwater. Regarding the former, pumping near the coast would capture the seawater that otherwise would have continued to flow inland. With respect to the latter, the high-quality return water coming from the desalination plant would replace water currently being pumped from wells, allowing groundwater levels to recover in the 400-Foot Aquifer. For these reasons, the proposed project would not conflict with SGMA.

4.4.2.3 Regional and Local

MCWRA Act (1995) (Agency Act)

In accordance with the Agency Act, MCWRA is charged with preventing the waste or diminution of the water supply in its territory by, among other things, controlling groundwater extractions and prohibiting groundwater exportation from the SVGB (MCWRA, 1995). Specifically, section 9(v) of the Agency Act provides that MCWRA has the power:

> To prevent the export of groundwater from the SVGB, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. Nothing in this act shall be deemed to prevent the development and use of the Seaside Groundwater Basin for use on any lands within or without that basin.

If any person or entity attempts to export groundwater from the SVGB, the MCWRA may seek an injunction from the Monterey Superior Court to prohibit such export.

The Agency Act further authorizes the MCWRA to commission groundwater studies to determine whether any portion underlying its territory is threatened with the loss of useable groundwater supply and to adopt an ordinance prohibiting further extraction of groundwater from an area and depth defined by the MCWRA.

As discussed more fully in Section 2.6, Water Rights, given the locations of the slant well screens beyond the jurisdictional boundaries of the County, it is not clear whether the Agency Act applies to the proposed project. However, as further discussed in that section, were the Agency Act to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This is because the proposed project would return to the SVGB any incidentally extracted useable groundwater. The water available for export would be new supply, or developed water, not extracted from the SVGB.

MCWRA Ordinance 3709

MCWRA Ordinance 3709 prohibits drilling into and/or pumping groundwater from the 180-Foot Aquifer within specific onshore areas, designated as Territories A and B (MCWRA, 1993). However, since the CEMEX parcel within which the proposed subsurface intake system would be located is not in either Territory A or B, the MCWRA Ordinance 3709 does not apply to the proposed project and the proposed project would therefore, be consistent (MCWRA, Personal Communication, 2018). This issue is discussed further in Section 2.6, Water Rights.

Seaside Groundwater Basin Watermaster (California Superior Court, Monterey California, Case No. M66343)

In 2006, through the adjudication of the Seaside Basin, the Monterey County Superior Court created the Seaside Groundwater Basin Watermaster. The purpose of the Watermaster is to assist the court in administering and enforcing the provisions of the judgment, which pertains to the oversight and management of Seaside Groundwater Basin resources. The Watermaster's objective is to help resolve the problems of lowered groundwater levels and the threat of seawater intrusion, which are the result of over-pumping. A primary objective of the proposed project is to reduce drawdown of Seaside Basin groundwater levels. Thus, through its implementation, the proposed project would be consistent with the adjudication of the Seaside Basin.

4.4.2.4 Consistency with Applicable Regional and Local Land Use Plans and Policies Relevant to Groundwater

Table 4.4-7 describes the regional and local land use plans, policies, and regulations pertaining to groundwater that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. Section 4.8, Land Use, Land Use Planning, and Recreation, presents a general overview of these policy documents. Also included in **Table 4.4-7** is an analysis of project consistency with such plans, policies, and regulations. The analysis concludes that the proposed project would not conflict with any applicable plan, policy, or regulation, as noted in the table.

TABLE 4.4-7
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GROUNDWATER RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone & inland areas)	Marina Municipal Code	Water Wells	Subsurface slant wells and monitoring wells for Subsurface Intake System	***Section 13.12.030 Permit—Required.*** No person shall construct, repair, reconstruct, abandon, or destroy any well unless a written permit has first been obtained from the County of Monterey.	This policy is intended to protect public health and safety by ensuring wells are properly constructed, maintained, and decommissioned.	Consistent: The applicant proposes and would be required to obtain a Well Construction Permit from the Monterey County Department of Environmental Health prior to commencement of project well construction.
County of Monterey (coastal zone & inland areas)	Monterey County Code	Water Wells	Subsurface slant wells and monitoring wells for Subsurface Intake System	***Section 15.08.030 Permit—Required*** a. No person shall construct, repair, reconstruct or destroy any well, abandoned well, cathodic protection well, observation well, monitoring well, or test well unless a written permit has first been obtained from the Health Officer of the County or his or her authorized representative as provided in this Chapter.	This policy is intended to protect public health and safety by ensuring wells are properly constructed, maintained, and decommissioned.	Consistent: The applicant proposes and would be required to obtain a Well Construction Permit from the Monterey County Department of Environmental Health prior to commencement of project well construction.
County of Monterey (coastal zone & inland areas)	Monterey County Code	Water Wells	Subsurface Slant Wells and monitoring wells for Subsurface Intake System	***Section 15.08.110 Technical Standards*** a. Standards. Standards for the construction, repair, reconstruction of or destruction of wells shall be as set forth in Chapter II and Appendices A, B, C D of the Department of Water Resources Bulletin No. 74-81, "Water Well Standards" (December, 1981).	This policy is intended to protect public health and safety by ensuring wells are properly constructed, maintained, and decommissioned.	Consistent: All wells within the State of California are required to be constructed in compliance with DWR Bulletin 74-81.
County of Monterey (coastal zone & inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Salinas Valley Return Pipeline, Carmel Valley Pump Station, Main System--Hidden Hills and Ryan Ranch--Bishop Interconnection Improvements	***Policy PS-2.8:*** The County shall require that all projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff), and to recharge groundwater where appropriate. Implementation shall include standards that could regulate impervious surfaces, vary by project type, land use, soils and area characteristics, and provide for water impoundments (retention/detention structures), protecting and planting vegetation, use of permeable paving materials, bioswales, water gardens, and cisterns, and other measures to increase runoff retention, protect water quality, and enhance groundwater recharge.	This policy is intended to minimize the impacts of new impervious surfaces to increase runoff retention, protect water quality, and enhance groundwater recharge.	Consistent: Most of the Subsurface Intake System and water conveyance pipelines would be buried below the ground surface, mainly within existing developed or disturbed areas, and would therefore result in no effect on the absorption of rainfall. The MPWSP Desalination Plant and the Carmel Valley Pump Station would be constructed in unpaved areas and all rainwater would be routed to the permeable surrounding sandy soils.
County of Monterey (coastal zone & inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, Desalinated Water Pipeline/Brine Mixing Box, Brine Discharge Pipeline, Salinas Valley Return Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy PS-2.9:*** The County shall use discretionary permits to manage construction of impervious surfaces in important groundwater recharge areas in order to protect and manage groundwater as a valuable and limited shared resource. Potential recharge area protection measures at sites in important groundwater recharge areas may include, but are not limited to, the following: a. Restrict coverage by impervious materials. b. Limit building or parking footprints. c. Require construction of detention/retention facilities on large-scale development project sites overlying important groundwater recharge areas as identified by Monterey County Water Resources Agency. The County recognizes that detention/retention facilities on small sites may not be practical, or feasible, and may be difficult to maintain and manage.	This policy is intended to preserve impervious surfaces to increase runoff retention, protect water quality, and enhance groundwater recharge.	Consistent: Most of the Subsurface Intake System and water conveyance pipelines would be buried below the ground surface, mainly within existing developed or disturbed areas, and would therefore result in no effect on recharge. The MPWSP Desalination Plant and the Carmel Valley Pump Station would be constructed in unpaved areas and all rainwater would be routed to the permeable surrounding sandy soils.
County of Monterey (coastal zone & inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Salinas Valley Return Pipeline, Carmel Valley Pump Station, Main System--Hidden Hills and Ryan Ranch--Bishop Interconnection Improvements	***Policy S-3.2:*** Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.	This policy is intended to protect surface water and groundwater quality from impacts of development.	Consistent: The proposed project would be subject to the State Construction General Permit, the Monterey County Grading Ordinance, the Monterey County Erosion Control Ordinance, and the RWQCB Resolution R3-2013-0032c, which require the implementation of specific construction-related BMPs to prevent concentrated stormwater run-on/runoff, soil erosion, and release of construction site contaminants. Surface water quality is also discussed in Section 4.3 Surface Water Hydrology and Water Quality.
County of Monterey (coastal zone)	North County Land Use Plan	Water Resources	Source Water Pipeline and New Desalinated Water Pipeline	***Policy 2.5.1:*** The water quality of the North County groundwater aquifers shall be protected, and new development shall be controlled to a level that can be served by identifiable, available, long term-water supplies...	This policy is intended to maintain the quality of groundwater resources and reduce overdraft of basin groundwater supplies.	Consistent: Water conveyance pipelines would be buried below the ground surface, mainly within existing developed or disturbed areas, and would therefore result in no effect on groundwater quality or recharge.

TABLE 4.4-7 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO GROUNDWATER RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (City of Seaside)	Fort Ord Reuse Plan	Conservation	ASR Conveyance Pipeline, and ASR Pump-to-Waste Pipeline	**Hydrology and Water Quality Policy A-1:** At the project approval stage, the City shall require new development to demonstrate that all measures will be taken to ensure that runoff is minimized and infiltration maximized in groundwater recharge areas.	This policy is intended to preserve impervious surfaces to increase runoff retention, protect water quality, and enhance groundwater recharge.	Consistent: The above-ground components of the proposed ASR system would be constructed in unpaved areas. All rainwater would be routed to the surrounding unpaved sandy areas and allowed to infiltrate into the subsurface as recharge. The below-ground components would not affect groundwater recharge.

SOURCES: FORA, 1997; Monterey County, 1982; Monterey County, 2010

4.4.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to groundwater resources if it would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Violate any ground water quality standards or otherwise degrade groundwater quality.

The following descriptions have been developed to elaborate on how these criteria are applied in the impact analyses in Sections 4.4.5.1 and 4.4.5.2, below. Implementation of the proposed project would be considered to have a significant impact associated with groundwater resources if:

- Construction reduced groundwater supplies, or substantially hindered the ability of surface water to recharge the aquifer, resulting in substantially lower groundwater levels.
- Construction discharges to groundwater exceeded water quality standards or otherwise degraded groundwater quality.
- Extraction from the subsurface slant wells substantially depleted groundwater in the SVGB such that there would be a substantial net deficit in aquifer volume.[24]
- Extraction from the subsurface slant wells lowered groundwater levels in the Dune Sand Aquifer or the 180-Foot Equivalent Aquifer so that nearby municipal or private groundwater production wells experienced either a substantial reduction in well yield or physical damage due to exposure of well screens and well pumps.
- Operation of the proposed ASR injection/extraction wells resulted in groundwater mounding, change in groundwater gradients, or lower groundwater levels such that nearby municipal or private groundwater production wells experienced either a substantial reduction in well yield or physical damage due to exposure of well pumps or screens.
- Extraction from the subsurface slant wells interfered substantially with groundwater recharge.
- Extraction from the subsurface slant wells adversely affected groundwater quality by exacerbating seawater intrusion in the SVGB.
- Injection of desalinated water treated to drinking water standards degraded the quality of native groundwater in the SGB.
- Operation of the proposed ASR injection/extraction wells were to result in discharges to groundwater resources that degrade groundwater quality.

[24] A substantial net deficit in aquifer volume refers to the removal of groundwater from the aquifer at a rate that exceeds natural recharge, such that: 1) groundwater levels are permanently lowered and could not recover to pre-pumping conditions; 2) production well yields in neighboring wells decline to such a degree that other groundwater users in the basin experience an intolerable decrease in available groundwater supply; or 3) the lowering of groundwater results in subsidence and compaction that reduces the available volume of groundwater storage.

4.4.4 Approach to Analysis

Four primary sources of data and information were used to guide the impact analysis presented in this section: 1) information obtained through subsurface investigations commissioned by CalAm that was subsequently peer reviewed by the EIR/EIS preparers; 2) groundwater modeling conducted by experts on the EIR/EIS team (see Appendix E2); 3) the SWRCB Final Review of California American Water Company's Monterey Peninsula Water Supply Project (see Appendix B2), and; 4) CalAm operating rules for injection and extraction of desalinated water by ASR (see Section 3.4.2). The following sections describe the details of these four elements of the impact analysis methodology.

4.4.4.1 Subsurface Investigations

Until recently, the general understanding of the subsurface geology near the CEMEX site was limited to information obtained from a few nearby wells, or from detailed investigations at distant locations, such as Marina State Beach or the former Fort Ord. Recognizing the need to obtain additional subsurface information to design the proposed project, CalAm commissioned a subsurface soil and groundwater investigation at the CEMEX site and at an alternate intake location at Potrero Road. These field investigations acquired supplemental information on subsurface geologic units, the hydrogeologic properties of those units, and the current aquifer water quality. This information in turn was used to better understand the hydrogeologic conditions, develop the hydrogeologic conceptual model, and to refine input parameters of the groundwater modeling. Additionally, obtaining data on subsurface stratigraphy and groundwater chemistry at various depth intervals helped refine and optimize construction details of the proposed slant wells. The investigations included drilling exploratory boreholes to identify and correlate the subsurface geologic units, to collect groundwater quality data, and to build clusters of monitoring wells.

The exploratory borehole drilling phase of the field investigation included drilling, logging, and testing of fourteen (14) boreholes within the project area: six (6) boreholes at the CEMEX site, six (6) boreholes around Moss Landing, one (1) borehole at Molera Road, and one (1) at Potrero Road. The details of the subsurface exploration, including boring logs, well construction details, field screening tests results, and laboratory analytical results, are presented in the July 2014 report titled, *Monterey Peninsula Water Supply Project Hydrogeologic Investigation Technical Memorandum TM 1, Summary of Results – Exploratory Boreholes* (**Appendix E3**, see TM1). The HWG peer reviewed TM1 before the final document was released and the EIR/EIS team participated in that peer review process. TM1 is also discussed in Section 4.2, Geology, Soils, and Seismicity.

Test Slant Well

CalAm installed the test slant well to further evaluate subsurface conditions and to test the response of the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer to pumping. The results have been used to refine the groundwater models and inform the analysis of the proposed project. The first phase of the test slant well investigation began with the construction of

a 724-foot-long test well drilled at an angle of 19 degrees below horizontal at the CEMEX site. Special Condition 11 of the Coastal Development Permit, "Protection of Nearby Wells," requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long-term pumping tests (Geoscience, 2015b). The long-term pumping test began in mid-April 2015, and results are available at http://www.watersupplyproject.org/#!test-well/c1f1l.

Monitoring Wells Installation and Testing

CalAm developed the groundwater monitoring network to assess the impacts of long-term pumping of the test slant well, assess and continually evaluate the hydrogeologic technical aspects of the project, evaluate potential impacts on critical inland water resources, and assess the movement of ocean water into the test slant well, and collect data to calibrate groundwater models.

CalAm's groundwater monitoring phase of work involved installing monitoring well clusters, which took place between December 2014 through August 2015 (see **Figure 4.4-9**). The monitoring well clusters at the CEMEX site are MW-1, MW-3, and MW-4 located west to east along the CEMEX access road, from the proposed slant well location to the CEMEX facility entrance; MW-4 is the compliance well identified in the Coastal Development Permit issued by the Coastal Commission for the operation of the test slant well. Off-site monitoring wells, which provide regional data for evaluation of potential impacts, include MW-5, MW-6, MW-7, MW-8, and MW-9, which are located at the proposed desalination plant site on Charles Benson Road, at the intersection of Lapis Road and Del Monte Road, and along West Blanco Road about 4 miles southeast of the CEMEX site. The established monitoring well network is equipped with water level transducers and conductivity transmitters that continually log information in 5 to 15-minute intervals, depending on the specific well completion. Each monitoring well cluster consists of three wells. The individual wells were drilled to monitor water level and chemistry in the Dune Sand Aquifer (S), the 180-FTE/180-Foot Aquifer (M), and 400-Foot Aquifer (D).[25] In addition to the monitoring wells, CalAm installed a water level data logger in the pond that CEMEX uses to dredge sand to monitor the effects of the test slant well on the CEMEX dredge pond. The details of the subsurface exploration including boring logs, well construction details, field screening tests results, and laboratory analytical results are presented in **Appendix E3**, (Appendix E: *Monterey Peninsula Water Supply Project, Hydrogeologic Investigation, Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update* (Geoscience, 2016b). The HWG peer reviewed TM2 before the final document was released and the EIR/EIS team participated in that peer review; that document is also discussed in Section 4.2, Geology, Soils, and Seismicity. Groundwater elevation and water quality data developed from monitoring the cluster wells are presented in the impact analysis, below.

[25] MW-5S is screened in a perched aquifer that lies above the Dune Sand Aquifer, rather than the Dune Sand Aquifer itself and was designated MW-5S(P) to indicate that it is representative groundwater levels in a perched aquifer. MW-6D is likely in the lower portion of the 180-Foot Aquifer and was re-designated as MW-6M(L) to indicate the deeper portion of the 180-Foot Aquifer.

4.4.4.2 Groundwater Modeling

Groundwater modeling was used to determine the extent of the cone of depression and the capture zone, and therefore, is a primary analytical tool used to evaluate project impacts on groundwater resources. This section describes the groundwater models and how they were used to simulate the groundwater response to the proposed pumping. The results of the groundwater modeling are presented in *North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios*, August 31, 2017, prepared by HydroFocus, Inc., a member of the EIR/EIS team (**Appendix E2**).

Groundwater Models

What is a Groundwater Model?

Groundwater models are computer simulations that represent water flow in the environment using mathematical equations. By mathematically representing a simplified version of a hydrogeological system, the effects of groundwater pumping scenarios can be simulated, evaluated, and compared to determine their effects on an aquifer system. The applicability or usefulness of the model depends on how closely the mathematical equations approximate the essential characteristics of the groundwater system being modeled.

Groundwater models consist of individual *cells* in a model *domain*. A domain is the entire area and depth within which the model simulates subsurface conditions. The domain is divided into a number of smaller units called cells, which represent a defined three-dimensional volume of an aquifer. The size and number of cells depend, in part, on the coverage area of the model. For example, models that cover an entire groundwater basin of many square miles may have cells that represent one square mile each, while models designed to evaluate smaller areas have cells representing only 200 square feet. Each cell contains information about the subsurface hydrogeological information inferred from soil borings, well logs, and geologic mapping. Parameter values are assigned to cells to approximate the physical characteristics that affect water movement through the volume of aquifer represented by that cell. Parameters typically include hydraulic conductivity (the ability of water to flow through a given material), and porosity and storage properties (the relative amount of open spaces between grains in the geologic material). Vertical layers are then selected based on the subsurface geologic characteristics, such as permeable aquifer zones and less permeable aquitards. After all of the cells are populated, the model is calibrated against observed groundwater levels measured in monitoring wells so that the model can better represent real world conditions.

Once the model has been populated and calibrated, it can be used to project water movement and storage changes of water beneath the subsurface and quantify changes in groundwater flow and storage as a result of groundwater extraction. The models used for this analysis tested the anticipated response of the aquifer or aquifers to various operating scenarios. The scenarios considered changes in rate and location of project pumping. The results of the scenarios are also compared against baseline, or current conditions, to determine and identify potential effects or impacts.

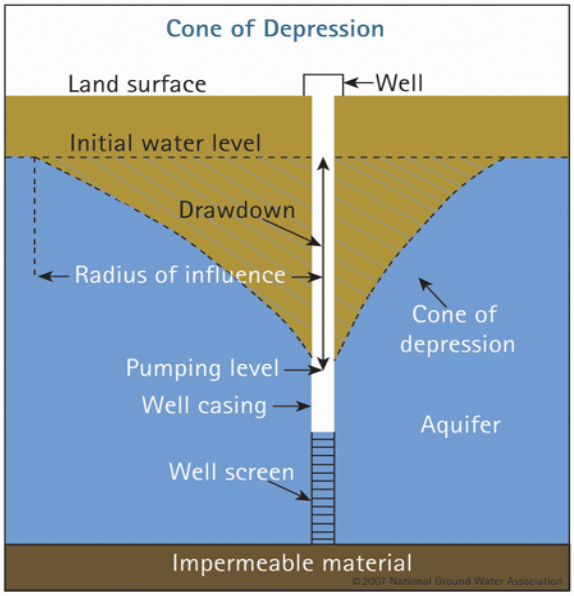
Limitations of Groundwater Models

Groundwater models simulate aquifer conditions based on a specific set of data that describes subsurface characteristics and groundwater flow. The more robust the data set, the more capable the model will likely be to simulate subsurface conditions. Groundwater models are mathematical-based computer programs that rely on specified input data to approximate real-world conditions and, consequently, there is a degree of uncertainty associated with the model output. Most groundwater model analyses tend to employ conservative input parameter values so that the output either understates or overstates the expected actual aquifer response. The models used to analyze the proposed project have been used before and, as part of this study, the models have benefited from input data derived from site-specific subsurface information. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.

Groundwater Terminology

Certain terminology is used in groundwater analysis to describe and illustrate the nature, extent, and movement of groundwater in aquifers, and the response of the aquifers to changes, such as pumping. In addition to calculated values (e.g., changes in the volume of water in storage), the spatial results of the model simulations are commonly expressed as maps that show the simulated response to the pumping of the wells under various scenarios. The maps show the cone of depression, the radius of influence, and particle tracking, terms that are described and illustrated below.

- **Cone of depression** – As water is extracted from a well, it is pulled into the screened section of the slant wells and removed from the subsurface water-bearing unit. Groundwater elevations would decrease around the slant wells in a distorted ovate fashion due to the ocean recharge boundary such that the cone of depression would not be centered at the slant wells. This cone would be the steepest and deepest closest to the well screen and rapidly become flatter and shallower away from the slant wells.



SOURCE: http://www.ngwa.org/Fundamentals/use/PublishingImages/cone_of_depression.gif

- **Capture Zone** – A capture zone refers to the three-dimensional volume of aquifer that contributes the water extracted by the wells. It is a function of drawdown caused by the pumping rate and the regional gradient (direction and slope) of the groundwater flow. In map view, the capture zone is a 2-dimensional surface that delineates the underlying aquifer volume that ultimately becomes the primary source water to the slant wells. The fundamental difference between the capture zone, which is supplying the water to the slant wells, and the cone of depression, which forms in response to pumping, is that the groundwater entering the slant wells originates only from within the capture zone, while the regional gradient controls the groundwater flow beyond the capture zone.

- **Radius of influence** – The radial extent of the area affected by the slant wells—that is, the area within which water levels are anticipated to decrease—is called the radius of influence. The anticipated affected area is depicted using groundwater elevation contour maps. Similar to topographic elevation contours, groundwater contours show the shape and elevations of the groundwater surface. The maximum radius of influence is typically defined as the distance by which the water levels are anticipated to decrease by some amount, such as one foot.

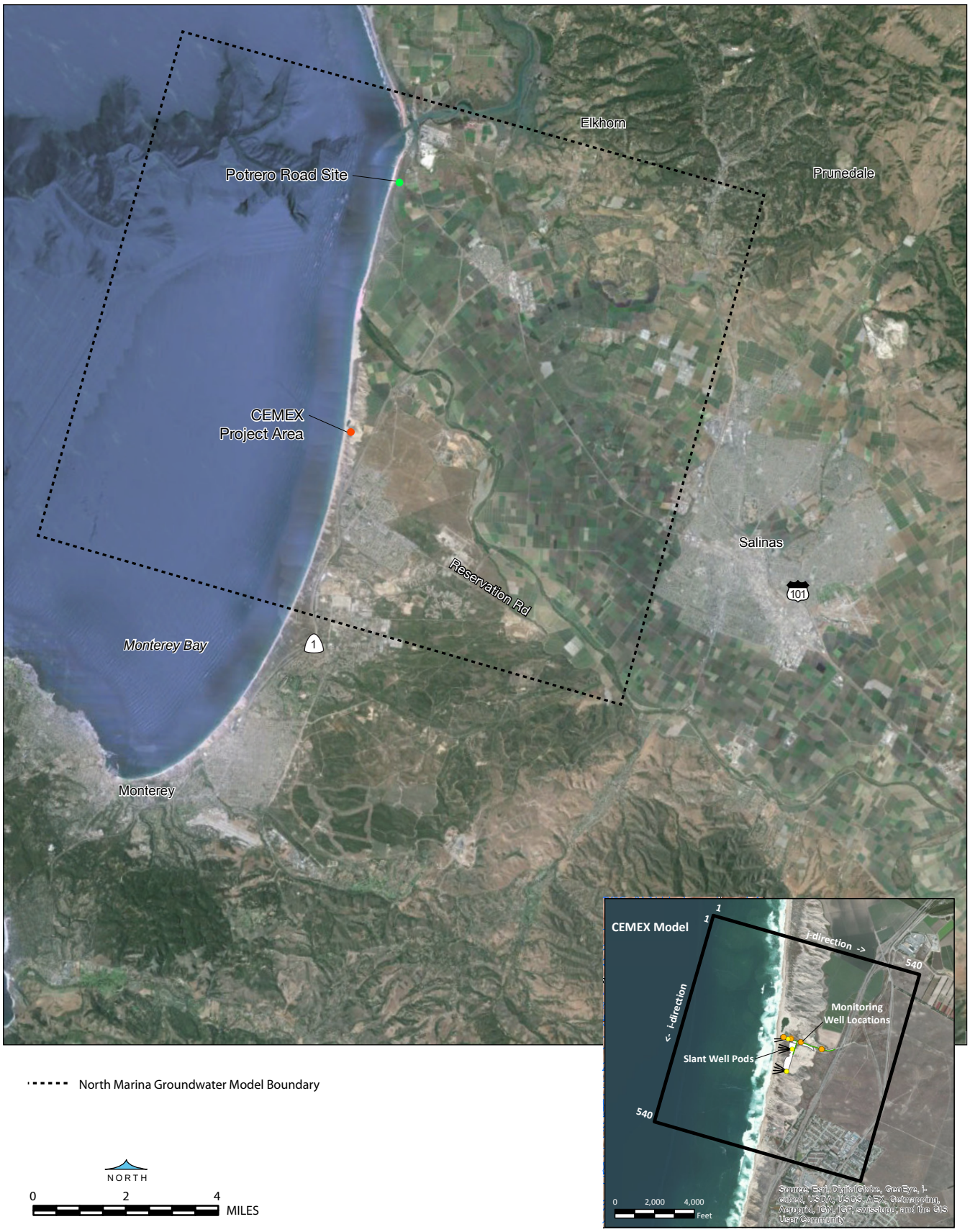
- **Particle tracking** – Using the groundwater elevation maps, the groundwater model can also generate particle tracking maps. Particle tracking maps show the flow path of a particle of water over time. In forward tracking, a particle is placed at a specific cell in the model domain and the model then simulates the path the particle of water will take through other cells as model time moves forward. In reverse tracking, the model simulates the path of where the particle came from, to identify its source.

North Marina Groundwater Model

The NMGWM is a detailed hydrologic computer model covering approximately 149 square miles and includes Elkhorn Slough to Prunedale on the north side, Prunedale to south of Salinas on the east side, south of Salinas to just north of the Fort Ord Dunes State Park on the south side, and extending into Monterey Bay (**Figure 4.4-12**). The NMGWM was originally developed in 2008, integrating information from the regional-scale Salinas Valley Integrated Groundwater and Surface Water Model (SVIGSM) including aquifer parameters, recharge and discharge terms, and boundary conditions in the North Marina area.

The NMGWM is based on model codes of MODFLOW. MODFLOW is a modular finite-difference flow model, which is a computer code that solves the groundwater flow equation. MODFLOW is public domain software that the U.S. Geological Survey developed in the early 1980s. Since MODFLOW's initial release, the USGS has released numerous updated versions, and MODFLOW is now the de facto standard code for aquifer simulation.

The cell size of the NMGWM is 200 feet by 200 feet oriented along 300 rows and 345 columns, and eight layers of variable thicknesses. Details of the review, update, and refinement of the NMGWM used for this analysis, is presented in **Appendix E2**. The product of the 2016 NMGWM update is hereafter referred to as NMGWM^{2016}. **Table 4.4-8** presents a correlation of geologic units, aquifers, and model layers.



SOURCE: Geoscience, 2015c

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Figure 4.4-12

North Marina Groundwater Model Boundaries

TABLE 4.4-8
CORRELATION OF GEOLOGIC UNITS, AQUIFERS, AND MODEL LAYERS

180/400-Foot Aquifer Subbasin			CEMEX Area			Models and Corresponding Horizontal Model Layers	
Surface Geologic Units	**Surface Geologic Units Map Symbol**	**Hydro-stratigraphic Units**	**Surface Geologic Units**	**Surface Geologic Units Map Symbol**	**Hydro-stratigraphic Units**	**North Marina Groundwater Model (NMGWM^{2016})**	**CEMEX Model**
Ocean Floor	Qf	Ocean Floor	Ocean Floor	Qf	Ocean Floor	1	1
Alluvium	Qal(a)	Perched "A" Aquifer	Dune Sand	Qd	Dune Sand Aquifer	2	2
			Older Dune Sand	Qod			3
							4
Older Alluvium	Qo	Salinas Valley Aquitard	Older Terrace/ Marine Terrace	Qt (Qmt)	180-Foot Aquifer Equivalent	3	5
						4	6
Older Alluvium/ Marine Terrace	Qo/Qmt	180-Foot Aquifer Equivalent					7
Older Alluvium/ Older Alluvial Fan - Antioch	Qo/Qfa						8
Older Alluvial Fan – Placentia	Qfp	180/400-Foot Aquitard	Aromas Sand	Qar	180/400-Foot Aquitard	5	9
Aromas Sand (Undifferentiated)	Qae	400-Foot Aquifer			400-Foot Aquifer	6	10
Aromas Sand – Eolian Facies	Qae						
Paso Robles Formation	QT	400-900-Foot Aquitard	Paso Robles Formation	QT	400-900-Foot Aquitard	7	11
		Deeper Aquifer			Deeper Aquifer	8	12

NOTES:

[a] Subsurface Holocene geologic unit not mapped at surface

SOURCE: Geoscience, 2015c.

The areal extent and thickness of model layers were refined using site specific borings, review and extension of existing geologic cross-sections, revised geologic cross sections and recent aquifer parameter information for the area. The NMGWM model layers and associated parameters such as horizontal and vertical hydraulic conductivity,[26] specific storativity,[27] specific yield,[28] and leakage[29] were refined using the data collected from the site-specific hydrogeologic investigations as described in Appendix E3. In addition, the NMGWM model incorporates the anticipated changes in sea level rise due to global climate change (ESA, 2013).

The following terms and concepts associated with the NMGWM are important to understand while reviewing the impact analyses for groundwater resources presented in this section. **Appendix E2** contains additional details.

Superposition Groundwater Modeling

The superposition approach in groundwater modeling is a well-established analytical tool. For this project, the NMGWM is converted to a superposition model, enabling the NMGWM^{2016} to solve for the groundwater changes due solely to the proposed project. These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM^{2016} reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater or lesser drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in **Appendix E2**, Section 5.2.

Return Water Considerations

The MPWSP proposes to return a certain fraction of water (referred to here as return water) extracted by the slant wells to water users in the SVGB as desalinated product water. As a brief review, the Agency Act does not allow groundwater pumped from the SVGB to be exported for any use outside the SVGB (see full discussion in Chapter 2.6, Water Rights). Since the groundwater in this area has been intruded by seawater for decades, the proposed slant wells at CEMEX would extract brackish water, which is a mixture of ocean water and water originating from the inland aquifers of the basin. The freshwater portion of the brackish source water that originated from the inland aquifers would constitute the proposed return water. To achieve consistency with the Agency Act, the MPWSP proposes to return the freshwater component of the brackish water that is extracted through the slant wells. The exact quantity of water to be returned annually would vary and would be determined each year using a mathematical formula.

[26] Hydraulic conductivity is the rate of water flow through a cross sectional area of an aquifer.
[27] Specific storativity is the amount of water taken out or put back into a unit volume of an aquifer when the water level changes.
[28] Specific yield is the amount of water that will drain from an aquifer just due to gravity.
[29] Leakage is the flow of water from one hydrogeologic unit to another. The leakage may be natural, as through a semi-impervious confining layer, or human-made, as through an uncased well.

However, for groundwater modeling and impact analysis purposes in this EIR/EIS, it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would be returned to the basin. The water would be returned to the SVGB through deliveries of up to 800 afy of desalinated product water to the Castroville Community Services District (CCSD). This water would be piped to the CCSD and the CSIP and provided to water customers instead of their pumping an equal amount from the ground. This method of returning water is referred to as in-lieu recharge because the delivered water would reduce the need to pump groundwater in corresponding quantities. The NMGWM^{2016} accounts for the 0 to 12 percent range by simulating the aquifer response in the various scenarios with a 0, 3, 6, and 12 percent returned product water.

Ocean Water Percentage

Determining how much ocean water would comprise the slant well feedwater (referred to as ocean water percentage, or OWP) has been a concern since the early planning stages of the MPWSP. This is because the converse of the OWP, i.e. the percentage of feedwater that is not ocean water, would be the amount of return water under the proposed project (such that if the OWP were 94 percent, the return water amount would be 6 percent of the source water). The superposition modeling application in the NMGWN^{2016} cannot determine the OWP in the slant well feedwater, so the HWG developed two methodologies to estimate the OWP: an analytical equation and a numerical modeling methodology that uses the existing local CEMEX groundwater model and assumptions from the NMGWM^{2016}. The analytical equation methodology estimates OWP for the proposed 9.6 mgd MPWSP (24.1 mgd extraction rate) and, hence, is discussed here. Both the analytical and numerical modeling methods estimate the OWP for the smaller desalination plant (6.4 mgd output; 15.5 mgd extraction rate) and are therefore discussed in the analysis of Alternatives 5a and 5b in Section 5.5.4. See **Appendix E3**, (section 3.2.3 and Appendix H) for a detailed discussion on the methodology for projecting the OWP.

The analytical equation approach for the 9.6 mgd MPWSP scenario calculated the OWP based on water and salinity budgets for the steady-state[30] capture volume and was evaluated for a range of hydraulic gradients. The water budget represents the steady-state inflows and outflows after equilibrium is reached from MPWSP pumping; results show equilibrium is reached in a few months to a few years. Steady-state inflows are seawater from the Monterey Bay and precipitation that falls over the capture zone. Outflow is water pumped from the slant wells. The hydraulic gradients are related to the size of the capture zone and the time necessary for seawater to flood the capture volume. The analytical methodology was calibrated using test slant well data from April 2015 to October 2016.

The results of the analytical OWP methodology estimated that long-term equilibrium OWP would range between 96 to 99 percent. The OWP is estimated to range from 87 to 93 percent after one year of pumping and from 92 to 97 percent after two years of pumping. The analysis also estimated that the pumping time to reach 90 percent OWP ranged from 4 to 21 months and pumping time to reach 95 percent OWP ranged from 6 to 37 months.

[30] Steady state refers to the period where outflow (i.e., slant well pumping) reaches equilibrium with inflow (aquifer recharge from ocean and precipitation).

Model Period

The model period for the NMGWM^{2016} is 63 years. The model scenarios are run over a set time period, beginning with the baseline conditions (no drawdown due to no slant well pumping) and extending out to a future point in time, typically set as the life span of a given project. Over this time period, land use, climate conditions, and, if located along the coast, sea level rise would be expected to change. However, as discussed above, superposition modeling considers only processes that effect changes due solely to project pumping, and in this application, refers only to projected sea level rise over the 63 years of modeled operations.

Sea Level Rise

Sea level along the coast of the Monterey Bay is expected to increase over the next six decades, resulting in a landward migration of the coastline and increased inland groundwater gradients at the coast. Sea level rise can influence the amount of ocean water extracted by slant wells and the resulting drawdown. An increase in sea level hastens the inland advance of ocean water above the underlying well screens, and as a result increases the potential for ocean water to flow into the wells. Between 2012 and 2073, sea level is projected to rise by 18.0 inches (ESA, 2013). The effects of sea level rise were integrated into the analysis by modeling the effects of the current sea level and that expected after 63 years of pumping at the slant wells. The impact analysis refers to current sea level (sea level conditions in 2012, or Model Year 1) and sea level projected for the year 2073, or Model Year 61. As described, in **Appendix E2**, sections 4.3 and 5.2, sea level effects were analyzed by comparing two different model runs. In one run, the sea level is set equal to 2012 conditions, and in the second model run, seal level is set equal to 2073 conditions.

Model Scenarios

Modeling scenarios were developed to project the drawdown from groundwater pumping at the CEMEX site and the alternative location at Potrero Road, and to assess the uncertainty in drawdown to model assumptions and input. A full list of the modeling runs and assumptions is provided in **Appendix E2**, Table 5.2. The scenarios incorporated the slant well pumping rates, sea level rise, four return water percentages, and aquifer distribution in various configurations.

Calibration

Groundwater models are calibrated by comparing the output, such as simulated groundwater levels, to the groundwater levels measured in monitoring wells. The NMGWM^{2016} was calibrated with information provided by the localized CEMEX Model, discussed below, and groundwater levels measured in the monitoring wells installed to evaluate slant well pumping. In addition, the NMGWM^{2016} was calibrated to various monitoring wells in the vicinity, including those installed south of the CEMEX site near Fort Ord. See **Appendix E2** for detailed information on the NMGWM^{2016} calibration methodology.

Sensitivity Analysis

Sensitivity analyses are performed to determine to what degree certain modeling parameters influence the output results. The NMGWM^{2016} development involved analysis of the sensitivity of model-calculated drawdown to uncertainty in pumping rates, return water volumes, and projected

sea level rise as well as modeled aquifer parameters and relative contributions of the Dune Sand Aquifer and 180-FT/180-FTE Aquifer to total slant well pumpage. Sensitivity analyses were performed to determine the effects of the aquifer contribution between the Dune Sand Aquifer and the 180-FTE Aquifer and to assess whether varying extraction volumes from each aquifer would alter the modeling results. The NMGWM^{2016} was run under the 0 percent return water scenario for three Dune Sand/180-FTE Aquifer distributions: 21/79, 44/56, and 66/34 percent. The 44/56 aquifer distribution is most likely and is assumed for the impact analyses below. Sensitivity analyses were also used to determine the uncertainty in the model-calculated cone of depression. For 2012 sea level conditions, and 0 percent return water, the maximum distance inland from the proposed MPWSP slant wells to the 1-foot drawdown contour was about 15,000 feet in Model Layer 2 (Dune Sand Aquifer), and about 20,000 feet in Model Layer 4 (180-FTE Aquifer). Due to uncertainties in sea level rise, hydraulic conductivity, and pumping layer allocation distribution, the estimated distances ranged from less than 10,000 feet to 24,000 feet in Model Layer 2, and 12,000 to 24,000 feet in Model Layer 4. Additional details on the sensitivity analyses performed for the NMGWM^{2016} are provided in **Appendix E2**, Section 6.0.

Localized CEMEX Model

The CEMEX model is a MODFLOW-based model that was developed to model the local effects of slant well pumping. Because the monitoring well cluster locations on the CEMEX site are relatively close to the proposed slant well locations, and because the NMGWM^{2016} cell size is 200 feet by 200 feet, it was possible that the slant wells and monitoring well clusters might be located in the same model cell. This proximity could reduce the ability of the NMGWM^{2016} to simulate the changing conditions between the slant and monitoring wells and to estimate the radius of influence during pumping. To address this, the CEMEX model was developed for the immediate area of the slant wells at the CEMEX site with a cell size of 20 feet by 20 feet (Geoscience, 2014a, 2015c, 2016b). The purpose of the CEMEX model is to better evaluate the localized effects of pumping the slant wells, including the cone of depression. Ultimately, the results of this localized model were incorporated into the NMGWM^{2016} results. **Figure 4.4-12** shows the model boundaries of this CEMEX model.

Seaside Groundwater Basin Modeling

The proposed project includes the injection and storage of treated water in the Santa Margarita Sandstone in the SGB as an addition to the ASR program. Groundwater modeling was previously conducted as part of the development of the ASR program and was presented in the *Final Environmental Impact Report/Environmental Assessment for the Monterey Peninsula Water Management District Phase 1 Aquifer Storage and Recovery Project*, dated August 2006 (MPWMD, 2006). The 2006 ASR modeling results were used to understand the response of the aquifers in the SGB to changes and to inform basin management decisions, such as how to operate the ASR program. The results of the SGB modeling were used to evaluate the impacts of the proposed project on the SGB. The SGB model is described below.

The 2006 ASR modeling effort evaluated changes in groundwater levels and long term changes in groundwater storage in the Santa Margarita Aquifer from operation of the ASR wells. The groundwater model was developed utilizing the WinFlow software program, which simulates

two-dimensional steady-state and transient groundwater flow, and used published aquifer parameters for the Santa Margarita aquifer. The model simulated the groundwater level and storage response based on an approximate injection volume of 2,426 af over the course of 183 days and extraction volume of 2,002 af over the course of 153 days, which represented the range of likely "extreme" injection and extraction conditions that could be encountered over the life of the ASR project. The results of the groundwater modeling indicated that long term operation of the ASR program would result in a beneficial impact on SGB storage and groundwater levels at existing water supply wells.

Subsequently, HydroMetrics developed the Seaside Basin Groundwater Model for the Seaside Groundwater Basin Watermaster based on MODFLOW-2005 to assist with groundwater management decisions (HydroMetrics, 2009b). The model domain included both the Seaside Basin and the area outside and to the north of the Basin. The model simulates five geologic layers: the Aromas Sand, the upper Paso Robles Aquifer, the middle Paso Robles Aquifer, the lower Paso Robles Aquifer, and the Santa Margarita Sandstone/Purisima Formation. The model simulates groundwater conditions between January 1987 and December 2008. As a part of developing the conceptual model and groundwater simulation, HydroMetrics concluded that the Santa Margarita Sandstone is "highly confined beneath thick clay beds near the ocean, and it does not receive significant deep percolation recharge near the ocean."

4.4.4.3 SWRCB Final Review of California American Water Company's Monterey Peninsula Water Supply Project

The SWRCB evaluation of the proposed project was considered as guidance for the analysis of groundwater impacts because it elucidates and provides context for the nexus between the thresholds of significance used in this section and recommendations and considerations of the SWRCB relative to water rights. Please refer to Chapter 2, Water Demand, Supplies, and Water Rights, which discusses the legal aspects in further detail.

To provide further clarification, on July 31, 2013, the SWRCB reviewed the proposed project (SWRCB, 2013). The SWRCB described its understanding of the physical setting, the components of the proposed project, and the legal analysis regarding the water to be produced by the slant wells.

The SWRCB reviewed the proposed project and provided specific investigation and modeling requirements to demonstrate that the proposed project "will not harm or cause injury to any other legal user of water" from the SVGB (SWRCB, 2013). The SWRCB identified three possible categories of injury that could occur from the MPWSP. The three foreseeable injuries that overlying users could experience are (1) a reduction in the overall availability of fresh water due to possible incidental extraction by the MPWSP; (2) a reduction in water quality in those wells in a localized area within the capture zone, or area of influence; and, (3) a reduction in groundwater elevations that requires users to expend additional pumping energy to extract water from the Basin.

From its review of the project, SWRCB stated that:

> "Key factors will be: (1) how much fresh water Cal-Am extracts as a proportion of the total pumped amount, (to determine the amount of water, that after treatment, would be

> considered desalinated seawater available for export as developed water); (2) whether pumping affects the water table level in existing users' wells, (3); whether pumping affects seawater intrusion within the Basin (4) how Cal-Am returns any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes in the larger Basin area or the immediate area around Cal-Am's wells."
>
> "If overlying groundwater users are protected from injury, appropriation of water consistent with the principles discussed in this report may be possible. To export water outside the Basin, Cal-Am must show 1) the desalinated water it produces is developed water, 2) replacement water methods to return water to the Basin are effective and feasible, and 3) the MPWSP can operate without injury to other users. A physical solution could be employed to assure all groundwater users rights are protected."

The SWRCB recommended the following actions to support the conclusion of no harm:

> "Studies are needed to determine the extent of the Dune Sand Aquifer, the water quality and quantity of the Dune Sand Aquifer, the extent and thickness of the SVA and the extent of the 180-Foot Aquifer."
>
> "The effects of the MPWSP on the Basin [i.e., the SVGB] need to be evaluated. Specifically, a series of test boring/wells would be needed to assess the hydrogeologic conditions at the site. Aquifer testing also would be needed to establish accurate baseline conditions and determine the pumping effects on both the Dune Sand Aquifer and the underlying 180-Foot Aquifer. Aquifer tests should mimic proposed pumping rates."
>
> "Updated groundwater modeling will be needed to evaluate future impacts from the MPWSP. Specifically, modeling scenarios will need to be run to predict changes in groundwater levels, groundwater flow direction, and changes in the extent and boundary of the seawater intrusion front. Additional studies also will be necessary to determine how any extracted fresh water is replaced, whether through re-injection wells, percolation basins, or through existing recharge programs. It may also be necessary to survey the existing groundwater users in the affected area. The studies will form the basis for a plan that avoids injury to other groundwater users and protects beneficial uses in the Basin. To ensure that this modeling provides the best assessment of the potential effects of the MPWSP, it is important that any new information gathered during the initial phases of the groundwater investigation be incorporated into the groundwater modeling studies as well as all available information including current activities that could influence the groundwater quality in the Basin."

4.4.4.4 Injection and Extraction of Desalinated Water for the ASR Program

The proposed project includes the injection, storage and extraction of treated water from the desalination plant into the Santa Margarita Sandstone in the SGB as an addition to the ASR program. CalAm would manage the injection and extraction of the Carmel River and desalinated water sent to the ASR system to avoid injecting water to, or extracting water from the ASR system, in a manner that might damage the aquifer, or exacerbate overdraft or seawater intrusion (CalAm, 2014). Specifically, the location of the existing groundwater depression in the SGB must be reviewed each year and extraction may only be conducted in wells located east (up gradient) of the center point of the depression and only in a certain preferential order (ASR wells first, then other specific production wells, as needed) to avoid pumping from near the coastline, which could

accelerate seawater intrusion. Section 3.4.2, Operation of the ASR System, provides additional details including the limitations on the rate of injection to prevent over-pressurization and compression of plugging materials in the injection wells.

4.4.5 Direct and Indirect Effects of the Proposed Project

The following impact analyses focus on potential effects on groundwater resources and water quality associated with the proposed project, MPWSP which includes 10 slant wells at CEMEX. The analyses of project impacts considered project plans, current conditions within the project area, applicable regulations and guidelines, and previous environmental assessments. **Table 4.4-9** summarizes the proposed project's impacts and significance determinations related to groundwater resources.

TABLE 4.4-9
SUMMARY OF IMPACTS – GROUNDWATER RESOURCES

Impacts	Significance Determinations
Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.	NI
Impact 4.4-2: Violate any groundwater quality standards or otherwise degrade groundwater quality during construction.	LS
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.	LS
Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations.	LSM
Impact 4.4-C: Cumulative impacts related to Groundwater Resources	LS

NOTES:
NI = No Impact
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with mitigation

4.4.5.1 Construction Impacts

Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction. ***(No Impact)***

Impact 4.4-1 addresses the effects on groundwater resources that could occur during the construction of the proposed project. In accordance with the significance criteria (Section 4.4.3 above), a significant impact would occur if construction activity reduced groundwater supplies or substantially hindered the ability of surface water to recharge the aquifer, resulting in lower groundwater levels. Under the MPWSP, temporary groundwater use during installation of the slant wells and the ASR injection/extraction wells could deplete groundwater supplies. Impact 4.4-3, below, evaluates the operational impacts related to the decrease in recharge.

Water Supply for Slant Well and ASR Drilling and Construction

The proposed slant wells and ASR injection/extraction wells would be built using a dual-wall, reverse-circulation rotary drill rig.[31] Some large-scale drilling projects (comparable to the proposed drilling and well construction) require large volumes of water during well drilling to reduce friction in the drill casing and to help flush rock fragments and pulverized cuttings generated from drilling out the borehole. The volume of water needed for the proposed slant well construction could be between 4 to 5 million gallons, but there might be much less, and perhaps none, depending on how the drilling proceeds (Geoscience, 2014b). The water required for ASR injection/extraction well construction would be less. If the proposed project requires well drilling water, it would be purchased from an outside water purveyor and delivered to the drill site by truck; water would not be extracted from local groundwater sources. No impact on local groundwater supplies would occur because the water needed to build the wells would be provided from an offsite water purveyor and would not be extracted from local groundwater sources.

Water Supply for Pipelines and Other Facility Construction

The proposed project pipelines, MPWSP Desalination Plant, and Carmel Valley Pump Station would be built using standard construction methods that would require water for dust suppression, concrete washouts, tire washing, and general site maintenance. Water for these operations would be purchased from a local water purveyor and delivered to each construction site by truck. Construction of these facilities would use water in amounts that are typical for this type of project, and groundwater pumping would not be necessary. Therefore, construction of the pipelines and support facilities would not impact groundwater supplies.

Impact Conclusion

For the reasons stated above, there would be no impacts associated with groundwater supplies and recharge during the construction of project facilities.

Mitigation Measures

None proposed.

Impact 4.4-2: Violate groundwater water quality standards or otherwise degrade groundwater quality during construction. ***(Less than Significant)***

In accordance with the significance criterion (Section 4.4.3, above), a significant impact would occur if construction discharges to groundwater exceeded water quality standards or otherwise degraded groundwater quality. This analysis evaluates whether construction operations, such as

[31] Dual-wall, reverse-circulation rotary drilling uses a drilling rig with two rotary drives. One drive rotates the outer drilling casing into the subsurface with a hardened drive or cutting shoe, while the other drive rotates an inner drill pipe and cutting bit. In reverse circulation, air or water is pumped under pressure down between the outer drill casing and inner drill pipe, and air, water, and cuttings are returned to the surface in the inner drill pipe. Upon reaching the desired depth, the inner drill string is removed and the well casing, filter pack, and surface seal is built inside the outer casing, allowing the well to be built while holding the native formation materials back from the borehole. Upon completion, the outer casing is withdrawn, leaving the finished well in place.

well drilling and the construction of pipelines and other facilities, would result in impacts on groundwater quality. Section 4.3, Surface Water Hydrology and Water Quality, addresses impacts related to surface water quality; Section 4.5, Marine Biological Resources, addresses impacts related to the marine environment.

Water Quality Impacts Associated with Construction of Slant Wells

The nine new slant wells would be built at depths that extend through the Dune Sand Aquifer and the 180-FTE Aquifer, similar to the existing test slant well. The 180-FTE Aquifer is likely hydrologically connected to the inland 180-Foot Aquifer. Inland of the current seawater intrusion front, wells in the 180-Foot Aquifer are used for irrigation and drinking water supplies. The proposed slant wells would be built using a dual-rotary drill rig that uses air, the water already present in the geologic materials, drilling fluid additives, and, when necessary, additional potable water to circulate the drill cuttings. If potable water were added, the quality of that water would be better than that of the underlying brackish water and therefore would not degrade groundwater quality. Considering that the proposed drilling method would only use air, water or mud, there is a very low potential for groundwater degradation to occur during drilling and, thus, this impact would be less than significant.

Water Quality Impacts Associated with Construction of ASR Injection and Extraction Wells

The ASR injection/extraction wells would be drilled without the use of drilling muds containing bentonite clay. However, when necessary, and depending on the formation material encountered, commercially available additives might be combined with the drilling water to increase fluid viscosity and stabilize the walls of the boring to prevent reactive shale and clay from swelling and caving into the hole. Other products would be used to enhance the drilling performance and help reduce the buildup of solids, decrease friction, and aid in reducing solids suspension. Drilling mud additives are commonly used by the well drilling industry for the drilling and installation of groundwater wells, and do not contain chemicals that would degrade groundwater quality. Because the additives are combined with the water and are circulated through the borehole annulus during drilling, they react locally within the borehole and do not migrate into the surrounding groundwater formation. The additives are noncorrosive and biodegradable, and do not contain chemicals that would degrade groundwater quality. Therefore, while the use of drilling fluid additives would be necessary during the drilling of the ASR injection/extraction wells, the potential for degradation to groundwater is low and the impact would less than significant. Section 4.3, Surface Water Hydrology and Water Quality, addresses the management and disposal of drilling muds and slurries.

All Other Facilities (MPWSP Desalination Plant, Carmel Valley Pump Station, and All Pipelines)

The proposed pipelines would be built along the TAMC right-of-way, Monterey Peninsula Recreational Trail, and existing road rights-of-way. The Carmel Valley Pump Station would be built on an existing concrete pad. These facilities do not require construction activities within groundwater-bearing zones and thus would have a very low potential to degrade groundwater

quality. While pipeline trenches may encounter shallow groundwater, the construction operation of laying a pipeline and backfilling the trench would not release contaminants into the shallow groundwater zone. This impact would be less than significant.

Impact Conclusion

Impacts associated with discharges to groundwater and impacts on groundwater quality during the construction of project facilities would be less than significant.

Mitigation Measures

None proposed.

4.4.5.2 Operations and Facility Siting Impacts

Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations. (*Less than Significant*)

Impact 4.4-3 evaluates the potential effects of extracting and injecting groundwater as proposed by the MPWSP. This impact analysis addresses the following:

- Changes in available supply in the SVGB from groundwater pumping at CEMEX,
- Effect of groundwater extraction at the CEMEX site on nearby groundwater supply wells,
- Effect of injection and extraction through ASR wells on the SGB, and
- Changes in aquifer recharge in SVGB.

Impact on Groundwater Supply in the SVGB

Please see Section 4.4.4, Approach to Analysis, for additional information on modeling, methodology and terms used in this analysis.

This analysis evaluates the extraction and return water components of the proposed project to determine their physical effects on the SVGB and determines whether the changes, if any, constitute a significant impact. The NMGWM^{2016} was the primary tool used to evaluate the effects on the basin and its aquifers and is discussed in more detail in Section 4.4.4, Approach to Analysis, and in **Appendix E2**. The significance criterion states that an impact would occur if extraction from the subsurface slant wells substantially depleted groundwater in the SVGB such that there would be a net deficit in aquifer volume. As described in Section 4.4.3, a substantial net deficit in aquifer volume, for the purposes of this analysis, refers to the removal of groundwater from the aquifer at a rate that exceeds natural recharge such that: 1) groundwater levels are permanently lowered and could not recover to pre-project conditions; 2)production well yields in neighboring active wells decline to such a degree that other groundwater users in the basin experience an intolerable decrease in available groundwater supply, or; 3) the lowering of groundwater results in subsidence and compaction that reduces the available volume of groundwater storage.

First, in order to conservatively judge potential impacts, this analysis determined the pumping scenario that would have the most profound aquifer response from the proposed slant well pumping at the CEMEX site. Extracting groundwater from slant wells at the CEMEX site could cause an aquifer response up to 4 miles inland. **Figure 4.4-13a** shows the cone of depression with -1, -5, -10, and -20-foot contours showing change in groundwater level and the extent of pumping influence in the 180-FTE Aquifer; these drawdowns would stabilize within five years after pumping begins, and would remain stable as long as the MPWSP is pumping. This model scenario assumes that no water would be returned to the SVGB and the sea level would be consistent with current levels. This scenario generates the most pronounced cone of depression with the largest area of influence because groundwater would not be returned to the basin, and because current sea level would not increase groundwater levels and gradients at the coast as it is expected to do in the next 63 years. This scenario was used to represent the maximum area of pumping influence, as shown in **Figure 4.4-13a**.

The second step in this analysis was to use the contour map showing the projected change in drawdown on **Figures 4.4-13a** and the extent of the projected capture zone **4.4-13b** to determine the area of influence, maximum drawdown, and area of capture created by the slant well pumping. The capture zone on **Figure 4.4-13b** is overlaid on the same cone of depression depicted on **Figure 4.4-13a** and represents the capture zone created with a regional gradient of 0.0007.[32]

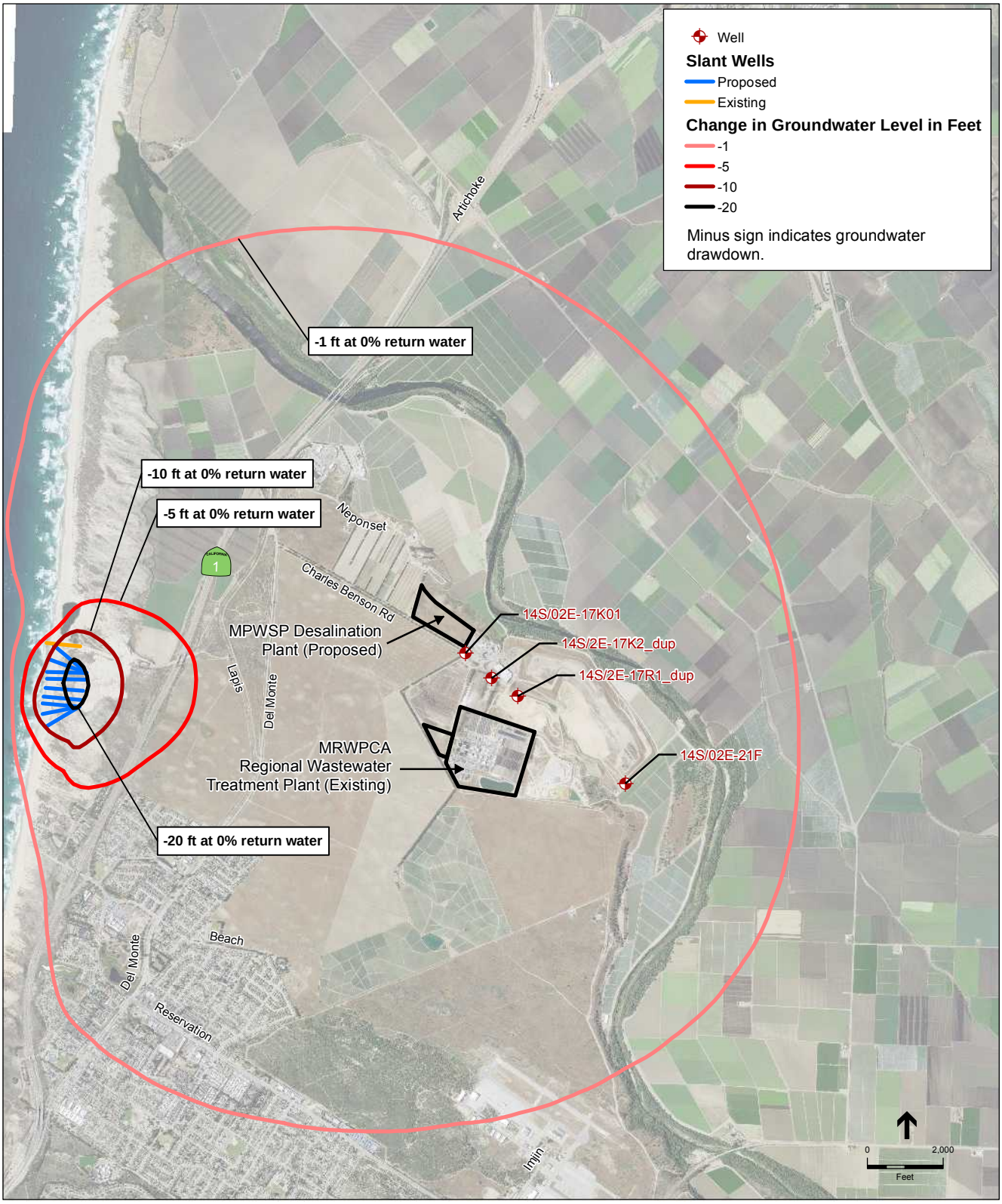
As shown by the projected area of pumping influence on **Figures 4.4-13a** and **4.4-13b**, the orientation of the cone of depression and the slant well capture zone indicate that the majority of the groundwater drawn into the proposed MPWSP slant wells would originate in the aquifer zones located at and slightly offshore of the coast and would likely be composed primarily of highly brackish ambient groundwater present in the aquifer materials and seawater. The western extent of the cone of depression is just offshore and near the slant wells where the drawdown would be deepest and contours steeper, indicating more flow to the slant wells and higher yield near the coast. This coincides with the shape of the capture zone. At the coast, seawater entering the slant wells would have the shortest and least restricted pathway through the overlying seafloor deposits.

The relationship between the cone of depression and the capture zone is shown graphically on **Figure 4.4-13c**, which provides a cross-sectional illustration of the Pre-Project and Project water levels, drawdown, and capture zone. The "Pre-Project" Condition (shown at the top of **Figure 4.4-13c**) depicts groundwater flowing inland from the coast at a gradient of 0.0005[33] and represents the groundwater condition in the 180-FTE Aquifer. The "Project Condition" represents how the groundwater would respond to slant well pumping in the 180/180-FTE Aquifer, assuming 2012 sea level and no return water, and is correlative to the map view of the cone of depression shown on **Figures 4.4-13a** and **4.4-13b**.[34] As illustrated by Figure 4.4-13b, when the

[32] A 0.0007 regional gradient is considered more representative of the minimum gradient based on local conditions. and is used herein for purpose of demonstration. The actual capture zone may be smaller with a higher steeper gradient.

[33] The gradient of 0.0005 is used in Figure 4.4-13c as a representative gradient for the purposes of demonstration.

[34] It should be noted that the vertical scale in the cross section is considerably exaggerated in the "Project Condition" to clearly illustrate the relationship between the cone of depression and the capture zone; for reference, the NMGWM[2016] projected that the maximum drawdown amount under this pumping scenario was about 29 feet at the slant wells.

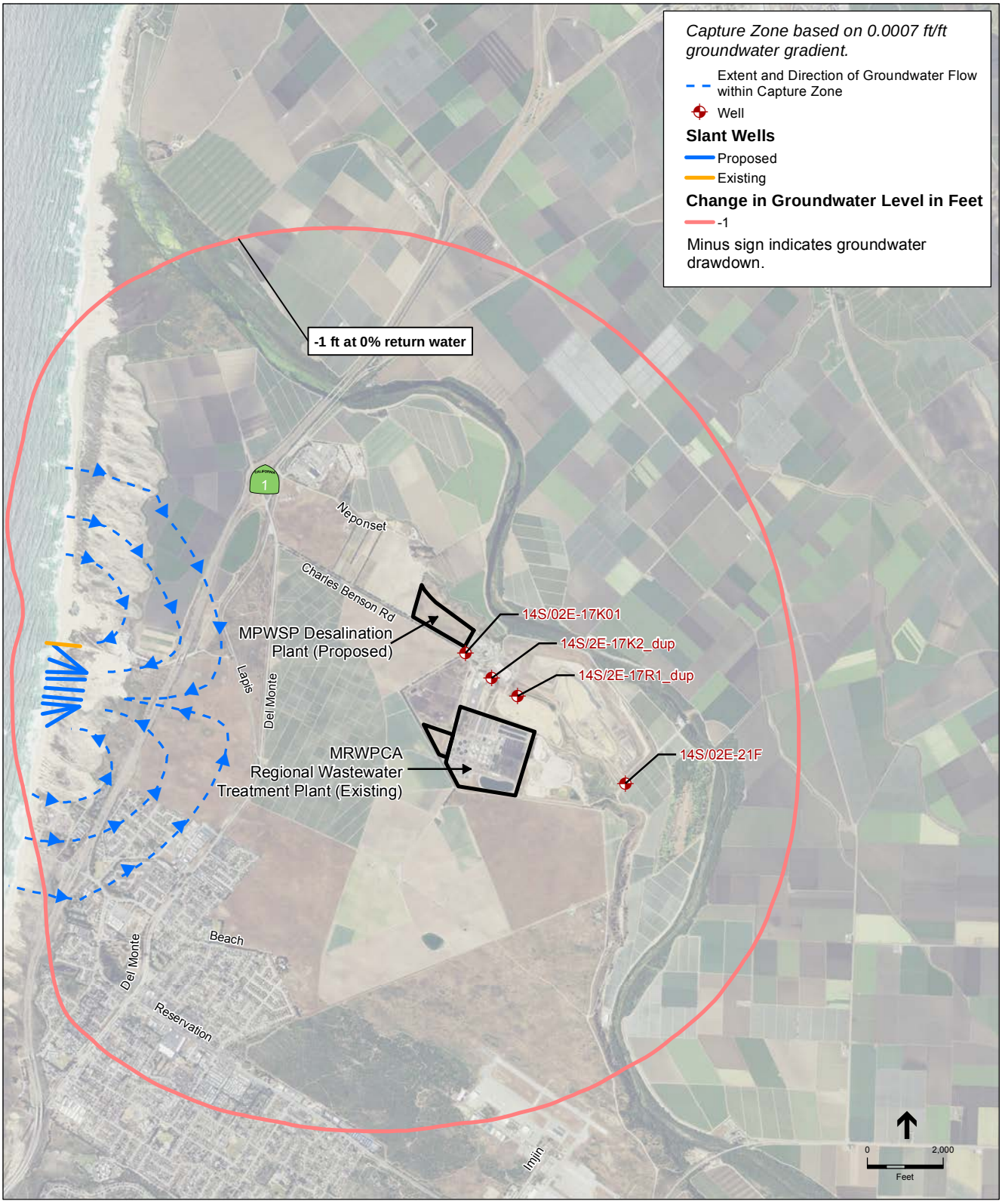


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-13a

Proposed Project: Response of 180-Foot Aquifer after 63 Years
0% Return Water

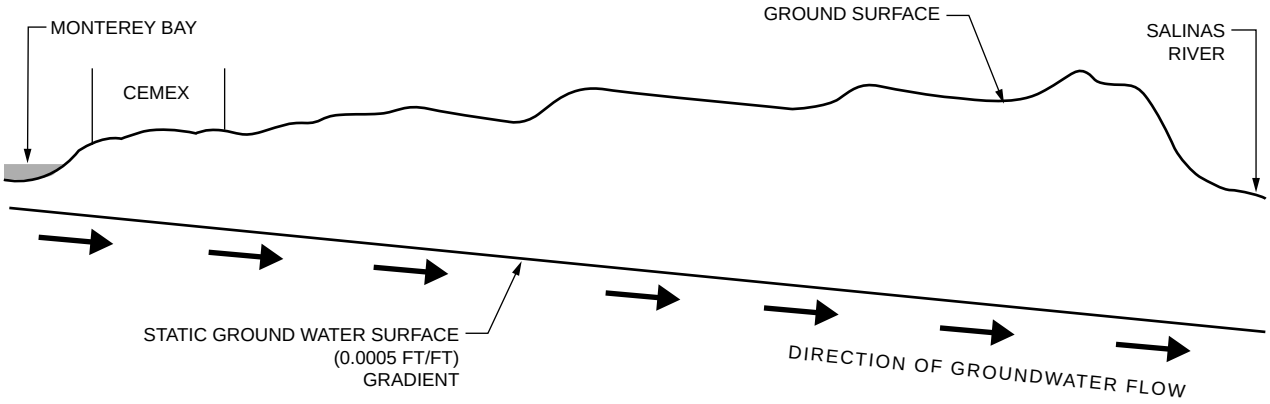


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

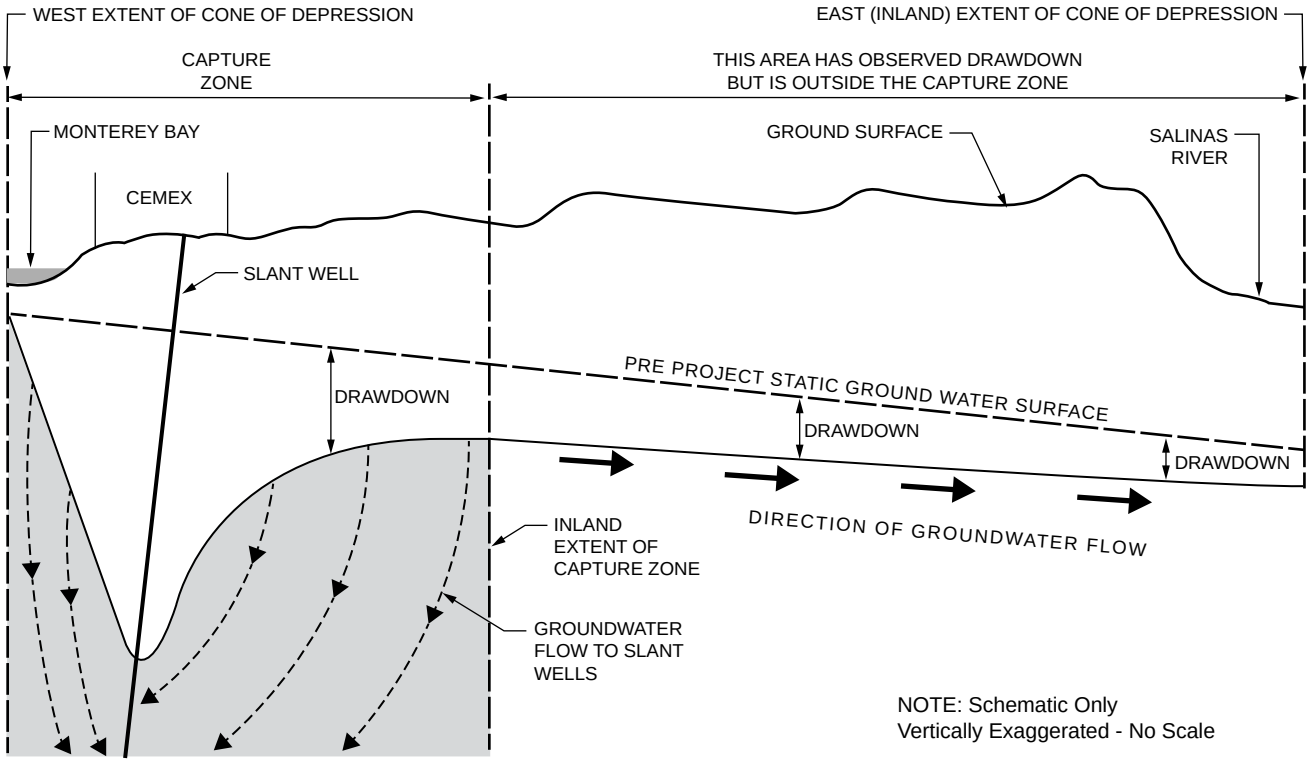
Figure 4.4-13b
Extent of Capture Zone and -1-Foot Contour of Cone of Depression
180-Foot Aquifer After 63 Years
0% Return Water

PRE PROJECT CONDITION



NOTE: Schematic Only
Vertically Exaggerated - No Scale

PROJECT CONDITION



NOTE: Schematic Only
Vertically Exaggerated - No Scale

SOURCE: ESA

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-13c
Schematic Showing Relationship Between Cone of Depression and Capture Zone

slant wells are pumping, water within the capture zone would be drawn into the wells from the surrounding sediments. The groundwater responds by creating a cone of depression, which would be most pronounced near the slant wells and would decrease and become shallower as the cone of depression extends eastward. The inland extent of the capture zone (shown by a vertical dashed line) is the point that could be described as a groundwater gradient divide: groundwater west of the divide is drawn into the capture zone by the slant wells and thus flows west, while the groundwater to the east of the divide continues to flow inland unimpeded under the regional gradient.

The third step in this analysis was to assess the quality and current use of the groundwater that would be extracted by the slant wells. As described in subsection 4.4.1.4, above, groundwater monitoring in wells from the coast inland about 8 miles in the 180-Foot Aquifer and 400-Foot Aquifer have shown evidence of legacy and ongoing seawater intrusion for decades. Currently, there are no groundwater supply wells drawing potable groundwater supplies from the Dune Sand Aquifer because of its overall limited extent. The MPWSP slant wells would not extract potable groundwater. Groundwater in the Dune Sand and 180-FTE Aquifers within the projected MPWSP slant well capture zone is highly brackish to saline, far exceeding the State Drinking Water Standard of 500 mg/L of TDS. This is the water that would become the source water for the proposed MPWSP slant wells. Other than at CEMEX, there are no groundwater supply wells or groundwater users of this highly intruded groundwater. Water quality in the capture zone is well represented by the CalAm monitoring well clusters MW-1, MW-3, and MW-4 and Test Slant Well results. Groundwater samples collected in monitoring wells in February 2015 indicate TDS concentrations ranging between 23,400 mg/L (MW-3S) to 30,900 mg/L (MW-1M) and chloride concentrations ranging between 11,680 mg/L and (MW-3S) and 16,037 mg/L. The concentrations also far exceed the 3,000 mg/L TDS threshold that SWRCB Resolution No. 88-63 (Appendix A-9 of the Basin Plan for the Central Coastal Basin) uses to determine whether groundwater is suitable, or potentially suitable, for municipal or domestic water supply (SWRCB, 2015). Recent testing for TDS in groundwater within the projected capture zone verifies the degree of seawater intrusion and these data show that groundwater within the projected capture zone of the proposed MWSP slant wells is highly brackish with elevated TDS attributable to seawater intrusion.

Current groundwater production in the Dune Sand Aquifer and the 180-FTE Aquifer at the CEMEX site and within the model-projected area of influence from MPWSP pumping is limited to minor irrigation and dust control. There are no water supply wells pumping potable water. Most of the wells in the coastal area are no longer active because of seawater intrusion. Furthermore, groundwater production is restricted within the seawater intruded coastal areas in the vicinity of the CEMEX site through MCWRA Ordinance 3709, which prohibits drilling wells and pumping groundwater from certain areas within the 180-FTE Aquifer in order to protect groundwater resources. While the proposed slant wells would not be located within the boundaries of Ordinance 3709, a portion of the area of pumping influence east of CEMEX is within the jurisdictional boundary of Ordinance 3709.

Conclusions of Impact Analysis – Depletion of Groundwater Supply from the SVGB

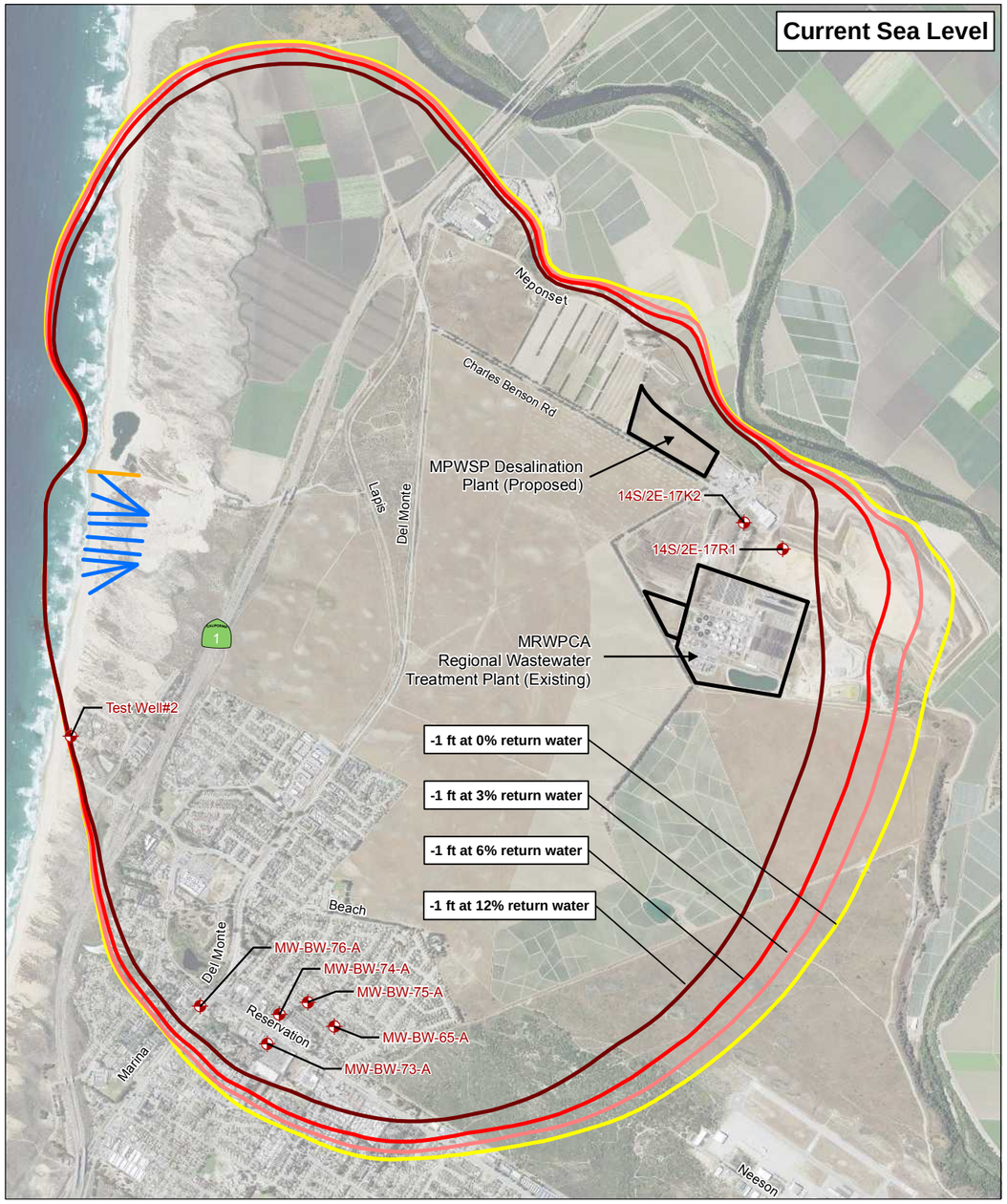
The proposed project would not deplete groundwater supplies in the Dune Sand, the180-FTE Aquifer, the 400-Foot Aquifer or the Deeper Aquifer; it would extract primarily seawater and a

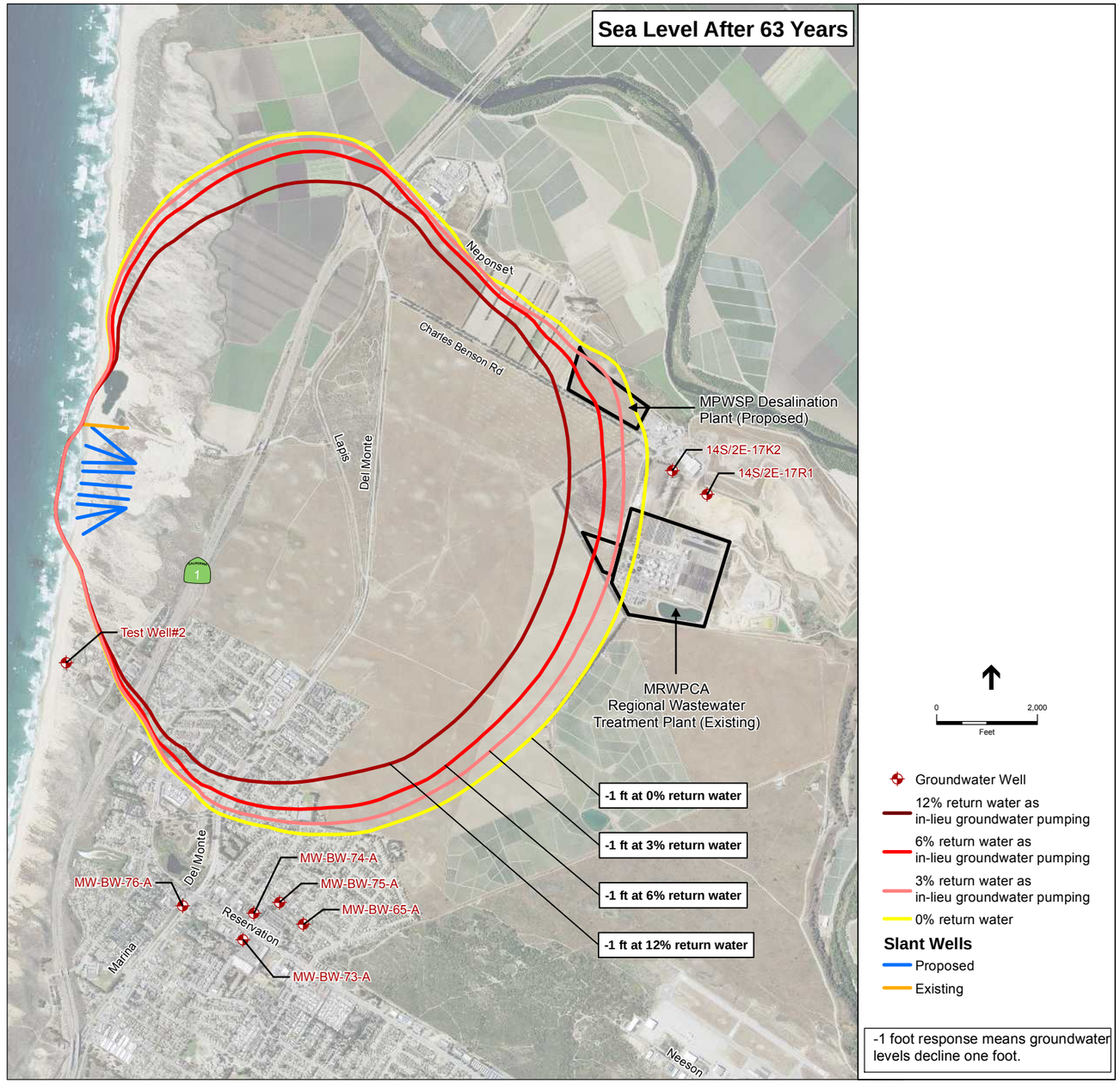
smaller volume of highly brackish ambient groundwater from a localized coastal capture area with only minor localized groundwater drawdown (1 to 5 feet) extending up to 4 miles inland. As the slant wells and the capture zone they create are located at the coast, seawater would be the primary source of recharge, and the regional inland gradient would preclude inland groundwater in the Dune Sand Aquifer and 180-Foot Aquifer from being drawn to the capture zone. The capture zone created by MPWSP groundwater pumping is within an area that has been degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity. When desalinated water is returned to the basin as part of the MPWSP, groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas would improve as water levels increase from in-lieu groundwater recharge. The return water component of the MPWSP would benefit each of the aquifers by either reducing the area of influence or by increasing groundwater levels in other areas. The effects of return water on the basin water levels are discussed below and shown on **Figures 4.4-14** through **4.4-16**. If the proposed project did not return any water, localized depressed groundwater levels would likely persist in the three affected aquifers throughout the life of the project. However, the area affected by groundwater pumping would remain localized and the MPWSP would continue to extract only highly brackish groundwater and seawater from the coast.

The MPWSP would not deplete groundwater supply from the SVGB or result in a substantial net deficit in aquifer volume of the Dune Sands or 180-FTE Aquifer because the slant well capture zone would be supplied by an unlimited source of recharge from the Monterey Bay that would replace the highly brackish ambient groundwater with seawater. At this rate of recharge, groundwater levels would be drawn down but would reach equilibrium (steady state) and are projected to increase over time, reducing the extent of the cone of depression, with sea level rise. The MPWSP slant wells would not draw groundwater from beyond the eastern extent of the capture zone in the Dune Sand or 180-FTE Aquifers so, other than a minor drawdown ranging between 1 and 5 feet up to 4 miles inland that would affect only a few active non-potable production wells, the water supplies of other basin users would not be intercepted, depleted, or degraded. The underlying geology (Terrace deposits) and the degree of projected drawdown would not be sufficient to trigger permanent subsidence or compaction and the eventual loss of aquifer volume. In addition, the calculated fraction of groundwater in the MPWSP source water would be returned to the basin as in-lieu recharge and, therefore, the water provided to the CalAm service area would have originated from the ocean. This return water function would essentially put the SVGB in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of SVGB pumping. Based on the conclusions of this analysis, this impact would be less than significant.

Impact on Nearby Production Wells

An impact would be considered significant if the proposed project were to lower groundwater levels in a nearby municipal or private groundwater production well enough to cause a substantial reduction in well yield, or to cause physical damage due to exposure of well screens and well pumps. The nearby production wells that could be affected by MPWSP pumping at the CEMEX site are shown on **Figure 4.4-14** and listed in **Table 4.4-10**.



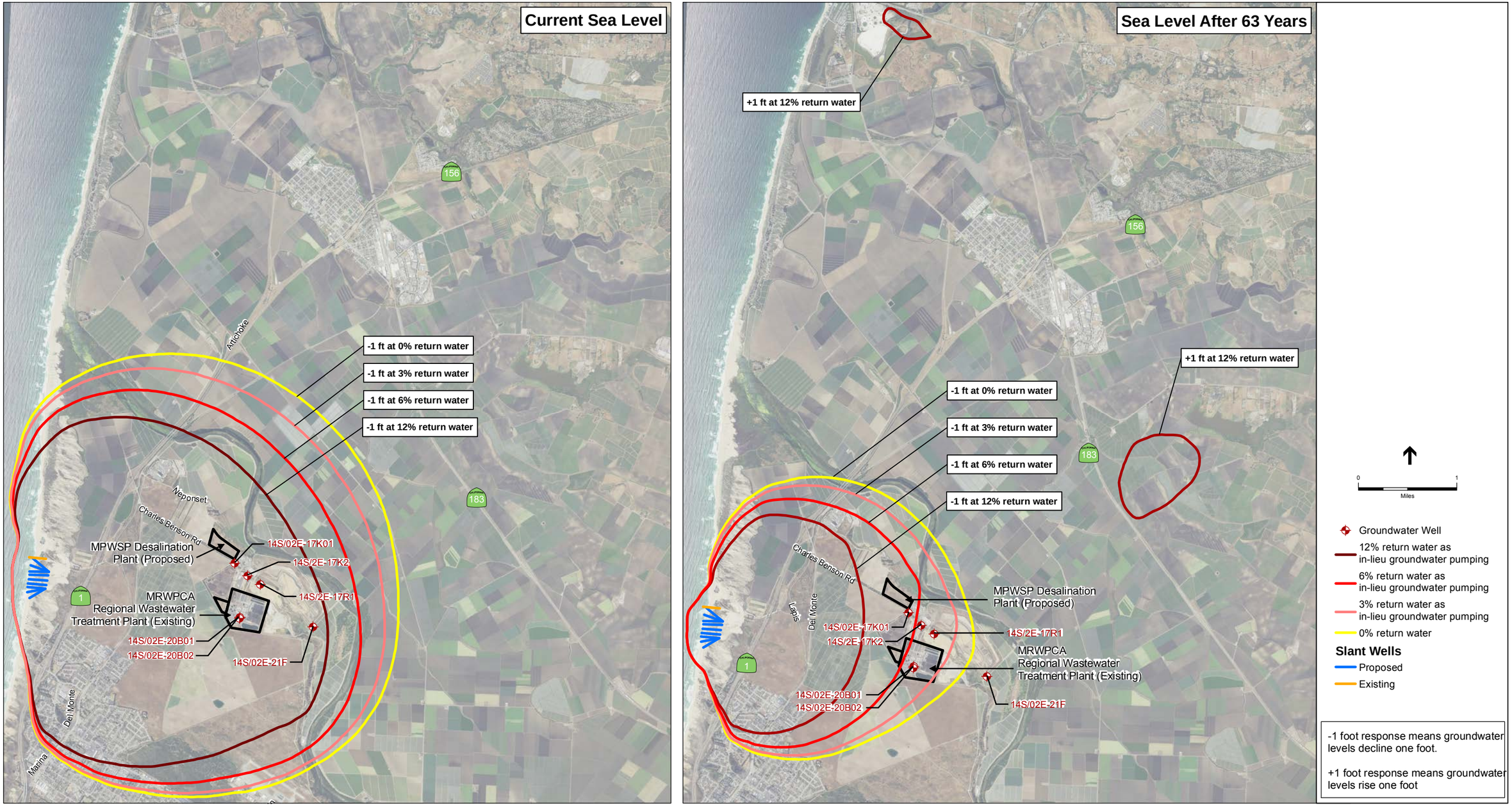


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-14

Proposed Project: 1-Foot Response in Dune Sand Aquifer

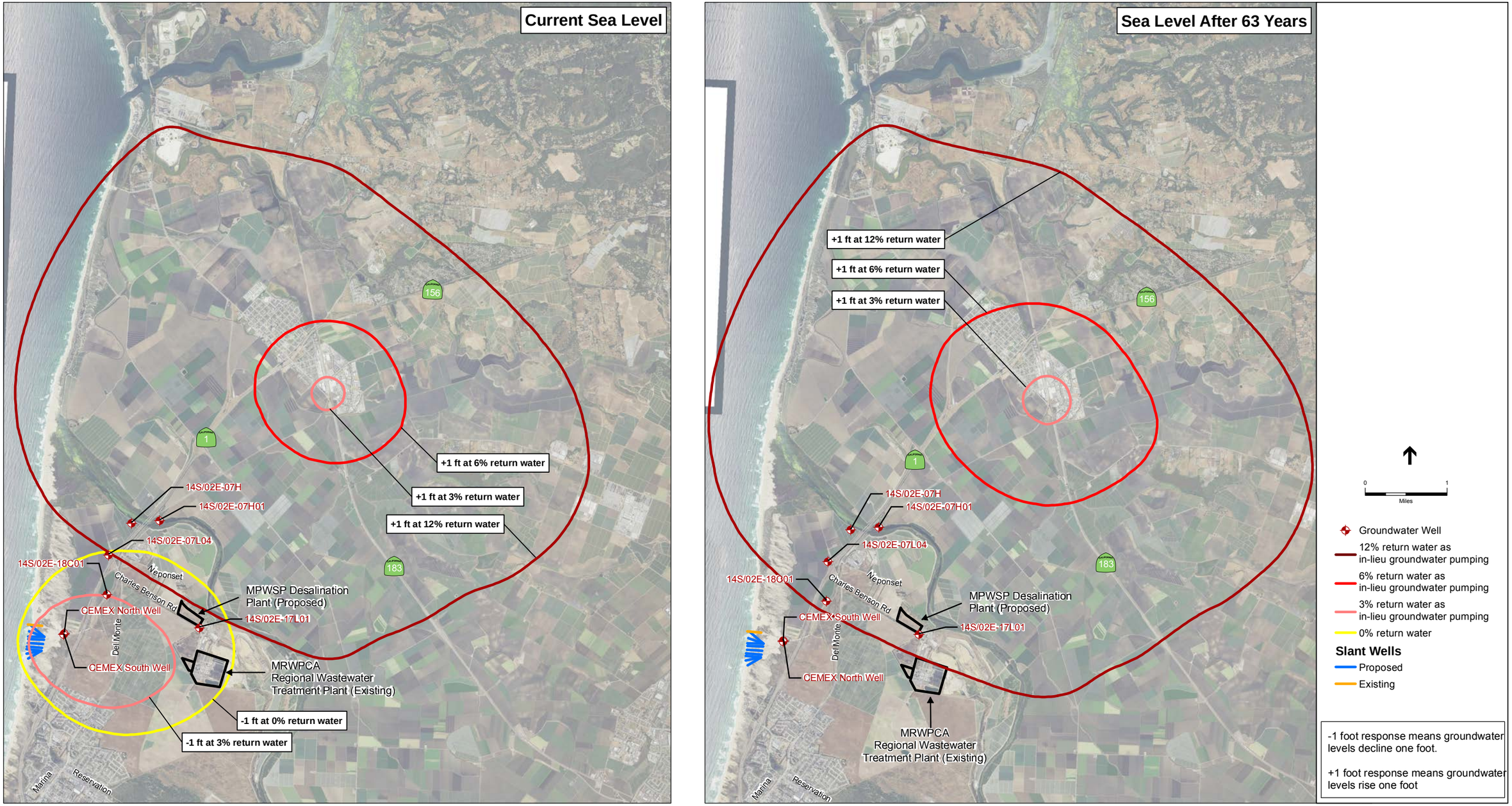


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-15

Proposed Project: 1-Foot Response in 180-Foot Aquifer



SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.4-16

Proposed Project: 1-Foot Response in 400-Foot Aquifer

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TABLE 4.4-10
KNOWN ACTIVE SUPPLY WELLS WITHIN VICINITY OF THE PROPOSED MPWSP SLANT WELLS

Well Owner	Well Number/ID	Aquifer	Use Status
CEMEX	South Well North Well	400	South Well is located about 1,600 feet southeast of the insertion point of the proposed slant wells. The well screen is set between 400 and 506 feet and is separated from the intake portion of the slant wells by the 180/400-Foot Aquitard. CEMEX North collapsed and is unusable.
Ag Land Trust	14S/02E-18C01	400	"Small Well" (14S/2E-18C1) is located between Lapis Road and east of Highway 1 and is used to supply a water truck filling station for dust control.
	14S/02E-18E01	900	"Big Well" (14S/02E-18E01) is located adjacent to the west side of Highway 1, north of the access road to the CEMEX property. The Big Well has no pump, but is reportedly occasionally hand-bailed for irrigation on local restoration projects.
MRWPCA Regional Wastewater Treatment Plant	14S/02E-20B01	180	Three wells are located just southeast of the proposed MPWSP Desalination Plant, but only the well screened across the Deeper Aquifer is active and is used for domestic purposes (i.e., drinking water, washing, toilets).
	14S/02E-20B02	180	
	14S/02E-20B03	900	
Monterey Peninsula Landfill	14S/02E-17K01	180	Located adjacent to and southeast of the proposed desalination plant site on Charles Benson Road. Four wells are screened across the Dune Sand Aquifer and/or the 180-FTE Aquifer. Three of the water supply wells are used for dust control; the fourth well is inactive.
	14S/02E-17K02	DSA and 180	
	14S/02E-17R01	DSA and 180	
	14S/02E-21F	180	
Bill Baillee/Unknown	14S/02E-07H	400	Two local private wells owned by Bill Baillee (14S/02E-07H and 14S/02E-07H01) and two with unknown owners (14S/02E-17L01 and 14S/02E-07L04). These wells are screened across the 400-Foot Aquifer.
	14S/02E-07H01	400	
	14S/02E-17L01	400	
	14S/02E-07L04	400	
Municipal Wells			Municipal wells are mentioned here, but they are not shown on figures because the City of Marina's Wells 10, 11, and 12 are over 2 miles to the southeast outside of the capture zone, and are screened in the Deeper Aquifer (MCWD, 2005). The Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers (MCWD, 2005)

NOTES:

MRWPCA = Monterey Regional Water Pollution Control Agency
DSA = Dune Sand Aquifer
180 = 180-FTE Aquifer or 180-Foot Aquifer
400 = 400-Foot Aquifer
900 = Deeper Aquifer

SOURCE: Geoscience, 2015c; MRWMD, 2003.

This impact analysis presents and discusses the NMGWM^{2016} model output that were used to project the aquifer response to the proposed MPWSP extraction of groundwater at the CEMEX site. These model outputs are used to assess the impacts on the nearby, active groundwater supply wells located within an area extending about 4 miles inland from the CEMEX site.

The aquifer response to the proposed project is shown for the Dune Sand Aquifer, (**Figure 4.4-14**), the 180-FTE Aquifer (**Figure 4.4-15**), and the 400-Foot Aquifer (**Figure 4.4-16**). As shown in Figures 5.3a-b and 5.4a-b of Appendix E.2, the NMGWM^{2016} calculated no drawdown in Model Layer 8 (the Deeper Aquifers or "900-Foot Aquifer") from the 9.6 mgd (proposed project) pumping scenario at CEMEX. The NMGWM^{2016} did not project an aquifer response from MPWSP pumping in the deeper aquifers, (often referred to as the 900-Foot Aquifer) underlying the 400/900 Foot Aquitard. These figures also show the local nearby water supply wells described in **Table 4.4-10** but locate only those supply wells that are screened in the specified aquifer. For instance, only wells screened in the 180-FTE Aquifer are shown on **Figure 4.4-15**. Each figure also provides a side-by-side comparison of the aquifer response at current sea level in Model Year 1 and the predicted sea level in Model Year 63.

The extent of aquifer response is shown using the -1-foot groundwater contour. This contour was chosen to delimit the minimum regional response of MPWSP pumping. Groundwater levels inside the -1-foot contour would have a groundwater drawdown greater than 1 foot. **Figure 4.4-13a** shows where the -1, -5, -10, and -20-foot drawdown contours would be inside the cone of depression formed under the pumping scenario with the greatest magnitude of aquifer response (0 percent return water under current sea level conditions). **Figures 4.4-14** through **4.4-16** show the -1-foot contour under the 0, 3, 6, and 12 percent return water scenarios.

Groundwater modelers used these return water percentages to capture minimum, maximum, and mid-range estimates of return water volumes. The amount of return water is expected to range between 0 percent and 12 percent. A 0 percent return volume would mean the MPWSP would extract water but not return water to the basin as in-lieu recharge. This would depict the condition that causes the greatest projected magnitude of aquifer response from MPWSP pumping.

Results of Impact Analysis - Proposed Project on Nearby Production Wells

Observations of Pumping Response Applicable to all Aquifers

The maximum projected pumping response in all three aquifers is depicted by the -1-foot contour at 0 percent return water, under current sea level rise conditions. The -1-foot contours resulting from 3, 6 and 12 percent return water consistently show an aquifer response less than that resulting from the 0 percent return water scenario. The area of pumping influence would be less pronounced under the sea level rise conditions expected after 63 years of operation because higher sea levels exert greater pressures at the coast, making more seawater available to the slant wells. Consequently, groundwater levels may decrease in a well when the MPWSP starts pumping, but could increase as the cone of depression decreases over the 63 years of operation.

Aquifer Response in Dune Sand Aquifer

The Dune Sand Aquifer response from MPWSP pumping, with current sea level conditions and 0 percent return water, would extend a maximum of about 3 miles inland from the CEMEX site (**Figure 4.4-14**). Under sea level conditions after 63 years, the area of influence would be reduced in size by about a mile. Monterey Peninsula Landfill wells 14S/2R-17K2 and 14S/2R-17R1 are screened in the Dune Sand Aquifer. It is important to note that the NMGWM[2016] considers the Dune Sand Aquifer, the Salinas Valley A Aquifer, and the -2-Foot Aquifer, plus the hydraulically disconnected perched, mounded aquifers at the Monterey Peninsula Landfill and the Fort Ord "A" Aquifer (occurring 1.5 miles inland) as one connected aquifer. However, this is not the actual hydrogeologic condition and therefore, there would be no impacts on the perched, mounded aquifers because they are above the Dune Sands Aquifer.

Aquifer Response in 180-FTE Aquifer

The greatest observed groundwater response to MPWSP pumping would be in the 180-FTE Aquifer under the current sea level conditions (**Figure 4.4-15**). The -1-foot contour resulting from the 0 percent return water scenario would extend a maximum distance of about 3.6 miles to the northeast. With sea level rise after 63 years, the aquifer response for all three return water scenarios would be reduced by about a mile. Under the 12 percent return water scenario, two localized areas of groundwater level increase would develop: one would be located 5 miles to the northeast, near Highway 183, and one would develop about 6.5 miles north, near Dolan Road in Moss Landing. Two small circular +1-foot contours indicate an increase in the groundwater level of 1 foot or more. This increase represents the effects of 12 percent return water, with the corresponding reduced pumping in the 400-Foot Aquifer underlying CSIP and CCSD.[35] Monterey Peninsula Landfill wells 14S/2R-17K01, 14S/2R-K02, 14S/2R-17R1, and 14S/2R-21F are screened in the 180-FTE Aquifer.

Aquifer Response in the 400-Foot Aquifer

Under the 0 percent return water scenario and current sea level conditions, the aquifer response would extend inland about 2.5 miles from the CEMEX site (**Figure 4.4-16**). Aquifer response with 3 percent return water and the current sea level would produce two conditions in the 400-Foot Aquifer: an area of pumping response extending inland from CEMEX about 1.8 miles, and an area of localized groundwater level increase near the CCSD. Under a 6 percent return water scenario, and under the current sea level conditions, the only aquifer response would be a groundwater level rise encompassing the CCSD and portions of the CSIP delivery area near Castroville. This change would be a likely result of CCSD reducing groundwater pumping because it would be receiving desalinated return water. With 12 percent return water and at current sea level rise, the groundwater levels in the 400-Foot Aquifer could increase by at least 1 foot north of the Salinas River, including the CCSD and CSIP areas, and areas east of Highway 183.

[35] The two isolated areas of increased groundwater levels in the 180-Foot Aquifer (sea level rise conditions after 63 years) are in response to decreased pumping from the 400-Foot Aquifer. The pumping reduction allows water to recover in the 400-Foot Aquifer, and as a result, the difference between water levels in the 180-Foot Aquifer and 400-Foot Aquifer decrease. The model results indicate, therefore, that water levels in the 180-Foot Aquifer will be greater than if pumping from the 400-Foot Aquifer continued.

The aquifer response with 0 percent return water and sea level conditions after 63 years could result in no aquifer response in the 400-Foot Aquifer. This is because higher sea level would provide more pressure at the coast and available seawater to the slant wells, which reduces the differences between water levels in the 180-Foot Aquifer and 400-Foot Aquifer. With 3, 6, and 12 percent return water and sea level rise after 63 years, the aquifer response would be similar to current sea level conditions, resulting in increased water levels extending out from the city of Castroville for about 3 to 4 miles in all directions. The CEMEX South Well, the Ag Land Trust Well (14S/02E-18C01), the MRWPCA Regional Wastewater Treatment Plant wells (14S/02E-20B01, 14S/02E-20B02), and the Bill Baillee/unknown wells (14S/02E-07H01, 14S/02E-07H, 14S/02E-07L01, and 14S/02E-07L04) are screened in the 400-Foot Aquifer.

Aquifer Response in the Deeper Aquifers

As shown in Figures 5.3a-b and 5.4a-b of Appendix E.2, the NMGWM^{2016} calculated no drawdown in Model Layer 8 (the Deeper Aquifers or "900-Foot Aquifer") from the 9.6 mgd (proposed project) pumping scenario at CEMEX (nor for reduced pumping scenarios or pumping at Potrero Road, associated with Alternatives 1, 5a, and 5b; see Section 5.5.4 and Appendix E2, Figures 5.9a-b and 5.10a-b). Therefore, it was concluded that the proposed slant well pumping at CEMEX would not influence groundwater levels in the deeper aquifers and there would be no direct groundwater drawdown impact from the MPWSP on the deeper aquifers.

As the deeper aquifers could rely on leakage from overlying aquifers, effects on these aquifers from slant well pumping in the 400-Foot Aquifer requires consideration. Based on the impact discussion for the 400-Foot Aquifer presented above, the proposed slant well pumping could cause a localized response in the 400-Foot Aquifer under current sea level conditions with 0 and 3 percent return water. The 6 and 12 percent return water scenarios would not draw water levels down in the 400-Foot Aquifer but would increase groundwater levels near CCSD and Castroville and east of Highway 183. Therefore, the pumping effect on the 400-Foot Aquifer under the 0 and 3 percent return water scenarios would not affect recharge to the deeper aquifers because the area of influence (the model-calculated cone of depression) would occur in an area where production wells are not actively pumping from the deeper aquifers. Under the 6 and 12 percent return water scenarios, groundwater levels could increase in the 400-Foot Aquifer, possibly increasing potential recharge to the deeper aquifers. Additionally, the projected groundwater drawdown effects in the 400-foot Aquifer from the MPWSP would not extend south to Marina, so it would not directly influence leakage recharge to the portions of the deeper aquifers currently pumped by MCWD production wells.

Depth of Well Screens in 180-FTE Aquifer and 400-Foot Aquifer

There are no active production wells extracting groundwater from the Dune Sand or 180-FTE Aquifers within the boundaries of the area projected as the MPWSP capture zone. There are no public or private wells completed in the Dune Sand Aquifer within the projected area of influence of MPWSP pumping. **Table 4.4-10** lists those wells that are within the area of influence (cone of depression) created by the proposed MPWSP slant well pumping and that could experience between 1 and 5 feet of drawdown because of the MPWSP pumping. These wells would be completed in the Dune Sand and 180-FTE Aquifer. Based on available well construction logs of

private and Monterey Peninsula Landfill supply wells, and information from the CalAm groundwater monitoring data, screen intervals of wells completed in the 180-FTE Aquifer range between 150 and 250 feet below the ground surface. For example, the well screen interval in Monterey Peninsula Landfill well 14S/02E-17K01, completed in the 180-FTE Aquifer, was placed between the depth interval of 210 to 250 feet and the water level in fall 2016 was about 95.0 feet below ground surface. The groundwater surface in this well, therefore, is 115 feet above the top of the well screen. The top of the well screen in the Bill Baillee well (14S02E-17L01), which is screened in the 400-Foot Aquifer, is 133 feet below the groundwater surface. Water levels in the 180-FTE Aquifer can range from 50 to 100 feet below ground surface in the area influenced by the MPWSP slant well pumping. In most cases, therefore, the well screens in these local supply wells are at least 100 feet below the groundwater surface in the well.

The MCWRA compiles annual regional groundwater level data on a quarterly basis for the SVGB including the Pressure 180-Foot Aquifer and Pressure 400-Foot Aquifer and compares the data to a representative dry water year and the 30-year average (MCWRA, 2018a). According to MCWRA water level data, the 30-year average (1987 to 2017) groundwater levels in the Pressure 180-Foot Aquifer fluctuate seasonally about 17 feet: from about 22 feet above mean sea level (amsl) in the winter months to 5 feet amsl in the summer. The lowest seasonal average water levels are recorded during drought years where, seasonally, the maximum seasonal fluctuation can be similar to the 30-year average (about 17 feet) but the groundwater levels drop about 10 feet overall, as was the case during the peak of the 2015 drought when the groundwater levels reached an annual low of about 6 feet below mean sea level. The groundwater level trends are similar in the pressure 400-Foot Aquifer where the annual seasonal fluctuation is about 20 feet between: 7 feet amsl in the winter months to 17 feet below mean sea level in the summer. The drought year groundwater level fluctuation was similar to the 30-year average (about 22 feet) but the groundwater levels dropped about 7 feet in the dry water year of 2015.

The projected drawdown of 1 to 5 feet in the neighboring wells from MPWSP slant well pumping would not draw water in the well close to the top of the screen. The potential that the increment of drawdown attributable to the MPWSP pumping would result in reduced well yield, exposure of well screens, or well damage during a drought year or as a result of other pumping stresses in the SVGB is low because the height of the groundwater over the screen is adequate to accommodate the tens of feet of annual water level changes due to seasonal fluctuations, agricultural pumping in normal water years, reduced recharge in drought periods, and additional drought-period pumping.

Impact Conclusion – Impact of Proposed Project on Nearby Production Wells

This analysis demonstrated that certain groundwater supply wells located within the slant well area of influence could experience a change in groundwater level between 1 and 5 feet during the life of the project.

The NMGWM^{2016} considered the effects of the project with and without returning water to the SVGB. The more profound groundwater level declines would occur under the 0 percent return water scenario because, under the 0 percent return water scenario, no water would be returned to the CCSD or CSIP for in-lieu groundwater recharge and pumping in the 400-Foot Aquifer would not be reduced. However, if 3 to 12 percent return water is supplied as in-lieu groundwater

recharge, there would be less of a response to MPWSP pumping in the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer. Increased sea level rise over the next 63 years would additionally reduce the area influenced by MPWSP pumping.

The nearby groundwater production wells affected by the change in groundwater levels are constructed in the 180-FTE Aquifer or the 400-Foot Aquifer and thus have casings, pumps, and screens at depths considerably deeper than the water table. Therefore 1 to 5 feet of drawdown due to MPWSP pumping would not lower water levels below the top of the well screens. A water level decline between 1 and 5 feet would not expose screens, cause damage, or reduce yield in the groundwater supply wells influenced by MPWSP pumping. Based on the modeled response of the 24.1 mgd extraction rate at the CEMEX site, the impact on nearby water supply wells would be less than significant.

Applicant-Proposed Measure

CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB. So, as part of the project, CalAm proposes to fund the expansion of the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot or more in the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. This constitutes an Applicant-Proposed Measure that is presented and evaluated at the end of **Impact 4.4-3**.

Impacts of ASR Injection/Extraction Wells

The volume of treated desalinated water routed to the ASR system would depend on precipitation and the water supply demands in any given year, but is expected to be about 2,100 afy. The injection of this additional water into the confined Santa Margarita Sandstone could create short-term groundwater mounding, which can cause localized changes in groundwater levels and flow. A significant impact could occur if operation of the proposed ASR injection/extraction wells resulted in groundwater mounding, change in groundwater gradients, or lower groundwater levels such that nearby municipal or private groundwater production wells were to experience a substantial reduction in well yield or physical damage due to exposure of well pumps or screens.

The MPWMD's ASR EIR (2006) analyzed the impacts on groundwater storage and water levels in the SGB. The analysis presented a pilot study and a groundwater model to evaluate the impacts on groundwater storage in the SGB through operation of the ASR program. The analysis determined that up to 2,426 afy could be injected through the implementation of the ASR program, of which up to 2,003 afy would be extracted. The findings of the analysis concluded that injecting excess treated Carmel River water into the ASR injection/extraction wells was beneficial to groundwater storage within the SGB, so long as extraction did not exceed injection on an annual basis.

Since the MPWMD's ASR project was approved with injection beginning in 2001, 2 afy to 1,117 afy of excess Carmel River have been injected into and extracted from storage for a total of about 4,175 af through 2013 (Pueblo Water Resources, 2014). Although, due to lack of precipitation and constraints in the existing CalAm transmission system, the program has not achieved 2,426 afy,

the annual volume of water evaluated in the ASR EIR, the groundwater monitoring results indicate that the injection and extraction of water does not adversely affect groundwater storage in the SGB. However, the MPWMD ASR program can only divert winter flows from the Carmel River that are in excess of in-river needs, and is therefore rainfall dependent. Furthermore, the program does not increase storage in the SGB, since the injected Carmel River water is subsequently pumped back out to reduce CalAm's pumping from the Carmel River and the SGB.

The proposed project would include the installation of two additional ASR injection/extraction wells to increase the reliability of the ASR program to inject and extract Carmel River water, and to allow for the injection and ultimate extraction of treated desalinated water. However, the injection and extraction volumes of water from the desalination plant would be managed such that there would be no net negative change to the storage of groundwater on an annual basis. That is, the volume of water in storage would not be allowed to decrease due to extraction. Water injected in a particular year but not used in that same year could be stored for the next year.

In addition, CalAm must return to the basin 700 afy of water for the next 25 years to mitigate its overdraft of the SGB (Seaside Groundwater Basin Watermaster, 2012b). To accomplish this water exchange, CalAm would extract only 774 afy of its 1,474 afy SGB adjudicated allocation. The payback of 700 afy for 25 years would result in the retention of 17,500 afy in storage, reducing the historical overdraft of the SGB and increasing groundwater levels.

Impact Conclusion – Operation of the ASR Injection/Extraction Wells

Injection and extraction would be managed so that the water provided from the desalination plant would not constitute a net negative change in storage. Because the storage in the aquifer would increase by 700 afy for the first 25 years and then remain constant thereafter, impacts related to mounding, change in groundwater flow directions and excessive extraction would not occur and the impact would be less than significant.

Impacts on Groundwater Recharge

The MPWSP could interfere with groundwater recharge by decreasing groundwater elevations from groundwater pumping, thereby disrupting the existing surface water–groundwater interaction on the Salinas River or creating additional impervious surfaces through the construction of project facilities. Impervious surfaces reduce the volume of rainwater that infiltrates down to the aquifer. A significant impact would occur if the proposed project causes a net deficit in aquifer volume or lowers the local groundwater table level so as to interfere substantially with groundwater recharge. The proposed project's contribution to alteration of the surface water-groundwater interaction and the increase in impervious surfaces is discussed below.

Impacts of the Project on the Surface Water-Groundwater Interaction at the Salinas River

As a river flows over the land surface, it may lose water to the subsurface or gain water by intersecting groundwater from the underlying water table,[36] depending on the depth to

[36] The water table is the surface of the shallowest aquifer that is unconfined and open to the overlying atmosphere. In this case, the groundwater surface of the Dune Sand Aquifer or the inland Perched A Aquifer would be the water table.

groundwater relative to the level of the riverbed. This surface water-groundwater interaction causes groundwater to discharge to streams in some areas and causes surface water to infiltrate to the subsurface aquifers in others. When a river gains groundwater from the aquifer, that is called a gaining stream; when it loses groundwater to the aquifer, it is called a losing stream. In the case of the MPWSP, the portion of the Salinas River within the area of influence from the slant well pumping is a gaining stream. Consequently, the slant well pumping could draw in brackish groundwater that would otherwise discharge to the river. It is unlikely that the proposed project would directly pull surface water from the Salinas River.

The NMGWM^{2016} can estimate the loss of groundwater outflow to a surface water feature such as the Salinas River. Based on the modeling, the estimated volume of groundwater removed from the river recharge system would be approximately 400 afy. A similar condition exists for Tembladero Slough, where the volume of groundwater removed by the slant well pumping from that system would be about 65 afy. The volume of water flowing to the ocean through the Salinas River in 2012 was about 250,000 afy, so the reduction of 400 afy is about 0.16 percent of the total flow. From a surface water supply standpoint, this magnitude of groundwater diversion from the Salinas River would be a minor, if not immeasurable, reduction in surface water supply. The same conclusion is applied to the Tembladero Slough, where the removal of 65 afy of groundwater discharge would not constitute a recognizable loss in supply for that system. The reduction of surface water attributable to slant well pumping is not a substantial reduction of water supply and thus this impact would be a less than significant impact.

Impacts of the Project on the Surface Water-Groundwater Interaction at CEMEX

The CEMEX facility has several ponds on its property. The largest pond, located to the north of the slant wells, is the source of the sand mined by CEMEX. The impact analysis of MPWSP pumping effects on recharge considered the largest pond to determine whether the proposed project would have an adverse impact on its recharge or on the current sand mining operations. A significant impact would occur if the proposed pumping at CEMEX reduced recharge to the Dune Sand Aquifer or interfered with or otherwise limited the ability of CEMEX to operate due to intolerable draw down in its main sand mining pond.

Pond Operation

The bottom of the large CEMEX dredge pond is assumed to be at about 30 feet below the surface water level in the pond (Geoscience, 2015b). The water level in the pond is in hydraulic connection with the ocean, receiving ocean water as seepage through the beach sand and occasional storm surges over the beach and into the pond. Winter storm surges push sand with very little silt or clay particles over the beach and into the largest pond, and the sand settles to the bottom of the pond. CEMEX then dredges the sand from the pond, sorts the sand into different grain sizes depending on the desired end product, and washes the sand to remove residual salts from seawater. The wash water is routed to the smaller ponds located north and east of the location of the proposed slant wells, where the seawater seeps into the sand and migrates back to the ocean. The smaller ponds are hydraulically disconnected from the underlying Dune Sand Aquifer. The larger, deeper sand source pond is in an area composed entirely of sand. The water level in the largest pond is controlled by the ocean tides (Geoscience, 2015b). Occasionally,

storm surges remove the sand barrier between the larger dredge pond and the ocean and the pond temporarily becomes a small bay, as occurred in March 2016. The smaller, shallower wash water ponds are fed entirely by the wash water and are not directly connected to either to the ocean or the underlying groundwater; wash water either evaporates or infiltrates into the shallow sand and migrates to the ocean.

A water level transducer was installed in the large dredge pond on the CEMEX property to monitor changes in water elevations. The most recent monitoring report indicates that the pond is tidally influenced (Geoscience, 2015a, b) due to the proximity of the pond to the ocean (within 200 feet). In addition, the pond water level monitoring indicates that the sand mining operations conducted on Monday through Friday also affect pond water levels. Pond water levels fluctuate and decrease during the week as sand and water is pumped out of the pond and then stabilize on Saturday and Sunday when the sand mining operations are closed.

Impact Analysis for CEMEX Dredging Pond Drawdown

This impact analysis is based on the CEMEX model analysis completed in September 2014, data generated in April 2015 after a five-day constant discharge pump test of the test slant well, and dredge pond transducer data obtained between April and October 2015.

In the September 2014 analysis, the localized CEMEX model was used to determine whether the dredge pond would be influenced by pumping at the proposed test well operating at 2,500 gallons per minute (gpm) (Geoscience, 2014a). The localized CEMEX model simulates the response of the Dune Sand Aquifer in its second, third, and fourth vertical layers. The depth of the large dredge pond falls within the second and part of the third model layer so the response in the dredge pond would be captured as a response in the upper portion of the Dune Sand Aquifer. The CEMEX model simulated the test well pumping for 8 months at 2,500 gpm. The results of the model run showed a drawdown at the dredge pond of about 1 foot. If a drawdown of 1 foot occurred for a pumping rate of 2,500 gpm from one well (the test slant well), there is a possibility that additional drawdown would occur in the pond during operation of the all of the proposed slant wells, which would operate at the combined pumping rate of 24.1 mgd or about 16,736 gpm. However, when compared to the daily tidal fluctuations in the dredge pond water levels, the decline in the water surface of any depth would be masked by the consistent recharge and tidal influence from the ocean.

On March 8, 2015, a water-level transducer was installed in the dredge pond. In April 2015, a five-day constant-discharge pumping test was conducted (Geoscience, 2015b). The transducer showed a series of cyclical fluctuations from March 8 through March 21, followed by relatively flat levels through April 2, followed by similar pattern of cyclical fluctuations at similar elevations through April 11. The cyclical fluctuations are due to a combination of tidal influence and the routine dredging of the pond for sand. The early March fluctuations, which occurred before the pumping test, and the early April fluctuations, which occurred during the pumping test, show a similar pattern at about the same water level, indicating that the water level in the dredge pond was not being influenced by the pumping of the test slant well. This also indicates that as the pond is dredged, the water levels quickly recover, with seawater seeping through the loose sand on the beach.

The transducer continued to collect useable data from April 22, 2015 until October 28, 2015, when the dredge pond was breached and the transducer was no longer operable. The data, discussed in the EIR/EIS, Appendix E3, Section 2.4.5.3, shows how the water in the dredge pond is influenced by the fluctuation of tides and dredge operations. Figure 2.1 of Appendix E3 shows a slight declining trend in dredge pond water levels from the start of the test slant well long-term test on April 22 to June 5 when the test slant well was shut down. The decline amounted to about a foot but then recovered when the pump was turned off. When the slant well was not operating, water levels in the dredge pond fluctuated by as much as two feet. The pond is hydraulically connected to the ocean through the beach sand and the occasional breach during large storms. The data verify that, because of this connection, the pond is consistently influenced by the ocean where water enters the pond during flood tide and flows out at ebb tide. The data collected at the dredge pond reveal that while there may be a slight response in the dredge pond from MPWSP pumping, water level changes due to dredge operations and daily tides would have a much greater effect on dredge pond water levels. The direct hydraulic connection of the dredge pond to the ocean would provide constant recharge to the pond and depletions due to pumping would be immediately replaced by induced seepage through the beach sands from the ocean. Therefore, the response on the dredge pond, if any, from the MPWSP pumping, would not interfere with recharge to the Dune Sand Aquifer, nor would it inhibit sand mining operations by depleting available water supplies to the pond. This impact is less than significant.

Impacts Related to Impervious Surfaces

Slant Wells

The subsurface intake system at the CEMEX site would consist of ten subsurface slant wells and associated pipelines, with aboveground electrical control cabinets on concrete pads at each well head. Each of the five new well sites would be on a 5,250- to 6,025-square-foot graded pad within the coastal sand dunes, where the surrounding and underlying soil is loose sand. The pipelines would be completed below ground. Precipitation would continue to infiltrate into the subsurface sands to the water table or migrate to the ocean. The minor amount of added impervious surface at the well sites would not meaningfully reduce potential recharge area of the shallow aquifer.

ASR Injection/Extraction Wells

Each of the two new ASR injection/extraction wells and pumps, and electrical control system would be housed in a 900-square-foot concrete pump house. The two 900-square-foot pump houses would be surrounded by unpaved soil. Rainwater falling on the pump houses would flow off the structures into the surrounding unpaved areas and would infiltrate down to the water table. Therefore, there would be no reduction to groundwater recharge.

MPWSP Desalination Plant

The MPWSP Desalination Plant would consist of several structures that would result in the creation of about 15 acres of new impervious surfaces that would restrict rainfall from infiltrating into the subsurface. However, rainwater falling on these structures would be routed through conventional drainage structures unpaved onsite area. Rainwater would still be able to infiltrate

into the subsurface and recharge the underlying aquifer. Therefore, there would be no reduction to groundwater recharge.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be enclosed in a 500-square-foot, single-story building built in an unpaved area. The surrounding area would remain unpaved, providing a route for rainwater falling on the pump station to infiltrate into the ground and recharge the underlying aquifer. The Carmel Valley Pump Station would not result in a reduction to groundwater recharge.

Pipelines

Construction workers would install 21 total miles of pipelines within or adjacent to existing roads and recreational trails. Most pipeline segments would be installed using conventional open-trench technology. The typical trench width would be 6 feet, and the overall construction corridor for pipeline construction would vary from 50 to 100 feet, depending on the size of the pipe being installed. The trenches would be backfilled and the surfaces restored to their pre-existing conditions. Therefore, there would be no change to the existing amount of impervious surfaces and no change to the existing volume of groundwater recharge.

Impact Conclusion Groundwater Recharge

The MPWSP slant wells would divert and capture some groundwater that would otherwise have flowed to the Salinas River and the Tembladero Slough. The amount of groundwater loss from both of these surface water systems would be minor, if not immeasurable, considering the volume of water that flows through them. The reduction of surface water attributable to slant well pumping is not a substantial loss to groundwater supply, nor does it constitute a substantial interference to surface water recharge and thus this impact would be less than significant. While pumping at the slant wells could cause drawdown in the large dredge pond over periods of extended pumping, the magnitude of that response would not interfere with recharge to the Dune Sand Aquifer, nor would it inhibit sand mining operations by depleting available water supplies to the pond. This impact is less than significant. Facilities proposed for the project would slightly increase the amount of impervious surfaces in the project area, but would not reduce the potential for surface water to recharge the underlying aquifers. Impacts associated with changes to groundwater recharge during the operation of all project facilities would be less than significant.

Impacts on All Other MPWSP Components

None of the other proposed facilities would involve the injection or extraction of groundwater. Therefore, there would be no impact on groundwater supplies from the operation of the monitoring wells, MPWSP Desalination Plant, pipelines, and pump stations.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, the MPWSP would not conflict with SGMA because it would not result in any of the undesirable results defined in SGMA. The following subsections summarize the analyses above to provide evidence for this conclusion with respect to

groundwater levels and supply; summaries relevant to groundwater quality are provided in Impact 4.4-4.

Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply, or significant and unreasonable reduction of groundwater storage

As explained above, the operation of the subsurface intake system would be expected to form a cone of depression (radius of influence) around the slant wells, which would largely stabilize within 1 to 5 years. The calculated fraction of water that originated in the Basin would be returned to the Basin as in-lieu recharge and, therefore, the quantity of water provided to the CalAm service area would be tied to the amount of water that originated from the ocean. This return option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping.

The lowering of groundwater levels and reduction of water in storage would be limited to the area within the radius of influence. A groundwater level decline between 1 and 5 feet would not expose well screens, cause damage, or reduce yield in the groundwater supply wells influenced by MPWSP pumping because the pumps in those wells are set much deeper to account for the tens of feet of annual water level changes due to seasonal fluctuations and agricultural pumping. Therefore, the few users of groundwater within that area would experience no significant and unreasonable lowering of groundwater levels, depletion of water supply, or reduction in storage.

Significant and unreasonable land subsidence that substantially interferes with surface land uses

As explained in Impact 4.2-8 in Section 4.2, Geology, Soils, and Seismicity, subsurface conditions that are more conducive to subsidence include clay or organic-rich soils. The units from which the proposed slant wells would be pumping are composed predominantly of sand and gravel. Sand- and gravel-rich soils are less prone to subsidence because the larger grains comprise a skeleton[37] that is less dependent on water pressure for support. In addition, the subsurface slant wells would draw the large majority of source water from the offshore coastal aquifers, where seawater would replace the water pumped from the slant wells, as discussed above. The continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would not subside as a result of proposed project pumping.

Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

As described above under the heading "Impacts of the Project on the Surface Water-Groundwater Interaction at the Salinas River," the annual volume of water flowing to the ocean through the Salinas River is about 250,000 afy, meaning the reduction of 400 afy would be about 0.16 percent of the total flow. From a surface water supply standpoint, this magnitude of groundwater diversion from the Salinas River would be a minor, if not undetectable, reduction in surface water supply. The same conclusion applies to the Tembladero Slough, where the removal of 65 afy of

[37] The grains are in contact with one another such that the combined grains support the weight of the overlying material.

groundwater discharge would not constitute a recognizable loss in supply for that system. The proposed project would not result in adverse impacts on beneficial uses of surface water.

Conclusion for Impact 4.4-3

The proposed project would extract mostly seawater and some brackish groundwater from a localized area; no fresh water supplies would be removed from the basin. When water is returned to the basin, groundwater elevations and the volume of water in storage would increase in the 400-Foot Aquifer underlying the CSIP and CCSD and adjacent areas. Water levels in nearby wells may decline in the 180-FTE Aquifer between 1 and 5 feet, but that would not expose screens, cause damage, or reduce yield in the groundwater supply wells. Injection and extraction through the ASR well system would be managed so that the water provided from the desalination plant would not constitute a net change in storage. The reduction of surface water from the Salinas River attributable to slant well pumping would not be a substantial loss to water supply, nor would it constitute a substantial interference to surface water recharge. Pumping at the slant wells could cause drawdown in the large dredge pond at CEMEX over periods of extended pumping, but the magnitude of that response would not interfere with recharge. The MPWSP may slightly increase the area of impervious surface in the project area, but it would not reduce the potential for surface water to recharge the underlying aquifers. Impacts associated with changes to groundwater recharge during the operation of all project facilities would be less than significant.

Applicant Proposed Measure - Groundwater Monitoring and Avoidance of Well Damage

The project applicant has proposed to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer as well as the Deeper Aquifer. This Applicant Proposed Measure is not required to reduce a potential impact to less than significant.

Applicant Proposed Measure

Applicant Proposed Measure 4.4-3 applies only to the Subsurface Intake System.

> **Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage.**
>
> Prior to the start of MPWSP slant well construction, CalAm, working with MCWRA, shall develop a groundwater monitoring and reporting program (the "Program") to the satisfaction of MCWRA. All costs of Program development and implementation shall be borne by CalAm either directly or through funding of MCWRA's staff, consultants and Program activities. The Program shall augment the MCWRA's existing regional groundwater monitoring network to focus on the area that could be affected by the proposed slant wells. The geographic area of the Program shall be within the model domain of the North Marina Groundwater Model, also referred to as NMGWM^{2016} and include the Dune Sand Aquifer, the 180-Foot Aquifer, the 400-Foot Aquifer and the Deeper Aquifer (i.e., the 900-Foot Aquifer) of the Salinas Valley Groundwater Basin (the "Monitoring Area"). The purpose of the Program is to ensure that owners of existing public or private groundwater supply wells within the Monitoring Area on the date the MPWSP commences

slant well pumping ("Active Supply Wells") suffer no harm as a result of MPWSP slant well pumping. The elements of the Program proposed under this measure are described below.

1. A network of monitoring wells has been completed on and near the CEMEX property as part of the CalAm test slant well project. These well clusters monitor water elevation and quality at various depth intervals within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the Program's monitoring network. These existing monitoring wells are subject to relocation, replacement, or substitution by new or other monitoring wells developed as part of the Program as determined by MCWRA.

2. In addition, using information from the Groundwater Extraction Management System (GEMS) maintained by MCWRA and from the State Water Resources Control Board's Division of Drinking Water, CalAm, in coordination with MCWRA, shall identify Active Supply Wells in the Monitoring Area and offer to owners of identified Active Supply Wells the opportunity to participate in the Program for groundwater elevation and water quality monitoring. The owners of Active Supply Wells in the Monitoring Area will receive at least 60 days' notice (via email, if available, and via certified mail) of the opportunity to participate in the Program, and may elect in writing to participate in the Program as to their Active Supply Wells ("Participating Active Supply Wells"). This opt-in process must occur sufficiently in advance of MPWSP slant well pumping so that information on pre-MPWSP conditions can be obtained for each Participating Active Supply Well. Prior to the start of MPWSP slant well pumping, an independent California-certified hydrogeologist retained and directed by MCWRA (the "Hydrogeologist") shall evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, flow rates, and drawdown) of each Participating Active Supply Well to develop pre-pumping data for each well. Water elevation and quality monitoring pursuant to the Program shall begin following initial groundwater well assessment, and shall continue at intervals specified in the Program (e.g., more frequently at the beginning of MPWSP slant well pumping and less often after stabilization of groundwater levels) until the well owner ceases pumping from the monitored well, or until the well owner agrees that monitoring is no longer required.

3. Prior to the start of MPWSP slant well pumping, CalAm and MCWRA shall review the current (as updated if needed) inventory of monitoring wells within the Monitoring Area, and identify locations within the Monitoring Area lacking monitoring coverage and that warrant monitoring in order to evaluate potential effects on Participating Active Supply Wells from MPWSP slant well pumping. Based upon that review, MCWRA may require that CalAm fund the installation of new monitoring wells in the Monitoring Area to be installed before MPWSP slant well pumping begins. The number of new monitoring well sites in the Monitoring Area and the location of those new monitoring well sites shall be determined by MCWRA. The area of groundwater monitoring under the Program may be extended outside of the Monitoring Area if warranted to evaluate potential MPWSP slant well pumping effects on Participating Active Supply Wells and recommended by the Hydrogeologist.

4. The groundwater data developed through the Program shall be collected by or provided to MCWRA at intervals identified in the Program, but in no event longer than 45 days from such data being obtained, to evaluate whether MPWSP slant well pumping is causing consistent and measurable drawdown of local groundwater levels that is

distinguishable from seasonal or multi-year groundwater level fluctuations. In the event that MCWRA identifies a consistent and measurable drawdown in groundwater levels and determines that such drawdown is potentially attributable to MPWSP slant well pumping and independent of seasonal or multi-year groundwater level fluctuations or any regional trends, the Hydrogeologist shall then determine if the observed degree of drawdown would damage or otherwise adversely affect any existing Participating Active Supply Wells. Adverse effects from lowered groundwater levels in Participating Active Supply Wells may include water elevation acute and long-term declines that draw water below pump intakes, causing cavitation due to exposure of the well screen, reduced well yields and pumping rates, increased energy costs to power the well, or changes in groundwater quality indicating that MPWSP slant well pumping is drawing lower quality water toward the well. Active Supply Wells that are not Participating Active Supply Wells will be considered for a determination by the Hydrogeologist of potential damage or adverse effects reasonably attributable to MPWSP slant well pumping (as described above) if substantial, credible evidence is submitted by the owners of such Active Supply Wells concerning damage or adverse effects at such wells, and such effects are verified by CalAm and the Hydrogeologist.

5. If the Hydrogeologist determines that a Participating Active Supply Well or an Active Supply Well that Cal-Am and the Hydrogeologist have verified for damage or adverse effects pursuant to Section 4 above, has been damaged or otherwise negatively affected by MPWSP slant well pumping, CalAm and the Hydrogeologist shall coordinate with the well owner to develop and implement a mutually agreed upon course of action. Such course of action may include but not be limited to repairing or deepening the existing well, restoring groundwater yield by improving well efficiency, facilitating an interim or long-term replacement of water supply, constructing a new well, or compensating the owner for increased pumping costs. Any interim or long-term replacement water supply shall be of the same or better quality (i.e., potable or non-potable) and predicted quantity as the existing supply of the Active Supply Well and shall be suitable for the purposes served by the existing Active Supply Well. Before CalAm undertakes any course of action to remedy the MPWSP slant well pumping effects on an Active Supply Well, the Hydrogeologist shall authorize such action and provide notice of such action to MCWRA.

Applicant Proposed Measure 4.4-3 would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that the project is causing groundwater levels to damage local active wells within the Dune Sand, 180-Foot/FTE, 400-Foot Aquifer or Deeper Aquifer, this measure would ensure that active wells are repaired or replaced. Implementation of **Applicant Proposed Measure 4.4-3** is not necessary to address any significant project effect.

Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations. (*Less than Significant with Mitigation*)

Impact 4.4-4 addresses the impacts on groundwater quality during the operation of the proposed project. Water quality considerations associated with the project operations include the exacerbation of seawater intrusion and the potential for the proposed project to cause new contamination, or to extend the limits of existing groundwater contamination through pumping at the subsurface intake system, ASR injection/extraction wells, and other project facilities. The

slant wells would extract water from the Dune Sand Aquifer and the 180-FTE Aquifer of the SVGB, while the ASR wells would periodically inject water into and extract groundwater from the Santa Margarita Sandstone in the SGB.

Operation of Subsurface Slant Wells

Impact on Groundwater Quality Within Slant Well Pumping Area of Influence

This impact analysis considers the effect of continuous pumping at the CEMEX site on local groundwater quality in the Dune Sand and 180-FTE Aquifer. As discussed in Impact 4.4-3, and shown in **Figures 4.4-10** and **4.4-11**, the water quality in the Dune Sand and 180-FTE Aquifers is degraded from seawater intrusion and has been for decades. The MPWSP slant wells would pump that water for the desalination plant source water. **Figure 4.4-13a** shows the extent of the cone of depression formed in the 180-FTE Aquifer during slant well pumping at the CEMEX site and the resultant groundwater drawdown projected under the conservative pumping scenario where sea level is at current levels and no water is return to the basin as part of the MPWSP. **Figure 4.4-13b** shows the project capture zone that would be created from the slant well pumping and **Figure 4.4-13c** depicts the relationship between the cone of depression and the capture zone.

The timeframe over which the cone of depression would develop to its full extent is also an important consideration in this analysis. According to the NMGWM[2016], the time required for the cone of depression in the 180-FTE Aquifer to reach its maximum extent, as shown in **Figure 4.4-13a**, is between 1 and 5 years after groundwater project start-up. After 5 years, the cone of depression would equilibrate and remain somewhat stable throughout the projected 63 years of operation. Based on this timeframe, localized changes in water quality could be realized within the first 5 years of project operation and could stabilize at that level. The NMGWM[2016] also projects that the timeframe for groundwater recovery after the MPWSP is offline would be in the range of 1 to 5 years.

From the time the slant wells begin pumping, and throughout the life of the project, local groundwater quality within the capture zone could change from highly brackish (23,400 mg/L TDS to 30,900 mg/L TDS) to more saline groundwater (seawater has a TDS concentration of about 33,500 mg/L). The degradation in water quality (measured as an increase in TDS) would occur because the slant wells would first draw in the ambient, highly brackish groundwater that is currently within the aquifer formation and, because the capture zone would be adjacent to the coast, seawater would flow in to replace it. This effect would occur only in the confines of the capture zone near the CEMEX site and would not affect groundwater from inland portions of the aquifers because inland groundwater east of the capture zone is under the influence of the inland, regional groundwater gradient.

This impact analysis considers whether this projected degradation in localized water quality would constitute a significant impact. A significant impact would occur if the proposed project would violate water quality standards or degrade a groundwater source such that it would interrupt or eliminate the available potable groundwater for other users in the basin. Groundwater in the Dune Sand and the 180-FTE Aquifers within the capture zone is not used for potable supply or irrigation and it is well documented that the groundwater is highly brackish (TDS

concentration in excess of 16,917 mg/L). As discussed in the Impact 4.4-3, quality within the proposed MPWSP slant well capture zone far exceeds the 3,000 mg/L threshold set by the SWRCB that determines whether a surface or groundwater is suitable, or potentially suitable for municipal or domestic water supply and should be so designated by the Regional Boards. The highly brackish water in the capture zone is not reasonably expected to supply a public water system without desalination. As stated in Impact 4.4-3, the use of the current groundwater production in this area is limited to minor irrigation and dust control. There are no water supply wells pumping potable water, and most of the wells in this area are no longer active because of seawater intrusion.

Based on current groundwater quality and the minimal groundwater use within the area affected by slant well pumping, the localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users. Therefore, this impact is considered less than significant.

Impact on Seawater Intrusion

As shown on **Figures 4.4-10** and **4.4-11**, the current location of the seawater intrusion front is about 8 miles inland in the 180-Foot Aquifer and 3.5 miles inland in the 400-Foot Aquifer. Once operational, the proposed slant wells would extract 24.1 mgd from the subsurface. A significant impact would occur if the proposed project caused the seawater intrusion front to migrate further inland, thereby exacerbating the seawater intrusion condition in the SVGB.

The effects on seawater intrusion were evaluated using the NMGWM^{2016} with particle tracking (described in the Approach to Analysis section, above). **Figure 4.4-17** shows the coastal seawater intrusion in the SVGB using the seawater intrusion front location estimated by the MCWRA and shown in **Figures 4.4-10** and **4.4-11**. Before running the model to simulate the 63 years of operation, individual water "particles" were placed along the leading edge of the mapped seawater intrusion front. Without the project, these particles are expected to continue to migrate inland with the movement of the seawater intrusion front. The NMGWM^{2016} is a superposition model, meaning that modeled project effects are isolated from all other stresses in the basin, such as the effects from other groundwater pumpers, inland pressure gradients, injection systems, and recharge. In superposition, the NMGWM^{2016} output is therefore the change attributable solely to the slant well pumping. **Figure 4.4-17** depicts the resulting particle-tracking outputs, showing that a number of particles radiate away from the seawater intrusion front back towards the coast. In **Figure 4.4-17**, some particle locations change substantially, whereas others do not. As to those that do change, the change in particle location shows where the seawater intrusion front would be after 63 years of MPWSP pumping *if that was the only factor affecting groundwater movement in the basin* (no recharge, no groundwater pumping, no pressure gradients, etc.). Therefore, Figure 4.4-17 illustrates the MPWSP's contribution to redirecting or reversing the inland advance of seawater intrusion. Because there are many stresses in the basin, the MPWSP project would not necessarily draw the leading edge of the seawater intrusion line back towards the coast to the extent shown by the particle-tracking output, but it does indicate that the MPWSP provides a benefit for the basin. Based on the particle-tracking results, the MPWSP would not exacerbate

seawater intrusion, and groundwater extraction from the coast, as part of project operations, would be expected to retard future inland migration of the seawater intrusion front. The proposed project would facilitate the reduction of seawater intrusion in the long term, and the impacts of the proposed project are considered less than significant.

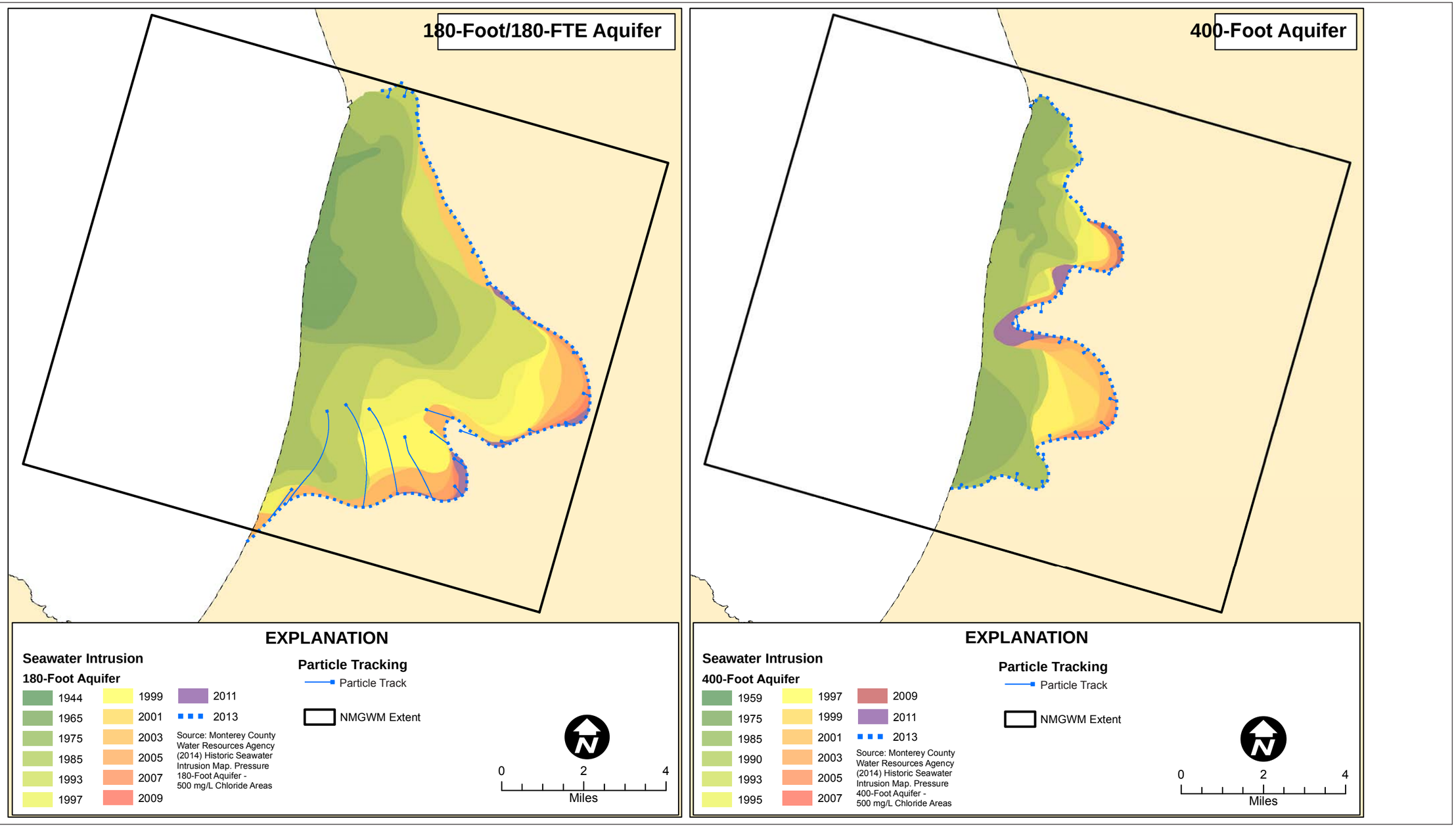
Impacts Associated with Existing Groundwater Remediation Systems

Past industrial, commercial, or military sites have residual soil and groundwater contamination caused by past spills, leaking underground tanks, unlined chemical disposal sites or inadvertent land disposal of chemicals in the SVGB and the SGB, as discussed in detail in Section 4.7, Hazards and Hazardous Materials. When contaminated groundwater is found at these sites, a common remedy is to pump the contaminated water out, treat it, and either dispose of it or use it for non-potable supply; this process is referred to as "pump and treat." Pumping contaminated water out of the ground requires extraction wells that, similar to the slant wells proposed by the proposed project, can create a cone of depression and an accompanying area of influence. When the area of influence of a pump and treat site intersects that of another water extraction system, the cones of depression interfere with each other and can cause the groundwater contamination to spread into previously uncontaminated or previously remediated areas.

The proposed slant wells would produce a radius of influence in the Dune Sand Aquifer and the 180-FTE Aquifer, as shown on **Figures 4.4-14** and **4.4-15** and as discussed in Impact 4.4-3. Within the CEMEX area, the NMGWM^{2016} projects that groundwater elevations could decrease and that decrease could incrementally affect groundwater flow directions. If there are nearby inland sites that are remediating contaminated groundwater in the same aquifers and that are located within the radius of influence of the slant wells, then the pumping of the slant wells could potentially interfere with those remediation activities, pulling contaminated groundwater into currently uncontaminated areas and degrading the existing water quality. This would violate the state policy of maintaining the existing water quality. A significant impact would occur if the proposed project created a condition that would violate water quality standards or otherwise degrade water quality.

The U.S. Army has been conducting investigation and cleanup activities at the former Fort Ord military reservation since 1986 (Fort Ord Base Realignment and Closure Office, U.S. Army, 2012). The ongoing remediation will continue until contaminant levels in the groundwater are reduced to clean-up levels or below, and are protective of human health. The northwestern border or the former Fort Ord is located within 2 miles southeast of the subsurface intake system.

As discussed in the Setting for Section 4.7, Hazards and Hazardous Materials, the former Fort Ord military base has several plumes of contaminated groundwater located southeast of the subsurface intake system, as shown on **Figure 4.7-1**. Source removal and ongoing groundwater remediation efforts have effectively reduced the contaminant concentrations and extents in these plumes. Three of the plumes closest to the slant wells are located within the area in which the NMGWM^{2016} estimates groundwater levels would decrease by one to two feet in the Dune Sand Aquifer and the 180-Foot Aquifer. The A-Aquifer is a shallow inland aquifer above the 180-Foot Aquifer and is not known to be hydraulically connected to the Dune Sand Aquifer at the proposed slant well locations. **Figure 4.7-1** shows the location and current configuration of the contaminant



SOURCE: HydroFocus, 2016

Figure 4.4-17

Proposed Project Impact on Location of Seawater Intrusion Front

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plumes and **Figure 4.4-15** shows the -1-foot drawdown contour of what is considered the "worst case" aquifer response from the proposed project (180-FTE Aquifer, no return water, with 2012 sea level conditions). Comparison of **Figures 4.7-1** and **4.4-15** shows that the -1-foot contour is approaching the contaminant plumes. If the drawdown caused by the slant well pumping was to intersect and alter the local flow gradient near the plumes, the slight change could influence the plumes to migrate further northwest into currently uncontaminated areas and to degrade water quality. The possible overlap of the slant well radius of influence with each of these plumes is discussed below.

OUCTP A-Aquifer Plume. The OUCTP A-Aquifer Plume, located about 2 miles southeast of the slant wells, is contaminated by carbon tetrachloride. This plume was previously under remediation by pump-and-treat technology (Ahtna, 2016). The A-Aquifer plume is currently being treated using enhanced in situ bioremediation, followed by monitored natural attenuation. This method involves enhancing naturally occurring microbes to break down the contaminants into non-toxic compounds, and does not require the extraction of groundwater. If the radius of influence of the proposed slant wells does reach the western portion of the OUCTP A-Aquifer Plume, then the decrease in groundwater elevations could alter the existing groundwater flow direction. This change in flow direction could pull the OUCTP Plume further northwest, spreading the contamination to areas that are not now contaminated above action levels. As previously discussed, this location is about 2 miles from the slant wells. At this distance, the NMGWM^{2016} simulations decrease in accuracy and the anticipated 1 to 2-foot groundwater elevation decrease within the radius of influence is less certain to extend this far. Nonetheless, the simulation indicates that the decrease in groundwater elevations is possible and could result in a significant impact. This impact would be reduced to less than significant with the implementation of **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**), which would require CalAm to monitor groundwater flow directions at the nearby known contaminated groundwater plumes and to work with the responsible parties if the proposed project would adversely impact those ongoing remediation efforts.

OUCTP 180-Foot-Aquifer Plumes. As described in detail in EIR/EIS Section 4.7, the OUCTP 180-Foot Aquifer Plumes are located a little over 3 miles southeast of the slant wells and are considered to have an upper and lower portion. The upper plume, referred to as the OUCTP Upper 180-Foot Aquifer Plume, is undergoing pump-and-treat technology for groundwater remediation (Ahtna, 2016). At its largest, the treatment system had seven extraction wells operating throughout the extent of the plume, including at the westernmost edge of the plume. As cleanup of the plume has proceeded, the extent of the plume has become smaller as concentrations in the groundwater have decreased. Currently, only one extraction well is in operation in the central area of the plume. The operation of the extraction well also serves to contain the plume and prevent its migration further west because groundwater flows toward the extraction well and cannot escape further west. As measured during the December 2014 monitoring event, the cone of depression around the extraction well was about 22 feet below the surrounding groundwater levels. With a cone of depression of 10 or more feet, the 1- to 2-foot decrease in groundwater levels caused by the proposed slant wells would be unable to overcome the cone of depression at the extraction wells.

The lower plume, referred to as the OUCTP Lower 180-Foot Aquifer Plume, was created when carbon tetrachloride migrated downward into the lower portion of the 180-Foot Aquifer. This plume is undergoing monitored natural attenuation that was implemented in March 2011. There is a contingency plan for additional well-head groundwater treatment if chemicals associated with the OUCTP plumes are detected in groundwater supply wells.

Given the current pump and treat remediation activity in the upper plume and the natural attenuation in the lower plume, in addition to the distance of these plumes from the MPWSP slant well pumping, the potential for the cone of depression of the MPWSP slant wells to interfere with OUCTP 180-Foot Aquifer plumes is low and the impact is considered less than significant with no mitigation proposed. However, the groundwater monitoring under Mitigation Measure 4.4-4, would require CalAm to continually monitor flow directions and water quality at the nearby OUCTP plumes, and to take appropriate action if interference occurs.

Impacts Associated with ASR Injection/Extraction Wells

Interference with Existing Groundwater Remediation Systems

The injection of desalinated product water into the proposed ASR-5 and ASR-6 Wells would increase groundwater elevations and the volume of water in underground storage. This increase in groundwater elevations would alter groundwater flow patterns in the vicinity of the proposed ASR-5 and ASR-6 Wells. If there are nearby sites that are remediating contaminated groundwater in the Santa Margarita Sandstone aquifer and are located within the area where groundwater elevations are expected to rise, then the increase of groundwater elevations could interfere with those remediation activities, pushing contaminated groundwater into currently uncontaminated areas and degrading the existing water quality.

As previously discussed, the addition of the ASR injection/extraction wells would increase the capacity to inject and store water in the Santa Margarita Sandstone in the SGB. The SGB is separated by a groundwater divide from the SVGB to the north, where the former Fort Ord sites discussed above are located. As previously discussed, water would be injected and extracted from the desalination plant into the SGB such that there would be no net negative change in storage on an annual basis.

The target aquifer for injection and storage is in the Santa Margarita Sandstone, at a depth of about 1,000 feet below the ground surface. Currently, a groundwater depression caused by historical overdraft is located to the south of the ASR system, with its center close to General Jim Moore Boulevard, as shown on **Figures 4.4-7** and **4.4-8**. The presence of this groundwater depression would cause the additional water injected and stored in the Santa Margarita Sandstone to flow toward that depression to the south. Consequently, only remediation sites with groundwater contamination in the Santa Margarita Sandstone at about 1,000 feet below the ground surface and located within the area between the ASR injection/extraction wells and the center of the groundwater depression could be affected. As shown on **Figures 4.7-1** and **4.7-2**, the nearest contaminated sites are located along Del Monte Boulevard, near the coast and west of the groundwater depression; however, the contamination is in the surficial Aromas Sand Aquifer. There are no known contaminated sites undergoing groundwater remediation in the area between the ASR

injection/extraction wells and the edge of the groundwater depression. Therefore, the potential for the ASR injection/extraction wells operation to interfere with groundwater remediation activities at nearby contaminated sites would be low and thus, this impact is less than significant.

Addition of Treated Water to the Santa Margarita Aquifer

The ASR component for the proposed project would continue to utilize and augment the existing ASR system. The expansion includes the construction of two additional ASR injection/extraction wells along General Jim Moore Boulevard (see **Figure 3-9a**) that would increase the reliability of storing Carmel River water in the SGB, and would facilitate the injection, storage, and extraction of desalinated water. The source water pumped from the slant wells would be treated to potable drinking water standards at the proposed desalination plant and pumped through the water supply distribution system to the SGB, where the water would be injected into the ASR injection/extraction wells for later recovery during dry periods (see **Figure 3-2**). As discussed in the Setting, the primary water quality concern associated with ASR projects using potable water is that DBPs, including THMs and HAAs, are formed during the disinfection process. Additionally, the injection of oxygenated water could potentially alter the geochemistry of the groundwater and increase the concentration of minerals in groundwater.

The existing ASR system treats surface water from the Carmel River to drinking water standards and then injects that treated water into storage in the Santa Margarita Sandstone for later extraction and use. As discussed in the Setting, the MPWMD conducted investigations to evaluate the effects of injecting water treated to drinking water standards into the Santa Margarita Sandstone. Their investigations, as well as ongoing monitoring, concluded that the DBPs do increase upon initial injection of treated surface water into the Santa Margarita Sandstone, but concentrations steadily decreased with time and the existing conditions are restored over the course of six to eight months (Pueblo Water Resources, 2014). Groundwater monitoring results indicate that over the course of that time, the pH remains neutral (between 6 and 8), indicating relatively stable geochemical conditions.

The RWQCB currently regulates the ASR project under Permit 20808C. As a result, the MPWMD continues to conduct groundwater studies and monitoring to document the changes to the groundwater system due to ASR, and to ensure that the ASR project does not degrade groundwater quality within the SGB. The RWQCB will continue to require a monitoring and response program for continued operation of the project and to protect groundwater quality in the Santa Margarita Sandstone, ands any expansion of the ASR project would require the approval from the RWQCB for implementation, which would require a similar level of water quality testing and monitoring to ensure that the injected water would not degrade the receiving groundwater in the SGB.

In accordance with the evaluation criteria, this impact would be significant if adding treated desalinated water into the current ASR system degraded the existing groundwater quality. **Table 4.4-11** compares the water chemistry of the treated Carmel River water to the water chemistry of desalinated water currently produced by the Sand City desalination plant. The Sand City desalination plant uses the same technology that would be used by the proposed desalination plant, so the resulting water chemistry would be similar. As shown in **Table 4.4-11**, the water chemistry of the treated Carmel River water is similar to the Sand City desalination

plant product water. Therefore, it would be reasonable to expect that the Santa Margarita Sandstone would have the same reaction to the injection of the treated desalination plant water as to the treated Carmel River water. This is a less than significant impact.

TABLE 4.4-11
WATER CHEMISTRY OF TREATED CARMEL RIVER WATER AND SAND CITY DESALINATED WATER

Chemical Parameter	Treated Carmel River Water	Treated Sand City Desalinated Water
Alkalinity as $CaCO_3$	129	55 - 125
Aluminum	0.025	nd (0.010)
Ammonia Nitrogen	0.1	na
Arsenic	nd (0.005)	nd (0.001)
Antimony	na	nd (0.0004)
Barium	0.056	0.014
Boron	na	0.5 – 0.877
Bromide	0.11	na
Beryllium	na	nd (0.0003)
Cadmium	na	nd (0.001)
Calcium	36	18 – 45
Chloride	32	72
Dissolved Organic Carbon	1.4	na
Chromium	na	nd (0.007)
Cobalt	na	na
Dissolved Oxygen	7.43	9.77
Electrical Conductivity	510	315 – 690
Fluoride	0.30	0.10
Iron	0.001	nd (0.06)
Lead	na	nd (0.001)
Magnesium	14	nd (1) – 8
Manganese	0.001	nd (0.010)
Mercury	na	nd (0.0002)
Molybdenum	na	0.003
Nickel	na	0.001
Nitrate/Nitrite as NO_3	0.05	na
Oxygen Reduction Potential (ORP)	749	128.8
Ortho-Phosphate	na	nd (0.77)
Total Phosphorous	0.34	na
Potassium	2.9	nd (5)
pH	7.70	7.51
Selenium	0.0017	nd (0.002)
Silicon	8.41	nd (10) – 12
Silver	na	nd (0.010)
Sodium	42	51.9
Strontium	0.200	0.131
Sulfate as SO_4	84.9	19.2
Thallium	na	nd (0.0003)
Uranium	0.0025	na
Vanadium	na	nd (0.050)
Zinc	0.210	nd (0.050)

NOTES: All concentrations in milligrams per liter (mg/L) except conductivity (micromhos per centimeter), ORP (millivolts), and pH (pH units)
na = not analyzed
nd = not detected above reporting limit in parentheses

SOURCE: EcoEngineers, 2008; Sand City Desalination Plant, 2011, 2014.

Maintenance of the ASR Wells

ASR injection/extraction wells sites are susceptible to well plugging because all water sources have at least some level of suspended solids, which can include particulates, bionutrients, or oxidants (Pueblo Water Resources, 2014). During injection, a trace amount of suspended solids is collected in the gravel pack of the well, in the aquifer material surrounding the gravel pack of the well, and in the silt trap of the well pipe.[38] Over time, the accumulated silt will clog the pore spaces of the well gravel pack and native aquifer materials, restricting the flow of aquifer water into the well and reducing well efficiencies. As a part of the routine operation of the ASR injection/extraction wells, each well must be periodically cleaned to maintain well efficiency. The cleaning process involves backflushing the wells and pumping out the turbid water. The inappropriate discharge of this turbid, sediment-laden, backflush water could adversely affect groundwater resources.

The well maintenance activities of the existing ASR injection/extraction wells have indicated that a weekly frequency of backflushing keeps the aquifer pore spaces clear of sediment and maintains well efficiencies (Pueblo Water Resources, 2014). The backflushing process consists of the following steps:

- Removing the well pump assembly
- Mechanically brushing the wells screens to dislodge sediment
- Bailing out the sediment-laden water
- Airlifting and swabbing the well pipe
- Chemically treating the well screen with glycolic acid and hydrochloric acid to remove and inhibit scale growth in the well screens
- Airlifting and swabbing the well pipe
- Chlorinating the well overnight, followed by airlifting to remove the chlorine solution the next day

Reports indicate that the initial discharge of backwash is a deep orange-brown turbid water, becoming cloudy after about 5 minutes, and clear within about 15 to 20 minutes for each screen interval being cleaned (Pueblo Water Resources, 2014). The effectiveness of the backflushing is checked by 10-minute specific capacity tests to verify the return of the well efficiency.

The discharge water would be pumped through subsurface piping and conveyed through the proposed ASR Pump-to-Waste Pipeline to the existing settling basin for the Phase I facilities at the intersection of General Jim Moore Boulevard and Coe Avenue, and infiltrated into the ground (**Figure 3-9a**). The settling basin is unlined to allow the discharge water to infiltrate into the subsurface soils, eventually migrating down back into the aquifer and leaving the sediment in the basin. The sediment that would accumulate in the basin would be periodically removed and disposed of at an appropriate disposal site. The depth to groundwater beneath the settling basin is about 350 or more feet below the ground surface (Pueblo Water Resources, 2013). It is reasonable

[38] The silt trap of the well is a blank (no well screen openings) section of well pipe below the well screen that provides a place for sediment to accumulate without clogging the well screen.

to expect that a 350-foot deep water column of sediments would be adequate to successfully remove the sediment and polish the water before the water infiltrates into the aquifer.

As a part of the project design, the periodic backflushing of ASR-5 and ASR-6 Wells would use the same process used for the existing ASR injection/extraction wells. Pipelines would be built to connect wells ASR-5 and ASR-6 into the existing pipeline system that includes the pipeline that discharges to the existing settling basin. Routing the discharge water to the existing settling basin and infiltrating it through soil would remove the sediments. Considering this process would be conducted when needed, water quality impacts associated with discharge water would be less than significant impact.

MPWSP Desalination Plant and All Pipelines and Conveyance Facilities

No other project facilities would inject or extract water. Therefore, these project facilities would cause no impact related to groundwater quality or interference with existing groundwater remediation activities.

Impact Conclusion

Slant well pumping at the CEMEX site could intersect the OUCTP A-Aquifer plume and degrade groundwater in areas not affected by the current contaminant plume. This is considered a significant impact that could be reduced to less than significant by **Mitigation Measure 4.4-4**. The OUCTP Upper 180-Foot Aquifer Plume would not be impacted by the MPWSP pumping because the magnitude of drawdown (about 1-2 feet) would be masked by the cone of depression currently created by the pump and treat remediation system. The proposed project would result in a less than significant impact related to interference with existing groundwater remediation activities, with the possible exception of two of the OUCTP plumes at the former Fort Ord. The impact would be reduced to less than significant with the implementation of **Mitigation Measure 4.4-4**, described below.

All Other Project Components

The operation of the MPWSP Desalination Plant, monitoring wells, pipelines, and pump stations would not involve the use of or discharges to groundwater. Therefore, there would be no impact relative to groundwater quality.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, the MPWSP would not conflict with SGMA because it would not result in any of the undesirable results defined in SGMA. The following subsections summarize the analyses above to provide evidence for this conclusion with respect to groundwater quality; summaries relevant to groundwater levels and supply are provided in Impact 4.4-3.

Significant and Unreasonable Seawater Intrusion

As explained above, the water quality in the Dune Sand, 180-FTE, and 400-Foot Aquifers is degraded from seawater intrusion and has been for decades. The capture zone that develops from

the proposed slant wells would be located within this area of seawater intrusion. The pumping over the life of the project would change the local groundwater quality of the inland areas close to the slant wells and within the groundwater capture zone from the current brackish-to-saline quality to a higher salinity. The increase in salinity within this small area would occur because the slant wells would draw in the brackish water that is currently in the aquifer formation and seawater would flow in to replace it. This effect would only occur within the capture zone near the coast at the CEMEX site; areas outside of the capture zone would not be affected.

As shown in Figure 4.4-17, the MPWSP would reduce or reverse the inland advance of the seawater intrusion front. Thus, the MPWSP would facilitate the reduction of seawater intrusion in the long term, and would not result in significant and unreasonable seawater intrusion.

Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies

The effects of the MPWSP on water quality relative to seawater intrusion are discussed above and demonstrate that the operation of the MPWSP would not adversely affect water quality. The radius of influence of pumping in the Dune Sand and 180-FTE Aquifers is expected to extend close to, but not overlap with, the contaminant plumes associated with the ongoing cleanup at the former Fort Ord. However, it is remotely possible that the radius of influence could reach and affect the contaminant plumes. Implementation of Mitigation Measure 4.4-4 would prevent the significant and unreasonable degradation of water quality due to the migration of contaminant plumes that impair water supplies.

Impact Conclusion for Groundwater Quality

For the slant wells, the seawater intrusion front would migrate back toward the ocean, which would be a less-than-significant impact. For the slant wells, the potential impact of interference with existing remediation systems would be reduced to less than significant with the implementation of Mitigation Measure 4.4-4. For the ASR injection/extraction wells, the net addition of injection water is considered a less than significant impact. For the ASR injection/extraction wells, the potential impact of interference with existing remediation systems would be less than significant. The operation of all other project facilities would have no impact on groundwater quality.

Therefore, for the proposed project as a whole, the potential operations impacts would be less than significant with mitigation, relative to groundwater quality.

Mitigation Measure

Mitigation Measure 4.4-4 applies only to the Subsurface Intake System.

> **Mitigation Measure 4.4-4: (Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes).**
>
> Prior to the start of MPWSP construction, CalAm shall incorporate the future quarterly groundwater elevation monitoring results for the OUCTP A-Aquifer and 180-Foot Aquifer (upper and lower) plumes into the well monitoring program described above in **Applicant**

Proposed Measure 4.4-3 until the two OUCTP plumes have been appropriately remediated and the RWQCB no longer requires remediation activities. Groundwater elevation data shall be obtained from the periodic monitoring reports developed by the U.S. Army and its contractors. The elements of the additions to the groundwater monitoring program proposed under this mitigation measure are described below.

- CalAm shall incorporate into its well monitoring program (described above for **Applicant Proposed Measure 4.4-3)**, the most recent monitoring reports available through the U.S. Army and its contractors for the monitoring wells that are necessary to characterize the flow direction and water quality of the three OUCTP plumes located in the A-Aquifer, the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer.
- The groundwater elevation results shall be evaluated by CalAm and its consultants on a quarterly basis to assess whether the -1-foot drawdown contour from the proposed subsurface intake system is approaching the edge of the OUCTP plumes. CalAm shall continuously coordinate with and include the U.S. Army in all pertinent correspondence during the groundwater data evaluation stages. If the analysis concludes that the slant well pumping could intersect or could influence the flow direction of the OUCTP plumes, then CalAm shall contact the U.S. Army, the Regional Water Quality Control Board – Central Coast Region, the California Department of Toxic Substance Control, and the U.S. EPA to initiate communications and develop and implement a plan to either stop or decrease the pumping to prevent any impact on the OUCTP plumes. In the unlikely event that an impact does occur, CalAm shall bear the necessary additional costs to address changes in the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by slant well pumping. CalAm shall consider using existing groundwater remediation and monitoring wells that remain on the site to expand the existing treatment systems.
- When the ongoing remediation of the OUCTP plumes has been completed and the RWQCB authorizes closure of the two OUCTP plumes remediation activities, this mitigation measure shall no longer apply.

Mitigation Measure 4.4-4 would monitor changes in the groundwater surface elevation caused by MPWSP pumping near the two OUCTP Plumes. If it is determined that MPWSP pumping could interfere with the Fort Ord plumes, this mitigation measure requires CalAm to take actions so the plumes do not expand and contaminate other areas, such as bearing the costs for work necessary to change the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by slant well pumping. This mitigation would reduce the impacts to less than significant.

4.4.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.4-C: Cumulative impacts related to Groundwater Resources. (*Less than Significant*)

The geographic scope of the cumulative analysis for groundwater resources includes portions of the SVGB and the SGB. Within the SVGB, it is the western half of the Pressure Area extending from the coast of the Monterey Bay to about Davis Road in Salinas and from Moss Landing south to the jurisdictional boundary of the Pressure Area and the SGB (**Figure 4.4-1**). The geographic scope within the SGB includes the entire basin as it is shown in **Figure 4.4-1**.

The geographic scope of this cumulative groundwater resources analysis must also include a vertical element because other projects could have a cumulative effect on the subsurface aquifers as well as the aquifer's areal distribution. This analysis includes as part of its geographic scope the underground aquifers in the SVGB and the SGB. In the SVGB, the aquifers of potential concern are the Dune Sand Aquifer, 180-FTE Aquifer, 180-Foot Aquifer (inland and east of CEMEX), and 400-Foot Aquifer. The NMGWM^{2016} did not project a groundwater response in the deeper aquifers (aka the 900-Foot Aquifer), therefore, it is not considered in the cumulative analysis. In the SGB, the aquifer of concern is the surficial shallow aquifer, which is in the unconfined Paso Robles Formation and the underlying confined Santa Margarita Sandstone.

Cumulative groundwater impacts would be significant if they would substantially deplete or interfere with groundwater supplies, violate water quality standards, or degrade water quality. This analysis evaluates cumulative impacts within the basins associated with the aquifer response to groundwater extraction and injection. The significance thresholds are applied to the physical effects from changes to the volume and quality of the groundwater. The surface infrastructure associated with the slant wells and the ASR wells, such as pipelines and pump stations, would not impact groundwater resources and is therefore not discussed further in this section.

Baseline conditions evaluated in the project-specific analysis in Section 4.4.5 reflect the contributions of past actions, including existing, operational projects that withdraw or return groundwater, on groundwater resources within the geographic scope. Therefore, the modeled timeframe considered for the cumulative analysis is the life of the project (approximately 60 years, see Section 4.4.4.2) plus two years to allow for aquifer recovery. Substantial quantities of groundwater would not be used or affected during the project construction phase; therefore, construction-phase effects are not addressed since the project's contribution to any cumulative effects would not be cumulatively significant in nature or extent (*less than significant*).

In determining the current and reasonably foreseeable projects within the SVGB, this analysis first considered those projects listed on **Table 4.1-2** that are water supply projects involving the construction, development and use of a large yield production well. The only project of this type was the Granite Ridge Water Supply Project (No. 33). This project proposes a 1,000 gallon per minute well, conveyance pipeline, and other infrastructure. However, this proposed project was

not considered in the cumulative analysis because it is over 12 miles from the area of pumping influence of the MPWSP and therefore, outside the geographic scope of this analysis. The effects of groundwater pumping under the Granite Ridge Water Supply Project would not combine with the effects of the proposed MPWSP because these two projects are far enough apart and in two separate groundwater aquifer systems.

The second set of projects considered are those within the geographic scope (SVGB) and that have the potential to pump groundwater creating a cone of depression that could possibly coalesce with the area of pumping influence of the MPWSP. The projects in this category are: the Monterey Regional Waste Management District Truck Yard Facility Project (No. 55), the Landfill-Gas-to-Energy Facility Phased Capacity Improvements (No. 58), The Dunes on Monterey Bay (No. 7), the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (No.35), the Regional Urban Water Augmentation Project (RUWAP) Desalination Element (No.31), the Marina Station (development project) (No. 12), and the CalAm Slant Test Well at CEMEX (No.47). It was determined that the only pertinent project in this category to address in the cumulative analysis would be the Regional Urban Water Augmentation Project (RUWAP) Desalination Element (No. 31), which is discussed below. The CalAm Slant Test Well at CEMEX has been previously analyzed and the MPWSP would incorporate the test slant well into its proposed slant well array. The other projects in this category would likely use municipal supplies and not require a water supply that depends on private groundwater extraction and would therefore not impact local or regional groundwater resources.

In determining the current and reasonably foreseeable projects within the SGB, this analysis considered those projects listed on **Table 4.1-2** that are located in the geographic scope (SGB) and could involve groundwater extraction or otherwise impact groundwater resources. The projects considered were the Salinas Valley Water Project Phase II (No. 1), the Seaside Resort (No. 16), the Monterey Bay Shores Resort (No. 19), Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 1) (No. 29), Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 2) (No. 30), and Pure Water Monterey Groundwater Replenishment (GWR) Project (No. 59). The existing Phase 1 and Phase 2 ASR Wells (Projects Nos. 29 and 30) are past projects that are therefore, included in the baseline. The development projects (Nos. 16 and 19) are expected to use municipal supplies and not require private groundwater extraction and thus are not considered in the cumulative analysis. The GWR project (No. 59) is not relevant to this analysis because if the GWR is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would construct the 6.4-mgd desalination plant described in Alternatives 5a and 5b. There are no known other present or reasonably foreseeable future cumulative projects identified in the Santa Margarita Sandstone of the SGB.

Based on the discussion above, the current and reasonably foreseeable future projects listed in **Table 4.1-2** that are within the geographic scope and have the potential to combine with the groundwater-related impacts of the proposed project are the Salinas Valley Water Project Phase II (No. 1), the Interlake Tunnel (No. 24), and the Regional Urban Water Augmentation Project (RUWAP) Desalination Element (No. 31). These projects are located within the SVGB.

The potential cumulative operations-phase groundwater resources impacts are discussed below.

Salinas Valley Water Project Phase II (No. 1)

The Salinas Valley Water Project Phase II would deliver additional surface water to the Pressure Area and East Side Area to offset pumping and help retard seawater intrusion. This would occur in the 180-Foot Aquifer and the 400-Foot Aquifer. Phase II would have a beneficial effect on the Pressure Area of the SVGB as it would curtail groundwater extraction and reduce stress on the groundwater aquifers. The MPWSP would draw seawater and brackish inland water from the western edge of the Pressure Area, which, over time, is expected to facilitate the retreat of the seawater intrusion front. If the MPWSP ultimately returns a portion of the desalinated product water to the basin as in-lieu groundwater recharge, then it would benefit the 400-Foot Aquifer by reducing groundwater pumping in the area underlying the CSIP and CCSD.

The MPWSP would capture about 400 afy of shallow groundwater that would otherwise discharge to the Salinas River and the Monterey Bay. The MPWSP's 400 afy contribution would only amount to about 0.3 percent of the 135,000 afy diversion of groundwater that would otherwise enter the Salinas River proposed under Phase II, and would not result in a significant reduction in surface supply. Notwithstanding minor, potential cumulative reductions in Salinas River flows, Phase II and the MPWSP would have a cumulative beneficial effect on groundwater resources in the Pressure Area of the SVGB. Overall, Phase II and the MPWSP would have a cumulative beneficial effect on the SVGB.

Interlake Tunnel (No. 24)

The Interlake Tunnel Project would produce additional surface water storage and supply for downstream groundwater recharge and reduction of seawater intrusion in the SVGB. The MPWSP would, over the course of the project, contribute to retarding the advancement of seawater intrusion through groundwater pumping in the already intruded western portion of the Pressure Area. The MPWSP would also enhance groundwater supplies in the 400-Foot Aquifer if the proposed project ultimately returns water to the basin but if the MPWSP does not return water to the basin, the impact would be benign. Overall, once implemented, assuming water is returned by the MPWSP both projects would eventually contribute to a cumulative beneficial impact for groundwater supply and quality.

RUWAP Desalination Element (No. 31)

As explained in Table 4.1-2, it is not reasonably foreseeable that MCWD would implement its prior plan to build a 2,700 afy desalination plant at its Armstrong Ranch property. However, the planning effort involving MCWD, Fort Ord Reuse Authority (FORA), and MRWPCA will explore the most cost effective and technically efficient mix of potential water sources, one being desalination. The feasibility study could conclude that a smaller desalination plant, such as a plant producing 1,000 afy, could be a viable option to provide the 973 afy shortfall to support the FORA Base Realignment Plan (BRP). This cumulative impact discussion, therefore, assumes that desalination would be chosen as a preferred water supply option and a 1,000 afy plant would be proposed at the MCWD Armstrong Ranch property, with intake wells located along the coast south of the CEMEX site near Reservation Road.

The cones of depression created by MPWSP pumping in the Dune Sands Aquifer and 180-FTE Aquifer are depicted in **Figures 4.4-14** and **4.4-15**, respectively. As shown, the cones of depression, delimited by the -1-foot drawdown contour, would extend south up to 2 miles to include the MCWD Reservation Road property under all sea level and return water scenarios. The MPWSP would pump about ten times the amount of groundwater per day as a smaller (1,000 afy) MCWD plant and, thus, the area of influence from the MPWSP pumping would cover a larger area than the MCWD project. If the proposed MCWD project were also pumping near the coast, its cone of depression, expected to be smaller and more confined, would likely intersect or be encompassed by the cone of depression created by MPWSP pumping. When cones of depression from two or more pumping wells overlap, it causes what is referred to as well interference. Interference between pumping wells can create a combined drawdown effect where groundwater levels are lower than would be expected from the individual pumping wells. Typically, the combined drawdown of two or more wells is equal to the sum of the drawdowns caused by each well individually. Well interference between the slant wells at MPWSP and MCWD would cause a significant cumulative impact if groundwater levels were lowered in a nearby municipal or private groundwater production well such that the well would be damaged, yield would be substantially reduced, the well owner would be required to deepen or abandon the well, or if it would otherwise deplete groundwater in the SVGB, making it unavailable to other users.

If groundwater pumping for the MPWSP and the MCWD desalination plants were to happen simultaneously, it is reasonable to predict that the cones of depression from the two systems would be close enough to cause some degree of well interference and increased drawdown near the coast, between the CEMEX site and the MCWD property at Reservation Road. There are no operating groundwater production wells in this area. As discussed in **Impact 4.3-3**, current groundwater production in the MPWSP source aquifers is limited to minor irrigation and dust control. There are no groundwater water supply wells pumping potable water in this area, and most wells in this area are no longer active because of seawater intrusion.

With the operation of both the MPWSP and a desalination project at MCWD, the decline in groundwater levels due to well interference would not adversely affect operating groundwater production wells. The cumulative effect of the two projects would also not deplete the basin groundwater supply because the groundwater in this area is degraded by seawater intrusion and is unusable for potable water supply or irrigation use due to its high salinity. Additionally, with the MCWD desalination plant and the MPWSP operating simultaneously, there could be a combined beneficial effect because with the two projects, the capture zone for inland flowing seawater would expand to the south to extract more intruding seawater and aid in retarding the inland advance of the existing seawater intrusion front. The RUWAP desalination element and the MPWSP, if they were to be operated concurrently, would not result in a significant cumulative impact and could contribute to a less than significant beneficial effect to reduce seawater intrusion.

Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than

significant. Since there would be no adverse significant cumulative impact to which the project would contribute, the proposed project would not result in a significant cumulative impact during operations (*less than significant*).

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4.5 Marine Biological Resources

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This section analyzes the potential for the Monterey Peninsula Water Supply Project (MPWSP or proposed project), which includes 10 slant wells at CEMEX, to affect marine habitats and associated marine biological resources. The marine biological resources study area encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from the Salinas River southward to the northern limits of Sand City. This area encompasses the ocean waters adjacent to the proposed subsurface slant wells site at the CEMEX sand mining facility and surrounding the Monterey Regional Water Pollution Control Agency's (MRWPCA) existing ocean outfall, which CalAm proposes to use to discharge the brine produced during the desalination process (see **Figure 4.5-1**). This area also includes the waters of Monterey Bay National Marine Sanctuary, and impacts associated with the federal proposed action, which includes the permitting and authorization of those project components that may affect sanctuary resources, including the brine discharge. This analysis considers construction and operational impacts associated with the subsurface slant wells and operational impacts associated with brine discharge because they are the only proposed actions that affect marine biological resources. The analysis of brine discharge impacts on marine biological resources relies on water quality information and analysis presented in Section 4.3, Surface Water Hydrology and Water Quality. Section 4.3 also discusses the indirect impacts on Marine Biological Resources resulting from the implementation of water quality mitigation. Marine birds, anadromous fish, and inland fish are addressed in Section 4.6, Terrestrial Biological Resources.

The CPUC received several comments pertaining to marine biological resources during the public review period for the April 2015 Draft EIR. Comments requested revision of the description of National Marine Sanctuary Program Regulations; and expansion of the discussion of state regulations to provide a more complete description of the Marine Life Protection Act and the Marine Life Management Act, as well as management plans for nearshore fishes and market squid. These comments have been addressed in Section 4.5.2, Regulatory Framework. Other comments include suggested revisions to the analysis approach and significance thresholds for analysis brine discharge impacts. Accordingly, the approach and significance thresholds have been revised and are presented in Sections 4.5.4 and 4.5.5. Comments received on the April 2015 Draft EIR expressed concerns over the potential for hypoxia[1] to occur near the seabed as a result of proposed MPWSP operational discharges. Specifically, there was concern that high salinity discharges from the MRWPCA outfall would restrict oxygen supply near the seabed and result in stress or mortality to benthic organisms and other marine biological resources. These issues are addressed in detail in Chapter 4.3, Water Quality, specifically Section 4.3.5.2 under Impact 4.3-4 and Impact 4.3-5, and a summary of this analysis is repeated in 4.5. Some commenters requested more quantitative analysis of shear stress effects on plankton associated with brine discharges and consideration of brine discharge impacts on squid. These issues are addressed under Impacts 4.5-4, 4.5-5, and 4.5-6. Finally, a concern was expressed regarding the presence of cold water offshore seeps. Although cold water seeps are one of the more unique and sensitive benthic habitats that occurs within Monterey Bay, they are located at depths greater than 3,000 feet (1,000 meters). There are no known cold water seeps within the study area and this topic is not further discussed.

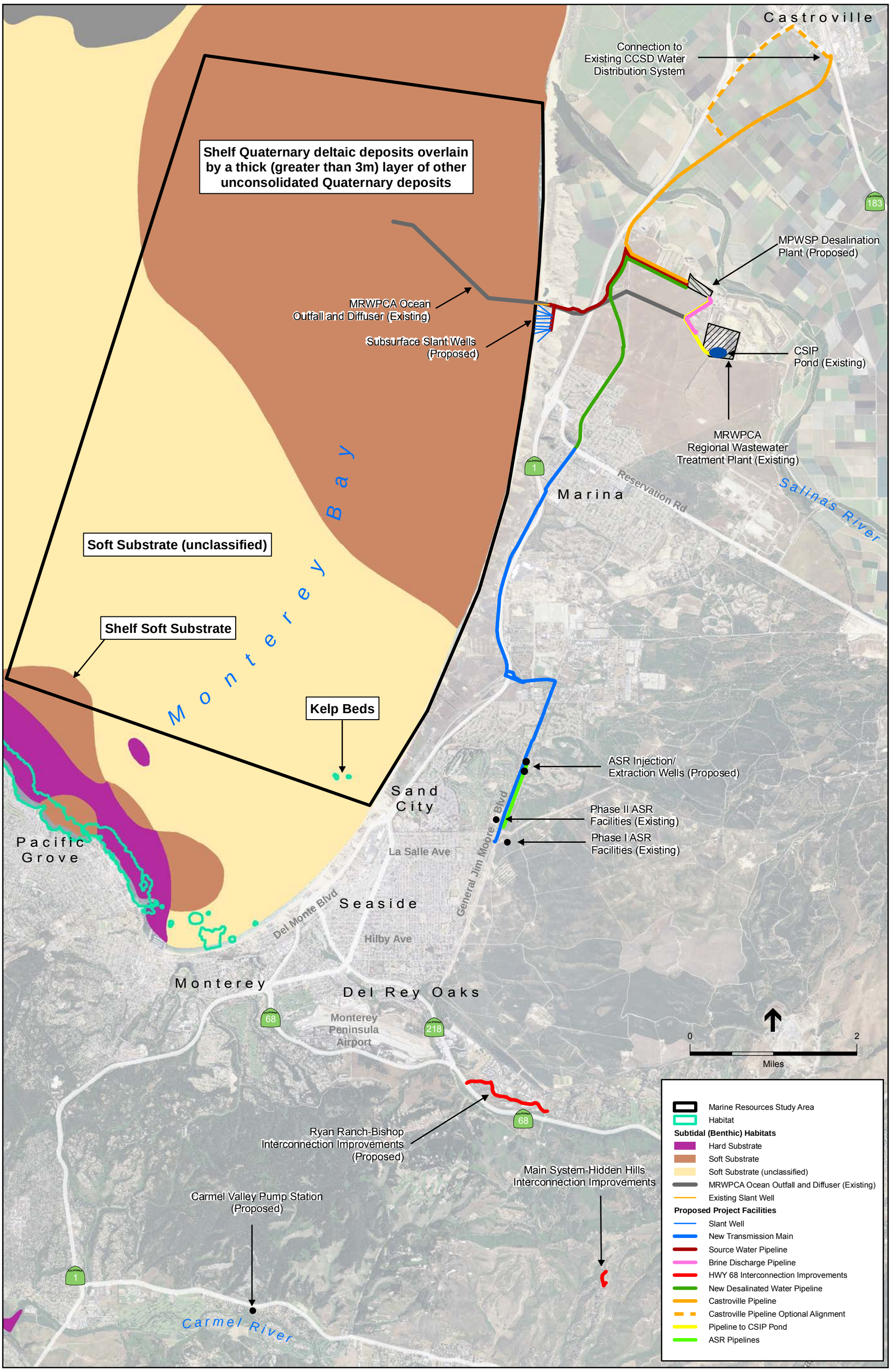
As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this Final EIR/EIS section. Those changes include:

- *The addition of California Division of Fish and Wildlife "Fully Protected" as a category of Special Status Marine Species; and*
- *The inclusion of additional brine discharge dilution modeling scenarios from Section 4.3, Surface Water Hydrology and Water Quality.*

4.5.1 Setting/Affected Environment

This setting section describes the regional oceanographic conditions and marine biological resources of Monterey Bay within Monterey Bay National Marine Sanctuary (MBNMS), and provides more specific information on habitats and resources in the study area. The impact analysis presented in Section 4.5.5, below, focuses on those resources located within the marine biological resources study area (**Figure 4.5-1**). The information on marine communities, plant and animal species, and sensitive biological resources used in the preparation of this section was obtained from regional databases including information available from MBNMS (MBNMS, 2013; 2015a, b; 2016a, b, c, d, e) environmental impact assessments prepared for other regional projects (MCRMA, 2014, SWCA/MBNMS, 2014), and scientific publication articles relevant to

[1] Hypoxia, or oxygen depletion, is an environmental phenomenon where the concentration of dissolved oxygen in the water column decreases to a level that can no longer support living aquatic organisms. The impacts of hypoxia are often described as creating a so-called "dead zone" in the marine environment.



SOURCE: CSUM; NOAA

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-1

Identified Seafloor Habitats in Study Area

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the proposed project, and reconnaissance-level surveys of the project area. A survey of marine plankton was performed on May 5, 2016 (AMS, 2016).

The study area is located in the nearshore coastal area of MBNMS, which was designated as a federally protected area in 1992. MBNMS is managed by the National Oceanographic and Atmospheric Administration (NOAA), Office of National Marine Sanctuaries (ONMS) and includes coastal waters from Marin to Cambria. MBNMS includes 276 statute miles of shoreline, extends an average distance of 30 miles from shore (MHWL) and encompasses 4,601 square nautical miles of ocean (MBNMS, 2015a). It was established for the purposes of research and monitoring, education and outreach, public use and resource protection, and includes a variety of habitats that support highly productive biological communities.

MBNMS resources include a variety of habitats that support extensive marine life, including 36 species of marine mammals, over 180 species of seabirds and shorebirds, at least 525 fish species, four sea turtle species, 31 different invertebrate phyla, and over 450 species of marine algae. Its natural resources include central California's largest contiguous kelp forest, one of North America's largest underwater canyons, and the closest-to-shore deep ocean environment off the continental United States. Its productive biological communities host one of the highest levels of marine biodiversity in the world, including 27 federally listed threatened and endangered species.

4.5.1.1 Existing Oceanographic Conditions

Monterey Bay has three ocean climate seasons: upwelling, oceanic, and Davidson current (Pennington and Chavez, 2000). The upwelling period, typically occurs mid-February through November, and is characterized by higher nutrient concentrations at the surface, where sunlight and stratification of the water column often lead to high primary production and chlorophyll values (see the discussion of pelagic habitat, below, for more details). MBNMS represents one of four major coastal upwelling regions worldwide. The seasonal upwelling makes Monterey Bay extremely productive in terms of being able to support a variety of species, including some whales and small schooling fish (e.g., sardine, herring).

During the oceanic period, which usually begins in mid-August and continues through mid-October, phytoplankton blooms are intermittent and primarily composed of small phytoplankton. Phytoplankton productivity is lowest in winter months and during the Davidson current period. Section 4.3, Surface Water Hydrology and Water Quality, provides more detail about the hydrology and water quality of Monterey Bay.

4.5.1.2 Existing Marine Habitats and Communities

The study area includes a variety of habitats that can be broadly divided into nearshore, pelagic (open water), and benthic (seafloor) habitats, as described in the following subsections.

Intertidal & Nearshore Habitats

The intertidal zone is located between the highest and lowest tide elevations. Intertidal zones along the central California coast include rocky shores, sandy beaches, coastal marshes, and tidal

flats located within estuaries and lagoons. The intertidal zone adjacent to the project area is characterized by sandy beaches.

Sand and gravel beach communities are structured in part by grain size, slope of the beach, and wave energy. Intertidal beach communities are also subject to daily tidal changes that result in highly fluctuating physical regimes in temperature, salinity, and moisture content of the sand.

Various invertebrate animals live in the sand and in wracks of decaying seaweed and other detritus. These include crustaceans, cirolanid isopods, and mole crabs (Oakden and Nybakken, 1977). Polychaete worms, bivalves (i.e. clams, mussels, and scallops) are also regularly present, though typically in low abundances. In addition, there are numerous species of shorebirds that use the sandy beaches in the project area to feed at the water's edge, such as sanderling, marbled godwit, and willet. Western snowy plover is a protected species that nest on these same beaches. Marine mammals, including California sea lions, harbor seals, and elephant seals, haul out on isolated beaches and sands spits. Southern sea otters (*Enhydra lutris nereis*) forage for crustaceans and bivalves in the surf zone during high tide. Sand dollars, worms, clams, crabs, and a variety of fish, including multiple species of surfperch, flatfish, rays, and sharks, inhabit or utilize the surf zone.

Pelagic (Open Water) Habitat

The pelagic habitat supports planktonic organisms that float or swim in the water, as well as fish, marine birds, and marine mammals. Monterey Bay has a high level of phytoplankton primary production[2] due to annual seasonal upwelling. Phytoplankton, the primary producers in the marine pelagic food web, are consumed by many species of zooplankton. In turn, the zooplankton supports a variety of species, such as small schooling fish (e.g., sardine, herring) and baleen whales (*Mysticeti*).

Seasonal blooms of phytoplankton regularly occur in Monterey Bay (Pennington and Chavez, 2000) when optimal conditions for each species (e.g. temperature, nutrient concentrations, salinity) develop. Some phytoplankton species, such as the dinoflagellate (*Cochlodinium*), produce toxins and can cause harmful algal blooms when they reproduce to very high densities (Kudela et al., 2008; Shahraki et al, 2013). A diatom (*Pseudo-nitzschia*) produces domoic acid, a neurotoxin that can bioaccumulate in the food chain and result in mortality in marine mammals, birds, and humans. This diatom is regularly associated with harmful algal blooms in Monterey Bay (Armstrong-Howard et al, 2007; Kudela et al, 2005).

Common zooplankton in Monterey Bay include small shrimp-like invertebrates (crustaceans) of the order Euphausiacea commonly known as krill. Large aggregations of euphausiids often precede the arrival of blue whales that come to feed on crustaceans at the edge of the Monterey Bay Submarine Canyon. Euphausiids feed on phytoplankton that grow after nutrient rich water has upwelled to the surface. Euphausiid species typically present in these groups are *Euphausia pacifica, Thyanoessa spinifera,* and *Nyctiphanes simplex* (Croll et al., 2005).

[2] Phytoplankton primary production refers to the growth rate of the phytoplankton community.

Small zooplankton was sampled near the MRWPCA outfall in the spring of 2016, to provide an example of the assemblages that could be affected by the proposed discharge of desalination brine (AMS, 2016). Three oblique tows (at the diffuser, 0.3 mile [0.5 kilometer] north of the diffuser, and 0.3 mile [0.5 kilometer] south of the diffuser) were made perpendicular to shore to bracket the water depth of the diffuser using a net with a 1-meter opening and net mesh of 202 µm. Calanoid copepods and euphausiid crustaceans were the most abundant organisms observed in sorted subsamples (see **Table 4.5-1**). Various crustacean, polychaete, and molluscan larvae and other small zooplankton were also observed. When total counts were normalized to volume, abundances ranged from 77 to 176 individuals per cubic foot (or 2,702 to 6,202 individuals per cubic meter), with an overall average of 123 individuals per cubic foot (4,357 individuals per cubic meter).

TABLE 4.5-1
ZOOPLANKTON COLLECTED NEAR THE MRWPCA OUTFALL IN MAY 2016

Station	CALAM-1 North of Diffuser	CALAM-2 Over the Diffuser	CALAM-3 South of Diffuser	Overall
Date	**14 May 2016**	**14 May 2016**	**14 May 2016**	
Time	**10:05**	**10:59**	**11:39**	
Wire out (m)	**99**	**100**	**62**	
Taxonomic Group (#/m^3)				**Mean #/m^3**
Copepod_unid	88.47	0.00	12.72	33.73
Calanoid	3,025.59	1,918.70	4,213.87	3,052.72
Oithona_sp	253.61	207.32	648.61	369.85
Corycaeus_sp	5.90	81.05	105.98	64.31
Copepod_nauplii	76.67	3.77	152.61	77.69
Euphausiid_nauplii	23.59	5.65	12.72	13.99
Euphausiid_Calyptopis	837.49	275.18	729.16	613.94
Euphausiid_furcilia	117.96	65.97	55.11	79.68
Cirripedia_nauplii	11.80	16.96	12.72	13.83
Cladocera_podon	0.00	0.00	8.48	2.83
Salp	159.24	45.23	33.91	79.46
Appendicularia_unid	41.28	5.65	127.18	58.04
Oikopleura_unid	23.59	9.42	8.48	13.83
Chaetognath_unid	23.59	35.81	29.68	29.69
Polychaete_unid	0.00	5.65	8.48	1.97
Polychaete_trocophore	0.00	3.77	4.24	4.71
Gastropod_larvae	0.00	5.65	4.24	2.67
Bivalve_veliger	0.00	3.77	8.48	4.40
Siphonophore	0.00	0.00	21.20	3.30
Hydromedusa	0.00	0.00	4.24	4.08
Sum	4,706.47	2,702.76	6,202.10	4,357.11

SOURCE: AMS, 2016

The nearshore phytoplankton and zooplankton communities of Monterey Bay support a diverse group (over 80 species) of fishes, sharks, and rays. These include flatfish such as halibut, sanddab, flounder, turbot, and sole that are closely associated with sandy habitats, as well as surfperch, rockfish, goby, and sculpin, which are normally associated with rocky habitats. Pelagic schooling fishes include Northern Anchovy (Engraulis mordax), Pacific Herring (Clupea pallasii), smelts (Osmeridae), Pacific Sardine (Sardinops sagax), and New World silversides (Atherinopsidae). The close proximity of the Monterey Bay Submarine Canyon to the shoreline means that certain fish, sharks, and marine mammals that would normally exist predominantly in deeper offshore waters can also be frequent inhabitants of the nearshore pelagic environment.

Market squid *(Doryteuthis (Loligo) opalescens*) inhabit the pelagic habitat in Monterey Bay and supports a major commercial fishery in the area, as well as providing a key food source for marine mammals, birds, and fish. Between 2009 and 2014, commercial landings of market squid in Monterey Bay ranged between 2.3 million and 90.4 million pounds annually with an average annual landing of 43.1 million pounds (CDFW, 2016a).

Market squid adults typically inhabit deeper offshore waters but return to shallower nearshore areas to spawn on sand and mud seafloor habitats. Peak spawning in Monterey Bay occurs in April. Squid larvae and juveniles inhabit the nearshore coastal waters of the study area (Porzio and Brady, 2006).

Monterey Bay has one of the most diverse and abundant marine mammal assemblages in the world with up to six species of seals and sea lions, 20 species of whales, dolphins, and porpoises, and one species of sea otter potentially occurring within the study area (MBNMS, 2016a). The most common seals and sea lions observed in the study area include the Pacific harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and the northern elephant seal (*Mirounga angustirostris*). Although any of these species can haul out on the sandy beaches or rocky intertidal breakwalls at Moss Landing Harbor, there are no known haul out areas for these species within the study area (MBNMS, 2016a).

The most commonly observed cetaceans (whales) within the study area include the humpback whale (*Megaptera novaengliae*), California gray whale (*Eschrichtius robustus*), the blue whale (*Balaenoptera musculus*), and occasionally the Minke whale (*Balaenoptera acutorostrata*). Other whale species that occur within Monterey Bay but are rarely or infrequently observed in the nearshore waters of the study area include the fin, sperm, North Pacific right, Sei, killer, and Baird's beaked whales. The most commonly observed dolphins and porpoises in the study area of Monterey Bay include the common dolphin (*Delphinus spp*.), bottlenose dolphin (*Tursiops truncates*), Pacific white-sided dolphin (*Lagenorhynchus obliguidens*), and Risso's dolphin (*Grampus griseus*). Additionally, while harbor porpoises (*Phocena phocena*) are frequently observed in the nearshore waters adjacent to Sunset Beach to the north of the study area, they are infrequently observed in the study area. Other dolphin and porpoise species present in the study area do not utilize nearshore waters or occur very infrequently; these include Dall's porpoise, Northern right whale dolphin, and striped dolphin. Southern sea otter (*Enhydra lutris nereis*) inhabits the nearshore waters of Monterey Bay and the study area using Elkhorn Slough in Elkhorn Slough National Estuarine Research Reserve as a pupping area (MBNMS, 2016a).

Benthic (Seafloor) Habitats

Two seafloor or benthic habitat types occur in the study area (see **Figure 4.5-1**): soft substrate and hard substrate, which comprise the benthic habitat or submerged lands of MBNMS.

Soft Substrate (Mud & Sand) Habitat

The soft substrate habitat in the study area has been characterized as a flat featureless plain with a gently sloping sandy seafloor (Eittreim et al., 1997). This soft substrate habitat consists primarily of deltaic deposits from the Salinas River and other unclassified soft substrate. Physical processes, such as waves and currents, sort the sediment particles roughly by grain size so that there are onshore-offshore gradients in the fineness of sediments, with coarser sand deposits closer to shore grading to muddy areas farther offshore (Edwards et al., 1997). The seafloor habitat located within the high-energy surf zone is characterized by coarse, mobile sands and contains a limited range and abundance of species commonly including flatfish, rays, shrimp, crabs, sand dollars, amphipods, clams, and large polychaete worms (Edwards et al., 1997). Offshore, the seafloor sediment gradually changes to a finer mud composition with increasing percentages of silts and clays, as a result of decreasing wind-driven wave energy. As a result of the increased organic and silt/clay composition of the seafloor sediments, and decreased energy, the associated invertebrate and fish communities commonly inhabiting these areas increase substantially over the nearshore surf zone. The infaunal marine community typically consists of multiple species of polychaete and oligochaete worms, amphipods, cumaceans, isopods, ostracods, mollusks, decapods, gastropods, and ophiuroides. Common megabenthic epifauna include anemones, crabs, shrimp, gastropod snails, echinoderm sea stars, and sea pens. Many different fish species spend all or part of their life cycle in association with the seafloor. These species include flatfish, gobies, poachers, eelpouts, and sculpins, which all live in close association with the benthos during their subadult and adult life. Others, such as salmon, steelhead, smelt, sturgeon and other fish species, use the benthos for foraging.

This habitat area typically extends throughout most of the Monterey Bay with associated species composition and abundance changing gradually with depth. This habitat is not as physically dynamic as the nearshore sandy habitat and is normally not subject to large fluctuations in water quality parameters like salinity and temperature. However, this region is still subject to wave and current action, which sorts bottom sediments and removes organic material.

Hard Substrate Habitat

Rocky areas along the central California coast provide habitat for a diverse group of organisms. More than 660 marine algae and kelp species are present in the rocky habitats of central California (Abbott and Hollenberg, 1976). Kelp forests occur in rocky subtidal areas and provide abundant microhabitats by virtue of their vertical structure. Kelp forests are capable of providing sufficient primary productivity (rate of formation of energy-rich organic compounds) to sustain the entire ecosystem. The growth requirements for kelp include light, relatively cool water, and high nutrients (primarily nitrates, phosphates, and some metals). In addition to macrophytes like giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis* spp.) that anchor on hard substrate, highly diverse invertebrate and fish assemblages also inhabit rocky areas. These include multiple species of bryozoans, anemones, shrimp, ectoprocts, solitary and branching corals, hydrocorals,

sponges, scallops, crabs, tubeworms, tunicates, and fish, including rockfish (*Sebastes*), sculpins, lingcod, and greenlings.

NOAA, as part of their coastal marine resource mapping efforts (NOAA, 2014a), indicates on one of their sensitivity index maps the potential presence of a small area of rocky subtidal habitat supporting kelp at the very southern end of the study area (see **Figure 4.5-1**). Additionally, hard substrate subtidal habitat has been identified (MBNMS, 2016d) that coincides with the ballast rock that is used to secure the MRWPCA outfall on the seabed (see **Figure 4.5-2**). As described above, the majority of the study area is soft bottom substrate and there are no SESAs in the study area. Video obtained during a recent inspection of the MRWPCA outfall revealed a rich hard-substrate assemblage on the ballast rock. Numerous species of rockfishes, sea cucumbers, anemones, solitary cup corals, and sponges were observed (Ballard Marine Construction, LLC, 2014).

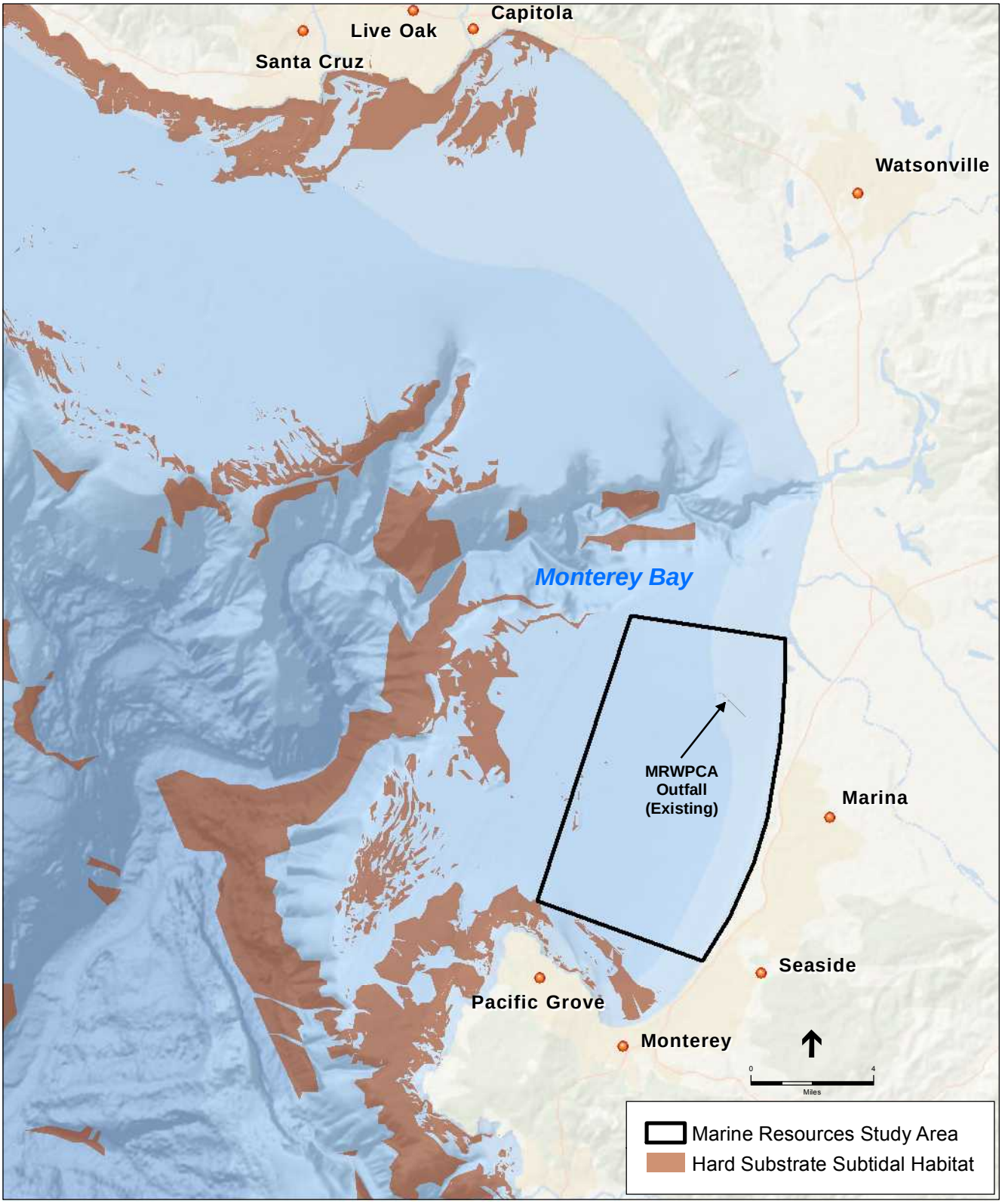
Submarine Canyons

A major feature of Monterey Bay is the system of submarine canyons that incise the coastal shelf. Monterey Canyon, whose head is close to shore near Moss Landing, is similar in size to the Grand Canyon (MBNMS, 2016f) with a maximum rim to floor relief greater than 5,500 feet. Soquel Canyon, much smaller than Monterey Canyon, begins offshore of Soquel and intersects with the northern rim of Monterey Canyon. The canyon walls are a mixture of soft substrate and rocky outcrops and support a very diverse biota of benthic organisms, such as corals, sea pens, tunicates, sponges, and crinoids, and fishes. Krill, a major prey item for many cetaceans, also exist in high concentrations along canyon walls and near canyon heads. None of the canyons in Monterey Bay are located within the study area.

4.5.1.3 Special-Status Marine Species

The high phytoplankton productivity of Monterey Bay and Elkhorn Slough supports numerous special-status mammals, birds, turtles, and fish. Special-status species include those species that are listed as federal or state endangered, threatened, proposed, and candidate species; and state or local species of concern. For the purposes of this analysis, special-status marine species include:

- Marine species that are listed or proposed or are candidate species for listing as Threatened or Endangered by the USFWS and NMFS pursuant to the Federal Endangered Species Act (FESA);
- Marine species listed as Rare, Threatened, or Endangered by CDFW pursuant to the California Endangered Species Act (CESA);
- Marine species managed and regulated under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA);
- Marine species protected under the Marine Mammals Protection Act (MMPA);
- Marine species managed and regulated by CDFW under the Nearshore Fisheries Management Plan and the Market Squid Fisheries Management Plan;



SOURCE: NOAA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-2

Hard Substrate Subtidal Habitat in Monterey Bay

- Marine species designated by CDFW as California Species of Concern and Fully Protected; and
- Marine species not currently protected by statute or regulation but considered rare, threatened, or endangered under CEQA (Guidelines Section 15380).

Table 4.5-2 presents the FESA, CESA, and MMPA marine species in Monterey Bay and their potential to occur within the study area. The special-status marine species that have the highest risk of being adversely affected by project construction and operational activities because of their presence within the study area are discussed below. **Table 4.5-3** presents marine fish and invertebrate species that are managed and regulated under the MSA and **Table 4.5-4** presents marine fish and invertebrates that are managed under the California Nearshore Fisheries Management Plan (NFMP) and the California Market Squid Fisheries Management Plan (MSFMP), that occur within the study area.

FESA, CESA, and MMPA Species

Mammals

The special-status marine mammals that are most likely to be present within the resource study area, within MBNMS, identified in **Table 4.5-2**, include the southern sea otter, humpback whale, California gray whale, common long-beak dolphin, bottlenose dolphin, California sea lion, and Pacific harbor seal. Southern sea otter predominantly inhabits nearshore environments, where it dives to the seafloor to forage on predominantly marine invertebrates such as sea urchins, mollusks, crustaceans, and fish. Humpback and blue whales are found throughout Monterey Bay and tend to concentrate in areas with abundant krill or anchovies where they can be observed feeding. Bottlenose and the common long-beak dolphin are the two most frequently observed marine mammals in the shallower coastal waters of the study area. They are year-round inhabitants often observed in moderate-sized groups. Harbor porpoise are shy and harder to observe, yet they also have resident populations in the area. Harbor seals and California sea lions are also routinely observed within the study area, although usually as single individuals. No haul outs for either species are known to occur within the study area, although individuals can and do haul out temporarily on the beaches within the study area. The California gray whale, although no longer a federal and State-listed species, is one of the most commonly observed whales in Monterey Bay. Similarly, the federally endangered humpback whale has become a common sight within Monterey Bay between April and December when migrating through the region.

Additional species of marine mammals are known to be present in Monterey Bay either year-round or seasonally, but are not likely to occur or rarely occur in the study area.

Birds

One special-status marine bird occurs in the study area. The California western snowy plover (*Charadrius alexandrinus nivosus*) and other marine and terrestrial birds potentially inhabiting the study area are discussed in Section 4.6, Terrestrial Biological Resources.

TABLE 4.5-2
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Marine Mammals					
Southern Sea Otter	*Enhydra lutris nereis*	FT, P, FP	A top carnivore in its coastal range and a keystone species of the nearshore coastal zone. Frequent inhabitor in kelp forests.	Year-round-Common	**High.** Otters are commonly found in Monterey Bay and the nearshore waters within the study area.
California Sea Lion	*Zalophus californianus*	P	Coastal waters of Monterey Bay are used for foraging with haul-out sites near Fishermen's Wharf; most abundant pinniped in MBNMS.	Seasonal-Common	**Moderate.** Main haul-out sites are located south of the study area; however, foraging can be expected to occur over the entire continental shelf.1
Steller Sea Lion	*Eumetopias jubatus*	FT, P	Occasional visitor in fall and winter utilizing the coastal waters of Monterey Bay for foraging, usually found among the California sea lions on the Coast Guard jetty in Monterey harbor.	Seasonal-Occasional	**Not Expected.** A small population breeds on Año Nuevo Island, just north of Monterey Bay and occasional individuals transit through MBNMS waters but no sightings within the study area have been reported.[1]
Harbor Seal	*Phoca vitulina richardii*	P	Most commonly observed pinniped along MBNMS coastline. Use the offshore waters of Monterey Bay for foraging and beaches for resting. Occur on offshore rocks, on sand and mudflats in estuaries and bays, and on some isolated beaches.[1]	Year-round-Common	**High.** Residents of MBNMS throughout the year, occurring mainly close to shore.
Northern Fur Seal	*Callorhinus ursinus*	FD	Usually come ashore in California only when debilitated, however, few individuals observed on Año Nuevo Island. Occur off of central California during winter following migration from northern breeding grounds.	Seasonal-Very Rare	**Not Expected.** Usually 18-28 km from shore in California, however, they have been observed within 5 km of Point Pinos to the south of the study area.[1]
Northern Elephant Seal	*Mirounga angustirostris*	FP, P	Usually observed offshore swimming and foraging and only come ashore in Monterey Bay when debilitated or at one of the established rookeries. Three rookeries are on mainland beaches in MBNMS at Pt. Piedras Blancas, Cape San Martin/Gorda, and Año Nuevo State Park.	Year-round, Common	**Low.** Northern elephant seals are widely distributed in MBNMS but have a low probability of occurring in the study area. They are sighted regularly over shelf, shelf-break, and slope habitats and they are also present in deep ocean habitats seaward of the 2000 m isobaths. Rookeries are located to the north and south of the study area.
Guadalupe Fur Seal	*Arctocephalus townsendi*	CT, FT, FD, FP	Breed along the eastern coast of Guadalupe Island, approximately 200 Kilometers west of Baja California. In addition, individuals have been sighted in the southern California Channel Islands, including two males who established territories on San Nicolas Island. Guadalupe fur seals have been reported on other southern California islands, and the Farallon Islands off northern California with increasing regularity since the 1980s and only occasional observed foraging and swimming in the waters of Monterey bay.	Seasonal-Very Rare	**Not Expected to Low.** This species is not known to regularly haul out or breed in the study area, but occasionally individuals have been sighted in MBNMS waters or have stranded on beaches located within the study area.[1]

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Marine Mammals (cont.)					
Harbor Porpoise	*Phocoena phocoena*	P	Observed in shallow sandy bottom areas of the Monterey Bay Shelf where they forage.	Year-round-Common	**Low.** Although the main population is located offshore Sunset Beach State Park to the north of the study area, individuals have been reported in the nearshore waters adjacent to the former Fort Ord military base.[2]
Risso's Dolphin	*Grampus griseus*	P	Generally found in waters greater than 1,000m in depth and seaward of the continental shelf and slopes.	Year-round-Very Rare	**Not Expected.** An increase in the number of Risso's dolphins in MBNMS has occurred since 1973; however, they generally occur in deeper waters offshore of the study area.[3]
Common Dolphin – Long-beaked	*Delphinus capensis*	P	Found relatively close to shore swimming and foraging.	Year-round-Common	**High.** The common dolphin is the most abundant cetacean found in the coastal waters of California, and the abundance within MBNMS has increased in recent years.[3]
Common Dolphin – Short-beaked	*Delphinus delphis*	P	A more pelagic species than the long-beaked common dolphin, they utilize Monterey Bay for foraging.[3]	Year-round-Rare	**Not Expected.** Generally found offshore of the study area.
Dall's Porpoise	*Phocoenoides dalli*	P	The most pelagic of the porpoises in MBNMS, they utilize Monterey bay for foraging.	Year-round-Rare	**Not Expected.** Most frequently seen off of Point Pinos and over the Monterey Canyon, both of which are outside of the study area.[3]
Bottlenose Dolphin	*Tursiops truncatus*	FD	Includes coastal and offshore populations. Both species use the waters of Monterey Bay for foraging.	Year-round-Common	**Moderate.** More than 45 individuals have been sighted during one recent survey. This species is now considered a resident of Monterey Bay, and is confined to occur within one km of shore.[3]
Pacific White-sided Dolphin	*Lagenorhynchus obliquidens*	P	Commonly seen near the shelf break in the offshore waters of Monterey Bay.	Year-round Common	**Not Expected - Low.** This had been the most frequently seen dolphin in Monterey Bay but has recently been replaced by the common dolphin. Occurs primarily within 15km west of Carmel Bay to the south of the study area and within 25km southwest of Santa Cruz to the north of the study area.[3]
Northern Right Whale Dolphin	*Lissodelphis borealis*	P	Deep, cold temperate waters over the continental shelf and slope in offshore Monterey Bay.	Year-round-Rare	**Low.** Most frequently seen south of MBNMS. Abundance of this species appears to have increased since 1973.[3]
Minke Whale	*Balaenoptera acutorostrata*	P	Can be in coastal/inshore and oceanic/offshore areas of Monterey bay.	Year-round-	**Low-Moderate**. Numerous sightings in the nearshore waters of Monterey Bay. Sightings are usually of single individuals.[3]

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Marine Mammals (cont.)					
Blue Whale	*Balaenoptera musculus*	FE, FD	In Monterey Bay, blue whales often occur near the edges of the submarine canyon where krill tends to concentrate. Blue whales feed only on krill and are in Monterey Bay between June and October, during times of high krill abundance. Blue whales begin to migrate south during November.	Seasonal-Common	**Low.** Regularly observed in Monterey Bay but mostly in deeper waters.
Humpback Whale	*Megaptera novaeangeliae*	FE, FD	Central California population of humpback whales migrates from their winter calving and mating areas off Mexico to their summer and fall feeding areas off coastal California. Humpback whales occur in Monterey Bay from late April to early December.	Seasonal-Common	**Moderate.** Observed throughout Monterey Bay.
Fin Whale	*Balaenoptera physalus*	FE, FD	More common farther from shore; occasionally encountered during the summer and fall in Monterey Bay.	Seasonal-Common	**Not Expected.** Due to their occurrence mainly farther offshore in deeper waters, it is not likely they would be seen in the study area.
Sperm Whale	*Physeter macrocephalus*	FE, FD	Occur in many open oceans; live at the surface of the ocean but dive deeply to catch giant squid.	Seasonal-Rare	**Not Expected.** Offshore but mostly in deeper waters.
Gray Whale	*Eschrichtus robustus*	FDL, P	Predominantly occur within the nearshore coastal waters of Monterey Bay. This species has been delisted under FESA but remains protected under MMPA.	Seasonal-Common	**High.** Occurring in coastal waters during late fall-winter southward migration and again late winter to early summer during their northward migration.
Killer Whale	*Orcinus orca*	P	Transient species observed throughout coastal California waters. Presence and occurrence can be common but unpredictable.	Seasonal-Common	**Low.** Most common during April, May, and June as they feed on northbound migrating gray whales. Generally observed in the deeper waters offshore of the study area.
North Pacific Right Whale	*Eubalaena glacialis*	FE, FD, FP	Seasonally migratory; inhabit colder waters for feeding, and then migrate to warmer waters for breeding and calving. Although they may move far out to sea during their feeding seasons, right whales give birth in coastal areas.	Seasonal-Very Rare	**Not Expected.** Sightings in MBNMS are very rare.[4]
Sei Whale	*Balaenoptera borealis*	FE, FD	Sighted in offshore waters throughout the latitudinal range of MBNMS, though usually occur seaward of the sanctuary's western boundary. Observed generally in deep water habitats including along the edge of the continental shelf, over the continental slope, and in the open ocean.	Seasonal-Very Rare	**Not Expected.** Sightings have become rare in MBNMS since the 1980s.[5]
Short-finned Pilot Whale	*Globicephala macrorhynchus*	P	Found primarily in deep waters in warmer tropical and temperate waters. Forage in areas with high densities of squid.	Year-round-Very Rare	**Not Expected.** Generally found in deeper water than that in the study area.
Baird's Beaked Whale	*Berardius bairdii*	FD	Inhabit deep offshore waters in the North Pacific.	Seasonal-Very Rare	**Not Expected.** Sightings in the fall in Monterey Bay and in deeper waters than the study area.

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Marine Mammals (cont.)					
Cuvier's Beaked Whale	*Ziphius cavirostris*	P	Deep pelagic waters (usually greater than 1,000m deep) of the continental shelf and slope. Seasonality and migration patterns are unknown.[6]	Seasonality unknown-Very Rare	**Not Expected.** Generally occur in the deeper waters west of the study area. Infrequent strandings in Monterey Bay.
Marine Turtles					
Leatherback Sea Turtle	*Dermochelys coriacea*	FE	Offshore pelagic environment.	Seasonal-Occasional	**Low.** Leatherback sea turtles are most commonly seen between July and October, when the surface water temperature warms to 15-16° C and large jellyfish, the primary prey of the turtles, are seasonally abundant offshore.
Green Sea Turtle	*Chelonia mydas*	FE	Primarily use three types of habitat: oceanic beaches (for nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas.	Seasonal-Rare	**Low.** In the eastern Pacific, green turtles have been sighted from Baja California to southern Alaska but most commonly occur from San Diego south.
Olive Ridley Sea Turtle	*Lepidochelys olivacea*	FT	Mainly a "pelagic" sea turtle, but has been known to inhabit coastal areas, including bays and estuaries.	Seasonal-Very Rare	**Not Expected.** In the eastern Pacific, the range of the Olive Ridley turtle extends from southern California to northern Chile.
Loggerhead Sea Turtle	*Caretta caretta*	FT	Occupy three different ecosystems during their lives: the terrestrial zone, the oceanic zone (> 100 fathoms water depth), and the neritic one (< 100 fathoms water depth).	Seasonal-Very Rare	**Low.** In the U.S., most recorded sightings are of juveniles off the coast of California but occasional sightings are reported along the coasts of Washington and Oregon.
Fish					
Chinook Salmon (winter-run)	*Oncorhynchus tshawytscha*	CE, FE	Anadromous and semelparous. This means that as adults, they migrate from a marine environment into the fresh water streams and rivers of their birth (anadromous) where they spawn and die (semelparous).	Seasonal	**Moderate.** Chinook salmon are normally entering the Sacramento River from November to June and spawning from late-April to mid-August, with a peak from May to June. They inhabit nearshore coastal waters of Central California throughout the year, but especially during migration time.
Chinook Salmon (Central California Evolutionary Significant Unit)	*Oncorhynchus tshawytscha*	FT, CSC	Juveniles may spend from 3 months to 2 years in freshwater before migrating to estuarine areas as smolts and then into the ocean to feed and mature. They prefer streams that are deeper and larger than those used by other Pacific salmon species.	Seasonal	**Low.** Historically, the range extended from Oregon to the Ventura River in California, but presently does not appear to extend very far south of San Francisco Bay but into Monterey Bay. Chinook salmon in this ESU exhibit an ocean-type life history and use Monterey Bay waters for foraging.

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Fish (cont.)					
Coho Salmon (Central California Evolutionary Significant Unit)	*Oncorhynchus kisutch*	CT, FT	Spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean.	Seasonal	**Low to Moderate.** Historically, there was a run in the Pajaro and Salinas Rivers but not since the 1990s. Current runs exist in Waddell Creek, Scott Creek, San Lorenzo River, Soquel Creek, and Aptos Creek. In Monterey County, the only runs are two small runs in the Carmel and Big Sur Rivers.
Steelhead (South Central California Coast Distinct Population Segment)	*Onchorhynchus mykiss*	FT, CSC	Steelhead are anadromous and can spend up to 7 years in fresh water prior to smoltification, and then spend up to 3 years in salt water prior to first spawning.	Seasonal	**Low to Moderate.** This DPS occupies rivers from the Pajaro River in Santa Cruz County to (but not including) the Santa Maria River in Santa Barbara County.
Tidewater Goby	*Eucycloglobius newberryi*	FE	Despite the common name, this goby inhabits lagoons formed by streams running into the sea. The lagoons are blocked from the Pacific Ocean by sandbars, admitting salt water only during particular seasons, and so their water is brackish and cool. The tidewater goby prefers salinities of less than 10 parts per thousand (ppt) (less than a third of the salinity found in the ocean) and is thus more often found in the upper parts of the lagoons, near their inflow.	Seasonal	**Low.** Seasonally present in Elkhorn Slough, Bennet Slough, and Salinas River, all of which are outside of the study area.
Western River Lamprey	*Lampetra ayresi*	CSC	Rivers for spawning and rearing; nearshore marine and estuarine habitat as adults. Adult river lampreys enter the ocean in late spring, spending 3-4 months in salt water where they exhibit rapid growth.[8,9]	Seasonal-Very Rare	**Not Expected to Low.** Uncommon in California and potentially in decline.
North American green sturgeon, Southern Distinct Population Segment (DPS)	*Acipenser medirostris*	FT	Within the marine environment, the Southern DPS occupies coastal bays and estuaries from Monterey Bay to Puget Sound in Washington. Individuals occasionally enter coastal estuaries to forage. All of Monterey Bay is designated Critical Habitat for green sturgeon.	Seasonal	**Low.** There are very few data on green sturgeon presence in coastal waters. This species may forage in or near the project area but its distribution in ocean waters is essentially unknown. Spawning occurs in the upper Sacramento River for the southern DPS and fish are known to frequent coastal waters < 110 meters.[16] In 2006, an individual was entrained at the Moss Landing Power Plant intake. No other sightings or reported presence in other entrainment and fish studies have indicated a more than occasional presence.

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Fish (cont.)					
White sharks	*Carcharodon carcharias*	CSC	In California, important white shark habitat occurs around Monterey Bay and Greater Farallones, national marine sanctuaries. White shark populations are impacted by purposeful and incidental capture by fisheries, marine pollution, and coastal habitat degradation	Year-round	**Moderate to High.** Present in coastal waters throughout the State and juveniles and adults are known to frequent the nearshore coastal waters along Monterey Bay coastline.
Eulachon	*Thaleichthys pacificus*	FT	Spawning and rearing in estuarine river habitat; migrate to saltwater where they spend three years and then return to river spawning locations.	Seasonal-Very Rare	**Low.** Monterey Bay is at the southernmost limit of this species distribution, and the population is in decline.[10]
White Sturgeon	*Acipenser transmontanus*	CSC	Live in estuaries of large rivers, but migrate to spawn in freshwater and often travel long distances between river systems.	Seasonal-Very Rare	**Low.** Exist in salt water from the Gulf of Alaska south to Ensenada, Mexico, but spawning only occurs in a few large rivers from the Sacramento-San Joaquin system northward. Self-sustaining spawning populations are currently only known in the Fraser (British Columbia), Columbia (Washington), and Sacramento (California) rivers.[11]
Longfin Smelt	*Spirinchus thaleichthys*	CT	Spend the majority of their life cycle in brackish to marine waters and migrates upstream to freshwater to spawn. A pelagic species.	Seasonal-Very Rare	**Not Expected.** A single longfin smelt collected from the Monterey Bay area was reported by Eschmeyer et al. (1983) but the San Francisco Bay-Delta population is considered to be the southernmost population for the species (Moyle 2002).[12]
Cowcod	*Sebastes levis*	CSC	Juveniles recruit to fine sediment habitat in Monterey Bay in late summer. They have been observed at depths between 40 and 100m. Young cowcod move to deeper habitat within their first year.[13,14]	Seasonal-Common	**Moderate.** Juveniles documented on soft-bottom habitat in study area.
Basking Shark	*Cetorhinus maximus*	CSC	This species movements and migrations are poorly understood. Usually sighted from British Columbia to Baja California in the winter and spring months; where they go once they leave coastal areas is unknown.	Seasonal-Very Rare	**Low.** Basking shark populations were severely depleted by commercial fisheries of the 1950s, and they have never fully recovered due to slow growth and low fecundity.[15]

TABLE 4.5-2 (Continued)
SPECIAL-STATUS MARINE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Listing Status	Habitat	Regional Occurrence	Potential to Occur in Study Area
Marine Invertebrates					
Black Abalone	*Haliotis cracherodii*	FE	Coastal and offshore island intertidal habitats on exposed rocky shores where bedrock provides deep, protective crevices for shelter.	Year-round-Very Rare	**Not Expected.** Study area is not designated as critical habitat due to the lack of preferred habitat (rocky intertidal vs. fine- to medium-grained sand beaches of Monterey Bay).[7] Could be present on hard substrate areas to the north and south of the study area.

NOTES:

FESA = Federal Endangered Species Act
MMPA = Marine Mammal Protection Act
CESA = California Endangered Species Act

Potential for Species Occurrence Rankings:
Not Expected - Suitable foraging or spawning habitat is not known to be present and the species has not been documented to occur
Low - Suitable foraging or spawning habitat is present, but the species has either not been documented to be present or if present, the presence is infrequent
Moderate - Suitable foraging or spawning habitat is present and the species has been documented to be present for part of the year
High - Suitable foraging or spawning habitat is present and the species has been documented to be present throughout the year and/or in substantial numbers

STATUS CODES:

Federal: National Oceanographic and Atmospheric Administration (NOAA); MMPA
FD = Depleted Population
P = Federally Protected

Federal: U.S. Fish and Wildlife Service (USFWS), NOAA National Marine Fisheries Service (NMFS); FESA
FDL = Delisted
FE = Listed as "endangered" (in danger of extinction) under FESA
FT = Listed as "threatened" (likely to become Endangered within the foreseeable future) under FESA
FC = Candidate to become a proposed species
FSC = Former "federal species of concern". The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review. *NMFS still lists "Species of Concern".

State: California Department of Fish and Game (CDFG); CESA
CE = Listed as "endangered" under the CESA
CT = Listed as "threatened" under the CESA
FP = State fully protected species
CSC = CDFW designated "species of special concern"

SOURCES: KLI, 2005; CDFG, 2001; MBNMS, 2015a; NOAA, 2014a; CSUMB, 2014. [1]Monterey Bay National Marine Sanctuary (MBNMS), 2016a; [2]Sanctuary Integrated Monitoring Network (SIMoN), 2016a; [3]MBNMS, 2016b; [4]SIMoN, 2016b; [5]SIMoN, 2016c; [6]National Oceanic and Atmospheric Administration (NOAA), 2016a; [7]NOAA, 2011b; [8]California Department of Fish & Wildlife (CDFW), 2015a; [9]Burton & Lea, 2013; [10]Gustafson, RG, 2016; [11]CDFW, 2015b; [12]The Bay Institute (TBI) et al., 2007; [13]Love & Yoklavich 2008; [14]Johnson et al., 2001; [15]PSRF, 2016.

TABLE 4.5-3
FISH SPECIES PRESENT IN MONTEREY BAY MANAGED UNDER MAGNUSON-STEVENS ACT

Fisheries Management Plan	Common Name	Scientific Name	Life Stages Present	Potential to Occur in Study Area
Coastal Pelagic	Northern anchovy	*Engraulis mordax*	L, J, A[1]	High
	Pacific sardine	*Sardinops sagax*	L, J, A[1]	Moderate-High
	Jack mackerel	*Trachurus symmetricus*	J, A[1]	Moderate-High
	Pacific mackerel	*Scomber japonicus*	L, J, A[1]	Moderate-High
	Pacific herring	*Clupea pallasi*	L, J, A	Moderate-High
	Market squid	*Doryteuthis (Loligo) opalescens*	L, J, A[1]	Moderate-High, when in season
Pacific Groundfish	English sole	*Parophrys vetulus*	L, J, A[2]	High
	Sand sole	*Psettichthys melanostictus*	L, J, A[1]	Moderate-High
	Rock sole	*Pleruonectes bilineatus*	J, A	Moderate-High
	Butter sole	*Pleuronectes isolepsis*	J, A	Moderate-High
	Pacific sanddab	*Citharichthys sordidus*	L, J, A[1]	Moderate-High
	Starry flounder	*Platichthys stellatus*	L, J, A[3]	Low-Moderate
	Diamond turbot	*Hypsopsetta guttulata*	A	Moderate-High
	Ratfish	*Hydrolagus colliei*	J, A	Moderate-High
	Lingcod	*Ophiodon elongatus*	L, J, A[4]	Low-Moderate
	Brown rockfish	*Sebastes auriculatus*	L, J, A[5]	Low-Moderate
	Kelp rockfish	*Sebastes atrovirens*	L, J, A	Low-Moderate
	Aurora rockfish	*Sebastes aurora*	L	Moderate-High
	Gopher rockfish	*Sebastes carnatus*	L, J, A	Low-Moderate
	Splitnose rockfish	*Sebastes diploproa*	L, J[6]	Low-Moderate
	Yellowtail rockfish	*Sebastes flavidus*	A	Moderate-High
	Shortbelly rockfish	*Sebastes jordani*	L, J[7]	Low-Moderate
	Black rockfish	*Sebastes melanops*	L, J, A[8]	Low-Moderate
	Black and yellow rockfish	*Sebastes chrysomelas*	L, J, A[9]	Very Low
	Blue rockfish	*Sebastes mystinus*	L, J, A[10]	Low
	Boccacio	*Sebastes paucispinis*	L, J, A	Low
	Grass rockfish	*Sebastes rastrelliger*	L, J, A[11]	Low
	Stripetail rockfish	*Sebastes saxicola*	L, J	Low-Moderate
	Juvenile & larval rockfish	*Sebastes spp.*	J, L	Low-Moderate
	Leopard shark	*Triakis semifasciata*	J, A[1]	Low-Moderate, when in season
	Spiny dogfish	*Squalus acanthias*	A, J,	Moderate-High
	Soupfin shark	*Galeorhinus zyopterus*	J, A	Low-Moderate
	Big skate	*Raja binoculata*	J, A	Low-Moderate
	California skate	*Raja inornata*	J, A	Low-Moderate
	Longnose skate	*Raja rhina*	J, A	Low-Moderate[12]
	Cabezon	*Scorpaenichthys marmoratus*	L, J, A	Moderate-High
Pacific Coast Salmon	Chinook salmon	*Oncorhynchus tshawytscha*	J, A	Moderate-High, when in season
	Coho salmon	*Oncorhynchus kisutch*	J, A	Moderate-High, when in season
Highly Migratory Species	Common thresher shark	*Alopias vulpinus*	J, A	Low-Moderate
	Shortfin mako shark	*Isurus oxyrinchus*	J, A	Rare, Present in waters deeper than 600 feet
	Albacore tuna	*Thunnus alalunga*	J, A	Moderate-High
	Northern bluefin tuna	*Thunnus orientalis*	J	Rare, Present in waters deeper than 600 feet

NOTES:
Life Stages- A = Adult, J = Juvenile, L = Larvae

SOURCES: [1]Tenera, 2014; [2]Boehlert & Mundy, 1987; [3]PFMC, 2005; [4]Allen, 2014; [5]NOAA, 2014b; [6]NOAA, 2016b; [7]Lenarz, 1980; [8]Miller & Shanks, 2004; [9]SIMoN, 2016d; [10]CDFG, 2001; [11]ODFW, 2016; [12]Driscoll, 2014.

TABLE 4.5-4
SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERIES MANAGEMENT PLAN AND CALIFORNIA NEARSHORE FISHERIES MANAGEMENT PLAN AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat	Regional Occurrence	Potential to Occur in Study Area
Market Squid	*Doryteuthis opalescens*	Pelagic. Adults migrate inshore to spawn over sand habitats and larvae generally occur inshore.	Year-round-Common	**Moderate.** The range of market squid is from the southern tip of Baja California, Mexico to southeastern Alaska. In central California spawning activity starts around April and ends in October. Adults occur in the upper 100m of the water column at night.[1]
Black Rockfish	*Sebastes melanops*	Occur in loose schools 10-20 ft above shallow, rocky reefs, but individuals may also be found resting on rocky bottoms or schooling in mid-water over deeper reefs. Larvae are pelagic, Young-of-year (YOY)[3] settle nearshore in shallower portions of kelp beds, and adults inhabit mid-water and pelagic areas over high relief rocky reefs.	Year-round-Rare	**Low.** Not common south of Santa Cruz.[2]
Black-and-Yellow Rockfish	*Sebastes chrysomelas*	Bottom-dwelling, generally in water less than 60 ft. Inhabit kelp beds and rocky reefs. Larvae and young juveniles are pelagic, but juveniles eventually settle on nearshore rocky areas or in kelp forests.	Year-round-Common	**Moderate.** Distributed from Eureka, California to Isla San Natividad, Baja California, but they are less common south of San Diego.[2]
Blue Rockfish	*Sebastes mystinus*	Larvae are pelagic. In spring, YOY appear in the kelp canopy, shallow rocky areas, and nearshore sand-rock interfaces. Adults inhabit the mid-water and pelagic areas around high-relief rocky reefs, the kelp canopy, and artificial reefs.	Year-round-Common	**High.** Distributed from the Bering Sea to Punta Banda, Baja California, from surface waters to a maximum depth of 1,800 ft. Most abundant rockfish in central California kelp beds.[2]
Brown Rockfish	*Sebastes auriculatus*	YOY migrate into bays and estuaries, which they use as nursery habitat (primarily in waters less than 175 ft deep). They may remain in higher salinity areas of bays for 1 to 2 years before returning to the open coast. Typically associated with sand-rock interfaces, rocky bottoms of artificial or natural reefs, and in eelgrass beds. In shallow areas they are associated with rocky areas and kelp beds, while in deeper water they stay near the rocky bottom.	Year-round-Common	**Moderate.** Distributed from southeast Alaska to Hipolito Bay, central Baja California. San Francisco Bay appears to be an important habitat.[2]
Cabezon	*Scorpaenichthys marmoratus*	Typically occur nearshore from the intertidal to 335 ft. As they get older and larger they tend to move to deeper water. Found in subtidal habitats in or around rocky reefs, under kelp beds, and in shallow tide pools.	Year-round-Common	**Moderate.** Distributed from Point Abreojos, Baja California to Sitka, Alaska.[2]

3 YOY – Young of Year. i.e., newly hatched juveniles.

TABLE 4.5-4 (Continued)
SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERIES MANAGEMENT PLAN AND CALIFORNIA NEARSHORE FISHERIES MANAGEMENT PLAN AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat	Regional Occurrence	Potential to Occur in Study Area
Calico Rockfish	*Sebastes dallii*	Found in areas of soft sand-silt sediment and on artificial reefs, from 60 to 840 ft deep. Adults inhabit rocky shelf areas where there is a mud-rock or sand-mud interface with fine sediments. Associated with areas of high and low relief.	Year-round-Common	**Moderate.** Distributed from Sebastian Viscaino Bay, Baja California to San Francisco.[2]
China Rockfish	*Sebastes nebulosus*	Larvae and early juveniles are pelagic, but larger juveniles and adults settle on rocky reefs or cobble substrate, generally at depths between 30 and 300 ft.	Year-round-Rare	**Low.** Distributed from Kachemak Bay, northern Gulf of Alaska to Redondo Beach and San Miguel Island in southern California, but are most abundant from southeastern Alaska to Sonoma County, California.[2]
Copper Rockfish	*Sebastes caurinus*	Found in the shallow subtidal to 600 ft. New recruits associate with surface-forming kelp. Juveniles settle to the bottom on rocky reefs and well as sandy areas. Adults are commonly found in kelp bed areas but also occur on deeper rocky reefs.	Year-round-Common	**Moderate.** Distributed from the northern Gulf of Alaska to central Baja California.[2]
Gopher Rockfish	*Sebastes carnatus*	Larvae and juveniles are pelagic, but as juveniles mature they settle on rocky reefs or into the kelp canopy. Adults are residential and bottom-dwelling, associated with kelp beds, rocky reefs, or sandy areas near reefs, from the intertidal to about 260 ft.	Year-round-Common	**Moderate.** Distributed from Eureka, California to San Roque, central Baja California, but are most common from Mendocino County, California to Santa Monica Bay.[2]
Grass Rockfish	*Sebastes restrelliger*	Shallow-water species, commonly found from the intertidal to 20 ft. Juveniles are pelagic, but adults are associated with kelp beds and reefs. Usually only juveniles are found in tide pools.	Year-round-Common	**Moderate.** Distributed from Yaquina Bay, Oregon to Bahia Playa Maria, central Baja California, although they are most commonly found from northern California south.[2]
Kelp Greenling	*Hexagrammos decagrammus*	Found in the intertidal to 500 ft, but are most common at depths of 150 ft or less. Found in subtidal habitats in or around rocky reef areas and under kelp beds. Juveniles and adults are common on any rocky bottom area with dense algal growth.	Year-round-Common	**Moderate.** Distributed from La Jolla, California to the Aleutian Islands in Alaska.[2]
Rock Greenling	*Hexagrammos lagocephalus*	Juveniles and adults are found in subtidal habitats in or around rocky reef areas and in kelp beds.	Year-round-Common	**Low.** Distributed from the Bering Sea to Point Conception. In California, this species is infrequently observed south of San Francisco.[2]
Kelp Rockfish	*Sebastes atrovirens*	Occur in rocky reef and artificial reef areas, but most commonly found in kelp beds, drifting within the kelp blades. Occur at depths up to 150 ft, but most often found at depths between 15 and 50 ft.	Year-round-Common	**High.** Distributed from Timber Cove, northern California to Punta San Pablo, central Baja California. Most abundant between northern Baja and central California.
Monkeyface Prickleback	*Cebidichthys violaceus*	Rocky areas with crevices, including high and low intertidal tide pools, jetties and breakwaters, and relatively shallow subtidal areas, particularly kelp beds. Juveniles are well adapted for high-intertidal areas. Occur from the intertidal to 80 ft in depth.	Year-round-Common	**Moderate.** Distributed from San Quintin Bay, Baja California to southern Oregon.[2]

TABLE 4.5-4 (Continued)
SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERIES MANAGEMENT PLAN AND CALIFORNIA NEARSHORE FISHERIES MANAGEMENT PLAN AND THEIR POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat	Regional Occurrence	Potential to Occur in Study Area
Olive Rockfish	*Sebastes serranoides*	Larvae and planktonic. YOY settle out of the plankton onto kelp beds, oil platforms, surfgrass. Occur from surface waters to about 396 ft.	Year-round-Common	**Moderate.** Distributed from southern Oregon to Islas San Benitos, central Baja California. Common from Cape Mendocino to Santa Barbara.[2]
Quillback Rockfish	*Sebastes maliger*	Larvae are planktonic. YOY settle out of the plankton onto shallow, low-relief rocky substrate and shallow, vegetated habitats such as kelp and eelgrass beds. Juveniles also inhabit the very nearshore seafloor and are found over both low- and high-relief rocky substrate. Adults are found in deeper water in close association with the bottom, perched on rocks or taking shelter in crevices.	Year-round-Rare	**Low.** Distributed from the Gulf of Alaska to San Miguel Island in southern California. Common between southeast Alaska and northern California.[2]
California Scorpionfish	*Scorpaena guttata*	Live in tide pools and to depths of about 600 ft. Very young scorpionfish live in shallow water in habitats with dense algae and bottom-encrusting organisms. Juveniles and adults are common on hard bottom such as rocky and artificial reefs.	Year-round-Rare	**Low.** Distributed from Santa Cruz, California south along the coast of Baja California and into the Gulf of California. Common as far north as Santa Barbara.[2]
California Sheephead	*Semicossyphus pulcher*	Inhabit nearshore rocky reefs, kelp beds, and surfgrass beds. Appear to prefer areas of high and low relief but have also been observed foraging over sandy bottom habitat. Use rock crevices and holes to sleep.	Year-round-Rare	**Low.** Distributed form Monterey Bay, California south into the Gulf of California. Not common north of Point Conception.[2]
Treefish	*Sebastes serriceps*	Found drifting in mats of kelp in areas of high rocky relief and on artificial reefs. Adult treefish are found on rock reefs, often in caves and crevices. Occur in shallow habitats to 150 ft in depth.	Year-round-Common	**Moderate.** Distributed from Cedros Island, Baja California to San Francisco.[2]

NOTES

[a] STATUS:
FE=Federally Endangered, SE= State Endangered, FT=Federally Threatened, ST=State Threatened, SSC= Species of Special Concern, FDL=Federally Delisted

[b] POTENTIAL TO OCCUR:
Not Expected = Not expected to occur. No suitable habitat within marine biological resources study area; study area outside currently known distribution or elevation range; no nearby documented occurrences or nearby documented occurrences are historical only.
Low = Low potential to occur: Potentially suitable habitat highly limited and/or of marginal quality; potentially suitable habitat present but species not documented nearby.
Moderate = Moderate potential to occur: Low to moderate quality habitat present; species documented in the study area.
High = High potential to occur: High quality suitable habitat present within study area; species documented in the project vicinity.

SOURCES: [1]CDFG. 2005, [2]CDFG. 2002.

Turtles

Special-status marine turtles that have a very low probability of occurring seasonally in the study area include the leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), olive ridley sea turtle (*Lepidochelys olivacea*), and loggerhead sea turtle (*Caretta caretta*). Leatherback sea turtles are federally endangered and most commonly seen in Monterey Bay from July to October. Green sea turtles, olive ridley sea turtles, and loggerhead sea turtles are federally threatened species rarely seen in Monterey Bay. NOAA has designated all of Monterey Bay as leatherback sea turtle critical habitat (NOAA, 2016c). The leatherback, green and loggerhead turtles have a low potential to occur within the study area; and the olive ridley turtle is not expected to occur within the study area.

Fish

The special-status fish with the highest probability of occurring in the study area are Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Onchorhynchus kisutch*), Steelhead (*Onchorhynchus mykiss*), Cowcod (*Sebastes levis)*, green sturgeon (*Acipenser medirostris*), and white shark (*Carcharodon carcharias*). Chinook salmon, depending on the run, is State endangered or threatened, federally endangered or threatened and has a low to moderate potential to occur in the study area. Coho salmon is a State and federally threatened species that has a low to moderate potential to occur in the study area. South-Central California Coast Steelhead Distinct Population Segment is a federally threatened species and a State species of special concern that has a low to moderate potential to occur in the study area. Green sturgeon is a federal threatened species and State species of concern that has a low potential to occur in the study area.

The tidewater goby (*Eucyclogobius newberryi*) is federally endangered and occurs seasonally in Elkhorn Slough and can be flushed out into the ocean during tidal events. Juvenile cowcod rockfish, a California species of special concern, are known to inhabit the shallower waters of the study area. Historically, due to pressures of fisheries mortality, loss of prey due to overharvesting, disease, predation, and habitat degradation linked to contaminants, white shark numbers had declined in the Northern Pacific. In 2013, NMFS[4] determined that recent information is consistent with a stable or increasing white shark population. In 2014, CDFW determined that based on the best available science, listing the Northeastern Pacific population of white shark as a threatened or endangered species is not warranted, yet take of white shark is still prohibited in the recreational and commercial fisheries.

Managed Fish Species

Under the Magnuson-Stevens Conservation and Management Act (discussed in Section 4.5.2, Regulatory Framework, below), NMFS, the Fishery Management Councils, and all federal agencies are required to cooperatively protect "essential fish habitat" for commercially important fish species such as Pacific coast groundfish, three species of salmon, and five species of coastal pelagic fish and squid. Essential Fish Habitat includes waters and substrates that support fish spawning, breeding, feeding, and maturation. Fish species found in the coastal waters of Monterey Bay and in Elkhorn Slough are protected by Federal Fishery Management Plans prepared by regional Fishery

[4] NMFS, 2013

Management Councils under the Magnuson-Stevens Act are listed in **Table 4.5-3**. All of the coastal waters of Central California and Monterey Bay are identified as Essential Fish Habitat for fish identified in the Pacific coast groundfish, salmon and coastal pelagic fisheries management plans under MSA. **Figures 4.5-3** Rockfish Conservation Area and **4.5-4** Essential Fish Habitat illustrate areas designated by NOAA as MSA managed groundfish and essential fish habitat for rockfish, respectively.

Commercial landings in the Monterey Bay ports (Monterey, Moss Landing, and Santa Cruz) indicate that in 2012 the major fish and invertebrates commercially harvested in Monterey Bay include northern anchovy, grenadier, California halibut, Pacific mackerel, assorted rockfish including blackgill, splitnose, and chillipepper, sablefish, Chinook salmon, white seabass, Pacific sardine, staghorn sculpin, sanddab, longnose skate, Dover sole, petrale sole, longspine thornyhead, shortspine thornyhead, albacore tuna, Dungeness crab, spot prawn, and squid (CDFW, 2013).

The most commonly landed recreational sport fishes in 2013 in central California and Monterey Bay were barred surfperch, assorted rockfish, including brown, black, copper, kelp, gopher, vermillion, yellowtail, and blue, calico surfperch, California lizardfish, Chinook salmon, Pacific mackerel, jacksmelt, northern anchovy, Pacific sanddab, silver surfperch, striped seaperch, walleye surfperch, sharks, and Dungeness crab (RECFIN, 2014).

4.5.1.4 Existing Marine Environment at the Proposed Intake and Outfall Locations

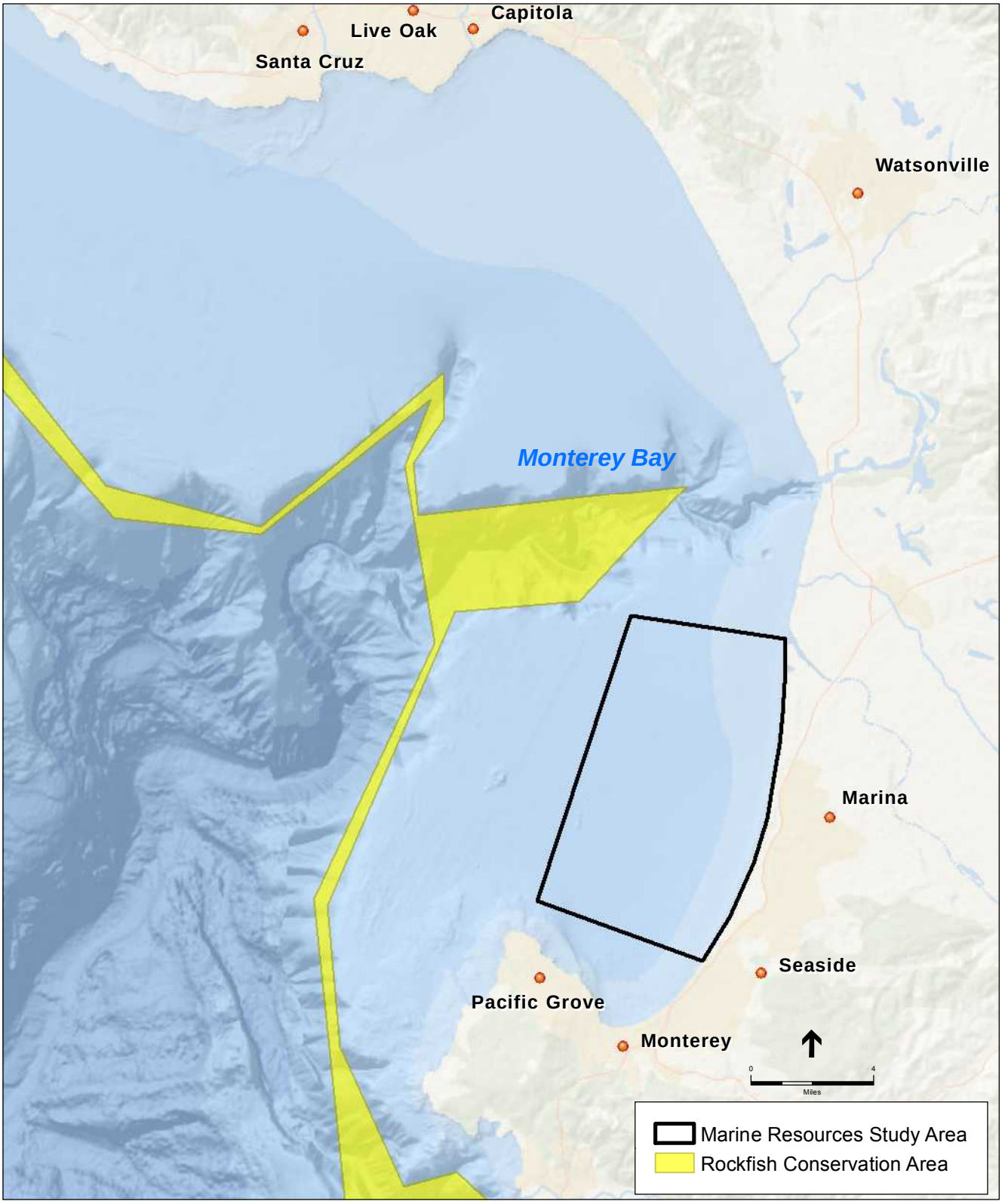
Many marine organisms inhabit either the surface (i.e., epifaunal) or reside within (i.e., infaunal) seafloor sediments. In particular, two communities are organized along a gradient of wave-induced substrate motion that is observed from San Diego to Washington:

- **Crustacean zone:** this shallower zone, characterized by strong water motion and sandy sediments, is occupied by small, mobile, deposit-feeding crustaceans, including sand-burrowing amphipods and surface-active cumaceans and ostracods. All can burrow into the loosely consolidated superficial sediments and flourish in wave-disturbed sand bottoms.
- **Polychaete zone:** characterized by more stable, fine sand with a significant amount of mud, this deeper zone is dominated by polychaete worms living in relatively permanent tubes and burrows. Many other relatively sessile[5] and suspension-feeding groups are also common here.[6]

The width and depth limits of these two zones vary, depending on the strength of wave activity. Benthic fishes are less abundant in the crustacean zone than the polychaete zone. Fish diversity on the sandy seafloor is relatively low compared to adjacent hard substrate areas.

The subsurface slant wells would terminate within the crustacean zone. The MRWPCA's existing ocean outfall and diffuser are in the polychaete zone. The marine communities inhabiting these zones are discussed in more detail below.

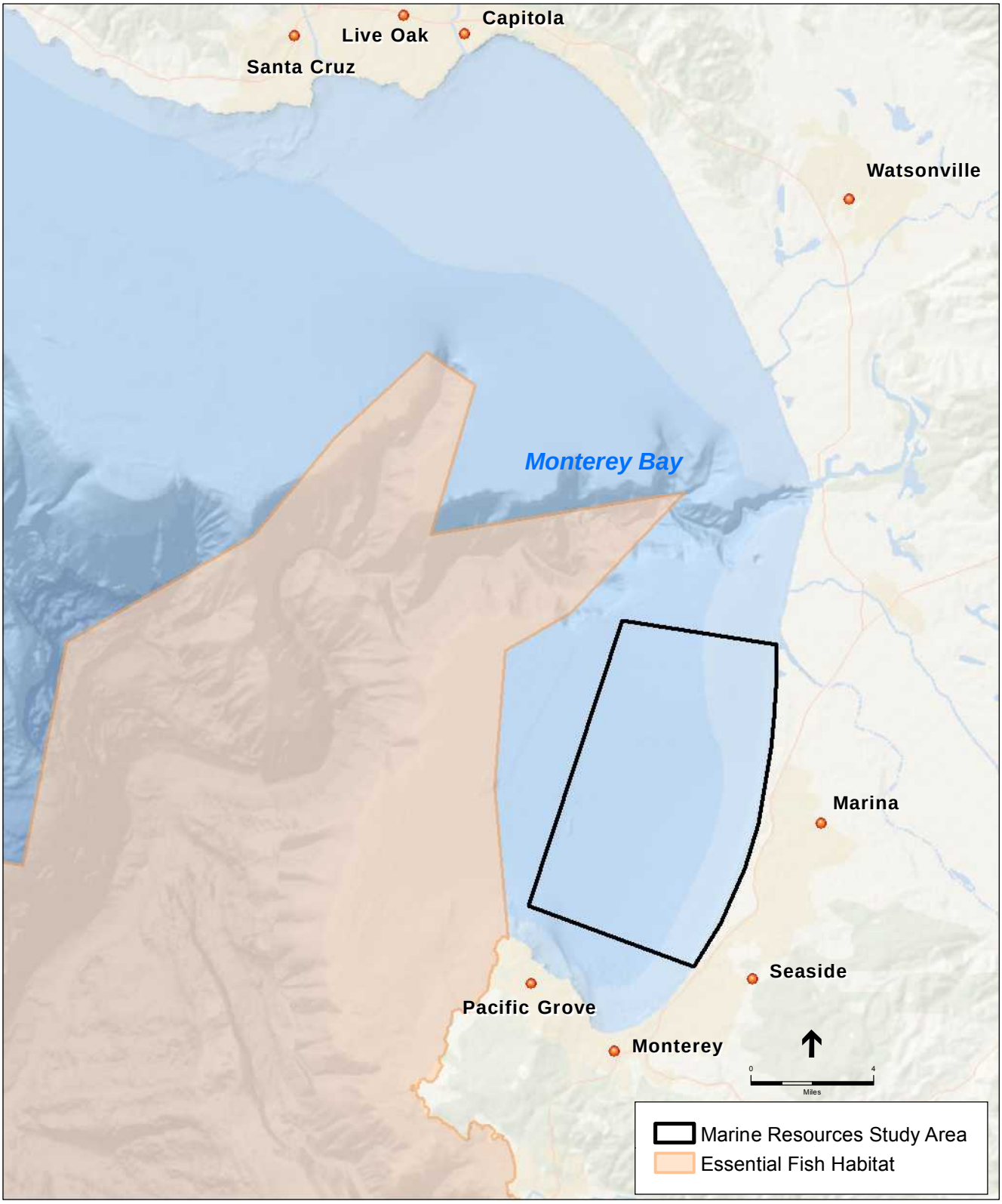
5 Sessile = of an organism, e.g., a barnacle, fixed in one place; immobile.
6 Zone descriptions from MBNMS, 2016g.



SOURCE: NOAA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-3
Rockfish Conservation Areas Designated in MBNMS under Federal Regulations



SOURCE: NOAA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-4

Essential Fish Habitat Designated in MBNMS under Federal Regulations

Proposed Subsurface Slant Wells

The subsurface slant wells would be drilled from roughly 900 feet inland of the shore and would extend beneath the coastal dunes and sandy beach, terminating 161 to 356 feet seaward of the MHW line, within the submerged lands of MBNMS, (except #8, which would not extend past the MHW line) in the nearshore zone at an estimated depth of 200 to 220 feet below MHW (190 to 210 feet beneath the seafloor).

Coastal dune habitat is described in detail in Section 4.6, Terrestrial Biological Resources. The intertidal beach area adjacent to the slant well locations is inhabited by crustaceans, cirolanid isopods, and mole crabs (Oakden and Nybakken, 1977). Polychaete worms, and bivalves (i.e. clams, mussels, and scallops) are also regularly present, though typically in low abundances. In addition, there are numerous species of shorebirds that use these beaches such as sanderling, marbled godwit, and willet that feed at the water's edge, and western snowy plover, a protected species that nest on these same beaches.

The high-energy surf zone is predominantly populated by sand dollars, polychaete worms, shrimp and other arthropods, clams, crabs, and a variety of fish, including multiple species of surfperch, flatfish, rays, and sharks. Marine mammals that may utilize the waters of the surf zone include California sea lions and Pacific harbor seals. Southern sea otters also forage for crustaceans and bivalves in the surf zone during high tide.

Existing MRWPCA Ocean Outfall for Brine Discharges

The habitat surrounding the existing MRWPCA ocean outfall and diffuser is a high-energy sand and mud soft-substrate, as illustrated in Figure 4.5-1. The existing 2.1-mile-long MRWPCA outfall ends approximately 1.5 miles offshore with a 1,100-foot-long underwater diffuser that sits on ballast rock at approximately 90 to 110 feet below sea level, within the waters of MBNMS. The outfall and diffuser are located approximately 3.5 miles southwest of the mouth of the Salinas River, within the area affected by the sediment plume from the river. A long-term monitoring study of the ocean outfall (ABA Consultants, 1999) reported no effects from the outfall discharge on benthic communities, or biological accumulation of contaminants in tissue. No effects were observed on the physical and chemical properties of the sediments and water column except adjacent to the outfall. The increased sediment stability provided by the physical structure of outfall pipe and accompanying ballast rock has allowed a community of tubiculous polychaetes (*Diopatra ornata*) to become established in a distinct band within 6–7 feet of the south side of the outfall. This occurrence increased the diversity and abundance of organisms near the outfall. The monitoring program also reported that the benthic community structure in the vicinity of the outfall shifted over time with a general increase in mobile epifauna and opportunistic species and a decrease in sessile species and their predators, which was consistent with patterns seen in other parts of Monterey Bay and not linked to the outfall (ABA Consultants, 1999). Video of the MRWPCA outfall taken during routine maintenance (Ballard Marine Construction, LLC 2014) revealed a rich assemblage of hard-substrate organisms inhabiting the ballast rock covering the outfall.

4.5.1.5 Non-native Invasive Aquatic Species

The introduction of non-native invasive aquatic species is one of the greatest threats to MBNMS subtidal and intertidal habitats. The introduction of non-native species into coastal Monterey Bay or estuarine ecosystems (Elkhorn Slough) can result in large-scale changes to aquatic communities. California's estuaries, in particular, have become home to many non-native or introduced species that have dominated local intertidal and subtidal marine communities. Elkhorn Slough has been reported to contain approximately 40 non-native, invasive species and a smaller number has been reported for the coastal waters of MBNMS (MBNMS 2016c).

Although the effects of introduced aquatic species on habitats they colonize is often unknown, some clearly have had serious negative influences. Impacts include decreasing abundance and even local extinction of native species, alteration of habitat structure, and extensive economic costs due to heavy organism and algal growths on vessel bottoms and navigation, scientific, and weather buoys. Historically, the principal mechanism of introduction to California coastal waters and estuaries has been fouling, boring, and release of ballast-dwelling organisms. Introduced species include snails, shrimp, plankton, crabs, and algae (MBNMS 2016c).

There are no known or reported occurrences of non-native aquatic species in the study area or more specifically the areas that will be affected by the proposed project.

The two documented non-native species occurring within coastal waters of MBNMS are the seaweed *Undaria pinnatifida* and the European green crab *Carcinus maenas*. Both species are normally associated with hard substrate habitat (SIMoN, 2016e).

4.5.2 Regulatory Framework

This section summarizes federal and state environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") pertaining to marine biological resources and indicates the project's consistency with those regulatory requirements. There are no such local requirements related to marine biological resources that would apply to the MPWSP. The consistency findings are based on the project, as proposed, without mitigation. Where the proposed project would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to the specific impact discussion in Section 4.5.5, Direct and Indirect Effects of the Project, below, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.5.5 includes identification of feasible mitigation that would resolve or minimize the potential inconsistency.

4.5.2.1 Federal Regulations

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered

and to designate critical habitat for those species (16 United States Code [USC] 1533). Multiple species of fish and marine mammals are listed by the USFWS and NMFS under FESA, as discussed in Section 4.5.1.3. Once a species is listed and critical habitat is designated, a federal agency undertaking, authorizing or carrying out an activity must ensure, in consultation with NMFS and/or USFWS, that the activity is not like to jeopardize listed species or destroy or adversely modify critical habitat (16 USC 1536(a)(2)). The statute also prohibits the "take" of a federally listed species (16 USC 1533(d), 1538(a)). "Take" is defined by the FESA as an action that harasses, harms, pursues, hunts, shoots, wounds, kills, traps, captures, or collects, or to attempt to engage in any such conduct." MBNMS will be consulting with NMFS and USFWS pursuant to section 7 of the FESA to assess the level of potential effects from the project and minimize those effects, wherever appropriate, to ensure consistency with the statute. Additional discussion of MPWSP effects related to FESA and the terrestrial environment is provided in Section 4.6, Terrestrial Biological Resources.

Federal Regulation of Wetlands and Other Waters

The United States Army Corps of Engineers (USACE) and the United States Environmental Protection Agency (USEPA) regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Sections 404 and 401 of the Federal Clean Water Act. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the USACE. Section 401 of the Federal Clean Water Act requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain State Water Quality Certification (Certification) that the proposed activity will comply with state water quality standards. Some classes of fill activities may be authorized under General or Nationwide Permits if specific conditions are met. Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species listed or proposed for listing under the Federal Endangered Species Act. In addition to conditions outlined under each Nationwide Permit, project-specific conditions can be required by the USACE as part of the Section 404 permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, an Individual Permit may be issued.

The federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

The MPWSP components proposed for the marine environment would be consistent with Sections 404 of the Federal Clean Water Act, and Executive Order 11990 because their construction would not include dredging or drilling in the territorial or federal waters; slant well drilling would begin approximately 900 feet inland of the shoreline and drill into and under the submerged lands of the Pacific Ocean, in State waters. Additional discussion of MPWSP effects related to wetlands and other waters of the terrestrial environment is provided in Section 4.6, Terrestrial Biological Resources.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA) (16 U.S.C. Sections 1801−1884) of 1976, as amended in 1996 and reauthorized in 2007, is intended to protect fisheries resources and fishing activities within 200 miles of shore. Conservation and management of U.S. fisheries, development of domestic fisheries, and phasing out of foreign fishing activities are the main objectives of the MSA. The MSA provided NOAA Fisheries with legislative authority to regulate U.S. fisheries in the area between 3 miles and 200 miles offshore and established eight regional fishery management councils that manage the harvest of the fish and shellfish resources in these waters.

The MSA defines "essential fish habitat" as those waters and substrate that support fish spawning, breeding, feeding, or maturation. The MSA requires that NOAA Fisheries, the regional fishery management councils, and federal agencies that take an action that may have an effect on managed fish species under MSA, identify essential fish habitat and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NOAA Fisheries, are required to develop and implement Fishery Management Plans. Fishery Management Plans delineate essential fish habitat and management goals for all managed fish species, including some fish species that are not protected under the MSA. Federal agency actions that fund, permit, or carry out activities that may adversely affect essential fish habitat are required under Section 305(b) of the MSA, in conjunction with required Section 7 consultation under FESA, to consult with NOAA Fisheries regarding potential adverse effects of their actions on essential fish habitat and to respond in writing to NOAA Fisheries' recommendations.

Monterey Bay is designated as essential fish habitat under four Fishery Management Plans (see **Figure 4.5-4**). These plans provide protection for Pacific groundfish, coastal pelagic species, highly migratory species, and Pacific coast salmon (i.e. Chinook salmon and Coho salmon). A total of 37 commercially important fish and shark species are managed through these four Fishery Management Plans. Within the study area, coastal pelagic species, some groundfish species, thresher sharks, and occasionally salmon are known to be present (**Table 4.5-2**). The MPWSP would be consistent with the MSA because the construction and operational impacts of the proposed project are not expected to result in any degradation of essential fish habitat within Monterey Bay.

Rivers and Harbors Appropriations Act of 1899

Section 10 of the Federal Rivers and Harbors Appropriations Act of 1899 (30 Stat. 1151, codified at 33 U.S.C. §§401, 403) prohibits the unauthorized obstruction or alteration of any navigable water (33 U.S.C. §§403). Navigable waters under the Rivers and Harbors Appropriations Act are tidally influenced waters that are presently used, have been used in the past, or could be used in the future to transport interstate or foreign commerce (33 C.F.R. 3294). Activities that commonly require Section 10 permits include construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable and pipeline crossings, and dredging and excavation.

The MPWSP components proposed for the marine environment would be consistent with Section 10 of the Rivers and Harbors Appropriations Act of 1899, because their construction would occur

onshore and would not obstruct or alter navigable waters. Additional discussion of MPWSP effects related to navigable waters of the terrestrial environment is provided in Section 4.6, Terrestrial Biological Resources.

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA), as amended in 1981, 1982, 1984, and 1995, establishes a federal responsibility for the protection and conservation of marine mammal species by prohibiting the "take" of any marine mammal. The MMPA defines "take" as the act of hunting, killing, capture, and/or harassment of any marine mammal, or the attempt at such. The Act also imposes a moratorium on the import, export, or sale of any marine mammals, parts, or products within the U.S. These prohibitions apply to any person in U.S. waters and to any U.S. citizen in international waters.

The primary authority for implementing the act belongs to the USFWS and NMFS. The USFWS is responsible for the protection of sea otters, and NMFS is responsible for protecting pinnipeds (seals and sea lions) and cetaceans (whales and dolphins).

The MMPA, as amended, provides that a citizen may request an authorization for taking of small numbers of marine mammals incidental to a specified activity (e.g. dredging, marine construction, marine transport) within a specified region. Authorizations may only be allowed if the activity would have a negligible impact on marine mammal species, or stock (a regional population under the MMPA), and would not have an unmitigable adverse impact on subsistence uses.

The MPWSP would be consistent with the MMPA because incidental take is not likely to occur from the construction and operation of the proposed project, and project activities are not expected to result in take or harassment of any marine mammals as discussed further in Section 4.5.5.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), enacted by Congress in 1972, is administered by NOAA's Office for Coastal Management. The CZMA provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. The CZMA outlines two national programs: the National Coastal Zone Management Program and the National Estuarine Research Reserve System. Thirty-four states have approved coastal management programs. The 34 coastal programs aim to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." The MPWSP would be located in a unique area that encompasses both a national marine sanctuary (MBNMS) and a national estuary (Elkhorn Slough National Estuarine Research Reserve).

Under Section 307 of the CZMA (16 USC 1456), activities that may affect coastal uses or resources that are undertaken by federal agencies, require a federal license or permit, or receive federal funding must be consistent with a State's federally approved coastal management

program. The primary authorities of California's federally approved coastal management program are the California Coastal Act, the McAteer-Petris Act, and the Suisun Marsh Protection Act. The California Coastal Commission (CCC) implements the California Coastal Act and the federal consistency provisions of the CZMA for activities affecting California coastal uses and resources outside of San Francisco Bay.

The MPWSP components proposed for marine environments would be fully consistent with the enforceable policies of CCC's coastal management program. See additional discussion of consistency with CCC's coastal management program under Section 4.5.2.2., State Regulations, below. Additional discussion of MPWSP consistency with the enforceable policies of CCC's coastal management program concerning terrestrial biological resources of the coastal zone is provided in Section 4.6, Terrestrial Biological Resources.

Clean Water Act

The Clean Water Act is described in Section 4.3, Surface Water Hydrology and Water Quality. Under the Clean Water Act, the USEPA seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters by implementing water quality regulations. Section 4.3, Surface Water Hydrology and Water Quality, summarizes Sections 303(d) and 402(p) of the Clean Water Act. Section 303(d) requires states to identify impaired water bodies (i.e., 303(d) List of Impaired Water Bodies). In the study area, impaired water bodies that eventually drain into Monterey Bay include Elkhorn Slough, Moro Cojo Slough, Salinas Reclamation Canal, Tembladero Slough, Old Salinas River estuary, Salinas River, and Moss Landing Harbor. In addition, the nearshore waters of northern Monterey Bay are on the 303(d) list. Section 402(p) requires National Pollutant Discharge Elimination System (NPDES) permits to control discharges of waste into waters of the United States and prevent the impairment of the receiving water for beneficial uses, which includes harm to marine biota. The USEPA has delegated authority of issuing NPDES permits in California to the SWRCB, which has nine regional boards. The Central Coast Regional Water Quality Control Board (RWQCB) regulates water quality in the project area. Discussion of the NPDES program and relevant permits is provided in Section 4.3, Surface Water Hydrology and Water Quality, Subsection 4.3.2.2. Determinations of consistency of the proposed MPWSP with specific applicable SWRCB regulations, plans and policies are also provided in Section 4.3.2.2.

National Marine Sanctuaries Act, MBNMS Regulations and Desalination Guidelines

Pursuant to the National Marine Sanctuaries Act (NMSA), originally referred to as the Marine Protection, Research, and Sanctuaries Act of 1972, the primary purpose of the NMSA is to identify, designate and manage areas of the marine environment of special national significance due to their conservation, recreational, ecological, historical, research, educational, or aesthetic qualities. Under the NMSA, it is unlawful for any person to destroy, cause the loss of, or injure any sanctuary resource managed under law or regulations for that sanctuary. NMSA general regulations define sanctuary resource as any living or non-living resource that contributes to the conservation, recreational, ecological, historical, research, educational or aesthetic value of the

sanctuary, including any algae and other marine plants, marine invertebrates, brine-seep biota, phytoplankton, zooplankton, fish, seabirds, sea turtles, and marine mammals.

MBNMS was designated in 1992 in recognition that the area provides a highly productive ecosystem and a wide variety of marine habitat, including outstanding concentrations of pinnipeds, whales, otters, and seabirds, abundant fish stocks, a variety of crustaceans, and other invertebrates.

MBNMS regulations that are relevant to the construction and operation of desalination plants include restrictions on discharging material or other matter into the sanctuary and restrictions on activities that alter the submerged lands (aka seabed) as a result of the installation of desalination facility structures on or beneath the ocean floor (e.g. an intake or outfall pipeline). Each of these activities first requires MBNMS approval. In particular, MPWSP activities that would be subject to MBNMS approval include disturbance of the submerged lands due to installation of the seawater intake below the ocean floor, and the discharge of brine into sanctuary waters from an existing ocean outfall, approximately 2 miles off shore and 90-110 feet below sea level. Any actions that have the potential to alter the seabed would require an MBNMS Authorization of a Coastal Development permit issued by the CCC. Operational discharges into sanctuary waters would require MBNMS authorization of an NPDES permit issued by the RWQCB (see Section 1.3.2 for additional information). NOAA may also issue Special Use Permits to establish conditions of access to, and use of, any sanctuary resource or to promote public use and understanding of a sanctuary resource. Special Use Permits may only be authorized if that activity is compatible with the purposes for which the sanctuary is designated and with protection of sanctuary resources; and that activities carried out under the permit be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources. NOAA recently approved a new category of Special Use Permit for the continued presence of a pipeline transporting seawater to or from a desalination facility in MBNMS (see Section 1.3.2.2).

On May 15, 2015, new federal regulations regarding introduced species became effective within MBNMS. These regulations prohibit introducing or otherwise releasing from within or into the Sanctuary an introduced species, except striped bass (*Morone saxatilis*) released during catch and release fishing activity. Federal regulation (15 CFR 922.132(a)(12)) prohibits the release of introduced species (including any biological matter capable of propagation from such species and genetically altered species).

Guidelines for Desalination Plants in MBNMS

In 2010, MBNMS in collaboration with the CCC, RWQCB, and NMFS, published a report titled *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* (MBNMS, 2010), which implements the desalination action plan included in the MBNMS Final Management Plan (described above). The report includes non-regulatory guidelines that were developed to help ensure that any future desalination plants in the sanctuary would be sited, designed, and operated in a manner that results in minimal impacts on the marine environment. The Guidelines address numerous issues associated with desalination including site selection, construction and operational impacts, monitoring and reporting, plant discharges, and intake systems.

The following Guidelines are pertinent to the analysis in Section 4.5.

Guidelines for Construction

- Identify potential impacts from the construction process on the marine and coastal environment.
- Best Management Practices should be developed and adhered to in order to avoid or minimize impacts on the marine environment during construction and the use of materials and practices that minimize disturbances to the environment to the maximum extent practicable should be included.

Guidelines for Brine Discharge

- All desalination plants should be designed to minimize impacts from the discharge. Desalination project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges. The proponent should evaluate the use of measures to minimize the impacts from desalination plant discharges including discharging to an area with greater circulation or at a greater depth, increasing in the number of diffusers, increasing the velocity while minimizing the volume at each outlet, diluting the brine with seawater or another discharge, or use of a subsurface discharge structure. The project proponent should provide a detailed evaluation of the projected short-term and long-term impacts of the brine plume on marine organisms based on a variety of operational scenarios and oceanographic conditions.
- A continuous monitoring program should be implemented to verify the actual extent of the brine plume, when deemed necessary (see Monitoring on page 4.3-13) and to determine if the plume is impacting EFH, critical habitat, or sanctuary resources. If it is, then mitigation for the EFH impact will be required.

Guidelines for Entrainment and Impingement

- All desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible.

Guidelines for Plant Site Selection

- Desalination plant intakes should be sited to avoid sensitive habitats.
- Desalination plant discharges should not be located in or near ecologically sensitive areas, including Areas of Special Biological Significance as designated by the State Water Resources Control Board, EFH Habitat Areas of Particular Concern as designated by the Pacific Fishery Management Council, and Marine Protected Areas designated under the Marine Life Protection Act.

Guidelines for Monitoring

For all desalination projects, an ongoing monitoring program must be developed to evaluate the extent of impacts from the plant's intake and discharge operations on marine biological resources. The monitoring program should:

- Develop a statistically acceptable baseline for the project area,
- Monitor source water for potential contaminants that may require additional treatment,
- Monitor the effluent prior to discharge to ensure it is in compliance with the California Ocean Plan

- Monitor the effects of the effluent on marine organisms within the plume,
- Monitor any required mitigation for unavoidable impacts to ensure the mitigation is performing as intended.

The issues discussed in the Guidelines relating to siting, constructing, and operating a desalination facility within MBNMS and the recommendations for reducing, avoiding, and minimizing impacts on sanctuary resources are reflected in the requirements of the California Ocean Plan (described in detail under State Regulations in Section 4.5.2.2, below). The Ocean Plan was recently amended (effective January, 2016) to specifically control potential adverse impacts on marine life associated with desalination facility intakes using seawater as source water and brine discharges. Further, the Ocean Plan includes specific enforceable numeric water quality objectives and other requirements pertaining to siting, constructing, and operating a desalination facility that are consistent with the Guidelines. The requirements set forth in the Ocean Plan were informed by the SWRCB collaborating with the Southern California Coastal Water Research Project to evaluate methods of brine disposal and monitoring strategies. Additionally, the amendments to the Ocean Plan were assessed in a SWRCB staff report analyzing desalination facility intakes and brine discharges which provides the rationale for how implementing such measures reduce potential environmental impacts from desalination facilities (SWRCB, 2015). To reflect this evolution of regulatory requirements supported by evidence based research, the Ocean Plan requirements are used, in part, as key thresholds of significance in the evaluation criteria for assessing impacts. The Ocean Plan requirements are generally more stringent and have more specificity regarding assessment and monitoring requirements than the Guidelines. As such, the Ocean Plan requirements are substantially consistent with the Guidelines. Impacts on sanctuary resources from brine discharges are discussed in detail in **Impact 4.3-4** and **Impact 4.3-5** as well as in Section 4.5, Marine Biological Resources. Section 6.4 includes a comprehensive list of Guideline recommendations and summarizes the proposed project's consistency with those guidelines.

NOAA (MBNMS) Memorandum of Agreement with State and Federal Agencies

NOAA (MBNMS) entered into a Memorandum of Agreement (MBNMS et al., 2015c) with the State of California, USEPA, and the Association of Monterey Bay Area Governments, which addresses the process for implementing the following water quality regulations applicable to State waters within the MBNMS:

- NPDES permits issued by the State of California under Section 13377 of the California Water Code; and
- Waste Discharge Requirements issued by the State of California under Section 13263 of the California Water Code.

The Memorandum of Agreement specifies how the review process for applications for leases, licenses, permits, approvals, or other authorizations will be administered within State waters in the MBNMS in coordination between the State and the Sanctuary's permit programs. The MBNMS Superintendent develops and follows a management plan that ensures protection of these resources, provides for research and education, and facilitates recreational and commercial uses, which are compatible with the primary goal of resource protection. MBNMS also implements the Water Quality Protection Program to enhance and protect the chemical, physical,

and biological integrity of the sanctuary. The program is a partnership of many local, state, and federal government agencies and calls for education, funding, monitoring, and development of treatment facilities and assessment programs to protect water quality (MBNMS et al., 2015c).

The discharge of brine effluent to the Sanctuary is a prohibited activity and has the potential to injure sanctuary resources, and as such, the proposed project is potentially inconsistent with the NMSA. Effects of discharges are discussed in Impact 4.5-4.

MBNMS has also partnered with research and management agencies to establish Sanctuary Ecologically Significant Areas in MBNMS (see **Figure 4.5-5**). These areas have been demonstrated to have "remarkable, representative and/or sensitive marine habitats, communities and ecological processes" (MBNMS, 2016d).

National Invasive Species Act

Under the National Invasive Species Act of 1996, the United States Coast Guard (USCG) established national voluntary ballast water guidelines. The USCG published regulations on June 14, 2004, establishing a national ballast water management program with mandatory requirements for all vessels equipped with ballast water tanks that enter or operate in U.S. waters. The regulations carry mandatory reporting requirements to aid in the USCG's responsibility, under the National Invasive Species Act, to determine patterns of ballast water movement. The regulations also require ships to maintain and implement vessel-specific ballast water management plans.

The MPWSP would be consistent with the National Invasive Species Act because the construction and operational impacts of the proposed project do not involve the use of vessels or other potential vectors for the introduction or transplantation of non-native, invasive species. Any maintenance of the existing MRWPCA outfall would be similar to or less than currently occurring maintenance and would utilize local vessels.

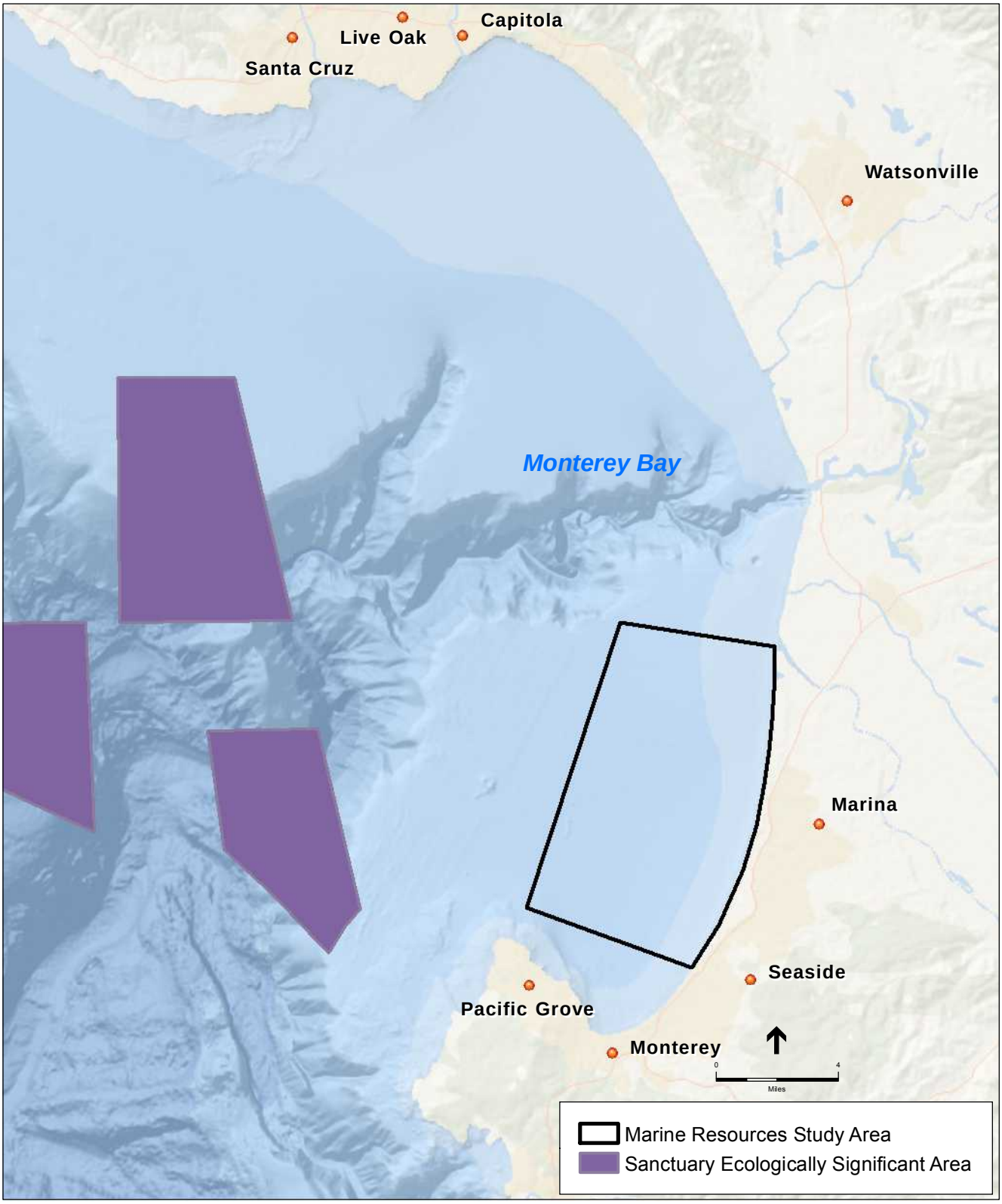
4.5.2.2 State Regulations

California Endangered Species Act

Under CESA, CDFW maintains lists of threatened and endangered species, candidate species, species of special concern and fully protected species. Marine species that are protected by CESA and have the potential to occur in the study area are listed in **Table 4.5-2**. The MPWSP components proposed for the marine environment would be consistent with CESA because their construction and operation are not expected to result in the take of any State protected species. Additional discussion of MPWSP effects related to CESA and the terrestrial environment is provided in Section 4.6, Terrestrial Biological Resources.

Fish and Game Code Sections 3503, 3511, 4700, 5050, and 5515

CESA-listed endangered and threatened species may not be taken or possessed at any time without a permit from CDFW (Fish and Game Code Section 3511 Birds, Section 4700 Mammals, Section 5050 Reptiles and Amphibians, and Section 5515 Fish). The MPWSP components



SOURCE: NOAA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-5
Sanctuary Ecologically Significant Areas Designated in MBNMS

proposed for the marine environment would be consistent with Fish and Game Code Sections 3503, 3511, 4700, 5050, and 5515 because their construction and operation are not expected to result in the take or possession of any State protected species. Additional discussion of MPWSP effects on CESA-listed species of the terrestrial environment is provided in Section 4.6, Terrestrial Biological Resources.

Marine Life Protection Act

The objective of the Marine Life Protection Act (MLPA) is protection of ecosystem structure and function. Specific mandates of the MLPA are to sustain, conserve, and rebuild depleted populations. The MLPA works in concert with the Marine Life Management Act. Within California, most of the legislative authority over fisheries management is enacted within the MLPA. This law directs CDFW and the Fish and Game Commission to issue sport and commercial harvesting licenses, as well as license aquaculture operations. CDFW, through the commission, is the State's lead biological resource agency and is responsible for enforcement of the State endangered species regulations and the protection and management of all State biological resources. A very important part of MLPA enactment has been the establishment of State Marine Protected Areas (MPAs) along the California coast. Fishing and other consumptive activities are strictly regulated in State MPAs in order to provide refuges within which healthy stocks can be maintained to ensure propagation along the entire coast. See **Figure 4.5-6**.

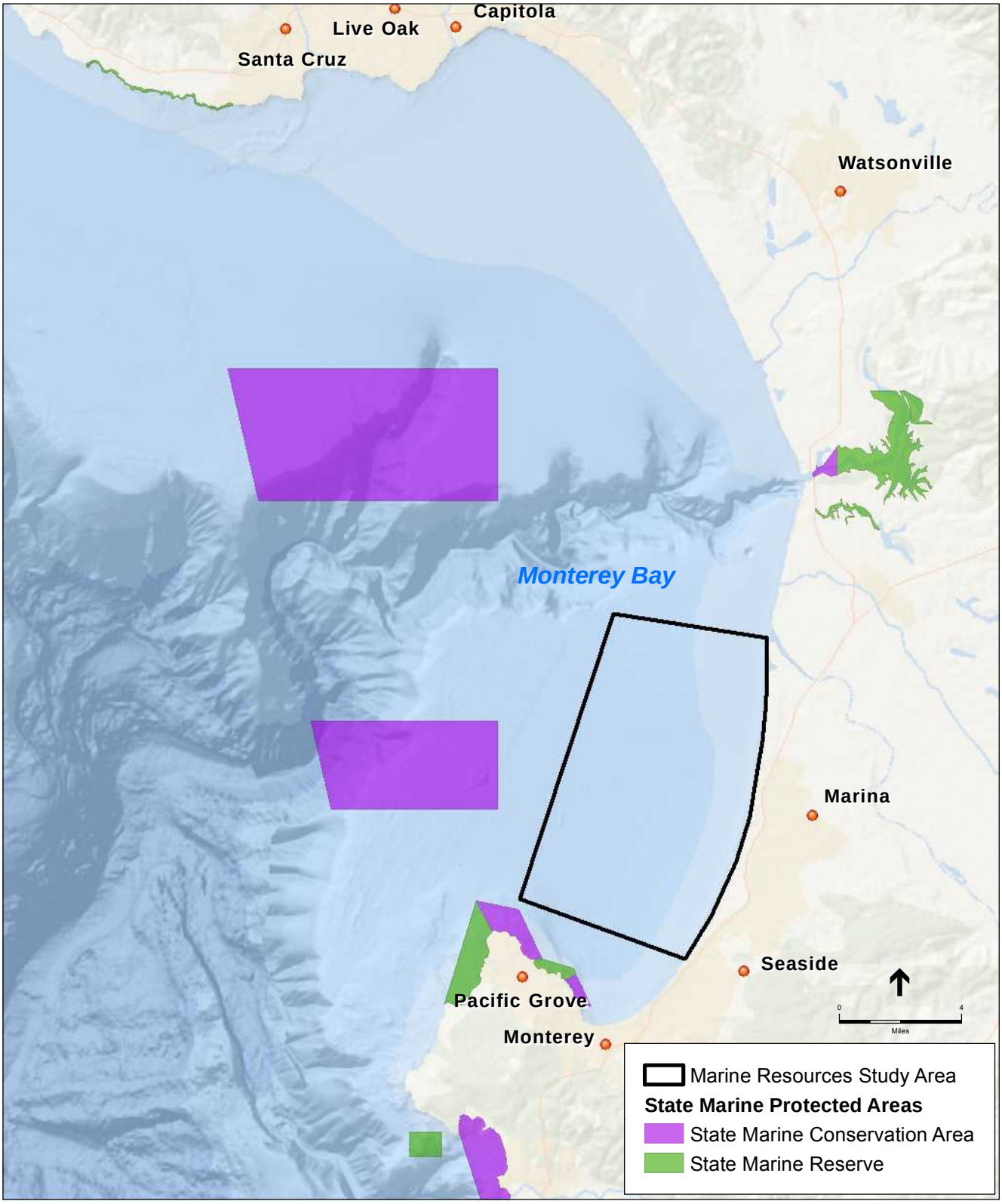
The MPWSP would be consistent with the MLPA because the construction and operational impacts of the proposed project are not expected to result in any degradation of ecosystem structure and function within Monterey Bay or to reduce the efficacy of MPAs within the Bay.

Marine Life Management Act

The Marine Life Management Act works in concert with the MLPA by advancing fishery management as an important element of ecosystem integrity and sustainability. Under the MLMA, implementation of the California Nearshore Fisheries Management Plan (NFMP) and the California Market Squid Fisheries Management Plan (MSFMP) affect species found in Monterey Bay (see **Table 4.5-4**).

Nearshore Fisheries Management Plan

The five goals of the Nearshore Fishery Management Plan (NFMP) are to ensure long-term resource conservation and sustainability, to employ science-based decision-making, to increase constituent involvement in management, to balance and enhance socio-economic benefits, and to identify implementation costs and sources of funding. The following measures are employed to meet the primary goal of sustainability: a fishery control rule including size limits, time/area closures, or gear restrictions, regional management tailored to conditions specific to each of four regions, marine protected areas, restricted fishery access, and allocation of total allowable catch (CDFG, 2002). All of the species regulated by the NMFP are primarily associated with rocky substrate.



SOURCE: NOAA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.5-6

Marine Protected Areas along the California Coast

Market Squid Fisheries Management Plan

The Market Squid Fishery Management Plan (MSFMP) establishes a management program for California's market squid (*Doryteuthis opalescens*) resource. The goals of the MSFMP are to manage the market squid resource to ensure long term resource conservation and sustainability, reduce the potential for overfishing, and institute a framework for management in light of potential environmental and socioeconomic changes. The tools implemented to accomplish these goals include fishery control rules (e.g., seasonal catch limits, weekend closures), creation of a restricted access program, and establishment of a seabird closure restricting the use of attracting lights for commercial purposes (CDFG, 2005).

The MPWSP would be consistent with the MLMA because the construction and operational impacts of the proposed project are not expected to substantially affect rocky substrate habitat or interfere with management of the nearshore or market squid fisheries.

California Ocean Plan

The California Ocean Plan (Ocean Plan) is described in Section 4.3, Surface Water Hydrology and Water Quality. The Ocean Plan establishes water quality objectives and beneficial uses for waters of the Pacific Ocean within 3 miles of the California Coast (SWRCB, 2012). NPDES waste discharge permits set discharge limits that are required to prevent exceedances of the water quality objectives in the Ocean Plan. The proposed project would discharge into Monterey Bay and therefore is subject to all Ocean Plan water quality objectives and NPDES requirements. The most relevant water quality objectives include:

- Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded;
- Waste management systems that discharge into the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community; and
- Waste discharged to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments or organisms.

The basis for water quality objectives established in the Ocean Plan is the protection of beneficial uses designated for each section of coastline by Regional Water Quality Control Boards (see **Table 4.3-3** in Section 4.3, Surface Water Hydrology and Water Quality). The designated beneficial uses relevant to marine biological resources in the study area are as follows:

- **Marine Habitat** – Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
- **Shellfish Harvesting** – Uses of water that support habitats suitable for the collection of filter- feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sport purposes. This includes waters that have in the past, or may in the future, contain significant shellfisheries.

- **Commercial and Sport Fishing** – Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Another relevant beneficial use is as follows:

- **Rare, Threatened, Endangered or Protected Species** – Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, endangered or protected.

While not having been designated for coastal waters between Salinas River and Monterey Harbor, this beneficial use requires consideration here because it is known that Southern sea otters forage in the study area.

Operational discharges resulting from implementation of the MPWSP may be inconsistent with provisions of the California Ocean Plan. This issue is discussed further in Section 4.3, Surface Water Quality and Hydrology, Subsection 4.3.2.2 and Impact 4.3-5.

Marine Invasive Species Act

All shipping operations that involve major marine vessels are subject to the Marine Invasive Species Act of 2003 (Public Resources Code Sections 71200 through 71271), which revised and expanded the California Ballast Water Management for Control of Non-indigenous Species Act of 1999 (AB 703). This act is administered by the California State Lands Commission. The act regulates the handling of ballast water from marine vessels arriving at California ports in order to prevent or minimize the introduction of invasive species from other regions.

The MPWSP would be consistent with the Marine Invasive Species Act because the construction and operational impacts of the proposed project would not involve the use of vessels or other potential vectors that could introduce or transplant non-native invasive species. Any maintenance of the existing MRWPCA outfall would utilize local vessels and would be similar to or less than what is already occurring.

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to marine biological resources are Coastal Act policies concerning: preservation and maintenance of marine biological resources; protection of the productivity and quality of coastal waters; prevention of oil and hazardous substance spills; minimization of continued movement of sediment and nutrients, and protection of recreational and commercial fisheries. A preliminary assessment of project consistency with this priority is provided here, however, a consistency certification will be provided to CCC as required by the Coastal Zone Management Act and its federal consistency regulations. The CCC will make the final decision as to whether the project is fully consistent.

With respect to preservation and maintenance of marine biological resources, construction and operation of the subsurface slant wells would have no effect. Sound generated by drilling operations would be greatly attenuated before reaching the water and the velocity of seawater pumped in through the intake wells would be so low that organisms would not be impinged on the seafloor. Operation of the brine discharge through the MRWPCA outfall would be managed to ensure that salinity, temperature and concentrations of other contaminants would remain within regulatory objectives and at levels known to be protective of marine organisms.

Concerning the productivity and quality of coastal waters, the MPWSP would not release any drilling fluids or other human-made materials during drilling or operation of the subsurface slant wells; nor would drilling affect natural water clarity. The discharge of brine and associated contaminants through the MRWPCA outfall would include only organic and inorganic constituents present in the source ocean water. While the brine discharge would increase salinities within the Zone of Initial Dilution around the diffuser, management of the brine discharge would ensure that salinities outside the Zone of Initial Dilution would not exceed 2 ppt above ambient salinities, in accordance with the Ocean Plan.

As for oil and hazardous substance spills, the MPWSP would be required to prepare and implement Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan and comply with the California Fire Code, as discussed more fully in Section 4.7, Hazards and Hazardous Materials. These measures would ensure that any spills would be contained onshore in the immediate vicinity of spillage. Operation of the Reverse Osmosis system would also ensure that any spills of petroleum or hazardous materials would be prevented from entering the brine discharge stream.

Regarding minimization of continued movement of sediment and nutrients, the drilling and operation of the subsurface slant wells would not alter the contour or character of the seafloor or shoreline environment. Onshore construction on the beach could temporarily re-suspend local beach sand but such an effect would be temporary and the beach contour would be returned to normal when construction is completed. Accordingly, drilling and operation of the subsurface slant wells would not restrict the movement of sediments or nutrients. The discharge of brine through the MRWPCA outfall and diffuser would also have no effect on the movement or character of sediments or nutrients beyond that which might already occur due to the physical structure of the outfall.

With respect to protection of recreational and commercial fisheries, the construction and operation of the subsurface slant wells would involve no changes to seafloor topography or overlying water quality. This means the project would produce no physical obstructions to fishing gear and have no effect on fish stocks. The concentrations of salts and contaminants in the brine discharge would be kept below those currently allowed for desalination systems and the existing MRWPCA municipal wastewater discharge, which would ensure no anticipated adverse effects on fish stocks.

For these reasons the project would not conflict with Coastal Act policies related to marine biological resources.

4.5.3 Evaluation Criteria

Impacts on marine biological resources would occur as a result of alterations to, or deterioration of marine aquatic habitats, which in turn would result in direct or indirect effects on marine taxa, communities, and food webs. Direct and indirect impacts on marine and aquatic taxa (i.e., plankton, fish, marine mammals, etc.) would not discriminate, and would affect all marine and aquatic taxa in the study area regardless of its species, whether it is listed as sensitive or not, or with which agency. The evaluation criteria therefore, consider the potential effects of the proposed project on habitat, special status species, and species considered in local, regional or federal resource management plans.

Implementation of the proposed project would have a significant impact on marine biological resources if it would:

- Have a substantial adverse effect, either directly or indirectly through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH)); or as identified by the CDFW, USFWS, or NMFS; or
- Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels; or cause modification of breeding, feeding or sheltering behavior; or
- Interfere substantially with the movement of any native resident or migratory fish or marine wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native marine wildlife nursery sites.

Based on the location and nature of the proposed project, the following criteria are not considered in the impact analyses in Sections 4.5.5.1 and 4.5.5.2 for the reasons described below.

- ***Introduce or spread an invasive non-native species***. Implementation of the MPSWP would not involve any construction or operational activities that would require the use of ocean vessels, and would not involve the temporary or permanent placement of any facilities in the Monterey Bay or adjacent harbors. Therefore, implementation of the proposed project would not have a means of introducing or relocating non-native invasive marine species. This criterion is not applicable to the proposed project and is not discussed further.

4.5.4 Approach to Analysis

Three aspects of the proposed project have the potential to adversely affect marine biological resources: (1) noise from the construction of the subsurface slant wells; (2) operation of the subsurface slant wells as it relates to impingement; and (3) operational discharges of brine generated by the MPWSP desalination plant via the MRWPCA existing ocean outfall. As discussed in Chapter 3, Description of the Proposed Project, the proposed slant wells would be located approximately 2 miles south of the Salinas River in the CEMEX active mining area in northern Marina. Nine new permanent slant wells would be installed from the shore using a dual

rotary drilling rig. The slant wells would extend beneath the coastal dunes, sandy beach, and sandy subtidal (surf zone)[7] habitats of Monterey Bay, terminating up to 350 feet seaward of mean high water (MHW) at a depth of 190 to 210 feet below the seafloor in the submerged lands of MBNMS.

The desalination process would generate an average of approximately 14 mgd of brine that would be discharged through the existing MRWPCA ocean outfall. The outfall currently is and would continue to be used to discharge treated wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant. The outfall terminates at an underwater diffuser located approximately 2 miles offshore (relative to MHW) at 90 to 110 feet below mean sea level where a soft mud substrate predominates.

The evaluation of whether the proposed project would result in substantial adverse effects considers three principal factors:

- Magnitude and duration of the impact (e.g., substantial/not substantial);
- Rarity of the affected resource; and
- Susceptibility of the affected resource to disturbance.

The evaluation of significance must also consider the interrelationship of these three factors. For example, a relatively small magnitude effect on a state or federally listed species could be considered significant if the species is rare and highly susceptible to potential disturbances resulting from the proposed project. Conversely, for a natural community that is not considered rare or particularly sensitive to disturbance, such as soft substrate benthos, an impact of much larger magnitude and/or longer duration would be required to result in a significant impact determination.

Underwater noise generated during slant well construction could result in impacts on marine biological resources. The potential underwater noise impacts on marine biological resources from slant well drilling were evaluated based upon reported sensitivities of marine organisms to frequency (pitch) and amplitude (decibel) and the reported disturbances from other similar operations, compared to underwater noise that would be generated by the proposed project.

Impacts on marine biological resources arising from slant well operations due to potential impingement of marine organisms and particulate material were evaluated using reports on the speeds of wave-induced and ambient ocean currents, and the velocity of water being drawn through the seafloor to the slant wells. Ocean current and organism swimming speeds were compared to the anticipated velocity of the subsurface slant wells at the seafloor to determine the probability of impingement of organisms and particulate material against the seafloor.

[7] a high wave energy environment

Impacts from elevated salinity and shear stress on marine biological resources due to brine discharge were also evaluated. Predicted discharge salinities were evaluated against Ocean Plan (SWRCB, 2015) thresholds (salinity no more than 2 ppt above background at the edge of the BMZ) and the results of toxicity tests and other experiments, as well as the recommendations of various commissions and working groups convened to set guidelines for desalination facilities. Elevations in ocean salinities above ambient salinity levels due to the discharge of brine from the proposed project were evaluated using several models that predicted salinity at the edge of the Zone of Initial Dilution (ZID) and at the Brine Mixing Zone (BMZ) during three oceanographic seasons (Davidson, upwelling and oceanic) under generally prevailing water temperatures and salinities. See also Section 4.3, Surface Water Hydrology and Water Quality, for the complete discussion on the approach to this analysis, and the effects of the brine discharge on ocean water quality resulting from the proposed project. These modeled salinities were compared to studies on the effects of elevated salinity on marine organisms. Potential impacts on marine organisms due to shear stress associated with the brine discharge through the MRWPCA outfall were also evaluated based upon the hydrodynamics of the current and proposed discharge scenarios (see Appendix D1).

Potential impacts on marine taxa from exposure to elevated concentrations of other select constituents in the effluent estimated at the edge of the ZID, are based on published toxicity data and the Ocean Plan water quality objectives that specify concentrations above which marine life could be at risk. In cases where the estimated concentrations of the constituents in the discharge could be near or above Ocean Plan objectives, actual toxicity data were obtained from available sources. Conservative estimates of contaminant concentrations were made using a combination of ocean water data obtained from the Central Coast Long-term Environmental Assessment Network (CCLEAN) and high-volume samples collected from the test slant well on the CEMEX property. Estimates based on CCLEAN data assumed the entire mass of contaminants in seawater drawn into the MPWSP Desalination Plant would be concentrated and returned to the ocean in the brine.

4.5.5 Direct and Indirect Effects of the Proposed Project

Direct and indirect effects of the proposed project are considered in the following sections. Consideration is given to those project elements that would have an effect on marine biological resources, marine habitats, and MBNMS resources as a result of the intake of desalination source water or the discharge of brine from the desalination process. Accordingly, drilling of the slant wells is the only construction activity that is considered here. The operational aspects considered are the operation of the wells and the discharge of brine. Impacts on marine biological resources that could result from implementation of water quality mitigation, such as retrofitting discharge diffuser ports to improve dilution, are discussed in Section 4.3, Surface Water Hydrology and Water Quality.

A summary of project impacts on marine biological resources is provided in **Table 4.5-5**.

TABLE 4.5-5
SUMMARY OF IMPACTS – MARINE BIOLOGICAL RESOURCES

Impacts	Significance Determinations
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction.	LS
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction; or cause modification of breeding, feeding or sheltering behavior.	LS
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.	LS
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.	LS
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	LS
Impact 4.5-6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.	LS
Impact 4.5-C: Cumulative impacts on marine biological resources.	LS

NOTES:
LS = Less than Significant

4.5.5.1 Construction Impacts

The subsurface slant wells are the only project components that would involve construction in or near the marine biological resources study area (see Figure 4.5-1). Since none of the other project facilities would require construction in the marine biological resources study area, construction of the other project facilities would not directly or indirectly affect marine biological resources and are not discussed below. Marine birds, anadromous fish, and inland fish are addressed in Section 4.6, Terrestrial Biological Resources.

Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction. (*Less than Significant*)

Underwater noise from the drilling operation itself, the potential accidental release of drilling fluid, and the possible discharge of clarified[8] groundwater recovered during drilling operations are the only possible construction activities that could affect marine biological resources and habitats.

The directional drilling of the slant wells would generate some subterranean noise that would transmit into seafloor sediments, including into the submerged lands of the MBNMS. What little underground drilling or tunneling noise data that is available is for tunnel boring machines (TBM), which are used to dig large-diameter transportation and water conveyance tunnels and would not be used for slant well construction. TBM equipment is fully located within the borehole or tunnel and all noise generating equipment, including drilling motors, cutter heads, drilling fluid recirculating pumps, etc. are located within the tunnel as well. As discussed in Chapter 3, Description of the Proposed Project, Section 3.3.2.1, all construction activities associated with the subsurface slant wells would occur several hundred feet inland of the maximum high-tide elevation, in previously disturbed areas. Most of the slant well noise-generating equipment would be located on the land surface outside of MBNMS, and the only down hole noise source during the 24-month construction period would be the cutter head and drilling fluid recirculating pump. As a result, the noise generated from TBM operations can be expected to be substantially higher than that generated by the cutter head for the proposed subsurface slant wells.

The San Francisco Public Utilities Commission drilled a 5-mile-long, 9-foot-diameter tunnel under San Francisco Bay. A TBM was used to drill the tunnel located approximately 125 feet below the San Francisco Bay seafloor. Wilson, Ihrig, and Associates calculated noise levels generated by normal cutting operations from the TBM inside the tunnel to range between 122 to 129 decibels (dB) root-mean-square,[9] at a frequency of 30 to120 hertz (Hz), with occasional peak levels at 134 dB at the bottom of the bay (Wilson Ihrig, and Associates, et al 2009).

The thickness of overlying sediments for the proposed project is greater than for the TBM operations under San Francisco Bay (i.e., 195 to 200 feet versus 125 feet in San Francisco Bay), and would act to further muffle transmitted underwater noise. Underwater noise attenuates through water-saturated sediments in proportion to the frequency of the sound waves (Hefner and Williams, 2004). Assuming a worst-case noise level equal to the noise generated by TBM (129 dB at 30 Hz) is emitted in a slant well, the drilling noise would attenuate at the rate of approximately 2.5 dB per meter (per 3.28 feet), potentially resulting in 144 dB of sound being attenuated through 190 feet (approximately 58 meters) and reaching zero by the time it reaches the seafloor surface. Measurements by Wilson et al (1997) found that underwater surf noise offshore of the former Fort Ord area in Monterey Bay, near the proposed slant well site, averaged 138 dB at 50 Hz and Farber and Wilson (1997).

8 Clarified Water: Water that has been processed to remove suspended sediments and is therefore “clear” and when discharged to the ocean will not result in increased turbidity.

9 Root-mean-square: The square root of the average over a period of time of the square of the amplitude. The root-mean-square level is often used to correlate the effects of sound and vibration on humans and mammals. Decibels reported in this section are hydroacoustic (underwater) decibels. Unlike airborne decibels used in the analysis of Section 4.12, Noise and Vibration, which are referenced to 20 micro Pascals, all underwater sound levels are referenced to 1 micro Pascal. Consequently, underwater sound levels are typically 26 dB higher than airborne levels because of the different reference levels as well as an additional 34 A-weighted decibels (dBA) higher due to the higher impedance of water.

In the event that some underwater noise reaches the seafloor surface, scientific investigations on the potential effect of underwater noise on fish indicate that sound levels below 183 to 187 dB do not appear to result in any acute physical damage or mortality to fish (barotraumas) depending on their size (Dalen and Knutsen, 1986; Caltrans, 2009). A startle response in salmon has been documented to occur at underwater sound levels of 140 to 160 dB (San Luis and Delta Mendota Water Authority and C.H. Hanson, 1996). Additionally, underwater noise levels greater than 160 dB are presumed to result in behavioral effects, temporary hearing loss, or permanent hearing loss depending on the species and the nature of the source (NMFS, 2016). **Table 4.5-6** provides a summary of some known acute and sub-lethal effects of underwater noise on fish and marine mammals. **Table 4.5-7** presents underwater noise levels at which NOAA has determined that both acute and sub-lethal effects occur for different groupings of marine mammals. Any of the drilling noise reaching overlying ocean waters is expected to be below background underwater noise levels and would have no effect on any marine organisms including special-status species.

The degradation of water quality resulting from the discharge of water produced during well drilling and well development is addressed in Impact 4.3-2, in Section 4.3, Surface Water Hydrology and Water Quality. Drilling of the subsurface slant wells would involve the use of water, bentonite mud, and/or the use of environmentally inert biodegradable additives to push the drill rig through the uppermost layer of dry dune sands as described in Section 3.3.2.1. Once the drill bit reaches groundwater, the mud slurry from the upper 100 feet of drilling would be pumped out and put it in a storage container for offsite hauling and disposal. Beyond this point only the water already present in the sand and potable water would be used to circulate the drill cuttings. Once the borehole and the casing and gravel pack have been installed, potable water would be circulated through the well casing to develop the well. The effluent produced during well development, which may contain soil cuttings and formation water (water present at depth in geologic materials), would be pumped to baker tanks to allow sediment to settle out. The clarified effluent would then either be conveyed to the existing discharge pipeline for the test slant well and discharged to the ocean via the MRWPCA ocean pipeline and outfall in or percolated into the ground at the CEMEX active mining area. The discharge of any clarified waters from slant well drilling through the MRWPCA outfall would be in compliance with the existing NPDES permit and Ocean Plan water quality objectives for turbidity and would not cause any impact on marine biological resources or habitats, including special status species and sanctuary resources in MBNMS.

The potential for the inadvertent release of drilling fluids into ocean waters during drilling of the slant wells would be very low, because these environmentally inert, biodegradable drilling additives or sand-bentonite mud slurry would only be used while drilling the initial 100 feet of loose dry sand, above the water table. After that point in the HDD bore, only potable water would be used to circulate and remove drill cuttings. Since the risk of accidentally discharging drilling fluids to the marine environment from HDD slant wells would be very low and the use of these additives is common practice, the potential impact from HDD slant well drilling and circulation fluids would be less than significant. Moreover, the bentonite slurry would be contained and properly disposed of offsite, as discussed in Section 4.3, Surface Water Hydrology and Water Quality.

TABLE 4.5-6
POTENTIAL EFFECTS OF VARYING UNDERWATER NOISE LEVELS ON FISH

Taxa	Sound Level (dB)	Effect	Reference
Fish			
All fish > 2 grams in size	206 peak 187 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008 (Caltrans, 2009)
All fish < 2 grams	186 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008 (Caltrans, 2009)
Pacific Herring	180-186	Avoidance behavior	Dalen and Knutsen, 1986
Salmon, steelhead	166	Avoidance behavior	Loeffelman et al., 1991
Salmon, Steelhead	140-160	Startle response	San Luis and Delta Mendota Water Authority and C.H. Hanson, 1996

TABLE 4.5-7
SUMMARY OF NOAA ESTABLISHED PERMANENT THRESHOLD SHIFT (PTS)[1] AND TEMPORARY THRESHOLD SHIFT (TTS)[2] SOUND LEVELS[3] FROM UNDERWATER NOISE LEVELS FOR MARINE MAMMALS

Hearing Group	Impulsive[4]	Non-impulsive[5]
Low-Frequency (LF) Cetaceans (Baleen whales)	$L_{pk, flat}$: 219 dB $L_{E,}L_{F,24H:}$ 183 dB	$L_{E,}L_{F,24H:}$ 199 dB
Mid-Frequency (MF) Cetaceans (Dolphins, toothed whales, beaked whales, bottlenose dolphins)	$L_{pk, flat}$: 230 dB $L_{E,}L_{F,24H:}$ 185 dB	$L_{E,}L_{F,24H:}$ 198 dB
High-Frequency (HF) Cetaceans (True porpoises**,** Kogia, river dolphins, cephalohynchid, Lageniorhynchus cruciger, and L. asustralis)	$L_{pk, flat}$: 202 dB $L_{E,}L_{F,24H:}$ 155 dB	$L_{E,}L_{F,24H:}$ 173 dB
Phocid Pinnipeds (True Seals) (Underwater)	$L_{pk, flat}$: 218 dB $L_{E,}L_{F,24H:}$ 185 dB	$L_{E,}L_{F,24H:}$ 201dB
Otariid Pinnipeds (Sea lions and fur seals) (Underwater)	$L_{pk, flat}$: 232 dB $L_{E,}L_{F,24H:}$ 203 dB	$L_{E,}L_{F,24H:}$ 219 dB

NOTES:

1 Permanent Threshold Shift is when a permanent reduction in hearing occurs or the frequencies at which sound can be detected is permanently reduced.

2 Temporary Threshold Shift is when a short-term (temporary) reduction in hearing or the frequency at which sound can be detected occurs.

3 Peak sound pressure (*L*pk) has a reference value of 1 µPa, and cumulative sound exposure level (*L*E) has a reference value of 1µPa^{2}s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

4 Impulsive noise is a category of noise which includes unwanted, almost instantaneous sharp sounds.

5 All noise not included in the definition of impulsive noise

SOURCE: NMFS, 2016

Impact Conclusion

Underwater noise generated during slant well drilling would be attenuated to zero at the seafloor and would have no impact during construction on marine biological resources in MBNMS. Additionally, because the drilling operation would be set back approximately 900 feet from MHW and the construction contractor would manage drilling muds and potential discharges of clarified groundwater in accordance with regulatory requirements, the potential for an accidental release of any hazardous drilling fluids into waters of MBNMS, or increased turbidity in Monterey Bay during slant well construction, would be less than significant. No impacts would occur from the construction of any other proposed facility because none occur within the marine biological resources study area. Therefore, this impact is considered to be less than significant.

Mitigation Measures

None proposed.

Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction; or cause modification of breeding, feeding or sheltering behavior. *(Less than Significant)*

As discussed for Impact 4.5-1, the potential for underwater noise, ocean discharge of clarified groundwater, or the accidental release of well drilling fluids to result in effects on marine biological resources or habitats would be less than significant. These activities are not expected to cause a fish or marine wildlife population to drop below self-sustaining levels or cause modification of their breeding, feeding or sheltering behavior. Therefore, the evaluation of impacts from drilling fluids, discharge of clarified ground water, and noise on marine species in MBNMS would be the same as for Impact 4.5-1; less than significant.

Mitigation Measures

None proposed.

Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction. *(Less than Significant)*

As discussed for Impact 4.5-1, there is little to no potential for underwater noise, ocean discharge of clarified groundwater, or the accidental release of well drilling fluids to interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS because the drilling activities would occur onshore and extend under the seafloor. Therefore, the impact would be less than significant.

Mitigation Measures

None proposed.

4.5.5.2 Operational and Facility Siting Impacts

Potential operational impacts on marine biological resources would be limited to adverse effects associated with operation of the subsurface slant wells and the discharge of brine generated at the proposed MPWSP desalination plant. Because none of the other project facilities would affect marine biological resources, none of the other facilities are discussed.

Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations. (*Less than Significant*)

Impacts on marine species during MPWSP operations as a result of the impingement of organisms or through the accumulation of fine particulate material on the seafloor, from elevated salinity or other constituents in the brine, or from shear stress[10] on plankton from discharged brine were evaluated. The risk was also assessed for indirect impacts caused by loss of foraging habitat and prey species on protected species such as marine mammals (for example, the Southern sea otter and California gray whale), seabirds, and other species, should the benthic infauna and macrofauna populations decline.

Impingement of Marine Organisms on the Seafloor

A key and fundamental concern about desalination facilities is the potential for the impingement[11] and entrainment[12] of marine organisms during the intake of seawater. The MPWSP would utilize subsurface slant wells that would terminate 190 to 210 feet below the seafloor, eliminating the need for an open ocean intake. Subsurface intakes are thought to eliminate impingement impacts on marine biota by utilizing a broad surface of seafloor through which seawater is drawn at a slow rate (Foster et al, 2013). A Draft Staff Report prepared by the SWRCB in support of the proposed Ocean Plan amendment addressing desalination facilities notes:

> Subsurface intakes collect water through sand sediment, which acts as a natural barrier to organisms and thus eliminates impingement and entrainment (MWDOC 2010; Missimer et al. 2013; Hogan 2008; Pankratz 2004; Water Research Foundation 2011). This gives subsurface intakes a significant environmental advantage over surface (or open) water

[10] Shear stress is a strain in the structure of a substance produced by pressure, when its layers are laterally shifted in relation to each other.
[11] Impingement occurs when organisms are trapped by the force of the flowing source water.
[12] Entrainment occurs when marine organisms enter the desalination plant intake, are drawn into the intake system, and pass through to the treatment facilities.

> intakes because mitigation for surface intake entrainment will have to occur throughout the operational lifetime of the facility. (SWRCB, 2015)

The vertical infiltration rate at the seafloor for the proposed MPWSP was estimated by assuming the entire 24.1 mgd (3,222,000 cubic feet/day) of seawater required to operate the MPWSP plant would be drawn through the seafloor located directly above the screened segment of the slant wells. The length of shoreline spanned by intake slant wells would be approximately 2,000 feet. If the seafloor area of water intake extended 500 feet offshore, the area of seafloor through which seawater would be taken into the wells would be approximately 1,000,000 square feet. Through this area of seafloor, a maximum of 3,222,000 cubic feet (24.1 million gallons x 0.1337 cubic feet per gallon) of water would be pumped each day. The vertical infiltration rate through the seafloor would have to be 3.222 feet/day or 0.0000373 ft/sec (approximately 0.011 mm/sec). This calculation is very similar to the 0.000051 ft/sec (approximately 0.016 mm/sec) peak vertical infiltration rates estimated by Williams (2010) for the South Orange Coastal Desalination Project. In comparison, an open ocean intake equipped with a wedgewire screen would draw water in at a rate of 0.5 ft/sec (152.4 mm/sec). For the purposes of this assessment, it is assumed that the infiltration flow rate of seawater through seafloor sediments and into the slant wells would be approximately 0.011 to 0.016 mm/sec.

A review of published swimming speeds for plankton, larval invertebrates, and larval fish reveals that it is highly unlikely these small organisms would be impinged against the seafloor by vertical infiltration of seawater during operation of the subsurface slant wells. Studies of invertebrate plankton have found swimming speeds substantially exceed the estimated vertical infiltration rate for the MPWSP slant wells (see **Table 4.5-8**) by several orders of magnitude. Because squid spawning typically occurs on sand and mud seafloor habitats at depths much deeper than the intertidal zone where slant wells would be located, potential impacts on market squid eggs from slant well pumping would not occur. Therefore, no impingement from slant well operations is expected to occur.

TABLE 4.5-8
SWIMMING SPEEDS OF PLANKTON, INVERTEBRATES, AND LARVAL FISH

Source	Organism	Swimming Speed[a]
Franks (1992)	Phytoplankton and Protozoa	M = 0.2 mm/sec
Buskey et al (2002)	Pelagic copepod	M = 500 mm/sec
Browman et al (2011)	Pelagic copepod	M = 48.9mm/sec A = 34.3 mm/sec
Gallager et al (2004)	Pelagic copepods and protozoa	M = 12.9 mm/sec
Torres and Childress (1983)	Euphausiid	R = 2.2 – 15.8 mm/sec
Chan et al (2013)	Gastropod larvae	R = 0.5 – 3.5 mm/sec
Paris et al (2013)	Reef fish larvae	A = 14.5 mm/sec
Humphrey (2011)	Larval lake trout	M = 150 – 250 mm/sec
Fisher (2005)	Larval reef fishes	R = 200 – 600 mm/sec

NOTES:
[a] = M = Maximum reported swimming speed, A = Average reported swimming speed, R = Range of reported swimming speeds

Impingement of Organic Material on the Seafloor

Even though impingement of plankton and larval fish is not expected to occur from the intake of ocean water into the slant wells, the operation of the slants wells could impinge fine organic matter against the seafloor, cause a build-up and change the normal distribution of sediment grain size. The settlement of sediment particles is controlled by the size and density of the particles and the median grain size of ambient sediments is roughly proportional to local current speeds (Van Rijn, 2007; McCave, 2008). At infiltration rates greater than 30 cm/sec (0.98 ft/sec), seafloor sediments are very mobile and typically do not retain fine particle fractions (McCave, 2008). Various studies have documented that nearshore currents at the seafloor are dominated by the orbital velocities of waves. Graham et al (1997) reported estimated orbital velocities of ocean waters due to surface waves at three nearshore kelp forest sites around the Monterey Peninsula ranging between 500 cm/sec (16.4 ft/sec) and 280 cm/sec (9.2 ft/sec). Additionally, wave orbital velocities attenuate due to friction against the seafloor as the waves near the shore. Weltmer (2003) measured orbital velocities near the seafloor in the surf zone near Sand City between 250 cm/sec (8.2 ft/sec) and 600 cm/sec (19.7 ft/sec). Consequently, normal wave generated water velocities at the seafloor locations of the slant wells is predicted to be 8 to 20 times greater than that required for fine-grained material to accumulate on the seafloor over the subsurface slant wells. As a result, there would be no potential for the impingement of fine organic matter on the seafloor or changes to soft substrate habitat.

Potential Effects of Elevated Salinity

The desalination process would generate approximately 14 mgd of brine that would be discharged via the MRWPCA ocean outfall into the waters of MBNMS. The outfall is currently used to discharge secondary treated wastewater from the MRWPCA Regional Wastewater Treatment Plant. The comingling and discharge of this brine could have an effect on special-status species that frequent the study area (see **Table 4.5-1**), especially bottom dwelling or foraging fish, including MSA and state-managed commercial fish species (see **Table 4.5-4**) and marine mammals such as the Southern sea otter and California gray whale, that feed on benthic organisms. The discharged brine, if concentrated enough, could also result in the loss of foraging habitat if the benthic infauna and macrofauna populations decline. Additionally, comments received on the April 2015 Draft EIR expressed concerns over the potential for hypoxia[13] to occur near the seabed as a result of proposed MPWSP operational discharges. Specifically, there was concern that high salinity discharges from the MRWPCA outfall would restrict oxygen supply near the seabed and result in stress or mortality to benthic organisms and other marine biological resources. This issue is discussed in detail in Section 4.3, Surface Water Hydrology and Water Quality, and a summary of the impact conclusions is provided below.

As explained in detail in Section 4.3, the seawater in Monterey Bay is a mixture of water masses from different parts of the Pacific Ocean with warmer, saltier water from the equatorial zone and colder, fresher water from the arctic regions. Near-shore surface salinities vary from 33.2 practical salinity units (psu) to 34.0 psu when upwelling is strong. Streams and rivers can locally

[13] Hypoxia, or oxygen depletion, is an environmental phenomenon where the concentration of dissolved oxygen in the water column decreases to a level that can no longer support living aquatic organisms. The impacts of hypoxia are often described as creating a so-called "dead zone" in the marine environment.

affect salinity, but even during flood conditions, when fresh water inputs to Monterey Bay peak, the salinity of Monterey Bay surface waters does not fall below 31 psu (MBNMS, 2013). Bograd and Lynn (2003) compared near-shore salinity and temperatures in Monterey Bay during two periods: 1950-1976 and 1977-1999, and found very little variation. The difference in near-shore salinities between the periods was approximately 0.2 parts per thousand (ppt) or psu and the difference in near-shore temperatures was approximately 1.4 °F. As such, the reported seasonal salinity and temperature is provided here as representative of baseline conditions. The 2015 Ocean Plan amendment established an allowable salinity increase of less than 2 ppt at the BMZ boundary (SWRCB, 2015). Exceeding this standard could result in a significant impact on fish and marine biota.

Dissolved Oxygen (DO) is typically used as a general index for the health of receiving waters (such as in the *Water Quality Control Plan for Ocean Waters of California* or Ocean Plan, discussed in Section 4.3.2.2). Adequate DO is vital for aquatic life and higher concentrations are generally considered to be desirable. Dissolved oxygen content in water is, in part, a function of water temperature and salinity, which affect the point at which water becomes saturated with DO. However, DO varies according to many other factors, including photosynthesis and biological and chemical oxygen demand associated with decomposition of organic material. Monterey Bay is a dynamic environment that includes variable concentrations of DO. Ambient DO levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 milligrams per liter (mg/L) to 8.00 mg/L (KLI, 1998, 1999); typically, DO in the range of 5 to 8 mg/L is considered protective of fish and marine biota depending on the species and life-stage. The Ocean Plan limits dissolved oxygen decreases as a result of operational discharges to no more than 10 percent from that which occurs naturally. Exceeding this standard for dissolved oxygen could result in a significant impact on fish and marine biota.

Elevated salinity and subsequent degradation of the marine environment are among the major concerns associated with coastal desalination projects (Damitz et al, 2006). Numerous studies have been performed to evaluate the effects of elevated salinity on marine organisms found within and outside of the study area in MBNMS, which have used different methods to test the sensitivity of various species. These studies have demonstrated that salinity effects are species-specific (see **Table 4.5-9**). Review of published results from field surveys and laboratory experiments (Roberts et al, 2010) indicate no studies have examined the impacts from the small range of salinity increases anticipated from the MPWSP desalination plant. As analyzed in detail in Section 4.3, except for the area adjacent to the discharge ports, the predicted salinity increase due to the MPWSP would be less than 2 ppt above ambient (increasing salinity up to 36.8 ppt) and the other studies tested organisms at much higher salinities. Moreover, there were apparent contradictions among different studies. For example, one field experiment cited by Roberts et al (2010) indicated reduced survival, shoot production, and vigor of seagrass transplants at salinities at or above 39.2 ppt (4 percent above ambient), whereas a laboratory experiment found another species of seagrass to have greatest growth and production at a salinity of 42.5 ppt. Although seagrass is not found in the study area, these conflicting results exemplify the limited applicability of data from other areas. A study of salinity effects based on approved marine organism toxicity test protocols (Phillips et al, 2012) reported median effect concentrations (EC50) ranging from 36.8 ppt to 61.9 ppt on various physiological processes (see **Table 4.5-10**).

TABLE 4.5-9
RESULTS FROM STUDIES ON THE EFFECTS OF ELEVATED SALINITY ON MARINE ORGANISMS

Author, Year	Species	Salinity Tested	Results	Comments
Pantell, 1993	*Menidia beryllina* (inland silverside)	23:1 SF Bay water:Brine 20:1 POTW Effluent:Brine	Mortality observed at greater brine concentrations	Freshwater species, dilutions of ambient samples tested without absolute salinities reported
	Skeletonema costatum (diatom)	23:1 SF Bay water:Brine 20:1 POTW Effluent:Brine	Growth effects observed at greater brine concentrations	Marine species, test salinities not reported
	Bivalve larvae	23:1 SF Bay water:Brine 20:1 POTW Effluent:Brine	Development effects observed at greater brine concentrations	Species not specified, dilutions of ambient samples tested without absolute salinities reported
	Citharichthys stigmaeus (sand dab)	23:1 SF Bay water:Brine 20:1 POTW Effluent:Brine	Mortality observed at greater brine concentrations	Local sand bottom species, dilutions of ambient samples tested without absolute salinities reported
Gross, 1957	*Pachygrapsus* (rock crab)	61 ppt 56 ppt	Lethal in 2 hours Survived > 72 hours	Locally found, but only in rocky habitats
	Emerita analoga (sand crab)	50 ppt 44 ppt	Lethal in 2 hours Survived > 24 hours	Local sand bottom species
	Olivella pycna (olive snail)	33 to 48 ppt	Not lethal	Local sand-bottom species, report unavailable for this evaluation
Iso et al, 1994	*Venrupis philippinarum* (little neck clams)	Various up 70 ppt	Survived and behaved normally at 50 ppt, lethal at 60 ppt after 48 hours and at 70 ppt after 24 hours	Grown commercially in California
	Pagrus major (sea bream)	Various up 70 ppt	Survived well in 45 ppt, behaved normally at 40 ppt, > 70 ppt lethal in 1 hour	Not found locally
	Pseudopleuronectes yokohamae (marbled flounder)	Various up 70 ppt	Egg hatching delayed but successful up to 60 ppt, larvae survived up to 50 ppt, 55 ppt lethal after 140 hours	Not found locally
McMillan and Mosely, 1967	Seagrass	Up to 74 ppt	Four species grew	No seagrasses in vicinity of proposed project, reference unavailable for this review
Pillard et al, 1999	*Mysidopsis bahia*	43 ppt	LC50 = 48 hours	Estuarine species
	Cyrpinidon variegates	70 ppt	LC50 = 48 hours	Estuarine species
	Menidia beryllina	44 ppt	LC50 = 48 hours	Estuarine species
Voutchkov, 2006	*Dendraster excentricus* (sand dollar)	37 to 40 ppt	Survived for 5.5 months, no effects on growth or fertility	Local sand-bottom species, reference unavailable for this review
	Strongylocentrotus purpuratus (purple urchin)	37 to 40 ppt	Survived for 5.5 months, no effects on growth or fertility	Local, but only in rocky habitats, reference unavailable for this review
	Haliotus rufescens (red abalone)	37 to 40 ppt	Survived for 5.5 months, no effects on growth or fertility	Rare locally, only found in rock habitats, reference unavailable for this review

TABLE 4.5-9 (Continued)
RESULTS FROM STUDIES ON THE EFFECTS OF ELEVATED SALINITY ON MARINE ORGANISMS

Author, Year	Species	Salinity Tested	Results	Comments
Reynolds et al, 1976	*Leuresthes tenuis* (California grunion prolarvae)	41 ppt	LC50 = 24 hours	Southern California species
	Leuresthes tenuis (larvae)	40 ppt	LC50 = 18 hours	Southern California species
SCCWRP, 1993	*Macrocystis pyrifera* spores (giant kelp)	43 ppt	Germination and growth not affected	Locally found, but not found for miles around the proposed project
	Rhepoxynius abronius (amphipod)	38.5 ppt	Survived 10 days	Local
	Strongylocentrotus purpuratus (purple urchin)	90:10 Seawater:Brine	No effect on fertilization	Local, but only in rocky habitats, test salinities not reported
Thessen et al, 2005	*Pseudo-nitzschia* spp. (diatom)	Up to 45 ppt	7 clones of 3 species grew up to 45 ppt	Local, species of *Pseudo-nitzschia* cause domoic acid poisoning

SOURCE: Pantell, 1993; Gross, 1957; Iso et al, 1994; McMillan and Moseley, 1967; Pillard et al, 1999; Voutchkov, 2006; Reynolds et al, 1976; SCCWRP, 1993; Thessen et al, 2005.

TABLE 4.5-10
TOXICITY TEST RESULTS AND MEAN EFFECTIVE CONCENTRATIONS OF SALINITY TOXICITY

Protocol	Physiological Process Measured	Test	Measured Test Solution Salinities	EC50[a]
Red Abalone	Development	1 2	34, 35, 36, 37, 38, 39, 40 34, 35, 36, 37, 38, 39, 40	36.8
Purple Urchin	Fertilization	1 2	34, 36, 38, 39, 41, 43, 45, 46, 48 34, 38, 41, 42, 43, 44, 45, 46, 47	44.2
Purple Urchin	Development	1 2	34, 35, 36, 37, 38, 39, 40, 41, 42 34, 35, 36, 37, 38, 39, 40, 41, 42	38.1
Sand Dollar	Fertilization	1 2	35, 38, 39, 41, 43, 45, 47, 48, 50 34, 36, 38, 40, 41, 43, 45, 46, 48	40.3
Sand Dollar	Development	1 2	34, 35, 36, 37, 38, 39, 40, 41, 42 34, 35, 36, 37, 38, 39, 40, 41, 42	39.6
Mussel	Development	1 2	34, 40, 41, 42, 43, 44, 45, 46, 47 35, 40, 41, 42, 44, 45, 46, 47, 48	43.3
Mysid Shrimp	Survival	1 2	35, 41, 45, 50, 56, 61 37, 42, 45, 49, 53, 56	47.8
Mysid Shrimp	Growth	1 2	35, 41, 45, 50, 56, 61 37, 42, 45, 49, 53, 56	> 49.7
Giant Kelp	Germination	1 2	34, 45, 49, 54, 59, 64 35, 44, 49, 54, 59, 65	55.5
Giant Kelp	Growth	1 2	34, 45, 49, 54, 59, 64 35, 44, 49, 54, 59, 65	47.3
Topsmelt	Survival	1 2	35, 45, 50, 55, 60, 65, 70 35, 44, 50, 54, 60, 65, 70	61.9
Topsmelt	Biomass	1 2	35, 45, 50, 55, 60, 65, 70 35, 44, 50, 54, 60, 65, 70	59.3

NOTE:
[a] EC50 = median salinity at which an effect was observed

SOURCE: Phillips et al 2012

Studies of salinity tolerances of organisms not within the context of toxicity tests also inform this analysis of potential impacts associated with brine discharge. In particular, market squid, *Doryteuthis (Loligo) opalescens* must be considered because their egg masses rest on the seafloor. A review by Vidal and Boletzky (2014) recommends a salinity range of 34 to 38 ppt for successful laboratory culture of the market squid. In an earlier publication, Boletzky (2004) suggested an ideal range of 32 to 38 ppt for most cephalopods. Thus, market squid appear to have a broad tolerance to salinity. Other species of concern (see Table 4.5-2) are motile and would be able to avoid areas of elevated salinity in the immediate vicinity of the brine discharge.

The 2015 Ocean Plan amendment established an allowable salinity increase of less than 2 ppt at the BMZ boundary (SWRCB, 2015); this is comparable to other international regulatory guidelines (see **Table 4.5-11**). This incremental salinity increase limit, however, is a conservative threshold for marine organisms, as none of the studies reviewed in the discussion above (see **Table 4.5-9**) found adverse effects on survival, growth, or behavior at salinities as low as the Ocean Plan objective. For this analysis, salinity levels both within the ZID (located between 3 to 11.9 meters or 10 to 39 feet from the diffuser depending on operating scenario; Table 4.5-12) and the BMZ (100 meters or 328 feet from the diffuser), as well as at the edge of these zones were evaluated for potential impacts on marine biological resources.

As presented in Section 4.3, Surface Water Hydrology and Water Quality, the highest anticipated ambient salinity of 33.89 ppt is expected to occur during the upwelling season (see **Table 4.3-1**). This peak ambient salinity would also coincide with the proposed project's maximum concentrated brine discharge stream, when the brine would not be combined with treated wastewater effluent from the MRWPCA regional wastewater treatment plant, resulting in the maximum salinity at the edge of the ZID of any scenario analyzed under Impact 4.3-4. Under this brine-only discharge scenario, the maximum increase in salinity at the edge of the ZID would be 1.6 ppt above ambient (see Scenario 2 and Scenario 15 in **Table 4.5-12**). This maximum anticipated salinity at the edge of the ZID due to the brine discharge is less than the lowest mean effective salinity reported by Phillips et al (2012) (i.e., 36.8 ppt; see **Table 4.5-10**). It should be noted that this mean effective salinity was for the embryonic development of red abalone, which occurs only on rocky substrate associated with kelp miles from the edge of the ZID. Moreover, none of the modeling results based upon a continuous discharge suggest a re-concentration of salinity in the discharged brine along the seafloor. Elevated salinities in the discharge plumes will never exceed 2 ppt above ambient at the point of contact with the seafloor and those maximum salinities will continue to dilute through mixing and diffusion as they flow across the seafloor.

Due to the fact that the recommended salinity range for culturing squid is 34 to 38 ppt, and the salinity at the edge of the ZID and the BMZ would not exceed 35.49 ppt and 35.23 ppt, respectively, the area outside the ZID and within the BMZ would continue to be suitable for squid spawning.

An area within the ZID, however, could be unsuitable for squid spawning. The most straightforward way of estimating the impact is to compare the area within the ZID to the entire area of suitable spawning habitat in Monterey Bay south of Monterey Submarine Canyon, which is the greatest focus of commercial fishing activities associated with spawning. The shelf area south of the Monterey Submarine Canyon is approximately 16 km (10 miles) long. The depth

TABLE 4.5-11
SUMMARY OF DOMESTIC AND INTERNATIONAL BRINE LIMITS

Region/Authority	Salinity Limit	Compliance Point	Source
USEPA	Increment ≤ 4 ppt	NA	NA
Carlsbad, CA	Absolute ≤ 40 ppt	1,000 feet	San Diego Regional Water Quality Control Board 2006
Huntington Beach, CA	Absolute ≤ 40 pt salinity (expressed as discharge dilution ratio of 7.5:1)	1,000 feet	Santa Ana Regional Water Quality Control Board 2012
Western Australia guidelines	Increment ≤ 5 ppt	NA	NA
Oakajee Port, Western Australia	Increment ≤ 1 ppt	NA	The Waters of Victoria State Environment Protection Policy
Perth, Australia/ Western Australia EPA	Increment ≤ 1.2 ppt and ≤ 0.8 ppt	50 m and 1,000 m	Wec 2002
Sydney, Australia	Increment ≤ 1 ppt	50 to 75 m	ANZECC 2000
Gold Coast, Australia	Increment ≤ 2 ppt	120 m	GCD Alliance 2006
Okinawa, Japan	Increment ≤ 1 ppt	Mixing zone boundary	Okinawa Bureau for Enterprises
Abu Dhabi	Increment ≤ 5 ppt	Mixing zone boundary	Kastner 2008
Oman	Increment ≤ 2 ppt	300 m	Sultanate of Oman 2005

SOURCE: Jenkins et al, 2012

TABLE 4.5-12
DILUTION MODEL RESULTS FOR DENSE DISCHARGE SCENARIOS

Scenario No.	Scenario	Predictions			At impact (ZID)		At BMZ	
		SEA	VP					
		Dilution	Dilution	Distance (ft)	Dilution[a]	Salinity increment (ppt)	Dilution	Salinity increment (ppt)
Typical Discharge Scenarios								
1	SE Only	-	-	-	-	-	-	-
2	Brine only	15.4	16.2	10.2	15.4	1.61	18.5	1.34
3	Brine + Low (1) SE	16.0	16.1	10.4	16.0	1.31	19.2	1.09
4	Brine + Low (2) SE	16.8	17.6	11.6	16.8	1.05	20.1	0.88
5	Brine + Low (3) SE	17.7	18.5	12.7	17.7	0.83	21.2	0.69
6	Brine + Low (4) SE	18.8	19.5	13.8	18.8	0.64	22.5	0.54
7	Brine + Mod (5) SE	20.1	20.9	15.3	20.1	0.48	24.2	0.40
8	Brine + Mod (6) SE	21.9	22.2	16.8	21.9	0.35	26.3	0.29
9	Brine + Mod (7) SE	24.8	24.9	19.2	24.8	0.23	29.7	0.19
10	Brine + Mod (8) SE	28.2	27.5	21.9	27.5	0.15	33.0	0.12
11	Brine + Mod (9) SE	34.2	27.7	22.3	27.7	0.09	33.2	0.07
12	Brine + High (10) SE	46.7	39.2	33.0	39.2	0.02	47.0	0.02
13	Brine + High (15) SE	-	-	-	-	-	-	-
14	Brine + High (19.78) SE	-	-	-	-	-	-	-
High Brine Discharge Scenarios (post-shutdown operations)								
15	High Brine only	15.5	16.3	10.5	15.5	1.60	18.6	1.33
16	High Brine + Low (1) SE	16.1	16.9	11.3	16.1	1.34	19.3	1.11
17	High Brine + Low (2) SE	16.7	17.5	12.1	16.7	1.11	20.1	0.92
18	High Brine + Low (3) SE	17.5	18.4	13.1	17.5	0.91	21.0	0.76
19	High Brine + Low (4) SE	18.6	19.3	14.2	18.6	0.73	22.3	0.61
20	High Brine + Mod (5) SE	19.6	20.4	15.4	19.6	0.58	23.6	0.48
21	High Brine + Mod (6) SE	22.1	21.4	16.6	21.4	0.42	25.7	0.35
22	High Brine + Mod (7) SE	22.8	22.8	18.1	22.8	0.34	27.4	0.28
23	High Brine + Mod (8) SE	25.0	24.5	19.8	24.5	0.24	29.4	0.20
24	High Brine + Mod (9) SE	28.2	27.2	22.3	27.2	0.16	32.6	0.14
25	High Brine + High (10) SE	32.5	30.2	25.3	30.2	0.10	36.2	0.08
26	High Brine + High (12) SE	58.6	44.9	39.0	44.9	0.01	53.9	0.01
27	High Brine + High (14) SE	-	-	-	-	-	-	-
28	High Brine + High (16) SE	-	-	-	-	-	-	-

NOTES:

[a] The lowest dilution value was selected from the two model (SEA and VP) analysis results to calculate incremental salinity increases at the edge of the ZID and BMZ to provide the most conservative assessment of potential salinity increases.

SE = secondary effluent (MRWPCA wastewater)

SOURCE: Roberts, 2017 (Appendix D1)

ranges for squid spawning (18 to 55 meters or 59 to 180 feet) spans approximately 3 km (1.8 miles) from shoreward to seaward edge, which covers 48 square kilometers (18 square miles). If the area between the diffuser port and the edge of the ZID on both sides of the outfall (i.e., 3 to 11.9 meters ([10 to 39 feet] wide by 335 meters [1,100 feet] long; on two sides) were to settle on the seafloor (which model results indicate it would not), approximately 2,010 to 7,800 square meters of seafloor (21,635 to 85,800 square feet) would be unsuitable for squid spawning. This area represents approximately 0.0042 to 0.0163 percent of the suitable spawning area on the seafloor south of Monterey Submarine Canyon.

There could be unanticipated effects on benthic and pelagic communities in the vicinity of the discharge. As discussed in Section 4.3, Surface Water Hydrology and Water Quality, the water-column salinity at the point of discharge would exceed 2 ppt within a very small volume of ocean water at each of the 129 open diffuser ports. For the worst-case brine-only discharge scenario, the volume of discharge with a salinity greater than 2 ppt above ambient would be approximately 2 feet in maximum diameter tapering at each end, and approximately 8 feet long, with a corresponding volume of 8.5 cubic feet of water mass at each of the open diffuser ports (see **Figure 4.3-10** in Section 4.3, Surface Water Hydrology and Water Quality). Extrapolation to all 129 open diffuser ports indicates a total volume of 1,100 cubic feet of water could exceed 2 ppt. The small volume of water that would be greater than 2 ppt above ambient salinity would not come into contact with any hard-substrate organisms inhabiting the ballast rock anchoring the outfall or benthic fauna located on the seafloor. Consequently, benthic communities near the outfall would not be affected by the increased salinity brine discharge. Compared to the total volume of water surrounding the diffuser to a height of 4 feet off the bottom (i.e., 3 to 11.9 meters ([10 to 39 feet] wide by 335 meters [1,100 feet] long by 1.2 meters [4 feet] high; on two sides = or 2,412 to 9,568 cubic meters or 88,000 to 343,200 cubic feet), this impact would involve 0.3 to 1.25 percent of the near-seafloor water in the vicinity of the discharge and contain approximately 8.2 to 41.4 million planktonic organisms. While mortality of small organisms could occur if they were entrained for more than a few seconds in the discharge plumes, the impact on pelagic organisms would result in a less-than-significant impact because of the small percentage of total habitat involved.

The Ocean Plan establishes receiving water salinity limitations for brine discharges from desalination facilities to protect the quality of ocean waters for beneficial uses, such as providing aquatic habitat. The impact analysis at 4.3.5.2 Operational and Facility Siting Impacts Impact 4.3-4, uses the Ocean Plan's receiving water salinity limitations as significance thresholds. The impact analysis estimates salinity levels within the BMZ, where salinity may exceed 2.0 ppt above natural background salinity, to determine the potential frequency and intensity of impacts on marine biological resources and beneficial uses. The impact analysis evaluates the salinity and dilution dynamics of a number of scenarios of operational discharges within the BMZ by determining the ZID for each discharge scenario and describes areas where salinity would exceed 2 ppt. Additionally, the analysis addresses the fate and travel path of the discharge plume beyond the BMZ and the potential for hypoxia to occur near the seabed.

The analysis of salinity levels indicates that for all discharge scenarios, and assuming a continuous discharge stream, the MPWSP brine and combined discharges would meet Ocean

Plan salinity and dissolved oxygen standards and are not likely to result in hypoxia on the ocean floor. Specifically, the discharge would result in salinity less than 2 ppt above ambient salinity at the edge of the ZID, which means that salinity levels would not exceed 2 ppt above ambient salinity at the edge of the BMZ (328 feet) since the edge of the ZID is well within the BMZ under all scenarios. The proposed project would therefore not exceed or violate the Ocean Plan salinity standards or degrade water quality in terms of salinity. For all discharge scenarios involving dense, negatively buoyant plumes (worst case scenarios), the Ocean Plan salinity limit is met at the edge of the ZID, which ranges from 10 feet to 39 feet depending on discharge scenario. As the plumes discharged from each of the 129 outfall diffuser jets travel away from the ZID, they continue to dilute (further reducing salinity levels) and ultimately merge within the BMZ boundary. Salinity levels would exceed 2 ppt in a relatively small area, 8.5 cubic feet, adjacent to each of the 129 diffuser ports and above the seafloor, after which the discharge plumes would attenuate rapidly with distance from each port. The combined area of exceedances of 2 ppt is not likely to adversely impact the marine environment because it is a relatively small volume in the water column when considered in the context of the total volumes of Monterey Bay. Also, the salinity increases presented in the analysis represent conservative values and would occur only along the seabed. Modelling demonstrates that salinity plumes are not likely to travel, or become trapped, along the seafloor due to the Coanda effect. Hypoxia from salinity near the seafloor was demonstrated to be unlikely based on a mass-balance analysis, which demonstrated that the amount of oxygen supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution is more than 30 times greater than that consumed by the sediments. As such, the concentration of dissolved oxygen in receiving ocean waters would not become depressed by more than 10 percent from that which occurs natural. For the majority of the water column, incremental salinities would be much lower than the reported values. Additionally, the analysis assumed zero ocean current; however, under actual ocean conditions, waves, tidal forces, and seasonal currents would increase mixing and dilution, thus reducing these assessed salinity levels. Therefore, operational discharges from the MPWSP would not increase salinity levels or impact DO in a manner that violates water quality objectives or waste discharge requirements or otherwise degrades the quality of receiving waters in Monterey Bay and MBNMS, and impacts on sanctuary marine biological resources would be less than significant.

Potential Effects of Other Brine Discharge Contaminants

In the irrigation season, brine-only would be discharged through the MRWPCA outfall. In the non-irrigation season, the brine would be combined with varying flows of secondary treated wastewater that would typically be buoyant when released into the ocean. But because the brine is denser than the wastewater flow, the brine could cause the wastewater to be less buoyant and various constituents in the wastewater may not adequately dilute as they do now.

To determine if exceedances of contaminants would occur in the discharge, the concentrations of constituents regulated under the Ocean Plan (**Table 4.3-4**) were calculated at the edge of the ZID using the modeled dilutions of various brine and brine-with-wastewater scenarios, and compared against the Ocean Plan water quality objectives (see Section 4.3 and Appendices D1-D3).

As discussed in detail in Section 4.3 (see Impact 4.3-5), the estimated concentrations for the full suite of Ocean Plan constituents are presented as concentrations at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective in **Table A1** and **Table A2** in **Appendix D3** for the discharge scenarios assessed for the MPWSP (**Tables 4.3-13 and 4.3-14**). As summarized in **Tables A1** and **A2** (**Appendix D3**), out of 80 constituents assessed for compliance with Ocean Plan numeric water quality objectives, the proposed project would comply with 65 objectives under all assessed operational discharge scenarios. Two constituents, cyanide and ammonia, were identified as having the potential to exceed the Ocean Plan objectives under certain operational scenarios. Potential issues for cyanide and ammonia compliance were identified to occur when there would only be low volumes of secondary effluent flow mixed with desalination brine. These two constituents may exceed the Ocean Plan objective, or come close to exceeding the objective, and are shown at their estimated concentration at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective at the edge of the ZID, in **Tables 4.3-15 and 4.3-16**, respectively. Ten constituents[14] were not detected in any of the source waters (desalination brine or wastewater) and results for these ten constituents are summarized in **Tables A1** and **A2** (**Appendix D3**). However, for these ten constituents, the analytical Method Reporting Limit[15] (MRL) achieved by the testing laboratory was higher than the Ocean Plan numeric objective (see Section 4.3, Surface Water Hydrology and Water Quality, for detailed discussion). Three additional constituents—acrylonitrile, beryllium, and TCDD equivalents—were detected in either the desalination brine or wastewater, but not in both. However, there is not enough information to assess the concentrations for these three constituents in the combined discharge of wastewater and brine due to differences in MRLs applied in the brine source waters as compared to the MRWPCA wastewater.

Based on a conservative assessment methodology (see Section 4.3), implementation of the MPWSP could potentially cause exceedances of Ocean Plan water quality objectives for the measurable constituents ammonia and cyanide. For an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**) would require CalAm to perform an extensive water quality assessment prior to implementation of the MPWSP. Operational discharges that cannot be demonstrated to conform to the Ocean Plan water quality objectives, incorporated as performance standards, may only be released following implementation of additional design features, engineering solutions, and/or operational measures that ensure compliance with objectives. With implementation of the proposed mitigation, the impact would be less than significant.

The modeled dilution factors for various scenarios of negatively buoyant plumes range from approximately 15:1 (seawater: effluent) to 59:1 at the edge of the ZID (Table 4.5-12).

[14] Chlorinated phenolics, 2,4-dinitrophenol, tributyltin, aldrin, benzidine, bis(2-chloroethyl)ether, 3,3-dichlorobenzidine, 1,2-diphenylhydrazine, heptachlor, 2,4,6-trichlorophenol.

[15] The lowest amount of an analyte in a sample that can be quantitatively determined with acceptable precision and accuracy under stated analytical conditions (i.e., the lower limit of quantitation).

Concentrations within the ZID (the area in the plume between its contact with the seafloor and the diffuser port) would be gradually higher than at the edge of the ZID. While mortality of small organisms could occur if they were entrained in the higher concentration discharge, the impact on pelagic organisms would result in a less-than-significant impact because of the small percentage of total habitat involved and the limited exposure duration. Discharged contaminants also would have less than significant impacts on benthic organisms due to acute toxicity because the area affected by the discharge plumes would be very small. Using the diameter of the discharge plumes cited above (i.e., 1.5 feet; see **Figure 4.3-10** in Section 4.3, Surface Water Hydrology and Water Quality), each plume would affect 1.77 square feet of seafloor at the point of contact. The total area affected would be 1.77 square feet x 129 open diffuser ports = 228 square feet. This area is less than 1 percent of the total area within the ZID (i.e., 1,100 feet long x 21 feet wide = 23,100 square feet). Transfer of bioaccumulated contaminants from benthic infauna to higher trophic levels also would be limited by the very small area of seafloor affected. Transfer to predators in higher trophic levels would be proportional to the relative consumption of prey from within and outside of the affected seafloor area.

As discussed in Section 4.3, the implementation of **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring**, **Analysis, Reporting**, **and Compliance**), would further ensure that brine constituents are discharged at concentrations below Ocean Plan requirements and further ensure compliance with the monitoring requirements and regulatory standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. Mitigation Measure 4.3-4 requires CalAm to implement a comprehensive Monitoring and Reporting Plan (Plan), following review and approval by the RWQCB and MBNMS, that is consistent with the requirements of the Ocean Plan and that incorporates, at a minimum (but not limited to), monitoring guidelines detailed in the Ocean Plan. The monitoring program would ensure that adequate water quality and marine resource data are gathered to determine baseline conditions and compliance with Ocean Plan water quality limitations. The Plan includes, at a minimum, appropriate performance standards, as well as corrective actions to be implemented (detailed in **Mitigation Measure 4.3-5, Implement Protocols to Avoid Exceeding Water Quality Objectives)**, such as retrofitting the existing outfall to increase dilution, additional pre-treatment of source water to the Desalination Plant, treatment of discharge, and/or flow augmentation, that would be required if the acquired data indicated non-compliance with Ocean Plan water quality objectives (or NPDES permit conditions) resulting from operational discharges. Impacts due to the discharge of other brine contaminants would be less than significant.

Potential Effects of Brine Discharge Shear Stress

Concern has been expressed that the jet velocities associated with brine discharges could cause damage in the discharge environment (SWRCB, 2014). Impacts due to shear stress caused by the brine discharge would be limited to plankton, because motile organisms would be able to avoid turbulence in the immediate vicinity of the brine discharge. Some laboratory studies have reported impacts on very small marine organisms caused by experimentally induced shear stress (Foster et al, 2013). In the case of the proposed MPWSP, such damage is highly unlikely. Modeling performed in support of a report submitted to the SWRCB that examined entrainment

effects from desalination projects (Foster et al, 2013) provided formulae for determining the spatial scales of turbulent eddies that occur at different discharge velocities.[16] The minimum and maximum discharge velocities (7.4 ft/sec (2.26 m/sec) and 14.8 ft/sec (4.51 m/sec)) modeled across all scenarios for the proposed MPWSP (see Appendix D1) closely approximate the discharge velocities calculated by Foster. Foster (2013) concludes that, at these very small eddy scales: "Overall, the area of high shear impacted by the diffusers is relatively small and transit times through this region relatively short. Thus, it seems reasonable to expect that, while the larvae that experience the highest shear will most likely experience lethal damage, the overall increase in mortality integrated over the larger area will be low."

Plankton samples collected near the MRWPCA outfall (see **Table 4.5-1**) were used in a hydrodynamic model to provide a quantitative estimate of the effects of shear stress from the brine discharge on plankton (**Appendix D1**). The analysis found that a very small percentage of water passing over all of the outfall diffusers is entrained (i.e., 1.7 to 6.4 percent). The greatest shear gradients occur in very small turbulent eddies such that effects of shear stress would be concentrated on plankton smaller than 1.0 mm. Assuming that 50 percent of entrained organisms below 1 mm are killed by shear stress, roughly 0.23 to 0.86 percent of total numbers of plankton flowing over the diffuser could be killed by shear stress, estimated to be roughly 892 million organisms per day. This number seems substantial, but is a tiny fraction of the estimated total plankton abundances at any point in time in Monterey Bay.

The total area around the edge of Monterey Bay at the depth of the MRWPCA diffuser is approximately 215 square kilometers and the average depth is 35 meters. By applying the average number of planktonic organisms per cubic meter observed in the plankton tows (see Table 4.5-1; 4,357 organisms per cubic meter), the total number of organisms in the nearshore area of Monterey Bay would be 3.41×10^{13} at any given time. The percentage of total nearshore plankton killed in Monterey Bay by shear stress associated with the discharge of brine from the MPWSP project each day would be 0.00261 percent. The amount of annual organism productivity represented by this percentage can only be approximated because the numbers present on any given day, as indicated by the plankton samples, are the result of production minus predation and natural mortality, which are unknown. Nevertheless, a rough approximation is possible. Calanoid copepods, which were the most abundant organisms in the plankton samples (see Table 4.5-1), typically have annual lifecycles (Atkinson, 1998). If it can be assumed that all calanoids begin and end their lifecycles at the same time, a mortality of 0.00261 percent per day would result in a maximum annual loss of less than 1 percent. Moreover, because the baseline condition involves wastewater without brine, the higher wastewater flow in the non-irrigation season means that the water entrained over the ZID is greater and potential plankton mortality is greater with these higher flows than would be the case with the proposed project.

[16] Foster concludes that higher strain rates and shear stresses are contained in smaller eddies. A discharge velocity of 2.9 m/sec (9.5 ft/sec) resulted in small eddies ranging from 0.03 mm (0.002 in) to 0.56 mm (0.02 in) at various locations in the discharge plume, from the diffuser port to the edge of the ZID. A discharge velocity of 4.6 m/sec (15.1 ft/sec) resulted in small eddies ranging from 0.02 mm (0.0008 in) to 0.63 mm (0.025 in).

Impact Conclusion

Impacts on marine biological resources, including MBNMS resources, during operations of the proposed MPWSP would be less than significant. Impingement of plankton, larval fish and other organic matter on the seafloor from the operation of the slant wells is not likely because of the low intake velocities. The increased salinity and other constituents in the brine discharge are expected to meet Ocean Plan water quality objectives at the edge of the ZID and are therefore, not expected to cause any impairments to marine biological resources including special status species. Brine discharges also are not expected to significantly affect marine habitat by reducing dissolved oxygen content (hypoxia). Nevertheless, and as discussed in Section 4.3, Surface Water Hydrology and Water Quality, the implementation of **Mitigation Measure 4.3-4** would further ensure the brine is discharged at concentrations below Ocean Plan water quality objectives and further ensure compliance with the monitoring requirements and regulatory standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay.

Impacts due to shear stress caused by the brine discharge would be limited to plankton, because motile organisms would be able to avoid turbulence in the immediate vicinity of the brine discharge and the impact would be less than significant because of the small percentage of plankton abundances potentially affected. Moreover, the Ocean Plan Provisions for Desalination Facilities require modeling and estimating of potential mortality due to shear stress entrainment, and require periodic re-evaluation to ensure the operational procedures employed result in acceptable plankton mortality (SWRCB, 2016).

Because there is little risk that benthic infauna and macrofauna populations will decline due to impingement, shear stress, and increased salinity, impacts are not anticipated on fish, marine mammals (such as the Southern sea otter and California gray whale), seabirds, and other species. Transfer of bioaccumulated contaminants from benthic infauna to higher trophic levels also would be limited by the very small area of seafloor potentially affected. Transfer to predators in higher trophic levels would be proportional (e.g., very limited) to the relative consumption of prey from within and outside of the affected seafloor area. Therefore, the indirect impacts on fish, marine mammals, sea birds, and other species are also determined to be less than significant.

Mitigation Measures

None proposed.

Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations. (*Less than Significant)*

As discussed for Impact 4.5-4, there are no anticipated occurrences of impingement of plankton and larval fish on the seafloor or a potential for deterioration of seafloor sediments and soft substrate benthic habitat from the operation of the MPWSP slant wells. Additionally, the discharge of elevated salinity brine is not expected to threaten to eliminate a marine plant or animal wildlife

community or cause a marine population to drop below self-sustaining levels. Therefore, the evaluation of impacts from MPWSP operations, including slant well and brine discharge operations, would be the same as for Impact 4.5-4; the impact would be less than significant.

Mitigation Measures

None proposed.

Impact 4.5-6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations. (*Less Than Significant)*

As discussed for Impact 4.5-4, there are no anticipated occurrences of impingement of plankton and larval fish on the seafloor or a potential for deterioration of seafloor sediments and soft substrate benthic habitat from the operation of the MPWSP slant wells. The analysis of impacts on the movement of native resident or migratory fish or marine wildlife species, including market squid, or interference with established native resident or migratory wildlife corridors or native marine wildlife nursery sites is identical to the analysis presented for **Impact 4.5-4**.

Additionally, the discharge of brine is not expected to interfere with the movement of native resident or migratory fish or marine wildlife species. Therefore, the evaluation of impacts from MPWSP operations, including slant well and brine discharge operations, would be the same as for Impact 4.5-4; the impact would be less than significant.

Mitigation Measures

None proposed.

4.5.6 Cumulative Effects of the Proposed Project

Impact 4.5-C: Cumulative impacts on marine biological resources. (*Less than Significant*)

The geographic scope for the cumulative analysis of impacts on marine biological resources encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from north of Moss Landing Harbor southward to the northern limits of Sand City, including the subtidal and intertidal habitats contained therein, and all marine biological communities. Beyond this area, other projects would be too distant from the MPWSP to result in any combined salinity or elevated brine constituent plumes, or to combine in any other way that may cause a cumulative effect on marine biological resources.

As discussed in Section 4.3.6, MBNMS was notified on Saturday, January 20, 2018, of a sewage spill into MBNMS from the Monterey Regional Water Pollution Control Agency (MRWPCA)

wastewater treatment facility. MRWPCA reported that the spill resulted in the release of approximately 2.8 million gallons of untreated sewage entered Monterey Bay. While sampling and information collection regarding the extent and potential impacts of the spill is ongoing, there have been no reported impacts on marine organisms or habitats. If any impacts are found, those would likely be localized and the incident therefore, is not anticipated to have any long-term residual impact on the marine biological resources in Monterey Bay in the year 2021 that would affect or change the EIR/EIS conclusion of impacts on marine biological resources resulting from implementation of the proposed project.

The cumulative projects listed in **Table 4.1-2** that are located within the geographic scope and whose impacts could overlap with those of the MPWSP include Test Slant Well (No. 47), RUWAP Desalination Element (No. 31), and RUWAP Recycled Water Element (No. 35). In addition, it is expected that either the DeepWater Desal Project (No. 34) or The People's Moss Landing Desal Project (No. 57), but not both, would be constructed and operated in the reasonably foreseeable future. With the exception of DeepWater Desal and People's Project, all of these projects are either built (No. 47), not reasonably foreseeable in its current configuration (No. 31), or projected to have very localized construction impacts.

The test slant well (No. 47) was considered in the evaluation of the proposed project. The RUWAP Recycled Water Element (No. 35) would reduce wastewater flows to the MRWPCA ocean outfall. The impacts that would result from a range of brine with wastewater flows were evaluated for the proposed project under Impact 4.5-4 (see Table 4.5-12). Therefore, the cumulative scenario that would result from the RUWAP Recycled Water Element in combination with the proposed project would be within the range of brine with wastewater flows analyzed under Impact 4.5-4; that impact was determined to be less than significant.

Both the DeepWater Desal and People's Project propose to use new ocean water intakes and new brine discharge outfalls equipped with diffuser jets. The proposed intake and outfall pipes for both projects would be located offshore of Moss Landing Harbor. As proposed by its applicant, the People's Project would develop supplemental water supplies to serve customers in CalAm's Monterey District service area. Since the People's Project and the MPWSP would not both be implemented to serve the same customers, this EIR/EIS assumes the People's Moss Landing Project is an alternative to the MPWSP (see Chapter 5). Therefore, it is not a reasonably foreseeable project in the cumulative scenario relevant to the MPWSP. It would also not be a reasonably foreseeable project in the cumulative scenario for any of the alternatives aimed at meeting the objectives of the MPWSP. Therefore, although acknowledged here as a reasonably foreseeable alternative to the proposed project (as described in Chapter 5), this project's contributions to cumulative impacts are not considered as part of the cumulative scenario relevant to the proposed project or another alternative. In contrast, DeepWater Desal Project is considered in the cumulative impacts analysis for the MPWSP because the project proponent has indicated that it intends to proceed even if another desalination plant is selected to serve the Monterey Bay region. DeepWater Desal would include the construction and operation of a seawater desalination facility and co-located data center to provide up to 25,000 afy of potable water and data transmission and storage services. DeepWater Desal would be developed to meet a regional need

for water, and CalAm would be one of several customers of the supply. As such, DeepWater Desal is considered in the cumulative effects scenario for the MPWSP. See Section 4.1 for additional details on the cumulative scenario and the basis for this determination.[17]

Construction Impacts

The proposed MPWSP would use subsurface slant wells in-lieu of an open ocean intake. As a result, there are no anticipated or proposed construction activities within the coastal waters of the MPWSP project area that are expected to result in disturbance or effects on marine biological resources. As discussed in Impact 4.5-1, potential impacts from construction-related underwater noise, the discharge of clarified water produced during well drilling and well development into the ocean, and the potential accidental release of drilling fluids would result in less-than-significant impacts on marine biological resources and habitats. Because any drilling noise reaching ocean waters overlying the slant wells is expected to be below background underwater noise levels, the lack of noise generated by slant well drilling could not combine with other sources of underwater noise generated by projects in the cumulative scenario to result in increased noise above ambient levels. The Deepwater Desal project would also involve offshore construction, but the Deepwater Desal intake and discharge facilities would be constructed approximately 6.5 miles to the north, and possibly years later than the MPWSP; therefore, noise would not accumulate with the proposed project's construction noise. The discharge of any clarified water to the ocean would be in compliance with Ocean Plan Water Quality standards for turbidity as stipulated in the revised NPDES permit. The NPDES permit requirements are themselves measures based, in part, on the consideration of cumulative effects on receiving waters; therefore, discharges of the proposed project when combined with discharges from the DeepWater Desal project would be within parameters considered not to result in a cumulatively significant effect on water quality.

Impingement of Marine Organisms and Organic Material on the Seafloor

While Deepwater Desal is expected to have a high impingement risk due to its open water intake design, the MPWSP's impingement risk is low and is not likely to incrementally increase the impingement risks caused by Deepwater Desal. As discussed under Impact 4.5-4, no impingement or entrainment of fish or invertebrate species would occur during MPWSP operations because the use of slant wells would result in a vertical infiltration rate that would be well below the swimming speeds of larval invertebrates and larval fish. Similarly, the low infiltration rate of the slant wells would not result in an accumulation of fine-grained organic materials on the seafloor. Therefore, the MPWSP could not contribute to any cumulative impacts related to the impingement or entrainment of fish or invertebrate species, or the impingement of fine organic matter.

Discharge of Brine and Other Brine-Associated Constituents

As discussed in Impact 4.5-4, the MPWSP would discharge a brine solution with an elevated salinity concentration as well as potentially elevated concentrations of contaminants to the ocean through the existing MRWPCA ocean outfall. Based on a conservative assessment methodology (see Section 4.3), implementation of the MPWSP could potentially cause exceedances of Ocean

[17] As explained in Section 4.1, the MPWSP assumes that GWR would not be operational, and as such, GWR is not considered in the cumulative impacts scenario.

Plan water quality objectives for the measurable constituents ammonia and cyanide. For an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID. The constitution of the brine that would be discharged from the DeepWater Desal project is currently unknown but this analysis assumes that, at a minimum, contaminants detected in the ocean water (CCLEAN, 2015) that currently exceed Ocean Plan water quality objectives (PCBs) would in all likelihood also exceed Ocean Plan water quality objectives at the edge of the DeepWater Desal ZID. If there are no operational actions available for dilution of the brine from the DeepWater Desal project, or feasible mitigation actions to reduce potential increased PCB concentrations, and therein reduce the potential impact on pelagic marine biological resources, then the potential impact on marine biological resources inhabiting pelagic habitat within the ZID of the DeepWater Desal project would be significant and unavoidable.

The DeepWater Desal project, in order to be viable and permitted, would have to implement operational actions that ensure its brine discharges also achieve the Ocean Plan water quality objectives. The distance between the DeepWater Desal proposed outfall and the existing outfall proposed for use by the MPWSP (i.e., 31,511 feet; 9,605 meters; 5.96 miles) leads to the determination that there is no expectation of the two BMZs reaching each other or intermixing discharge waters. The area within the BMZ for the MPWSP that could exceed 2 ppt is estimated at a total volume of approximately 31 cubic meters (1,100 cubic feet) of pelagic habitat and associated marine taxa, including special status fish, invertebrate, and marine mammal species. Since the DeepWater Desal project proposes to discharge more brine than the MPWSP, its BMZ would be larger than that of the MPWSP. Depending on operating conditions, the DeepWater Desal project could result in approximately 150 to 1,500 cubic meters (5,300 to 53,000 cubic feet) of pelagic habitat exceeding 2 ppt around the diffuser structure. Thus, the potential cumulative area of coastal Monterey Bay pelagic habitat affected by salinity exceeding 2 ppt could be up to approximately 1,532 cubic meters (54,100 cubic feet) depending on operating conditions, which it is an infinitesimally small amount of water when compared to the volume of nearshore pelagic habitat in the study area (i.e., 215 square kilometers x 35 meters average depth = 7.5 billion cubic meters or 265 billion cubic feet). Therefore, based on the comparative scale of the volume of pelagic habitat that could exceed 2 ppt salinity as compared to the nearshore pelagic habitat available in Monterey Bay, there would be no significant cumulative impacts in Monterey Bay regardless of other external stressors. Monterey Bay in MBNMS is resource rich (not resource constrained) and most special status fish, invertebrates, and marine mammal species that would encounter the increased area of salinity are motile, they would behaviorally avoid the area and would find other areas to inhabit. Therefore, the cumulative effect of the two projects from increased salinity concentrations in their brine discharges on marine biological resources, including special status fish, invertebrates, and marine mammal species, would be less than significant.

However, the proposed MPWSP discharge could be out of compliance with the Ocean Plan for cyanide and ammonia and for an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID. The implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** would ensure that brine constituents from the MPWSP, such as cyanide and ammonia, are discharged at concentrations below Ocean Plan requirements and would result in a less than significant

contribution to a cumulative impact related to cyanide and ammonia. Since the MPWSP would be using subsurface intakes, the PCBs drawn into the source water through the ocean floor would be less than ambient ocean water and would not exceed Ocean Plan objectives at the edge of the ZID. Thus, the MPWSP would have a less than significant contribution to a cumulative impact related to PCB concentrations.

Brine Discharge Shear Stress

As discussed in Impact 4.5-4, impacts on marine organisms caused by shear stress would be concentrated on plankton smaller than 1.0 mm and would be less than significant (0.00261 percent of nearshore planktonic organisms killed). At present, only a preliminary assessment of potential shear stress impacts on planktonic organisms has been performed for the DeepWater Desal project. However, the assessment of potential brine discharge effects on planktonic organisms relative to the volume of the MPWSP brine discharge (Impact 4.5-4) can be used as a basis for estimating similar impacts from the DeepWater Desal project. If the MPWSP and DeepWater Desal were both built and operated, DeepWater Desal is estimated to have a brine discharge of approximately 27 mgd, in comparison to the MPWSP's 14 mgd brine discharge. Assuming that the DeepWater Desal diffuser jets would cause no greater shear impact than the diffusers used on the MRWPCA outfall, DeepWater Desal brine discharges are estimated to cause plankton mortality rates of approximately 447 million individuals per day, assuming plankton densities similar to those measured at the MRWPCA outfall (see Table 4.5-1). As a result, the estimated potential cumulative effect of brine discharge shear stress on planktonic organisms less than 1 mm in size would be approximately 3.8 billion planktonic organisms per day or 0.011 percent of the potential nearshore plankton in Monterey Bay, a small fraction of the plankton less than 1 mm in size inhabiting the nearshore waters near the ocean outfalls. Additionally, the Ocean Plan water quality objectives for brine discharges require modeling and estimating of potential mortality due to shear stress entrainment and require periodic re-evaluation to ensure the operational procedures employed result in acceptable plankton mortality (SWRCB, 2016). No significant cumulative impact from brine discharge shear stress would occur as a result of the MPWSP and DeepWater Desal project.

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4.6 Terrestrial Biological Resources

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This section analyzes the potential for the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to adversely affect biological resources and prescribes mitigation to reduce significant impacts. This section describes terrestrial biological resources in the Monterey region and provides detailed information regarding the resources that exist, or have the potential to exist, within a 50-foot buffer of the project area (the study area for terrestrial biological resources). The resources described include vegetation communities and associated wildlife, wetlands and other water bodies, freshwater and anadromous fisheries, and special-status plants and wildlife (federally and state-endangered, threatened, proposed, and candidate species; and state and local species of concern). Impacts on marine biological resources are discussed separately in Section 4.5, Marine Resources.

The CPUC received several comments pertaining to terrestrial biological resources during the public review period for the April 2015 Draft EIR. Comments on the April 2015 Draft EIR suggested that mapping of biological resources was at a scale that made it difficult to read or distinguish vegetation or wildlife habitat types, and that information on special-status species occurrences should have been included. New maps have been included in this EIR/EIS (See Appendix F) based on more detailed vegetation and habitat mapping that has been completed since the Draft EIR was published. Descriptive information about vegetation and wildlife habitats and special-status species is in Section 4.6.1.4 through Section 4.6.1.10.

Comments indicated that protocol surveys should have been included in the Draft EIR. Although this is not a CEQA or NEPA requirement, such surveys have been completed as part of the permitting process, and the results are reflected in Sections 4.6.1.8, Special-Status Species, and 4.6.1.9, Critical Habitat, of this EIR/EIS.

Comments suggested that the Draft EIR provided insufficient or deferred mitigation with regard to impacts on some biological resources, including special-status plants and silvery legless lizard. Mitigation measures in Sections 4.6.5.1 (Construction Impacts) and 4.6.5.2 (Operational and Facility Siting Impacts) have been revised based on input from regulatory agencies and improved species information resulting from more extensive surveys of biological resources. Mitigation for species listed by the state of California as Fully Protected Species also is addressed in these sections.

Several comments on the Draft EIR concerned use of western snowy plover occurrence data in the vicinity of the proposed subsurface slant wells, status of western snowy plover in the vicinity of this facility, and potential impacts of this facility on plovers. ESA requested western snowy plover occurrence data from Point Blue Conservation Science, but Point Blue Conservation Science was unable to provide this data prior to publication of this EIR/EIS. This EIR/EIS includes additional information and analysis in regards to western snowy plover in Sections 4.6.5.1 (Construction Impacts) and 4.6.5.2 (Operational and Facility Siting Impacts).

Comments on the Draft EIR suggested that impacts of reduced pumping on the riparian habitat of the Carmel River should be analyzed. This EIR/EIS concluded that since a primary purpose of the proposed project is to reduce pumping from the Carmel River to restore and increase flows, the effect of this project would be a beneficial effect on stream flows in the Carmel River and the river's aquatic and riparian biological resources. This is discussed further in Sections 4.3 (Surface Water Hydrology and Water Quality, and Section 4.6.1.2 (Information Sources and Survey Methodology).

Several comments on the Draft EIR were concerned with consistency of the proposed project with a mitigation monitoring plan for the CEMEX facility. This EIR/EIS relies on impact assessments and mitigation approaches developed in coordination with regulatory agencies taking current biological resource conditions into consideration. Comments on the Draft EIR also assert that no jurisdictional wetlands or other waters of the U.S. or of the state occur within the CEMEX property. This EIR/EIS continues to regard surface waters within the study area as potentially jurisdictional, except where noted in the discussion below, pending a jurisdictional determination made by the U.S. Army Corps of Engineers, Central Coast Regional Water Quality Control Board, or other regulatory agencies.

Comments on the Draft EIR also indicated that portions of the proposed project that would occur within Fort Ord Dunes State Park will require permits, coordination, and need to conform to a pending Habitat Conservation Plan (HCP) being prepared by FORA. Consistency of the proposed project with the existing HMP and Draft HCP is discussed in Sections 4.6.2.2, 4.6.5.1, and 4.6.5.2 of this EIR/EIS.

Comments received on the Draft EIR concerned with local coastal planning issues requested that City of Marina Local Coastal Land Use Plan (LCLUP) primary and secondary habitat studies should be completed and these areas are mapped, and that the proposed project should be consistent with LCLUP. Information on consistencies of habitat studies is in Sections 4.6.1.4, Vegetation Communities and Wildlife Habitats, 4.6.1.5, Sensitive Natural Communities, and 4.6.1.6, Wetlands and Other Waters. Information on LCLUP consistency is in Table 4.6-4 in Section 4.6.2.3, Local Regulations, and in Section 4.8, Land Use, Land Use Planning, and Recreation. Comments on the Draft EIR also recommended analysis of the effect of extraction wells on coastal dune and ESHAs. Information on the zone of influence of the extraction wells is located in Section 4.4, Groundwater Resources.

Some comments expressed concern about the authority of the Lead Biologist designated in the mitigation measures presented in the Draft EIR, and the role of that individual relative to the project proponent. This is further described in Section 4.6.5.2 under Mitigation Measure 4-6.1a.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Update to the definition of listed special-status species to include those species listed as rare by the California Fish and Game Commission.*
- *Addition of the fully protected species category pursuant to the California Endangered Species Act.*
- *Addition of a description of the state and local definitions of Environmentally Sensitive Habitat Areas (ESHA) and the City of Marina Local Coastal Land Use Plan's (LCLUP) definition of primary and secondary habitat, a revision to the description of where ESHA and primary and secondary habitats would occur within the study area based on guidance from representatives from the California Coastal Commission (CCC), and maps of where potential ESHA occurs in the study area. Based on this revised description of where ESHA and primary and secondary habitats would occur, the Final EIR/EIS added a preliminary estimate of the acreage of ESHA (and primary or secondary habitat as applicable) that would be impacted from the proposed project. Revisions to Mitigation Measure 4.6-2b reflect these changes.*
- *Revision to the discussion of wetlands and waters of the U.S. and waters of the state to state that in the absence of a verified wetland delineation by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CCC, this document assumes that all potential jurisdictional features identified in surveys described in this document and by the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) may be considered jurisdictional by the USACE, RWQCB, and CCC.*
- *Addition of an analysis of potential impacts on globose dune beetle and Salinas kangaroo rat, which are identified as rare and endangered species in the City of Marina's LCLUP.*
- *Revisions to Table 4.6-2 (Special-Status Species with the Potential to Occur at Project Facilities) to move Pacific Grove clover, a state rare species, under the header of federal or state listed species.*
- *Addition of discussion of potential impacts from spreading the subsurface slant well drilling spoils within the subsurface slant well construction area.*

- *Revisions to some mitigation measures that have language such as "to the extent feasible" or "when feasible" or "to the extent practicable" to either remove that language or ensure the measure has a two-tiered approach to mitigate impacts.*

- *Revisions to some mitigation measures to: clarify that compensatory mitigation for maintenance of the subsurface slant wells would only be applied once and not every five years; add success criteria and performance standards to ensure that the mitigation component would reduce impacts to less than significant, and; add specific performance standards for restoration and compensation areas and methods for mitigating the impacts.*

- *Revision to Mitigation Measure 4.6-1e (Avoidance and Minimization Measures for Special-status Plants) to require a minimum 2:1 compensation ratio for permanent impacts, clarify the options for compensation, and include specific performance standards.*

- *Revisions to Mitigation Measure 4.6-1p (Control Measures for Spread of Invasive Plants) to state that, within U.S. Army-owned land, control measures for invasive species shall also conform to guidelines in the Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community (e.g., Section 9.2.4, Undesirable Plant Pests).*

- *Revision of Impact 4.6-C to include a general description of the amount of sensitive habitat that may be disturbed by the cumulative projects and to include the total acreage of impacts that the proposed project may have on sensitive habitat types.*

4.6.1 Setting/Affected Environment

4.6.1.1 Definitions

Project area refers to the area where all construction-related disturbances would occur. All permanent footprints of the proposed facilities are within the project area.

Study area encompasses a 50-foot buffer around the project area. A 50-foot buffer around the project area was established as the survey area to ensure biological resources within the project area and immediate adjacent vicinity were assessed for potential direct and indirect project impacts. Reconnaissance-level biological field surveys conducted for the proposed project were generally consistent with the study area, with some exceptions (described in Section 4.6.1.2, below).

Special-status biological resources include special-status plants and animals,[1] sensitive natural communities, wetlands, and other waters of the United States and of the state, as defined by the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Services (NMFS), the California Department of Fish and Wildlife (CDFW), the California Coastal Commission (CCC), the California Regional Water Quality Control Board (RWQCB), and the California Native Plant Society (CNPS).

[1] Several species known to occur within the general project area are accorded "special-status" because of their recognized rarity or vulnerability to habitat loss or population decline. Some of these species receive specific protection in federal and/or state endangered species legislation. Others have been designated as "sensitive species" or "species of special concern" on the basis of adopted policies of federal, state, or local resource agencies. These species are referred to collectively as "special-status species."

Special-status plant and animal species are defined as:

- Species listed under the Federal Endangered Species Act (FESA), Marine Mammal Protection Act, California Endangered Species Act (CESA), California Fish and Game Code, or Native Plant Protection Act as endangered, threatened, or depleted; species that are candidates or proposed for listing; or species that are designated as rare, species of special concern, or Fully Protected.
- Locally rare species defined in the CEQA Guidelines, which may include species that are designated as sensitive, declining, rare, or locally endemic, or as having limited or restricted distribution by various federal, state, and local agencies, organizations, and watch lists. This includes species ranked as California Rare Plant Rank (CRPR) 1A, 1B, 2A, 2B, 3 or 4 by the CNPS.[2]

Special-status plant and animal species are categorized as either listed or non-listed. Listed special-status species refers to those species that are listed as threatened or endangered under FESA and/or CESA or as rare by the California Fish and Game Commission. Non-listed special-status species refers to all other types of special-status species, as described above, that are not listed as threatened or endangered under FESA and/or CESA or as fully protected by the California Fish and Game Commission.

Sensitive natural community is a natural community that receives regulatory recognition from municipal, county, state, and/or federal entities, such as the CDFW in its California Natural Diversity Database (CNDDB), because the community is unique in its constituents, restricted in distribution, supported by distinctive soil conditions, and/or considered locally rare. (See Section 4.6.1.5 for a discussion of sensitive natural communities in the study area.)

Critical habitat is defined for listed species under FESA and consists of: (1) the specific areas within the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of FESA, on which are found those physical or biological features (constituent elements) that are essential to the conservation of the species and that may require special management considerations or protection; and (2) the specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of FESA, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Waters of the U.S. is defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) as:

(1) All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

(2) All interstate waters, including interstate wetlands;

[2] CNPS CRPR 1A is a plant that is presumed extinct in California. CRPR 1B is a plant that is rare, threatened, or endangered in California and elsewhere. CRPR 2A is presumed extirpated in California, CRPR 2B is a plant that is rare, threatened, or endangered in California but more common elsewhere. CRPR 3 is a plant about which more information is needed. CRPR 4 is a plant of limited distribution.

(3) All other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce, including any such waters that are or could be used by interstate or foreign travelers for recreational or other purposes; or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the U.S. under the definition;

(5) The tributaries of waters identified in numbers (1) through (4), above;

(6) Territorial seas; and

(7) Wetlands located adjacent to waters (other than waters that are themselves wetlands) identified in numbers (1) through (6), above.

Federal "Other Waters" is a type of water of the U.S. It includes all waters of the U.S. described above, except for features that meet the federal definition of a wetland.

Waters of the state are defined differently by three state agencies: RWQCB, CDFW, and CCC. Waters of the state are more broadly defined than waters of the U.S. as any surface water or groundwater, including saline waters, within the boundaries of the state of California. Boundaries of waters of the state are often determined on a case-by-case interpretation of data by the state agencies. The definition of waters of the state for each state agency is described in Section 4.6.2.2, State Regulations.

Environmentally Sensitive Habitat Area (ESHA) is a designated protected area within the Coastal Zone as defined in the California Coastal Act. The detailed definition of ESHAs is provided in Section 4.6.1.5, Sensitive Natural Communities and Environmentally Sensitive Habitat Areas.

4.6.1.2 Information Sources and Survey Methodology

The descriptions of vegetation communities, wildlife habitats, and potentially jurisdictional waters in this section are based on reconnaissance-level field surveys,[3] focused and protocol level field surveys,[4] review of available biological resources survey reports encompassing portions of the study area, review of relevant literature, and review of databases and inventories maintained by resource agencies. The impact analysis described in this section is based on special-status species observations available to Environmental Science Associates (ESA) as of October 2017.

The study area was surveyed by ESA, Arcadis, and AECOM[5] between 2012 and 2016. ESA biologists conducted reconnaissance-level field surveys of previously proposed pipeline alignments and facility sites on May 17, June 5, and September 20, 2012 (ESA, 2012); March 6, 7, and 26,

[3] Reconnaissance-level field surveys are conducted for the purpose of generally describing the vegetation communities present within a project area and assessing the potential for special-status species to occur within the project area plus a 50-foot buffer (i.e., the survey area).

[4] Focused surveys are conducted to determine the presence or absence of a certain species or habitat type. Protocol-level surveys are a type of focused survey using specific survey protocol as defined by a regulatory agency.

[5] URS conducted the surveys in September 2013, March 2014, April 2014, and June 2014, but AECOM acquired URS in 2014.

2013, and May 9, 2013 (ESA, 2013); and April 24, 2014, and June 25, 2014 (ESA, 2014). Updated surveys for the majority of proposed pipeline alignments and facility components that are included as part of the proposed project analyzed in this EIR/EIS were conducted by ESA biologists on March 23, 24, and 25; April 7; and May 20, 21, and 22, 2016 (ESA, 2016). AECOM conducted focused and protocol-level surveys, including wetland delineation mapping, of the proposed pipeline and facility sites on September 3 through 5, 2013; March 17 through 21, April 21 through 25, May 20 through 22, and June 11 through 20, 2014; and March 17 and 18, April 7 through 9, June 10, June 15 through 18, 2015, and March 14 through 18, April 25 through 29, June 6 through 10, June 16, and June 17, 2016 (URS, 2014a, 2014b; AECOM, 2016). The area where water produced during development of the ASR-5 and ASR-6 Wells was not accessed because of unexploded ordnance restrictions, but the majority of the site was visually surveyed from General Jim Moore Boulevard.

During the 2016 surveys, ESA confirmed plant communities identified (inclusive of vegetation alliance) and wetland delineation mapping conducted by AECOM between 2013 and 2016 and by ESA between 2012 and 2015. ESA biologists also identified and mapped any new plant communities, habitat types, and potentially jurisdictional wetlands and drainages within the study area.

For this analysis, ESA biologists documented plant and wildlife species observed during reconnaissance-level, protocol-level, and focused surveys and evaluated the potential for sensitive natural communities, special-status plant and animal species, and wildlife movement corridors to occur within the study area.

Other key references used in the preparation of this section include, but are not limited to, aerial photographs, topographic maps, soil survey maps, geological maps, USFWS National Wetland Inventory (NWI) maps (USFWS, 2016b), climatic data, project plans, and the following:

- H. T. Harvey & Associates, 2005. *California American Water Company Monterey County Coastal Water Project Terrestrial Biological Resources Phase II Report*.
- Jones & Stokes, 2006. *Final Environmental Impact Report/Environmental Assessment for the Monterey Peninsula Water Management District Phase 1 Aquifer Storage and Recovery Project.* State Clearinghouse No. 2004121065. Prepared for the Monterey Peninsula Water Management District. Certified August 21, 2006.
- Fort Ord Reuse Authority, 2012*. Draft Installation-Wide Multispecies Habitat Conservation Plan*. Prepared by ICF International. March 2012.
- "Monterey Desal rare plant survey" email from Martha Lowe, Environmental Science Associates, to Erin Harwayne, Denise Duffy & Associates (ESA, 2010).
- Special-status plant surveys conducted on the CEMEX site on April 24, 2014 by ESA and Zander Associates (Zander Associates, 2014).
- Special-status plant and animal surveys, wetland delineation mapping, and vegetation mapping conducted in the study area between 2013 and 2016 (AECOM, 2016).
- AECOM, 2017. *Jurisdictional Delineation for California American Water Monterey Peninsula Water Supply Project*. April, 2017.

Other sources of information include: applicable literature on biological resources in the Monterey region; the Monterey County General Plan (Monterey County, 2010); the CNPS on-line Electronic Inventory (CNPS, 2016); the USFWS official list of species occurring in Monterey County (USFWS, 2016a); the CDFW's CNDDB special-status species records for the Moss Landing, Marina, Salinas, Seaside, Spreckels, Carmel Valley, Monterey, Mount Carmel, and Prunedale United States Geological Survey (USGS) 7.5-minute topographic quadrangles (CDFW, 2016); and Calflora (2016).

4.6.1.3 Regional Terrestrial Biological Resources

Monterey County is situated at the confluence of the San Francisco Bay, Central Coast, and South Coast Range floristic provinces. As a result, the flora of Monterey County is some of the most diverse in California. Monterey County represents the southern and northern population range limits of many rare species endemic to the northern and southern portions of the state, respectively.

The study area extends from Tembladero Slough to the Carmel River valley to the south. The proposed Castroville Pipeline traverses agricultural fields and a portion of the Salinas River. Some segments of the proposed pipeline alignments are located on stabilized back dune slopes on the west side of Highway 1, within incorporated areas generally bordering Highway 1 to the east. The proposed slant well site is located within the CEMEX active mining area in northern Marina. In the vicinity of the proposed ASR facilities and other proposed pipeline alignments, the former Fort Ord military base comprises extensive areas of relatively undisturbed maritime chaparral, a unique plant community associated with stabilized Pleistocene sand dunes. The proposed interconnection improvements for the Highway 68 satellite water systems are located within low-density residential and business areas in the forested hillsides above the Carmel River Valley.

Most of the study area is within 5 miles of the Pacific Ocean on level to gently sloped topography. With the exception of the proposed interconnection improvements along the Highway 68 corridor, which range between 400 and 800 feet in elevation, elevations within the other portions of the study area range from sea level to approximately 350 feet. Average annual precipitation in the city of Monterey is 20 inches; annual temperatures average 65 degrees Fahrenheit (NOAA, 2014).

4.6.1.4 Vegetation Communities and Habitat Types

The vegetation/habitat classification presented herein is based on *A Manual of California Vegetation* (Sawyer et al., 2009) and habitat mapping methods used in the *CalAm Coastal Water Project Final Environmental Impact Report* (CPUC, 2009). The majority of the study area was mapped in the field using vegetation alliances described in *A Manual of California Vegetation*. This mapping was conducted by AECOM between 2013 and 2015 in support of federal and state regulatory permit applications (AECOM, 2016). ESA verified this survey data in the field in 2016. For the purposes of this EIR/EIS, these vegetation alliances were combined into broader vegetation community types that correlate with wildlife habitat types. The description of the general vegetation types includes a listing of the finer-scale alliances that are either largely consistent with them or that are included within them. **Table 4.6-1** summarizes the broader vegetation types and their included alliances, and crosswalks these with wildlife habitats. This

method supports consistency between this document, which focuses on the broader vegetation community types, and future regulatory permit applications, which may rely on vegetation alliance or wildlife habitat categories.

TABLE 4.6-1
VEGETATION COMMUNITY AND HABITAT TYPE CROSSWALK

Vegetation Community/ Habitat Type	Vegetation Alliance[a]	Wildlife Habitat[b]
Non-native Grassland	Annual brome grasslands California annual grassland	Annual Grassland
Central Dune Scrub	California buckwheat scrub California coffee berry scrub California sagebrush scrub Deerweed scrub Dune mat Island buckwheat scrub Sandmat manzanita chaparral Silver dune lupine-mock heather scrub	Coastal Scrub
Central Maritime Chaparral	Maritime chaparral Sandmat manzanita chaparral Silver dune lupine-mock heather scrub Deerweed scrub	Mixed Chaparral
Northern Coastal Scrub	California sagebrush scrub California sagebrush-California buckwheat Scrub California sagebrush-California black sage Scrub Coastal brambles Deerweed scrub Poison oak scrub Yellow bush lupine scrub	Coastal Scrub
Coyote Brush Scrub	Coyote Brush Scrub	Coastal Scrub
Riparian Woodland and Scrub	Arroyo willow thickets Box-elder forest Fremont cottonwood woodland Shining willow groves	Valley Foothill Riparian
Freshwater Marsh	California bulrush marsh Cattail marshes Soft rush marsh Knotweed marsh	Freshwater Emergent Wetland
Coast Live Oak Woodland	Coast Live Oak woodland	Coastal Oak Woodland
Open Water	None	Riverine
Ice Plant Mats	Ice Plant Mats	None
Agricultural	None	Cropland
Ruderal	Perennial pepperweed patches	None
Developed/Landscaped	Eucalyptus groves Acacia shrubland Monterey cypress stands Monterey pine woodland	Urban Barren Eucalyptus

NOTES:
[a] Per protocol-level and focused surveys conducted by AECOM, which used the classifications from *A Manual of California Vegetation* [Sawyer et al., 2009]
[b] Classifications from *A Guide to Wildlife Habitats of California* [Mayer and Laudenslayer, 1988)

Figures 4.6-1a through **4.6-1o** provide maps of vegetation alliances, listed within their respective vegetation community/habitat type as described below, within the study area. The figures are intended as a general guide; additional and more detailed information is included in the discussion below.

Vegetation communities and habitat types within the project area include: non-native grassland, central dune scrub, central maritime chaparral, northern coastal scrub, coyote brush scrub, riparian woodland and scrub, freshwater marsh, coast live oak woodland, open water (includes pond, channel, river), ice plant mats, agricultural, ruderal, and developed/landscaped.

Non-Native Grassland

Non-native grassland occurs at various locations throughout the study area. It occurs as monotypic stands and also interspersed with several other vegetation communities, such as oak woodland, central maritime chaparral, central dune scrub, ice plant mats, and ruderal areas. It can support dominant plant species of other communities, and can provide habitat for special-status species that occur in these adjacent habitats. The largest expanses of non-native grassland within the project area occur north of the intersection of Del Monte Boulevard and Highway 1 in Marina, along the Monterey Peninsula Recreational Trail in the vicinity of Reservation Road, north of the intersection of Highway 1 and Nashua Road, and at and adjacent to the existing Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant, including the proposed Desalination Plant site and other lands north of Charles Benson Road. Within the study area this community comprises a variety of non-native annual grasses, introduced weedy forbs, and a few native grasses and forbs. Common dominants of non-native grassland in the study area include Italian ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), annual fescue (*Festuca myuros*), hare barley (*Hordeum murinum* ssp. *leporinum*), and wild oat (*Avena fatua*). Associated forbs include filaree (*Erodium botrys*), English plantain (*Plantago lanceolata*), wild radish (*Raphanus sativus*), shortpod mustard (*Hirschfeldia incana*), prickly sow thistle (*Sonchus asper*), deerweed (*Acmispon glaber*), and iceplant (*Carpobrotus edulis, C. chilensis*). Occasional native grasses such as purple needlegrass (*Stipa pulchra*) and creeping wildrye (*Elymus triticoides*) also occur. Some shrubs and trees, including the native coyote brush (*Baccharis pilularis*), mock heather (*Ericameria ericoides*), Monterey cypress (*Hesperocyparis macrocarpa*), and non-native eucalyptus (*Eucalyptus globulus,* and others), also are found sporadically within the grasslands. In general, the diversity of plant species within non-native grassland varies greatly with levels of disturbance. Coastal prairie, a rare and sensitive plant community of relatively undisturbed sites and characterized by a high proportion of native perennial grasses, and a diversity of native forbs and several special-status species, was not observed within the study area.

Non-native grassland includes the following vegetation alliances as mapped by AECOM (2016):

- Annual brome grasslands (*Bromus* [*diandrus, hordeaceus*] - *Brachypodium distachyon* Herbaceous Semi-Natural Alliance)
- California annual grassland

Biological Study Area

Non-native Grassland
- California annual grassland

Central Dune Scrub
- Central Dune Scrub
- California sagebrush scrub
- Silver dune lupine-mock heather scrub
- Dune mat
- California buckwheat scrub
- Sandmat manzanita chaparral

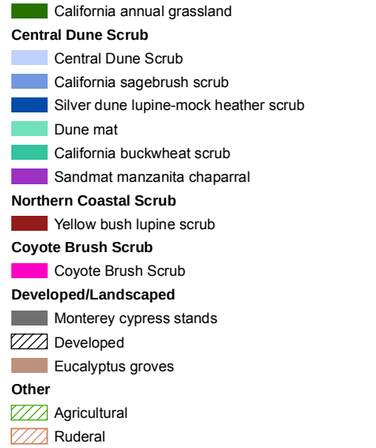
Northern Coastal Scrub
- Yellow bush lupine scrub

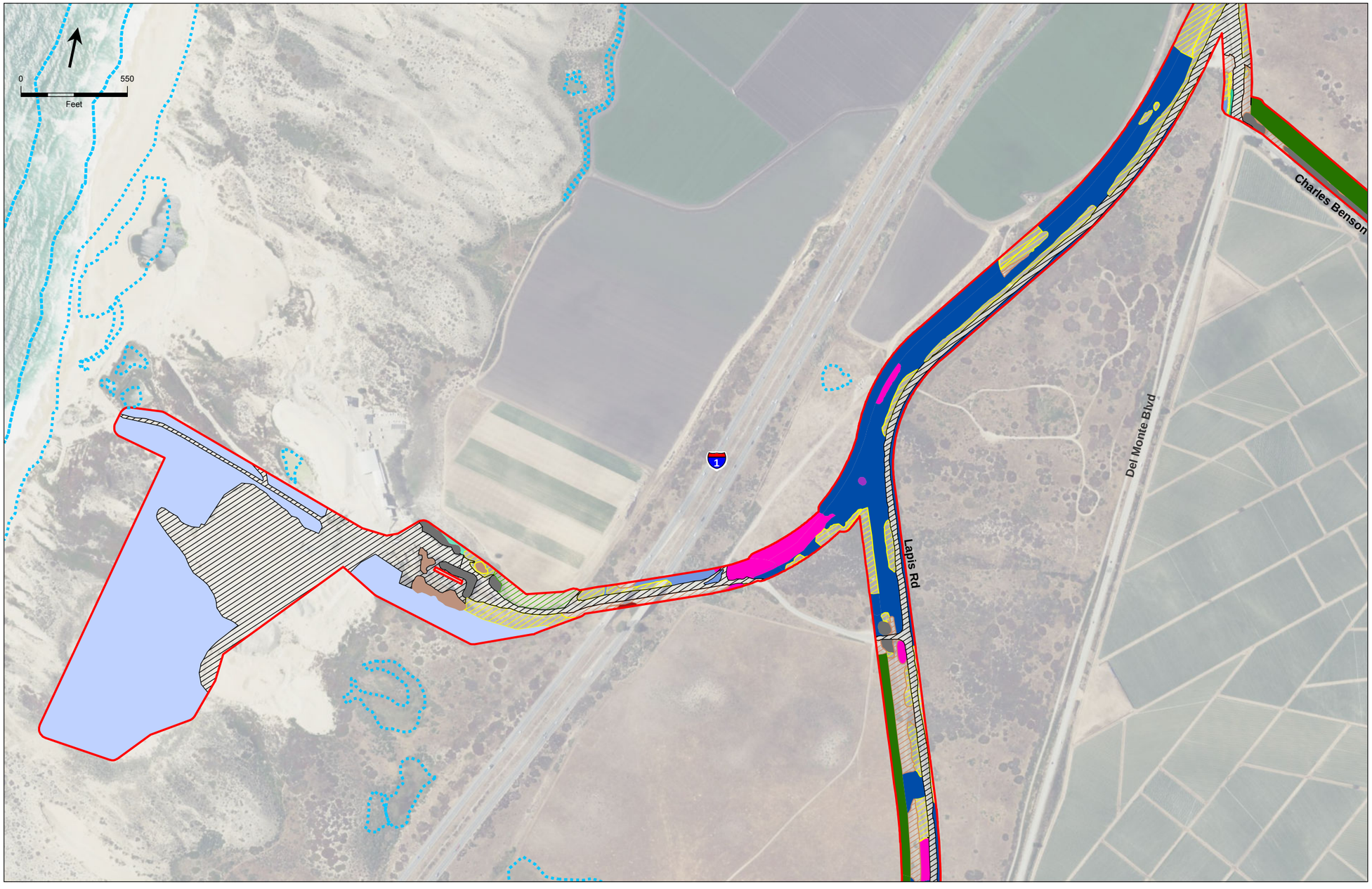
Coyote Brush Scrub
- Coyote Brush Scrub

Developed/Landscaped
- Monterey cypress stands
- Developed
- Eucalyptus groves

Other
- Agricultural
- Ruderal
- Ice Plant mats

Potential Wetlands and Waters
- Potentially USACE, RWQCB, CDFW, and/or CCC Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1a

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Non-native Grassland

California annual grassland

Northern Coastal Scrub

Yellow bush lupine scrub

Coyote Brush Scrub

Coyote Brush Scrub

Developed/Landscaped

Landscaped shrubbery

Monterey cypress stands

Developed

Monterey pine woodland

Eucalyptus groves

Other

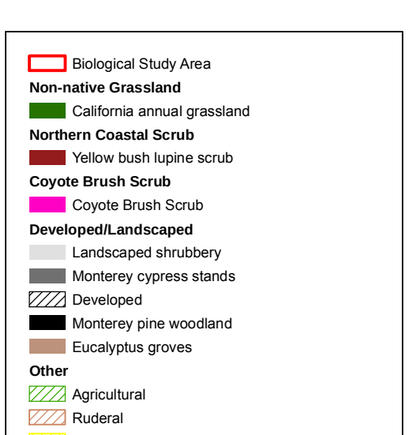
Agricultural

Ruderal

Ice Plant mats

Potential Wetlands and Waters

Potentially USACE, RWQCB, and/or CDFW Jurisdictional



SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1b

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1c

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Non-native Grassland
- California annual grassland

Central Dune Scrub
- California sagebrush scrub
- Silver dune lupine-mock heather scrub
- Island buckwheat scrub

Coyote Brush Scrub
- Coyote Brush Scrub

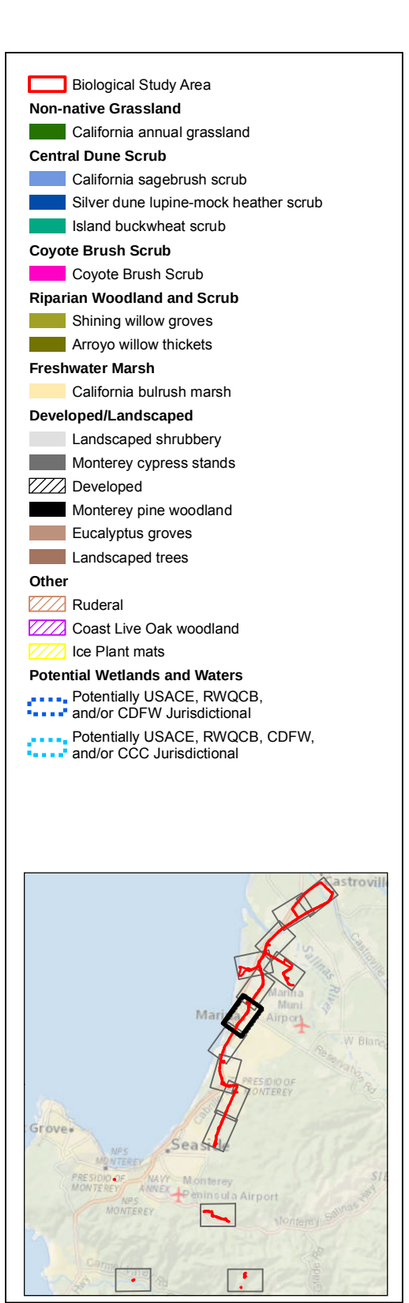
Riparian Woodland and Scrub
- Shining willow groves
- Arroyo willow thickets

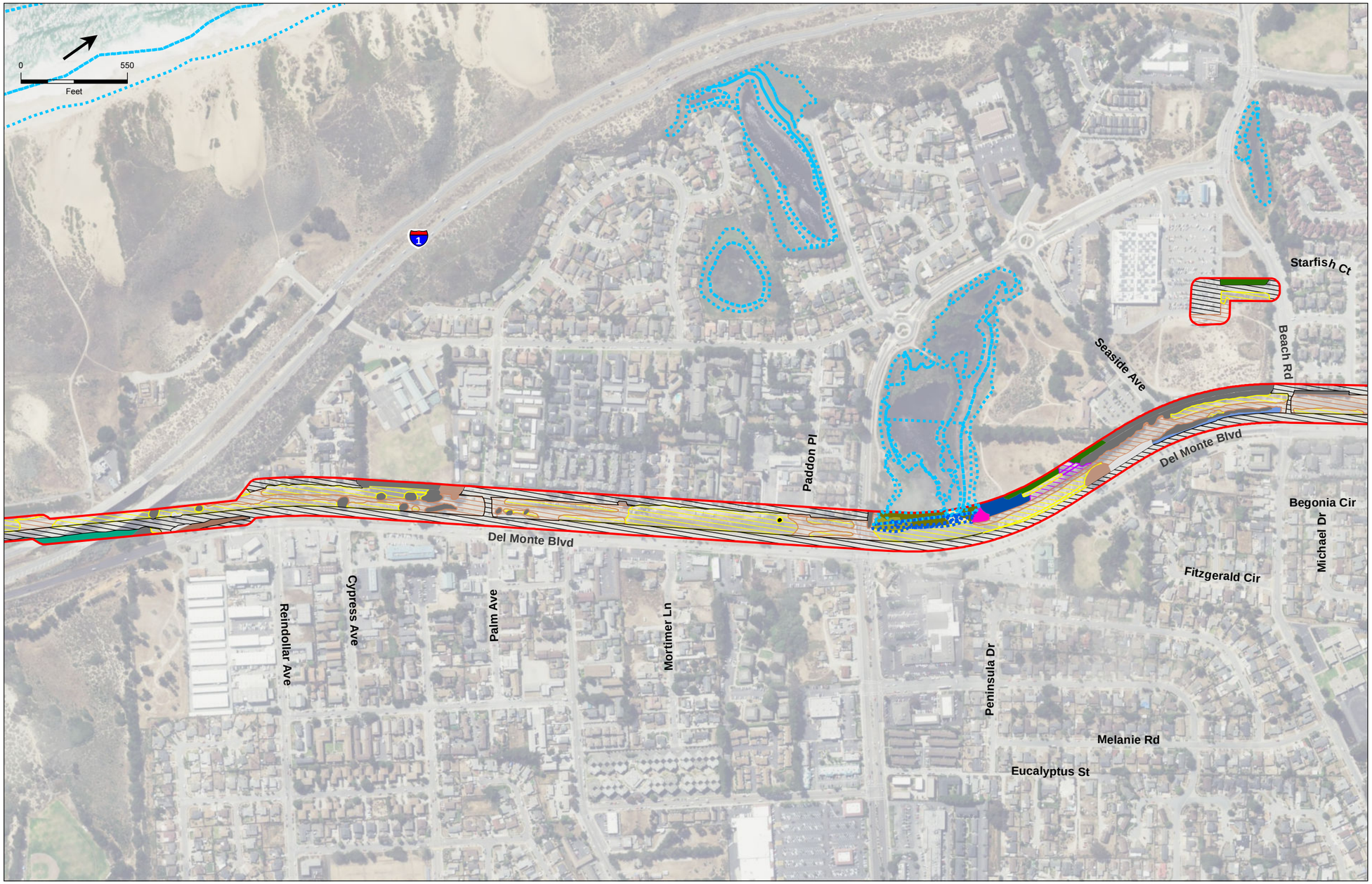
Freshwater Marsh
- California bulrush marsh

Developed/Landscaped
- Landscaped shrubbery
- Monterey cypress stands
- Developed
- Monterey pine woodland
- Eucalyptus groves
- Landscaped trees

Other
- Ruderal
- Coast Live Oak woodland
- Ice Plant mats

Potential Wetlands and Waters
- Potentially USACE, RWQCB, and/or CDFW Jurisdictional
- Potentially USACE, RWQCB, CDFW, and/or CCC Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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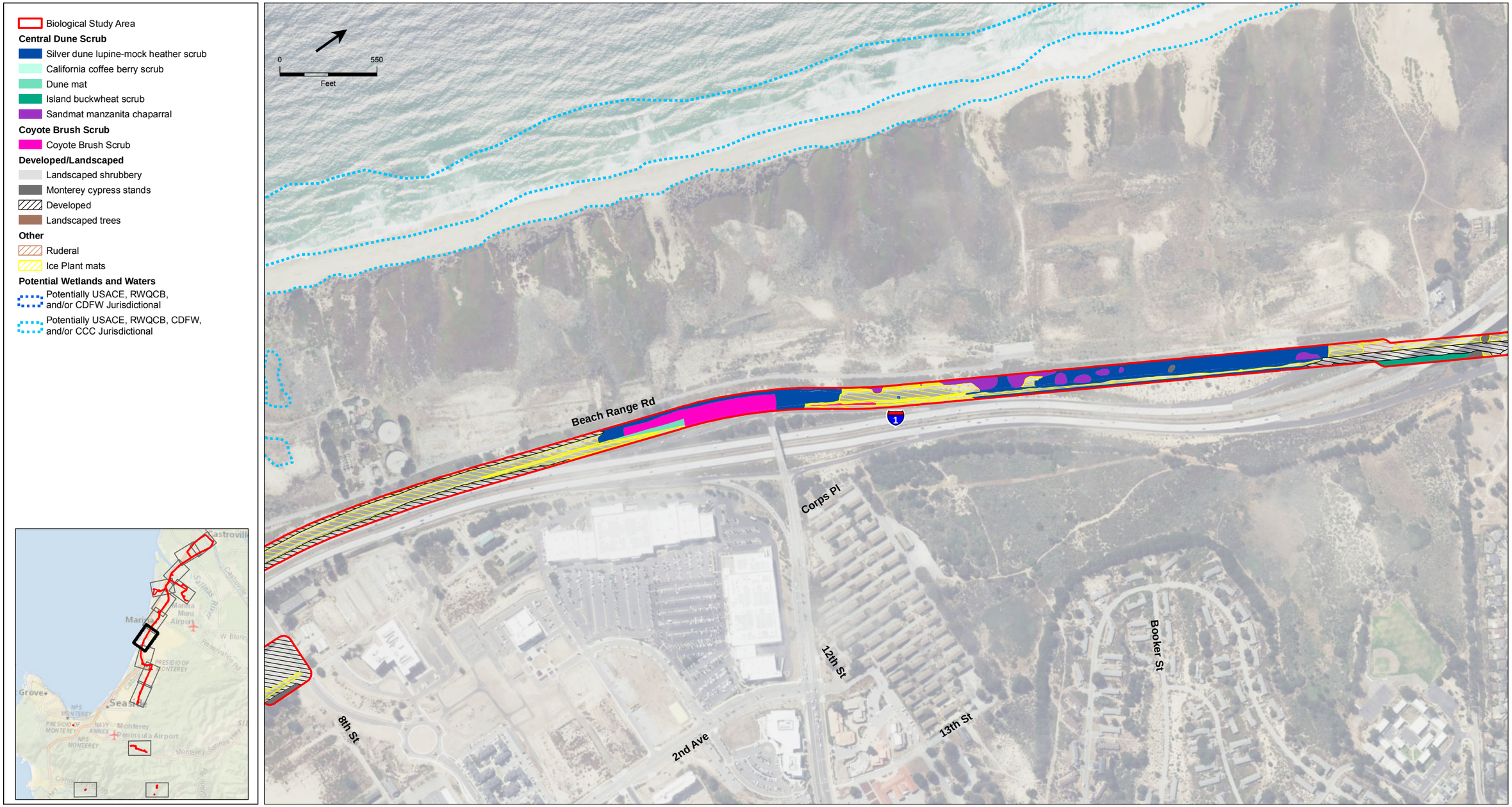
Figure 4.6-1d
Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area



SOURCE: ESA, 2016,AECOM, 2016

Figure 4.6-1e
Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area
US Army Land

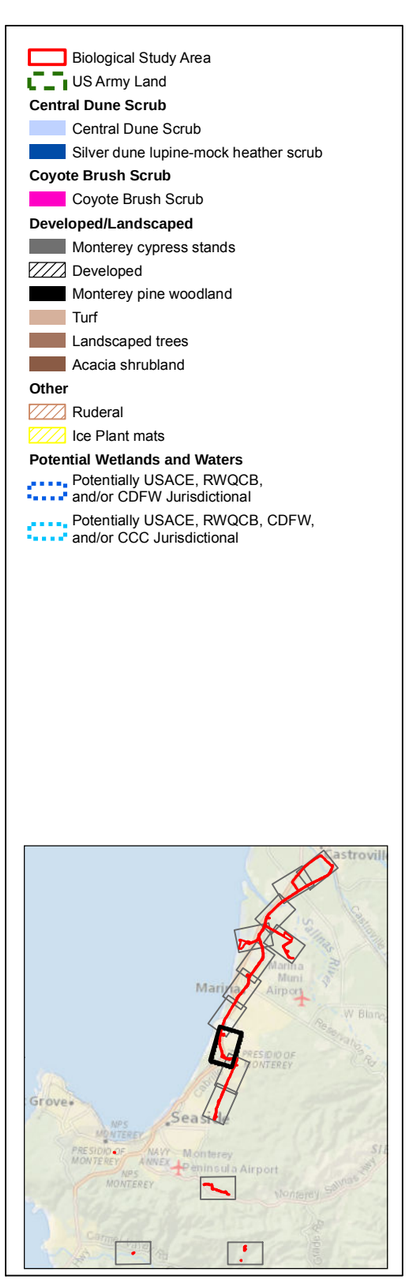
Central Dune Scrub
- Central Dune Scrub
- Silver dune lupine-mock heather scrub

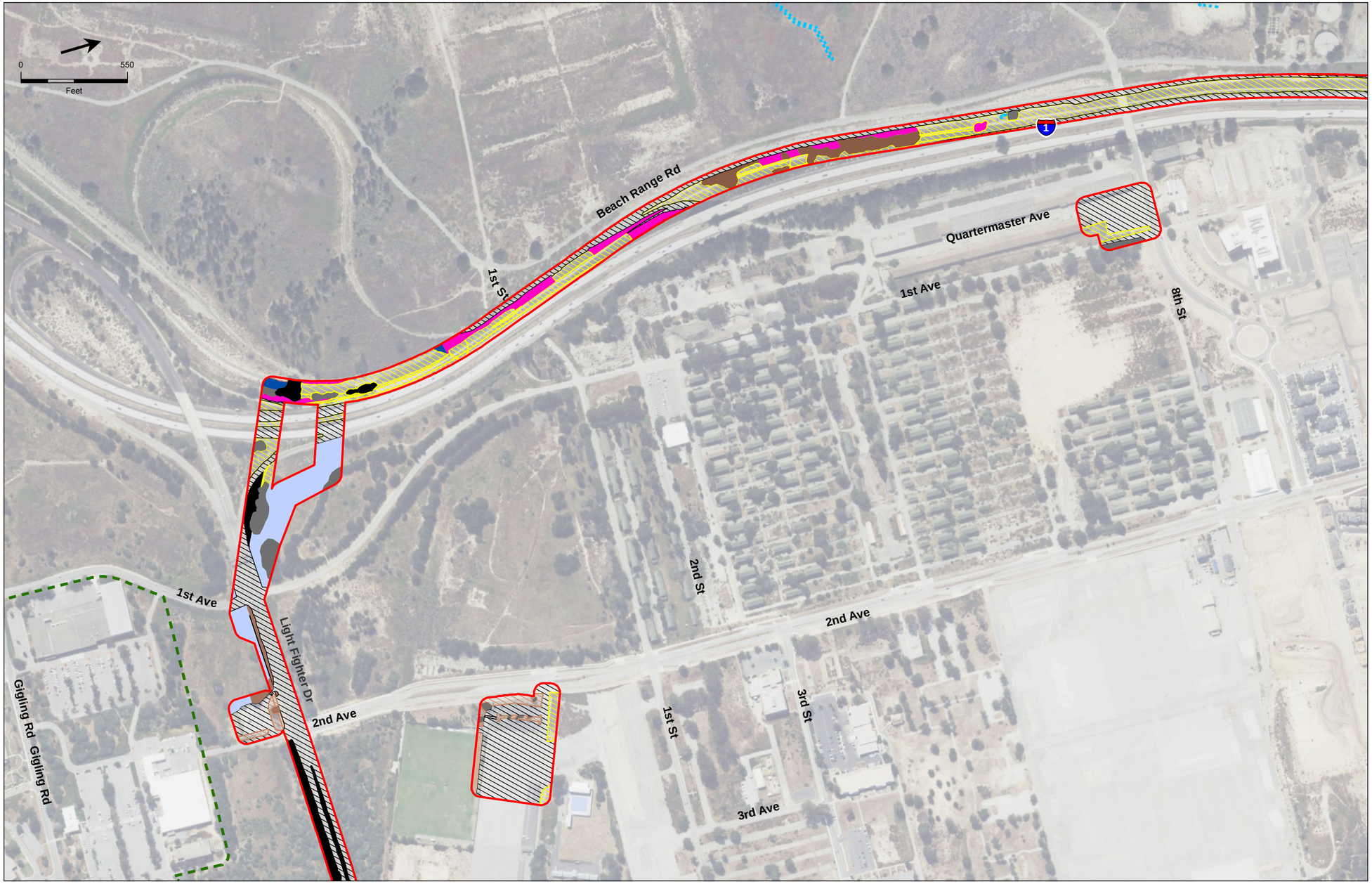
Coyote Brush Scrub
- Coyote Brush Scrub

Developed/Landscaped
- Monterey cypress stands
- Developed
- Monterey pine woodland
- Turf
- Landscaped trees
- Acacia shrubland

Other
- Ruderal
- Ice Plant mats

Potential Wetlands and Waters
- Potentially USACE, RWQCB, and/or CDFW Jurisdictional
- Potentially USACE, RWQCB, CDFW, and/or CCC Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016; US ARMY, 2016

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Figure 4.6-1f
Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area
US Army Land

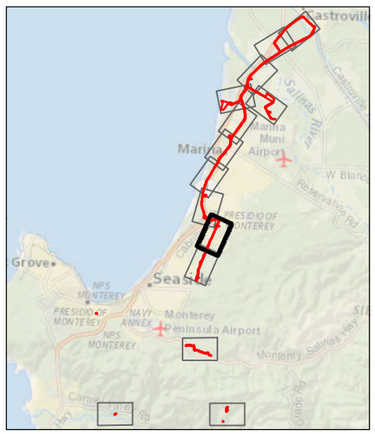
Central Dune Scrub
Central Dune Scrub

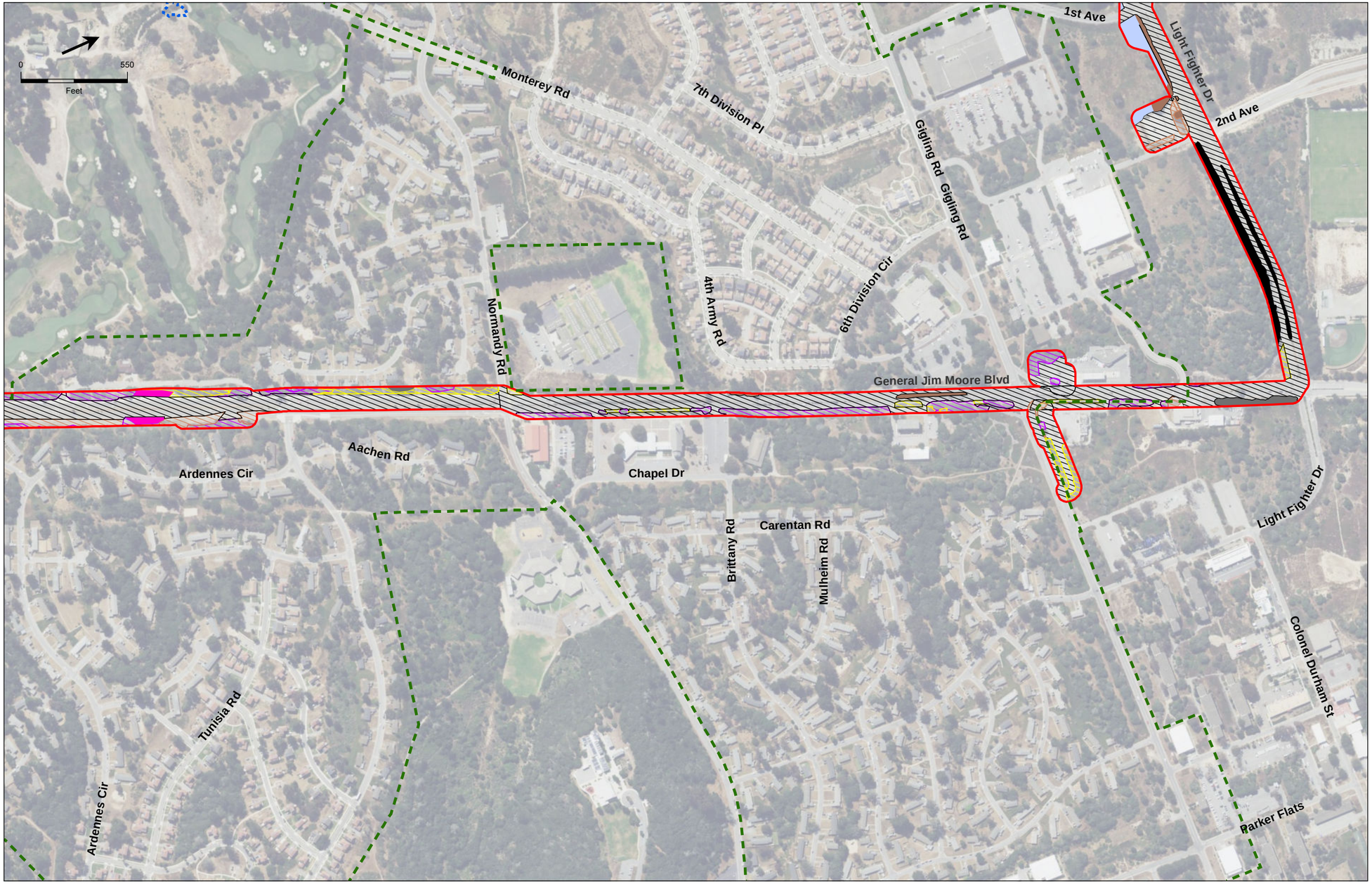
Coyote Brush Scrub
Coyote Brush Scrub

Developed/Landscaped
Landscaped shrubbery
Monterey cypress stands
Developed
Monterey pine woodland
Eucalyptus groves
Landscaped trees

Other
Ruderal
Coast Live Oak woodland
Ice Plant mats

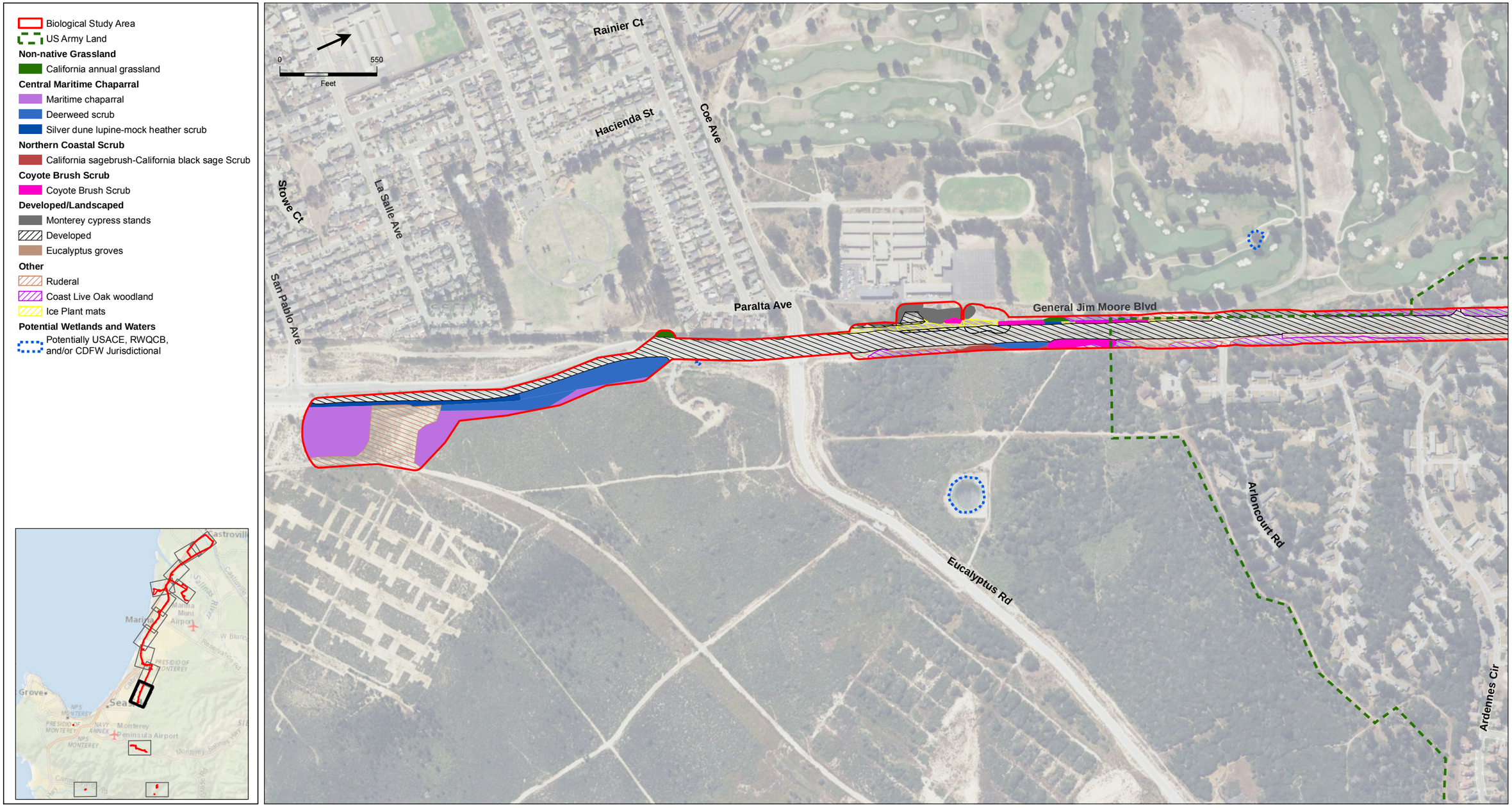
Potential Wetlands and Waters
Potentially USACE, RWQCB, and/or CDFW Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016; US ARMY, 2016

Figure 4.6-1g
Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area



SOURCE: ESA, 2016,AECOM, 2016; US ARMY, 2016

Figure 4.6-1h
Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

habitats_020918

Non-native Grassland
- California annual grassland

Central Dune Scrub
- Central Dune Scrub
- California sagebrush scrub
- Deerweed scrub
- Silver dune lupine-mock heather scrub

Central Maritime Chaparral
- Sandmat manzanita chaparral

Northern Coastal Scrub
- California sagebrush-California buckwheat Scrub

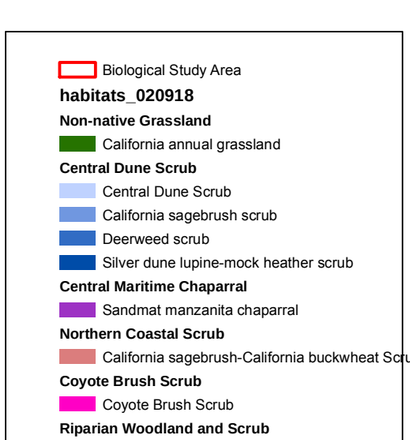
Coyote Brush Scrub
- Coyote Brush Scrub

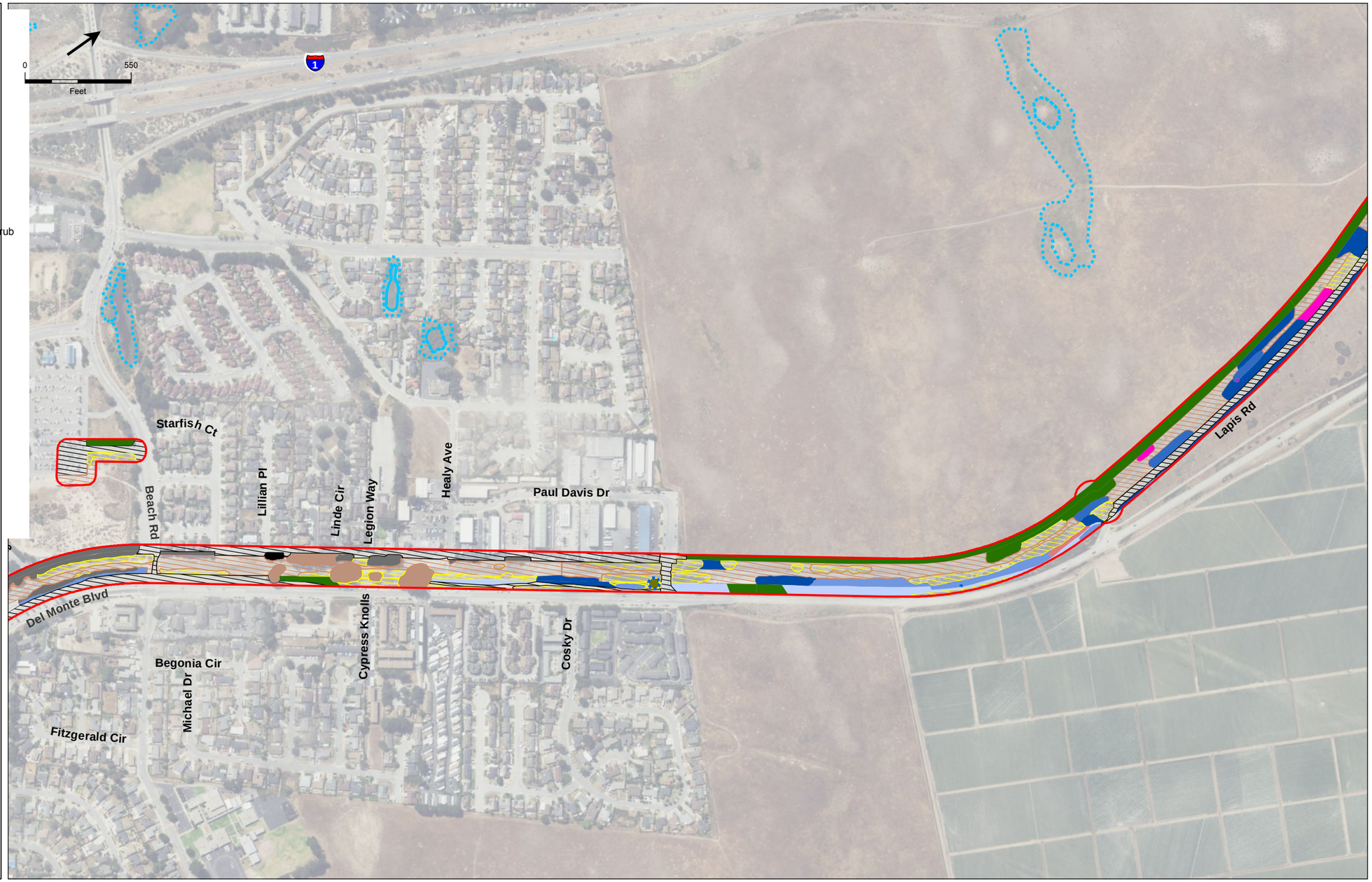
Riparian Woodland and Scrub
- Arroyo willow thickets

Developed/Landscaped
- Landscaped shrubbery
- Monterey cypress stands
- Developed
- Monterey pine woodland
- Eucalyptus groves

Other
- Ruderal
- Ice Plant mats

Potential Wetlands and Waters
- Potentially USACE, RWQCB, and/or CDFW Jurisdictional
- Potentially USACE, RWQCB, CDFW, and/or CCC Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1j

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Non-native Grassland

California annual grassland

Riparian Woodland and Scrub

Arroyo willow thickets

Developed/Landscaped

Landscaped shrubbery

Developed

Other

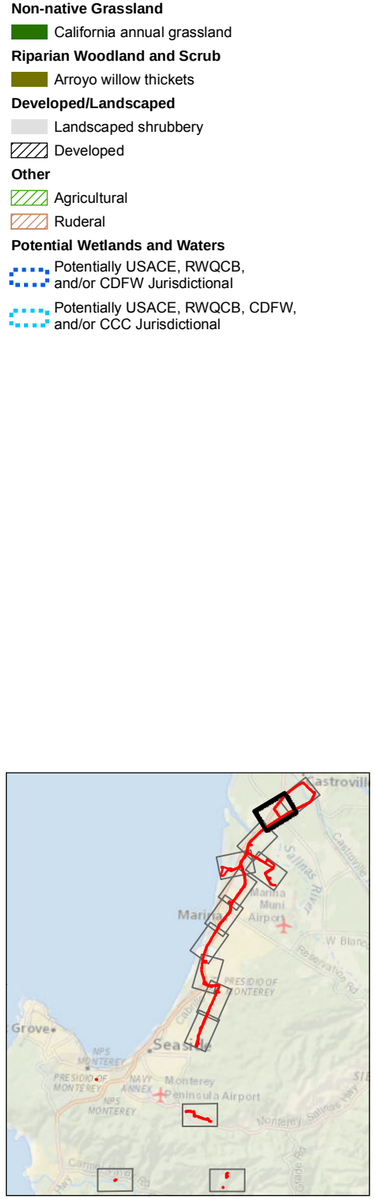
Agricultural

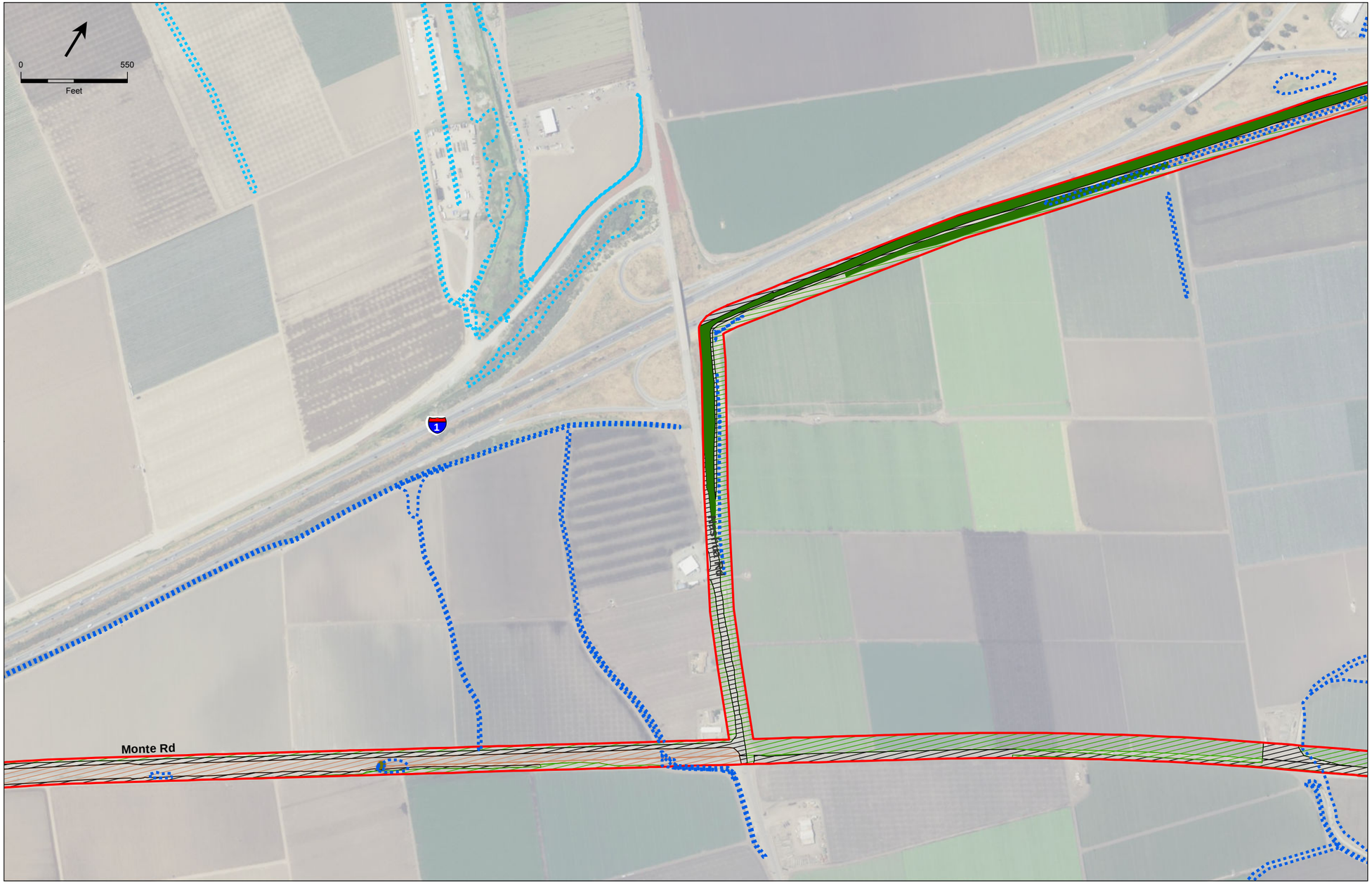
Ruderal

Potential Wetlands and Waters

Potentially USACE, RWQCB, and/or CDFW Jurisdictional

Potentially USACE, RWQCB, CDFW, and/or CCC Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1k

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Non-native Grassland
- California annual grassland

Coyote Brush Scrub
- Coyote Brush Scrub

Riparian Woodland and Scrub
- Arroyo willow thickets

Freshwater Marsh
- California bulrush marsh
- Soft rush marsh
- Knotweed Marsh

Developed/Landscaped
- Landscaped shrubbery
- Monterey cypress stands
- Developed
- Eucalyptus groves
- Landscaped trees

Other
- Agricultural
- Open water

Ruderal
- Ruderal
- Perennial pepperweed patches

Potential Wetlands and Waters
- Potentially USACE, RWQCB, and/or CDFW Jurisdictional

SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1l

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Potential Wetlands and Waters

Potentially USACE, RWQCB, and/or CDFW Jurisdictional

Non-native Grassland

California annual grassland

Northern Coastal Scrub

California sagebrush scrub

Coyote Brush Scrub

Coyote Brush Scrub

Developed/Landscaped

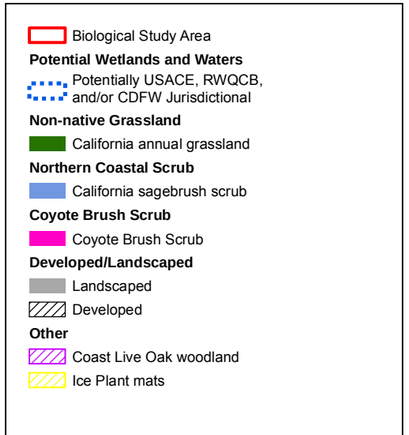
Landscaped

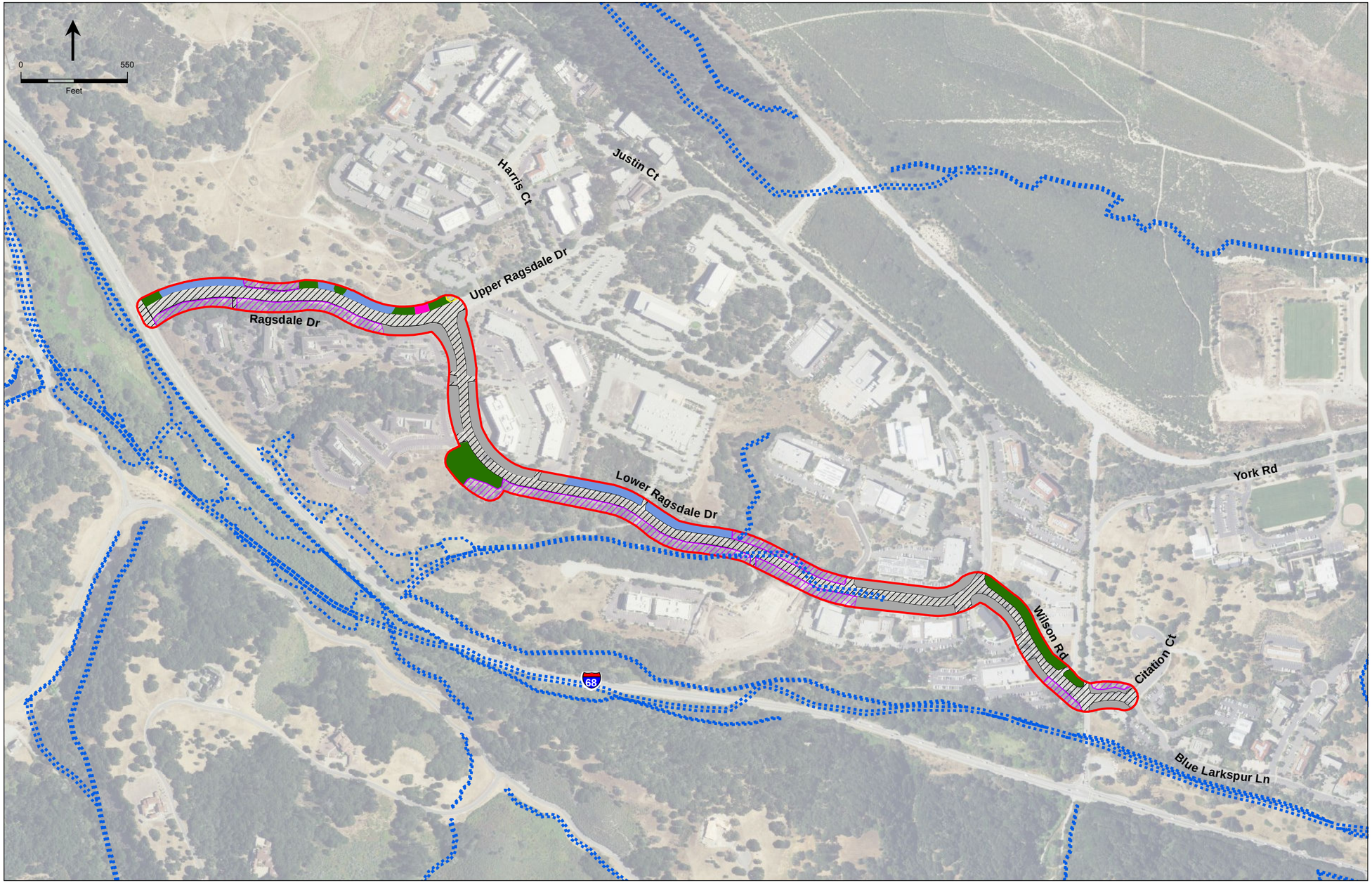
Developed

Other

Coast Live Oak woodland

Ice Plant mats





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1m

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Northern Coastal Scrub

California sagebrush scrub

Developed/Landscaped

Developed

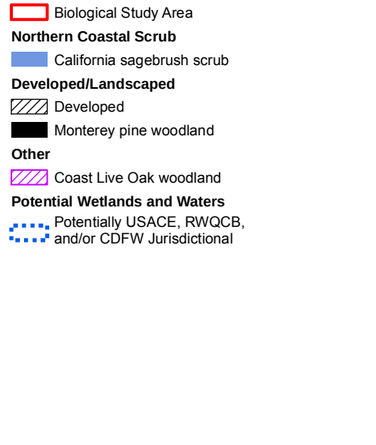
Monterey pine woodland

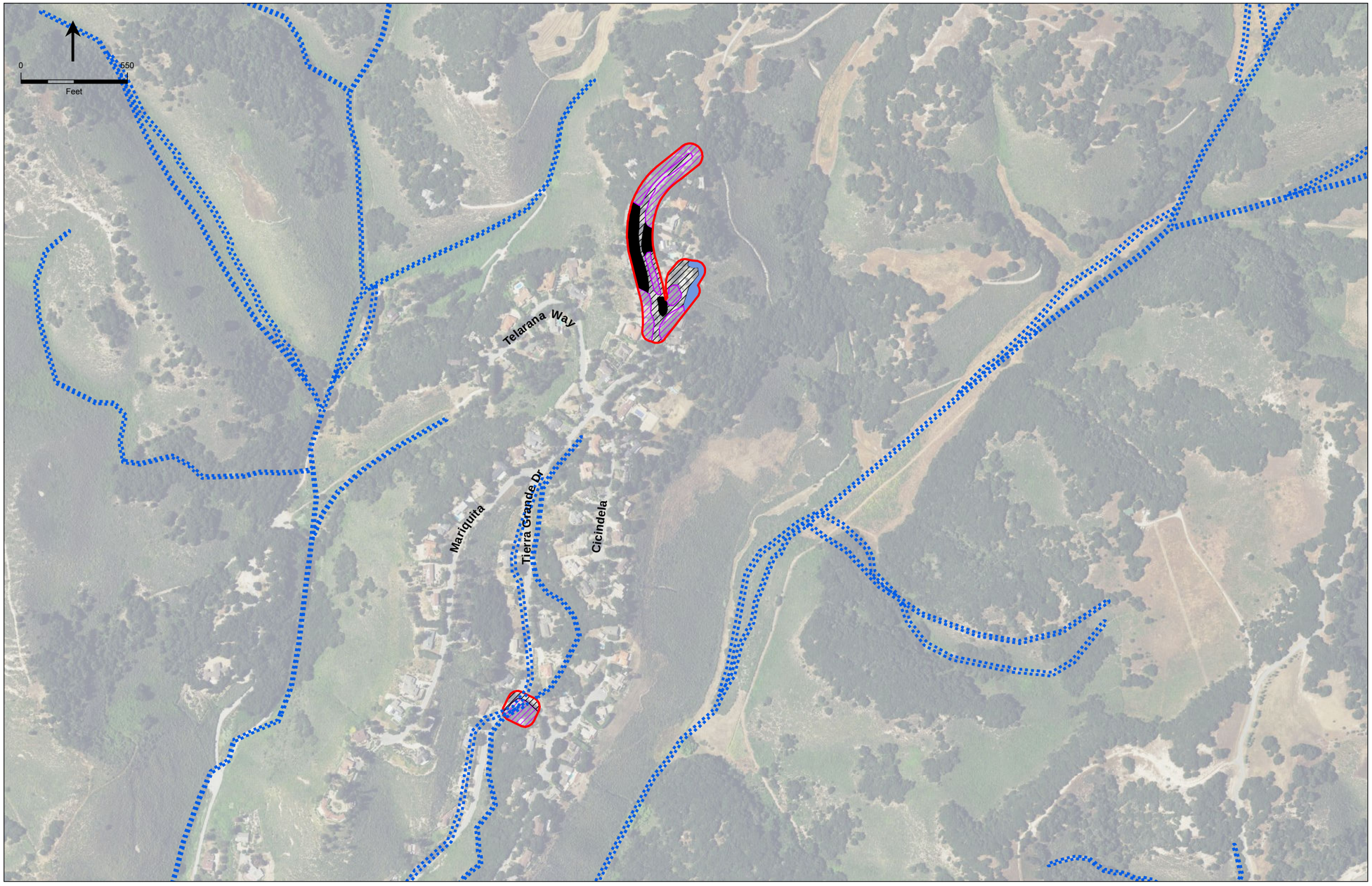
Other

Coast Live Oak woodland

Potential Wetlands and Waters

Potentially USACE, RWQCB, and/or CDFW Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1n

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Biological Study Area

Non-native Grassland

California annual grassland

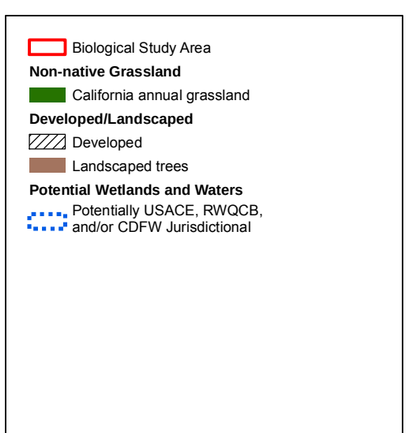
Developed/Landscaped

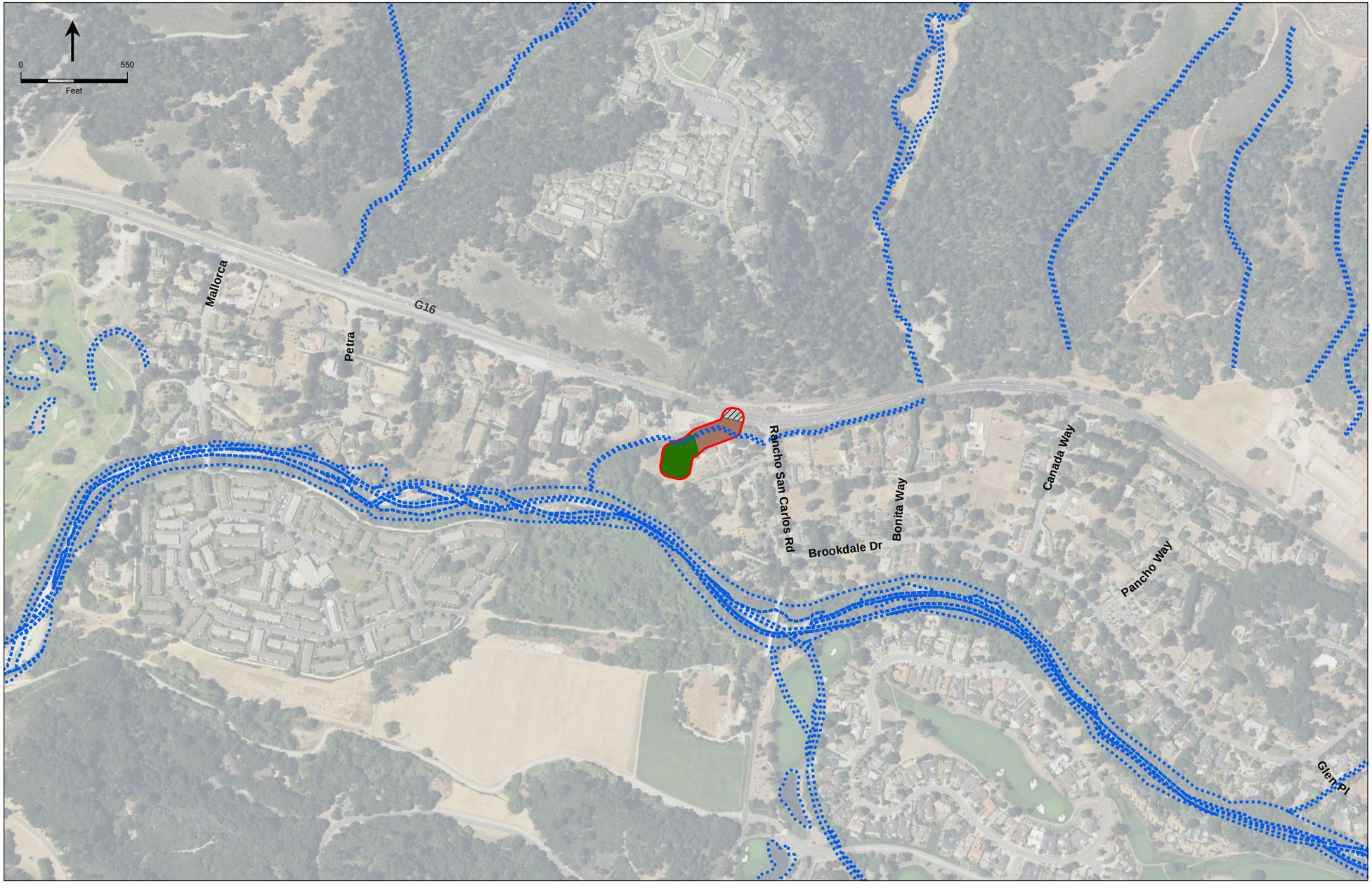
Developed

Landscaped trees

Potential Wetlands and Waters

Potentially USACE, RWQCB, and/or CDFW Jurisdictional





SOURCE: ESA, 2016,AECOM, 2016

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Figure 4.6-1o

Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area

Annual grassland provides little cover for wildlife, yet numerous species forage, and several species breed, in this community. Small mammals such as deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi*), and Botta's pocket gophers (*Thomomys bottae*) are common residents in annual grasslands in Monterey County. Larger mammals such as coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) occasionally forage in this community as well.

A variety of birds use annual grasslands as foraging habitat, including savannah sparrows (*Passerculus sandwichensis*), horned larks (*Eremophila alpestris*), western meadowlarks *(Sturnella neglecta*), lesser goldfinches *(Carduelis psaltria*), and barn swallows (*Hirundo rustica*). Western meadowlarks, horned larks, and mourning doves (*Zenaida macroura*) may nest in grasslands in the project area. Raptors, such as red-tailed hawks (*Buteo jamaicensis*) and northern harriers *(Circus cyaneus*), commonly forage over grasslands as well. Some species of raptors, such as red-tailed hawks and white-tailed kites (*Elanus leucurus*), may occasionally nest in trees within the grassland. Western fence lizards *(Sceloporus occidentalis*), gopher snakes (*Pituophis catenifer catenifer*), and other snakes are also likely to occur in this community in the project area.

Central Dune Scrub

Central dune scrub occurs extensively throughout most of the study area. This vegetation type generally exhibits some level of disturbance from past or present land use, dune instability, or invasive plant species, but the level of disturbance varies throughout the study area.

Central dune scrub occurs in the northern portion of the study area along Lapis Road and Del Monte Boulevard, along the Monterey Peninsula Recreational Trail between Marina and Seaside, in the dunes along the western boundary of the CEMEX active mining area (i.e., the vegetated patches between the active mining area and the beach), in undisturbed sections of the CEMEX active mining area, and along the CEMEX access road. These areas contain native dune scrub species, but also support a variety of non-native and invasive species and often include a substantial proportion of non-native and highly invasive ice plant. Typical native shrubs found throughout the disturbed dune scrub habitat include California sagebrush (*Artemisia californica*), coast buckwheat (*Eriogonum latifolium*), deerweed, California lilac (*Ceanothus* spp.), mock heather (*Ericameria ericoides*), silver dune lupine (*Lupinus chamissonis*), and sandmat manzanita (*Arctostaphylos pumila*). Non-native cover typically includes non-native grasses (wild oat, Mediterranean barley, and Italian ryegrass), iceplant, and other weedy species. Some typical foredune species, such as beach evening primrose (*Camissonia cheiranthifolia*) and sea rocket (*Cakile maritima*), occur along the CEMEX access road where the central dune scrub transitions to the beach.

The composition of dune scrub vegetation transitions throughout the study area from areas dominated by non-native species (within residential neighborhoods in Marina and between Imjin Parkway and Lightfighter Drive in Sand City) to areas with higher native cover in the dunes between the CEMEX active mining area and along the CEMEX access road, Lapis Road, Del Monte Boulevard north of Beach Road, and the Monterey Peninsula Recreational Trail between Imjin Parkway and approximately Reindollar Avenue.

The following vegetation alliances mapped by AECOM (2016) are included in the broad concept of Central dune scrub described above:

- California buckwheat scrub (*Eriogonum fasciculatum* Shrubland Alliance)
- California coffee berry scrub (*Frangula californica* Shrubland Alliance)
- California sagebrush scrub (*Artemisia californica* Shrubland Alliance)
- Deerweed scrub (*Lotus scoparius* Shrubland Alliance)
- Dune mat (*Abronia latifolia - Ambrosia chamissonis* Herbaceous Alliance)
- Island buckwheat scrub (*Eriogonum giganteum* Landscaped Scrub)
- Sandmat manzanita chaparral (*Arctostaphylos pumila* Provisional Shrubland Alliance)
- Silver dune lupine-mock heather scrub (*Lupinus chamissonis - Ericameria ericoides* Shrubland Alliance)

Within the study area, central dune scrub is likely to support several reptile species, including southern alligator lizards (*Elgaria multicarinata*), western fence lizards, and black legless lizards (*Anniella pulchra nigra*). Small mammals such as deer mice and brush rabbits (*Sylvilagus bachmani*) provide prey for nonnative red foxes (*Vulpes regalis*) that occur in this habitat. White-crowned sparrows (*Zonotrichia leucophrys*) are probably the most abundant breeding bird in this habitat. Horned larks and song sparrows (*Melospiza melodia*) are among other birds found in this habitat. Where its host plant (coast buckwheat) is present, Smith's blue butterfly (*Euphilotes enoptes smithi*) also may occur in central dune scrub.

Central Maritime Chaparral

Central maritime chaparral is a plant community limited to areas of sandy soils subject to summer fog. It is found in relatively small patches throughout its range along the central coast. It is dominated by endemic species of manzanita (*Arctostaphylos* spp.), California lilac (*Ceanothus* spp.), and chamise (*Adenostoma fasciculata*), and supports a high proportion of other rare and endangered plants and wildlife. The former Fort Ord military base encompasses some of the largest, most intact areas of maritime chaparral remaining on the central coast. Maritime chaparral in the study area is closely associated with relict sand dunes (i.e., paleodunes) of the mid-Pleistocene era, a geomorphic feature of very limited distribution within California that has been much reduced by urban development in the communities of Marina and Seaside. In addition, the overall viability of maritime chaparral is likely declining due to long-term suppression of fire and other natural disturbances, which help maintain the health and diversity of this plant community. Studies show that long-term absence of fire within central maritime chaparral may lead to the community's transition to oak woodland (Van Dyke et al., 2001). Many annual and herbaceous perennial species depend on fire and other disturbance to control encroachment of woody species.

Within the study area, central maritime scrub occurs along the east side of General Jim Moore Boulevard and south of Coe Avenue in the former Fort Ord military base; specifically, at the southern terminus of the construction area for the ASR facilities where water produced during development of the ASR wells would be conveyed and percolated. Within the study area, this community exists as a mosaic of disturbed and undisturbed variations, with most of the disturbed

areas located near General Jim Moore Boulevard and adjacent to existing access roads within the former Fort Ord military base. These areas were likely disturbed during road construction and military operations, and typically support deerweed scrub as an early successional response to the disturbance. The non-disturbed areas are dominated by shaggy-barked or woolly-leaf manzanita (*Arctostaphylos tomentosa* ssp. *tomentosa*), sandmat manzanita, sticky monkeyflower (*Mimulus aurantiacus*), chamise, black sage (*Salvia mellifera*), and poison oak (*Toxicodendron diversilobum*) with many other perennials and shrubs common throughout. The disturbed areas contain many of the same species but have higher cover of deerweed, iceplant, bush lupine (*Lupinus* spp.), and non-native grasses. Additionally, these disturbed areas contain higher cover of unvegetated sandy soil. A variety of special-status plants have been documented within the former Fort Ord military base including sandmat manzanita, Monterey spineflower, seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*), Eastwood's goldenbush (*Ericameria fasciculata*), Kellogg's horkelia (*Horkelia cuneata* ssp. *sericea*), and sand gilia (*Gilia tenuiflora* ssp. *arenaria*) (Fort Ord Reuse Authority, 2012).

Central maritime chaparral includes the following vegetation alliances as mapped by AECOM (2016):

- Sandmat manzanita chaparral (*Arctostaphylos pumila* Provisional Shrubland Alliance)
- Silver dune lupine-mock heather scrub (*Lupinus chamissonis - Ericameria ericoides* Shrubland Alliance)
- Deerweed Scrub (*Lotus scoparius* [=*Acmispon glaber*] Shrubland Alliance) – occurs as early seral stage in disturbed areas of former maritime chaparral.

Wildlife species likely to occur in maritime chaparral habitats include a variety of small reptiles, such as western fence lizards, alligator lizards, California horned lizards (*Phrynosoma blainvillii*), and California striped racers (*Coluber lateralis lateralis*), as well as a variety of small mammals, including deer mice, brush mice, and jackrabbits (*Lepus californicus*). Birds likely to occur here include California thrashers (*Toxostoma redivivum*), Western scrub-jays (*Aphelocoma californica*), wrentits (*Chamaea fasciata*), and Anna's hummingbirds (*Calypte anna*).

Northern Coastal Scrub

Northern coastal scrub occurs widely throughout the study area near the coast on sandy to clay soils, but typically more interior, developed, and stabilized soils than nearby active dunes. Within the study area, it occurs adjacent to the Salinas River, along General Jim Moore Boulevard within the some of the former Fort Ord lands, along Ragsdale and Lower Ragsdale Drive, and off of Tierra Grande Drive. Northern coastal scrub is associated with and transitions to grassland, maritime chaparral, coast live oak woodland, central dune scrub, and ice plant mats. The vegetation is characterized by sparse to dense cover of soft-leaved, low-stature shrubs such as coyote brush, California sagebrush, and black sage. Northern coastal scrub often supports a well-developed annual herbaceous understory that includes native wildflowers, non-native grasses (wild oat, Mediterranean barley, and Italian ryegrass), iceplant, and other weedy species. Several special-status plants are documented from this plant community, including Monterey spineflower,

Monterey ceanothus, and sandmat manzanita. Many different alliances of northern coastal scrub are recognized based on dominant species.

Northern coastal scrub includes the following vegetation alliances as mapped by AECOM (2016):

- California sagebrush scrub (*Artemisia californica* Shrubland Alliance)
- California sagebrush-California buckwheat Scrub (*Artemisia californica - Eriogonum fasciculatum* Shrubland Alliance)
- California sagebrush-California black sage Scrub (*Artemisia californica - Salvia mellifera* Shrubland Alliance)
- Coastal brambles (Rubus [*parviflorus, spectabilis, ursinus*] Shrubland Alliance)
- Deerweed scrub (*Lotus scoparius* [=*Acmispon glaber*] Shrubland Alliance)
- Poison oak scrub (*Toxicodendron diversilobum* Shrubland Alliance)
- Yellow bush lupine scrub (*Lupinus arboreus* Shrubland Alliance and Semi-Natural Alliance)

Wildlife using this habitat are similar to those species expected in the maritime chaparral, such as California quail, blue-gray gnatcatcher (*Polioptila caerulea*), Anna's hummingbird, Coast Range fence lizard, northern pacific rattlesnake, gopher snake, brush rabbit, and California ground squirrel.

Coyote Brush Scrub

Coyote brush scrub occurs extensively throughout the study area. It ranges from small patches to extensive stands where it is associated with non-native grassland species in the spaces between shrubs. The most extensive stands are located north of the Salinas River, along Monte Road north of Del Monte Boulevard, along the railroad tracks between Lapis Road and the CEMEX access road in Marina, and at various locations along the Monterey Peninsula Recreational Trail between 8th Street and Lightfighter Drive. It is usually situated adjacent to or integrated with grasslands, coastal scrub and ruderal areas (such as roadsides and railroad rights of way). Often it is indicative of previous disturbance that has subsequently been left undisturbed for more than several years, allowing coyote brush to invade and establish in large numbers. Alternatively, it may displace coastal grasslands where fire or grazing have been eliminated, eventually converting them to mosaics of scrub and grassland. Special status plant species are uncommon, but may include species also found in grasslands or northern coastal scrub.

Coyote brush scrub conforms to the following vegetation alliance as mapped by AECOM (2016):

- Coyote brush scrub (*Baccharis pilularis* Shrubland Alliance)

Wildlife occurring in coyote brush scrub is expected to be similar to northern coastal scrub and non-native grassland.

Riparian Woodland and Scrub

Riparian woodland and scrub is often associated with perennial water sources such as lakes and rivers. Within the study area riparian woodland and scrub generally occurs along the edges of the pond at Locke-Paddon Park in Marina and along Laguna del Rey in Seaside, at the Salinas River crossing, and in a roadside drainage crossing of Castroville Road/Highway 183. Willows (*Salix* spp.) are typically the dominant trees and shrubs at these locations. Numerous shrubs, herbs, and vines also occur in the understory of this community, including mulefat (*Baccharis salicifolia*) and native and non-native blackberries (*Rubus ursinus, R. armeniacus*).

Riparian woodland and scrub includes the following vegetation alliances as mapped by AECOM (2016):

- Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance)
- Box-elder forest (*Acer negundo* Forest Alliance)
- Fremont cottonwood woodland (*Populus fremontii* Forest Alliance)
- Shining willow groves (*Salix lucida* Woodland Alliance)

Riparian woodland and scrub habitats provide cover and resources for a variety of wintering and breeding birds, such as yellow-rumped warblers (*Dendroica coronata*), warbling vireos (*Vireo gilvus*), orange-crowned warblers (*Oreothlypis celata*), and Wilson's warblers (*Cardellina pusilla*). The mixed understory in this community supports a variety of small mammals and reptiles, including raccoon (*Procyon lotor*), deer mice, and coast garter snake (*Thamnophis elegans terrestris*). Several riparian sites are located in incorporated areas in park settings and are subject to disturbance from vehicle and pedestrian traffic. In contrast, the Salinas River crossing location is relatively remote and continuous along the riverbanks, and consists of trees with a dense and multi-layered canopy that provides high quality habitat.

Freshwater Marsh

Freshwater marshes are wetland plant communities with year-round or nearly year-round inundation or soil saturation that supports perennial emergent plants, typically dominated by bulrushes, rushes and cattails. Within the study area, freshwater marshes are located in small impoundments and drainages along the proposed Castroville Pipeline, along Tembladero Slough within the proposed Castroville Pipeline Optional Alignment 1, and along a pond near the intersection of Aquajito Road and Fremont Street in Monterey. Freshwater marsh also may occur as small or sparse understory patches within areas mapped as other more dominant vegetation types, such as riparian forest and scrub.

Freshwater marsh includes the following vegetation alliances as mapped by AECOM (2016):

- California bulrush marsh (*Schoenoplectus californicus* Herbaceous Alliance)
- Cattail marshes (*Typha* [*angustifolia, domingensis, latifolia*] Herbaceous Alliance)
- Knotweed marsh
- Soft rush marshes ((*Juncus effusus* Herbaceous Alliance)

Freshwater marshes are used by common wildlife species including waterfowl such as Canada goose, mallard, American coot, pied-billed grebe, and great egret (*Ardea alba*). Marsh wren (*Cistothorus palustris*) and song sparrow (*Melospiza melodia*) may nest in shoreline vegetation of project area freshwater marsh habitat with northern rough-winged swallow (*Stelgidopteryx serripennis*) foraging over the open water. This habitat may also be used by amphibians including the sierra treefrog (*Pseudacris sierra*) and American bullfrog (*Lithobates catesbeianus*).

Coast Live Oak Woodland

Within the study area, coast live oak woodland is located along General Jim Moore Boulevard between Ardennes Circle and Coe Avenue, and adjacent to the Salinas River. Coast live oak woodland also occurs within the study area of the proposed Ryan Ranch–Bishop and Main System–Hidden Hills Interconnection Improvements. In the vicinity of the project area, coast live oak woodland occurs in sandy soils and is dominated by coast live oak (*Quercus agrifolia*) with the occasional eucalyptus, Monterey pine (*Pinus radiata*), or Monterey cypress. The understory is typically non-native grassland or other herbaceous annuals such as miner's lettuce (*Claytonia perfoliata*) and hedgenettle (*Stachys bullata*). In the vicinity of General Jim Moore Boulevard, coast live oak woodland forms a mosaic with central maritime chaparral and coastal sage scrub communities, and shrub species typically found in these two communities also occur in the adjacent oak woodland.

Coast live oak woodland conforms to the following vegetation alliance as mapped by AECOM (2016):

- Coast live oak woodland (*Quercus agrifolia* Woodland Alliance)

In Monterey County, coast live oak woodlands support a considerable diversity of wildlife species. Mammals likely to be found here include western gray squirrels (*Sciurus griseus*) and Monterey dusky-footed woodrats (*Neotoma fuscipes luciana*) as well as other small rodents. Mule deer (*Odocoileus hemionus*) also occur in oak woodlands. Several avian species rely heavily on the acorns for food, including acorn woodpeckers (*Melanerpes formicivorous*), western scrub-jays, and California quails (*Callipepla californica*). Chestnut-backed chickadees (*Poecile rufescens*), oak titmice (*Baeolophus inornatus*), Hutton's vireos (*Vireo huttoni*), dark-eyed juncos (*Junco hyemalis*), ash-throated flycatchers (*Myiarchus cinerascens*), and Nuttall's woodpeckers (*Picoides nuttallii*) are among other birds that nest in this community. Several species of amphibians, such as arboreal salamanders (*Aneides lugubris*), can be found in coast live oak woodlands, in which moisture is retained under fallen wood and in crevices in the oaks. Reptiles may include ringneck snakes (*Diadophis punctatus*) and Skilton's skinks (*Plestiodon skiltonianus skiltonianus*).

Ice Plant Mats

Ice plant mats are relatively monotypic patches dominated by the nonnative ice plant species (*Carpobrotus edulis, C. chilensis*; landscaped areas of cultivated ice plant, *Drosanthemum floribundum,* are mapped as "landscaped"). Ice plant mats are low-growing, dense or patchy, and spread by runners. The dense growth habitat precludes other species, though many coastal dune

scrub and annual grassland species may occur in gaps in ice plant cover. Ice plants are aggressive invaders of coastal dune and scrub habitats. They are also used in low-maintenance garden landscaping, on roadsides and medians, and in parking lots and sidewalk verges. Ice plants were widely introduced in the region to stabilize sand dunes, and have colonized a significant portion of the coastal dune and paleodune plant communities. Ice plant mats also are a frequent target for removal and restoration of native coastal vegetation.

Ice plant mats conform to the following vegetation alliance as mapped by AECOM (2016):

- Ice plant mats (*Carpobrotus edulis* or Other Ice Plants Herbaceous Semi-Natural Alliance)

Ice plant mats are regarded as providing marginal wildlife habitat value, though may provide cover for some small rodents and reptiles. Seeds of iceplant are eaten by deer, jackrabbits, and brush rabbits, which may contribute to the spread of ice plant (D'Antonio, 1990).

Agricultural

Agricultural lands exist in the northern study area along Charles Benson Road, Lapis Road, Del Monte Boulevard, Monte Road, Nashua Road, Highway 1, Highway 156, and the dirt agricultural road located north of Monte Road/Nashua Road. These lands provide little or no habitat for native plants and wildlife as they are regularly manipulated as crops are planted, harvested, rotated, and irrigated, or the lands are grazed. Other than crops (e.g., strawberries and cut flowers), vegetation in these areas consists primarily of non-native species adapted to disturbance, such as wild oat, bromes, mustards (*Brassica nigra* and *Hirschfeldia incana*), mallows (*Malva* spp.), and filarees.

Agricultural areas can support wildlife species that have adapted to disturbance, but generally support few wildlife species because of their lack of diversity in vegetation and foraging opportunities. California ground squirrels often occur along margins of cropland, and raptors such as red-tailed hawks often forage for ground squirrels over agricultural lands. Fallow fields can attract other foraging birds, including Brewer's blackbird (*Euphagus cyanocephalus*) and killdeer (*Charadrius vociferus*).

Ruderal

Ruderal areas are not currently in active use, but have been subject to intense or recurring disturbance, generally through removal or other alteration of all native vegetation, alteration of topography, soil compaction, and the addition or removal of man-made features such as paving, buildings, and channelization of watercourses. Depending on the intensity and type of disturbance and time since disturbance, ruderal areas can remain relatively barren or become revegetated with primarily non-native weedy species. Within the project area, ruderal areas are generally located along Highway 1, Highway 156, and Highway 183, along Monte Road north of the Salinas River, along the dirt agricultural road north of Tembladero Slough, within MRWPCA Regional Wastewater Treatment Plant, along Del Monte Boulevard at Reservation Road, and along Del Monte Boulevard at Canyon Del Rey Boulevard.

All ruderal areas are dominated by non-native weedy vegetation; however, the dominant species varies depending on the site characteristics at each location. Dominant species include field mustard (*Brassica rapa*), radish (*Raphanus sativus*), dwarf nettle (*Urtica urens*), and common chickweed (*Stellaria media*). Unidentifiable herbicide-treated weeds occur at the ruderal area near the intersection of Del Monte Boulevard and Canyon Del Rey Boulevard.

Ruderal includes the following vegetation alliance as mapped by AECOM (2016):

- Perennial pepper weed patches (*Lepidium latifolium* Herbaceous Semi-Natural Alliance)
- Ruderal

Ruderal communities do not support the diversity of native plant or wildlife that is characteristic of undisturbed natural communities, but many native wildlife species have adapted to ruderal areas: red-tailed hawk, American crow (*Corvus brachyrhynchos*), white-crowned sparrow (*Zonotrichia leucophrys*), American goldfinch (*Spinus tristis*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*) are examples. Non-native animal species that are associated with ruderal communities include European starling (*Sturnus vulgaris*), rock dove (*Columba livia*), Virginia opossum (*Didelphis virginiana*), and Norway rat (*Rattus norvegicus*).

Developed/Landscaped

Developed and landscaped areas occupy much of the project area, particularly within the cities of Seaside and Monterey, and along Charles Benson Road in unincorporated Monterey County. Developed areas include paved and dirt roadways and trails, parking lots, buildings, and other manmade features. Landscaped features occur in association with these developed features and include gardens, parks, lawns, and landscaping trees and shrubs, such as planted stands of Monterey cypress and Monterey pine.

Developed and landscaped include the following vegetation alliances as mapped by AECOM (2016):

- Eucalyptus groves (*Eucalyptus* [*globulus, camaldulensis*] Woodland Semi-Natural Alliance)
- Acacia shrubland (Acacia Shrubland)
- Monterey cypress stands (*Hesperocyparis macrocarpa* Woodland Special Stands)
- Monterey pine woodland (*Pinus radiata* Forest Alliance)

As with agricultural areas, developed and landscaped areas can support wildlife species that have adapted to site disturbance but native plants are often absent and wildlife abundance and diversity are generally low. Striped skunks, raccoons, and Virginia opossums occur regularly in urban areas. Birds adapted to the urban landscape include house finches (*Haemorhous mexicanus*), northern mockingbirds (*Mimus polyglottos*), mourning doves, European starlings, house sparrows (*Passer domesticus*), and rock doves.

Open Water

Non-vegetated waters include relatively permanently inundated rivers and streams, tidal sloughs, lakes, and ponds, and may also include some small drainages and ditches. Open water is typically bordered by one or more of the preceding wetland or riparian vegetation types. As habitat, they are occupied by fish, amphibians, and reptiles, and other aquatic organisms, and are accessed as water and food sources by birds and mammals.

4.6.1.5 Sensitive Natural Communities and Environmentally Sensitive Habitat Areas

Sensitive Natural Communities

Sensitive natural communities (or special-status native plant communities) are designated as such by various resource agencies, such as CDFW, or in local policies and regulations and are generally considered to have important functions or values for wildlife or humans and/or are recognized as declining in extent or distribution and are considered threatened enough to warrant some sort of protection. For example, many local agencies in California consider protection of oak woodlands important for their value as an ecosystem and federal, state, and most local agencies classify wetlands and riparian areas as sensitive communities. The CNDDB tracks communities that are considered to be important for habitat conservation; these sensitive natural communities are considered special-status for the purposes of this analysis.

Several of the vegetation communities that occur in the project area are considered sensitive natural communities for the purposes of this analysis for one or more of the following reasons: (a) they are considered a sensitive natural community by CDFW; and/or (b) they are considered a sensitive community by one or more of the affected local jurisdictions, or are designated as a sensitive community in one or more of the general plans applicable to the project area.

The following communities occur in the study area and are considered special-status natural communities for the purposes of this analysis: central dune scrub, central maritime chaparral, northern coastal scrub, riparian woodland and scrub, freshwater marsh, and coast live oak woodland. Section 4.6.1.10, Sensitive Terrestrial Biological Resources in the Study Area, below, describes the distribution of these communities in the study area.

Federally designated critical habitat either within or in close proximity to the proposed project is described in Section 4.6.1.9, Critical Habitat, below.

Environmentally Sensitive Habitat Areas

The Coastal Act defines Environmentally Sensitive Habitat Areas (ESHA) as “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Pub. Res. Code §30107.5). ESHA is designated within the coastal zone by the CCC or in an applicable local coastal program.

In areas where a local coastal program has been developed and approved, the local coastal program may include a separate definition of ESHA. The proposed project is within the jurisdiction of three local coastal programs: City of Marina's LCLUP, Monterey County's North County Land Use Plan, and the City of Seaside Local Coastal Program Land Use Plan. The definitions of ESHA in each of these local coastal programs are provided below.

City of Marina Local Coastal Land Use Plan

The City of Marina's LCLUP designates areas protected within the coastal zone as primary and secondary habitats. For the purpose of this analysis, this document assumes that both primary and secondary habitat would correspond with the CCC's definition of ESHA. The definitions of primary and secondary habitat are described in Exhibit A of the City of Marina's LCLUP (2013) and provided below.

Primary habitat. This term includes all of the environmentally sensitive habitat areas in Marina. These are as follows:

1. Habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species. These species will be collectively referred to as "rare and endangered."
2. Vernal ponds and their associated wetland vegetation. The Statewide Interpretive Guideline for Wetlands and Other Wet Environmentally Sensitive Habitat Areas (California Coastal Commission, February 14, 1981) contains technical criteria for establishing the inland boundary of wetland vegetation.
3. All native dune vegetation, where such vegetation is extensive enough to perform the special role of stabilizing Marina's natural sand dune formations.
4. Areas otherwise defined as secondary habitat that have an especially valuable role in an ecosystem for sensitive plant or animal life, as determined by a qualified biologist approved by the City.

Secondary habitat. This term refers to areas adjacent to primary habitat areas within which development must be sited and designed to prevent impacts which would significantly degrade the primary habitat. The secondary habitat area will be presumed to include the following, subject to more precise determination upon individual site investigation:

1. The potential/known localities of rare and endangered plant species as shown on "Disturbed Vegetation" map in the Marina Local Coastal Program.
2. The potential wildlife habitats as shown "Potential Wildlife Habitats" map in the Marina Local Coastal Program.
3. Any area within 100 feet of the landward boundary of a wetland primary habitat area.

Rare and endangered species. This term will apply to those plant and animal species which are rare, endangered, threatened or are necessary for the survival of such species. The Environmental Analysis Report prepared for the Marina Local Coastal Program identified such species in the

dune habitat areas. While future scientific studies may result in addition or deletion of species, the list presently includes:

1. Smith's Blue Butterfly (*Shijimiaeoides enoptes smithi*)
2. Globose Dune Beetle (*Coelus globosus*)
3. Black Legless Lizard (*Anniella pulchra nigra*)
4. Salinas Kangaroo Rat (*Dipodomys heermanni goldmani*)
5. Seaside Painted Cup (*Castilleja latifolia* ssp. *latifolia*)
6. Monterey Spine Flower (*Chorizanthe pungens* var. *pungens*)
7. Eastwood's Ericameria (*Ericameria fasciculate*)
8. Coast Wallflower (*Erysimum ammophilum*)
9. Menzies' Wallflower (*Erysimum menziesii*)
10. Coastal Dunes Milk Vetch (*Astragalus tener* var. *titi*)
11. Dune Gilia (*Gilia tenuiflora* var. *arenaria*)
12. Wild Buckwheat (*Eriogonum latifolium*)*
13. Wild Buckwheat (*Eriogonum parvifolium*)*
14. Bush Lupine (*Lupinus* ssp.)+

* only within the range of Smith's Blue Butterfly.
\+ only within the range of the Black Legless Lizard.

Monterey County North County Land Use Plan

Section 2.3 of the North County Land Use Plan defines Environmentally Sensitive Habitats as "areas in which plant or animal life or their habitats are rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. These include Areas of Special Biological Significance as identified by the State Water Resources Control Board; rare and endangered species habitat, all coastal wetlands and lagoons, all marine wildlife, and kelp beds; and indigenous dune plant habitats" (Monterey County, 1999).

City of Seaside Local Coastal Program Land Use Plan

Policy LUD-CZ 1.2.A of the City of Seaside Local Coastal Program Land Use Plan defines ESHA as "any area in which plant or animal life or their habitats are either rare, or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (City of Seaside, 2013).

Environmentally Sensitive Habitat Areas in the Study Area

The exact limits of primary and secondary habitat within the study area, as defined in the City of Marina's LCLUP, and ESHA, as defined in the Coastal Act, North County Land Use Plan, and City of Seaside Local Coastal Program Land Use Plan, have not been verified by the CCC or any local agencies. ESA and AECOM biologists met with representatives from the CCC for guidance

on the limits of primary habitat, secondary habitat, and ESHA within the study area on May 19 and July 19, 2017, but as of publication of this Final EIR/EIS, the CCC has not made a formal determination of the limits of these areas.

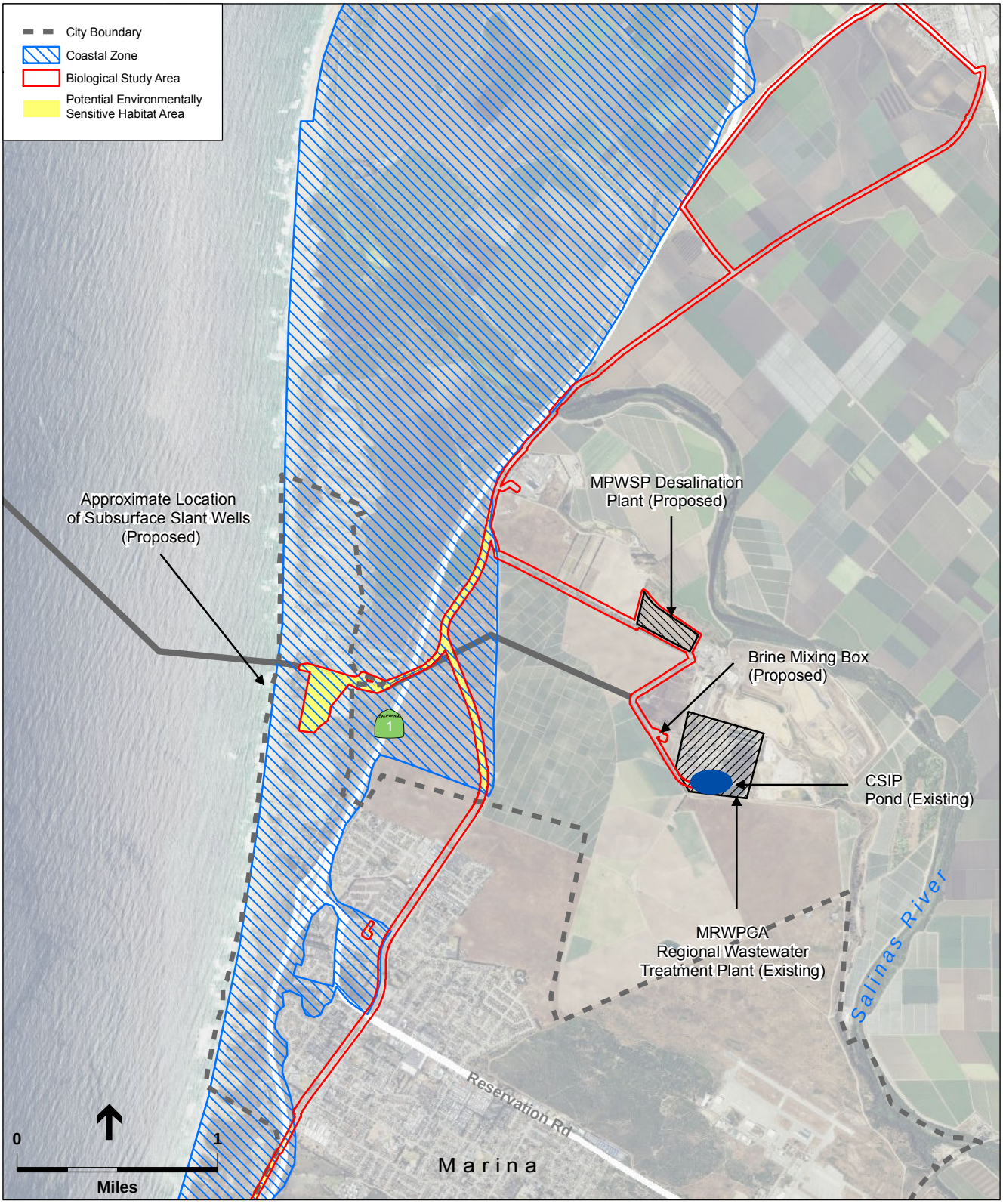
In the absence of a formal determination, and based on the definitions of primary habitat, secondary habitat, and ESHA described above and on guidance from the CCC, this document assumes that all undeveloped areas within the coastal zone would be considered primary habitat (within the City of Marina's LCLUP jurisdiction) and ESHA in all other jurisdictions. Potential ESHA within the study area is shown in **Figures 4.6-2a** and **4.6-2b**. The CCC and/or local agencies may determine that some portions of the undeveloped areas are secondary habitat (within the coastal zone in the City of Marina) or receive no protection through the Coastal Act or a local coastal program. For example, a portion of the segment of the proposed new Transmission Main within the coastal zone in the City of Marina that parallels the Transportation Agency for Monterey County (TAMC) right-of-way north of Lightfighter Drive for approximately 2 miles may be considered secondary habitat by the City of Marina. This area may not meet item number 3 in the definition of primary habitat. This area is located east of Beach Range Road and the TAMC railroad tracks embankment and west of and adjacent to the Monterey Peninsula Recreational Trail. The sparse dune vegetation in this area, which is in the depression between the railroad track embankment and the elevation of the recreational trail, does not contribute to stabilization of dune formations.

4.6.1.6 Wetlands and Other Waters

Wetlands are ecologically productive habitats that support a rich variety of both plant and animal life. The importance and sensitivity of wetlands has increased as a result of their value as recharge areas and filters for water supplies and widespread filling and destruction to enable urban and agricultural development.

USACE jurisdiction typically extends to the limit of the wetland, as defined by the presence of hydrophytic vegetation, hydric soils, and wetlands hydrology. In contrast, CCC jurisdiction for wetlands may extend to the limit of any one of the above parameters and therefore typically is much broader than USACE jurisdiction. However, the CCC only has jurisdiction over wetlands and waters located within the coastal zone. Additionally, the RWQCB also regulates wetlands, other waters of the U.S., and waters of the state. The main channels of the Elkhorn Slough are under the jurisdiction of the Monterey Bay National Marine Sanctuary. Federal and state definitions of wetlands and waters are further detailed in Section 4.6.2, Regulatory Framework.

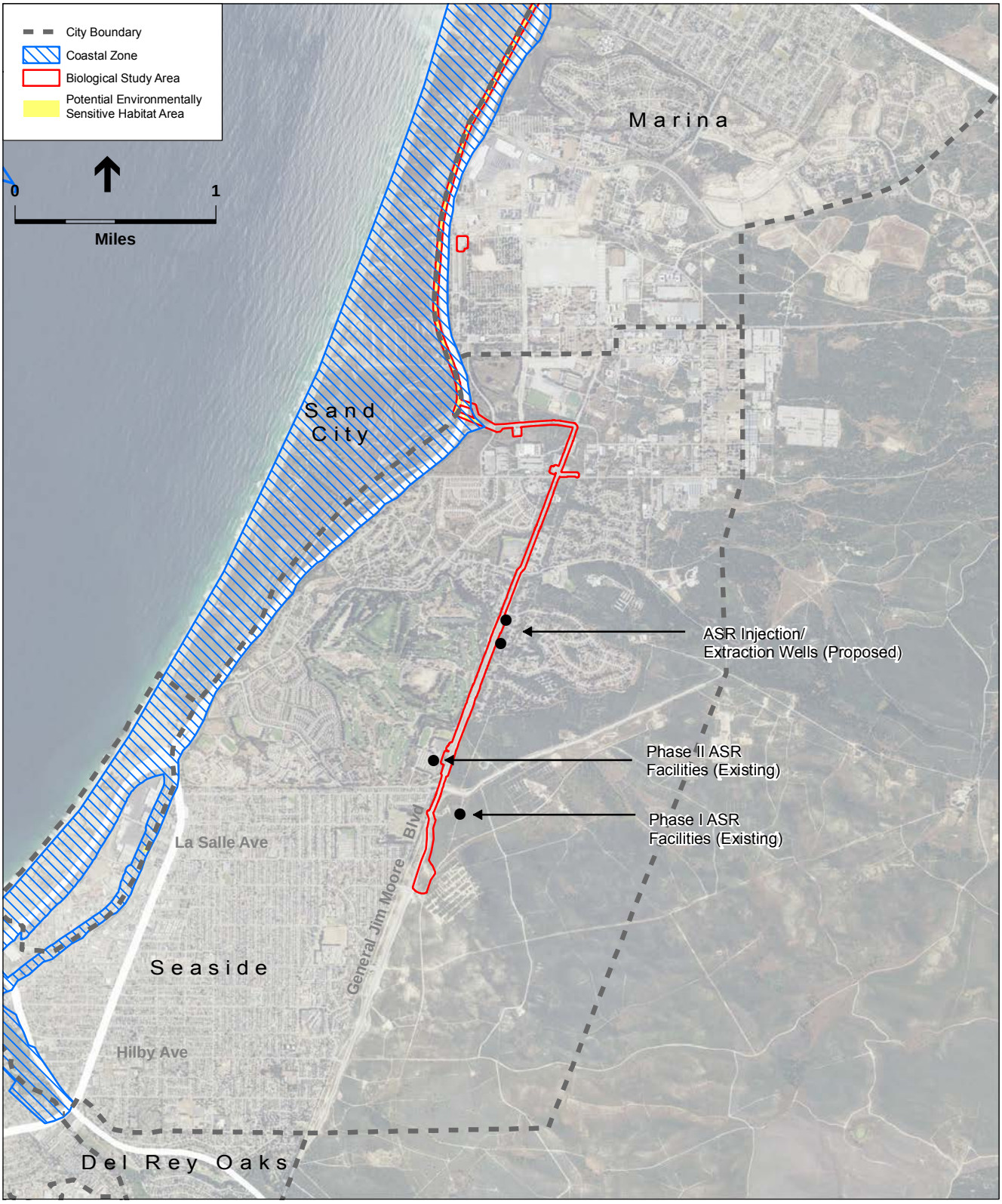
Wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC within the study area were mapped by AECOM during field surveys conducted between 2014 and 2016 (AECOM, 2016) and have been summarized in a wetland delineation report prepared for the proposed project (AECOM, 2017). Additionally, ESA mapped any potentially jurisdictional wetlands or waters within the study area during field surveys conducted in 2013, 2014, and 2016 for the MPWSP (ESA, 2013, 2014, 2016). Many potentially jurisdictional wetlands and waters occur within the study area and include the following vegetation community/habitat types described in Section 4.6.1.4 above: riparian woodland and scrub, freshwater marsh, and open water, as well as



SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.6-2a
Potential Environmentally Sensitive Habitat Areas in the Biological Study Area



SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.6-2b

Potential Environmentally Sensitive Habitat Areas in the Biological Study Area

a few small culverts and drainages present within the study area. These potential wetlands and waters are shown on **Figures 4.6-1a** through **4.6-1o**. The wetland delineation report would need to be approved by the agencies to determine the limits of jurisdictional wetlands and waters within the project area.

The USFWS NWI[6] was queried to identify wetlands and other surface waters that have been mapped within, or in close proximity to, the study area. The NWI data represents reconnaissance-level information on the location, type, and size of surface waters that was developed on-screen using digital datasets. Since this data is not collected in the field, and because the definition of wetlands can vary among regulatory agencies, the wetland delineation would need to be verified to confirm the limits of jurisdictional wetlands and waters mapped by the NWI. Several potentially jurisdictional wetlands and/or other waters have been mapped by the NWI within, or in close proximity to, the study area. These features are shown on **Figures 4.6-1a** through **4.6-1o** and include a variety of wetland and other water types such as estuarine and marine deepwater, estuarine and marine wetland, freshwater emergent wetland, freshwater forested/shrub wetland, freshwater pond, lake, and riverine.

In the absence of a verified wetland delineation by the USACE, RWQCB, and CCC, this document assumes that all potential jurisdictional features identified in the surveys described above and by the NWI may be considered jurisdictional by the USACE, RWQCB, and CCC.

Wild and Scenic Rivers

The federal Wild and Scenic Rivers Act was enacted by Congress in 1968 for the purpose of preserving the free-flowing characteristics and outstanding remarkable values of designated rivers while allowing uses compatible with the management goals of designated rivers. The categories of outstanding remarkable values include scenic, recreational, geologic, fish and wildlife, historic, and cultural values. The California Wild and Scenic Rivers Act of 1972 is modeled after the federal Wild and Scenic Rivers Act. There are no designated wild and scenic rivers within the study area.

4.6.1.7 Wildlife Movement Corridors

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization have fragmented or separated large open space areas. The fragmentation of natural habitat creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. Movement corridors offset the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange with separate populations.

[6] The NWI is a nationwide inventory of wetlands and other surface waters that is compiled by the USFWS to provide information on the distribution and type of wetlands and aid in conservation efforts.

The majority of the study area comprises developed areas, or adjacent to developed areas, such as roads and recreational trails, which do not serve as wildlife movement corridors. Although some common wildlife travel along developed areas, wildlife likely move parallel to these developed areas along relatively undeveloped stretches of beach and dune habitat located west and east of the project area. Lands north of Marina are used for agricultural purposes, but may serve as a movement corridor between coastal and inland areas for species adapted to agricultural disturbance such as raptors and songbirds. The Salinas River provides a wildlife movement corridor for fish, birds, and other species that migrate locally along riparian corridors.

4.6.1.8 Special-Status Species

For the purposes of this EIR/EIS, "special-status species" include threatened, endangered, candidate, and other sensitive species identified in local and regional plans, policies, and regulations, and by the CDFW, USFWS, and NMFS.[7] Special-status species include those species listed in Section 15380(b), Section 15380(c), and Section 15380(d) of the CEQA Guidelines. Special-status species include:[8]

- Plant and wildlife species listed as rare, threatened, and endangered under the FESA and CESA;
- Candidate species (species that are proposed for listing under either federal or state law);
- Species designated by CDFW as species of special concern or Fully Protected Species;
- Species protected by the federal Migratory Bird Treaty Act (MBTA) (16 USC §§ 703-711) and California Fish and Game Code;
- Bald and golden eagles protected by the federal Bald Eagle Protection Act (16 USC § 668); and
- Species that may be considered rare or endangered pursuant to Section 15380 of the CEQA Guidelines (including plants species with California Rare Plant Ranks of 1, 2, 3, or 4).

Data on species occurrence was obtained from the CDFW, the CNDDB, the CNPS Electronic Inventory, the USFWS species list, published biological literature of the region, and site surveys as described in Section 4.6.1.2 above.

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7 Marine biological resources under NMFS authority are covered in Section 4.5, Marine Resources.

8 CEQA Guidelines Section 15380(b) states "A species of animal or plant is: (1) "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or (2) "rare" when either: (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act."

CEQA Guidelines Section 15380(c) states: "A species of animal or plant shall be presumed to be endangered, rare or threatened, as it is listed in: (1) Sections 670.2 or 670.5, Title 14, California Code of Regulations; or (2) Title 50, Code of Federal Regulations Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered."

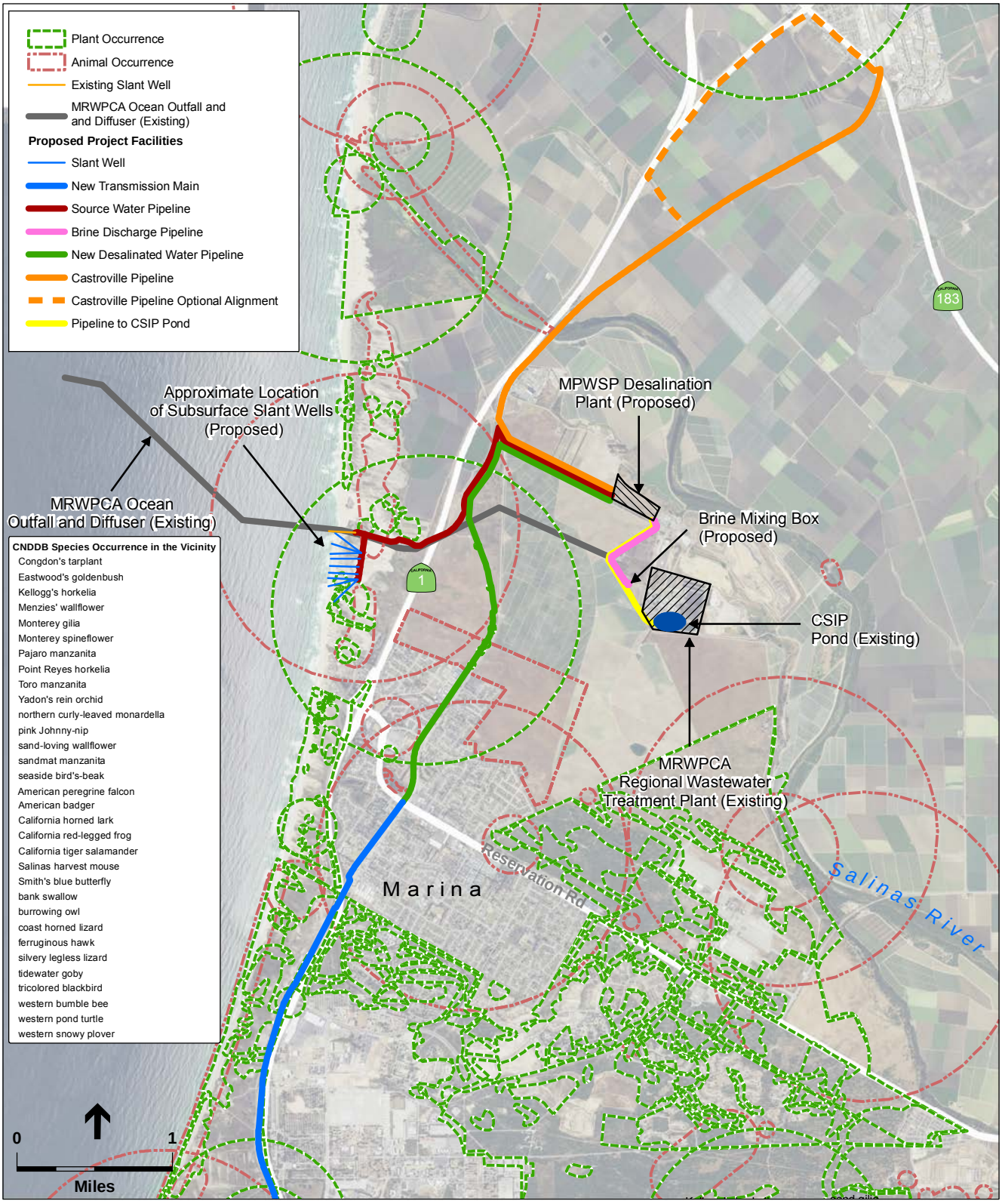
CEQA Guidelines Section 15380(d) states: "A species not included in any listing identified in subdivision (c) shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet the criteria in subdivision (b)."

Table F-1 in Appendix F lists the special-status plant and animal species that have been documented to occur or have the potential to occur in suitable habitat within the project area. The table also includes an assessment of potential to occur within the project area based on previous special-status record locations and current site conditions. Special-status species with a moderate or higher potential to occur within the project area are discussed in detail below.

Figures 4.6-3a, **4.6-3b**, and **4.6-3c** show the CNDDB occurrence records in the project vicinity.

Seven federal and/or state listed plant species occur in the project area or have a moderate to high potential to occur within the project area. These species include Monterey spineflower, robust spineflower (*Chorizanthe robusta* var. *robusta*), seaside bird's-beak, Menzies' wallflower (*Erysimum menziesii*), sand gilia, Yadon's rein orchid (*Piperia yadonii*), and Pacific Grove clover (*Trifolium polyodon*). Four federal and/or state listed animal species occur in or have a moderate to high potential to occur within the project area including Smith's blue butterfly, California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and western snowy plover (*Charadrius alexandrinus nivosus*). Twenty-two non-listed special-status plant species are either known to occur within the project area or have a moderate to high potential to occur within the project area. These include Hickman's onion (*Allium hickmanii*), Hooker's manzanita (*Arctostaphylos hookeri* ssp. *hookeri*), Toro manzanita (*Arctostaphylos montereyensis*), Pajaro manzanita (*Arctostaphylos pajaroensis*), ocean bluff milkvetch (*Astragalus nuttallii var. nuttallii*), sandmat manzanita, Monterey Coast paintbrush (*Castilleja latifolia*), Monterey ceanothus (*Ceanothus rigidus*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), branching beach aster (*Corethrogyne filaginifolia* [formerly *leucophylla*]), Eastwood's goldenbush, sand-loving wallflower (*Erysimum ammophilum*), Kellogg's horkelia, Carmel Valley bush-mallow (*Malacothamnus palmeri* var. *involucratus*), marsh microseris (*Microseris paludosa*), northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*), south coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*), native stands of Monterey pine, Michael's rein orchid (*Piperia michaelii*), Santa Cruz microseris (*Stebbinsoseris decipiens*), and Santa Cruz clover (*Trifolium buckwestiorum*).

Twenty-five non-listed special-status animal species are either known to occur or have a moderate to high potential to occur within the project area. These include globose dune beetle (*Coelus globosus*), western pond turtle (*Actinemys marmorata*), black legless lizard, silvery legless lizard *(Anniella pulchra pulchra*), coast horned lizard (*Phrynosoma blainvillii*), Coast Range newt (*Taricha torosa*), tricolored blackbird (*Agelaius tricolor*), short-eared owl (*Asio flammeus*), western burrowing owl (*Athene cunicularia*), red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), Ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), white-tailed kite, California horned lark (*Eremophila alpestris actia*), American peregrine falcon (*Falco peregrinus*), American kestrel (*Falco sparverius*), loggerhead shrike (*Lanius ludovicianus*), California yellow warbler (*Setophaga petechia brewsteri*), pallid bat (*Antrozous pallidus*), Salinas kangaroo rat (*Dipodomys heermanni goldmani*), western red bat (*Lasiurus blossevillii*), Monterey dusky-footed woodrat, Monterey shrew (*Sorex ornatus salaries*), and American badger (*Taxidea taxus*).



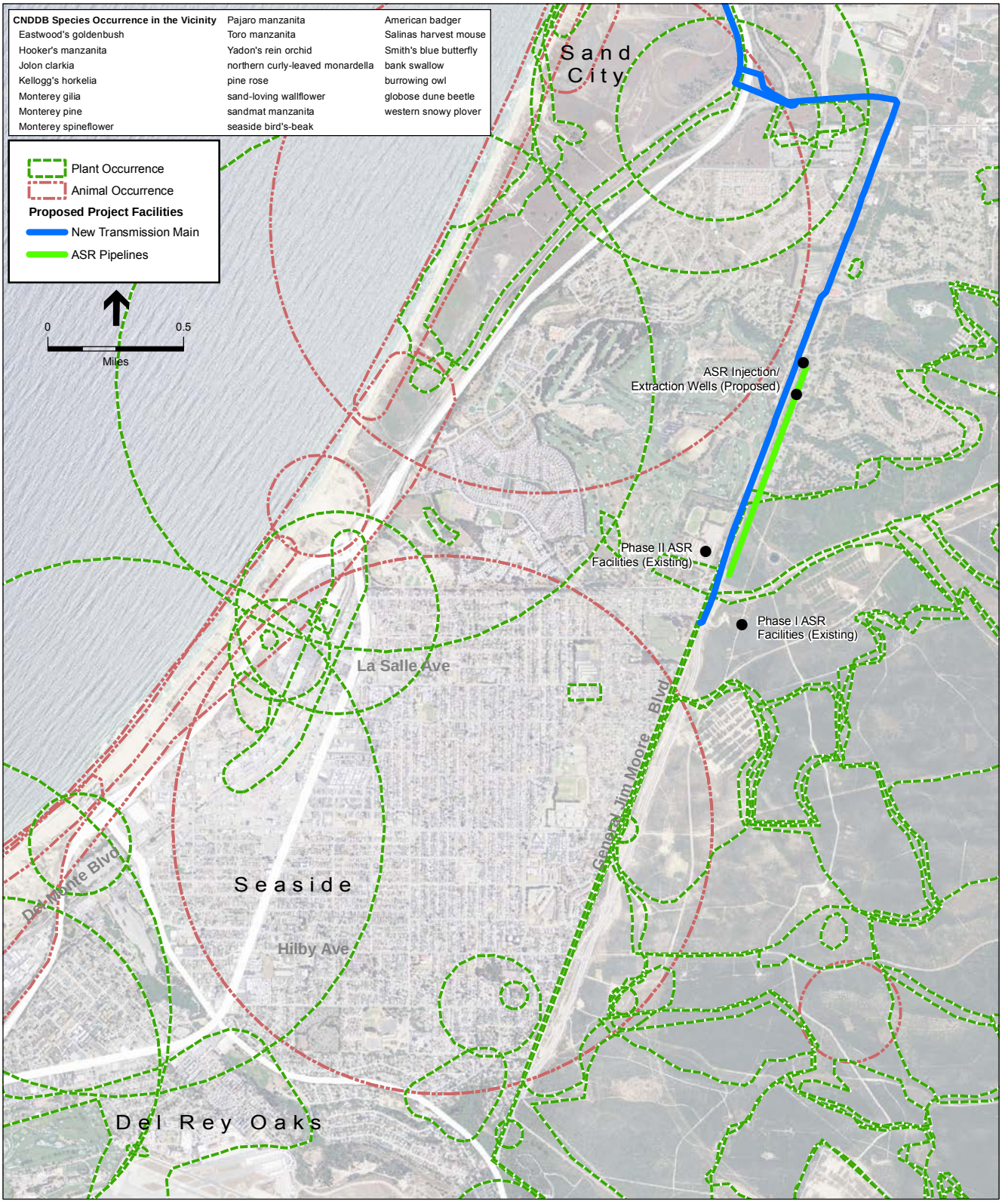
SOURCE: CDFW, 2016; ESA, 2016

CNDDB version 12/2016. Please Note: The occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not yet been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area.

205335.01 Monterey Peninsula Water Supply Project

Figure 4.6-3a

CNDDB Occurrence Records



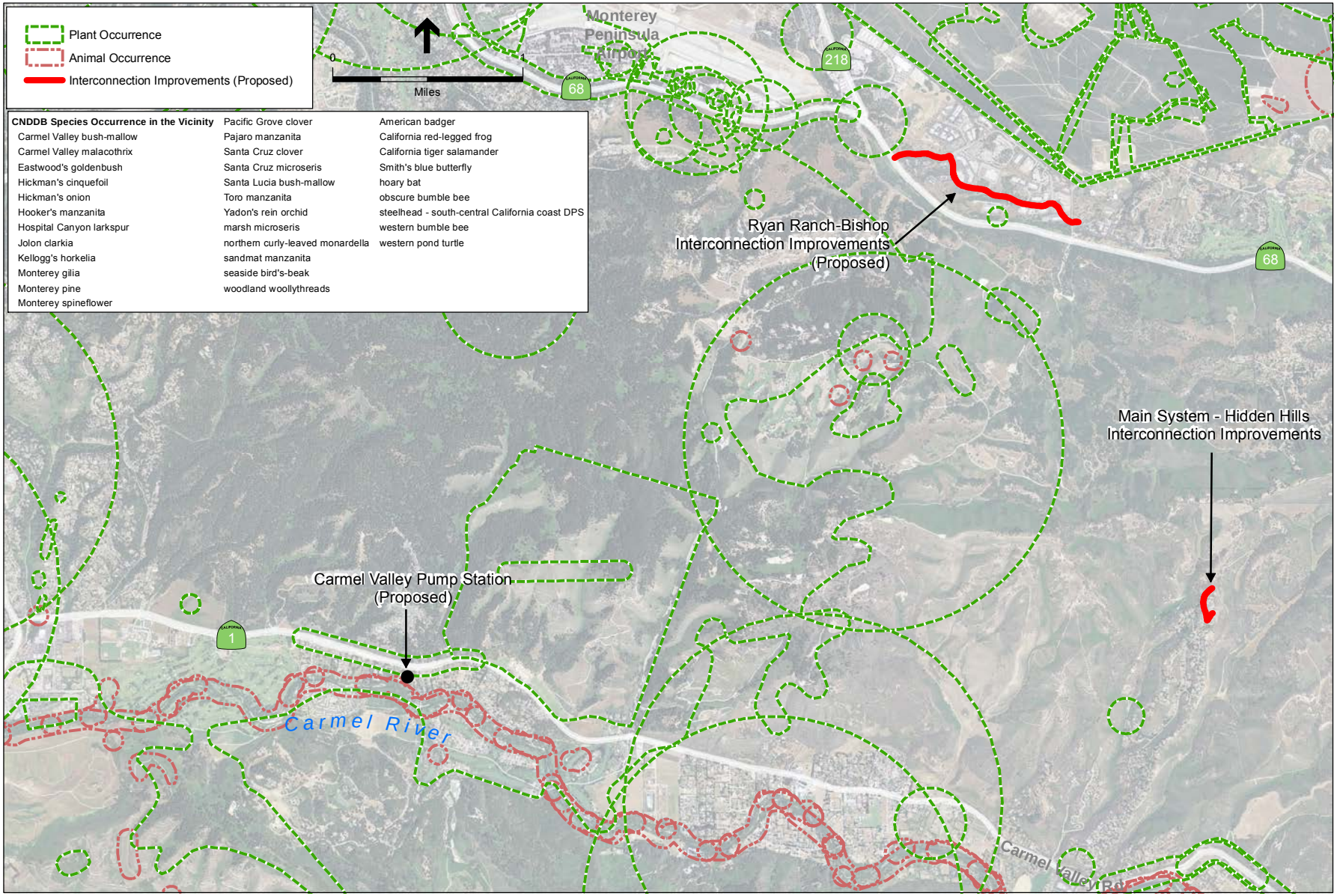
SOURCE: CDFW, 2016; ESA, 2016

CNDDB version 12/2016. Please Note: The occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not yet been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area.

205335.01 Monterey Peninsula Water Supply Project

Figure 4.6-3b

CNDDB Occurrence Records



SOURCE: CDFW, 2016; ESA, 2016

CNDDB version 12/2016. Please Note: The occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not yet been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area.

205335.01 Monterey Peninsula Water Supply Project

Figure 4.6-3c

CNDDB Occurrence Records

Numerous native birds also are likely to occur in the project area. These birds, protected under the MBTA and California Fish and Game Code, are likely to nest locally from March through August, with most nesting occurring April through July.

Federal and State Endangered and/or Threatened Species

Plants

Monterey spineflower (*Chorizanthe pungens* var. *pungens*). Monterey spineflower is federally listed as threatened and a CRPR 1B.2 taxon. It is a small, low-growing, annual herb in the buckwheat family (Polygonaceae) inhabiting the sandy soils of coastal and inland marine terraces in northern Monterey County. Monterey spineflower occurs in disturbed areas in grassland, such as road cuts and eroded areas, or in shifting sands of coastal dunes. It is also associated with sand blowouts in areas partially stabilized by iceplant. Monterey spineflower requires a relatively bare substrate for establishment and growth and is threatened by the encroachment of nonnative annual grasses and perennial weed species.

Populations of Monterey spineflower are known from a variety of locations within and adjacent to the project area. This species has been mapped widely within the former Fort Ord military base including the Fort Ord Dunes State Park near the new Transmission Main alignment south of Reservation Road, along General Jim Moore Boulevard near the new Transmission Main and ASR pipeline alignments (USACE, 1997; Fort Ord Reuse Authority, 2012; CDFW, 2016). During botanical surveys conducted for the proposed project, ESA observed this species in disturbed coastal dune scrub north of Reservation Road along the proposed new Desalinated Water Pipeline alignment on Lapis Road and the west side of Del Monte Boulevard (ESA, 2012; 2016). In 2010, Monterey spineflower was observed along the proposed Source Water Pipeline alignment along Lapis Road and the CEMEX access road (ESA, 2010). Additionally, Zander Associates biologists observed this species adjacent to the CEMEX access road in 2013 and 2014 at the proposed Source Water Pipeline alignment (Zander Associates, 2013; 2014). During botanical surveys conducted at the CEMEX sand mining facility in 2014 and 2016 in support of this project, ESA found Monterey spineflower in high densities scattered throughout portions of the active mining area, including at the proposed subsurface slant well sites (ESA, 2014; 2016). Other populations have been observed within central dune scrub and disturbed areas east of Lapis Road and north of the CEMEX access road (CDFW, 2016). It was also observed within the Castroville Pipeline alignment (AECOM, 2016).

This species occurs in both undisturbed and disturbed central dune scrub, non-native grassland, central maritime chaparral, northern coastal scrub, and ice plant mat communities and has a moderate to high potential to occur along the east side of General Jim Moore Boulevard in the vicinity of the proposed ASR facilities.

Robust spineflower (*Chorizanthe robusta* var. *robusta*). Robust spineflower is federally listed as endangered and a CRPR 1B.1 taxon. It is an annual herb that blooms from April through September. This species grows in sandy or gravelly soils of coastal dune scrub. Robust spineflower is threatened by development, mining, recreation, and non-native plants. According to USFWS, this species is currently limited to Santa Cruz County, but has been historically

documented in Monterey County (USFWS, 2010a). This species was not observed within the project area during the botanical surveys conducted for the proposed project. Although this species is not currently known within Monterey County, it has been historically observed in the project vicinity and has potential to occur within central dune scrub and maritime chaparral at the CEMEX active mining area; along the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main; and on the east side of General Jim Moore Boulevard in the vicinity of the proposed ASR facilities.

Seaside bird's-beak (*Cordylanthus rigidus* var. *littoralis*). Seaside bird's-beak is state listed as endangered and a CRPR 1B.1 taxon. It is a relatively large, many-branched, annual herb in the broomrape family (Orobanchaceae) that blooms from May through October. This species grows in the sandy soils of stabilized dunes and is associated with Monterey pine forest, oak woodland, and maritime chaparral. Like other annual plants of sandy soils, seaside bird's-beak generally requires regular ground disturbance to maintain a bare substrate and control competition with non-native grasses and perennial species. According to the CNDDB, this species has been documented on sand dunes in Sand City, Marina, Seaside, and Monterey although these records are all prior to 1950 and populations in these areas may have been extirpated (CDFW, 2016). This species may occur in suitable habitat, such as central dune scrub, maritime chaparral, and coast live oak woodland at the proposed subsurface slant well site (e.g., the CEMEX sand mining facility); along the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main alignments; and at the ASR-5 Well and ASR-6 Well sites, along the ASR Conveyance Pipeline alignment, along the ASR Pump-to-Waste Pipeline and the ASR Recirculation Pipeline alignment.

Menzies' wallflower (*Erysimum menziesii*). Menzies' wallflower is federal and state listed as endangered and a CRPR 1B.1 taxon. Originally, it was thought that two subspecies (*Erysimum menziesii* ssp. *menziesii* and ssp. *yadonii*) occur within Monterey County, with subspecies *menziesii* occurring in a disjunct distribution in Monterey and Mendocino Counties and subspecies *yadonii* restricted to coastal dunes between the mouth of the Salinas River and the former Fort Ord military base (USFWS, 2008). However, the most recent update to the Jepson Manual only recognizes the species and not these two subspecies (Jepson Flora Project, 2013). This species is a biennial or perennial plant in the mustard family and produces yellow flowers from June through August. It was observed within the new Transmission Main alignment near the intersection of Lightfighter Drive and Highway 1 during surveys conducted for the proposed project in 2014 (URS, 2014b). This species occurs at the foredunes north of the CEMEX sand mining facility (CDFW, 2016) and was observed in this same area during botanical surveys conducted for the proposed project in 2012 and 2016 (ESA, 2012; 2016). It also occurs in sand dunes north and south of the CEMEX facility (CDFW, 2016). This species has potential to occur in central dune scrub at the proposed subsurface slant well site and along the proposed Source Water Pipeline, and new Desalinated Water Pipeline alignments.

Sand gilia (*Gilia tenuiflora* ssp. *arenaria*). Sand gilia is federally listed as endangered, state listed as threatened, and a CRPR 1B.2 taxon. It is a small, erect annual in the phlox family (Polemoniaceae) blooming from April through June. A rare associate of the maritime chaparral, coastal scrub, and oak woodland communities of northern Monterey County, sand gilia favors bare

substrates created by unstable soil conditions. Sand gilia often occurs with Monterey spineflower, which is a federally threatened and CRPR 1B.2 species,[9] with similar ecological requirements; however, a more common associate is wand woollystar (*Eriastrum virgatum*). Changes in dune vegetation have greatly reduced the amount of suitable habitat for these disturbance-dependent species, and many remaining populations are associated with roadsides, eroded drainages, and recently burned chaparral. This species has been observed in sand dunes throughout the project area. Within the immediate project vicinity it has been observed at Marina State Beach south of the CEMEX sand mining facility; in central dune scrub north of the CEMEX sand mining facility; within the proposed new Transmission Main alignment near the intersection of Imjin Parkway and Highway 1; in dune scrub west of Auto Center Parkway; at a location[10] east of General Jim Moore Boulevard in the vicinity of the ASR facilities; at a former Fort Ord military base property located approximately 1.2 miles south of the intersection of Del Monte Boulevard and Reservation Road and just east of Highway 1; and at Marina State Beach approximately 1.4 miles south of the intersection of Del Monte Boulevard and Reservation Road and just west of Highway 1 (CDFW, 2016). Based on the broad distribution of occurrence records within the project area, this EIR/EIS assumes sand gilia could potentially occur in central dune scrub and central maritime chaparral at the subsurface slant wells site, along the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline alignments, and at the ASR-5 Well and ASR-6 Well sites.

Yadon's rein orchid (*Piperia yadonii*). Yadon's rein orchid is federally listed as endangered and a CRPR 1B.1 taxon. It is a slender perennial herb in the orchid family (Orchidaceae) that blooms from May through August. This species occurs in Monterey pine forest with a sparse understory, and along ridges and other areas of shallow soil within maritime chaparral. Unlike many other rare plants associated with maritime chaparral, Yadon's rein orchid does not colonize bare ground following disturbance events; instead, this species requires bare areas that remain relatively stable over time, allowing plants to form symbioses with host-specific mycorrhizal fungi. CNDDB occurrence records for this species in the project vicinity are mostly limited to areas south and west of the Monterey Regional Airport (CDFW, 2016). This species has been documented east of Highway 1 and north of Imjin Parkway (CDFW, 2016). It has also been documented approximately 0.3 mile north of the proposed Ryan Ranch-Bishop Interconnection Improvements (Fort Ord Reuse Authority, 2012). Yadon's rein orchid has the potential to occur near the Main System-Hidden Hills Interconnection Improvements site, and at the ASR-5 and ASR-6 Wells sites, along the ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline alignments.

Pacific Grove clover (*Trifolium polyodon*). Pacific Grove clover is state listed as rare and a CRPR 1B.1 taxon, though possibly of hybrid origin (Baldwin, et al, 2012). It is a small semi-prostrate annual plant in the pea family (Fabaceae) that flowers from April to June. Pacific Grove clover occurs on mesic sites in closed-cone coniferous forest (i.e., Monterey pine and cypress),

9 CRPR 1B consists of plants that are rare, threatened, or endangered in California and elsewhere. The 0.2 extension indicates that the plant is "Moderately endangered in California" and reflects the level of threat to the species.

10 As reported in the CNDDB (CDFW, 2016), the exact location of this occurrence record is unknown, but is mapped as a large polygon east of General Jim Moore Boulevard based on a map in "Flora and Fauna Baseline Study of Fort Ord."

and in grasslands, coastal prairie or meadow habitat on marine terraces, and in swales in dunes. It has been documented at several locations on the west side of the Monterey Peninsula, on Point Lobos, and in a few other locations near Jack's Peak and in Carmel Valley (CDFW, 2016). Historical records suggest it may once have been more widespread in the vicinity of Monterey and Pacific Grove, but has likely been displaced by residential and golf course development of marine terrace grasslands and forests (Jones & Stokes, 1996). Although it can occur on sites with some ongoing disturbance, the MPWSP facilities located closest to known or potential populations (Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements) would be in previously developed locations, such as roads.

Invertebrates

Smith's blue butterfly (*Euphilotes enoptes smithi*). Smith's blue butterfly is federally listed as endangered. It is a small butterfly endemic to the central coast of California. This species relies on two host plants—coast buckwheat and seacliff buckwheat (*Eriogonum parvifolium*)—during all of its life stages. These two host plant species are found in coastal sand dunes and chaparral. Smith's blue butterfly uses the flower heads of these plants for feeding, mating, and egg-laying. Adults emerge during summer (June through September), and live approximately one week, during which time they mate. Eggs hatch shortly thereafter, and the caterpillars feed on the host plant then pupate for about 10 months (typically in the leaf litter below the plant) before emerging as adults the next summer. Adults also occasionally feed on nectar from naked buckwheat (*Eriogonum nudum*).

Smith's blue butterfly has been documented at several locations containing central dune scrub in the vicinity of the project area, from the city of Monterey to the south to the Salinas River National Wildlife Refuge to the north (CDFW, 2016; USACE, 1997; Fort Ord Reuse Authority, 2012). There is also a historical record from chaparral near Carmel Valley Village and two records near the Carmel school in Carmel Valley (CDFW, 2016). During 2012 botanical surveys conducted at the "north CEMEX site" located approximately 0.8 mile north of the CEMEX active mining area,[11] coast buckwheat, one of the two host plants for the Smith's blue butterfly, was observed in high densities in the sand dunes north of the CEMEX sand mining facility (ESA, 2012). Coast buckwheat was also observed in high densities along the CEMEX access road and in central dune scrub within the CEMEX active mining area and Smith's blue butterfly was observed in a mosaic of central dune scrub and ice plant mats during the 2016 botanical surveys of the CEMEX facility (Zander Associates, 2014; ESA, 2014; 2016). Coast buckwheat and seacliff buckwheat was found in central dune scrub along the new Transmission Main between Beach Road and Lightfighter Drive and coast buckwheat was observed along the Source Water Pipeline and new Desalinated Water Pipeline along Lapis Road. (AECOM, 2016; ESA, 2016). Smith's blue butterfly has the potential to occur at the locations where coast buckwheat has been observed.

[11] This location corresponds with the subsurface intake system described in CalAm's January 2013 Supplemental Testimony, which included up to 10 subsurface slant wells at the north CEMEX site. After input from resource agencies in March 2013 regarding impacts on western snowy plover habitat at this site, the subsurface intake system for the MPWSP was moved south to its current location in the CEMEX active mining area (see Chapter 7, Alternatives, regarding Preliminary Intake Option 1 at the north CEMEX site for additional discussion).

Fish

South- Central California Coast Steelhead (*Oncorhynchus mykiss*) Distinct Population Segment. The South-Central California Coast Steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (SCCC DPS) is federally listed as threatened and considered a California species of special concern. Steelhead are anadromous, meaning that they spawn in freshwater, spend the first one to three years (or more) of life in freshwater, and then migrate to the ocean where they continue to grow and mature before returning to spawn in their natal streams. Steelhead populations within the Salinas River and Carmel River basins are part of the threatened SCCC DPS of the species. This DPS extends from the Pajaro River south to, but not including, the Santa Maria River. The Salinas River watershed is considered a part of the Interior Coast Range Biogeographic Population Group (BPG) and the Carmel River is included in the Carmel Basin BPG within the 2013 SCCC DPS Recovery Planning Area (NMFS, 2013).

Overall population of the SCCC DPS is understood to be extremely small (NMFS, 2013). Steelhead populations within the Salinas River watershed have not been well documented, like many watersheds within this DPS, but a few point estimates, summarized in NMFS (2007), are available:

- USFWS catch estimate of 3,600 adults in 1946
- USFWS average run-size estimate of 900 fish in 1951
- Kelley and Dettman estimate of less than 500 adults as of 1983

Based on the above trend and more recent population assessments conducted on the Arroyo Seco, NMFS (2007) concluded that the Salinas River run of steelhead has declined to an adult abundance averaging less than 50 fish and that this remnant population faces a host of risks intrinsic to the low abundance of various sub-populations within the watershed. Poor habitat conditions related to the majority loss of the Salinas River estuary, increase in erosion and sedimentation resulting from adjacent land uses (e.g. residential and agricultural development), water management and physical impediments (e.g. groundwater extraction and dams), and presence of invasive species (e.g., giant reed [*Arundo donax*] and striped bass [*Marone saxatilis*]) are considered the primary threats to the Interior Coast Range BPG population (NMFS, 2013). NMFS (2007) concluded that the Upper Salinas, Nacimiento/San Antonio, and Arroyo Seco River sub-populations face "very high", "high", and "fairly high" risks of extinction, respectively. Additional monitoring conducted at the Salinas River Weir between 2010 and 2014 to document steelhead passage counts, abundance, and migration timing detected 53 upstream passages in the most abundant monitoring season (2012-2013) (FISHBIO, 2014). Although there are no steelhead occurrences from the CNDDB in Tembladero Slough, steelhead have the potential to occur in that slough. The Castroville Pipeline would be installed beneath the Salinas River and Tembladero Slough via trenchless technologies.

Amphibians

California tiger salamander (*Ambystoma californiense*). California tiger salamander is federal and state listed as threatened. It is principally an upland species found in annual grasslands and in the grassy understory of valley-foothill hardwood communities in central and northern California.

It requires underground refuges (usually ground squirrel or other small mammal burrows), where it spends the majority of its annual cycle. Between December and February, when seasonal ponds begin to fill, adult California tiger salamanders engage in mass migrations to aquatic sites during a few rainy nights to breed. Adult tiger salamanders have been documented at distances of two kilometers (1.2 miles) from breeding ponds (Orloff, 2007).

No potential breeding ponds were observed within the project area. There are few CNDDB records for California tiger salamander within the immediate project vicinity. The closest CNDDB records are from a stock pond located approximately 1 mile south of the Ryan Ranch–Bishop Interconnection Improvements site and 2 miles northwest of the Main System–Hidden Hills Interconnection Improvements site; and from a seasonal swale surrounded by annual grassland and strawberry fields located 1.5 miles northeast of the Castroville Pipeline alignment northern terminus where 33 California tiger salamander larva were captured in 2006 (CDFW, 2016). California tiger salamander larvae have also been documented at a vernal pool located approximately 1 mile northeast of the Ryan Ranch–Bishop Interconnection Improvements site (CDFW, 2016). A known breeding site is also located approximately 1.2 miles northeast of the Ryan Ranch-Bishop Interconnection Improvements site (Fort Ord Reuse Authority, 2012). This species has also been observed approximately 2 miles east of the proposed ASR facilities.

This species would have low potential to occur along the new Transmission Main Pipeline alignment as there are no recent observations in the vicinity of this alignment and this area is highly urbanized.

The MPWSP Desalination Plant site has previously been regularly mowed or disked; however, it currently provides non-native grassland with significant cover from ruderal species. The site is located within 250 feet of a drainage ditch connected to the Salinas River and a retention basin to the northeast of the site. There is some potential that California tiger salamander could occur in this drainage ditch or retention basin and, if present, could utilize grassland at the MPWSP Desalination Plant as upland habitat.

Non-native grassland within the north portion of the proposed new Desalinated Water Pipeline and Source Water Pipeline alignments is located within 1.2 miles of the drainage ditch connected to the Salinas River. Additionally, a potential breeding pond surrounded by grassland and agricultural fields is located in Armstrong Ranch within 1.2 miles east of the new Desalinated Water Pipeline Alignment. The area surrounding the pond has recently been converted to agricultural, which could limit dispersal from the pond to the pipeline alignment. If present within the ditch and/or pond, California tiger salamander could disperse to grassland within the northern portion of the alignments and use these areas as upland habitat. This species would not be expected to occur at the pond at Locke-Paddon Park as the pond is isolated by development. Grassland located within the Pipeline to CSIP Pond and Brine Discharge Pipeline alignments and the Brine Mixing Box construction footprint are also located within 1.2 miles of the drainage ditch connected to the Salinas River and retention basin and California tiger salamander could utilize these areas as upland habitat.

With the exception of grassland located at Charles Benson Road and Del Monte Boulevard, the Castroville Pipeline is surrounded by agricultural or developed areas which provide marginal dispersal habitat for California tiger salamander. Agricultural drainage ditches along the alignment are regularly maintained, sparsely vegetated, shallow and unlikely to support breeding California tiger salamander. One pond located just over 1.2 miles northwest of the alignment among agricultural fields has potential to support breeding California tiger salamander; however, CNDDB has no records of species occurrence at these locations (CDFW, 2016). A swale is located approximately 1.2 miles northeast of the Castroville Pipeline terminus. If California tiger salamanders are present in this swale, they could potentially disperse into the project area. Agricultural fields and the City of Castroville which occur between the Castroville Pipeline alignment and the swale provide low quality dispersal habitat unlikely to be used as upland habitat by California tiger salamander.

The grassland adjacent to Charles Benson Road is separated from the Armstrong Ranch grasslands to the south; however, California tiger salamander could disperse into this area from the drainage ditch connected to the Salinas River and use this grassland as upland habitat.

According to mapping of potential California tiger salamander breeding and upland habitat conducted within the former Fort Ord (Fort Ord Reuse Authority, 2012), there are no potential breeding ponds located within 1.2 miles of the ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, or ASR Pump-to-Waste Pipeline, so this species would not be expected to occur at these sites.

California tiger salamander has been observed within 1.2 miles of the Ryan Ranch-Bishop Interconnection Improvements site. There are also ponds located within 1.2 miles of the Main System-Hidden Hills Interconnection Improvements site that could support California tiger salamander. The majority of the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements sites are paved and would not support this species. However, California tiger salamander could occur in the approximately 0.7-acre grassland area located within the proposed Ryan Ranch-Bishop Interconnection Improvements site and grassland or coast live oak woodland adjacent to both of these Interconnection Improvements sites.

The Carmel Valley Pump Station site consists of non-native grassland with coast live oak woodland fringe south of Carmel Valley Road and surrounded by residential development. California tiger salamander are not expected at this site. There are no CNDDB occurrence records for this species in the vicinity of the Carmel Valley Pump Station site and, from aerial photographs, suitable potential breeding habitat does not appear within 1.2 miles of the site.

California red-legged frog (*Rana draytonii*). California red-legged frog is federally listed as threatened and considered a California species of special concern. This species is principally a pond frog that can be found in quiet permanent waters of ponds, pools, streams, rivers, springs, marshes, and lakes. Moist woodlands, forest clearings, and grasslands also provide suitable habitat for this species in the non-breeding season. Adult frogs seek waters with dense shoreline vegetation, such as cattails (*Typha angustifolia, T. latifolia*), which provide good cover, but may

also be found in unvegetated waters. California red-legged frogs breed from January to May. Eggs are attached to vegetation in shallow water and are deposited in irregular clusters. Tadpoles grow up to 3 inches in size before metamorphosing. California red-legged frogs are active year-round along the coast but inland populations may aestivate from late summer to early winter. Adults consume insects such as beetles, caterpillars, and isopods, while tadpoles forage on algae and detritus. Depending on environmental conditions, California red-legged frogs may frequently travel distances greater than 1.2 miles from breeding ponds, and some adults have been documented to travel more than 2 miles (USFWS, 2002). Typical dispersal distances are less than 0.3 mile, with few individuals dispersing up to 1.2 to 1.8 miles (Fellers, 2005). Dispersal habitat is defined in the Federal Register's designation of critical habitat for the California red-legged frog by the USFWS as "upland or riparian habitat within and between occupied or previously occupied sites located within 1 mile of each other (USFWS, 2010b)."

Potential California red-legged frog breeding habitat was not observed within the project boundary during reconnaissance surveys conducted for the proposed project. There are few California red-legged frog CNDDB occurrence records in the immediate project vicinity (CDFW, 2016). Most CNDDB records are limited to the Carmel River with one record from the Salinas River approximately 0.75 mile east of the proposed MPWSP Desalination Plant site (CDFW, 2016). There are some historical observations from 1856, 1891, and 1942 from the Pacific Grove and downtown Monterey area (AmphibiaWeb, 2016). It is unlikely that California red-legged frogs still occur in this area due to years of development and isolation from recent occurrence records. This frog is known to breed along the Carmel River and adults have been observed in artificially-maintained ponds at the Tehama Golf Course, which is located approximately 1.2 miles south of the Ryan Ranch-Bishop Interconnection Improvements and 2.1 miles west of the Main System-Hidden Hills Interconnection Improvements site (CDFW, 2016).

This species would have low potential to occur at the new Transmission Main as there are no recent observations in the vicinity and this area is highly urbanized.

The MPWSP Desalination Plant has previously been regularly mowed or disked; however, it currently supports non-native grassland with ruderal species cover. The site is located within 675 feet of the Salinas River, and 250 feet of a drainage ditch connected to the Salinas River and retention pond. Since the frog is known from the Salinas River, this species could potentially disperse through MPWSP Desalination Plant site and use non-native grassland as upland habitat.

Non-native grassland within the north portion of the proposed new Desalinated Water Pipeline and Source Water Pipeline is located within one mile of the Salinas River. Additionally, a pond surrounded by grassland and agricultural fields is located in Armstrong Ranch within 1.2 miles east of the new Desalinated Water Pipeline Alignment. The area surrounding the pond has recently been converted to agricultural, which could limit dispersal from the pond to the pipeline alignment. If present within the Salinas River and/or pond, California red-legged frog could disperse to grassland within the northern portion of the alignments and use these areas as upland habitat. This species would not be expected to occur at the pond at Locke-Paddon park as it is surrounded by development and likely contains predatory fish. Non-native grassland located within the Pipeline to CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box project area

boundaries also is located within 1 mile of the Salinas River and California red-legged frog could disperse through these areas as well.

The Castroville Pipeline is surrounded by agricultural or developed areas which provide marginal upland habitat for California red-legged frog. Agricultural drainage ditches along the alignment are regularly maintained, sparsely vegetated, shallow and unlikely to support breeding California red-legged frog. The Salinas River, Tembladero Slough, and the freshwater marsh and riparian woodland and scrub north of Tembladero Slough provide potential aquatic habitat for California red-legged frog. Additionally, same as the Source Water Pipeline and new Desalinated Water Pipeline, potential breeding ponds are located within 1.2 miles of the non-native grassland located north of the 0.8-mile-long pipeline segment along Charles Benson Road. California tiger salamander and California red-legged frog could utilize these grasslands as upland habitat.

According to mapping of potential California red-legged frog breeding and upland habitat conducted within the former Fort Ord (Fort Ord Reuse Authority, 2012), there are no potential breeding ponds located within one mile of the ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, or ASR Recirculation Pipeline, so this species is not be expected to occur at these sites.

California red-legged frog has been observed within one mile of both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites, and there are several drainages between the recorded sightings and these project improvements. Although most of the project area associated with the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements are paved, California red-legged frog could occur in the approximately 0.7-acre grassland area located within the proposed Ryan Ranch-Bishop Interconnection Improvements site and grassland or oak woodland that occurs adjacent to both of these sites.

The Carmel Valley Pump Station site consists of non-native grassland with coast live oak woodland fringe south of Carmel Valley Road and surrounded by residential development. The site is located on a lot adjacent to the Carmel River where CNDDB documents a breeding population of California red-legged frog between 1993 and 2003 (CDFW, 2016). However, groundwater pumping of the Carmel River in this area is reported to leave smaller tributaries and backwater pools dry and would influence use of this area for breeding on an annual basis (CDFW, 2016). California red-legged frog could use the Carmel Valley Pump Station site as upland refugia or during dispersal.

Birds

Western Snowy Plover (*Charadrius alexandrinus nivosus*). The western snowy plover is federally listed as threatened and considered a California species of special concern. It breeds primarily on coastal beaches from southern Washington to southern Baja California. The species breeds above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Less common nesting habitat includes bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. Snowy plover use areas with wide, sandy, dune-backed

beaches for roosting and foraging during the nonbreeding season. This species forages above and below the mean high waterline, typically gathering food from the surface of the sand, wrack line, or low foredune vegetation.

Western snowy plover are known to nest in the beach and sand dunes between Reservation Road and the Salinas River National Wildlife Refuge, known as the Marina subregion (Page et al., 2017). In this subregion, 34 nests were observed in 2016 and 65 nests were found in 2015 (Page et al., 2016). In 2016 there were 427 individual snowy plovers in the Monterey Bay breeding population (Page et al., 2017). During surveys conducted for the MPWSP in 2012 (ESA, 2012) and 2013 (ESA, 2013), western snowy plovers were observed at the beach located north and south of the CEMEX sand mining facility, respectively. Multiple western snowy plover nests have been observed on the beach and foredunes within and at the proposed northernmost subsurface slant well cluster in the CEMEX active mining area (PRBO, 2012 in Zander Associates, 2013). This species has also historically nested in the backdunes of the CEMEX active mining facility where the subsurface slant wells are proposed (Neuman, 2015). Several western snowy plovers were observed among the sparse central dune scrub and iceplant mats of the CEMEX active mining facility during reconnaissance surveys in May 2016 (ESA, 2016). Western snowy plover has a high potential to nest along the beach and foredunes in the vicinity of the northernmost subsurface slant well cluster at the western terminus of the proposed Source Water Pipeline alignment. Additionally, western snowy plover may use the beach and dunes within all subsurface slant well and Source Water Pipeline work areas for wintering, roosting, and foraging. Western snowy plover has potential to nest in the backdunes in the proposed subsurface slant well area.

Other Special-Status Species

Plants

Hickman's onion (*Allium hickmanii*). Hickman's onion is a CRPR 1B.2 taxon. It is a perennial, bulbiferous herb in the onion family (Alliaceae) that blooms during April and May. This species is most often associated with shallow, sandy, or otherwise unproductive soils, such as shale and clay hardpan. Hickman's onion is associated with a variety of plant species; most populations are associated with grassland species, but some occur at the grassland/chaparral ecotone or within open oak woodland areas. Plants favor slightly mesic microhabitats within these communities. Coastal influence, and the supplemental moisture associated with summer fog, may be the most important variable affecting population distributions. Remnant patches of coastal prairie typically receive summer fog and are particularly likely to support Hickman's onion. This species has been documented in a moist drainage area over hardpan near the proposed Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016). This species has not been observed during project-related botanical surveys, but has potential to occur in grassland or grassland understory of coast live oak woodlands alongside the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites.

Hooker's manzanita (*Arctostaphylos hookeri* ssp. *hookeri*). Hooker's manzanita is a CRPR 1B.2 taxon. One of several rare manzanita species endemic to the Monterey Bay region, Hooker's manzanita (heath family [Ericaceae]) is associated with sandy shale soils and sandstone outcrops.

It is an uncommon component of the maritime chaparral community, and is differentiated from other local manzanitas by its short, low-growing stature and shiny green leaves. The distribution of this subspecies extends from the hills east of Watsonville to Carmel; other rare subspecies of *A. hookeri* occupy coastal habitat to the north and south. It is found in chaparral, coastal prairie, coastal scrub, and valley and foothill grassland communities. This species has been documented within maritime chaparral near the Ryan Ranch-Bishop Interconnection site (CDFW, 2016; USACE, 1997). During botanical surveys of the project area in 2016, Hooker's manzanita was observed in central dune scrub bordering the new Transmission Main Pipeline alignment along General Jim Moore Boulevard at Normandy Road (AECOM, 2016). This species has a potential to occur in maritime chaparral and northern coastal scrub (California sagebrush scrub alliance) communities near the Main System-Hidden Hills Interconnection Improvements site and along the east side of General Jim Moore Boulevard in the vicinity of the proposed ASR facilities, and in central dune scrub at the subsurface slant well site and along the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main Pipeline, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to Waste Pipeline alignments.

Toro manzanita (*Arctostaphylos montereyensis*). Toto manzanita is a CRPR 1B.2 taxon. The species is identified by its short-haired glandular appearance and relatively long petioles. Toro manzanita is found in chaparral, woodland, and coastal scrub communities. Occurrence records for this species are located in maritime chaparral in the vicinity of both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites, near the Monterey Regional Airport, and on the former Fort Ord military base (CDFW, 2016). It may occur in coast live oak woodland, maritime chaparral, or northern coastal scrub (California sagebrush scrub alliance) in the vicinity of the Ryan Ranch-Bishop Interconnection Improvements site; Main System-Hidden Hills Interconnection Improvements site; along the east side of General Jim Moore Boulevard in the vicinity of the proposed ASR-5 and ASR-6 Wells and the three proposed ASR pipelines; and along the proposed new Transmission Main.

Pajaro manzanita (*Arctostaphylos pajaroensis*). Pajaro manzanita is a CRPR 1B.1 taxon. This species is an important component of maritime chaparral in the upper watershed of Elkhorn Slough and occurs with less frequency in the Marina and Seaside areas. It can also occur along the edges of oak woodland. Pajaro manzanita is readily distinguishable by its clasping, square-based leaves and mint green color. This species has been observed in the former Fort Ord military base near the intersection of General Jim Moore Boulevard and Broadway Avenue and near the intersection of Lightfighter Drive and Highway 1 near the northern entrance to the former Fort Ord military base (CDFW, 2016). This species has potential to occur in maritime chaparral, northern coastal scrub or coast live oak woodland communities along the new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments; at both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites; and at the ASR-5 and ASR-6 Well sites.

Sandmat manzanita (*Arctostaphylos pumila*). Sandmat manzanita is a CRPR 1B.2 taxon. It is a low-growing mounded shrub found in sand dunes. The leaves of sandmat manzanita are smaller than other locally occurring manzanitas. The bark is red and shredded. Sandmat manzanita is an important component of maritime chaparral in the former Fort Ord military base and is

documented in the vicinity of General Jim Moore Boulevard, in coastal areas from Marina to Seaside, and near the Presidio of Monterey and the Monterey Airport (CDFW, 2016). During reconnaissance-level surveys conducted for this EIR/EIS, this species was observed in central dune scrub at multiple locations along the proposed new Transmission Main alignment between Marina and Lightfighter Drive (ESA, 2016). Two individuals were also observed along Lapis Road near the proposed new Desalinated Water Pipeline alignment during project related botanical surveys conducted in 2012 (ESA, 2012). This species has potential to occur within central dune scrub and central maritime chaparral within the subsurface slant wells site, along the Source Water Pipeline alignment, along the new Desalinated Water Pipeline alignment, in the vicinity of the Main System-Hidden Hills Interconnection Improvements, and at the ASR-5 and ASR-6 Wells sites, along the ASR Conveyance Pipeline, ASR Recirculation Pipeline, and the ASR Pump-to-Waste Pipeline alignments.

Ocean bluff milkvetch (*Astragalus nuttallii* var. *nuttallii*). Ocean bluff milkvetch is a CRPR 4.2 taxon. It is a perennial herb of the pea family, endemic to the central coast of California where it grows in sandy soils and forms a thick, low clump of hairy stems and leaves. Flowers are dull cream-colored to violet and fruit is an inflated legume pod up to 6 centimeters in length containing many seeds in a single chamber. Observed during focused botanical surveys of the CEMEX active mining facility conducted in 2015 (AECOM, 2016). May occur in central dune scrub throughout the project area at the subsurface slant wells site, along the Source Water Pipeline alignment, along the new Desalinated Water Pipeline alignment, the ASR-5 and ASR-6 Wells sites, along the ASR Conveyance Pipeline, ASR Recirculation Pipeline, and the ASR Pump-to-Waste Pipeline alignments.

Monterey coast paintbrush (*Castilleja latifolia*). Monterey Coast paintbrush is a CRPR 4.3 taxon. It is a hemiparasitic perennial herb in the broomrape family (Orobanchaceae) that typically blooms between February and September. It grows in sandy soils in closed-cone coniferous forest, coastal dunes, coastal scrub, and openings in cismontane woodland. Monterey Coast paintbrush has been observed in central dune scrub during reconnaissance surveys of the new Transmission Main Pipeline alignment between Reservation Road and Lightfighter Drive and at the CEMEX active mining facility (ESA, 2016; AECOM, 2016). Monterey Coast paintbrush has potential to occur in central dune scrub, central maritime chaparral, and coast live oak woodland at the subsurface slant well site, along the Source Water Pipeline, new Desalinated Water Pipeline, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, and at the ASR-5 and ASR-6 Wells.

Monterey ceanothus (*Ceanothus rigidus*). Monterey ceanothus is a CRPR 4.2 taxon. It is a perennial evergreen shrub in the buckthorn family (Rhamnaceae) that typically blooms between February and June. This species is found in closed-cone coniferous forest, chaparral, and coastal scrub areas with sandy soils. It is found in Monterey, Santa Cruz, and San Luis Obispo Counties. It was also observed within the new Transmission Main alignment and adjacent to the ASR Conveyance, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments in 2014 during surveys conducted for the proposed project (URS, 2014b). Monterey ceanothus has potential to occur within central dune scrub and central maritime chaparral at the proposed subsurface slant wells site, along the Source Water Pipeline, new Desalinated Water Pipeline,

ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, and at the ASR-5 and ASR-6 Wells.

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*). Congdon's tarplant is a CRPR 1B.1 taxon. This spiny, resinous, annual herb in the sunflower family (Asteraceae) occurs in grassland, particularly in areas with alkaline substrates, and in depressions or disturbed areas where water collects. The blooming period extends from June through November. The range of this species includes Alameda, Contra Costa, Monterey, Santa Clara, San Luis Obispo, and San Mateo counties. Congdon's tarplant has been observed in grassland and drainage ditches in the vicinity of Highway 68 east and northeast of both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements. It has also been observed in mesic grassland areas at the Moss Landing Power Plant (CDFW, 2016). This species often occurs in disturbed areas and has potential to occur in slightly mesic, alkaline grassland and ruderal areas in the vicinity of the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements and at the MPWSP Desalination Plant site.

Branching beach aster (*Corethrogyne filaginifolia* [formerly *C. leucophylla*]). Branching beach aster is a CRPR 3.2 taxon. It is a perennial herb in the sunflower family. This species typically blooms between May and December and typically occurs in closed-cone coniferous forest and coastal dune and dune scrub habitat in sandy soils between taller shrub cover. It was frequently observed within the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and new Transmission Main alignments during surveys conducted for the proposed project (URS, 2014b; ESA, 2016).

Eastwood's goldenbush (*Ericameria fasciculata*). Eastwood's goldenbush is a CRPR 1B.1 taxon. It is a perennial yellow-flowering shrub in the sunflower family that blooms from July through October. This species occurs in sandy soils in openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub communities. Eastwood's goldenbush has been observed on the former Fort Ord military base in the vicinity of General Jim Moore Boulevard and between Patton Parkway and Imjin Road east of Highway 1 (CDFW, 2016). It has potential to occur in central dune scrub, maritime chaparral, and coastal sage scrub communities at the subsurface slant well site, along the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, in the vicinity of the Main System-Hidden Hills Interconnection Improvements, and at the ASR-5 Well and ASR-6 Well sites.

Sand-loving wallflower (*Erysimum ammophilum*). Sand-loving wallflower is a CRPR 1B.2 taxon. It is an annual yellow-flowered herb in the mustard family (Brassicaceae) that blooms February through June. This species is another rare associate of the maritime chaparral community, growing on loose sandy soils of coastal and inland dunes. Populations of sand-loving wallflower are documented within Marina State Beach, Fort Ord Dunes State Park, on former Fort Ord lands in the vicinity of Marina, on the former Fort Ord military base in the vicinity of General Jim Moore Boulevard, and in disturbed dunes north of the CEMEX sand mining facility (CDFW, 2016). Individuals of this species were observed in coastal dunes north of the CEMEX sand mining facility during project related botanical surveys conducted in 2012 (ESA, 2012).

Additionally this species was observed in 2014 and 2016 during surveys conducted for the proposed project at the subsurface slant well site within central dune scrub at the CEMEX active mining facility (ESA, 2014; 2016). Sand-loving wallflower was also documented in central dune scrub along the new Transmission Main Pipeline between Patton Parkway and Imjin Parkway (AECOM, 2016). This species has potential to occur in central dune scrub and maritime chaparral along the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, and at the ASR-5 Well and ASR-6 Well sites.

Kellogg's horkelia (*Horkelia cuneata* ssp. *sericea*). Kellogg's horkelia is a CRPR 1B.1 taxon. A spreading perennial herb in the rose family (Rosaceae), Kellogg's horkelia is associated with relict dunes and old marine terraces from San Mateo County south to Santa Barbara County. Relatively recent (within the last 30 to 40 years) CNDDB occurrence records have documented this species within the former Fort Ord military base east of General Jim Moore Boulevard within the development water infiltration area that will be used during development of the ASR-5 Well and ASR-6 Well, north of the Ryan Ranch-Bishop Interconnection Improvements site, and north of Imjin Parkway east of Highway 1 (CDFW, 2016). This species was observed along Del Monte Boulevard along the new Desalinated Water Pipeline alignment during project related botanical surveys conducted in 2012 and 2016 (ESA, 2012; 2016). Kellogg' horkelia has potential to occur in central dune scrub and maritime chaparral at the subsurface slant well site, and along the Source Water Pipeline alignment.

Carmel Valley bush-mallow (*Malacothamnus palmeri* var. *involucratus*). Carmel Valley bush-mallow is a CRPR 1B.2 taxon. It is a shrub in the mallow family (Malvaceae), and is a fire-dependent species found on talus hilltops and slopes in chaparral, woodland, and coastal scrub communities. This variety is endemic to Monterey and San Luis Obispo Counties. In the vicinity of the project area, more recent observations have been documented in the vicinity of the Main System-Hidden Hills Interconnection Improvements and Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016). In 2002, Carmel Valley bush-mallow was observed approximately 0.2 mile southwest of the Main System–Hidden Hills Interconnection Improvements and in 2003 it was observed in coast live oak forest approximately 300 feet south of the Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016). Carmel Valley bush-mallow has potential to occur in central dune scrub, central maritime chaparral, northern coastal scrub, coast live oak woodland, and non-native grassland communities along the ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, in the vicinity of the Main System-Hidden Hills Interconnection Improvements and Ryan Ranch–Bishop Interconnection Improvements, and at the ASR-5 Well and ASR-6 Well sites.

Marsh microseris (*Microseris paludosa*). Marsh microseris is a CRPR 1B.2 taxon. It is a perennial herb in the sunflower family that typically blooms between April and June, and uncommonly through July. It occurs in vernally wet areas within closed-cone coniferous forest, woodland, coastal scrub, and valley and foothill grasslands. It is found in the San Francisco Bay Area and along the central California coast. There are other historical records from the Del Monte Forest area. The most recent CNDDB observations of this species in the vicinity of the project area is from a 1997 observation located approximately 1.5 miles southwest of the Ryan Ranch–

Bishop Interconnection Improvements (CDFW, 2016). This species has potential to occur within seasonally wet areas in the vicinity of both the Ryan Ranch–Bishop and Main System-Hidden Hills Interconnection Improvements sites.

Northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*). Northern curly-leaved monardella is a CRPR 1B.2 taxon. It is an annual herb in the mint family (Lamiaceae), found in chaparral, coastal dunes, coastal scrub, and lower montane coniferous forest. Northern curly-leaved monardella typically blooms between April and September. This species has been observed in suitable habitat at several locations within the project vicinity (CDFW, 2016). The most recent observation was in the vicinity of the Monterey Regional Airport. This species has potential to occur within central dune scrub, central maritime chaparral, and northern coastal scrub communities at the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline.

South coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*). South coast branching phacelia is a CRPR 3.2 taxon. It is a perennial herb in the forget-me-not family (Boraginaceae), found in chaparral, coastal dunes, coastal scrub, and coastal sandy (sometimes rocky) marshes and swamps. South coast phacelia typically blooms between March and August. South coast branching phacelia has potential to occur in central dune scrub, central maritime chaparral, and northern coastal scrub communities at the subsurface slant wells site, within the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, and Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline).

Monterey pine (*Pinus radiata*). Monterey pine is a CRPR 1B.1 taxon. It is a perennial evergreen tree in the pine family (Pinaceae). There are only three native stands in California: at Ano Nuevo, in Cambria, and on the Monterey Peninsula. This species has been widely introduced and used in landscaping in many other locations; however, Monterey pine trees planted in urban or streetscape locations typically are not considered special-status. The CNDDB reports two occurrences of this species in the vicinity of the project area. The occurrence records include the entire assumed historical range, which encompass much of the Monterey Peninsula and portions of the project area. In practice, individual or isolated trees that exist only in a landscaping context are not considered sensitive. However, the *Biological Assessment for the Monterey Bay Regional Desalination Project Monterey Presidio Project* concludes that Monterey pines within the Monterey Bay Regional Desalination Project Monterey Presidio Project area are considered special-status because they occur within the historic range of the species (Denise Duffy & Associates, 2010). On a case-by-case basis, any Monterey pines present at the Carmel Valley Pump Station, and both Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements sites may be considered special-status if they are within, or in close proximity to, the assumed historical range reported by the CNDDB.

Michael's rein orchid (*Piperia michaelii*). Michael's rein orchid is a CRPR 4.2 taxon. It is a perennial herb in the orchid family that typically blooms between April and August. It is found in coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub,

and lower mountain coniferous forest. Michael's rein orchid was observed in several locations within the new Transmission Main pipeline alignment between Patton Parkway and Lightfighter Drive and along General Jim Moore Boulevard near San Pablo Avenue during protocol level plant surveys conducted for the proposed project in 2014 (AECOM, 2016). This species has potential to occur in central dune scrub and central maritime chaparral at the subsurface slant wells site, within the Source Water Pipeline, new Desalinated Water Pipeline, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, at the ASR-5 Well and ASR-6 Well, and in woodlands in the vicinity of the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites.

Santa Cruz microseris (*Stebbinsoseris decipiens*). Santa Cruz microseris is a CRPR 4.2 taxon. It is an annual herb in the sunflower family, found in open areas, sometimes in serpentine soils, in broadleaf upland forest, chaparral, coastal prairie and scrub, and valley and foothill grassland communities. It occurs in Monterey, Santa Cruz, and Marin Counties. Santa Cruz microseris typically blooms in April and May. One CNDDB occurrence record for this species is located in the vicinity of the project area; in 1978 one plant was observed at the top of a roadcut outside of pasture just northeast of the Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016). This species has a potential to occur in coast live oak or grassland in the vicinity of both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites.

Santa Cruz clover (*Trifolium buckwestiorum*). Santa Cruz clover is a CRPR 1B.1 taxon. It is an annual herb in the legume family that blooms April through October. It is typically found on margins of broadleaved upland forest, woodland, and coastal prairie. Its range includes Mendocino, Sonoma, San Mateo, Santa Cruz, and Monterey Counties. There are two CNDDB records for this species in the vicinity of the project area, both of which are from 1993 and are located near both the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements sites (CDFW, 2016). This species has potential to occur within coast live oak woodland or non-native grassland in and around these two sites.

Invertebrates

Globose dune beetle (*Coelus globosus*). The globose dune beetle is considered sensitive under the City of Marina's LCLUP. This species inhabits foredunes and sand hummocks where it forages leaves, twigs, seeds, and plant detritus above and below the surface, generally preferring native dune plants to non-native species with the exception of sea rocket (*Cakile maritima*). Its range extends from Bodega Bay Head to Ensenada, Baja California, and the Channel Islands (with the exception of San Clemente). This species has been observed along the coastal portion of Monterey Bay including the sand dunes in Seaside and at the Salinas River State Beach (CDFW, 2016). This species has potential to occur within central dune scrub at the proposed subsurface slant well site and in the western portion of the Source Water Pipeline.

Reptiles

Western pond turtle (*Actinemys marmorata*). The western pond turtle is considered a California species of special concern. It is an aquatic turtle that usually leaves the aquatic site to reproduce, to aestivate, and to overwinter. This turtle requires some slack or slow water, although it occurs

where enough food resources occur in faster moving water. Western pond turtle usually nest in hard-packed clay soil in upland areas from March to July. Hatchlings disperse from the nest with winter rains. Western pond turtles have been observed within the Carmel River, at a brackish water pond near the intersection of Beach Road and Reservation Road approximately 0.2 mile west of the proposed new Transmission Main Pipeline alignment (CDFW, 2016). This species has potential to occur within suitable aquatic habitat throughout the project area including Locke-Paddon Pond in Marina, Laguna del Rey Park in Monterey, the Salinas River, Tembladero Slough and freshwater marsh and riparian woodland and scrub north of Tembladero Slough.

Black legless lizard (*Anniella pulchra nigra*). Black legless lizard is considered a California species of special concern. They are found in sand dunes and sandy soils along the Monterey Bay. Black legless lizard typically inhabit dune areas with moist soil and bush lupine and mock heather as the dominant plants. They are fossorial animals that burrow in loose soil with a high sand content. This subspecies is typically black or dark brown above and yellow below. Some groups only recognize the species, California legless lizard (*Anniella pulchra*), and do not recognize this or other subspecies (i.e. silvery legless lizard described below). The specific CNDDB record locations for this species are suppressed by CDFW, but this species is known from sand dune communities, including both native and non-native plant dominant areas, at locations within the Marina, Seaside, Monterey, Moss Landing, and Watsonville West USGS 7.5 minute topographic quadrangles (CDFW, 2016). This species has potential to occur within central dune scrub, northern coastal scrub, and central maritime chaparral at the proposed subsurface slant well site; along the Source Water Pipeline, new Desalinated Water Pipeline, southwest portion of the Castroville Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments; and at the ASR-5 Well and ASR-6 Well sites.

Silvery legless lizard (*Anniella pulchra pulchra*). Silvery legless lizard is considered a California species of special concern. They are found in vegetation communities within sandy or loose loamy soils and sparse vegetation. Their range includes the coast and central valley of California from the southern San Francisco Bay Area to Baja California. This subspecies is silvery gray, or beige above and yellow below. As with the black legless lizard, some groups only recognize the species, California legless lizard, and do not recognize this or other subspecies. There is one CNDDB record for this subspecies in the vicinity of the project area; two individuals were observed in maritime chaparral near Reservation Road approximately 0.5 mile east of the project area (CDFW, 2016). The next closest CNDDB record is from sand dunes at Moss Landing approximately 5 miles northwest of the project area. Similar to the black legless lizard, this subspecies has potential to occur within central dune scrub, northern coastal scrub, and central maritime chaparral communities at the proposed subsurface slant well site; along the Source Water Pipeline, new Desalinated Water Pipeline, southwest portion of the Castroville Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments; and at the ASR-5 Well and ASR-6 Well sites.

Coast horned lizard (*Phrynosoma blainvillii*). Coast horned lizard is considered a California species of special concern. They occupy loose sandy loam and alkaline soils in a variety of vegetation communities including chaparral, grasslands, saltbush scrub, coastal scrub, and

clearings in riparian woodlands. Coast horned lizards primarily eat insects such as ants and beetles. Their population decline is mainly attributed to conversion of land for agricultural purposes. The human introduction of non-native Argentine ants, which tend to displace the native carpenter ants and do not provide enough nutrition for coast horned lizard, is another factor in their decline. Within the vicinity of the project area, coast horned lizards have been observed in grazed annual grasslands and coastal dune scrub north of Beach Road along the proposed new Desalinated Water Pipeline alignment (CDFW, 2016). Additionally, coast horned lizards have been observed at several locations approximately 1.5 miles east of the new Transmission Main alignment (CDFW, 2016). This species has potential to occur in sandy soils within grassland, central dune scrub, central maritime chaparral, and northern coastal scrub at the proposed subsurface slant well site; along the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments; and at the ASR-5 Well and ASR-6 Well sites.

Coast Range newt (*Taricha torosa*). Coast Range newt is considered a California species of special concern. Adult Coast Range newt habitat within central California includes grassland and woodland habitats. They breed in ponds, reservoirs and streams. Newts aestivate in terrestrial habitat during the dry summer and can migrate large distances between breeding and aestivation sites, however they may not migrate great distances if suitable aestivations sites are close to breeding sites. Coast Range newts have been observed in and around stock ponds located south of the Carmel River (CDFW, 2016). This species has potential to occur in ponds and streams and in adjacent grassland and woodland habitat within the survey area including: MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, ASR Facilities, new Transmission Main, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas.

Birds

Tricolored blackbird (*Agelaius tricolor*). Tricolored blackbird is considered a California species of special concern. Tricolored blackbirds are found almost exclusively in the Central Valley and central and southern coastal areas of California. The tricolored blackbird is highly colonial and forms dense breeding colonies of up to tens of thousands of pairs. This species typically nests in tall, dense, stands of cattails or tules, but also nests in blackberry, wild rose bushes, and tall herbs. Nesting colonies are typically located near standing or flowing freshwater. Tricolored blackbirds form large, often multi-species, flocks during the nonbreeding period and range more widely during the nonbreeding period than during the reproductive season. This species has been observed at Locke-Paddon Park, less frequently at the Salinas River, northeast of the Salinas River, and at other locations in the vicinity of the survey area (CDFW, 2016; eBird, 2016). While this species may also forage in grassland and agricultural areas throughout the project area, Locke-Paddon Park and Laguna del Rey Park are the only areas in the project area that provide adequate potential nesting habitat.

Short-eared owl (*Asio flammeus*). Short-eared owl is considered a California species of special concern. This species inhabit densely vegetated grasslands, emergent wetlands, and shrublands

along the coast with abundant prey (e.g., voles, other small mammals, birds, reptiles, amphibians, and arthropods). Short-eared owls require dense vegetative cover such as tall grasses and freshwater emergent vegetation for roosting and resting. Nesting occurs from April through July, with nests constructed on dry ground in depressions concealed by dense vegetation. In the project vicinity, short-eared owl has been observed at the Salinas River National Wildlife Refuge and Armstrong Ranch grasslands (eBird, 2016). This species could forage or nest in grassland, wetland, or northern coastal scrub habitat in the project area near the proposed Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and New Transmission Pipeline alignments, and near the proposed MPWSP Desalination Plant facility.

Western burrowing owl (*Athene cunicularia*). Western burrowing owl is considered a California species of special concern. It is a small, terrestrial owl of open country that favors flat, open grassland and sparse shrubland ecosystems. In California, western burrowing owls are found in close association with California ground squirrels. Ground squirrels provide western burrowing owls with nesting and refuge burrows, and maintain areas of short vegetation height, providing foraging habitat and allowing for visual detection of avian predators by burrowing owls. Burrowing owls are semi-colonial nesters, and group size is one of the most significant factors contributing to site constancy by breeding burrowing owls. The nesting season, as recognized by the CDFW, runs from February 1 through August 31. Within the project vicinity, wintering burrowing owls have been observed within coastal dune scrub near the U.S. Navy Post Graduate School and in grazed grassland north of Beach Road on either side of the new Transmission Main Pipeline alignment (CDFW, 2016). ESA observed two burrowing owls in these grasslands between Highway 1 and Del Monte Blvd. during 2016 reconnaissance surveys (ESA, 2016). Burrowing owls were also historically observed in open valley fields on the former Fort Ord lands near Reservation Road (CDFW, 2016). No recent local breeding burrowing owl occurrence records are included in the CNDDB (CDFW, 2016). During biological surveys conducted for the proposed project numerous ground squirrels and ground squirrel burrows were observed within non-native grassland, central dune scrub, and ruderal areas (ESA, 2016). Both breeding and wintering burrowing owls have potential to occur in non-native grassland, central dune scrub, central maritime chaparral, and ruderal areas that support ground squirrel populations along the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main Pipeline alignments.

Red-tailed hawk (*Buteo jamaicensis*). Red-tailed hawks, their nests, and their eggs are protected under California Fish and Game Code 3503.5. This species is commonly found in woodlands and open country with scattered trees. These large hawks feed primarily on small mammals, but will also prey on other small vertebrates, such as snakes and lizards, as well as small birds and invertebrates. Red-tailed hawks nest in a variety of trees in urban, woodland, and agricultural areas. This species is commonly found throughout the project vicinity (eBird, 2016). Red-tailed hawks may forage within grassland and scrub communities within the project area and could potentially nest within mature trees or suitable structures throughout the project area.

Red-shouldered hawk (*Buteo lineatus*). Red-shouldered hawks, their nests, and their eggs are protected under California Fish and Game Code 3503.5. This species is another common raptor species typically found in a variety of woodlands with nearby open areas for foraging. This

species has a highly varied diet of small mammals, snakes, lizards, amphibians, small or young birds, and large insects. Red-shouldered hawks build large stick nests in mature trees, including riparian woodland trees and large eucalyptus groves. This species has been observed at numerous locations throughout the project vicinity, most commonly within Laguna del Rey Park and El Estero Park (eBird, 2016). Red-shoulder hawks have potential to nest within riparian woodland, eucalyptus forest, oak woodland, and large groves of ornamental trees within the project area.

Ferruginous hawk (*Buteo regalis*). The ferruginous hawk is included on CDFW's watch list. This species is primarily a bird of the Great Plains and the Rockies, and only winters in California, typically in groups. This species forages over open country including grasslands, deserts, and sagebrush scrub, where it preys on small mammals. Ferruginous hawk has been observed near Moss Landing, on Former Fort Ord Base lands, Salinas River Water Treatment Plant, and at Armstrong Ranch (eBird, 2016). In 2004, four ferruginous hawks were observed wintering in the Armstrong Ranch grasslands (CDFW, 2016). This species could winter in grassland and forage over northern coastal scrub habitat in the project area near the proposed Source Water Pipeline, new Desalinated Water Pipeline, southwest portion of the Castroville Pipeline, and New Transmission Pipeline alignments, and near the proposed MPWSP Desalination Plant facility.

Northern harrier (*Circus cyaneus*). Northern harrier, its nests, and its eggs are protected under California Fish and Game Code 3503.5. This species forages over grasslands, wet meadows, sloughs, and marshes, feeding on small mammals such as California vole, mice, birds, frogs, small reptiles, and insects. In western states, this species nests on the ground in dry uplands. Northern harrier has been observed near the mouth of the Salinas River, at Armstrong Ranch, Marina State Beach, Fort Ord Dunes State Park, and former Fort Ord base lands in the project vicinity (eBird, 2016). This species could forage over the dunes near the subsurface slantwells; forage or nest in grassland, wetland, northern coastal scrub or central maritime chaparral habitat in the project area near the proposed Source Water Pipeline, new Desalinated Water Pipeline, southwest portion of the Castroville Pipeline, and New Transmission Pipeline alignments; near the proposed MPWSP Desalination Plant facility; along the ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments; and at the ASR-5 Well and ASR-6 Well sites.

White-tailed kite (*Elanus leucurus*). White-tailed kite is a state Fully Protected species. These raptors forage for small rodents and other prey primarily in open grassy or scrubby areas. They nest in large shrubs or trees adjacent to this habitat. Kites are likely to be found foraging in a variety of vegetation communities throughout the project area such as grassland, northern coastal scrub, and central maritime chaparral. White-tailed kites have been observed throughout the project vicinity (eBird, 2016). Suitable nesting habitat in areas with low levels of human disturbance is found throughout the project area.

California horned lark (*Eremophila alpestris actia*). California horned lark is included on CDFW's watch list. California larks are a permanent resident in most of California except the Sierra during winter. This species is usually found in open habitat, such as grassland and

agricultural areas, where trees and shrubs are absent and has been observed from sea level to above treeline in grasslands, deserts and alpine dwarf-scrub habitat. Horned lark uses grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities for cover from predators. The California horned lark typically nests in dry grasslands and rangelands that provide low, sparse cover (e.g., grazed, mowed, or barren areas without trees and shrubs) between March and July. Foraging habitat includes open grasslands where insects and seeds are abundant. This species has been observed at the Salinas River National Wildlife Refuge, grasslands of Armstrong Ranch, and in former Fort Ord military base lands within the project vicinity (eBird, 2016). California horned lark may forage and nest in grassland near the new Desalinated Water Pipeline, Source Water Pipeline, south west portion of the Castroville Pipeline, new Transmission Main Pipeline near Lightfighter Drive, Pipeline to CSIP Pond, near the proposed MPWSP Desalination Plant facility, and near the Ryan Ranch Interconnection Improvement site.

American peregrine falcon (*Falco peregrinus*). Peregrine falcon is a federally and state delisted species and state Fully Protected. They are known throughout California and are year-around residents along the Pacific coast. The peregrine is a specialist, preying primarily on mid-sized birds in flight, such as pigeons and doves. Occasionally these birds will eat insects and bats. Although typical nesting sites for the species are tall cliffs, preferably over or near water, peregrines are also known to use urban sites, including bridges and tall buildings. Peregrine falcons have been observed at Laguna Grande Regional Park, near Armstrong Ranch, and along the coast between Marina and Monterey (eBird, 2016). A peregrine nest has been observed within the Moss Landing USGS 7.5 7.5-minute topographic quadrangle, although the exact location is suppressed by the CNDDB (CDFW, 2016). Nesting habitat is absent from the project area, but this species may hunt and perch throughout the project area.

American kestrel (*Falco sparverius*). American kestrel, its nests, and its eggs are protected under California Fish and Game Code 3503.5. This species is a relatively small member of the falcon family that preys on small birds, mammals, lizards, and insects. The kestrel is found most commonly in open areas, such as grasslands and pastures. American kestrels nest primarily in tree cavities but may also nest in buildings. American kestrels have regularly been observed at Armstrong Ranch and Laguna Grande Park and occasionally at other locations in the project vicinity (eBird, 2016). Most documented sightings occurred in the non-breeding season. This species may nest in trees or buildings located adjacent to foraging habitat, such as grassland and agricultural fields, and forage throughout these open areas.

Loggerhead shrike (*Lanius ludovicianus*). Loggerhead shrike is considered a California species of special concern. They are year-round residents in grassland and scrub communities in California, where they forage primarily on large insects, lizards, and small mammals. Shrikes generally build their nests in shrubs in fairly open areas. This species has been observed at a few locations in the project vicinity including Armstrong Ranch, Fort Ord Dunes State Park, and Ryan Ranch in Del Rey Oaks (eBird, 2016). This species has potential to forage and nest in grassland, northern coastal scrub, and coast live oak woodland communities throughout the project area.

Mammals

Pallid bat (*Antrozous pallidus*). Pallid bat is considered a California species of special concern. They are pale to light brown in color and weighing about 1 ounce, the Pacific race is one of the state's largest bats. Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in hollow trees. Colonies can range from a few individuals to over a hundred and are non-migratory. Some female and/or young colonies (typical of the coastal subspecies) may use their day roost for their nursery as well as for winter roosting. Pallid bats typically breed from March 15 through August 15. Although crevices are important for day roosts, night roosts often include porches, garages, barns, and highway bridges. Pallid bats may travel up to several miles for water or foraging sites if roosting sites are limited. Pallid bats prefer foraging on terrestrial arthropods in dry open grasslands, vineyards, orchards, or oaks near water and rocky outcroppings or old structures. Although the occurrence of pallid bat in this part of Monterey County is not well-documented, the species could forage over a variety of communities in the project area and could potentially roost in human-made structures such as the Highway 1 overpasses or smaller bridge crossings in Castroville, Marina, Seaside, and Monterey and in trees throughout the project area.

Salinas kangaroo rat (*Dipodomys heermanni goldmani*). The Salinas kangaroo rat is considered sensitive under the City of Marina's Local Coastal Land Use Plan. Salinas kangaroo rat is a subspecies of Heerman's kangaroo rat (*Dipodomys heermanni*). These kangaroo rats occur in brushy and grassy slopes and flats and in chaparral-covered hillsides. They are known to gather seeds from a wide variety of forbs and grasses, as well as leaves and occasionally insects. Their preferred burrowing substrate is fine, deep soil, although shallow, coarse, and rocky soil also may be used. In the Monterey Bay, the range of the Salinas kangaroo rat includes the lower (northern) end of the Salinas Valley from the coast of Monterey Bay south of the mouth of the Salinas River to the vicinity of Soledad. The City of Marina's Local Coastal Land Use Plan identifies grasslands within the plan area as providing potential habitat for this subspecies. This species has potential to occur in grassland, scrub, and chaparral habitat along the new Desalinated Water Pipeline and new Transmission Main alignments and the staging area at Beach Road in the City of Marina.

Western red bat (*Lasiurus blossevillii*). Western red bat is considered a California species of special concern. In California, the western red bat is found in coastal areas south of the San Francisco Bay and in the Central Valley and surrounding foothills (Bolster, 1998). They roost in tree and shrub foliage, predominantly in edge habitats adjacent to streams and open fields. They are often associated with riparian habitats. The western red bat could occur in trees located throughout the project area, particularly those associated with riparian areas.

Monterey dusky-footed woodrat (*Neotoma fuscipes luciana).* Monterey dusky-footed woodrat is considered a California species of special concern. This species prefers hardwood forests, riparian communities, and brushlands and often forages above ground. Food includes berries, fungi, leaves, flowers, and nuts. Woodrats construct large nests of sticks. The breeding season of dusky-footed woodrat typically extends from February through November (Carraway and Verts, 1991). However, at the Hastings Reserve in the Upper Carmel Valley of Monterey County, reproduction is observed year-round, with the fewest pregnancies occurring during December and

the most during February (Williams et al., 1992). During reconnaissance-level surveys conducted for the proposed project, woodrat nests were observed in riparian woodland adjacent to the Salinas River near the Highway 1 overcrossing, approximately 0.5 mile north of the project area. Woodrats could occur in oak woodland in the vicinity of both the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites. Woodrats could also occur in central maritime chaparral, northern coastal scrub, and coast live oak woodland communities along the ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments, at the ASR-5 and ASR-6 Wells sites, at the Carmel Valley Pump Station site, and the Ryan Ranch-Bishop Interconnection Improvements site, and Main System-Hidden Hills Interconnection Improvements site.

Monterey shrew (*Sorex ornatus salarius*). Monterey shrew is considered a California species of special concern. This species is found in coastal salt marshes and adjacent sand hills and riparian wetland, woodland, and upland communities in the vicinity of the Salinas River Delta. According to the *Draft Installation-Wide Multispecies Habitat Conservation Plan*, which covers the former Fort Ord military base lands (HCP), in 2005, shrews that were believed to be Monterey shrews were captured during California tiger salamander salvage surveys conducted at the East Garrison site on the eastern end of Reservation Road (Fort Ord Reuse Authority, 2012). The DNA analysis had not been completed at the time of the publication of the HCP but based on the location it is assumed that captured shrews were subspecies *salarius*. Between 2010 and 2011 shrews were also inadvertently captured during California tiger salamander surveys at the Fort Ord Natural Reserve, which is located on the east side of Del Monte Boulevard along Reservation Road. DNA analysis of these shrews was also not available at the time of publication of the HCP, however it is assumed that they are the subspecies *salarius* based on dentition and external morphology. These shrews were found in a variety of vegetation types including: shaggy bark manzanita, coastal scrub, under oak trees, sandmat manzanita, and non-native grassland. Based on the 2005 and 2010/2011 captures, Monterey shrew also potentially occur in coast live oak woodland, grasslands, northern coastal scrub, central maritime chaparral, and savanna vegetation. The HCP mapped potential habitat for the Monterey shrew. Based on that habitat mapping and onsite conditions, Monterey shrew has potential to occur along the new Transmission Main Pipeline, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignments along General Jim Moore Blvd.; at the Carmel Valley Pump Station; in the vicinity of the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements; and at the ASR-5 Well and ASR-6 Well sites.

American badger (*Taxidea taxus*). American badger is considered a California species of special concern. In North America, American badgers occur as far north as Alberta, Canada and as far south as central Mexico. In California, American badgers occur throughout the state except in humid coastal forests of northwestern California in Del Norte and Humboldt Counties. The species has been decreasing in numbers throughout California over the last century. American badgers occur in a wide variety of open, arid vegetation communities but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub. The principal habitat requirements for this species appear to be sufficient food (burrowing rodents), friable soils, and relatively open uncultivated ground. American badgers are primarily found in areas of low to moderate slope. There is a historical CNDDB occurrence record for this species

from the city of Marina. More recent records indicate the species was observed in grazed grassland in the vicinity north of the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites (CDFW, 2016). This species has potential to occur in non-native grassland at the MPWSP Desalination Plant, along the Source Water Pipeline, new Desalinated Water Pipeline, Castroville and new Transmission Main alignments, ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline alignment and in the vicinity of the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites.

4.6.1.9 Critical Habitat

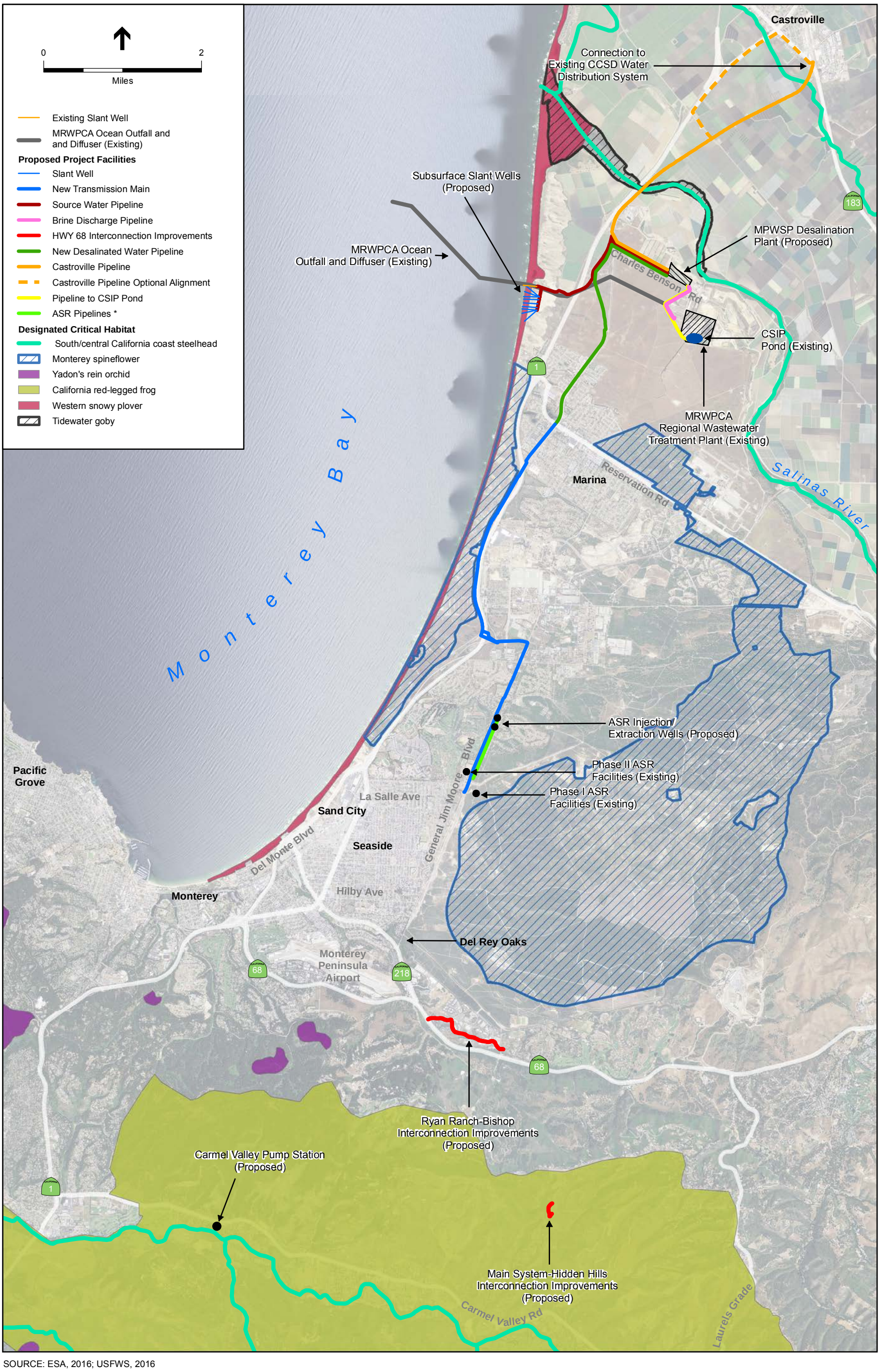
Critical habitat for six federally listed species is designated either within or in close proximity to the proposed project. The species include Monterey spineflower, Yadon's rein orchid, SCCC DPS, California red-legged frog, western snowy plover, and tidewater goby. **Figure 4.6-4** shows designated critical habitat for these species in the project vicinity.

Monterey Spineflower

Two Monterey spineflower critical habitat units occur in the project vicinity. Unit 3 (Marina) includes coastal beaches, dunes, and bluffs from the city of Marina south to the city of Seaside and Sand City and generally parallels the western side of the study area. An approximately 2-mile segment of the proposed new Transmission Main alignment is located parallel, and between 150 and 200 feet east, of the eastern boundary of Unit 3. Unit 8 (Fort Ord) includes grassland, maritime chaparral, coastal scrub, and oak woodland within the former Fort Ord military base east of General Jim Moore Boulevard. The area where water produced during development of the ASR-5 and ASR-6 wells would be conveyed lies along a portion of the western boundary of Unit 8. The Federal Register critical habitat designation notice for Monterey spineflower (73 FR 1525) defines the primary constituent element for this species as a vegetation structure arranged in a mosaic with openings between the dominant elements (e.g., scrub, shrub, oak trees, or clumps of herbaceous vegetation) that changes in spatial position as a result of physical processes such as windblown sands and fire and that allows sunlight to reach the surface of the following sandy soils: coastal beaches, dune land, Baywood sand, Ben Lomond sandy loam, Elder sandy loam, Oceano loamy sand, Arnold loamy sand, Santa Ynez fine sandy loam, Arnold-Santa Ynez complex, Metz complex, and Metz loamy sand.

Yadon's Rein Orchid

Multiple Yadon's rein orchid critical habitat units are located in the project vicinity. Units 4a and 4b (Aguajito), 5 (Old Capitol), and 6a and 6e (Monterey Peninsula) are all located within 2 miles of the study area. Units 4a and 4b are located between 1.3 and 1.9 miles southeast of the Ryan Ranch–Bishop Interconnection Improvements, respectively. Units 4a and 4b contain a mix of Monterey pine forest and maritime chaparral communities. Unit 6a supports Monterey pine forest, Gowen cypress/Bishop pine forest, and maritime chaparral. Unit 6e supports a mix of coast live oak and Monterey pine forest. The area between Units 5, 6a, and 6e and the study area is generally developed. The area between Units 4a and 4b and the Ryan Ranch–Bishop



SOURCE: ESA, 2016; USFWS, 2016

NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

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Figure 4.6-4
Designated Critical Habitat

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Interconnection Improvements site is generally undeveloped and includes a mix of grassland and oak woodland communities. The Federal Register critical habitat designation notice for Yadon's rein orchid (72 FR 60409) defines the primary constituent elements for this species as:

1. A vegetation structure providing filtered sunlight on sandy soils:
    a. Coastal pine forest (primarily Monterey pine) with a canopy cover of 20 to 70 percent, and a sparse herbaceous understory on Baywood sands, Narlon loamy fine sands, Sheridan coarse sandy loams, Tangair fine sands, Santa Lucia shaly clay loams and Chamise shaly clay loams underlain by a hardpan; or
    b. Maritime chaparral ridges with dwarfed shrubs (primarily Hooker's manzanita) on Reliz shaly clay loams, Sheridan sandy loams, Narlon sandy loams, Arnold loamy sands and soils in the Junipero–Sur complex, Rock Outcrop–Xerorthents Association, and Arnold–Santa Ynez complex often underlain by rock outcroppings.
2. Presence of nocturnal, short-tongued moths in the families Pyralidae, Geometridae, Noctuidae, and Pterophoridae.

South-Central California Coast Steelhead Distinct Population Segment

The study area is located between two critical habitat hydrologic units SCCC DPS: the Carmel River Hydrologic Unit and the Salinas Hydrologic Unit. Both the Salinas River and Tembladero Slough, which are within the Salinas Hydrologic Unit, are located within the Castroville Pipeline alignment. Tembladero Slough is also within the Castroville Pipeline optional alignment 1. The Carmel River, which is located within the Carmel River Hydrologic Unit, is located approximately 280 feet south of the proposed Carmel Valley Pump Station. The Federal Register critical habitat designation notice for SCCC DPS (70 FR 52488) defines primary constituent elements for this species as: freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, estuarine areas free of obstruction, and offshore marine areas with water quality and habitat conditions suitable to support this species.

California Red-Legged Frog

Both the Main System–Hidden Hills Interconnection Improvements site and Carmel Valley Pump Station site are located within California red-legged frog critical habitat Unit MNT-2 (Carmel River). The Ryan Ranch–Bishop Interconnection Improvements site is located approximately 1.0 mile north of this unit. Unit MNT-2 includes the Carmel River drainage and nearby San Jose Creek. The Federal Register revised critical habitat designation notice for California red-legged frog (75 FR 12816) defines primary constituent elements for this species as:

1. Aquatic breeding habitat, which is described as standing bodies of fresh water including streams, pools, and other ephemeral or permanent water bodies;
2. Non-breeding aquatic and riparian habitat, which is described as freshwater pond or stream habitats that may not hold water long enough for the species to complete its life cycle, but could provide for shelter, foraging, predator avoidance, and aquatic dispersal of frogs;
3. Upland habitat, which is defined as upland areas adjacent to breeding or non-breeding aquatic habitat including various vegetation types such as grassland, woodland, forest,

wetland, or riparian areas that provide shelter, forage, and predator avoidance for frogs. Upland habitat should include boulders, rocks and organic debris, small mammal burrows, or moist leaf letter; and

3. Dispersal habitat, which is defined as accessible upland or riparian habitat within and between occupied or previously occupied sites located within 1 mile of each other. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, or other areas that do not contain features identified in 1, 2, or 3 above.

Western Snowy Plover

Western snowy plover critical habitat Unit CA 22 (Monterey to Moss Landing) includes beaches from Moss Landing south to Monterey. The northernmost slant well head and the western terminus of the Source Water Pipeline alignment are located approximately 240 feet east of, and outside of, this critical habitat unit. The remaining slant well heads are approximately 600 feet east of the critical habitat unit. Portions of the new Transmission Main, and new Desalinated Water Pipeline alignments run roughly parallel and east of this unit and are located a minimum of 0.2 to 0.6 mile from the unit. The Federal Register critical habitat designation notice for western snowy plover (77 FR 36728) defines the primary constituent elements for the western snowy plover as sandy beaches, dune systems immediately inland of an active beach face, salt flats, mudflats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites, with:

1. Areas that are below heavily vegetated areas or developed areas and above the daily high tides;

2. Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low water flow and annual high tide or high water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;

3. Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in (2) for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and

4. Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.

Tidewater Goby

Tidewater goby (*Eucyclogobius newberryi*) critical habitat Unit MN-2 (Salinas River) includes the lower reach of the Salinas River. This unit is outside the geographical area occupied by the species and is not considered to be currently occupied. This unit is located within the proposed Castroville Pipeline alignment. The Federal Register critical habitat designation notice for tidewater goby (78 FR 8746) defines the primary constituent element for tidewater goby as follows:

1. Persistent, shallow (in the range of approximately 0.3 to 6.6 ft (0.1 to 2 m)), still-to-slow-moving lagoons, estuaries, and coastal streams with salinity up to 12 ppt, which provide adequate space for normal behavior and individual and population growth that contain one or more of the following:
    a. Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction;
    b. Submerged and emergent aquatic vegetation, such as *Potamogeton pectinatus*, *Ruppia maritima*, *Typha latifolia*, and *Scirpus* spp., that provides protection from predators and high flow events; or
    c. Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity.

Smith's Blue Butterfly

Critical habitat for the Smith's blue butterfly was proposed in 1977; however, it has never been finalized. The proposed Smith's blue butterfly critical habitat includes coastal sand dunes from Del Rey Creek north to the Salinas River. The subsurface slant well site, portions of the new Source Water Pipeline alignment, and portions of the new Transmission Main are within the proposed critical habitat. The Federal Register notice for the proposed determination of critical habitat for Smith's blue butterfly (42 FR 7972) does not include primary constituent elements for Smith's blue butterfly.

4.6.1.10 Sensitive Terrestrial Biological Resources in the Study Area

This section discusses the potential for sensitive terrestrial biological resources to occur at each facility in the study area. **Table 4.6-2** presents the occurrence potential for special-status species at the individual facility sites and pipeline alignments. (Refer to **Figures 3-2** through **3-13** in Chapter 3, Description of the Proposed Project, for the locations of the proposed facilities.) The list of special-status plant and animal species in **Table 4.6-2** was compiled from the CNPS on-line Electronic Inventory (CNPS, 2016); the USFWS official species list for the proposed project (USFWS, 2016a); and the CDFW's CNDDB special-status species records for the Moss Landing, Marina, Salinas, Seaside, Spreckels, Carmel Valley, Monterey, Mount Carmel, and Prunedale USGS 7.5-minute topographic quadrangles (CDFW, 2016). The occurrence potential for special-status species considers the habitat requirements and life history of the individual species, site-specific reconnaissance-level biological surveys (habitat assessments) of the project area, and focused and protocol-level surveys of special-status species at select facility locations as described in Section 4.6.1.2. As described in Section 4.6.4, Approach to Analysis, the impact analyses presented in Sections 4.6.5.1 and 4.6.5.2 consider only those species with a moderate to high potential to occur.

Subsurface Slant Wells

The subsurface slant wells include ten subsurface slant wells (the converted test slant well and nine new wells). The 10 slant wells would be located at six sites: four sites (the test slant well site and three new sites) would each have one slant well and two sites would have three slant wells at

each (see **Figure 3-3a**). The well sites are numbered sequentially, with Site 1 being the northernmost site and Site 6 the southernmost site. Site 1 is located near the western terminus of the CEMEX access road, approximately 120 feet southeast of the CEMEX settling ponds. Site 1 is located along the CEMEX access road, but is situated at the approximate midpoint of the vegetated sand dunes. The majority of the remaining well clusters would be installed on the eastern side of the heavily vegetated area of the sand dunes. The construction footprint of the nine new permanent slant wells and conversion of the test slant well into a permanent well is approximately 9 acres. A portion of this construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline and Source Water Pipeline using the optional alignment.

The subsurface slant well construction area is comprised of areas of relatively undisturbed central dune scrub, formerly disturbed sand dunes that are revegetating with native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil in actively mined areas. The areas of relatively intact scrub occur along the western active mining area boundary (just east of the unvegetated beach area) and at the west end of the access road in the vicinity of the settling ponds. The current and recently disturbed areas occur east of the vegetated sand dunes and south of the CEMEX access road. Central dune scrub within the subsurface slant wells site and CEMEX active mining area includes iceplant and native plant species typically found in central dune scrub or foredune vegetation communities such as California sagebrush, coast buckwheat, mock heather, beach evening primrose, and sea rocket.

The entire subsurface slant well area within the coastal zone would likely be considered primary habitat under the City of Marina's LCLUP (City of Marina, 2013) and ESHA by the CCC.

There are no potentially jurisdictional waters of the U.S. and/or waters of the state within the slant well study area, although a wetland delineation has not been verified by the USACE, RWQCB, and CCC. MBNMS is not included in the LCLUP study area.

Table 4.6-2 presents the potential for special-status species to occur at the subsurface slant well site. Western snowy plover, ocean bluff milkvetch, Monterey spineflower, sand-loving wallflower, and coast buckwheat (host plant for Smith's blue butterfly) have been observed within the site (ESA, 2013, 2014, 2016; AECOM, 2016). Special-status plant and wildlife species that have not been observed at the site but that could potentially occur in central dune scrub at this site include robust spineflower, seaside bird's-beak, Menzies' wallflower, sand gilia, Smith's blue butterfly, globose dune beetle, Hooker's manzanita, sandmat manzanita, Monterey Coast paintbrush, Monterey ceanothus, branching beach aster, Eastwood's goldenbush, Kellogg's horkelia, northern curly-leaved monardella, south coast branching phacelia, Michael's rein orchid, black legless lizard, silvery legless lizard, and coast horned lizard.

TABLE 4.6-2
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT PROJECT FACILITIES

Species	Status (USFWS/ CDFW/ CRPR)	Subsurface Slant Wells	MPWSP Desalination Plant	Pipelines North of Reservation Road				Facilities and Improvements South of Reservation Road					Staging Areas
				Source Water Pipeline	New Desalinated Water Pipeline	Castroville Pipeline	Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond	ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline	New Transmission Main	Carmel Valley Pump Station	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	
Potential To Occur Codes:													
N= Not expected to occur: No suitable habitat within project area; project area outside currently known distribution or elevation range; no nearby documented occurrences or nearby documented occurrences are historical only.													
L = Low potential to occur: Potentially suitable habitat highly limited and/or of marginal quality; potentially suitable habitat present but species not documented nearby.													
M = Moderate potential to occur: Low to moderate quality habitat present; species documented in the project vicinity.													
H = High potential to occur: High quality suitable habitat present within project area; species documented in the project vicinity.													
O = Observed: Species (or an indication that the species is present) was observed in the project area during field surveys conducted by ESA or others.													
N/A = Not considered sensitive within local jurisdiction at these facilities.													
Federal or State Listed Species													
Plants													
Monterey spineflower	FT/--/CRPR 1B.2	O	O	O	O	O	L	O	O	N	N	N	H
robust spineflower	FE/CRPR 1B.1	M	L	M	M	M	L	M	M	N	N	N	M
Seaside bird's-beak	SE/CRPR 1B.1	M	L	M	M	M	L	M	M	N	N	N	M
Menzies' wallflower	FE/SE/ CRPR 1B.1	M	N	M	M	M	N	N	O	N	N	N	L-M
sand gilia	FE/ST/ CRPR 1B.2	H	L	H	M	M	L	H	H	N	N	N	M
Yadon's rein orchid	FE/CRPR 1B.1	N	N	N	N	N	N	M	L	N	L	M	L-M
Pacific Grove clover	--/SR/CRPR 1B.1	N	N	L	L	L	N	L	L	N	L-M	L-M	N
Invertebrates													
Smith's blue butterfly	FE/--	H	N	H	H	N	N	L	H	N	N	N	L-M
Fish													
South-Central California Coast Steelhead DPS	FT/CSSC	N	N	N	N	M	N	N	N	N	N	N	N
Amphibians													
California tiger salamander	FT/ST	N	L-M	L-M	L-M	L-M	L-M	L	L	N	L-M	L-M	L-M
California red-legged frog	FT/CSSC	N	M	L-M	L-M	L-M	L-M	L	L	H	L-M	L-M	L-M
Birds													
Western snowy plover	FT/CSSC	O	N	O	N	N	N	N	N	N	N	N	N
Other Special-Status Species													
Invertebrates													
globose dune beetle	Local	H	N/A	H	L	N/A	N/A	N/A	L	N/A	N/A	N/A	L
Plants													
Hickman's onion	CRPR 1B.2	N	N	N	N	N	N	L	N	N	L-M	L-M	L
Hooker's manzanita	CRPR 1B.2	M	N	M	M	N	N	M	O	N	L	M	L-M
Toro manzanita	CRPR 1B.2	N	N	N	N	N	N	M	M	N	M	M	L
Pajaro manzanita	CRPR 1B.1	N	N	N	N	N	N	M	M	N	M	M	N
sandmat manzanita	CRPR 1B.2	M	N	H	H	N	N	O	O	N	L	M	H
ocean bluff milkvetch	CRPR 4.2	O	N	O	L	N	N	M	L	N	N	N	L
Monterey Coast paintbrush	CRPR 4.3	H	N	H	H	M	N	M	O	L	L	L	M
Monterey ceanothus	CRPR 4.2	M	N	M	M	N	N	O	O	N	N	N	O
Congdon's tarplant	CRPR 1B.1	N	L-M	L	L	L-M	L	L	L	N	M	M	L

TABLE 4.6-2 (Continued)
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT PROJECT FACILITIES

Species	Status (USFWS/ CDFW/ CRPR)	Subsurface Slant Wells	MPWSP Desalination Plant	Pipelines North of Reservation Road				Facilities and Improvements South of Reservation Road					Staging Areas
				Source Water Pipeline	New Desalinated Water Pipeline	Castroville Pipeline	Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond	ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline	New Transmission Main	Carmel Valley Pump Station	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	
Other Special-Status Species (cont.)													
Plants (cont.)													
branching beach aster	CRPR 3.2	H	N	O	O	O	N	L	O	N	N	N	H
Eastwood's goldenbush	CRPR 1B.1	M	N	L-M	L-M	L-M	N	M	M	N	L	M	L-M
sand-loving wallflower	CRPR 1B.2	O	N	M	M	M	N	M	O	N	N	N	L-M
Kellogg's horkelia	CRPR 1B.1	M	N	H	O	M	N	O	O	N	L	L	M
Carmel Valley bush-mallow	CRPR 1B.2	N	N	N	N	N	N	M	N	N	M-H	M-H	L
marsh microseris	CRPR 1B.2	L	N	L	L	N	N	L	L	N	M	L-M	N
northern curly-leaved monardella	CRPR 1B.2	M	N	M	M	M	N	M-H	M-H	N	L	L	L-M
south coast branching phacelia	CRPR 3.2	H	N	H	H	M	N	H	M	N	N	N	L-M
Monterey pine	CRPR 1B.1	N	N	N	N	N	N	N	N	M	L-M	L-M	N
Michael's rein orchid	CRPR 4.2	M	N	H	H	M	N	H	O	L	L-M	L-M	L-M
Santa Cruz microseris	CRPR 1B.2	L	N	L	L	L	N	L	L	N	L-M	L-M	N
Santa Cruz clover	CRPR 1B.1	N	N	L	L	L	N	L	L	N	L-M	L-M	N
Reptiles													
Western pond turtle	CSSC	N	N	N	M	L-M	N	N	N	N	N	N	N
black legless lizard	CSSC	M-H	L	M	M	L-M	N	H	M-H	N	N	N	M
silvery legless lizard	CSSC	M-H	L	M	M	L-M	N	H	M-H	N	N	N	M
coast horned lizard	CSSC	M-H	L	L-M	L-M	L	N	M	L-M	N	L	L	L-M
Coast Range newt	CSSC	N	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M
Birds													
tricolored blackbird	CSSC (nesting)	N	L	N	O	L	N	L	M	L	L	L	L
short-eared owl	CSSC (nesting)	L	M	M	M	L-M	L	L	M	N	N	N	L-M
western burrowing owl	CSSC (nesting, wintering)	N	L	H	H	L	N	L	L-M	N	N	N	L-M
red-tailed hawk	3503.5	L	H	H	H	H	H	H	H	H	H	H	H
red-shouldered hawk	3503.5	L	M-H	M	M	L	M	H	H	H	H	H	H
Ferruginous hawk	WL (wintering)	N	L-M	H	H	L-M	N	L	L-M	N	N	N	L
Northern harrier	3503.5 (nesting)	L	M	M	M	L-M	L	L-M	M	N	N	N	M
White-tailed kite	--/FP (nesting)	L	M	M-H	M-H	L-M	M	M	M-H	L-M	L-M	L-M	M
California horned lark	WL	L	H	H	H	L-M	L	L	H	L	L-M	L	M
American peregrine falcon	FD/SD/FP	L	M	H	H	M	M	L-M	H	L-M	L-M	L-M	L
American kestrel	3503.5	L	M	H	H	L-M	M	M	H	M	M	M	M
loggerhead shrike	CSSC (nesting)	L	M	H	H	M	H	H	H	M	H	H	M

Potential To Occur Codes:
N= Not expected to occur: No suitable habitat within project area; project area outside currently known distribution or elevation range; no nearby documented occurrences or nearby documented occurrences are historical only.
L = Low potential to occur: Potentially suitable habitat highly limited and/or of marginal quality; potentially suitable habitat present but species not documented nearby.
M = Moderate potential to occur: Low to moderate quality habitat present; species documented in the project vicinity.
H = High potential to occur: High quality suitable habitat present within project area; species documented in the project vicinity.
O = Observed: Species (or an indication that the species is present) was observed in the project area during field surveys conducted by ESA or others.
N/A = Not considered sensitive within local jurisdiction at these facilities.

TABLE 4.6-2 (Continued)
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT PROJECT FACILITIES

Species	Status (USFWS/ CDFW/ CRPR)	Subsurface Slant Wells	MPWSP Desalination Plant	Pipelines North of Reservation Road				Facilities and Improvements South of Reservation Road					Staging Areas
				Source Water Pipeline	New Desalinated Water Pipeline	Castroville Pipeline	Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond	ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline	New Transmission Main	Carmel Valley Pump Station	Ryan Ranch-Bishop Interconnection Improvements	Main System-Hidden Hills Interconnection Improvements	
Potential To Occur Codes: N= Not expected to occur: No suitable habitat within project area; project area outside currently known distribution or elevation range; no nearby documented occurrences or nearby documented occurrences are historical only. L = Low potential to occur: Potentially suitable habitat highly limited and/or of marginal quality; potentially suitable habitat present but species not documented nearby. M = Moderate potential to occur: Low to moderate quality habitat present; species documented in the project vicinity. H = High potential to occur: High quality suitable habitat present within project area; species documented in the project vicinity. O = Observed: Species (or an indication that the species is present) was observed in the project area during field surveys conducted by ESA or others. N/A = Not considered sensitive within local jurisdiction at these facilities.													
Other Special-Status Species (cont.)													
Mammals													
pallid bat	CSSC	N	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M	L-M
Salinas kangaroo rat	Local	L	N/A	L	L-M	N/A	N/A	N/A	L-M	N/A	N/A	N/A	L-M
western red bat	CSSC	N	L-M	L-M	M	M	L-M	L-M	L-M	L-M	L-M	L-M	L-M
Monterey dusky-footed woodrat	CSSC	N	N	N	N	N	N	M	M	M	M	M	L-M
Monterey shrew	CSSC	N	L	N	N	L	N	M	M	L-M	M	M	L-M
American badger	CSSC	N	L-M	M	M	L-M	L	L-M	M	N	L-M	L-M	L-M

SPECIAL-STATUS SPECIES CODE DESIGNATIONS:

Federal
- FE = Federally listed as endangered
- FT = Federally listed as threatened
- FD = Federally delisted

State
- SE = State listed as endangered
- ST = State listed as threatened
- SR = State listed as rare
- SD = State delisted
- FP = State Fully Protected
- WL = State watch list
- CSSC = California species of special concern
- 3503.5 = Section 3503.5 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

Local = considered sensitive in a local plan

California Rare Plant Rank (Formerly known as CNPS List):
- 1A = Plants presumed extinct in California.
- 1B = Plants rare, threatened, or endangered in California and elsewhere.
- 2A = Plants presumed extirpated in California.
- 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
- 3 = Plants about which more information is needed.
- 4 = Plants of limited distribution.

An extension reflecting the level of threat to each species is appended to each CRPR as follows:
- .1 – Seriously threatened in California.
- .2 – Moderately threatened in California.
- .3 – Not very threatened in California.

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MPWSP Desalination Plant

The proposed MPWSP Desalination Plant and associated facilities (including the pretreatment system, Reverse Osmosis system, post-treatment system, chemical storage, and administrative building) are located on the upper terrace (approximately 25 acres) of a 46-acre vacant parcel on the north side of Charles Benson Road and approximately 675 feet south of the Salinas River. Approximately 25 acres would be developed.

The majority of the proposed MPWSP Desalination Plant site is comprised of non-native annual grassland. Although this area contains non-native grassland species as dominants, there is significant cover from ruderal species such as field mustard, radish, dwarf nettle, and chickweed. Site soils are sandy. A small patch of yellow bush lupine scrub is located in the northeastern corner of the site.

There are no potentially jurisdictional waters of the U.S. or waters of the state within the MPWSP Desalinated Plant study area, although a wetland delineation has not been verified by the USACE and RWQCB.

Monterey spineflower was observed during botanical surveys of the proposed MPWSP Desalinated Plant (AECOM, 2016). This site could support Congdon's tarplant, a species that can be found in disturbed vegetation communities. Although the site does not contain high quality upland habitat for California red-legged frog, this species has been observed in the Salinas River, approximately 0.75 mile east of the site, and could occur in grassland at the MPWSP Desalination Plant site. Similarly, the site does not contain high quality upland habitat for California tiger salamander. However, if California tiger salamander are present in a drainage ditch or retention pond located approximately 250 feet from the site, they could occur in grassland at the MPWSP Desalination plant site. Similarly, if Coast Range newt occur in the Salinas River, drainage ditch or retention pond, they have potential to occur in grassland at the site. Additionally, American badger could occur at the site.

Table 4.6-2 lists the potential for special-status species to occur at the MPWSP Desalination Plant site. Several mature ornamental eucalyptus and Monterey cypress trees border the site along its southern and western boundaries. These trees may provide potential nesting habitat for raptors such as red-tailed hawk, red-shouldered hawk, and American kestrel and special-status bat species. Short-eared owl, northern harrier, white-tailed kite and American peregrine falcon could forage over the site. The entire site provides nesting habitat for California horned lark and loggerhead shrike and common passerines protected under the MBTA.

Pipelines and Other Conveyance Facilities North of Reservation Road

Pipelines north of Reservation Road include the Source Water Pipeline, Source Water Pipeline Optional alignment, new Desalinated Water Pipeline, new Desalinated Water Pipeline Optional alignment, Castroville Pipeline, Castroville Pipeline Optional alignment, Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond.

Source Water Pipeline

The Source Water Pipeline extends east from the subsurface slant wells in the CEMEX active mining area, along the CEMEX access road, Lapis Road, and, parallel and north of Charles Benson Road, to the MPWSP Desalination Plant site. The construction footprint is approximately 16.4 acres. A portion of this footprint overlaps with a portion of the construction footprints for the subsurface slant well, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, Castroville Pipeline using the optional alignment 2, the new Desalinated Water Pipeline, and the new Desalinated Water Pipeline using the optional alignment. The optional alignment for the Source Water Pipeline would be identical to the alignment described above, except that the 0.8-mile-long segment that runs along Charles Benson Road would be installed within the paved Charles Benson Road right-of-way (as opposed to north of and outside of the right-of-way). The construction footprint for the Source Water Pipeline using the optional alignment is approximately 16.5 acres. A portion of the construction footprint for the Source Water Pipeline using the optional alignment overlaps with a portion of the construction footprints for the subsurface slant well, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, Castroville Pipeline using the optional alignment 2, the new Desalinated Water Pipeline, and the new Desalinated Water Pipeline using the optional alignment.

The study area within this alignment contains central dune scrub along the developed CEMEX access road and a mix of central dune scrub, comprised of silver dune lupine-mock heather scrub and California sagebrush scrub alliances, coyote brush scrub, ice plant mats, agricultural and ruderal areas from the CEMEX entrance to the intersection of Lapis Road and Del Monte Boulevard. Central dune scrub within the CEMEX active mining area along the access road contains relatively high cover of native dune scrub species. Central dune scrub and coyote brush scrub communities east of the CEMEX active mining area are moderately disturbed and include non-native invasive species such as radish, mustard, and iceplant. The developed CEMEX entrance is surrounded by large eucalyptus and Monterey cypress trees. From Lapis Road the Source Water Pipeline alignment extends through non-native grassland and agricultural fields to the MPWSP Desalination Plant site. A mix of Monterey cypress stands, Eucalyptus groves, ruderal areas, and iceplant mats which border Charles Benson Road to the north. The 0.8-mile-long segment of the proposed pipeline alignment north of and outside of the Charles Benson Road right-of-way would be located along the north side of the row of trees and along the southern boundary of agricultural lands. The Source Water Pipeline Optional Alignment would be installed entirely within the paved Charles Benson Road right-of-way, outside of the agricultural lands and on the south side of the row of trees.

Undeveloped areas in the coastal zone within the City of Marina would likely be considered primary habitat under the City of Marina's LCLUP and ESHA by the CCC. Additionally, undeveloped areas outside of the City of Marina, but within the coastal zone, may be designated as ESHA under the North County Land Use Plan Local Coastal Program and/or by the CCC.

There are no potentially jurisdictional waters of the U.S. or waters of the state along the Source Water Pipeline (including the Source Water Pipeline Optional Alignment) alignment, although a wetland delineation has not been verified by the USACE, RWQCB, and CCC.

Table 4.6-2 lists all special-status species with potential to occur along the Source Water Pipeline alignment. Monterey spineflower was observed along the CEMEX access road within the active mining area (Zander, 2013; 2014). Branching beach aster has been observed along Lapis Road and the CEMEX access road during protocol level plant surveys conducted for the proposed project (URS, 2014b). Coast buckwheat, the host plant for Smith's blue butterfly, has been observed along the CEMEX access road within the CEMEX active mining facility (Zander, 2014) and Smith's blue butterfly has potential to occur in this area. Western snowy plover is known to nest in the beach and foredunes at the western edge of the proposed Source Water Pipeline alignment (PRBO, 2012 in Zander Associates, 2013). Ocean bluff milkvetch has been observed along the proposed Source Water Pipeline alignment within the CEMEX active mining area during botanical surveys of the project area in 2015 (AECOM, 2016). Robust spineflower, seaside bird's beak, Menzies' wallflower, sand gilia, Hooker's manzanita, sandmat manzanita, Monterey Coast paintbrush, Monterey ceanothus, Eastwood's goldenbush, sand-loving wallflower, Kellogg's horkelia, northern curly-leaved monardella, south coast branching phacelia, Michael's rein orchid, and globose dune beetle have potential to occur within central dune scrub in the project area. California red-legged frog, California tiger salamander, and Coast Range newt have potential to occur in non-native grassland in the northern portion of the pipeline alignment during dispersal. Reptiles that are known to occur in scrub communities with sandy soils, such as black legless lizard, silvery legless lizard, and coast horned lizard, could potentially occur within central dune scrub in this area. American badger may occur within non-native grassland. Wintering western burrowing owls and Ferruginous hawk have also been observed on the Armstrong Ranch property (CDFW, 2016) and could occur within grassland in or adjacent to the pipeline alignment. Pallid bat has a low to moderate potential to roost within crevices underneath the Highway 1 overpass. Raptors such as red-tailed hawk, white-tailed kite, short-eared owl, northern harrier, California horned lark, and loggerhead shrike could potentially nest and/or forage throughout the pipeline alignment and special-status bat species could roost within trees in the alignment.

New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment

The new Desalinated Water Pipeline would extend from the MPWSP Desalination Plant west, north of and parallel to Charles Benson Road, then turn north on Del Monte Boulevard for approximately 800 feet to Lapis Road, then continue south along Lapis Road to another Lapis Road/Del Monte Boulevard intersection, then turn south and continue south along Del Monte Boulevard to Reservation Road. The construction footprint is approximately 35.4 acres. A portion of the construction footprint for the new Desalinated Water Pipeline overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, and Castroville Pipeline using the optional alignment 2. The new Desalinated Water Pipeline Optional alignment would be identical to the alignment described in the paragraph above, except that the 0.8-mile-long segment that runs along Charles Benson Road would be installed within the Charles Benson Road paved right-of-way (as opposed to north of and outside of the right-of-way). The construction footprint for the new Desalinated Water Pipeline using the optional alignment is approximately 35.5 acres. A portion of the construction footprint for the new Desalinated Water Pipeline using the optional alignment overlaps with a portion of the

construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, Castroville Pipeline, Castroville using the optional alignment 1, and Castroville Pipeline using the optional alignment 2.

The alignment north of Charles Benson Road is the same as that described above for the Source Water Pipeline; it includes non-native annual grassland and agricultural land bordered on the south by Monterey cypress and eucalyptus trees. As described for the New Source Water Pipeline Optional alignment, the new Desalinated Water Pipeline Optional alignment would travel through the developed Charles Benson Road along this segment. The alignment from the intersection of Charles Benson Road and Del Monte Boulevard south to Marina Green Drive includes a mix of moderately disturbed central dune scrub, including silver dune lupine-mock heather scrub, sandmat manzanita chaparral, California sagebrush-California buckwheat scrub, California sagebrush scrub and deerweed scrub alliances, coyote brush scrub, non-native annual grassland, ice plant mats, ruderal, and developed roadways. The segment between Marina Green Drive and Reservation Road is largely dominated by ruderal areas, developed/landscaped areas, and ice plant mats and is surrounded by urban development. Some native communities, such as central dune scrub, coyote brush scrub, and coast live oak woodland, occur within this segment, but they are highly disturbed. Several Monterey cypress stands and eucalyptus groves also occur within the segment between Marina Green Drive and Reservation Road. Riparian woodland and scrub communities associated with Locke-Paddon Park occurs near Reservation Road within the alignment.

Undeveloped areas in the coastal zone in the City of Marina may be considered primary habitat under the City of Marina's LCLUP and ESHA by the CCC. Undeveloped areas within the coastal zone north of the City of Marina may be considered ESHA under the North County Land Use Plan Local Coastal Program and by the CCC.

Riparian woodland and scrub at Locke-Paddon Park and an isolated willow thicket near the intersection of Marina Green Drive and Del Monte Boulevard are potentially jurisdictional waters of the U.S./waters of the state.

Table 4.6-2 lists all potential special-status species with potential to occur along the Desalinated Water Pipeline alignment. Despite disturbance, Monterey spineflower and Kellogg's horkelia were observed within central dune scrub along Del Monte Boulevard during surveys conducted for the proposed project (ESA, 2012; 2016). Branching beach aster was observed along Del Monte Boulevard during protocol level plant surveys conducted for the proposed project (URS, 2014b). Robust spineflower, seaside bird's beak, Menzies' wallflower, sand gilia, Hooker's manzanita, sandmat manzanita, ocean bluff milkvetch, Monterey Coast paintbrush, Monterey ceanothus, south coast branching phacelia, Michael's rein orchid, Eastwood's goldenbush, sand-loving wallflower, northern curly-leaved Monardella, south coast branching phacelia, and Michael's rein orchid have potential to occur within suitable habitat in the project area. California red-legged frog and California tiger salamander have potential to occur in non-native grassland in the northern portion of the pipeline alignment. Coast Range newt have potential to occur in grassland and woodland habitat and adjacent to the pond at Locke-Paddon Park. Salinas kangaroo rat has potential to occur in grassland or scrub habitat. Black legless lizard, silvery legless lizard, and coast horned lizard, could potentially occur within central dune scrub in this area. Western pond turtle may occur at the

brackish water pond on Beach Road west of the pipeline. American badger may occur within the non-native grassland. Western burrowing owls and wintering Ferruginous hawks have also been observed on the Armstrong Ranch property (CDFW, 2016) and could occur within grassland in or adjacent to the pipeline alignment. Raptors such as red-tailed hawk, short-eared owl, northern harrier, white-tailed kite, and passerines such as California horned lark and loggerhead shrike, could potentially nest and/or forage throughout the pipeline alignment and special-status bat species could roost within trees in the alignment.

Riparian woodland and scrub adjacent to the pond in Locke-Paddon Park has the potential to support western pond turtle. Tricolored blackbird has been observed within Locke-Paddon Park (CDFW, 2016; eBird, 2016) and could occur along the pipeline alignment.

Castroville Pipeline and Castroville Pipeline Optional Alignments

The 4.5-mile-long Castroville Pipeline would extend west from the MPWSP Desalination Plant north of, and parallel to Charles Benson Road, to Del Monte Boulevard. The pipeline would travel north on Del Monte Boulevard for approximately 800 feet where it turns north along the TAMC right-of-way to the Salinas River. From the Salinas River it continues on the TAMC right-of-way to the intersection of Monte Road and Nashua Road. From this intersection the pipeline would extend north along an agricultural road to Highway 183, then would continue north on Del Monte Avenue for approximately 500 feet. The construction footprint is approximately 15.0 acres. A portion of the Castroville Pipeline construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment. The Castroville Pipeline Optional alignment 1 would be identical to the Castroville Pipeline alignment except that at the intersection of Monte Road and Nashua Road the alignment would turn northwest along Nashua Road to the Monterey Peninsula Recreational Trail. The optional pipeline would continue northeast along the Monterey Peninsula Recreational Trail for approximately 1.5 mile to Highway 183, then continue southeast on Highway 183 for approximately 0.7 mile. The construction footprint for the Castroville Pipeline using the optional alignment 1 is approximately 16.2 acres. A portion of the construction footprint for the Castroville Pipeline using the optional alignment 1 overlaps with a portion of the construction footprints for Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment. The Castroville Pipeline Optional alignment 2 would be identical to the Castroville Pipeline alignment except, similar to the Source Water Pipeline and new Desalinated Water Pipeline Optional alignments, the 0.8-mile segment along the Charles Benson Road would be installed within the paved Charles Benson Road right-of-way (as opposed to north of and outside of the paved road right-of-way). The construction footprint for the Castroville Pipeline using the optional alignment 2 is approximately 15.1 acres. A portion of the construction footprint for the Castroville Pipeline using the optional alignment 2 overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment.

The alignment segment that parallels Charles Benson Road to the north is the same as that described above for the Source Water Pipeline and new Desalinated Water Pipeline; it includes non-native

annual grassland and agricultural land bordered on the south by Monterey cypress and eucalyptus trees. As described for the Source Water Pipeline and new Desalinated Water Pipeline Optional alignments, the Castroville Pipeline Optional alignment 2 would travel through the developed Charles Benson Road along this segment. The Castroville Pipeline alignment then traverses through developed areas, ruderal areas, coyote brush scrub, and ice plant mats with a few isolated patches of central dune scrub and non-native grassland before crossing through agricultural lands, ruderal, and developed areas until it reaches the Salinas River. The Salinas River includes open water and adjacent riparian woodland and scrub, coyote brush scrub, and northern coastal scrub communities. North of the Salinas River the study area includes mostly agricultural, developed, and ruderal areas until it crosses over Tembladero Slough. North of Tembladero Slough, the alignment passes through a mix of agricultural, developed, ruderal, coyote brush scrub, riparian woodland and scrub and freshwater marsh communities. The Castroville Pipeline Optional alignment 1 would pass through similar habitat types, which include mostly agricultural, ruderal and developed areas and a few isolated freshwater wetlands and the open water of Tembladero Slough.

A small segment of the proposed Castroville Pipeline alignment is located within the coastal zone. Undeveloped habitat within this area may be designated as ESHA under the North County Land Use Plan Local Coastal Program and by the CCC.

There are a few potentially jurisdictional waters of the U.S./water of the state within the Castroville Pipeline alignment which include the Salinas River, Tembladero Slough, riparian woodland and scrub communities, freshwater marsh communities, and a few culverts and ditches.

Table 4.6-2 lists all potential special-status species with potential to occur along the Castroville Pipeline alignment and the same species would be expected to occur along the Castroville Pipeline using the optional alignment 1 and using the optional alignment 2. Monterey spineflower and branching beach aster have been observed within the alignment north of the intersection of Charles Benson Road and Del Monte Boulevard. Although these areas are fairly disturbed they have potential to support other special-status plants that occur in central dune scrub. California red-legged frog could occur in the Salinas River, Tembladero Slough and willow areas north of Tembladero Slough. California red-legged frog and California tiger salamander could occur in upland grassland areas within approximately 1.2 miles of potential breeding habitat. American badger could occur in non-native grassland. Coast Range newt could occur in and around Tembladero Slough and the Salinas River and in adjacent grassland areas. Black legless lizard, silvery legless lizard, and coast horned lizard, could potentially occur within the small areas of central dune scrub in this area. Red-tailed hawk, short-eared owl, northern harrier, white-tailed kite, American peregrine falcon, American kestrel, California horned lark, and loggerhead shrike could forage in the vicinity of the alignment. Common passerine birds such as northern rough-winded swallow (*Stelgidopteryx serripennis*) could nest in the riparian vegetation bordering the Salinas River or beneath the road crossings along the alignment. Special-status bat species could roost in trees and beneath bridge crossings along the alignment.

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

The 1-mile-long Brine Discharge Pipeline and 1.2-mile-long Pipeline to CSIP Pond alignments extend between the MPWSP Desalination Plant site and the existing MRWPCA Regional

Wastewater Treatment Plant. The pipelines would be installed along access roads and through mostly ruderal and developed areas within the MRWPCA Regional Wastewater Treatment Plant, although some patches of non-native grassland are present. These pipeline alignments are located adjacent to ornamental Monterey cypress stands present along the access roads. The Brine Mixing Box would be installed at the terminus of the Brine Discharge Pipeline where ruderal, non-native grassland is present. The construction footprint for both of these pipelines and the Brine Mixing Box combined is approximately 7.4 acres, including the Brine Mixing Box construction staging area.

There are no potentially jurisdictional waters of the U.S. or waters of the state within the Brine Discharge Pipeline, Pipeline to CSIP Pond, or the Brine Mixing Box study areas, although a wetland delineation has not been verified by the USACE and RWQCB. However, one potentially jurisdictional pond feature is located adjacent to the pipeline alignment study area.

Table 4.6-2 lists all potential special-status species with potential to occur along the Brine Discharge Pipeline and Pipeline to CSIP alignments and the Brine Mixing Box project area. California red-legged frog, California tiger salamander, and Coast Range newt have potential to occur in grassland and grazed grassland/agricultural areas within the pipeline alignments and Brine Mixing Box construction footprint during dispersal. The mature Monterey cypress trees along Charles Benson Road and the access road to the MRWPCA Regional Wastewater Treatment Plant could provide roosting, foraging, and/or nesting habitat for loggerhead shrike, a variety of raptors such as red-tailed hawk and red-shouldered hawk, and provide roosting habitat for special-status bats. Additionally, passerines such as California horned lark may occasionally forage and nest within the grazing lands. Non-native grassland within the MRWPCA Regional Wastewater Treatment Plant site may provide nesting habitat for common passerines but does not generally provide suitable habitat for other special-status species due to its isolation from large expanses of non-native grassland.

Improvements to ASR System (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline)

The proposed ASR facilities include two new ASR injection/extraction wells (ASR-5 and ASR-6 Wells) and three parallel 0.9-mile-long, 30-inch-diameter ASR pipelines (ASR Recirculation Pipeline, ASR Conveyance Pipeline, and ASR Pump-to-Waste Pipeline). The pipelines would be located within General Jim Moore Boulevard between Ardennes Circle and Coe Avenue. The construction footprint for all three ASR pipelines is approximately 8.8 acres. A portion of the construction footprint for the ASR pipelines overlaps with a portion of the construction footprints for the new Transmission Main and the new Transmission Main using the optional alignment. The ASR-5 and ASR-6 Wells would be located east of General Jim Moore Boulevard near Ardennes Circle. Each ASR well would be housed in a permanent 900-square foot concrete pump house. Chain-link fencing would encompass an approximately 0.4-acre and 0.5-acre area around the ASR-5 and ASR-6 Wells, respectively. Therefore, the construction footprint for both of the ASR Wells is expected to be approximately 0.9 acre. Additionally, water produced during development of the ASR-5 and ASR-6 Wells would be conveyed to a natural depression located

east of General Jim Moore Boulevard near San Pablo Avenue. The construction footprint of the area where water would be conveyed is approximately 7.0 acres.

The ASR-5 and ASR-6 Well sites are located between General Jim Moore Boulevard and single family residences. The sites contain a mix of coast live oak woodland, coyote brush scrub, and ruderal areas. The pipelines would be installed within developed General Jim Moore Boulevard. The northern end of the pipeline alignments are bordered by a mix of single family residences and moderately disturbed coast live oak woodland, coyote brush scrub, ice plant mats, and ruderal areas, while the southern end of the alignments are bordered by relatively undisturbed northern coastal scrub and coast live oak woodland on former Fort Ord lands. The area where water produced during development of the ASR-5 and ASR-6 wells would be conveyed is located on former Fort Ord lands and contains a mix of central maritime chaparral and ruderal areas.

There are no potentially jurisdictional waters of the U.S. or waters of the state within the ASR Facilities study areas, although a wetland delineation has not been prepared by the USACE and RWQCB.

Table 4.6-2 lists all potential special-status species with potential to occur at the ASR facilities. Kellogg's horkelia has been observed within the development water infiltration area that will be used during development of the ASR-5 and ASR-6 Wells (CDFW, 2016). Monterey spineflower, sandmat manzanita, Kellogg's horkelia, and Monterey ceanothus were observed along the pipeline alignment during reconnaissance surveys and focused botanical surveys of the project area along General Jim Moore Boulevard (ESA, 2016; AECOM, 2016). Additionally, a variety of special-status plant species known to occur in scrub communities with sandy soils could potentially occur along this stretch of General Jim Moore Boulevard including Monterey spineflower, robust spineflower, seaside birds-beak, sand gilia, Yadon's rein orchid, Hooker's manzanita, Toro manzanita, Pajaro manzanita, ocean bluff milkvetch, Monterey Coast paintbrush, Monterey ceanothus, Eastwood's goldenbush, sand-loving wallflower, Kellogg's horkelia, Carmel Valley bush-mallow, northern curly-leaved monardella, south coast branching phacelia, and Michael's rein orchid.

Silvery legless lizard, black legless lizard, and coast horned lizard could potentially occur within central dune scrub, northern coastal scrub, and coyote brush scrub, in sandy soils within the grassland, or on edges of the coast live oak woodland habitat. Coast Range newt could occur in woodland areas. Raptors such as red-tailed hawk, red-shouldered hawk, northern harrier, white-tailed kite, American kestrel, and loggerhead shrike have potential to nest and forage within or adjacent to the project area. Special-status bats have potential to roost in trees within the project area. Northern coastal scrub and coast live oak woodland also provide potential habitat for Monterey dusky-footed woodrat, Monterey shrew, and American badger.

Pipelines and Other Conveyance Facilities South of Reservation Road

Facilities and improvements south of Reservation Road include the new Transmission Main, new Transmission Main Optional alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

New Transmission Main and New Transmission Main Optional Alignment

The new 6-mile-long, 36-inch-diameter Transmission Main pipeline alignment begins at Reservation Road and continues south along the west side of Del Monte Boulevard between the Monterey Peninsula Recreational Trail and TAMC right-of-way to a point approximately 750 feet north of the Highway 1/ Lightfighter Drive interchange. From the interchange it travels east through undeveloped areas, then along Lightfighter Drive to General Jim Moore Boulevard. It then travels south along General Jim Moore Boulevard to the existing Phase I ASR Facilities near the intersection of General Jim Moore Boulevard and Coe Avenue. The construction footprint is approximately 27.1 acres. A portion of the new Transmission Main construction footprint overlaps with a portion of the ASR pipelines construction footprint. The optional alignment for the new Transmission Main would be identical to the alignment described above, except that it would turn southeast toward Lightfighter Drive in a slightly different location than the new Transmission Main alignment. The construction footprint for the new Transmission Main using the optional alignment is 26.8 acres. A portion of the construction footprint for the new Transmission Main using the optional alignment overlaps with a portion of the construction footprint for the ASR pipelines.

The pipeline segment between Reservation Road and the Highway 1 overcrossing is fairly disturbed and includes ice plant mats and ruderal areas with a few Monterey cypress stands and eucalyptus groves. South of the Highway 1 overcrossing the alignment follows the back of the dunes associated with Fort Ord Dunes State Park. These back dune areas contain low to moderately disturbed central dune scrub (including silver dune lupine-mock heather scrub, sandmat manzanita, and island buckwheat scrub alliances), ice plant mats, coyote brush scrub, and some ruderal and developed areas. Once the segment heads east along Lightfighter Drive it runs within the developed Lightfighter Drive and General Jim Moore Boulevard. These roadways are surrounded by a mix of single family residences coast live oak woodland, coyote brush scrub, ice plant mats, and ruderal areas, with some areas of northern coastal scrub.

The pipeline segment between the Highway 1 overcrossing and the Highway 1/Lightfighter Driver interchange is located within the coastal zone. Undeveloped areas within the coastal zone in the City of Marina may be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC. Undeveloped areas within the City of Seaside in the coastal zone may be designated as ESHA by the City of Seaside Local Coastal Program Land Use Plan and by the CCC, and undeveloped areas in the coastal zone and outside of a local coastal plan area, may be considered ESHA by the CCC.

There is one potentially jurisdictional water of the U.S. and/or water of the state within the new Transmission Main study area; an ephemeral drainage located adjacent to the project boundary south of the 8th Street overpass.

Table 4.6-2 lists the special-status species that could potentially occur along the new Transmission Main alignment. Sandmat manzanita was observed in scattered stands through this segment during reconnaissance level surveys conducted for the proposed project in 2013 (ESA, 2013). Monterey spineflower and Kellogg's horkelia have also been observed along this pipeline alignment (USACE, 1997; Fort Ord Reuse Authority, 2012; CDFW, 2016; and Denise Duffy & Associates, 2013,

respectively). Menzies' wallflower, branching beach aster, Monterey Coast paintbrush, Monterey ceanothus, south coast branching phacelia, and Michael's rein orchid were observed within the new Transmission Main alignment during protocol level plant surveys conducted for the proposed project in 2014 (URS, 2014b). Sandmat manzanita was observed in central dune scrub along General Jim Moore Boulevard during botanical surveys in 2016 (AECOM, 2016).

A variety of special-status plant species associated with central dune scrub could occur along this pipeline corridor including robust spineflower, seaside bird's-beak, sand gilia, Hooker's manzanita, Toro manzanita, Pajaro manzanita, ocean bluff milkvetch, Eastwood's goldenbush, northern curly-leaved monardella, and sand-loving wallflower. Coast buckwheat was observed in high densities within the proposed Transmission Main alignment during reconnaissance level surveys conducted in 2013 for the proposed project (ESA, 2013). Therefore, for the purposes of this analysis, it is assumed Smith's blue butterfly could occur along the new Transmission Main alignment.

Salinas kangaroo rat has potential to occur in scrub or chaparral habitat. Black legless lizard, silvery legless lizard, and coast horned lizard could potentially occur within central dune scrub along this alignment. Coast Range newt could occur in oak woodland. Ground squirrels and their burrows were observed in central dune scrub and grassland communities throughout the alignment and western burrowing owl and American badger could occur in these areas. Additionally, raptors such as red-shouldered hawk, red-tailed hawk, white-tailed kite, short-eared owl, northern harrier, American peregrine falcon, and loggerhead shrike could nest and forage within this area. Tricolored blackbird could nest at Locke-Paddon Park in the vicinity of the alignment. Pallid bat has some potential to roost within crevices underneath the Highway 1 overpasses and pallid bat and red bat have potential to roost in trees within the alignment. Northern coastal scrub and coast live oak woodland also provide potential habitat for Monterey dusky-footed woodrat and Monterey shrew.

Carmel Valley Pump Station

The Carmel Valley Pump Station is located near the intersection of Carmel Valley Road and Rancho San Carlos Road. The site includes the proposed pump station, which would be enclosed within a 500-square-foot single-story building, a 100-square-foot electrical control building, as well as the proposed inlet and outlet pipelines that would connect to existing facilities at Carmel Valley Road. The construction footprint for the pump station and associated pipelines is approximately 0.2 acre. The site includes non-native annual grassland, landscaped, and developed areas bordered by coast live oak woodland.

There is a potentially jurisdictional wetland mapped by the NWI within the Carmel Valley Pump Station study area.

Table 4.6-2 lists all potential special-status species with potential to occur at the Carmel Valley Pump Station site. Native stands of Monterey pine may occur in the vicinity of this site. California red-legged frog are known to breed in the Carmel River and small tributaries and backpools in the vicinity of the proposed Carmel Valley Pump Station (CDFW, 2016). This species could use non-native grassland at the site as upland habitat. Coast Range newt could occur in non-native grassland or surrounding woodland. Raptors such as red-tailed hawk, red-

shouldered hawk and American kestrel may nest in trees surrounding the site. Loggerhead shrike and common passerines may also nest in trees or shrubs in the site vicinity. Special-status bats have potential to roost in trees surrounding the site and Monterey dusky-footed woodrat may occur in the coast live oak woodland understory.

Ryan Ranch-Bishop Interconnection Improvements

The Ryan Ranch–Bishop Interconnection Improvements site is located along Ragsdale Drive, Lower Ragsdale Drive, and Wilson Road just north of Highway 68. The site is located within an existing road within a business park with existing stands of coast live oak woodland, northern coastal scrub, and non-native grassland interspersed throughout the buildings, roads, parking lots, and landscaping located adjacent to the roadway. The 1.1-mile-long, 8-inch-diameter Ryan Ranch–Bishop Interconnection Improvements pipeline would extend between an existing interconnection at Highway 68 and Ragsdale Avenue and a new connection to the Bishop system. The construction footprint is approximately 7.3 acres. Although the proposed improvements would be constructed within the existing paved roadway, there is one area of non-native grassland adjacent to the road within the project area.

The NWI has mapped a wetland drainage that appears to pass through a culvert underneath Lower Ragsdale Drive near the intersection of Lower Ragsdale Drive and Ryan Court within the Ryan Ranch-Bishop Interconnection Improvements site. This drainage may be considered a water of the U.S./waters of the state.

Table 4.6-2 lists all potential special-status species with potential to occur in the vicinity of the Ryan Ranch-Bishop Interconnection Improvements site. Although most of construction would include work within existing developed roadways, some work would occur in non-native grassland. Furthermore, special-status plant species could occur in coast live oak woodland or non-native grassland adjacent to the roadway including Hickman's onion, Toro manzanita, Pajaro manzanita, Congdon's tarplant, Carmel Valley bush-mallow, marsh microseris, Michael's rein orchid, Santa Cruz microseris, Santa Cruz clover, Pacific Grove clover, and native stands of Monterey pine. Coast Range newt, Monterey dusky-footed woodrat, Monterey shrew, American badger, and special-status bats may also occur in suitable habitat within or adjacent to the Ryan Ranch-Bishop Interconnection Improvements site. Raptors such as red-tailed hawk, red-shouldered hawk, white-tailed kite, American peregrine falcon and American kestrel may forage in the site vicinity and/or nest in nearby oak woodland. California horned lark and common passerines may also forage and/or nest in the non-native grassland, northern coastal scrub, and coyote brush scrub in site vicinity.

Although California tiger salamander breeding habitat is absent from the Ryan Ranch-Bishop Interconnection Improvements site, California tiger salamander breeding ponds exist within 1.2 miles of the Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016) and this species has potential to occur onsite in the upland grassland. California red-legged frog aquatic habitat is absent from the site. This frog is known to breed within the Carmel River (CDFW, 2016) and could utilize other aquatic sites between the Carmel River and the Ryan Ranch-Bishop Interconnection Improvements site if suitable habitat is present. Due to the presence of several

drainages between the Carmel River and the Ryan Ranch-Bishop Interconnection Improvements site, there is a potential for California red-legged frog to occur in the grassland while dispersing.

Main System-Hidden Hills Interconnection Improvements

The Main System-Hidden Hills Interconnection Improvements site is located along Tierra Grande Drive in a low-density residential area north of Carmel Valley Road. The existing interconnection between the main CalAm distribution system and the Hidden Hills system would be improved by installing approximately 1,200 feet of 6-inch-diameter pipeline along the northern extent of Tierra Grande Drive. Additionally, the existing pump capacity at the Upper Tierra Grande Booster Station and the Middle Tierra Grande Booster Station would be upgraded. The construction footprint for the Main System-Hidden Hills Interconnection Improvements is 1.1 acre. The improvements would be constructed within the developed roadway and within the existing Middle Tierra Grande Booster Station, but coast live oak woodland, Monterey pine woodland, and northern coastal scrub are located adjacent to the road edges.

A wetland drainage, mapped by the NWI, is located approximately 600 feet downslope of the majority of the Main System-Hills Interconnection Improvements study area, but appears to run either beneath or adjacent to the Middle Tierra Grande Booster Station. This wetland feature could be considered a water of the U.S./water of the state.

Table 4.6-2 lists all potential special-status species with potential to occur in the vicinity of the Main System-Hidden Hills Interconnection Improvements site. Although most of construction would include work within existing developed roadways, some special-status plant species could occur in coast live oak woodland, non-native grassland, or scrub communities adjacent to the roadway including Yadon's rein orchid, Hickman's onion, Hooker's manzanita, Toro manzanita, Pajaro manzanita, sandmat manzanita, Congdon's tarplant, Eastwood's golden bush, Carmel Valley bush-mallow, marsh microseris, Santa Cruz microseris, Michael's rein orchid, Santa Cruz clover, Pacific Grove clover, and native stands of Monterey pine. Raptors such as red-tailed hawk, red-shouldered hawk and loggerhead shrike may forage and nest in the vicinity of the interconnection improvement site. Coast Range newt, Monterey dusky-footed woodrat, Monterey shrew, American badger, and special-status bats may also occur in suitable habitat adjacent to this Interconnection Improvements site.

California red-legged frog aquatic habitat is absent from the Main System-Hidden Hills Interconnection Improvements site. This frog is known from the Carmel River, approximately 1 mile south of the site, and from artificial ponds located within the Tehama Golf Course approximately 2 miles northwest of the site (CDFW, 2016). Due to the presence of several drainages between the Carmel River and the Main System-Hidden Hills Interconnection Improvements site, there is a potential for California red-legged frog to occur in upland areas adjacent to the site, but would not be expected to utilize the facility site as it is developed. Stock ponds that could potentially support California tiger salamander are located within 1.2 miles of the site. If California tiger salamander are present in these ponds, they have potential to disperse through upland areas adjacent to the site.

Staging Areas

There are eight staging areas located throughout the project area. **Table 4.6-3** below lists the location of each staging area, a description of the site, size of the site, habitat types present, and the special-status species that occur or have potential to occur within or adjacent to the staging areas. **Table 4.6-2** lists all of the special-status species with potential to occur within the staging areas. The majority of the staging areas are located within developed or highly disturbed areas; however, some are located adjacent to undisturbed habitat. Additionally, the proposed staging area on the west side of General Jim Moore Boulevard, near Seaside Middle School, in Seaside, does contain northern coastal scrub and coyote brush scrub communities. None of the staging areas contain potentially jurisdictional waters of the U.S./waters of the state within or adjacent to the study area.

The staging area at Beach Road in Marina is within the coastal zone and undeveloped areas within the staging area may be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC.

4.6.2 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to terrestrial biological resources. A brief summary of each is provided, along with a finding regarding the project's consistency with those regulatory requirements. The consistency findings concern the project as proposed, without mitigation. Where the proposed project would be consistent with the applicable regulatory requirement, no further discussion of consistency with that regulatory requirement is provided. Where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.6.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is addressed in more detail. The regulatory framework for surface water hydrology and water quality and marine biological resources are described in Sections 4.3.2 and 4.5.2, respectively.

4.6.2.1 Federal Regulations

Federal Endangered Species Act (FESA)

The USFWS (jurisdiction over terrestrial and freshwater aquatic species) and National Marine Fisheries Service (NMFS; jurisdiction over most anadromous and marine fish, and mammals) oversee the FESA. The FESA prohibits the "take"[12] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. Section 7 of the Act mandates that a federal agency undertaking funding, issuing a permit or

[12] The definition of "take" pursuant to the FESA is to "harass, harm, pursue, hunt, shoot, wound, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS has also interpreted "harm" to include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. NMFS has defined harm to mean "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." 50 CFR 222.102.

TABLE 4.6-3
CONSTRUCTION STAGING AREAS, HABITAT TYPES, AND SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR

Location	Site Description	Staging Area Footprint (acre)	Habitat Types Present in Study Area	Special-Status Species with Potential to Occur within or Adjacent to the Staging Areas
Monte Road/ Neponset Road in unincorporated Monterey County	Paved parking lot (semi-trucks) at Dole Vegetable Processing Plant	0.7	Developed/ Landscaped, Ice Plant Mats, Ruderal	Habitat for California tiger salamander, California red-legged frog, Coast Range newt, black legless lizard, and silvery legless lizard occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent buildings and trees. Branching beach aster and Monterey spineflower documented in nearby central dune scrub.
Beach Road in Marina	Paved parking lot at Walmart	0.4	Developed/ Landscaped, Ruderal, Ice Plant Mats, Non-native Annual Grassland	Habitat for Salinas kangaroo rat, black legless lizard, silvery legless lizard, coast horned lizard, and Coast Range newt occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees. Branching beach aster documented in nearby central dune scrub.
Highway 1/1st Street in Marina	Gated paved parking lot	1.2	Developed/ Landscaped, Ice Plant Mats	Habitat for black legless lizard, silvery legless lizard, and coast horned lizard occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees. Monterey spineflower, coast buckwheat and branching beach aster documented in nearby central dune scrub. Smith's blue butterfly may occur in vicinity.
2nd Avenue, between Lightfighter Drive and Divarty Street, in Seaside	Paved parking lot at the Cal State University at Monterey Bay Athletic Fields	3.2	Developed/ Landscaped, Ruderal, Ice Plant Mats	Habitat for black legless lizard, silvery legless lizard, and coast horned lizard occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees. Landscaped manzanita observed at the site during ESA's reconnaissance survey.
2nd Avenue/ Lightfighter Drive in Seaside	Paved parking lot.	0.5	Developed/ Landscaped, Ruderal, Central Dune Scrub	Habitat for black legless lizard, silvery legless lizard, coast horned lizard, and other special-status species with potential to occur in central dune scrub occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees
West side of General Jim Moore Boulevard, near Gigling Road, in Seaside	Paved parking lot	0.3	Developed/ Landscaped, Coast Live Oak Woodland	Habitat for black legless lizard, silvery legless lizard, coast horned lizard, and Coast Range newt occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees.
East side of General Jim Moore Boulevard, near Gigling Road, in Seaside	Paved parking lot	0.2	Developed/ Landscaped, Ice Plant Mats, Ruderal, Coast Live Oak Woodland	Habitat for black legless lizard, silvery legless lizard, coast horned lizard, and Coast Range newt occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees and buildings. Monterey spineflower documented in nearby central dune scrub (AECOM, 2016).
West side of General Jim Moore Boulevard, near Seaside Middle School, in Seaside	Sandy area	0.1	Northern Coastal Scrub, Ice Plant Mats, Coyote Brush Scrub, Developed/ Landscaped	Habitat for black legless lizard, silvery legless lizard, coast horned lizard, and Monterey shrew occurs in the staging area vicinity. Nesting birds and roosting bats may occur in adjacent trees and buildings. Monterey spineflower and branching beach aster (AECOM, 2016) documented in nearby central dune scrub. Monterey ceanothus documented within survey area (AECOM, 2016) and confirmed to be located on vegetated shoulder of paved area by ESA during reconnaissance surveys.

authorization, or carrying out an activity consult with the USFWS and, or NMFS, depending on the affected species, to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The federal agency is required to consult with the USFWS and NMFS if it determines the proposed project "may affect" listed species or critical habitat. During consultation, the potential for take would be determined and, if take is expected to occur, the necessary conditions to allow the issuance of an incidental take authorization would be imposed. As indicated in **Table 3-8** in Chapter 3, Description of the Proposed Project, consultation with the USFWS and NMFS is required for regulatory permits and approvals.

The proposed project has potential to result in take of federally threatened or endangered species, which would be inconsistent with FESA. This inconsistency is addressed under Impact 4.6-1 (*Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction*) and Impact 4.6-6 (*Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations*).

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) affirms, or implements, a commitment by the United States to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, . . . or any part, nest, or egg of any such bird" (16 USC § 703) anywhere in the United States.

The proposed project has potential to result in the removal of nests occupied by migratory birds or in other impacts on migratory birds, which would be inconsistent with the MBTA. This inconsistency is addressed under Impact 4.6-1 (*Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction*) and Impact 4.6-6 (*Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations*).

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency

Wetlands and other waters (e.g., rivers, streams, and natural ponds) are a subset of "waters of the U.S.," and receive protection under Section 404 of the Clean Water Act (CWA). The USACE has primary federal responsibility for administering regulations that concern waters of the United States. In this regard, the USACE acts under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "navigable waters,"[13] and the Clean Water Act (Section 404), which governs specified activities in waters of the United States, including wetlands. The construction of structures, such as tidegates, bridges, and piers, as well as

[13] Navigable waters are defined as those waters that are subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

construction activities that could interfere with navigation, such as dredging and stream channelization, may require a Section 10 permit. A Section 404 permit is required if the activity involves the discharge of fill into waters of the U.S. The United States Environmental Protection Agency (USEPA) has the ultimate authority for designating dredge and fill material disposal sites and can veto the Corp's issuance of a permit to fill jurisdictional waters of the United States.

The USACE requires a permit if a project proposes placement of structures within navigable waters and/or alteration of waters of the U.S. Some classes of fill activities may be authorized under Regional General or Nationwide permits if specific conditions are met. Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species (listed or proposed for listing under the FESA). The Nationwide permit outlines general conditions and may specify project-specific conditions as required by the USACE during the Section 404 permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, an Individual Permit may be issued by the USACE.

The federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Several Supreme Court cases have challenged the scope and extent of the USACE's jurisdiction over waters of the United States and have led to several reinterpretations of that authority. The most recent of these decisions are the case of *Solid Waste Agency of Northern Cook County (SWANCC) v. the Army Corps of Engineers* (January 9, 2001) and *Rapanos v. United States* (June 2006). The SWANCC decision found that jurisdiction over non-navigable, isolated, intrastate waters could not be based solely on the use of such waters by migratory birds. The reasoning behind the SWANCC decision could be extended to suggest that waters need a demonstrable connection with a navigable water to be protected under the CWA. The introduction of the term "isolated" has led to the consideration of the relative connectivity between waters and wetlands as a jurisdictionally relevant factor. The Rapanos case further questioned the definition of "waters of the United States" and the scope of federal regulatory jurisdiction over such waters but resulted in a split decision which did not provide definitive answers but expanded on the concept that a "significant nexus" with traditional navigable waters was needed for certain waters to be considered within the jurisdiction of the USACE.

On June 5, 2007 the USEPA and the USACE released guidance on CWA jurisdiction in response to the Rapanos Supreme Court decision, which can be used to support a finding of CWA coverage for a particular water body when either a) there is a significant nexus between the stream or wetland in question and navigable waters in the traditional sense; or b) a relatively permanent water body is hydrologically connected to traditional navigable waters and/or a wetland has a surface connection with that water. According to this guidance the USACE and the USEPA will take jurisdiction over the following waters:

1. Traditional navigable waters, which are defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters;

3. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months);

4. Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g. they are not separated by uplands, a berm, dike, or similar feature).

The USEPA and the USACE retain jurisdiction over the following waters, based on a fact-specific determination of significant nexus, as defined below, to a traditional navigable water: non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; and wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The USEPA and the USACE *generally* do not assert jurisdiction over the following features: swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The USEPA and the USACE have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters;

2. Significant nexus analysis includes consideration of hydrologic and ecologic factors including:

    a. volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary;

    b. proximity to a traditional navigable water;

    c. size of the watershed;

    d. average annual rainfall;

    e. average annual winter snow pack;

    f. potential of tributaries to carry pollutants and flood waters to traditional navigable waters;

    g. provision of aquatic habitat that supports a traditional navigable water;

    h. potential of wetlands to trap and filter pollutants or store flood waters; and

    i. maintenance of water quality in traditional navigable waters.

The proposed project has potential to result in fill of wetlands or other waters regulated under Section 404 of the CWA or activities in, over, or under navigable waters regulated under Section 10 of the Rivers and Harbors Act, which would be inconsistent with each of these

regulations. This inconsistency is addressed under Impact 4.6-3 (*Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction*) and Impact 4.6-8 (*Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations*).

Federal Policies on Riparian Communities in California

Riparian communities are associated with water and have a variety of functions, including providing high-quality habitat for resident and migrant wildlife, streambank stabilization, and runoff water filtration. Throughout the United States, riparian habitats have declined substantially in extent and quality compared with their historical distribution and condition. These declines have increased concerns about dependent plant and wildlife species, leading federal agencies to adopt policies to arrest further loss. USFWS Mitigation Policy identifies California's riparian habitats as belonging to resource Category 2, for which "no net loss" of existing habitat value is recommended (USFWS, 1981).

The proposed project has potential to result in loss of riparian habitat, which would be inconsistent with the USFWS Mitigation Policy. This inconsistency is addressed under Impact 4.6-2 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction*) and Impact 4.6-7 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations*).

Executive Order 13112: Prevention and Control of Invasive Species

Enacted in February 1999, Executive Order (EO) 13112 calls for federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. This includes consideration of the potential effects of invasive species in NEPA analyses. The EO established an Invasive Species Council comprised of federal agencies and headed by the Secretary of the Interior with the responsibility to oversee implementation of the executive order.

The proposed project has potential to result in the introduction and spread of invasive species, which would be inconsistent with the EO. This inconsistency is addressed under Impact 4.6-5 (*Introduce or spread an invasive non-native species during construction*) and Impact 4.6-9 (*Introduce or spread an invasive non-native species during operations*).

Integrated Natural Resource Management Plan, Presidio of Monterey and Ord Military Community

The Integrated Natural Resource Management Plan (INRMP) for the Presidio of Monterey and Ord Military Community (OMC) has been prepared in accordance with Army Regulation (AR) 200-3 and the Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities. For the OMC, the INRMP covers only those lands being permanently retained by the Army. Land areas identified for civilian reuse, the former Fort Ord, are not included in the INRMP. The INRMP is intended to be a component and supporting element of the Installation Master Plan.

The INRMP contains guidelines for land management with regard to landscaping, maintenance, irrigation, fertilization, and pest control. The Lead Agencies anticipate that the U.S. Army will require compliance with the applicable INRMP policies and guidelines in permits and/or other agreements obtained by CalAm for the ASR facilities within U.S. Army-owned land.

4.6.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act. Of primary relevance to terrestrial biological resources are Coastal Act policies concerning ESHAs and adjacent developments, and diking, filling, or dredging and continued movement of sediment and nutrients. A preliminary assessment of project consistency with these priorities is provided here. Final determinations regarding project consistency are reserved for the Coastal Commission.

With respect to Coastal Act policies related to ESHA and the diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes, the proposed project would be potentially inconsistent. These potential conflicts are addressed in Impact 4.6-2 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction*), Impact 4.6-3 (*Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction*), Impact 4.6-7 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations*), and Impact 4.6-8 (*Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations*).

California Endangered Species Act

California implemented its own Endangered Species Act (CESA) in 1984. The state act prohibits the take[14] of state listed endangered and threatened species; however, habitat destruction is not included in the state's definition of take. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFW administers the act and authorizes take through Section 2081 agreements (except for designated fully-protected species, as described under the heading, California Fish and Game Code, below). Under CCR Title 14, Section 786.9(b), CDFW can also approve the take of state rare plants under Section 2081.

The proposed project has potential to result in take of state threatened or endangered species, or a rare plant, which would be inconsistent with CESA. This inconsistency is addressed under Impact 4.6-1 (*Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction*) and

[14] Take, under the CESA, is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Impact 4.6-6 (*Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations*).

California Fish and Game Code

Section 2080 of the California Fish and Game Code states that "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act." Pursuant to Section 2081 of the code, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memoranda of Understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by CDFW, which makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

Additionally, as described in CCR Title 14, Section 786.9, CDFW may also permit take of state rare plants under the same conditions as take authorizations issued pursuant to Section 2081 of the Fish and Game Code.

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks)[15] or Strigiformes (owls), or of their nests and eggs.

California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians] and 5515 [fish] allows the designation of a species as Fully Protected. This is a greater level of protection than is afforded by the CESA, since such a "Fully Protected" designation means the listed species cannot be taken at any time.

Under the California Fish and Game Code Sections 1900-1913 the California Native Plant Protection Act (NPPA) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with CDFW during

[15] At the time Section 3503.5 was written, the order Falconiformes included diurnal birds of prey in the families Accipitridae (eagles, hawks, kites, harriers and others) and Falconidae (falcons and caracaras). In 2010, Accipitridae was placed in a new order, Acciptriformes, by the North American Classification Committee (NACC). However, for the purposes of this report, we interpret the reference to the order Falconiformes in Section 3503.5 to also include diurnal birds of prey in the order Accipitriformes.

project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

The proposed project has potential to result in take or other impacts on plants or wildlife protected under California Fish and Game Code, which would be inconsistent with California Fish and Game Code. This inconsistency is addressed under Impact 4.6-1 (*Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction*) and Impact 4.6-6 (*Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations*).

CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines section 15380 provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a "candidate species" that has not yet been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

As described in Section 4.6.1.8 Special-Status Species, for the purposes of this EIR/EIS "special-status species" includes those that may be considered rare or endangered pursuant to Section 15380 of the CEQA Guidelines (these include plant species with CRPR of 1, 2, 3, or 4 and candidate species).

As Section 15380 provides a definition of special-status species, the project would be consistent with this guideline. As described in other regulatory discussions for FESA, MBTA, CESA, and California Fish and Game Code, the project would be inconsistent with these other regulations that protect special-status species. These inconsistencies are addressed under Impact 4.6-1 (*Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction*) and Impact 4.6-6 (*Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations*).

State Regulation of Waters Including Wetlands

Regional Water Quality Control Board

Under Section 401 of the CWA, the RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act (Porter-Cologne Act). Under the Porter-Cologne Act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface

water and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters of the state must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

The RWQCB requires projects to avoid impacts on wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. In addition California defines wetlands by presence of one or more of the following three attributes in addition to wetland hydrology:

- At least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover);
- The substrate is predominantly undrained hydric soil; and
- The substrate is not soil (such as a rocky shore) and is saturated with water or covered by shallow water at some time during the growing season of each year.

Under normal circumstances, the federal definition of wetlands requires all three wetland identification parameters to be met, whereas the California definition requires the presence of at least one of these parameters. For this reason, identification of wetlands by state agencies consists of the union of all areas with a non-soil substrate that are periodically inundated or saturated, or in which at least seasonal dominance by hydrophytes may be documented, or in which hydric soils are present.

The state issued the California Wetlands Conservation Policy (Executive Order W-59-93), commonly referred to as the "No Net Loss Policy" for wetlands. The Order aims to ensure no overall net loss, and long-term net gain in the quality, quantity, and performance of wetlands in California.

The proposed project has potential to result in fill of waters or wetlands regulated under Section 401 of the CWA and waters regulated under the Porter-Cologne Act, which would be inconsistent with each of these regulations. This inconsistency is addressed under Impact 4.6-3 (*Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction*) and Impact 4.6-8 (*Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations*).

California Department of Fish and Wildlife

Under Sections 1600-1616 of the California Fish and Game Code, the CDFW regulates activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams and lakes. CDFW's jurisdictional limits are defined in Section 1602 of the California Fish and Game Code as, "bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake…." The CDFW requires a Streambed Alteration Agreement for activities within its jurisdictional area. If CDFW determines that a project would result in

substantial adverse effects on an existing fish or wildlife resource, CDFW would prepare a Lake or Streambed Alteration Agreement that includes reasonable measures to protect the resources.

The proposed project has potential to result in impacts on rivers or streams, which would be inconsistent with Sections 1600-1616 of the California Fish and Game Code. This inconsistency is addressed under Impact 4.6-3 (*Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction*), Impact 4.6-2 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction*), Impact 4.6-7 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations*), and Impact 4.6-8 (*Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations*).

Provisions and Policies Applying to Sensitive Communities in both Wetlands and Uplands

California Coastal Commission

The California Coastal Commission (CCC), in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone under the California Coastal Act (Coastal Act). On land the coastal zone varies in width from several hundred feet in highly urbanized areas to five miles in certain rural areas. Offshore the coastal zone encompasses a 3-mile-wide band of ocean. Development activities are broadly defined by the Coastal Act to include: the construction of buildings and structures, divisions of land, and activities that change the intensity of use of land or public access to coastal waters. A development activity within the coastal zone generally requires a coastal development permit from either the CCC, or from a local government with a certified Local Coastal Program (LCP), to ensure that the activity complies with the Coastal Act. The Coastal Act includes goals and policies that constitute the statutory standards that are applied to planning and regulatory decisions made by the CCC and by local governments.

The Coastal Act defines ESHAs as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Pub. Res. Code §30107.5). The CCC generally treats wetlands, streams, riparian habitats, and open coastal waters as ESHAs, although exceptions may exist where the definition of ESHA is not satisfied. Because the CCC typically defines wetlands based on a "one-parameter approach" CCC jurisdictional wetlands are typically greater in extent than those regulated by the USACE under the CWA. An ESHA may also be found in upland areas, for example stands of large, mature trees in an area otherwise lacking such habitat.

The principal Coastal Act policy pertaining to ESHAs is PRC Section 30240, which provides: "Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas."

As discussed in connection with wetlands, above, the ESHA policy is applied by the CCC or by local agencies with approved LCPs. LCPs within the project area utilize the Coastal Act definition for ESHAs and some LCPs include additional guidance to determine ESHA boundaries within their respective LCP area.

The proposed project has potential to result in impacts on wetlands or ESHA regulated by the CCC, which would be inconsistent with the Coastal Act. This inconsistency is addressed under Impact 4.6-2 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction*), Impact 4.6-3 (*Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction,* Impact 4.6-7 (*Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations*), and Impact 4.6-8 (*Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations*).

Habitat Management and Conservation Plans

1997 Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California

The USACE developed a multispecies Habitat Management Plan for the former Fort Ord as a mitigation measure for impacts on vegetation and wildlife resources resulting from pre-disposal, disposal, and reuse actions, such as hazardous materials remediation. The 1997 Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California (HMP; USACE, 1997) addresses those potential impacts and promotes preservation, enhancement, and restoration of habitat and populations of HMP covered species, while allowing development on selected properties.

For the most part, the proposed project will not occur in lands covered under the HMP. The exception to this would be the construction of the new Transmission Main, and Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline).

2012 Draft Installation-Wide Multispecies Habitat Conservation Plan for Former Fort Ord

FORA is preparing a Draft Habitat Conservation Plan for the former Fort Ord military base entitled *Draft Installation-Wide Multispecies Habitat Conservation Plan* (Draft HCP; Fort Ord Reuse Authority, 2012). The Draft HCP provides a framework for ensuring conservation and enhancement of 19 special-status plant and animal species and the natural communities that support them on the former Fort Ord military base that would contribute to species recovery and is based on the HMP described above. Once finalized, the HCP will serve as the basis for issuance of a base-wide Section 2081 (CESA) incidental take permit by CDFW and also as the basis for issuance of a base-wide Section 10(a)(1)(B) (FESA) incidental take permit by the USFWS. The Draft HCP incorporates all relevant information from the HMP described above issued by the USACE in April 1997, and, once finalized, will supersede it as the primary conservation planning document for non-federal recipients of the former Fort Ord lands.

Once finalized, the HCP will accompany applications to CDFW and USFWS for incidental take of species addressed in the HCP. USFWS will consider issuance of permits for all HCP wildlife species but CDFW can only issue permits for state-listed or candidate species. Upon approval of the applications, including the HCP and other supporting documentation, permits will be issued for a term of 50 years. The most recent HCP draft was prepared in March 2015. FORA received comments from Permittees and wildlife agencies on the draft HCP in 2016. The final adoption date has not been determined.

Similar to the HMP, the majority of the proposed project will not occur in lands covered under the HCP. The exception to this would be the construction of the new Transmission Main, and proposed ASR facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline).

4.6.2.3 Applicable Regional and Local Land Use Plans and Policies

Table 4.6-4 identifies the regional and local land use plans, policies, and regulations pertaining to inland biological resources that are relevant to the MPWSP and that were adopted for the purpose of avoiding or minimizing an adverse environmental effect. Also included in Table 4.6-4 is an analysis of project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would be consistent with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project would be potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to Section 4.6.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.6-4
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Land Use – Primary Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 2.4.4:*** Wherever possible, lands with significant agricultural, natural habitat, or scenic value shall be retained and protected from degradation.	This policy is intended to preserve and protect sensitive natural communities.	Potentially Inconsistent: Installation of the subsurface slant wells, New Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within sensitive natural communities. This issue is addressed further in Impacts 4.6-2 and 4.6-7 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.112***: The policies of the Community Land Use Element are designed to protect areas with significant agricultural or natural-habitat value from being displaced by development, and they are designed to protect and conserve air, water and energy resources.	This policy is intended to protect important agricultural, biological, air, water, and energy resources from impacts of development.	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within and could disrupt sensitive natural communities (which may include wetlands and waters) and sites supporting special-status species. This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3, 4.6-6, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.114:*** Within areas identified as supporting sensitive habitat(s), the following requirements shall apply: 1. With the exceptions of areas where an approved Habitat Management Program (HMP) or Habitat Conservation Program (HCP) allows development without restrictions, and for structures erected to maintain, restore or enhance sensitive habitat and species, require discretionary approval for all new structural and road development proposed within sensitive habitat areas or on sites supporting sensitive species and habitat. 2. Site and design those new structures or roads which may be allowed within designated Habitat Reserves or other identified sensitive habitat areas so as to minimize adverse impacts upon habitat areas. This may entail site plan modification and/or the inclusion of appropriate mitigation measures developed by biologists, soils engineers, or hydrologists (e.g., erosion and storm-drainage controls, wildlife culverts, and grading limitations). (2006-243)	This policy is intended to protect sensitive natural communities (which may include wetlands and waters) and sites supporting special-status species.	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within, and could disrupt, sensitive natural communities (which may include wetlands and waters) and sites supporting special-status species. This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3, 4.6-6, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.115:*** Within areas for which there is an approved (HMP) or (HCP) and where avoidance of significant impacts is not feasible as determined through discretionary review, a seasonal avoidance and/or salvage/relocation program for certain species and habitat areas should be established or undertaken, as appropriate, prior to site development.	This policy is intended to protect special-status species and sensitive natural communities within areas where there is an approved HMP or HCP.	Potentially Inconsistent: There are no approved HMPs or HCPs that cover the sites of the proposed subsurface slant wells, Source Water Pipeline, and new Desalinated Water Pipeline. However, the new Transmission Main is located within an approved HMP. Installation of the Transmission Main could disrupt special-status species and sensitive natural communities in an approved HMP area. This issue is further addressed in Impacts 4.6-1, 4.6-2, and 4.6-10.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.116:*** Where new development may remove all or a portion of identified sensitive habitat in an area not subject to an approved HMP or HCP, and where no less environmentally damaging alternative can be feasibly implemented, comparable habitat should be restored either onsite or offsite on a two-to-one basis (e.g., two acres of habitat shall be restored for every acre of habitat removed).	This policy is intended to protect sensitive natural communities (which may include wetlands and waters) in areas not subject to an approved HMP or HCP.	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, and new Desalinated Water Pipeline, and maintenance of the subsurface slant wells would occur within, and could disrupt, sensitive natural communities (which may include wetlands and waters) outside of an approved HMP. This issue is addressed further in Impacts 4.6-2, 4.6-3, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.118:*** Where development sites are adjacent to areas designated as "Habitat Reserves" or other identified sensitive areas, site improvements and buildings shall be located and designed so as to avoid adverse impacts on the biological resource in question. Development shall be conditioned upon the incorporation of adequate mitigation measures in terms of site design. Such measures might include the following: a) providing an adequate buffer between new development and identified sensitive habitat; b) minimizing the need for grading that would substantially alter the existing topography; c) incorporating erosion- and sediment-control techniques during and after construction; d) establishing appropriate native landscaping between new development and sensitive habitat; and e) providing wildlife corridors or connections between the sensitive habitat and other natural open space areas.	This policy is intended to protect areas designated as Habitat Reserves" or other sensitive natural communities (which may include wetlands and waters).	Potentially Inconsistent: The subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main are proposed for sites in or adjacent to areas designated as "Habitat Reserves and Other Open Space." These Habitat Reserves are comprised of sensitive natural communities (which may include wetlands and waters). Installation of these facilities and maintenance of the subsurface slant wells could disrupt such communities. This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3, 4.6-6, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.119:*** As part of any application package for development proposed on undeveloped lands in former Fort Ord or on the Armstrong Ranch, seasonally timed surveys for known or suspected sensitive or unique species and habitats shall be undertaken by a qualified biologist approved by the City Community Development Director (except in those areas where such species have already been addressed by approved habitat conservation/management plans or similar plans or agreements). This information shall be provided as part of a preliminary site and development review, and, for development on former Fort Ord, should be submitted to CRMP for review and recommendations. Where such species are found to occur, mitigation plans (or Habitat Management Plans) shall be prepared in coordination with the USFWS and CDFW unless approved habitat management plans are already in place.	This policy is intended to identify and protect special-status species and sensitive natural communities (which may include wetlands and waters) on undeveloped lands in former Fort Ord and on the Armstrong Ranch.	Potentially Inconsistent: Installation of the new Transmission Main would occur on undeveloped lands within the former Fort Ord that potentially support special-status species and sensitive natural communities (which may include wetlands and waters). Surveys to identify presence of these species, and then avoid impacts on these species, are not included as part of the proposed project. This issue is addressed further in Impacts 4.6-1, 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.120:*** Oak woodland shall be protected to the greatest extent possible in recognition both of its relatively high biological and aesthetic resource value and its important role in California's and Monterey County's natural heritage. In areas supporting oak woodland, a site survey of this resource should be completed for all new subdivisions and commercial projects as part of a preliminary site and development review. All stands of oak woodland and individual specimens with a diameter of 6 inches or more when measured 4.5 feet from ground level should be identified on a base map. To the greatest extent possible, development plans shall then attempt to incorporate the oak woodland or individual specimens into the plan as an integral feature of the natural and built environment. All oak trees shall be replaced and maintained with new trees of the same stock as those found onsite or in the site vicinity according to the following replacement formula: a minimum one-for-one (one replacement tree for each tree removed) where replacement trees are proposed to be the same diameter or greater than those to be removed; a minimum three-to-one (three replacement trees for each tree removed) for replacement trees of lesser diameter than those proposed for removal, unless, as determined by arborist, the site's specific environmental conditions would not sufficiently support a healthy oak habitat. All diameter measurements shall be taken at 4.5 feet from ground level. Replacement trees shall be a mixture of sizes.	This policy is intended to protect oak woodlands and individual oak trees.	Potentially Inconsistent: Oak woodlands do not occur within the sites of the proposed subsurface slant wells, Source Water Pipeline, or new Transmission Main within the City of Marina. However, a tree survey has not been conducted at these sites and individual oak trees could occur within the Source Water Pipeline and new Transmission Main and be removed during construction. This issue is addressed further in Impact 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts. Oak woodland occurs within the new Desalinated Water Pipeline. Oak woodlands and individual oak trees could be removed during construction of these facilities. This issue is addressed further in Impacts 4.6-2 and 4.6-4 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.121:*** In those areas where the potential for vernal pools exists, a site survey shall be conducted by a qualified biologist. Any development or grading of a site found to have one or more vernal pools shall provide a wetland buffer of sufficient width and size, as determined by a qualified biologist, between the vernal pond habitat, including associated wetland vegetation, and the proposed or existing development to both protect those species most sensitive to development disturbances and complement the habitat value of the wetland resource. Structures allowed within the wetland buffer shall be limited to those required for providing public access and nature observation. Grading within identified vernal ponds shall be limited to that necessary for habitat restoration, enhancement and protection or as may otherwise be recommended by a qualified biologist. No soil disturbance shall occur during the rainy season within the designated vernal pond and buffer area. Grading within the drainage area of vernal ponds but outside the designated wetland buffer may be allowed in accordance with the provisions of an approved erosion control and landscape plan pursuant to Policy 4.125.1 of this plan with appropriate measures employed as needed to protect the wetland habitat.	This policy is intended to protect wetlands classified as vernal pools and/or vernal ponds.	Potentially Inconsistent: Vernal ponds (including the pond associated with Locke-Paddon Park) occur in the vicinity of the proposed new Desalinated Water Pipeline alignment and could be adversely affected by pipeline construction. This issue is addressed further in Impacts 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.122:*** The City shall require that lighting of streets and other public areas in proximity to areas of natural open space be shielded and as unobtrusive as possible so as to direct light away from habitat reserve areas and other areas of natural open space. The same requirements shall follow for outdoor lighting on private development sites adjacent to such lands.	This policy is intended to protect sensitive natural habitats and species from impacts of nighttime lighting.	*MPWSP consistency with plans, policies, and ordinances related to nighttime lighting is presented Section 4.14, Aesthetic Resources.*
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Land Use	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 2.10:*** Lands designated as "Habitat Reserve and Other Open Space" are intended for permanent retention in open space to protect significant plants and wildlife inhabiting these areas. These lands consist of the following natural areas: 1. ***Riparian Habitat.*** Land occupied by riparian vegetation along the banks of the Salinas River shall be retained and the scarce riparian habitat preserved. Use of these lands for development purposes is further restricted by the potential for flooding. 2. ***Coastal Strand and Dunes.*** These lands adjacent to Monterey Bay provide habitat for rare, threatened wildlife and plant species. Approximately 1,600 acres west of Highway One are designated as habitat reserve for this purpose. Except for a limited number of areas where visitor-serving facilities and public park use is to be permitted, this entire area shall be retained as open space. As part of the "Habitat Reserve"	This policy is intended to protect significant plants and wildlife from impacts of development.	Potentially Inconsistent: The subsurface slant wells, Source Water Pipeline, and new Transmission Main are proposed for sites in or around areas designated as "Habitat Reserves and Other Open Space." These Habitat Reserves are comprised of sensitive natural communities (which may include wetlands and waters). Installation of the facilities and maintenance of the subsurface slant wells could disrupt such communities. This issue is addressed further under Impacts 4.6-1, 4.6-2, 4.6-3, 4.6-6, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas) (cont.)				designation, a stand-alone State Park designation is recognized as an appropriate use by this plan for the 370 acre Lonestar property, with the condition that most of this site be provided with an implementing funding source for protection of its habitat values, and recreational uses be limited and subordinated to the habitat requirements of sensitive plant and wildlife species occurring here. On both public and privately owned lands, dune habitat shall be restored to a healthy condition. 3. ***Maritime Chaparral.*** Coastal Scrub, and Coast Live Oak Woodland. Approximately 1,160 acres of land within the Marina Planning Area is designated for permanent retention in open space so as to protect maritime chaparral, coastal scrub, and coast live oak woodlands and other plant and wildlife species that inhabit these areas. The designated lands include approximately 600 acres in the University of California Natural Reserve System located next to the Monterey Bay Educational, Science, and Technology Center; an adjoining 124-acre site occupying a combination of lands conveyed to the City as part of the transfer of the airport and adjacent land on Armstrong Ranch and 160 acres located within the larger East Garrison Reserve. Another 227-acre reserve is located south of Imjin Road. This area is a former landfill site that has been capped, and which will be restored as a natural habitat area. An additional 50 acres located along the east side of Highway One in the vicinity of the planned extension of Del Monte Boulevard is also a designated reserve. 4. ***Wetlands.*** An area of 80 acres on the Armstrong Ranch property between Del Monte Boulevard and Highway One is designated as Habitat Reserve due to the presence of vernal ponds. Additional small areas where vernal ponds occur may exist elsewhere on the Armstrong property. Prior to approval of development plans for this property, biological field surveys shall be conducted to determine if additional vernal ponds exist. If such surveys document the existence of such ponds, development plans must provide either for the preservation or replacement of this habitat.		
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 8:*** To prohibit further degradation of the beach environment and conserve its unique qualities.	This policy is intended to protect beach habitat.	Potentially Inconsistent: Installation of the subsurface slant wells and a portion of the Source Water Pipeline and maintenance of the subsurface slant wells may occur adjacent to, and could disrupt, beaches. This issue is addressed further in Impacts 4.6-2 and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 19:*** To promote reclamation and protection of native dune habitat and vegetation except in areas presently being mined.	This policy is intended to protect native dune habitat, including vegetation.	Potentially Inconsistent: Installation of the subsurface slant wells and portions of the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within, and could disrupt, native central dune scrub. This issue is addressed further in Impacts 4.6-2 and 4.6-7 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 23:*** To support continuation of the coastal-dependent sand mining operations as long as they are economically feasible and their operations are managed with sensitivity to the adjacent dune environment.	This policy is intended to ensure that continued coastal-dependent sand mining operations are protective of nearby dune environments.	Consistent: The proposed project does not include coastal-dependent sand mining operations.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 24:*** To protect and encourage the restoration of the vernal ponds to their original state and allow only those uses adjacent which will reinforce and conserve the unique habitat qualities of these ponds.	This policy is intended to protect vernal ponds.	Potentially Inconsistent: Vernal ponds (including the pond associated with Locke-Paddon Park) occur in the vicinity of the proposed new Desalinated Water Pipeline alignment and could be adversely affected by pipeline construction. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 25:*** To protect the habitat of recognized rare and endangered species found in the Coastal dune area.	This policy is intended to protect special-status species habitat found in coastal dunes.	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within, and could disrupt native central dune scrub, where special-status species are either known to occur or have potential to occur. This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 26:*** To regulate development in areas adjacent to recognized rare and endangered species or their habitats so that they will not threaten continuation of the species or its habitat.	This policy is intended to protect areas of rare and endangered species habitat (including wetlands) from impacts of development.	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur adjacent to, and could indirectly disrupt, special-status species habitat (including wetlands). This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3, 4.6-6, 4.6-7, and 4.6-8 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Planning Guidelines	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	**Rare and Endangered Species: Habitat Protection.** In Marina's Coastal Zone, the foredune, dune and grassy inland areas all contain potential habitat for rare and endangered plants and animals. The precise range for each plant and animal is not known because intensive site-specific study throughout the area was not financially possible. However, the potential for various rare and endangered habitats has been identified and mapped (see Environmental Capability section) to provide a guide to the locations where more intensive study is required. Because a site-specific study is needed in many areas before any development can take place, the following policies apply to all of the areas indicated on the map[1] or meeting the definitions of Exhibit "A" as being potential habitats for rare and endangered plants and animals. • Before any use or change in use, areas identified as potential habitat for rare and endangered plant or animal species shall be investigated by a qualified biologist to determine the physical extent of the primary habitat areas for the specific rare and endangered plants and animals on that site. • Primary habitat areas shall be protected and preserved against any disruption of habitat values and only uses dependent on those resources shall be allowed within those areas. All development must be sited and designed so as not to interfere with the natural functions of such habitat areas. Management and enhancement opportunities should be incorporated into use or development proposals; potential impacts shall be fully mitigated, including the assurance of long-term mitigation and maintenance of habitat through the use of appropriate acreage replacement/restoration ratios for any unavoidable direct impacts on habitat areas. • Potential secondary or support habitat areas to the primary habitats identified on the site should also be defined. Secondary habitat investigation should include identification of the role and importance of the secondary area to the primary habitat area and should stress the impact of use or development in the secondary area on the primary habitat. All development in this area must be designed to prevent significant adverse impacts on the primary habitat areas. In concert with State law, City Ordinances shall require environmental review and appropriate mitigation of identified impacts for all development in the Coastal Zone, including the assurance of long term mitigation and maintenance of habitat through the use of appropriate acreage replacement/restoration ratios for any unavoidable direct impacts on habitat areas. • Development in wetlands shall be prohibited. Access for nature observation shall be the only exception; and this access should not be permitted unless a qualified biologist determines that the impacts of construction and human observation can be sufficiently mitigated to insure continuation of the rare and endangered species and/or its habitat. • Available evidence indicates that dune vegetation is more resilient than previously thought, and areas damaged by illegal use or negligence shall be considered restorable and eligible for restoration.	This policy is intended to protect special-status species habitat (including wetlands), which includes primary habitat (defined as all of the environmentally sensitive habitat areas in Marina) and secondary habitat (defined as areas adjacent to primary habitat areas within which development must be sited and designed to prevent impacts which would significantly degrade the primary habitat).	Potentially Inconsistent: Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within special-status species habitats (including wetlands and including those defined as primary and secondary habitat in the City of Marina LCLUP). This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3 4.6-4, 4.6-6, 4.6-7, and 4.6-8. Mitigation measures are provided to reduce or avoid impacts on special-status species habitats. However, as described in Impact 4.6-4, construction of these facilities, and maintenance of the subsurface slant wells, would be inconsistent with the City of Marina LCLUP, a significant and unavoidable impact.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone) (cont.)				• Where habitats of rare and endangered species are located on any parcel, owners and/or operators shall, at such time that development is proposed, develop and execute a Management Plan which will protect identified rare and endangered plant and animal communities. Each plan should be drawn up by a qualified biologist in cooperation with the property owner developer. [1] Presumably this refers to the maps entitled "Natural Habitats" and "Potential Wildlife Habitats." [2] Exhibit 'A' Habitat Definitions: *Primary habitat*. This term includes all of the environmentally sensitive areas in Marina. These are as follows: 1. Habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species. These species will be collectively referred to as "rare and endangered". 2. Vernal ponds and their associated wetland vegetation. The Statewide Interpretive Guideline for Wetlands and Other Wet Environmentally Sensitive Habitat Areas (California Coastal Commission, February 14, 1981) contains technical criteria for establishing the inland boundary of wetland vegetation. 3. All native dune vegetation, where such vegetation is extensive enough to perform the special role of stabilizing Marina's natural sand dune formations. 4. Areas otherwise defined as secondary habitat that have an especially valuable role in an ecosystem for sensitive plant or animal life., as determined by a qualified biologist approved by the City. *Secondary habitat*. This term refers to areas adjacent to primary habitat areas within which development must be sited and designed to prevent impacts which would significantly degrade the primary habitat. The secondary habitat area will be presumed to include the following, subject to more precise determination upon individual site investigation: 1. The potential/known localities of rare and endangered plant species as shown on LUP page 71 ("Disturbed Vegetation" map). 2. The potential wildlife habitats as shown on LUP page 75 ("Potential Wildlife" map). 3. Any area within 100 feet of the landward boundary of a wetland primary habitat area. *Rare and endangered species*. In Marina, this term will apply to those plant and animal species which are rare, endangered, threatened or are necessary for the survival of such species. The Environmental Analysis Report prepared for this LUP identified such species in the dune habitat areas. While future scientific studies may result in addition or deletion of species, the list presently includes: 1. Smith's Blue Butterfly (Shijimiaeoides enoptes smithi) 2. Globose Dune Beetle (Coelus globosus) 3. Black Legless Lizard (Anniella pulchra nigra) 4. Salinas Kangaroo Rat (Dipodomys Heermanni Goldmani) 5. Seaside Painted Cup (Castilleja latifolia ssp. latifolia) 6. Monterey Spine Flower (Chorizanthe pungens var. pungens) 7. Eastwood's Ericameria (Ericameria fasciculata) 8. Coast Wallfower (Erysimum ammophilum) 9. Menzies' Wallflower (Erysimum menziesii) 10. Coastal Dunes Milk Vetch (Astragalus tener var. titi) 11. Dune Gilia (Gilia tenuiflora var. arenaria) 12. Wild Buckwheat (Erigonum latifolium)* 13. Wild Buckwheat (Erigonum parvifolium)* 14. Bush Lupine (Lupinus ssp.)+ * only within the range of Smith's Blue Butterfly. + only within the range of the Black Legless Lizard.		

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Planning Guidelines	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	**Wetlands Protection.** Despite their seasonal nature, the vernal ponds are considered to be coastal wetlands. There are several vernal ponds remaining in Marina's Coastal Zone; all but one supports a marsh. Most of the ponds are brackish and, except in the very wettest years, most are dry for some part of the year. The following shall be applied when planning in or near the vernal ponds: • Because of their fragile geology, no new structures shall be allowed within the vernal pond itself. The only new structure allowed in the wetland area should be those designed for public access for nature observation. No access structure should be allowed without thorough investigation by a qualified biologist and geologist. Design should include mitigation for all impacts identified by these specialists. • New development within the drainage areas of the natural Vernal Ponds shall be regulated to protect the vernal pond and its water quality. No development within the drainage area of a vernal pond should be approved without investigation by a qualified biologist as well as other necessary specialists. Grading setbacks, reduction of impervious surface coverage, siltation basins, and other appropriate measures shall be employed to protect the ponds and their wetlands. • A 100 foot riparian setback shall be established from the edge of all wetlands. • The City should encourage State participation in the preservation and restoration of the historic vernal ponds and their wetlands.	This policy is intended to protect vernal pools and their associated wetlands.	Potentially Inconsistent: Vernal ponds (including the pond associated with Locke-Paddon Park) occur in the vicinity of the proposed new Desalinated Water Pipeline alignment. Construction could occur within the 100-foot riparian setback of the edge of the vernal ponds and water quality within the vernal ponds could be adversely affected by pipeline construction. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 17.51 – Tree Removal, Preservation and Protection	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Chapter 17.51 –*** Tree Removal, Preservation and Protection includes measures to preserve and maintain existing trees. This ordinance requires that a tree removal permit be obtained from the City for any tree that shall be removed or relocated.	This policy is intended to protect trees.	Potentially Inconsistent: Installation of the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main could result in tree removal. This issue is addressed further in Impact 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts. No trees occur at the subsurface slant well site.
Fort Ord Dunes State Park	Fort Ord Dunes State Park General Plan and Environmental Impact Report	Physical Resources	New Transmission Main	**BIO-8:** Preserve large areas of coastal dune habitat. Restore land that is in degraded condition, but includes some remaining native species, and is located adjacent to intact areas of coastal dune habitat in order to create large areas of connected, viable habitat of native plants and animals. Areas that serve to connect existing and potentially restored habitat areas should be considered as a very high priority, as these corridors will re-connect remnant habitats, creating what could become an extensive network of natural habitats within the park.	This policy is intended to preserve and restore coastal dune habitat.	Potentially Inconsistent: Installation of the new Transmission Main would occur within central dune scrub. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
City of Monterey (inland areas)	Monterey City Code	Chapter 37 – Preservation of Trees and Shrubs	Ryan Ranch-Bishop Interconnection Improvements	***Chapter 37 –*** Preservation of Trees and Shrubs is intended to assure preservation of trees and replacement of trees when removal is unavoidable. A tree permit is required to be obtained from the City for removal or excessive pruning of any protected tree. Protected trees are defined as a) trees located on a vacant private parcel that are more than two inches (2") in diameter when measured at a point four feet six inches (4'6") above the tree's natural grade; and, b) trees located on a private, developed parcel that are more than six inches (6") when measured at a point four feet six inches (4'6") above the tree's natural grade. The City can also designate Local Landmark Trees, which is an outstanding, healthy, and prominent tree that is designated landmark in accordance to procedures established in the Municipal Code.	This policy is intended to preserve and mitigate for the loss of protected trees and Local Landmark Trees.	Potentially Inconsistent: Installation of the Ryan Ranch-Bishop Interconnection Improvements may require tree removal or tree trimming. This issue is addressed further in Impact 4.6-4 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	**Policy NCR-CZ 1.1.C:** Minimize Adverse Effects to Natural Coastal Resources. New development shall be located in areas where it will not have a significant adverse effect either individually or cumulatively on natural coastal resources and public access and recreation.	This policy is intended to protect natural coastal resources, such as sensitive natural communities, wetlands, and special-status species.	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and/or disturb, sensitive natural communities, wetlands, and special-status species habitat. These issues are addressed further in Impacts 4.6-1, 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	**Policy NCR-CZ 1.2.A:** Designation of ESHA. Areas of particular habitat value and fragility consistent with Policy LUD-CZ 1.3.B are considered Environmentally Sensitive Habitat Areas (ESHA). Actual determination of ESHA boundaries shall be based on facts on the ground at the time development is considered.	This policy is intended to protect environmentally sensitive habitat areas (which may include wetlands and waters).	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and disrupt, environmentally sensitive habitat areas (which may include wetlands and waters). This issue is addressed further in Impacts 4.6-2, and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy NCR-CZ 1.2.B:*** Protection of ESHA I. ESHAs shall be protected against significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. II. Development in areas adjacent to ESHAs shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat areas. III. Site-specific surveys to confirm the presence and extent of identifiable plant and animal life or habitats shall be required for all new development in, and adjacent to, ESHA. Site-specific surveys shall be prepared by a qualified biologist and shall include recommended mitigation measures to avoid, and where avoidance is not possible, minimize sensitive habitat impacts.	This policy is intended to protect environmentally sensitive habitat areas (which may include wetlands and waters).	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and disrupt, environmentally sensitive habitat areas (which may include wetlands and waters). This issue is addressed further in Impacts 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy NCR-CZ 1.3.A:*** Designation of Wetlands. Areas periodically or permanently covered with water that meet the definition of wetland in Coastal Act Section 30121, are considered to be wetlands. The presence of either hydrology, soils, or vegetation must be evidenced for an area to qualify as a wetland. Actual determination of wetland boundaries shall be based on facts on the ground at the time development is considered.	This policy is intended to protect wetlands.	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and disturb, wetlands. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy NCR-CZ 1.3.B:*** Protection of Wetlands I. The biological health and productivity of wetland areas shall be maintained, and where feasible, restored. II. Development that may have an adverse effect on a wetland shall not be allowed. The biological productivity of coastal waters, streams, wetlands, estuaries, and lakes, shall be maintained and restored, where feasible, to maintain optimum populations of marine organisms and to protect human health where applicable. Maintenance and restoration efforts shall support biological productivity by minimizing adverse effects of wastewater discharges and entrainment; controlling runoff, preventing substantial interference with surface water flow, and minimizing alteration of natural streams; preventing depletion of groundwater supplies; encouraging wastewater reclamation; and maintaining natural vegetation buffer areas that protect riparian habitats.	This policy is intended to protect wetlands and waters.	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and disturb, wetlands and waters. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts. Water quality is addressed in EIR/EIS Section 4.3, Surface Water Hydrology and Water Quality.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy LUD-CZ 3.1.A:*** Considerations for Natural Habitat Areas – ESHA • Proposed development in areas adjacent to an ESHA, including wetlands (as identified earlier by Policies NCR-CZ 1.2.A and 1.3.A), shall be required to demonstrate that it is sited and designed to be compatible with the protection of these resources. • Proposed development in areas adjacent to an ESHA (including wetlands) shall be required to provide a site-specific resource report prepared by a qualified biologist. The report shall include, at a minimum, the following: - A site-specific survey evaluating existing known resources at the time of proposed development. A map identifying existing known resources within the project's identified area of potential impact at the time of proposed development. - An evaluation of necessary buffers and/or setbacks required around any identified ESHA, wetland or riparian vegetation to ensure the long term biological integrity of the resource. All identified necessary buffers and/or setbacks required to ensure the biological integrity of the resource shall be mapped. i. Buffers or setbacks are required around Natural Habitat Areas including ESHA, riparian vegetation, and wetlands of a sufficient size to ensure the biological integrity of the resource, including under changing sea level conditions.	This policy is intended to protect environmentally sensitive habitat areas (which may include wetlands and waters).	Potentially Inconsistent: Installation of the new Transmission Main could occur within, and disturb, environmentally sensitive habitat areas (which may include wetlands and waters). This issue is addressed further in Impacts 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone) (cont.)				ii. A minimum buffer of 50 feet as measured from the extent of identified habitat type shall be required, unless a biological assessment results in information indicating that expanded or reduced setback/buffer would ensure the biological integrity of the resource. Smaller setbacks or buffers may be allowed only if it can be demonstrated that: (1) the required minimum 50-foot buffer would render the site unusable for its designated use; and (2) the buffer has been adjusted downward only to a point where the designated use can be accommodated. Under no circumstances shall the buffer be reduced to less than 25-feet. If the buffer/setback is adjusted downward, additional mitigation measures developed in consultation with the Department of Fish & Game shall be implemented. iii. No permanent structures shall be permitted within the required buffer/setback area except for structures of a minor nature that do not lead to significant degradation of the resource such as fences or at grade improvements for public access and/or recreation purposes (i.e. paths, trails, platforms, parking). • Identification of all biological impacts of proposed development. • Alternatives and/or mitigation for avoiding and/or reducing any identified impacts to a less than a significant level. Mitigation / Restoration and Monitoring Program for any mitigation required, including identification of appropriate acre replacement / restoration ratios for any unavoidable impacts.		
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy LUD-CZ 3.1B:*** Considerations for Natural Habitat Areas – Wetland Vegetation Management. For proposed development within the coastal zone, a Vegetation Management Report prepared by a qualified biologist shall be required. The report shall consist, at a minimum, of the following: • A site-specific survey of the vegetation and habitat types at the time of proposed development. • A map identifying existing vegetation and habitat types relative to the identified project area, and identification of all potential impacts associated with the proposed development. • Identification of appropriate native plant species for use in restoration activities. • Identification of appropriate buffers, or setbacks, necessary to protect identified vegetation • Alternatives and/or mitigation for avoiding and/or minimizing identified impacts. Mitigation shall include procedures and planting/maintenance plans that will encourage, enhance, or reestablish desirable plant communities. The Vegetation Management Report shall be consistent with the most current version of the Wetland Management/Enhancement and Restoration Program (refer to Policy NCR-CZ 1.5D).	This policy is intended to protect environmentally sensitive habitat areas (which may include wetlands and waters).	<u>Potentially Inconsistent:</u> Installation of the new Transmission Main could occur within environmentally sensitive habitat areas (which may include wetlands and waters). This issue is addressed further in Impacts 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy COS-4.2:*** Protect and enhance the creeks, lakes, and adjacent wetlands for their value in providing visual amenity, habitat for wildlife, and recreational opportunities.	This policy is intended to protect wetlands and waters.	<u>Consistent:</u> Potential wetlands or waters were not observed within the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline alignment within the City of Seaside.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline	***Policy COS-4.3:*** Encourage the preservation and enhancement of oak woodland elements in the natural and built environments.	This policy is intended to protect oak woodlands.	<u>Potentially Inconsistent:</u> Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within and disturb oak woodlands. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.54 – Trees	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Chapter 8.54 –***Regulates and controls the planting, removal, protection and preservation of trees within the city. A permit is required for the removal or alteration of any tree on private property in the city without a permit issued as provided in this chapter. A permit is also required to plant any Coast Redwood, Blue Gum Eucalyptus, Willow, Cottonwood or Poplar within the city.	This policy is intended to protect trees.	<u>Potentially Inconsistent:</u> Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could result in removal or alteration of trees. This issue is addressed further in Impacts 4.6-1 and 4.6-4 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-3.7:*** Areas of biological significance shall be identified and preserved as open space. These include, but are not limited to: a. The redwood community of Robinson Canyon; b. The riparian community and redwood community of Garzas Creek; c. All wetlands, including marshes, seeps, and springs (restricted occurrence, sensitivity, outstanding wildlife value). d. Native bunchgrass stands and natural meadows (restricted occurrence and sensitivity). e. Cliffs, rock outcrops, and unusual geologic substrates (restricted occurrence). f. Ridgelines and wildlife migration routes (wildlife value).	This policy is intended to protect sensitive natural communities (which may include wetlands and waters) and wildlife corridors.	Potentially Inconsistent: Installation of the Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements could disturb sensitive natural communities (which may include wetlands and waters). This issue is addressed further in Impacts 4.6-2 and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-3.8:*** Development shall be sited to protect riparian vegetation, minimize erosion, and preserve the visual aspects of the Carmel River. In places where the riparian vegetation no longer exists, it should be planted to a width of 150 feet from the river bank, or the face of adjacent bluffs, whichever is less. Density may be transferred from this area to other areas within a lot.	This policy is intended to protect sensitive natural communities and wetlands and waters of the Carmel River.	Consistent: The Carmel Valley Pump Station would not impact the Carmel River or associated riparian vegetation. The Main System- Hidden Hills Interconnection Improvements would not occur in the vicinity of the Carmel River.
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-4.1(b):*** Motorized vehicles shall be prohibited on the banks or in the bed of the Carmel River, except by permit from the Water Management District or Monterey County.	This policy is intended to protect sensitive natural communities and wetlands and waters of the Carmel River.	Consistent: Construction of the Carmel Valley Pump Station would not require use of motorized vehicles within the Carmel River. The Main System-Hidden Hills Interconnection Improvements would not occur in the vicinity of the Carmel River and therefore no motorized vehicles would be used within the Carmel River
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-3.10:*** b. Valley oaks should be incorporated on floodplain terraces. c. Weedy species such as pampas grass and genista shall not be planted in the Valley. e. The chaparral community shall be maintained in its natural state to the maximum extent feasible in order to preserve soil stability and wildlife habitat and also be consistent with fire safety standards.	This policy is intended to protect sensitive natural communities.	Consistent: Sensitive natural communities do not occur at the proposed Carmel Valley Pump Station and the Carmel Valley Pump Station does not include restoration of a floodplain terrace or planting weedy species. Installation of the Main System-Hidden Hills Interconnection Improvements is not located on a floodplain, does not including planting weedy species, and chaparral does not occur at the site.
County of Monterey (inland areas)	Carmel Valley Master Plan	Natural Resources	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-3.11:*** The County shall discourage the removal of healthy native oak and madrone and redwood trees in the Carmel Valley Master Plan Area. A permit shall be required for the removal of any of these trees with a trunk diameter in excess of six inches, measured two feet above ground level. Where feasible, trees removed will be replaced by nursery-grown trees of the same species and not less than one gallon in size. A minimum fine, equivalent to the retail value of the wood removed, shall be imposed for each violation. In the case of emergency caused by the hazardous or dangerous condition of a tree and requiring immediate action for the safety of life or property, a tree may be removed without the above permit, provided the County is notified of the action within ten working days. Exemptions to the above permit requirement shall include tree removal by public utilities, as specified in the California Public Utility Commission's General Order 95, and by governmental agencies.	This policy is intended to protect native oak, madrone, and redwood trees.	Potentially Inconsistent: Installation of the Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements could result in the removal of native oak, madrone, and redwood trees. This issue is addressed further in Impact 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Greater Monterey Peninsula Area Plan	Conservation/Open space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy GMP-3.5:*** Removal of healthy, native oak, Monterey pine, and redwood trees in the Greater Monterey Peninsula Planning Area shall be discouraged. An ordinance shall be developed to identify required procedures for removal of these trees. Said ordinance shall take into account fuel modification needed for fire prevention in the vicinity of structures and shall include: a. Permit requirements. b. Replacement criteria c. Exceptions for emergencies and governmental agencies	This policy is intended to protect native oak, madrone, and redwood trees.	Potentially Inconsistent: Installation of the of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station could result in the removal of native oak, madrone, and redwood trees. This issue is addressed further in Impact 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Greater Monterey Peninsula Area Plan	Conservation/Open space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy GMP-3.6:*** A 100-foot setback from all wetlands, as identified by a County-approved biologist, shall be provided and maintained in open space use. No new development shall be allowed in this setback area. No landscape alterations will be allowed in this setback area unless accomplished in conjunction with a restoration and enhancement plan prepared by a County-approved biologist and approved by the California Department of Fish and Wildlife.	This policy is intended to protect wetlands and waters.	Potentially Inconsistent t: Installation of the Brine Discharge Pipeline and Pipeline to CSIP Pond would occur within 100-feet of a potential wetland. The impact would be temporary and there would be no permanent aboveground facilities. After project construction, a 100-foot setback from the potential would remain. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts. Installation of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station within the Greater Monterey Peninsula Area Plan area would not occur within 100-feet of potential wetland.
County of Monterey (coastal zone and inland areas)	Greater Monterey Peninsula Area Plan	Conservation/Open space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy GMP-3.9:*** Critical habitat areas should be preserved as open space. When an entire parcel cannot be developed because of this policy, a low intensity, clustered development may be approved. However, the development should be located on those portions of the land least biologically significant so that the development will not upset the natural function of the surrounding ecosystem.	This policy is intended to protect critical habitat, sensitive natural communities, and habitat for special-status species.	Potentially Inconsistent: Installation of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station could occur in or around critical habitat, sensitive natural communities, and/or habitat for special-status species. This issue is discussed in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 21.64 – Special Regulations	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Section 21.64.260*** – Preservation of Oak and Other Protected Trees. In Monterey County oak trees within areas designated as Resource Conservation, Residential, Commercial, or Industrial cannot be removed without the approval of necessary permits. Exceptions include removal of oak trees pursuant to the purpose and standards required in areas designated as Agriculture, Industrial, and or Mineral Extraction. In addition, Title 20, Parts 2-5, addresses native tree removal and protection in the Coastal Zone and Title 21 outside the Coastal Zone. Chapter 16 of the Monterey County Municipal Code also addresses oak and other native tree protection. Native trees in Monterey County, as defined in the ordinance, include Santa Lucia fir, black cottonwood, Fremont cottonwood, box elder, willows, California laurel, sycamores, oaks and madrones. Trees must be at least six inches in diameter two feet above the ground level in order to be subject to these regulations. A landmark oak tree is defined as an oak tree that is 24 inches or more in diameter when measured two feet above ground level or one that is visually significant, historically significant, or exemplary of its species. Removal of any landmark tree is prohibited unless approved by the County Director of Planning and Building Inspection.	This policy is intended to protect oak and other native trees.	Potentially Inconsistent: Installation of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station could result in the removal of oak and other native trees. This issue is addressed further in Impacts 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-4.1:*** Federal and State listed native marine and fresh water species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant shall be protected. Species designated in Area Plans shall also be protected.	This policy is intended to protect special-status species.	Potentially Inconsistent: As detailed in **Table 4.6-6**, special-status species could occur within the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station sites. Construction of these facilities could result in impacts on special-status species. This issue is addressed further in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.1:*** The extent and acreages of critical habitat shall be inventoried to the extent feasible and mapped in GIS. Conservation of listed species shall be promoted.	This policy is intended to protect listed species and critical habitat.	Potentially Inconsistent: As detailed in **Table 4.6-6**, listed species and/or critical habitat occur or have potential to occur within the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station sites. Construction of these project components may disrupt such species and/or critical habitat. This issue is addressed further in Impacts 4.6-1 and 4.6-2and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.2:*** The extent and acreages of the potentially suitable habitat for listed species shall be inventoried to the extent feasible and mapped in GIS. Conservation of species shall be promoted as provided in the Area Plans.	This policy is intended to protect listed species and critical habitat.	Potentially Inconsistent: As detailed in **Table 4.6-6**, listed species and/or critical habitat occur or have potential to occur within the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station sites. Construction of these project components may disrupt such species and/or critical habitat. This issue is addressed further in Impacts 4.6-1 and 4.6-2and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.4:*** Development shall avoid, minimize, and mitigate impacts on listed species and critical habitat to the extent feasible. Measures may include but are not limited to: a. clustering lots for development to avoid critical habitat areas, b. dedications of permanent conservation easements; or c. other appropriate means. If development may affect listed species, consultation with USFWS and CDFW may be required and impacts may be mitigated by expanding the resource elsewhere onsite or within close proximity offsite. Final mitigation requirements would be determined as required by law.	This policy is intended to protect listed species and critical habitat.	Potentially Inconsistent: As detailed in **Table 4.6-6**, listed species and/or critical habitat occur or have potential to occur within the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station sites. Construction of these project components may disrupt such species and/or critical habitat. This issue is addressed further in Impacts 4.6-1 and 4.6-2and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.5:*** Landowners and developers shall be encouraged to preserve the integrity of existing terrain and native vegetation in visually sensitive areas such as hillsides, ridges, and watersheds. Routine and Ongoing Agricultural Activities shall be exempt from this policy.	This policy is intended to protect sensitive natural communities.	Potentially Inconsistent: As detailed in **Table 4.6-6**, sensitive natural communities occur or have potential to occur at the proposed MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Main System-Hidden Hills Interconnection Improvements sites. Construction of these facilities could affect sensitive natural communities. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. Sensitive natural communities do not occur at the Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Ryan Ranch-Bishop Interconnection Improvements and Carmel Valley Pump Station sites in unincorporated Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.6:*** Native and native compatible species, especially drought resistant species, shall be utilized in fulfilling landscaping requirements.	This policy is intended to protect native plant species and prevent the introduction and spread of non-native and invasive plant species used in landscaping.	Potentially Inconsistent: Upon completion of construction, disturbed areas would be restored to their approximate pre-construction condition. Site restoration could involve the use of non-native plant species. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.11:*** Conservation of large, continuous expanses of native trees and vegetation shall be promoted as the most suitable habitat for maintaining abundant and diverse wildlife.	This policy is intended to protect sensitive natural communities, trees, and wildlife corridors.	Potentially Inconsistent: As detailed in **Table 4.6-6**, sensitive natural communities and/or trees occur or have potential to occur at the proposed MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station. Construction of these facilities could affect sensitive natural communities and/or trees. This issue is addressed further in Impacts 4.6-2 and 4.6-4 and mitigation measures are provided to reduce or avoid any impacts. Construction of all of these facilities would not affect wildlife corridors.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.13:*** Efforts to obtain and preserve natural areas of particular biologic, scientific, or educational interest, and restrict incompatible uses from encroaching upon them, shall be encouraged.	This policy is intended to protect sensitive natural communities.	Potentially Inconsistent: As detailed in **Table 4.6-6**, sensitive natural communities occur or have potential to occur at the proposed MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Main System-Hidden Hills Interconnection Improvements sites. Construction of these facilities could affect sensitive natural communities. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. Sensitive natural communities do not occur at the Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Ryan Ranch-Bishop Interconnection Improvements and Carmel Valley Pump Station sites in unincorporated Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.16:*** A biological study shall be required for any development project requiring a discretionary permit and having the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. An ordinance establishing minimum standards for a biological study and biological surveys shall be enacted. A biological study shall include a field reconnaissance performed at the appropriate time of year. Based on the results of the biological study, biological surveys may be necessary to identify, describe, and delineate the habitats or species that are potentially impacted. Feasible measures to reduce significant impacts to a less than significant level shall be adopted as conditions of approval.	This policy is intended to protect sensitive natural communities, wetlands and waters, and special-status species.	Potentially Inconsistent: As detailed in **Table 4.6-6**, special-status species, sensitive natural communities, and/or wetlands and waters occur or have the potential to occur within, or in the vicinity of, the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements and Carmel Valley Pump Station sites. Construction of these facilities could affect special-status species, sensitive natural communities, and/or wetlands and waters. These issues are addressed further in Impacts 4.6-1, 4.6-2, and 4.6-3 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.17:*** The County shall prepare, adopt, and implement a program that allows projects to mitigate the loss of critical habitat. The program may include ratios, payment of fees, or some other mechanisms in consultation with responsible state and/or federal regulatory agencies. Until such time as the program has been established, projects shall mitigate the loss of critical habitat on an individual basis in consultation with responsible state and/or federal regulatory agencies. A Community Plan or Rural Center Plan that includes a mitigation program shall not be subject to this policy.	This policy is intended to protect critical habitat.	Potentially Inconsistent: Critical habitat occurs within the vicinity of the Source Water Pipeline, Castroville Pipeline, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station sites and could be indirectly affected by these facilities. This issue is discussed in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.18:*** Prior to disturbing any federal or state jurisdictional areas, all applicable federal and state permitting requirements shall be met, including all mitigation measures for development of jurisdictional areas and associated riparian habitats.	This policy is intended to protect wetlands and waters.	Potentially Inconsistent: Installation of the Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station could disturb wetlands and waters. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts. Construction of the MPWSP Desalination Plant and the Main System-Hidden Hills Interconnection Improvements are not expected to impact waters or waters.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.22:*** In order to preserve riparian habitat, conserve the value of streams and rivers as wildlife corridors and reduce sediment and other water quality impacts of new development, the county shall develop and adopt a Stream Setback Ordinance. The ordinance shall establish minimum standards for the avoidance and setbacks for new development relative to streams. The ordinance shall identify specific setbacks relative to the following rivers and creeks so they can be implemented in the Area Plans: Salinas, Carmel River, Arroyo Seco, Pajaro River, Nacimiento, San Antonio, Gabilan Creek, and Toro Creek. The ordinance may identify specific setbacks for other creeks or may apply generic setbacks based on the stream classification developed for the ordinance. The ordinance shall delineate appropriate uses within the setback area that shall not cause removal of riparian habitat, compromise identified riparian wildlife corridors, or compromise water quality of the relevant stream while also taking into consideration uses that serve health and safety purposes. The Stream Setback Ordinance shall apply to all discretionary development, County public projects, and to conversion of lands uncultivated for the previous 30 years, on normal soil slopes over 15% or on highly erodible soils on slopes over 10%.	This policy is intended to protect streams and associated riparian habitat.	Potentially Inconsistent: Installation of the Castroville Pipeline would occur approximately 150 feet of the Salinas River. Construction activities could indirectly impact this features. This issue is addressed further in Impact 4.6-3 and mitigation measures are provided to reduce or avoid any impacts. Installation of the Carmel Valley Pump Station would occur approximately 280 feet from the Carmel River. Project compliance with the NPDES project would ensure construction would not degrade water quality in the Rivers. Streams and associated riparian habitat do not occur in or around the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements sites.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.23:*** The County shall prepare, adopt and implement a program that allows projects to mitigate the loss of oak woodlands, while also taking into consideration wildfire prevention/protection. Consistent with California Public Resources Code Section 21083.4, the program shall identify a combination of the following mitigation alternatives: a. Ratios for replacement, b. Payment of fees to mitigate the loss or direct replacement for the loss of oak woodlands and monitoring for compliance; and c. Conservation easements. The program shall identify criteria for suitable donor sites. Mitigation for the loss of oak woodlands may be either onsite or offsite. The program shall allow payment of fees to either a local fund established by the County or a state fund. Until such time as the County program is implemented consistent with Public Resources Code Section 21083.4(b), projects shall pay a fee to the state Oak Woodlands Conservation Fund (OWCF). Replacement of oak woodlands shall provide for equivalent acreage and ecological value at a minimum of 1:1 ratio. The program shall prioritize the conservation of oak woodlands that are within known wildlife corridors as a high priority. The oak woodlands mitigation program shall be adopted within 5 years of adoption of the General Plan.	This policy is intended to protect oak woodlands.	Potentially Inconsistent: Installation of the Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements could disturb oak woodlands. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. Oak woodlands do not occur at the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, and Carmel Valley Pump Station sites within unincorporated Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.24:*** The County shall require discretionary projects to retain movement corridors of adequate size and habitat quality to allow for continued wildlife use based on the needs of the species occupying the habitat. The County shall require that expansion of its roadways and public infrastructure projects provide movement opportunities for terrestrial wildlife and ensure that existing stream channels and riparian corridors continue to provide for wildlife movement and access.	This policy is intended to protect wildlife movement corridors.	Consistent: Installation of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements and Carmel Valley Pump Station would not substantially disrupt wildlife movement through wildlife corridors

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-5.25:*** Occupied nests of statutorily protected migratory birds and raptors shall not be disturbed during the breeding season (generally February 1 to September 15). The County shall: a. Consult, or require the developer to consult, with a qualified biologist prior to any site preparation or construction work in order to: 1. Determine whether work is proposed during nesting season for migratory birds or raptors, 2. Determine whether site vegetation is suitable to nesting migratory birds or raptors, 3. Identify any regulatory requirements for setbacks or other avoidance measures for migratory birds and raptors which could nest on the site, and 4. Establish project-specific requirements for setbacks, lock-out periods, or other methods of avoidance of disruption of nesting birds. b. Require the development to follow the recommendations of the biologist. This measure may be implemented in one of two ways: 1. Preconstruction surveys may be conducted to identify active nests and, if found, adequate buffers shall be provided to avoid active nest disruption until after the young have fledged; or 2. Vegetation removal may be conducted during the non-breeding season (generally September 16 to January 31); however, removal of vegetation along waterways shall require approval of all appropriate local, state, and federal agencies. This policy shall not apply in the case of an emergency fire event requiring tree removal. This policy shall apply for tree removal that addresses fire safety planning, since removal can be scheduled to reduce impacts on migratory birds and raptors.	This policy is intended to protect migratory birds and raptors during the breeding season.	Potentially Inconsistent: Installation of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements and Carmel Valley Pump Station could disturb migratory birds and raptors during the breeding season. This issue is addressed further in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.1:*** With the exception of resource dependent uses, all development, including vegetation removal, excavation, grading, filling, and the construction of roads and structures, shall be prohibited in the following environmentally sensitive habitat areas: riparian corridors, wetlands, dunes, sites of known rare and endangered species of plants and animals, rookeries, major roosting and haulout sites, and other wildlife breeding or nursery areas identified as environmentally sensitive. Resource dependent uses, including nature education and research hunting, fishing and aquaculture, where allowed by the plan, shall be allowed within environmentally sensitive habitats only if such uses will not cause significant disruption of habitat values.	This policy is intended to protect environmentally sensitive habitats, wetlands and waters, and special-status species.	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Additionally, several special-status species, as listed in **Table 4.6-6**, occur or have the potential to occur within these alignments. Construction of the above-referenced project components could disrupt these sensitive habitats and species. These issues are addressed further in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.2:*** Land uses adjacent to locations of environmentally sensitive habitats shall be compatible with the long-term maintenance of the resource. New land uses shall be considered compatible only where they incorporate all site planning and design features needed to prevent habitat impacts, upon habitat values and where they do not establish a precedent for continued land development which, on a cumulative basis, could degrade the resource.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.3:*** New development adjacent to locations of environmentally sensitive habitats shall be compatible with the long-term maintenance of the resource. New subdivisions shall be approved only where significant impacts on environmentally sensitive habitats from development of proposed parcels will not occur.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.4:*** To protect environmentally sensitive habitats and the high wildlife values associated with large areas of undisturbed habitat, the County shall maintain significant and, where possible, contiguous areas of undisturbed land for low intensity recreation, education, or resource conservation use. To this end, parcels of land totally within sensitive habitat areas shall not be further subdivided. On parcels adjacent to sensitive habitats, or containing sensitive habitats as part of their acreage, development shall be clustered to prevent habitat impacts.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.5:*** Where private or public development is proposed in documented or potential locations of environmentally sensitive habitats – particularly those habitats identified in General Policy No. 1- field surveys by qualified individuals or agencies shall be required in order to determine precise locations and to recommend mitigating measures to ensure protection of any sensitive habitat present. The required survey shall document that the proposed development complies with all applicable environmentally sensitive habitat policies.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.6:*** The County shall ensure the protection of environmentally sensitive habitats through deed restrictions or dedications of permanent conservation easements. Where land divisions or development are proposed in areas containing environmentally sensitive habitats, such restrictions or easements shall be established through the development review process.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.8:*** Where development is permitted in or adjacent to environmentally sensitive habitat areas (consistent with all other resource protection policies), the County, through the development review process, shall restrict the removal of indigenous vegetation and land disturbance (grading, excavation, paving, etc.) to the minimum amount necessary for structural improvements.	This policy is intended to protect environmentally sensitive habitats (which may include wetlands and waters).	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within and adjacent to central dune scrub. Central dune scrub would likely be considered an environmentally sensitive habitat. Construction of the above-referenced project components could disrupt this sensitive habitat. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. No potential wetlands or waters were observed in or around the proposed Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.9:*** The County shall require the use of non-invasive plant species in proposed landscaping and should encourage the use of appropriate native species or species that are compatible with native plants.	This policy is intended to protect native plant species and prevent the introduction and spread of non-native and invasive plant species used in landscaping.	Potentially Inconsistent: Upon completion of construction, disturbed areas would be restored to their approximate pre-construction condition. Site restoration could involve the use of non-native plant species. This issue is addressed further in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.2.10:*** Construction activities, industrial, and public and commercial recreational uses which would affect rare and endangered birds shall be regulated to protect habitats of rare, endangered, and threatened birds during breeding and nesting seasons. Regulations may include restriction of access, noise abatement, and restriction of hours of operation of public or private facilities. Regulations shall not prohibit emergency operation of service and public utility equipment. Access in such locations shall be confined to appropriate areas on designated trails and paths. No access shall be approved which results in significant disruption of habitat.	This policy is intended to protect breeding rare and endangered birds.	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline could affect breeding rare birds. This issue is addressed further in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts. The Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area do not contain habitat for endangered birds.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.A2:*** Maritime chaparral is an uncommon, highly localized and variable plant community that has been reduced in North County by residential and agricultural development. Further conversion of maritime chaparral habitat to agricultural uses is highly discouraged. Where new residential development is proposed in chaparral areas, it shall be sited and designed to protect the maximum amount of maritime chaparral. All chaparral on land exceeding 25 percent slope should be left undisturbed to prevent potential erosion impacts as well as to protect the habitat itself.	This policy is intended to protect maritime chaparral.	Consistent: Maritime chaparral does not occur within the Source Water Pipeline and new Desalinated Water Pipeline.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.A4:*** Oak woodland on land exceeding 25 percent slope should be left in its native state to protect this plant community and animal habitat from the impacts of development and erosion. Development within oak woodland on 25 percent slope or less shall be sited to minimize disruption of vegetation and habitat loss.	This policy is intended to protect oak woodland	Consistent: Oak woodland does not occur within Source Water Pipeline and new Desalinated Water Pipeline.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.A6:*** Coastal dune habitats in areas shown as Resource Conservation or as Scenic and Natural Resource Recreation on the plan map shall be preserved and protected. Appropriate uses in such areas shall be limited to scientific, education and low intensity recreational uses, and within the Moss Landing area, essential utility pipelines where no feasible alternative exists. Disturbance or destruction of dune vegetation shall be prohibited, unless no feasible alternative exists, and then only if re-vegetation with similar species is made a condition of project approval. Any resulting dune disturbance shall be restored to the natural condition.	This policy is intended to protect coastal dune habitat within areas mapped as Resource Conservation or as Scenic and Natural Resource Recreation.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline are not proposed for areas mapped as Resource Conservation or as Scenic and Natural Resource Recreation.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.A9:*** Where major access routes are available or desirable through the dunes to the coast, boardwalks or other appropriate pathways constructed of permeable materials should be provided to protect the vegetation stabilizing the dunes. Other access routes through the dunes should be controlled and only allowed in limited circumstances.	This policy is intended to protect coastal dune habitat where access routes would pass through the dunes to the coast.	Consistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area would not include installation of an access route through the dunes to the coast.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B1:*** Riparian plant communities shall be protected by establishing setback requirements consisting of 150 feet on each side of the bank of perennial streams, and 50 feet on each side of the bank of intermittent streams, or the extent of riparian vegetation, whichever is greater. In all cases, the setback must be sufficient to prevent significant degradation of the habitat area. The setback requirement may be modified if it can be conclusively demonstrated by a qualified biologist that a narrower corridor is sufficient or a wider corridor is necessary to protect existing riparian vegetation from the impacts of adjacent use.	This policy is intended to protect riparian plant communities associated with streams.	Consistent: Riparian plant communities associated with streams do not occur within or adjacent to the Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B2:*** All development, including dredging, filling, and grading within stream corridors, shall be limited to activities necessary for flood control purposes, water supply projects, improvement of fish and wildlife habitat, or laying of pipelines when no alternative route is feasible, and continued and future use of utility lines and appurtenant facilities. These activities shall be carried out in such a manner as to minimize impacts from increased runoff, sedimentation, biochemical degradation, or thermal pollution. When such activities require removal of riparian plant species, re-vegetation with native plants shall be required.	This policy is intended to protect stream corridors and associated riparian vegetation.	Consistent: Streams do not occur within or adjacent to the Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B3:*** The following activities shall be prohibited within intermittent and perennial stream channels: cultivated agriculture, pesticide applications, and installation of septic systems would not destroy vegetative ground cover of the stream channel.	This policy is intended to protect intermittent and perennial stream channels.	Consistent: Streams do not occur within or adjacent to the Source Water Pipeline and new Desalinated Water Pipeline within the North County Land Use Plan area.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B4:*** A setback of 100 feet from the landward edge of vegetation of all coastal wetlands shall be provided and maintained in open space use. No permanent structures except for those necessary for resource-dependent use which cannot be located elsewhere shall be constructed in the setback area. Prior to approval of all proposed structures in the setback area, it must be demonstrated that the development does not significantly disrupt the habitat resource.	This policy is intended to protect coastal wetlands.	Consistent: Potential wetlands or waters do not occur in or around the proposed Source Water within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B5:*** All wetland areas of the North County Coastal Zone shall be protected and preserved for their plant and wildlife values, including but not limited to McClusky Slough, Pajaro River, Salinas River, Salinas River Lagoon, Elkhorn Slough, Bennett Slough, and Moro Cojo Slough. The County's existing Non Pointsource Pollution Program shall be implemented.	This policy is intended to protect wetlands.	Consistent: Potential wetlands or waters do not occur in or around the proposed Source Water Pipeline within the North County Land Use Plan area.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.B6:*** Dredging or other major construction activities shall be conducted so as to avoid breeding seasons and other critical phases in the life cycles of commercial species of fish and shellfish and other rare, endangered, and threatened indigenous species.	This policy is intended to protect commercial species of fish and shellfish and other special-status species.	Potentially Inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline could occur during the breeding season and other critical phases of special-status species as listed in **Table 4.6-6**. This issue is addressed further in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts. Impacts related to commercial species of fish and shellfish are discussed in EIR/EIS Section 4.5 Marine Resources.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.C1:*** Wildlife management considerations should be included in the evaluation of development proposals, particularly land division proposals. Large, and where feasible, contiguous areas or corridors of native vegetation should be retained in order to meet the various needs of those wildlife species requiring large areas of undisturbed habitat.	This policy is intended to protect wildlife corridors.	Consistent: Installation and maintenance of the Source Water Pipeline and new Desalinated Water Pipeline would not result in the loss of large contiguous areas or wildlife corridors.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.3.C2:*** Critical wildlife habitat areas (refer to General Policy 2) shall be protected and an adequate distance based on a site-by-site analysis between such habitat and disturbed areas (e.g., building sites and roads) shall be maintained.	This policy is intended to protect sensitive natural communities and habitat for special-status species.	Potentially inconsistent: Installation of the Source Water Pipeline and new Desalinated Water Pipeline would occur within sensitive natural communities and known or potential habitat for special-status species as detailed in **Table 4.6-6**. This issue is addressed further in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Key Policy 4.3.4:*** All future development within the North County coastal segment must be clearly consistent with the protection of the area's significant human and cultural resources, agriculture, natural resources, and water quality.	This policy is intended to provide long-term resource management and protection.	Potentially Inconsistent: Construction of the Source Water Pipeline and new Desalinated Water Pipeline could disrupt sensitive natural communities and/or species dependent upon those habitats. These issues are addressed further in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts. Potential wetlands or waters do not occur in or around the proposed Source Water Pipeline within the North County Land Use Plan area.
County of Monterey (inland areas)	North County Area Plan	Conservation/ Open Space	Castroville Pipeline	***Policy NC-3.3:*** Conservation of North County's native vegetation shall be given high priority to: a. Retain the viability of threatened or limited vegetative communities and animal habitats, b. Promote the area's natural scenic qualities, and c. Preserve rare, endangered, and endemic plants for scientific study. d. Property owners shall be encouraged to cooperate with the County in establishing conservation easements over areas of native vegetation.	This policy is intended to protect special-status species and sensitive natural communities.	Potentially Inconsistent: Construction of the Castroville Pipeline could affect special-status species and sensitive natural communities. These issues are addressed further in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (inland areas)	North County Area Plan	Conservation/ Open Space	Castroville Pipeline	***Policy NC-3.4:*** Removal of healthy, native oak and madrone trees in the North Monterey County Area shall be discouraged. An ordinance shall be developed to identify required procedures for removal of these trees. Said ordinance shall take into account fuel modification needed for fire prevention in the vicinity of structures and shall include: a. Permit requirements b. Replacement criteria c. Exceptions for emergencies and governmental agencies	This policy is intended to protect native oak and madrone trees.	Potentially Inconsistent: Construction of the Castroville Pipeline could require the removal of native oak or madrone trees. This issue is addressed further in Impact 4.6-4 and a mitigation measure is provided to reduce or avoid any impacts.
County of Monterey (inland areas)	North County Area Plan	Conservation/ Open Space	Castroville Pipeline	***Policy NC-3.5:*** Critical habitat areas should be preserved as open space. When an entire parcel cannot be developed because of this policy, a low intensity, clustered development may be approved. However, the development should be located on those portions of the land least biologically significant so that the development will not upset the natural function of the surrounding ecosystem.	This policy is intended to protect critical habitat, sensitive natural communities, and habitat for special-status species.	Potentially Inconsistent: Construction of the Castroville Pipeline could sensitive natural communities and habitat for special-status species. This issue is addressed further in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to avoid any impacts. Construction of the Castroville Pipeline would comply with the NPDES program and would not alter critical habitat.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy A-2:*** The City shall ensure that measures are taken to prevent degradation and siltation of the ephemeral drainage that passes through the Planned Residential Extension District and Community Park in Polygon 24.	This policy is intended to protect a potential wetland.	Consistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline would not affect the wetland located within Polygon 24.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy A-4:*** The City shall encourage the preservation of small pockets of habitat and populations of HMP species within and around developed areas. ***Program A-4.1:*** The City shall require project applicants who propose development in underdeveloped natural lands to conduct reconnaissance-level surveys to verify the general description of resources for the parcel provided in the biological resource documents prepared for the U.S. Army Corps of Engineers. The information gathered through these reconnaissance-level surveys shall be submitted as a component of the project application package. ***Program A-4.3:*** Where development will replace existing habitat which supports sensitive biological resources, the City shall encourage attempts to salvage some of those resources by collecting seed or cuttings of plants, transplanting vegetation, or capturing and relocating sensitive wildlife species.	This policy is intended to protect sensitive natural communities and special-status species.	Potentially Inconsistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within or adjacent to sensitive natural communities and/or habitat for special-status species as detailed in **Table 4.6-6**. These issues are further addressed in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy A-9:*** The County shall encourage the preservation of small pockets of habitat and populations of HMP species within and around developed areas. ***Program A-9.1:*** The County shall require project applicants who propose development in undeveloped natural lands to conduct reconnaissance-level surveys to verify the general description of resources for the parcel provided in the biological resource documents prepared for the U.S. Army Corps of Engineers. The information gathered through these reconnaissance-level surveys shall be submitted as a component of the project application package. ***Program A-9.3:*** Where development will replace existing habitat which supports sensitive biological resources, the County shall encourage attempts to salvage some of those resources by collecting seed or cuttings of plants, transplanting vegetation, or capturing and relocating sensitive wildlife species.	This policy is intended to protect special-status species.	Potentially Inconsistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within or adjacent to habitat for special-status species as detailed in **Table 4.6-6**. This issue is further addressed in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy B-1:*** The City shall strive to avoid or minimize loss of sensitive species listed in Table 4.4-2 that are known or expected to occur in areas planned for development. ***Program B-1.2:*** If any sensitive species listed in Table 4.4-2 are found in areas proposed for development, all reasonable efforts should be made to avoid habitat occupied by these species while still meeting project goals and objectives. If permanent avoidance is infeasible, a seasonal avoidance and/or salvage/ relocation program shall be prepared. The seasonal avoidance and/or salvage/ relocation program for these species should be coordinated through the CRMP.	This policy is intended to protect special-status species.	Potentially Inconsistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within or adjacent to habitat for special-status species as detailed in **Table 4.6-6**. This issue is further addressed in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy C-1:*** The City shall encourage that grading for projects in undeveloped lands be planned to complement surrounding topography and minimize habitat disturbance.	This policy is intended to protect sensitive natural communities.	Potentially Inconsistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within or adjacent to sensitive natural communities. This issue is further addressed in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy C-3:*** Lighting of outdoor areas shall be minimized and carefully controlled to maintain habitat quality for wildlife in undeveloped natural lands. Street lighting shall be as unobtrusive as practicable and shall be consistent in intensity throughout development areas adjacent to undeveloped natural lands.	This policy is intended to protect wildlife and their habitats from nighttime lighting.	Consistent: Operation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline would not include outdoor lighting in or around undeveloped natural lands.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Biological Resources Policy D-1:*** The City shall require project applicants to implement a contractor education program that instructs construction workers on the sensitivity of biological resources in the vicinity and provides specifics for certain species that may be recovered and relocated from particular development areas.	This policy is intended to protect special-status species.	Potentially Inconsistent: Installation of the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could occur within or adjacent to habitat for special-status species as detailed in **Table 4.6-6**. This issue is further addressed in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Biological Resources Policy A-9:*** The County shall encourage the preservation of small pockets of habitat and populations of HMP species within and around developed areas. ***Program A-9.1:*** The County shall require project applicants who propose development in undeveloped natural lands to conduct reconnaissance-level surveys to verify the general description of resources for the parcel provided in the biological resource documents prepared for the U.S. Army Corps of Engineers. The information gathered through these reconnaissance-level surveys shall be submitted as a component of the project application package. ***Program A-9.3:*** Where development will replace existing habitat which supports sensitive biological resources, the County shall encourage attempts to salvage some of those resources by collecting seed or cuttings of plants, transplanting vegetation, or capturing and relocating sensitive wildlife species.	This policy is intended to protect sensitive natural communities and special-status species.	Potentially Inconsistent: Installation of the Ryan Ranch-Bishop Interconnection Improvements could affect sensitive natural communities and special-status species. This issue is further addressed in Impacts 4.6-1 and 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	**Biological Resources Policy B-1:** The County shall strive to avoid or minimize loss of sensitive species listed in Table 4.4-2 that are known or expected to occur in areas planned for development. ***Program B-1.2:*** If any sensitive species listed in Table 4.4-2 are found in areas proposed for development, all reasonable efforts should be made to avoid habitat occupied by these species while still meeting project goals and objectives. If permanent avoidance is infeasible, a seasonal avoidance and/or salvage/ relocation program shall be prepared. The seasonal avoidance and/or salvage/ relocation program for these species should be coordinated through the CRMP.	This policy is intended to protect special-status species.	Potentially Inconsistent: Installation of the Ryan Ranch-Bishop Interconnection Improvements could affect special-status species. This issue is further addressed in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	**Biological Resources Policy C-1:** The County of Monterey shall encourage that grading for projects be designed to complement surrounding topography, minimize habitat disturbance.	This policy is intended to protect sensitive natural communities.	Potentially Inconsistent: Installation of the Ryan Ranch-Bishop Interconnection Improvements could affect sensitive natural communities. This issue is further addressed in Impact 4.6-2 and mitigation measures are provided to reduce or avoid any impacts.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Biological Resources Policy C-3:*** Lighting of outdoor areas shall be minimized and carefully controlled to maintain habitat quality for wildlife in undeveloped natural lands. Street lighting shall be as unobtrusive as practicable and shall be consistent in intensity throughout development areas adjacent to undeveloped natural lands.	This policy is intended to protect wildlife and their habitats from nighttime lighting.	Consistent: Installation and operations of the Ryan Ranch-Bishop Interconnections Improvements facility would not include night lighting.

TABLE 4.6-4 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TERRESTRIAL BIOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Biological Resources Policy D-1:*** The County shall require project applicants to implement a contractor education program that instructs construction workers on the sensitivity of biological resources in the vicinity and provides specifics for certain species that may be recovered and relocated from particular development areas. 1. In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities. 2. Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. 3. Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. 4. Restoration purposes. 5. Nature study, aquaculture, or similar resource dependent activities.	This policy is intended to protect special-status species.	Potentially Inconsistent: Installation of the Ryan Ranch-Bishop Interconnection Improvements could affect special-status species. This issue is further addressed in Impact 4.6-1 and mitigation measures are provided to reduce or avoid any impacts.

SOURCES: California State Parks, 2004; City of Marina, 2000, 2013; City of Seaside, 2004; FORA, 1997; Monterey County 1985, 1999, 2010.

4.6.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to terrestrial biological resources if it would:

- Have a substantial adverse effect, either directly, indirectly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in federal, state, local, or regional plans, policies, regulations, or by the CDFW, USFWS, or NMFS;
- Result in a substantial adverse effect on critical habitat;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Result in a substantial adverse effect on federal "other waters" as defined in the Code of Federal Regulations (40 CFR 122.2);
- Result in a substantial adverse effect on waters of the state, as defined by the California Water Code Section 13050 [e], through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Introduce or spread an invasive non-native species; or
- Be inconsistent with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Based on the location and nature of the proposed project, the following criteria are not considered in the impact analyses in Sections 4.6.5.1 and 4.6.5.2 for the reasons described below.

> ***Interfere substantially with the movement of native fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*** As discussed in Section 4.6.1.7, Wildlife Movement Corridors, the majority of the site is located within or adjacent to developed areas, which do not serve as wildlife movement corridors. Although some wildlife moves through these roadways and trails, they would likely travel in undisturbed areas located adjacent to these features and outside of the project area. Terrestrial wildlife habitat in the project area is fragmented by agricultural fields, residential developments, commercial/industrial developments, and roads. The majority of the construction disturbance involves temporary construction of pipelines in developed or disturbed areas, which would not substantially impede wildlife movement in undisturbed wildlife corridors. Although some wildlife may be deterred from movement through the construction site during construction, construction would largely

occur in areas that are subject to current development or disturbance. Additionally, project construction would be implemented in segments so only portions of the project site would be under construction at any one time. The proposed project does not include the permanent placement of structures within creeks, rivers, or other waterways and would not substantially impede the movement of native resident or migratory fish or wildlife corridors or impede the use of native wildlife nursery sites. Implementation of the proposed project would result in a negligible impact relative to this criterion.

Impacts to special-status species are addressed in Impact 4.6-1 and 4.6-6 below.

No work would occur within the Carmel River so it was not included as part of this analysis. Implementation of the proposed project would comply with California State Water Resources Control Board (SWRCB) Order 95-10 as described in Section 1.3 in Chapter 1, Introduction and Background, and the proposed project would not increase the quantity of Carmel River water in CalAm's water supply portfolio for the Monterey District service area (Monterey District). As described in Section 3.2.4 in Chapter 3, Description of the Proposed Project, the proposed improvements to the Seaside Groundwater Basin ASR system would not affect CalAm's maximum allowable surface water diversions from the Carmel River for injection into the Seaside Groundwater Basin. Rather, project implementation would secure replacement water supplies for the Monterey District, enabling CalAm to reduce its current diversions from the Carmel River system to its legal right to 3,376 afy (equivalent to about 3 mgd). Therefore, implementation of the proposed project would have a beneficial effect on stream flows in the Carmel River and the river's aquatic and riparian biological resources.

4.6.4 Approach to Analysis

The following is a discussion of the approaches to, and definitions of, significance of impacts on terrestrial biological resources. General CEQA and NEPA guidance regarding significance of impacts is provided in Section 4.1.

In addition to the general guidance provided in Section 4.1, CEQA Guidelines Section 15065 includes specific references to biological resources and directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. NEPA requires consideration of both context and intensity in assessing impacts, as outlined in detail in Section 4.1.

The potential impacts of the project on special-status species were assessed based on literature review, professional judgment, and the following considerations:

1. A determination of species occurrence. The determination of species occurrence was presented in Section 4.6.1, Setting, above. This determination evaluated each species': (a) potential occurrence within the project area (i.e., the area within which all construction-related disturbance would occur, includes facility footprints) or (b) potential occurrence in the project vicinity (generally defined as the terrestrial and aquatic habitats of the areas adjacent to the project area). This determination was based on an analysis of life history

and habitat requirements, as well as the suitability of habitat for the species found within and adjacent to the project area. If a species was determined unlikely to occur in the project area or project vicinity, or had a low potential to occur in the project area or project vicinity (for example, if no potential habitat exists for the species in the vicinity), then the species was given no further consideration. The impact analyses presented in Sections 4.6.5.1 and 4.6.5.2, below, consider only those species actually observed or with a moderate to high potential to occur in the project area and/or vicinity.

The results of this determination for each species for the project as a whole are provided in the "Potential for Species Occurrence" column of **Table F-1** located in **Appendix F** of this EIR/EIS. **Table 4.6-2**, above, provides the potential for each species considered to occur in habitat within, or adjacent to, each project facility.

2. A determination of impact. The determination of impact is presented under Section 4.6.5, Direct and Indirect Effects of the Proposed Project, within Section 4.6.5.1, Construction Impacts and Section 4.6.5.2, Operational and Facility Siting Impacts. If suitable habitat was determined to be present within the project area and the species has been documented in the project vicinity or has at least a moderate potential to occur, the analysis then considered whether project implementation would result in a substantial adverse effect on the species. Both direct effects (e.g., mortality attributable to construction activities, or displacement of habitat) and indirect effects (e.g., construction-related noise and dust emissions) were considered. In evaluating the likelihood and severity of an impact, the life history and habitat requirements of a species also were considered.

   For the purposes of this EIR/EIS, the definition of the word "substantial" as used in the significance criteria above has three principal factors:

   - Magnitude[16] or intensity and duration of the impact;
   - Rarity and context of the affected resource; and
   - Susceptibility of the affected resource to disturbance.

   The evaluation of significance must also consider the interrelationship of these three factors. For example, a relatively small-magnitude impact on a state- or federally listed species could be considered significant if the species is rare and highly susceptible to disturbance. Conversely, for a natural community such as California annual grassland, which is not necessarily considered rare or highly sensitive to disturbance, a much larger magnitude of impact might be required to result in a significant impact.

This project would require authorization from various regulatory agencies including the USACE, USFWS, NMFS, RWQCB, CDFW, and CCC. The mitigation measures prescribed below reflect the anticipated terms and conditions in the authorizations. Based on the professional judgment and experience of the biologists that conducted this analysis, the mitigation measures in this section (and their constituent requirements and performance standards) would minimize and avoid impacts such that they would be reduced to a less-than-significant level.

[16] Magnitude may include the aerial extent of impact, number of species affected, length of time, or intensity of impact.

4.6.5 Direct and Indirect Effects of the Proposed Project

TABLE 4.6-5
SUMMARY OF IMPACTS – TERRESTRIAL BIOLOGICAL RESOURCES

Impacts	Significance Determinations
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction.	LSM
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	LSM
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction.	LSM
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	SU
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	LSM
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	LSM
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations.	LSM
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations.	LSM
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	LSM
Impact 4.6-10: Be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan or other approved local, regional, or state habitat conservation plan.	LSM
Impact 4.6-C: Cumulative impacts related to terrestrial biological resources.	SU

NOTES:
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable impact for which no mitigation is available

The following impact analysis evaluates impacts of the proposed project as required by CEQA and NEPA. A Biological Assessment, which would evaluate the project's impacts on federally listed species, would be prepared in support of FESA Section 7 consultation between the ONMS and USFWS and between the ONMS and NMFS.

4.6.5.1 Construction Impacts

Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. (Less than Significant with Mitigation)

This impact addresses impacts on special-status species. As defined above in Section 4.6.1.8, Special-Status Species, special-status species includes listed as well as candidate and sensitive species, and Fully Protected Species.

Special-status plants and animals that could occur at the various proposed facility sites and pipeline alignments are summarized in **Table 4.6-2**, and those species with a moderate to high potential to occur at the project sites and that could be significantly impacted during construction are presented in **Table 4.6-6**. Construction activities could result in both direct and indirect adverse effects on special-status plants and animals. In general, construction in developed areas that have been surfaced, drained, and maintained free of vegetation would have a low potential to result in substantial adverse effects on special-status species. However, if construction were to extend into areas of undeveloped natural vegetation, substantial adverse effects could occur. Construction within or adjacent to natural, high-quality habitat would have a greater potential to result in significant impacts on special-status plants and animals and/or their habitat compared to facilities adjacent to developed or highly disturbed areas.

Impact acreages are provided below for each facility when appropriate and are provided as an approximation based on the current proposed project footprint. Since many of the facilities overlap, the impact acreages provided below may overlap with the impact acreages for other facilities and optional alignments. The final impact acreages for the entire project would be based on whether the proposed project uses the proposed alignments or optional alignments.

Overview of Potential Construction Effects on Plants

Site clearance, grading, excavation, and other earthmoving activities can cause direct mortality of individual special-status plants through soil disturbance and loss of habitat. Earthmoving activities can also eliminate soil seedbanks, potentially reducing the size of local rare plant populations and adversely affecting the viability of the population by reducing reproduction below sustainable levels. Permanent indirect impacts on special-status plant species may arise from population fragmentation and introduction of non-native weeds. Population fragmentation can affect pollinator activity and, hence, reproduction and gene flow. Introduction and establishment of invasive weeds within or adjacent to special-status plant populations can reduce species growth and recruitment. In addition, indirect impacts on special-status plant species located in offsite areas can arise from fugitive dust and increased soil erosion at construction work areas and the migration of sediment into adjacent habitat, or accidental offsite habitat use by construction workers. Fugitive dust and sediment can interfere with metabolic processes such as photosynthesis and respiration.

Overview of Potential Construction Effects on Wildlife

Special-status wildlife can be trampled by construction vehicles and heavy construction equipment or get trapped in trenches or other open excavations. Vegetation and tree removal can result in direct impacts on nesting birds through loss of nests and eggs or nestling mortality, and can reduce or fragment foraging and dispersal habitat. Even at sites that have little or no wildlife habitat, impacts can occur if wildlife from adjacent habitat areas enter or pass through the construction work area. Construction can result in the temporary or permanent loss of habitat for wildlife species. Construction activities can also result in indirect impacts on special-status wildlife related to disturbance or harassment of individuals. For example, construction noise, vibration, and nighttime lighting can cause special-status birds, bats, and other animals to abandon nests, roosts, or other breeding areas. Artificial lighting during nighttime construction can also increase predation and

disrupt reproductive behaviors. Introduced invasive non-native plant species can degrade habitat. Eroded sediment and hazardous construction chemicals from the construction work area can be transported offsite via site runoff and adversely affect receiving downstream water bodies and degrade habitat for both terrestrial and aquatic animals.

Subsurface Slant Wells

The subsurface slant wells include ten subsurface slant wells (the converted test slant well and nine new permanent wells). Site 1 is located along the CEMEX access road, but is situated at the approximate mid-point of the vegetated sand dunes. The majority of the remaining nine wells (Sites 2 through 6) would be installed on the eastern side of the heavily vegetated area of the sand dunes and constructed on concrete pads. The components of the proposed subsurface slant wells that would be below the mean high water line would be within the Monterey Bay National Marine Sanctuary (MBNMS). Impacts to marine biological resources from the slant well components that would be located within the MBNMS are described in Section 4.5, Marine Biological Resources. The facility components that are evaluated in this section would be located above the mean high water line and outside of the MBNMS.

Construction of the nine new permanent slant wells and conversion of the test slant well into a permanent well would disturb approximately 9 acres in the CEMEX active mining area. A portion of this construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline and Source Water Pipeline using the optional alignment. The 9 acres includes 8 acres for temporary staging, materials storage, and stockpiling areas, which would be restored following construction, and 1 acre for new permanent above-ground facilities.

Approximately 1,600 cubic yards of spoils returned from drilling the slant wells would be spread across the 8-acre temporary disturbance area and would contribute to temporary impacts in this area. The spoils would be composed of sand and would form a layer less than 2 inches thick when spread within the 8-acre temporary disturbance area. Salinity levels of the spoils from the slant wells would be in the range of brackish water (approximately 16 to 30 ppt, which is consistent with the brackish aquifer that the wells would penetrate). Soils are considered saline if conductivity is greater than 4 mS/cm (approximately 2 ppt). Conductivity in sandy dune soils has been measured between 0.2 and 0.4 mS/cm (approximately 0.1 to 0.2 ppt), considerably below the saline threshold (Donnelly and Parmenter, 1983). Input of salts (sodium, chloride and other ions) from salt spray is likely constant, but roughly equals losses due to leaching (Alpert, 2016). In regions of high rainfall, the impact of salt-spray is minimal because salt is washed off plants (and presumably, from near the soil surface) and leached out of the root zone. In dry climates, salt spray contributes to formation of a salt crust that binds sand particles (Chapman, 1976); this is not evident on sand dunes on the Monterey peninsula, therefore it can be assumed that precipitation is removing salts from the soil surface. Although the salinity of the spoils would be above existing dune sand salinity, the process of leaching and dilution would be expected to rapidly reduce salinity to background levels, particularly at or near the soil surface, and would not permanently impede the re-establishment of native plants.

TABLE 4.6-6
SPECIAL-STATUS SPECIES AND SENSITIVE NATURAL COMMUNITIES THAT COULD BE SIGNIFICANTLY IMPACTED DURING CONSTRUCTION OF THE PROPOSED FACILITIES

			Pipelines North of Reservation Road				Facilities and Improvements South of Reservation Road					
Species or Resource	**Subsurface Slant Wells**	**MPWSP Desalination Plant**	**Source Water Pipeline**	**New Desalinated Water Pipeline**	**Castroville Pipeline**	**Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond**	**ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline**	**New Transmission Main**	**Carmel Valley Pump Station**	**Ryan Ranch-Bishop Interconnection Improvements**	**Main System-Hidden Hills Interconnection Improvements**	**Staging Areas**
Federal or State Listed Species												
Plants												
Monterey spineflower	X	X	X	X	X		X	X				X
robust spineflower	X		X	X	X		X	X				X
Seaside bird's-beak	X		X	X	X		X	X				X
Menzies' wallflower	X		X	X	X			X				X
sand gilia	X		X	X	X		X	X				X
Yadon's rein orchid							X				X	X
Pacific Grove clover										X	X	
Invertebrates												
Smith's blue butterfly	X		X	X	X			X				X
Fish												
South/central California coast steelhead					X							
Amphibians												
California tiger salamander		X	X	X	X	X				X	X	X
California red-legged frog		X	X	X	X	X			X	X	X	X
Birds												
Western snowy plover	X		X									
Other Special-Status Species												
Invertebrates												
globose dune beetle	X		X									
Plants												
Hickman's onion										X	X	
Hooker's manzanita	X		X	X			X	X			X	X
Toro manzanita							X	X		X	X	
Pajaro manzanita							X	X		X	X	
sandmat manzanita	X		X	X			X	X			X	X
ocean bluff milkvetch	X		X				X					
Monterey Coast paintbrush	X		X	X	X		X	X				X
Monterey ceanothus	X		X	X			X	X				X
Congdon's tarplant		X			X					X	X	
branching beach aster	X		X	X	X			X				X
Eastwood's goldenbush	X		X	X	X		X	X			X	X
sand-loving wallflower	X		X	X	X		X	X				X
Kellogg's horkelia	X		X	X	X		X	X				X

TABLE 4.6-6 (Continued)
SPECIAL-STATUS SPECIES AND SENSITIVE NATURAL COMMUNITIES THAT COULD BE SIGNIFICANTLY IMPACTED DURING CONSTRUCTION OF THE PROPOSED FACILITIES

Species or Resource	Subsurface Slant Wells	MPWSP Desalination Plant	Pipelines North of Reservation Road: Source Water Pipeline	Pipelines North of Reservation Road: New Desalinated Water Pipeline	Pipelines North of Reservation Road: Castroville Pipeline	Pipelines North of Reservation Road: Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond	Facilities and Improvements South of Reservation Road: ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline	Facilities and Improvements South of Reservation Road: New Transmission Main	Facilities and Improvements South of Reservation Road: Carmel Valley Pump Station	Facilities and Improvements South of Reservation Road: Ryan Ranch-Bishop Interconnection Improvements	Facilities and Improvements South of Reservation Road: Main System-Hidden Hills Interconnection Improvements	Staging Areas
Other Special-Status Species (cont.)												
Plants (cont.)												
Carmel Valley bush-mallow							X			X	X	
marsh microseris										X	X	
northern curly-leaved monardella	X		X	X	X		X	X				X
south coast branching phacelia	X		X	X	X		X	X				X
Monterey pine									X	X	X	
Michael's rein orchid	X		X	X	X		X	X		X	X	X
Santa Cruz microseris										X	X	
Santa Cruz clover										X	X	
Reptiles												
Western pond turtle				X	X							
black legless lizard	X		X	X	X		X	X				X
silvery legless lizard	X		X	X	X		X	X				X
coast horned lizard	X		X	X			X	X				X
Coast Range newt		X	X	X	X	X	X	X	X	X	X	X
Birds												
tricolored blackbird				X				X				
short-eared owl		X	X	X	X			X				X
western burrowing owl			X	X				X				X
red-tailed hawk		X	X	X	X	X	X	X	X	X	X	X
red-shouldered hawk		X	X	X		X	X	X	X	X	X	X
Ferruginous hawk		X	X	X	X			X				
Northern harrier		X	X	X	X		X	X				X
White-tailed kite		X	X	X	X	X	X	X	X	X	X	X
California horned lark		X	X	X	X			X		X		X
American peregrine falcon		X	X	X	X	X	X	X	X	X	X	
American kestrel		X	X	X	X	X	X	X	X	X	X	X
loggerhead shrike		X	X	X	X	X	X	X	X	X	X	X
Mammals												
pallid bat		X	X	X	X	X	X	X	X	X	X	X
Salinas kangaroo rat				X				X				X
western red bat		X	X	X	X	X	X	X	X	X	X	X
Monterey dusky-footed woodrat							X	X	X	X	X	X
Monterey shrew							X	X	X	X	X	X
American badger		X	X	X	X		X	X		X	X	X

TABLE 4.6-6 (Continued)
SPECIAL-STATUS SPECIES AND SENSITIVE NATURAL COMMUNITIES THAT COULD BE SIGNIFICANTLY IMPACTED DURING CONSTRUCTION OF THE PROPOSED FACILITIES

			Pipelines North of Reservation Road				Facilities and Improvements South of Reservation Road					
Species or Resource	**Subsurface Slant Wells**	**MPWSP Desalination Plant**	**Source Water Pipeline**	**New Desalinated Water Pipeline**	**Castroville Pipeline**	**Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond**	**ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline**	**New Transmission Main**	**Carmel Valley Pump Station**	**Ryan Ranch-Bishop Interconnection Improvements**	**Main System-Hidden Hills Interconnection Improvements**	**Staging Areas**
Natural Communities												
central dune scrub	X		X	X	X			X				X
central maritime chaparral							X					
northern coastal scrub		X			X		X	X		X		X
riparian woodland and scrub				X	X							
freshwater marsh					X							
coast live oak woodland				X			X	X		X	X	X
Environmentally Sensitive Habitat Areas												
	X		X	X	X			X				X
Critical Habitat												
Monterey spineflower												
western snowy plover	X		X									
south/central California coast steelhead					X							
California red-legged frog									X		X	
Tidewater goby					X							
Potential Wetlands and Waters												
Potentially USACE, RWQCB, and/or CDFW jurisdictional					X	X			X	X	X	
Potentially USACE, RWQCB, CDFW, and/or CCC jurisdictional	X		X	X				X				X
Local Tree Policies or Ordinances												
		X	X	X	X	X	X	X	X	X	X	

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Existing ground cover at the subsurface slant well site includes relatively undisturbed central dune scrub, formerly disturbed sand dunes that are revegetating with native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil. The areas of relatively intact scrub occur along the western active mining area boundary (just east of the active beach area) and at the west end of the access road in the vicinity of the CEMEX settling ponds. The current and recently disturbed areas occur east of the vegetated sand dunes and south of the CEMEX access road. Slant well construction would take approximately 15 months to complete, and could take place any time throughout the overall 24-month construction duration for the proposed project.

Monterey spineflower, sand-loving wallflower, and ocean bluff milk vetch have been observed at the site (ESA, 2013; 2014; AECOM, 2016). Construction of the subsurface slant wells and associated aboveground facilities in the CEMEX active mining area has the potential to disturb documented populations of Monterey spineflower, sand-loving wallflower, and ocean bluff milkvetch. A variety of other special-status plant species, as listed in **Table 4.6-6**, are either known to occur or have a potential to occur in central dune scrub at the site, including robust spineflower, seaside bird's-beak, Menzies' wallflower, sand gilia, Hooker's manzanita, sandmat manzanita, Monterey Coast paintbrush, Monterey ceanothus, branching beach aster, south coast branching phacelia, Eastwood's goldenbush, Kellogg's horkelia, northern curly-leaved Monardella, and Michael's rein orchid. If these species are present within or adjacent to the construction work area for the subsurface slant wells, they could be directly or indirectly impacted by construction activities during the 15-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*. This would be a significant impact.

Coast buckwheat, host plant for Smith's blue butterfly, occurs within the proposed subsurface slant wells site (ESA, 2013; 2014). Smith's blue butterfly was observed in central dune scrub in the vicinity of the proposed subsurface slant wells during 2016 surveys of the CEMEX active mining area (ESA, 2016). Removal or impacts on these plants and associated soil during construction could adversely impact individual adult butterflies, their eggs, or larvae, if present. Impacts to any life form of the Smith's blue butterfly would result in a significant impact. Construction of the subsurface slant wells has potential to temporarily impact approximately 1.6 acre of Smith's blue butterfly habitat, which would be a significant impact.[17] Coast buckwheat is expected to recover, as it is relatively easy to cultivate and reestablish in dune scrub habitat, and would be returned to pre-construction conditions. However, some potential for permanent loss of the host plant and individual butterfly eggs, larvae or adults remains possible and would be a significant impact.

As described in Section 4.6.1.8, above, western snowy plover are known to nest and breed within the beach and foredunes located west of, and within the western portion of, the CEMEX active mining area. The beach and foredunes provide important breeding/nesting and wintering habitat

[17] Impact 4.6-1 analyzes impacts from construction activities on Smith's blue butterfly. Impacts from maintenance activities on Smith's blue butterfly habitat are analyzed in Impact 4.6-6. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 1.6 acre of Smith's blue butterfly habitat. This maintenance area is assumed to be located within the 1.6-acre temporary construction footprint. Therefore, construction and maintenance of the subsurface slant wells would result in a permanent impact on 1.6 acre of Smith's blue butterfly habitat.

for the western snowy plover. Surveys conducted during the 2015 nesting season identified multiple nests along the stretch of beach in the vicinity of the CEMEX active mining area (Page et al., 2017). Some nests have been found in the vicinity of the CEMEX settling ponds and adjacent to the CEMEX access road (Zander, 2013) and at the location of the northernmost well site. Nesting has also been documented in the backdunes of the CEMEX active mining area where the subsurface slant wells are proposed (Neuman, 2015). Typical wintering habitat in California includes sand spits and dune-backed beaches (USFWS, 2007) and most flocks of wintering plovers would likely occur along the beach, away from the back dunes. However, individual western snowy plovers may also use the entire subsurface slant well construction area for wintering. There are approximately 1,600 acres of mapped western snowy plover critical habitat within the Monterey Bay area.

Construction of the slant wells in the CEMEX active mining area could occur year-round. The 9-acre construction footprint for the subsurface slant wells is located within potential nesting habitat and construction of the nine subsurface slant wells and conversion of the test well to a permanent production well would result in the temporary loss of 8.0 acres (for temporary construction disturbance to areas that would be restored) and permanent loss of 1.0 acre (for new permanent above-ground facilities) of potential habitat.[18] A portion of this impact area may overlap with the Source Water Pipeline. Construction noise and vibration, earthmoving activities, vegetation clearance, and night lighting associated with installation of the nine subsurface slant wells during the snowy plover nesting season (typically defined as March 1 through September 30) could also impact plovers by causing temporary flight ("flushing") of breeding birds, nest abandonment, or nest failure. The impact to plover habitat and behavior from construction of the nine subsurface slant wells and conversion of the test well to a permanent well may have lasting effects on snowy plover behavior and would be significant.

With respect to wintering birds, construction activities would be temporary and largely occur within the backdunes, away from the beach and foredunes where flocks of plovers are typically found in this season. However, construction activities would be implemented in or around areas where plovers may occur during the winter. Construction activities associated with the conversion of the test slant well to a permanent well has the greatest likelihood of disturbing flocks of wintering plovers as it is closest to the beach where wintering flocks typically occur. Although not typical habitat, plovers may winter in the backdunes and construction of the nine subsurface slant wells in this area may impact plovers. Construction during the snowy plover wintering season (October 1 through February 28) could directly or indirectly adversely impact individual birds if present within or adjacent to the construction area. Human presence and construction noise and activities can cause roosting plovers to fly and disturb resting or foraging activities. This would be a significant impact.

[18] Impact 4.6-1 analyzes impacts from construction activities on western snowy plover. Impacts from maintenance activities on western snowy plover habitat are analyzed in Impact 4.6-6. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of potential western snowy plover habitat. This maintenance area is assumed to be located within the 8-acre temporary construction footprint. Therefore, the proposed project overall (including construction and maintenance) would result in a permanent impact on 7 acres (1 acre from construction and 6 acres from maintenance) and temporary impact on 2 acres (from construction) of western snowy plover habitat.

Construction activities may also displace wintering birds that may utilize the beach in the vicinity of the slant well or in the backdunes. Wintering habitat is not dependent on specific and stationary locations, such as nest sites during breeding season, so there is a much greater availability of suitable habitat. Abundant wintering habitat is present within the extensive dune system along the Monterey Bay shoreline north and south of the subsurface slant wells site. The beach north and south of the site is subject to some disturbance from humans or dogs; however, birds can access these areas during construction. Although birds may be initially disturbed and temporarily displaced during construction, the majority of the site (8 acres) would be returned to pre-construction conditions and birds would be able to utilize the site following construction. Temporary and permanent impacts to plover habitat were described in previous paragraphs.

Construction and operation of the test slant well has been conducted at the same location of Site 1 of the proposed subsurface slant well and its impact analysis serves as a reference for the type of impact that may result from construction of the proposed subsurface slant wells. The USFWS issued a letter of concurrence for the test slant well as part of the test slant well's FESA Section 7 consultation (USFWS, 2014). With regard to western snowy plover, the letter concurred that due to the small amount of habitat disturbance, proposed site restoration, seasonal avoidance, and implementation of other avoidance measures, the test slant well project was not likely to adversely affect western snowy plover. Construction and operation of the test slant well has been monitored and no direct take of western snowy plover has been observed (Jacob Martin, USFWS pers. comm., 2016). The scope of work for the test slant well is smaller than the scope of work for the proposed subsurface slant well. However, the analysis and findings from the test slant well support the conclusion that impacts to plovers can be reduced through implementation of avoidance and minimization measures.

Black legless lizard, silvery legless lizards, and coast horned lizard have potential to occur within the subsurface slant well site, and if present during construction, they could be directly or indirectly impacted by construction activities during the 15-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*. This would be a significant impact.

Other special-status birds protected by the federal MBTA and Section 3503 of the California Fish and Game Code, such as killdeer, may nest within or adjacent to the construction work areas for the slant wells and associated facilities. If nesting birds are present, construction activities could directly or indirectly impact these species during the 15-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*. This would be a significant impact.

Globose dune beetle has potential to occur within central dune scrub at the slant well site. If present, construction activities could degrade habitat for this species, which would be a significant impact.

Impacts of subsurface slant well construction on central dune scrub habitat for globose dune beetle, black legless lizard, silvery legless lizard, coast horned lizard, and the special-status plant species listed above are addressed below under Impact 4.6-2.

A full list of special-status species that could be significantly impacted by subsurface slant well construction is provided in Table 4.6-6. Overall, the impact on special-status species during slant well construction would be significant. However, with implementation of **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly)**, **4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1p (Control Measures for Spread of Invasive Plants), 4.12-1b (General Noise Controls for Construction Equipment)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**, the impacts would be reduced to a less-than-significant level. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and

covering non-active stockpiles; requiring implementation of noise controls for construction equipment to reduce noise impacts on special-status wildlife species; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

MPWSP Desalination Plant

The proposed MPWSP Desalination Plant described in Chapter 3, Description of the Proposed Project, Section 3.2.2 would be constructed on the upper terrace (approximately 25 acres) of a 46-acre vacant parcel on Charles Benson Road. This facility would be located outside of the MBNMS. Nighttime construction is anticipated at the MPWSP Desalination Plant site throughout the 24-month construction period. Construction activities would disturb approximately 25 acres and the MPWSP Desalination Plant would create approximately 15 acres of impervious surface within this 25-acre construction area. The 25 acres that would be disturbed during construction is mostly non-native grassland with a small patch of yellow bush lupine scrub. Google Earth aerial photography (Google Earth, 2016) indicates the site was disked and/or mowed regularly prior to 2013, but appears to have recently been left undisturbed. Adjacent land uses include the MRWPCA Regional Wastewater Treatment Plant, crop production, and grazing.

Table 4.6-6 identifies the special-status species that could be significantly impacted by construction at the site. As described in Section 4.6.1.10, Monterey spineflower has been observed at the MPWSP Desalination Plant site and the site could support Congdon's tarplant, a CRPR 1B.1 plant that can occur in disturbed habitats. If Monterey spineflower or Congdon's tarplant are present within the project construction work area, earthwork activities conducted during the 24-month construction period could significantly directly or indirectly impact Monterey spineflower and Congdon's tarplant as described above under the heading *Overview of Potential Construction Effects on Plants*. Additionally, California red-legged frog or California tiger salamander could disperse through the site. If individual California red-legged frogs or California tiger salamanders are present, construction of the MPWSP Desalination Plant could directly or indirectly impact these individuals during the 24-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. The site does not provide high quality upland refugial habitat for these species. However, there is potential for California red-legged frog and California tiger salamander to breed in a drainage ditch or retention pond located approximately 250 feet from the site. If California red-legged frog and California tiger salamander occur in those aquatic features, then non-native grassland at the MPWSP Desalination Plant could be considered upland habitat for these species. Construction of the MPWSP Desalination Plant would result in the temporary loss of 10 acres and permanent loss of 15 acres of potential California red-legged frog and California tiger salamander upland habitat. The impact on California red-legged frog and California tiger salamander habitat would be a significant impact.

Coast Range newt and American badger could occur in grassland areas and be impacted by construction, a significant impact.

Mature ornamental eucalyptus and Monterey cypress trees planted along Charles Benson Road adjacent to the site may provide nesting and roosting habitat for raptors such as red-tailed hawk, red-shouldered hawk, and American kestrel and special-status bat species. The entire site provides potentially suitable nesting habitat for common passerines protected under the MBTA. Currently the site also provides potential foraging habitat for raptors and other birds. **Table 4.6-2** provides a complete list of special-status species with the potential to occur at the MPWSP Desalination Plant site. Nighttime construction lighting and both daytime and nighttime construction noise have the potential to disturb raptors and special-status passerines actively nesting in the trees along Charles Benson Road during the 24-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. If nesting birds or roosting special-status bats are present within these trees, they could be harmed if the trees are removed, also a significant impact.

Steelhead are known to occur in the Salinas River (NMFS, 2007), which is located approximately 850 feet north of the MPWSP Desalination Plant site. A drainage ditch that flows into the Salinas River is located approximately 250 feet north and downslope of the MPWSP Desalination Plant site. Construction of the MPWSP Desalination Plant would not directly impact steelhead. However, soil-disturbing activities at the site could result in soil erosion and the migration of eroded soil and sediment downgradient towards the Salinas River. As discussed under Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, project construction activities that would disturb more than one acre would be subject to the National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements. Per the requirements, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared by a Qualified SWPPP Developer and a Qualified SWPPP Practitioner would oversee its implementation. The SWPPP, which would include site-specific erosion and stormwater control measures (such as installing sediment barriers like silt fencing and fiber rolls and maintaining equipment and vehicles used for construction) to be implemented during construction of the MPWSP Desalination Plant, would reduce or eliminate the offsite migration of pollutants and sediment. Mandatory compliance with the NPDES Construction General Permit would avoid substantial adverse effects on the water quality of steelhead habitat along the Salinas River. Thus, the impact on steelhead within the Salinas River would be less than significant.

The construction-related effects on special-status species described above (Monterey spineflower, Congdon's tarplant, California red-legged frog, California tiger salamander, Coast Range newt, American badger, and special-status bats and nesting birds) would result in a significant impact. Implementation of following mitigation measures would ensure that impacts on sensitive species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger), 4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander)**, **4.6-1p (Control Measures for Spread of Invasive Plants)** and **4.14-2 (Site-**

Specific Nighttime Lighting Measures). These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of exclusion fencing to ensure special-status species are prevented from entering the construction area or can safely leave it, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

Pipelines and Other Conveyance Facilities North of Reservation Road

Most pipeline segments would be installed using conventional open-trench technology; however, trenchless methods would be used when open-cut trenching is not feasible or desirable. The construction sequence would typically include clearing and grading the ground surface along the pipeline alignments; excavating the trench; preparing and installing pipeline sections; installing vaults, manhole risers, manifolds, and other pipeline components; backfilling the trench with non-expansive fills; restoring preconstruction contours; and revegetating or paving the pipeline alignments, as appropriate.

Source Water Pipeline

The Source Water Pipeline is described in Section 3.2.1.2 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. Installation of the Source Water Pipeline is anticipated to take 6 months. Although not planned, nighttime installation of the Source Water Pipeline could be required to expedite the construction schedule. The construction footprint is approximately 16.4 acres. A portion of this footprint overlaps with a portion of the construction footprints for the subsurface slant well, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, Castroville Pipeline using the optional alignment 2, the new Desalinated Water Pipeline, and the new Desalinated Water Pipeline using the optional alignment.

Central dune scrub, coyote brush scrub, ice plant mats, and agricultural and ruderal areas exist along the proposed Source Water Pipeline alignment along the CEMEX access road and Lapis Road. From Lapis Road, the Source Water Pipeline alignment extends through non-native grassland and agricultural fields to the MPWSP Desalination Plant site. Monterey cypress and eucalyptus trees, which border Charles Benson Road, occur south of the pipeline alignment.

Monterey spineflower occurs in high densities along the CEMEX access road and in the surrounding sand dunes in the CEMEX active mining area (Zander Associates, 2013; 2014). Branching beach aster has been observed along Lapis Road and the CEMEX access road (URS, 2016). As indicated in **Table 4.6-2**, a number of other special-status plants may also occur in central dune scrub along this pipeline alignment. Construction of the Source Water Pipeline has potential to disturb Monterey spineflower, branching beach aster, and ocean bluff milkvetch. If other special-status plants, such as Menzies' wallflower, sand gilia, or other special-status plants listed in **Table 4.6-6**, are present within or adjacent to the project area, they could be directly or indirectly impacted by construction during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*, a significant impact.

Coast buckwheat (host plant for Smith's blue butterfly) occurs in high densities along the CEMEX access road and in the surrounding sand dunes in the CEMEX active mining area (Zander Associates, 2014), although few individuals were observed within the Source Water Pipeline alignment. If any life form of the butterfly is present on or around these host plants, removal of the plant would be a significant impact on Smith's blue butterfly. Additionally, installation of the Source Water Pipeline has potential to impact approximately 0.2 acre of Smith's blue butterfly habitat, a significant impact. This impact area overlaps with a portion of the new Desalinated Water Pipeline Smith's blue butterfly habitat impact area described below.

Western snowy plover are known to use the western portion of the Source Water Pipeline alignment year-round. This portion of the Source Water Pipeline alignment overlaps a portion of the subsurface slant well installation area, so the type of impact would be similar to impacts described above for the subsurface slant wells. Construction noise or activity associated with installation of the Source Water Pipeline during the western snowy plover breeding season could impact plovers by causing temporary flight of breeding birds and potentially permanent effects from nest abandonment or failure, which would be significant. Construction work within the western end of the proposed Source Water Pipeline would result in temporary habitat impacts (since the construction area would be returned to pre-construction conditions) to approximately

0.2 acre of potential habitat (some of this area may overlap with the impact area for the subsurface slant wells as described above), which would be a significant impact. The remainder of the Source Water Pipeline would be constructed away from the beach and foredunes where plovers typically nest and would not result in the temporary loss of plover habitat. Construction noise or activity during the wintering season could directly or indirectly impact individual birds, a significant impact. Construction activities may temporarily displace birds that typically winter along the beach near the western portion of the Source Water Pipeline. Habitat is available on the beach and in the dunes north and south of the project area for wintering use during construction. Although birds may be initially disturbed and temporarily displaced during construction, and there is some potential for nest abandonment and failure, the site would be returned to pre-construction conditions and birds would be able to utilize the site following construction. However, the net impact on the western snowy plover is anticipated to be significant.

A potential California tiger salamander breeding pond is located within 1.2 miles of the Source Water Pipeline alignment, and non-native grassland within 1.2 miles of a potential breeding pond provides potential California tiger salamander upland habitat. The Salinas River is located within one mile of the Source Water Pipeline and non-native grassland within one mile of the Salinas River provide potential California red-legged frog upland habitat. Construction of the Source Water Pipeline has potential to temporarily impact (the site would be restored following construction) approximately one acre of California tiger salamander and California red-legged frog upland habitat, a significant impact. If individual California red-legged frogs or California tiger salamanders are present, construction of the Source Water Pipeline could result in take of these individuals during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. This impact area overlaps with the new Desalinated Water Pipeline and Castroville Pipeline.

Additionally, as described in Section 4.6.1.8, above, and as presented in **Table 4.6-6**, numerous other special-status wildlife species, including western burrowing owl and American badger, may inhabit non-native grassland, and black legless lizard, silver legless lizard, coast horned lizard may inhabit central dune scrub along this pipeline alignment. Coast Range newt may occur in non-native grassland. Special-status bats may roost within crevices underneath the Highway 1 overpass at the CEMEX access road and in trees within the alignment. Raptors such as red-tailed hawk, white-tailed kite, and loggerhead shrike, among others, could nest in trees and/or forage along both of these pipeline alignments. If black legless lizard, silvery legless lizard, coast horned lizard, Coast Range newt, burrowing owl, or American badger are present in suitable habitat in or around the pipeline alignment, special-status bats are roosting in or around the pipeline alignment, or special-status nesting birds are present in or around the pipeline alignment they could be directly or indirectly impacted by construction activities during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*.

Globose dune beetle has potential to occur within central dune scrub at the slant well site. If present, construction activities could degrade habitat for this species, which would be a significant impact.

Impacts of Source Water Pipeline construction on central dune scrub, which is habitat for the special-status plant species listed above, globose dune beetle, black legless lizard, silvery legless lizards, and coast horned lizard, are addressed in Impact 4.6-2. Impacts on special-status species during construction of the Source Water Pipeline as described above and as listed in **Table 4.6-6** would be significant. However, implementation of the following mitigation measures would ensure that impacts on special-status species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring measures to avoid and minimize impacts on western burrowing owl such as conducting pre-construction surveys to determine if owls are present requiring a no-disturbance buffer around nesting sites or occupied

burrows, and potentially excluding wintering burrowing owls from the work area, and compensating for loss of habitat; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; requiring implementation of noise controls for construction equipment to reduce noise impacts on special-status wildlife species; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

The Source Water Pipeline using the optional alignment would impact approximately 0.2 acre of Smith's blue butterfly habitat, approximately 0.2 acre of western snowy plover nesting habitat, and 0.1 acre of non-native grassland, which provides potential California tiger salamander and California red-legged frog upland habitat. The Source Water Pipeline using the optional alignment would generally result in the same type of impact as described for the Source Water Pipeline. The same impact conclusion and mitigation measures would apply to the Source Water Pipeline using the optional alignment as apply to the Source Water Pipeline.

New Desalinated Water Pipeline

The new Desalinated Water Pipeline is described in Section 3.2.3.3 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. Installation of both the new Desalinated Water Pipeline and new Transmission Main is anticipated to take 15 months. Although not planned, nighttime installation of the new Desalinated Water Pipeline could be required to expedite the construction schedule. The construction footprint is approximately 35.4 acres. A portion of the construction footprint for the new Desalinated Water Pipeline overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, and Castroville Pipeline using the optional alignment 2.

The segment of the new Desalinated Water Pipeline located between the intersection of Charles Benson Road and Del Monte Boulevard south to Marina Green Drive includes a mix of moderately

disturbed central dune scrub, coyote brush scrub, non-native annual grassland, ice plant mats, ruderal, and developed roadways. The segment between Marina Green Drive and Reservation Road is largely dominated by ruderal areas, developed/landscaped areas, and ice plant mats and is surrounded by urban development. Some native communities, such as central dune scrub, coyote brush scrub, and coast live oak woodland, occur within this segment, but they are highly disturbed. Several Monterey cypress stands and eucalyptus groves also occur within the segment between Marina Green Drive and Reservation Road. Riparian woodland and scrub exists along the Desalinated Water Pipeline alignment at Locke-Paddon Park, near the intersection of Del Monte Boulevard and Reservation Road. Non-native grassland and agricultural land occur in the alignment north of Charles Benson Road.

Monterey spineflower and Kellogg's horkelia were observed in central dune scrub along Del Monte Boulevard during surveys conducted for the proposed project (ESA, 2012; 2016). Branching beach aster was observed along Del Monte Road within the pipeline alignment during protocol level plant surveys conducted for the proposed project in 2014 (URS, 2014b). As indicated in **Table 4.6-2**, a number of other special-status plants may also occur along this pipeline alignment. Construction of the Desalinated Water Pipeline has potential to disturb Monterey spineflower and Kellogg's horkelia, a significant impact. If other special-status plants, such as Menzies' wallflower, sand gilia, or other special-status plants listed in **Table 4.6-6**, are present in suitable habitat within or adjacent to the project area, they could be directly or indirectly impacted by construction activities during the 15-month (in conjunction with the new Transmission Main) construction period as described above under the heading *Overview of Potential Construction Effects on Plants*, a significant impact.

A few small patches (approximately 0.2 acre in extent) of coast buckwheat (host plant for Smith's blue butterfly) occur within the new Desalinated Water Pipeline alignment (AECOM, 2016). If any life form of the butterfly is present on or around these host plants, removal of the plant would be a significant impact on Smith's blue butterfly. Additionally, installation of the new Desalinated Water Pipeline has potential to impact approximately 0.2 acre of Smith's blue butterfly habitat, a significant impact. This impact area overlaps with a portion of the Source Water Pipeline Smith's blue butterfly habitat impact area described above.

Two potential California tiger salamander breeding ponds are located within 1.2 miles of the new Desalinated Water Pipeline alignment and non-native grassland within 1.2 miles of a potential breeding pond provides potential California tiger salamander upland habitat. Additionally, the Salinas River and another potential breeding pond are located within 1.2 miles of the new Desalinated Water Pipeline. Non-native grassland within 1.2 miles of the Salinas River and the potential breeding pond provide potential California red-legged frog upland habitat. Construction of the new Desalinated Water Pipeline has potential to temporarily impact (the site would be restored following construction) approximately 1.4 acre of California tiger salamander and California red-legged frog upland habitat, which is a significant impact. If individual California red-legged frogs or California tiger salamanders are present, construction of the new Desalinated Water Pipeline could directly or indirectly impact these individuals during the 15-month (in conjunction with the new Transmission Main) construction period as described above under the

heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. Much of this impact area overlaps with the Source Water Pipeline and Castroville Pipeline.

As presented in **Table 4.6-6**, numerous special-status wildlife species including Coast Range newt, western burrowing owl, and American badger may occur in non-native grassland and black legless lizard, silvery legless lizard, and coast horned lizard may inhabit central dune scrub along the pipeline alignment. Riparian woodland and scrub located adjacent to the pond at Locke-Paddon Park and along the alignment has the potential to support western pond turtle and tricolored blackbird. Raptors such as red-tailed hawk, white-tailed kite, and loggerhead shrike, among others, could nest in trees and/or forage along the pipeline alignment. Special-status bats could roost in trees within the alignment. Salinas kangaroo rat has potential to occur in grassland or scrub habitat and this species is considered sensitive in the coastal zone within the City of Marina. If burrowing owl, American badger, black legless lizard, silvery legless lizard, coast horned lizard, Coast Range newt, western pond turtle, tricolored blackbird, special-status nesting birds, special-status bats, or Salinas kangaroo rat are present in or around the alignment, they could be directly or indirectly impacted by construction activities during the 15-month (in conjunction with the new Transmission Main) construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife.*

Impacts of new Desalination Water Pipeline construction on central dune scrub, which is habitat for the special-status plant species listed above, black legless lizard, silvery legless lizard, and coast horned lizard, and on riparian woodland and scrub, which is habitat for tricolored blackbird and western pond turtle, are addressed in Impact 4.6-2.

Impacts on special-status species during construction of the new Desalinated Water Pipeline would be significant. However, implementation of the following mitigation measures would ensure that impacts on special-status species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander)**, **4.6-1p (Control Measures for Spread of Invasive Plants)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status

species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring measures to avoid and minimize impacts on western burrowing owl such as conducting pre-construction surveys to determine if owls are present, requiring a no-disturbance buffer around nesting sites or occupied burrows, and potentially excluding wintering burrowing owls from the work area, and compensating for loss of habitat; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

The new Desalinated Water using the optional alignment would impact approximately 0.2 acre of Smith's blue butterfly habitat and approximately 0.5 acre of non-native grassland, which provides potential California tiger salamander and California red-legged frog upland habitat. The new Desalinated Water Pipeline using the optional alignment would result in the same type of impact as described for the new Desalinated Water Pipeline. The same impact conclusion and mitigation measures would apply to the new Desalinated Water Pipeline using the optional alignment as apply to the new Desalinated Water Pipeline.

Castroville Pipeline

Construction of the 4.5-mile-long Castroville Pipeline would take approximately 4 months. This facility would be located outside of the MBNMS. Nighttime installation of the Castroville Pipeline could be required to meet the construction schedule. The construction footprint is approximately 15.0 acres. A portion of the Castroville Pipeline construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment.

The alignment north of and parallel to, Charles Benson Road includes non-native annual grassland and agricultural land bordered on the south by Monterey cypress and eucalyptus trees. North of Charles Benson Road the alignment traverses developed areas, ruderal areas, coyote brush scrub, and ice plant mats with a few isolated patches of central dune scrub and non-native grassland before crossing through agricultural, ruderal, and developed areas until it reaches the Salinas River. The Salinas River includes open water and adjacent riparian woodland and scrub, coyote brush scrub, and northern coastal scrub communities. North of the Salinas River the alignment includes mostly agricultural, developed, and ruderal areas until it crosses over Tembladero Slough. North of Tembladero Slough, the alignment passes through a mix of agricultural, developed, ruderal, coyote brush scrub, riparian woodland and scrub and freshwater marsh communities before continuing back to developed and ruderal areas.

Monterey spineflower and branching beach aster were observed in and around central dune scrub north of the intersection of Del Monte Boulevard and Charles Benson Road during surveys conducted for the proposed project (AECOM, 2016). As indicated in **Table 4.6-2**, a number of other special-status plants may also occur along this pipeline alignment. Construction of the Castroville Pipeline has potential to disturb Monterey spineflower and branching beach aster, a significant impact. If other special-status plants, such as Menzies' wallflower, sand gilia, or other special-status plants listed in **Table 4.6-6**, are present in suitable habitat within or adjacent to the project area, they could be directly or indirectly impacted by construction activities during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*, a significant impact.

The Salinas River, Tembladero Slough, and freshwater marsh and riparian woodland and scrub located north of Tembladero Slough provide potential California red-legged frog aquatic habitat. Construction of the Castroville Pipeline would be installed on the underside of an existing bridge over the Salinas River and beneath Tembladero Slough and construction would not occur within these areas. Pipeline construction would temporarily impact 0.9 acre of riparian woodland and scrub, which is potential aquatic habitat. Non-native grassland in the southern end of the Castroville Pipeline alignment is located within 1.2 miles of potential California tiger salamander and California red-legged frog breeding areas. This non-native grassland would provide upland habitat for California tiger salamander and California red-legged frog. Construction of the Castroville Pipeline has potential to temporarily impact approximately 1.1 acres of California tiger salamander and California red-legged frog upland habitat, which is a significant impact. Much of this impact area overlaps with the Source Water Pipeline and new Desalinated Water Pipeline. Temporary impacts on California tiger salamander and California red-legged frog habitat would be significant.

If individual California red-legged frog or California tiger salamander are present, construction of the Castroville Pipeline could directly or indirectly impact these individuals during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. As discussed under Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, project construction activities that disturb more than 1 acre are subject to the NPDES Construction General Permit requirements. Per the requirements, a SWPPP would be prepared by a Qualified SWPPP Developer and a Qualified SWPPP Practitioner would oversee its implementation. The SWPPP, which would include site-specific erosion and stormwater control measures to be implemented during construction of the Castroville Pipeline, would reduce or eliminate the offsite migration of pollutants and sediment. Mandatory compliance with the NPDES Construction General Permit would avoid substantial adverse effects on water quality in the Salinas River and Tembladero Slough. Thus, the indirect impacts on California red-legged frog habitat in the Salinas River and Tembladero Slough would be less than significant and no mitigation is necessary.

Steelhead are known from the Salinas River and have potential to occur in Tembladero Slough. The proposed Castroville Pipeline would be installed on the underside of the existing bridge over the Salinas River and beneath Tembladero Slough using HDD. There would be no construction within the Salinas River or Tembladero Slough from construction and therefore, no direct impacts on steelhead from construction. Grubbing and excavation of vegetated areas would be required at two small areas on the north and south end of the elevated portion of the proposed pipeline crossing over the Salinas River in addition to riparian vegetation trimming along the pipeline installation route. The entry and exit pits for the crossing beneath Tembladero Slough would be located at least 40 feet from Tembladero Slough. Soil disturbing activities from installation of the Castroville Pipeline in the vicinity of the Salinas River and Tembladero Slough could result in soil erosion and the migration of eroded soil and sediment downgradient towards the water features. Mandatory compliance with the NPDES Construction General Permit and implementation of the SWPPP would prevent indirect impact on steelhead habitat in the Salinas River and Tembladero Slough from upland soil erosion. Although not anticipated, there is potential for frac-outs[19] to occur using HDD. If a frac-out occurs, bentonite slurry could be released into Tembladero Slough, which could degrade water quality and adversely impact steelhead habitat and/or individual fish by increasing suspended sediments that may inhibit fish respiration and degrade habitat, a significant impact. The pipeline would be installed on the bridge over the Salinas River from a temporary barge that would be in place for no more than one month. The bridge currently provides shade over the Salinas River and the barge would be relatively small compared to the larger unshaded Salinas River and would be used for a short time period, so impacts from the barge would be less than significant.

As presented in **Table 4.6-6**, numerous special-status wildlife species including American badger may occur in non-native grassland and black legless lizard, silver legless lizard, and coast horned lizard may inhabit central dune scrub along the pipeline alignment. Coast Range newt may occur in aquatic habitat and adjacent upland and grassland areas. Riparian woodland and scrub located north of Tembladero Slough has the potential to support western pond turtle. Special-status

[19] A frac-out, or hydrofracture, is the inadvertent loss of drilling fluid from the borehole to the surrounding soil, surface, or waterbody, as a result of excess fluid pressure during directional drilling.

raptors such as red-tailed hawk, white-tailed kite, and loggerhead shrike, among others, could potentially nest in trees and/or forage along the pipeline alignment. Special-status bats could roost in trees within the alignment. If black legless lizard, silvery legless lizard, coast horned lizard, Coast Range newt, American badger, western pond turtle, or special-status nesting birds or bats are present in or around the alignment, they could be directly or indirectly impacted by construction activities during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*.

Impacts of Castroville Pipeline construction on central dune scrub, which is habitat for black legless lizard, silvery legless lizard, and coast horned lizard, and on riparian woodland and scrub, which is habitat for western pond turtle, are addressed in Impact 4.6-2.

Impacts on special-status species during construction of the Castroville Pipeline would be significant. However, implementation of the following mitigation measures would ensure that impacts on special-status species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander)**, **4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-1q (Frac-out Contingency Plan)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**.

These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and

avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on special-status species and their habitat; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

The Castroville Pipeline using the optional alignment 1 would temporarily impact (the site would be returned to pre-construction conditions following construction) approximately 0.9 acre of riparian woodland and scrub and 0.01 acre of freshwater marsh and between approximately 1 and 2 acres of non-native grassland, which provides potential California tiger salamander and California red-legged frog upland habitat. The Castroville Pipeline using the optional alignment 2 would temporarily impact approximately 0.9 acre of riparian woodland and scrub and 0.1 acre of non-native grassland. However, the same impact conclusion and mitigation measures would apply to the Castroville Pipeline using both optional alignments as the Castroville Pipeline.

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

Construction of the 1-mile-long Brine Discharge Pipeline would be completed in approximately 3 months and construction of the 1.2-mile-long Pipeline to CSIP Pond would be completed in approximately 2 months. The Brine Mixing Box would be completed in approximately 6 months. These facilities would be located outside of the MBNMS. Nighttime construction may be required to expedite construction. The construction footprint for both of these pipelines and the Brine Mixing Box combined is approximately 7.4 acres, including the Brine Mixing Box construction staging area.

The Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would be installed in paved access roads and ruderal areas, and non-native grassland. The pipeline alignments are located adjacent to ornamental Monterey cypress stands present along the access roads.

Table 4.6-2 presents the potential for special-status plant and wildlife species to occur along the Brine Discharge Pipeline and Pipeline to CSIP Pond alignments and the Brine Mixing Box footprint, and **Table 4.6-6** identifies the special-status plant and wildlife species that could be

significantly impacted by project-related construction activities. As indicated in **Table 4.6-2**, special-status plants either have a low potential to occur or are not expected to occur along these construction footprints; therefore, as indicated in Table 4.6-6, no potentially significant impact on special-status plants would result.

A potential California tiger salamander breeding pond is located within 1.2 miles of the Brine Discharge Pipeline and Pipeline to CSIP Pond alignments and non-native grassland within 1.2 miles of a potential breeding pond provides potential California tiger salamander upland habitat. The Salinas River is located within 1 mile of the Brine Discharge Pipeline and Pipeline to CSIP Pond and non-native grassland within 1 mile of the Salinas River provide potential California red-legged frog upland habitat. Construction of the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond has potential to permanently impact approximately 0.4 acre and temporarily impact approximately 0.4 acre each of California tiger salamander and California red-legged frog upland habitat, which is a significant impact. Coast Range newt also has potential to occur in grassland areas. If individual California red-legged frogs, California tiger salamanders, or Coast Range newt are present, construction of the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond could directly or indirectly impact these individuals during the 2-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact.

Planted Monterey cypress trees on the west side of the MRWPCA's access road provide roosting, foraging, and/or nesting opportunities for a variety of raptors and other birds and roosting habitat for special-status bats. Although these trees are not expected to be removed during pipeline installation activities, due to the proximity of construction, if raptors or special-status nesting passerines or roosting special-status bats are present during construction in or around the project area, construction activities could result in direct or indirect impacts on these species during the 2-month construction period as described under the heading *Overview of Potential Construction Effects on Wildlife*, which would result in a significant impact. Non-native grassland within the MRWPCA Regional Wastewater Treatment Plant site may provide nesting habitat for common passerines protected by the MBTA. If nesting birds are present within the grassland, they could be directly or indirectly impacted by construction activities, which would be a significant impact.

Implementation of the following mitigation measures would ensure that impacts on special-status species at this site would be reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an

exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline)

The proposed ASR Facilities are described in Chapter 3, Description of the Proposed Project, Section 3.2.4. These facilities include the ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline. These facilities would be located outside of the MBNMS. Each ASR well would be housed in a permanent 900-square foot concrete pump house. Chain-link fencing would encompass an approximately 0.4-acre and 0.5-acre area around the ASR-5 and ASR-6 Wells, respectively. Therefore, the construction footprint for both of the ASR Wells is expected to be approximately 0.9 acre. Water produced during development of the wells would be conveyed to a 1.4-acre natural depression located east of the intersection of San Pablo Avenue and General Jim Moore Boulevard and percolated into the ground. The construction footprint of the area where water would be conveyed is approximately 7.0 acres. Three parallel 0.9-mile-long, 30-inch-diameter ASR pipelines (ASR Recirculation Pipeline, ASR Conveyance Pipeline, and ASR Pump-to-Waste Pipeline) would extend along General Jim Moore Boulevard between the proposed ASR-5 and ASR-6 Wells at the Fitch Park military housing area and Coe Avenue/General Jim Moore Boulevard. The construction footprint for all three ASR pipelines is approximately 8.8 acres. A portion of the construction footprint for the ASR pipelines overlaps with a portion of the construction footprints for the new Transmission Main and the new Transmission Main using the optional alignment. Installation of the ASR pipelines would occur during daytime hours. Construction of the ASR-5 and ASR-6 wells would require nighttime construction.

The ASR-5 and ASR-6 Well sites contain a mix of coast live oak woodland, coyote brush scrub, and ruderal areas surrounded by single family residences. The ASR pipelines would be installed within developed General Jim Moore Boulevard, but are surrounded by a mix of single family residences and moderately disturbed coast live oak woodland, coyote brush scrub, ice plant mats, and ruderal areas, in the north with a border of undisturbed northern coastal scrub and coast live oak woodland on former Fort Ord lands at the southern end of the pipeline alignment. The area where

water produced during development of the ASR-5 and ASR-6 wells would be conveyed is located on former Fort Ord lands and contains a mix of central maritime chaparral and ruderal areas.

Kellogg's horkelia has been observed within the development water infiltration area that will be used during development of the ASR-5 and ASR-6 Wells (CDFW, 2016). Monterey spineflower, Kellogg's horkelia, and Monterey ceanothus were observed along the ASR pipeline alignment during reconnaissance surveys and focused botanical surveys of the project area along General Jim Moore Boulevard (ESA, 2016; AECOM, 2016). As indicated in **Table 4.6-2**, there are several other special-status plant species that have a moderate to high potential to occur in or adjacent to the proposed ASR Facilities including robust spineflower, seaside birds-beak, sand gilia, Yadon's rein orchid, Hooker's manzanita, Toro manzanita, Pajaro manzanita, sandmat manzanita, ocean bluff milkvetch, Monterey Coast paintbrush, Eastwood's goldenbush, sand-loving wallflower, Carmel Valley bush-mallow, northern curly-leaved monardella, south coast branching phacelia, Michael's rein orchid, and others listed in **Table 4.6-2**. Installation of the ASR Facilities could result in direct or indirect impacts on special-status plant species during the 5-month construction period for the ASR pipelines and 12-month construction period for the ASR wells as described above under the heading *Overview of Potential Construction Effects on Plants* (see **Table 4.6-6** for a complete list of special-status species that could be significantly impacted by construction of the proposed ASR facilities).

Special-status wildlife with a moderate to high potential to occur at the ASR Facilities include silvery legless lizard, black legless lizard, coast horned lizard, Coast Range newt, red-tailed hawk, and Monterey dusky-footed woodrat. See **Table 4.6-2** for a complete list of special-status wildlife species and their potential to occur at the ASR facilities sites. If black legless lizard, silvery legless lizard, coast horned lizard, Coast Range newt, Monterey dusky-footed woodrat, Monterey shrew, or American badger are present in the construction area, or if raptors or other special-status nesting passerines or roosting special-status bats are present within or in close proximity to the construction area, those species could be directly or indirectly impacted by construction activities during the 5-month construction period for the ASR pipelines and 12-month construction period for the ASR wells as described above under the heading *Overview of Potential Construction Effects on Wildlife*.

Impacts to coast live oak woodland and central maritime chaparral, which are habitats for one or more of the special-status species listed above (including special-status plants, black legless lizard, silvery legless lizards, coast horned lizard, Coast Range newt, Monterey dusky-footed woodrat, Monterey shrew, and American badger) at this facility, is addressed in Impact 4.6-2. Substantial adverse effects on special-status species during construction of the ASR facilities, as described above, would result in a significant impact. Implementation of the following mitigation measures would reduce impacts on special-status species at this site to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and**

Minimization Measures for American Badger), **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1p (Control Measures for Spread of Invasive Plants)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

Pipelines and Other Conveyance Facilities South of Reservation Road

New Transmission Main and New Transmission Main Optional Alignment

The new Transmission Main and new Transmission Main Optional alignments are described in Chapter 3, Description of the Proposed Project, Section 3.2.3.4. This facility would be located outside of the MBNMS. This 6-mile-long, 36-inch-diameter pipeline would extend from the Desalinated Water Pipeline at the intersection of Del Monte Boulevard and Reservation Road

south to the existing Phase I ASR Facilities near the intersection of General Jim Moore and Coe Avenue. Construction of this pipeline and the new Desalinated Water Pipeline would take approximately 15 months to complete. Similar to the other pipelines, construction activities would occur during the daytime hours, except at a few locations where nighttime construction would be required to meet the project schedule. The construction footprint is approximately 27.1 acres. A portion of the new Transmission Main construction footprint overlaps with a portion of the ASR pipelines construction footprint.

As described in Section 4.6.1.10, habitat along the new Transmission Main alignment is variable and includes ice plant mats and ruderal areas with a few Monterey cypress stands and eucalyptus groves, central dune scrub along the back dunes of Fort Ord Dunes State Park, coyote brush scrub, and coast live oak woodland with some areas of northern coastal scrub in inland areas.

Table 4.6-2 presents the potential for special-status plant and wildlife species to occur along the new Transmission Main alignment, and **Table 4.6-6** identifies the special-status plant and wildlife species that could be significantly impacted by project-related construction activities. As indicated in **Table 4.6-2**, Sandmat manzanita, Monterey spineflower, Menzies' wallflower, Kellogg's horkelia, Monterey Coast paintbrush, branching beach aster, south coast branching phacelia, Michael's rein orchid, and Monterey ceanothus have been observed along the alignment (ESA, 2013; USACE, 1997; Fort Ord Reuse Authority, 2012; CDFW, 2016; Denise Duffy & Associates, 2013; and URS, 2016) and construction of the Transmission Main could result in direct and indirect impacts on these species during the 15-month construction period (in conjunction with the new Desalinated Water Pipeline) as described above under the heading *Overview of Potential Construction Effects on Plants*, a significant impact. Additionally, a number of other special-status plant species could occur within the alignment and, if present, could be directly or indirectly impacted by construction, which is a significant impact.

Coast buckwheat occurs along the alignment (ESA, 2013) and could support Smith's blue butterfly. If any life form of Smith's blue butterfly is present, removal or destruction of coast buckwheat and associated soil could result in injury or loss of Smith's blue butterfly. Construction of the new Transmission Main would temporarily impact approximately 0.3 acre of Smith's blue butterfly habitat. These impacts on Smith's blue butterfly would be significant. Although the habitat would only be temporarily impacted, because the site would be returned to pre-construction conditions, construction could result in the permanent loss of the host plant, a significant impact.

Black legless lizard, silvery legless lizard, coat horned lizard, Coast Range newt, western burrowing owl, American badger, tricolored blackbird, Salinas kangaroo rat, Monterey dusky-footed woodrat, and Monterey shrew could occur along, or in the vicinity of, the alignment. Additionally, raptors and other birds protected by the MBTA could nest where suitable habitat occurs along the alignment. Special-status bats have some potential to roost within crevices underneath the Highway 1 overpass and in trees within the alignment. If present, these species could be directly or indirectly impacted by construction activities during the 15-month construction period (in conjunction with the new Desalinated Water Pipeline) as described above

under the heading *Overview of Potential Construction Effects on Wildlife*. The impact on these special-status wildlife species is considered significant.

Impacts to sensitive natural communities, which are habitat for the special-status plant species listed above, black legless lizard, silvery legless lizards, coast horned lizard, and Coast Range newt, at this facility is addressed in Impact 4.6-2.

The overall construction-related impact on special-status plant and wildlife species during construction of the new Transmission Main would be significant. However, implementation of the following mitigation measures would ensure that these impacts are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly)**, **4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat), 4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1p (Control Measures for Spread of Invasive Plants)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring measures to avoid and minimize impacts on western burrowing owl such as conducting pre-construction surveys to determine if owls are present, requiring a no-disturbance buffer around nesting sites or occupied burrows, and potentially excluding wintering burrowing owls from the work area, and compensating for loss of habitat; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting

season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species.

Since the new Transmission Main and new Transmission Main using the optional alignment would impact the same special-status species, the same impacts and mitigation measures would apply to the new Transmission Main using the optional alignment as apply to the new Transmission Main.

Carmel Valley Pump Station

The proposed Carmel Valley Pump Station is described in Section 3.2.3.8 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS.

The pump station would be enclosed within a 500-square-foot single-story building and a 100-square-foot electrical control building would be constructed outside of the pump station building. This pump station also includes an inlet and outlet pipeline that connects the pump station to Carmel Valley Road. Construction would take approximately 6 months to complete and would occur during daytime hours only. The construction footprint for the pump station and associated pipelines is approximately 0.2 acre.

The site includes non-native annual grassland, landscaped, and developed areas bordered by coast live oak woodland.

Special-status species that could be significantly impacted during construction of the Carmel Valley Pump Station are listed in **Table 4.6-6**. They include California red-legged frog, Monterey pine, Coast Range newt, red-tailed hawk, red-shouldered hawk, white-tailed kite, American peregrine falcon, American kestrel, loggerhead shrike, pallid bat, western red bat, Monterey dusky-footed woodrat, and Monterey shrew. If Monterey pines are located at the site, they may be part of a native stand, which is considered special-status. If a native Monterey pine stand is present within or adjacent to the construction area, it could be directly or indirectly impacted by

construction activities during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*, a significant impact.

California red-legged frogs are known to breed in the Carmel River and small tributaries and backpools in the vicinity of the proposed Carmel Valley Pump Station (CDFW, 2016). Non-native grassland at the site provides potential upland habitat for this species. If California red-legged frog are present at the site, construction of the Carmel Valley Pump Station could directly or indirectly impact these individuals during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact. Additionally, construction activities would temporarily impact 0.04 acre and permanently impact 0.08 acre of upland habitat, which is a significant impact.

Additionally, raptors, such as red-tailed hawk or red-shouldered hawk, and birds protected under the MTBA and California Fish and Game Code may nest in trees that border the boundary of site. Special-status bats may also roost in trees adjacent to the construction area. Monterey dusky-footed woodrat and Monterey shrew may occur in the adjacent coast live oak woodland understory. Coast Range newt could occur in grassland or adjacent oak woodland. If these species are present in the construction area, construction could directly or indirectly impact these species during the 6-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, which would be a significant impact. This impact would be inclusive of construction noise which, as stated in Section 4.12 Noise and Vibration, could generate noise levels more than 15 dBA above existing ambient noise levels.

However, implementation of the following mitigation measures would ensure that impacts on special-status species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat), 4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, and **4.6-1o (Avoidance and Minimization Measures for California Red-legged frog and California Tiger Salamander)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring measures to avoid and minimize impacts on Monterey dusky-footed

woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; requiring measures to avoid and minimize impacts on native stands of Monterey Pines such as avoiding any stands present to avoid tree loss and replacing trees that cannot be avoided to compensate for any loss; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; and requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts.

Ryan Ranch-Bishop Interconnection Improvements

The proposed Ryan Ranch–Bishop Interconnection Improvements are described in Section 3.2.3.11 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. The 1.1-mile-long, 8-inch-diameter Ryan Ranch–Bishop Interconnection Improvements pipeline would extend between an existing interconnection at Highway 68 and Ragsdale Avenue and a new connection to the Bishop system. Construction of the Ryan Ranch–Bishop Interconnection Improvements would occur during daytime hours and would take approximately 4 months to complete. The construction footprint is approximately 7.3 acres.

The proposed Ryan Ranch–Bishop Interconnection Improvements would be located within a business park area with existing stands of coast live oak woodland, northern coastal scrub, and non-native grassland interspersed throughout the developed areas. In general, construction disturbance would be limited to the road right-of-ways; however, there is an area of non-native grassland adjacent to the roadway where disturbance would occur.

Special-status species that could be significantly impacted during construction of the Ryan Ranch–Bishop Interconnection Improvements are indicated in **Table 4.6-6**. Although construction-related disturbance would be largely limited to the paved roadways, some special-status plant species could occur in coast live oak woodland adjacent to the construction area or non-native grassland within or adjacent to the construction area, including Hickman's onion, Toro manzanita, Michael's rein orchid, and native stands of Monterey pine. If these special-status plant species, or others listed in **Table 4.6-6**, occur within or adjacent to the construction disturbance areas, these plants could be directly or indirectly impacted by construction activities during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*. This would be a significant impact.

Although California tiger salamander breeding habitat is absent from the site, California tiger salamander breeding ponds are known within 1 mile of the Ryan Ranch–Bishop Interconnection Improvements (CDFW, 2016); thus, salamander could occur in upland habitat at the site. California red-legged frog aquatic habitat is absent from site, however, this frog is known to breed within the

Carmel River (CDFW, 2016) and could occur in grassland within the construction areas or other suitable upland habitat adjacent to construction area while dispersing. Construction activities would temporarily impact approximately 0.5 acre of California tiger salamander and California red-legged frog upland habitat. If these species are present they could be directly or indirectly impacted by construction activities during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact.

Additionally, Coast Range newt, Monterey dusky-footed woodrat, Monterey shrew, and/or American badger could occur in suitable habitat within or adjacent to the Ryan Ranch–Bishop Interconnection Improvements site. Special-status nesting birds and bats could also occur within or adjacent to site. If these species, or others listed in **Table 4.6-6** are present, they could be directly or indirectly impacted by construction activities during the 4-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, a significant impact.

Construction-related impacts on special-status plant and animal species during construction of the Ryan Ranch-Bishop Interconnection Improvements would be significant (see **Table 4.6-6** for a complete list of special-status species that would be significantly impacted). However, implementation of the following mitigation measures would reduce impacts on special-status species to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, and **4.6-1o (Avoidance and Minimization Measures for California Red-legged frog and California Tiger Salamander)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and

avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; requiring measures to avoid and minimize impacts on native stands of Monterey Pines such as avoiding any stands present to avoid tree loss and replacing trees that cannot be avoided to compensate for any loss; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; and requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts.

Main System-Hidden Hills Interconnection Improvements

The proposed Main System-Hidden Hills Interconnection Improvements are described in Section 3.2.3.11 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. The existing interconnection between the main CalAm distribution system and the Hidden Hills system would be improved by installing approximately 1,200 feet of 6-inch-diameter pipeline along the northern extent of Tierra Grande Drive. Additionally, the existing pump capacity at the Upper Tierra Grande Booster Station and the Middle Tierra Grande Booster Station would be upgraded. Construction of the Main System-Hidden Hills Interconnection Improvements would occur during daytime hours and would take approximately 3 months to complete. The construction footprint for the Main System-Hidden Hills Interconnection Improvements is 1.1 acre.

The Main System–Hidden Hills Interconnection Improvements site is located in a low-density residential area. Construction disturbance would be limited to the road right-of-way and within the existing developed booster stations, but coast live oak woodland, Monterey pine woodland, and northern coastal scrub occur adjacent to the developed areas.

Special-status species that could be significantly impacted during construction of the Main System-Hidden Hills Interconnection Improvements are indicated in **Table 4.6-6**. Although construction-related disturbance would be limited to the paved roadways and existing facilities, some special-status plant species could occur in coast live oak woodland, non-native grassland, or northern coastal scrub adjacent to the developed areas, including Yadon's rein orchid, Hickman's onion, Toro manzanita, Michael's rein orchid, and native stands of Monterey pine. If these special-status plant species, or others listed in **Table 4.6-6**, occur within or adjacent to the construction disturbance areas, they could be directly or indirectly impacted by construction activities during the 3-month construction period as described above under the heading *Overview of Potential Construction Effects on Plants*. This would be a significant impact.

Similarly, if California red-legged frog, California tiger salamander, or Coast Range newt are dispersing through suitable habitat adjacent to the work area during construction; if Monterey dusky-footed woodrat, Monterey shrew, or American badger are located in suitable habitat adjacent to the construction area; if raptors or special-status nesting passerines, roosting special-status bats, or other special-status wildlife species listed in **Table 4.6-6**, are present within or adjacent to the construction work area, they could be directly or indirectly impacted by construction activities during the 3-month construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, which would be a significant impact.

Implementation of the following mitigation measures would reduce impacts on special-status species to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats)**, **4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)** and **4.6-1o (Avoidance and Minimization Measures for California Red-legged frog and California Tiger Salamander)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; requiring measures to avoid and minimize impacts on native stands of Monterey Pines such as avoiding any

stands present to avoid tree loss and replacing trees that cannot be avoided to compensate for any loss; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts.

Staging Areas

There are eight staging areas located throughout the project area. **Table 4.6-3** in Section 4.6.1.10 lists the location of each staging area, a description of the site, habitat types present, and the special-status species with potential to occur within or adjacent to the staging areas. These facilities would be located outside of the MBNMS. The majority of the staging areas are located within developed or highly disturbed areas. However, there is potential for special-status species to occur in the vicinity of each of the staging area as listed in **Table 4.6-3**.

These special-status species include California tiger salamander, California red-legged frog, black legless lizard, silvery legless lizard, Coast Range newt, special-status plants, Smith's blue butterfly, Salinas kangaroo rat, nesting birds, roosting bats, and others listed in **Table 4.6-2**.

Special-status species that could be significantly impacted during use of the staging areas are indicated in **Table 4.6-6**. Although construction-related disturbance would be limited to the developed or highly disturbed areas, some special-status plant species could occur in areas adjacent to the developed and disturbed areas, including, but not limited to, Monterey spineflower, branching beach aster, Kellogg's horkelia, and Monterey ceanothus. If these special-status plant species, or others listed in **Table 4.6-6**, occur within or adjacent to the construction disturbance areas, they could be directly or indirectly impacted by construction activities during the construction period as described above under the heading *Overview of Potential Construction Effects on Plants*. This would be a significant impact.

Similarly, if California red-legged frog, California tiger salamander, Salinas kangaroo rat, black legless lizard, Coast Range newt, or Smith's blue butterfly are located in suitable habitat adjacent to the construction area; if raptors or special-status nesting passerines, roosting special-status bats, or other special-status wildlife species listed in **Table 4.6-6**, are present within or adjacent to the construction work area, they could be directly or indirectly impacted by construction activities during the construction period as described above under the heading *Overview of Potential Construction Effects on Wildlife*, which would be a significant impact.

Implementation of the following mitigation measures would reduce impacts on special-status species to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless**

Lizard, and Coast Horned Lizard), 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl), 4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1j (Avoidance and Minimization Measures for American Badger), 4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat), 4.6-1l (Avoidance and Minimization Measures for Special-status Bats), **4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander),** and **4.6-1p (Control Measures for Spread of Invasive Plants)**. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring measures to avoid and minimize impacts on western burrowing owl such as conducting pre-construction surveys to determine if owls are present, requiring a no-disturbance buffer around nesting sites or occupied burrows, and potentially excluding wintering burrowing owls from the work area, and compensating for loss of habitat; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these

species, if present, and compensating for permanent impacts; and requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction could be inconsistent with applicable regulatory requirements related to special-status species that were adopted for the purpose of avoiding or mitigating an environmental effect. Specifically, the project could be inconsistent with the FESA, Federal Migratory Bird Treaty Act, CESA, California Fish and Game Code, City of Marina General Plan Policies 4.112, 4.114, 4.115, 4.118, 4.119, and 2.10; City of Marina Local Coastal Land Use Plan Policies 25 and 26 and Planning Guideline entitled Rare and Endangered Species: Habitat Protection; City of Seaside Local Coastal Program Land Use Plan Policy NCR-CZ 1.1.C; Seaside Municipal Code Chapter 8.54; Monterey County Greater Monterey Peninsula Area Plan Policy GMP-3.9; Monterey County General Plan Policies OS-4.1, OS-5.1, OS-5.2, OS-5.4, OS-5.16, and OS-5.25; Monterey County North County Land Use Plan Policies 2.3.2.1, 2.3.2.10, 2.3.3.B6, 2.3.3.C2, NC-3.3, and NC-3.5 and Key Policy 4.3.4; Fort Ord Reuse Plan (Seaside) Biological Resource Policies A-4, B-1, D-1; and Fort Ord Reuse Plan (Monterey County) Biological Resource Policies A-9, B-1, D-1, which were established to avoid or mitigate special-status species impacts, respectively. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard), 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl), 4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1j (Avoidance and Minimization Measures for American Badger), 4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat), 4.6-1l (Avoidance and Minimization Measures for Special-status Bats), 4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander), 4.6-1p (Control Measures for Spread of Invasive Plants), 4.6-1q (Frac-out Contingency Plan), 4.12-1b (General Noise Controls for Construction Equipment)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures)** would reduce impacts on special-status species by: designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-

status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring measures to avoid and minimize impacts on western burrowing owl such as conducting pre-construction surveys to determine if owls are present, requiring a no-disturbance buffer around nesting sites or occupied burrows, and potentially excluding wintering burrowing owls from the work area, and compensating for loss of habitat; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; requiring specific measures to avoid and minimize impacts on American badger such as conducting pre-construction surveys to identify whether any badger dens are present and avoiding and/or passively relocating badgers from dens as necessary to avoid and minimize impacts to badgers within active dens; requiring measures to avoid and minimize impacts on Monterey dusky-footed woodrat such as relocating active nests within the construction area to areas outside of the construction area to minimize impacts to individual woodrats from construction activities; requiring measures to avoid and minimize impacts on special-status bats such as limiting removal of trees or structures with potential bat roosting habitat to the time of year when bats are active to avoid disturbing bats during the maternity roosting season or months of winter torpor; requiring measures to avoid and minimize impacts on native stands of Monterey Pines such as avoiding any stands present to avoid tree loss and replacing trees that cannot be avoided to compensate for any loss; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; requiring preparation of a Frac-out Contingency Plan and implementation of measures

in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on special-status species and their habitat; requiring implementation of noise controls for construction equipment to reduce noise impacts on special-status wildlife species; and requiring measures to minimize light spillover outside of the construction area to minimize construction lighting impacts on special-status wildlife species. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Impacts on special-status species habitat are described for each project facility above; however, portions of the work areas for some facilities overlap with the work area for other facilities. This section includes a summary of the overall project impacts to special-status species habitat, which accounts for areas of overlap. Overall, construction of the entire proposed project has the potential to temporarily impact approximately 8.0 acres and permanently impact approximately 1.0 acre of potential western snowy plover habitat,[20] temporarily impact approximately 2.1 acres of Smith's blue butterfly habitat,[21] temporarily impact approximately 12.3 acres and permanently impact approximately 15.4 acres of California tiger salamander habitat, and temporarily impact approximately 13.3 acres and permanently impact approximately 15.5 acres of California red-legged frog habitat.

Construction activities associated with all proposed project facilities have the potential to result in significant impacts on special-status species. For all facilities, implementation of the proposed mitigation measures would reduce impacts on special-status species to a less-than-significant level.

Mitigation Measures

Mitigation measures provided below and in Impact 4.6-2 and Impact 4.6-3 include specific restoration and compensation requirements for temporary and permanent impacts for sensitive biological resources. **Table 4.6-7** below includes a summary of these restoration and compensation requirements.

[20] Impact 4.6-1 analyzes impacts from construction activities on western snowy plover. Impacts from maintenance activities on western snowy plover habitat are analyzed in Impact 4.6-6. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of potential western snowy plover habitat. This maintenance area is assumed to be located within the 8-acre temporary construction footprint. Therefore, the proposed project (including construction and maintenance) would result in a permanent impact to 7 acres (1 acre from construction and 6 acres from maintenance) and temporary impact to 2 acres (from construction) of western snowy plover habitat.

[21] Impact 4.6-1 analyzes impacts from construction activities on Smith's blue butterfly. Impacts from maintenance activities on Smith's blue butterfly habitat are analyzed in Impact 4.6-6. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 1.6 acre of Smith's blue butterfly habitat. This maintenance area is assumed to be located within the 1.6-acre temporary construction footprint for the subsurface slant wells. The proposed project (including construction and maintenance) would result in a permanent impact to 1.6 acre of Smith's blue butterfly habitat (from construction and maintenance of the subsurface slant wells) and temporary impact to 0.5 acre from construction of other facilities.

TABLE 4.6-7
SUMMARY OF TERRESTRIAL BIOLOGICAL RESOURCE MITIGATION MEASURE RESTORATION AND COMPENSATION REQUIREMENTS*

Resource	Temporary Impact Restoration and/or Compensation Requirements	Permanent Impact Compensation Requirements
Protected trees	N/A	As required by local plans, policies, and ordinances as listed in Table 4.6-10
Western burrowing owl	Restore temporarily impacted habitat; no compensation required	Replacement of the habitat acreage, number of burrows, and number of burrowing owls impacted (1:1 compensation)
Secondary habitat as defined in the City of Marina's LCLUP (and not within ESHA as defined by the CCC)	Restore temporarily impacted habitat; no compensation required	1:1 compensation
Special-status plants	Restore temporarily impacted habitat; 1:1 compensation	2:1 compensation
Native stands of Monterey Pine	N/A	2:1 compensation
• Smith's blue butterfly • California tiger salamander and California red-legged frog • Sensitive natural communities, ESHA, primary habitat as defined in the City of Marina's LCLUP, or critical habitat • Jurisdictional waters	Restore temporarily impacted habitat; no compensation required	2:1 compensation
Western snowy plover	Restore temporarily impacted habitat; no compensation required	3:1 compensation

NOTE:

* This table provides a summary of the restoration and compensation requirements provided in the terrestrial resource mitigation measures. See the full text of the terrestrial resource mitigation measures for a detailed description of restoration and compensation requirements.

Mitigation Measure 4.6-1a applies to all project facilities: the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System–Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.

Prior to initiation of construction, CalAm and/or representatives of CalAm shall retain a qualified Lead Biologist[22] to oversee compliance with avoidance and minimization measures for all special-status species and sensitive habitats. The Lead Biologist shall be

[22] The term "qualified biologist" or "qualified Lead Biologist" for surveys is defined as an individual who shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology or closely related field and has demonstrated prior field experience using accepted resource agency techniques for the survey prescribed, and who possesses all appropriate USFWS, NMFS, and CDFW permits. The term "biological monitor" or "qualified biological monitor" is defined as holding similar educational credentials to those of a qualified biologist and who has functioned as an environmental inspector or monitor on at least two construction projects within the preceding two years.

onsite, or shall appoint qualified biologists and/or qualified biological monitors to be onsite, during all fencing and ground disturbance activities. The Lead Biologist, qualified biologists, and qualified biological monitors shall be subject to approval by resource agencies with jurisdiction over the special-status species with potential to occur at the project site (and local agencies, if required). Only the Lead Biologist and/or qualified biologists may lead protocol surveys and relocate special-status species, as authorized by the resource agencies with jurisdiction over these species.

In the event that construction-related activities have the potential to violate the prescribed special-status species and habitat protection measures, the project Lead Biologist, or other appointed qualified biological monitors shall report to construction or operational site supervisors with authority to stop work to prevent any violations. Work shall proceed only after the construction-related hazards to special-status species and habitats are removed. If a special-status wildlife species is present, work shall proceed only if the species is no longer at risk of injury or death. Violations shall be thoroughly documented as part of compliance monitoring activities.

The Lead Biologist shall ensure that all compliance monitoring activities are documented on a daily basis, and shall prepare a summary monitoring report on a monthly basis to be submitted to regulatory agencies upon their request. The monthly summary monitoring report shall provide information regarding the worker awareness training (see Mitigation Measure 4.6-1b below), surveys, and any observed special-status species, including any accidental injuries or fatalities. The monthly report shall also document the effectiveness and practicality of the prescribed avoidance and minimization measures and recommend modifications to the measures if needed. The Lead Biologist shall supply agency staff with copies of compliance records, including any reports of non-compliance, upon request.

The Lead Biologist shall have in her/his possession a copy of all compliance measures while work is being conducted onsite, and shall ensure that CalAm's onsite representatives and contractors also maintain copies of the compliance measures on the site. To facilitate the Lead Biologist's role, CalAm shall ensure that the Lead Biologist is fully apprised of all decisions that change or materially affect the schedule, methods, and location of work that is subject to the protective measures for biological resources.

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1b applies to all project facilities.

Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.

Prior to starting work, all construction workers at the project areas shall attend a Construction Worker Environmental Awareness Training and Education Program developed and presented by the Lead Biologist, appointed qualified biologist, and/or qualified biological monitor. The program shall include information on each federal and state-listed species, as well as other special-status wildlife and plant species and sensitive natural communities that may be encountered during construction activities. The training shall include: information on special-status species' life history and legal protections; the definition of "take" under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA); the measures CalAm and/or its contractors have committed to implementing to protect special-status species and sensitive natural communities; reporting requirements and communication

protocols; specific measures that each worker shall employ to avoid "take" of special-status species; and penalties for violation of FESA and/or CESA. Training shall be documented as follows:

1. An acknowledgement form shall be signed by each worker indicating that environmental training has been completed.

2. A sticker shall be placed on hard hats indicating that the workers have completed the environmental training. Construction workers shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker.

3. A copy of the training transcript/training video and/or DVD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms, shall be submitted to the CPUC.

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1c applies to all project components.

Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.

CalAm's construction contractor(s) shall implement the following general avoidance and minimization measures to protect special-status species and sensitive natural communities at the facility sites during construction:

1. The construction footprint, staging areas, equipment access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and flagging prior to construction to avoid natural resources outside of the project area. Any construction-related disturbance outside of these boundaries, including driving, parking, temporary access, sampling or testing, or storage of materials, shall be prohibited without explicit approval of the Lead Biologist.

2. New access driveways shall not extend beyond the delineated construction work area boundary. Construction vehicles shall pass and turn around only within the delineated construction work area boundary or local road network. Where new access is required outside of existing roads or the construction work area, the route shall be clearly marked (i.e., flagged and/or staked) prior to being used, subject to review and approval of the Lead Biologist.

3. Vehicle speeds within the project area shall not exceed 15 miles per hour on roads within the sites.

4. Excavated soils shall be stockpiled in disturbed areas lacking native vegetation. Stockpile areas shall be marked by the Lead Biologist to define the limits where stockpiling can occur.

5. Standard best management practices (such as setbacks and use of silt fences and fiber rolls) shall be employed to prevent loss of habitat due to erosion caused by project related impacts (i.e., grading or clearing for new roads). All detected erosion shall be remedied immediately upon discovery.

6. Fueling of construction equipment shall take place within existing paved areas, and at least 50 feet from drainages (including streams, creeks, ditches, culverts, or storm

drain inlets) and native habitats. Contractor equipment shall be checked for leaks prior to operation and repaired when leaks are detected. Fuel containers shall be stored within appropriately-sized secondary containment barriers.

7. The introduction of exotic plant species shall be avoided through physical or chemical removal and prevention. Measures to prevent the introduction of exotic plants into the construction site via vehicular sources shall include implementing Track clean or other method of vehicle cleaning for vehicles coming to the site and leaving the site. Earthmoving equipment shall be cleaned prior to transport to the project area. Weed-free rice straw or other certified weed-free straw shall be used for erosion control. Weed populations introduced into the site during construction shall be eliminated by chemical and/or mechanical means approved by California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS).

8. Use of herbicides as vegetation control measures shall be used only when mechanical means have been deemed ineffective. All uses of such herbicidal compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and state and federal legislation as well as additional project-related restrictions deemed necessary by the CDFW and/or USFWS. No rodenticides shall be used.

9. Prior to the start of construction at any proposed facility site where special-status amphibians, reptiles and mammals have a moderate or high potential to occur, the construction work area boundary shall be fenced with a temporary exclusion fence to prevent special-status wildlife from entering the site during construction (see **Table 4.6-6** for the list of special-status species that could be significantly impacted at each project facility site). The exclusion fencing shall be constructed of metal flashing, plastic sheeting, or other materials that will prohibit California horned lizards, Monterey shrews, and other special-status reptiles, amphibians, and rodents from climbing the fence. If meshing is used it shall be of a size that would not catch wildlife. The fencing shall be buried a minimum of 6 inches below grade to secure the fence and extend a minimum of 30 inches above grade. The fencing shall be inspected by the Lead Biologist or qualified biological monitor on a daily basis during construction activities to ensure fence integrity. Any needed repairs to the fence shall be performed on the day of their discovery. Fencing shall be installed and maintained during all phases of construction. Final fence design and location shall be determined in consultation with USFWS and CDFW. Exclusion fencing shall be removed once construction activities are complete.

10. If special-status wildlife species are found on the site immediately prior to construction or during project construction, construction activities shall cease in the vicinity of the animal until the animal moves on its own (if possible, as determined by the Lead Biologist or biological monitor) outside of the project area. Additional mitigation measures specific to special-status plants; Smith's blue butterfly; black legless lizard, silvery legless lizard, and coast horned lizard; western burrowing; American badger; Monterey dusky-footed woodrat, California red-legged frog and California tiger salamander are described in Mitigation Measure 4.6-1f, 4.6-1g, 4.6-1h, 4.6-1j 4.6-1k, and 4.6-1o. The Lead Biologist and Lead Agencies shall consult with wildlife resource agency(ies) with jurisdiction over the species regarding any additional avoidance, minimization, or mitigation measures that may be necessary if the animal does not move on its own. A report shall be prepared by the Lead

Biologist to document the activities of the animal within the site; all fence construction, modification, and repair efforts; and movements of the animal once again outside the exclusion fence. This report shall be submitted to the CPUC and pertinent wildlife agencies with jurisdiction over the wildlife species.

11. Vegetation removal and grading activities shall be conducted during daylight hours. Immediately prior to conducting vegetation removal or grading activities inside fenced exclusion areas, the Lead Biologist or a qualified biologist shall survey within the exclusion area to ensure that no special-status species are present. The Lead Biologist or a qualified biologist shall also monitor vegetation removal or grading activities inside fenced exclusion areas for the presence of special-status species. If special-status species are present, then measure 10 above shall be implemented.

12. To prevent the inadvertent entrapment of special-status wildlife during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at the close of each working day, or escape ramps constructed of earth fill or wooden planks shall be positioned within the excavations to allow special-status wildlife to escape on their own. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If listed species are trapped, they shall only be relocated with authorization from USFWS and/or CDFW, as appropriate.

13. All construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods and with a diameter of 4 inches or more shall be inspected for special-status wildlife before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a special-status animal is discovered inside a pipe, that section of pipe shall not be moved until the appropriate resource agency, with jurisdiction over that species, has been consulted to determine the appropriate method for relocation. If necessary, under the direct supervision of the qualified biologist, the pipe may be moved once to remove it from the path of construction activity until the animal has escaped.

14. All vertical tubes used in project construction, such as chain link fencing poles or signage mounts, shall be temporarily or permanently capped at the time they are installed to avoid the entrapment and death of special-status birds.

15. Water used for dust abatement shall be minimized in an effort to avoid the formation of puddles that could attract common ravens and other predators to the construction work areas.

16. No vehicle or equipment parked in the project area shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of wildlife. If present, the animal shall be left to move on its own.

17. All vehicles and equipment shall be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Lead Biologist shall be informed of any hazardous spills within 24 hours of the incident. Hazardous spills shall be immediately cleaned up and the contaminated soil shall be properly disposed of at a licensed facility.

18. A trash abatement program shall be implemented during construction. Trash and food items shall be contained in closed containers and removed from the construction site

daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.

19. Workers shall be prohibited from feeding wildlife and bringing pets and firearms to the construction work areas.

20. Intentional killing or collection of wildlife species, including special-status species in the project area and surrounding areas shall be strictly prohibited.

21. All temporarily disturbed areas shall be returned to pre-project conditions or better. Existing access roads within the CEMEX site shall be returned to their existing use.

22. Only natural-fiber, biodegradable meshes and coir rolls shall be used for erosion control and landscaping. Photodegradable and other plastic mesh erosion control products shall not be used.

23. Invasive plant species shall not be installed at any restoration or mitigation site.

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1d applies to the subsurface slant wells and the Source Water Pipeline and Source Water Pipeline Optional Alignment.

Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover.

Construction contractors shall be required to implement the following measures to protect western snowy plover:

1. CalAm shall require that its construction contractor(s) implement all avoidance and minimization measures required by USFWS as part of the FESA Section 7 consultation between the ONMS and USFWS.

2. Construction work at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant shall occur during the western snowy plover non-breeding season (defined as October 1 through February 28) unless otherwise approved by the USFWS.

3. For work that cannot be completed during the non-nesting season, the following steps to obtaining USFWS approval shall be implemented:

    a. CalAm shall include in final design submittals to the Lead Agencies and USFWS proposed feasible methods of avoidance and minimization of impacts on nesting western snowy plovers. Such measures may include, but are not limited to, installation of visual or noise barriers, limiting the type of construction, installation of noise controls on equipment, and other measures that achieve visual separation and/or noise reduction. CalAm shall obtain concurrence from Lead Agencies and USFWS on this proposed suite of avoidance and minimization measures prior to start of construction of the subsurface slant wells and Source Water Pipeline. Measures shall be implemented as necessary as described in item d, below.

    b. CalAm shall engage the services of Point Blue or other qualified western snowy plover biologist (subject to approval by USFWS) to perform one year of surveys during the nesting season preceding construction to determine whether

nesting is occurring within sight or audible range of the slant well head locations or Source Water Pipeline.

c. If findings from the nesting season survey are negative, then the qualified western snowy plover biologist shall conduct additional pre-construction nesting surveys within 24 hours of initiation of construction activities within 300 feet of all construction work areas to determine if any snowy plover nests are present. If there is a break of 3 days or more in construction activities, a survey shall be conducted before construction begins again.

d. If nests are observed within 300 feet of construction activities, the qualified biologist shall notify and consult with USFWS to determine whether construction may proceed, based on detailed information on location of nest(s), proximity to construction, topography, and noise environment. Additional avoidance or minimization measures shall be implemented prior to initiating construction activities. Construction may proceed if, with the incorporation of such avoidance or minimization measures, the work would not cause an adult to abandon an active nest or young, change an adult's behavior so it could not care for an active nest or young, or directly impact an adult or young, or as allowed within the take provisions authorized by USFWS.

e. The biologist shall conduct periodic monitoring during construction to determine if there are any nest starts. Nest starts shall be reported to USFWS to determine whether construction on all or portions of the slant wells or Source Water Pipeline need to be suspended for the duration of nesting and fledging. The biologist will inform the decision with detailed information on location of nest(s), proximity to construction, topography, and noise environment. Construction may continue, subject to USFWS approval, if, with the incorporation of avoidance or minimization measures identified under item a, above, and deemed necessary by USFWS, the work would not cause an adult to abandon an active nest or young, change an adult's behavior so it could not care for an active nest or young, or directly impact an adult or young, or as allowed within the take provisions authorized by USFWS.

4. For construction during the breeding season that is approved by USFWS, visual barriers shall be installed around any work area located within line of sight of potential nesting habitat. Visual barriers shall be constructed at an adequate height and width to visually block construction equipment and construction crews from snowy plover nesting habitat. Final designs of the visual barriers shall be coordinated with USFWS. Existing sand dunes may serve as visual barriers.

5. For work conducted during the non-nesting season, a qualified biologist will evaluate the nature and extent of wintering plover activity in the project area no more than 3 days prior to construction and inform CalAm so they can implement avoidance and minimization measures, such as those listed in subsection 3a, that avoid or minimize disturbance to plovers. The biologist shall conduct periodic monitoring during construction to ensure that minimization measures are implemented to avoid or minimize disturbance to plovers. The measures shall ensure that wintering plovers are not directly impacted by construction activities.

6. CalAm shall restore all temporarily impacted potential snowy plover habitat following construction. At a minimum the restored site shall meet the following performance standards by the fifth year following restoration:

a. Temporarily impacted areas are returned to pre-project conditions or greater

b. Native vegetation cover shall be at least 70 percent of baseline native vegetation cover

c. The restoration area shall have no more cover by invasives than the baseline

Restoration and performance standards shall be described in a Habitat Mitigation and Monitoring Plan consistent with **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)**.

7. Anti-perching devices, such as bird spikes or wire strips, shall be installed and maintained on the top of the proposed electrical control cabinets to discourage potential plover predators.

8. Permanent loss of western snowy plover habitat, to be determined based on final design and construction specifications, will be compensated at a minimum ratio of 3:1. Compensation may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat for western snowy plover.

   Prior to project implementation, CalAm shall prepare a Habitat Mitigation and Monitoring Plan, as described in Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan), which will describe either onsite or offsite creation, restoration, enhancement, or preservation. The plan will include actions to benefit western snowy plover, in conjunction with providing mitigation for special-status plants, as described in Mitigation Measure 4.6-1e, below. The plan will be subject to USFWS input and approval. It will describe creation, restoration, and/or enhancement methods that may include, but not be limited to removal of ice plant, stabilization of dune sand, planting, seeding or other means of re-establishing native plant species. It will describe measures to manage recreational activities to benefit western snowy plover. Measures may include requiring that dogs are on leash, fencing is installed around breeding areas, and kite flying is restricted in the breeding season.

   CalAm will identify and secure access rights and other approvals to implement the plan, and will execute the plan. CalAm will conduct, or will support a qualified third party monitor to conduct annual monitoring of performance measures for a minimum of five years, such as cover, density and diversity of native plant species, thresholds of non-native plant abundance, and stability of dune sands. At a minimum, the compensation areas shall meet the following performance standards by the fifth monitoring year:

   a. Native vegetation cover shall be at least 70 percent of the native vegetation cover in the impact area.

   b. The compensation areas shall not be heavily vegetated.

   c. Invasive species cover shall be less than or equal to the invasive species cover in the impact area

   d. No barrier between the compensation site and the water

   e. No significant erosion

This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of western snowy plover habitat. Compensatory mitigation

for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.

Mitigation Measure 4.6-1e applies to: the: the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Ryan Ranch-Bishop Interconnection Improvements, Main System–Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants.

Prior to construction, CalAm or its contractor shall conduct focused botanical survey(s) for special-status plants in all potentially suitable habitat during the appropriate blooming period for each species and in accordance with the guidelines established by California Department of Fish and Game in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG, 2009). Maps depicting the results of these surveys shall be prepared for use in final design. If more than two years elapse between the focused botanical surveys and commencement of ground disturbance activities, a final set of appropriately-timed focused botanical surveys shall be conducted and populations mapped. The results of these final surveys shall be combined with previous survey results to produce habitat maps showing habitat where the special-status plants have been observed during either of the focused botanical surveys conducted for each facility site.

Special-status plant species are widespread throughout the project area, and could occur at the following facility locations: subsurface slant well site, MPWSP Desalination Plant site, ASR-5 and ASR-6 Wells sites, and along the Source Water Pipeline, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional Alignment, the Castroville Pipeline and Castroville Pipeline Optional Alignments, new Transmission Main and new Transmission Main Optional Alignment, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements, and at proposed staging areas.

1. To the extent feasible, project facilities shall be sited to avoid permanent and temporary impacts on special-status plants and their required constituent habitat elements.

2. Special-status plants located within temporary construction areas shall be fenced or flagged for avoidance (if feasible) prior to construction. The Lead Biologist or the appointed biological monitor shall ensure compliance with off-limits areas. If avoidance is not feasible, seasonal avoidance measures (i.e., limited operating periods based on timing of annual plant dormancy), or temporarily placing heavy fabric or wooden mats over the affected habitat shall be applied as appropriate. Topsoil salvage and site restoration may also be implemented, to be determined by the Lead Biologist and USFWS and CDFW, as appropriate, to ensure the site is returned to pre-construction conditions.

3. For potential impacts on listed plant species, such as Menzies' wallflower, sand gilia, Monterey spineflower, and Yadon's rein orchid, CalAm shall comply with the FESA CESA by implementing any requirements from USFWS and CDFW consultation. For state listed rare plants, a state Incidental Take Permit (ITP) may be required which would provide conditions for allowable take and measures to compensate impacts on rare plants.

4. For HMP plant species on former Fort Ord lands, plants shall be salvaged, under the direction of a qualified biologist, as necessary, per the requirements of the HMP, and in accordance with any requirements from USFWS and CDFW.

5. If avoidance is not feasible, compensation for temporary or permanent loss of special-status plant occurrences, in the form of land purchase or restoration, shall be provided at a minimum 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts. Compensation for loss of special-status plant populations may include the restoration or enhancement of temporarily impacted areas, purchase and permanent stewardship of known occupied habitat or the restoration and reintroduction of populations in degraded, unoccupied habitat. Restoration or reintroduction may be located on- or offsite. At a minimum, the compensation areas shall meet the following performance standards by the fifth year following initiation of compensation efforts:

    a. The compensation area shall be at least the same size as the impact area.

    b. Native vegetation cover shall be at least 70 percent of the native vegetation cover in the impact area

    c. Population of the impacted special-status species shall have either:

        i. at least 60 percent cover of the impact area, or

        ii. at least 70 percent survival of installed plants

    d. Invasive species cover shall be less than or equal to the invasive species cover in the impact area

    Additionally, restored populations shall have greater than the number of individuals of the impacted population, in an area greater than or equal to the size of the impacted population, for at least 3 consecutive years without irrigation, weeding, or other manipulation of the restoration site.

6. CalAm shall prepare a **Habitat Mitigation and Monitoring Plan, as described in Mitigation Measure 4.6-1n** (Habitat Mitigation and Monitoring Plan), which will describe either onsite or offsite restoration.

    Alternatively, compensatory credits may be purchased through a USFWS- and/or CDFW-approved mitigation bank, or USFWS-approved Habitat Conservation Plan.

This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of special-status plants occurring at that site. Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.

Mitigation Measure 4.6-1f applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, New Transmission Main and New Transmission Main Optional Alignment, and staging areas.

Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.

CalAm or its construction contractor(s) shall implement the following measures to reduce impacts on Smith's blue butterfly during construction:

1. CalAm shall require that its construction contractor(s) implement all avoidance and minimization measures required by USFWS as part of the FESA Section 7 consultation between ONMS and USFWS.

2. Floristic botanical surveys of all suitable habitat for coast buckwheat and seacliff buckwheat, both of which are host plants to Smith's blue butterfly, shall be conducted by a qualified biologist during project design and prior to project implementation. Maps depicting the results of these surveys shall be prepared to document the location of the host plants within or adjacent to the project area.

3. Construction of project elements shall be planned to avoid mapped host plants for Smith's blue butterfly whenever feasible.

4. If it is not feasible to avoid disturbance to host plants during project construction, the following shall be implemented:

    a. Prior to the start of construction activities and before conducting preconstruction surveys for Smith's blue butterfly, the Lead Biologist or an appointed qualified biologist shall prepare a protect-in-place and relocation plan for Smith's blue butterfly and its host plants. If either is found in areas subject to permanent habitat or plant loss, then plants would be salvaged and relocated in accordance with the plan. The relocation plan shall be submitted to USFWS for approval. The relocation plan shall define the study area, describe appropriate handling and relocation methods (such as digging up and removing individual plants, duff, and/or soil and moving them to a new location), and identify appropriate relocation sites. Surveys shall be conducted at relocation sites to determine the existing Smith's blue butterfly population size and ensure that the relocation sites will not become overpopulated. Only relocation sites that are not overpopulated and have suitable habitat conditions (e.g. soils, vegetation, etc.) shall be used.

    b. If preconstruction surveys identify butterflies or host plants in areas subject only to temporary disturbance that do not require plant removal, then the plants, and leaf litter and soil which may hold dormant butterfly pupae, would be protected in place with heavy fabric, plywood or other mats (depending on the stability of the underlying soil) to allow construction vehicles to pass over. Following construction, the fabric or mats would be carefully removed and the area allowed to recover. Short-term damage to buckwheat populations is expected to be low.

    c. A qualified biologist shall survey the work area no more than 30 days before the onset of ground disturbance. If any life stage of the Smith's blue butterfly or its host plants is found within the project area boundary, the Lead Biologist

or qualified biologist shall relocate plants, duff, and/or soil, from the site before construction begins per the relocation plan described above.

5. Upon completion of construction activities, CalAm shall restore Smith's blue butterfly habitat temporarily impacted during construction. Compensatory mitigation for permanent impacts shall be provided either onsite or offsite at a minimum ratio of 2:1. Compensation for loss of host plant populations may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:

    a. Temporarily impacted areas are returned to pre-project conditions or greater

    b. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover

    c. The population of coast buckwheat and/or seacliff buckwheat shall have either:

        i. at least 60 percent cover of the baseline/impact area, or

        ii. at least 70 percent survival of installed plants

    d. No more cover by invasives than the baseline/impact area

    Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)**.

    Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.

This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of Smith's blue butterfly habitat. Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.

Mitigation Measure 4.6-1g applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, and staging areas.

Mitigation Measure 4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.

The Lead Biologist shall appoint a qualified biologist possessing a Scientific Collecting Permit issued by CDFW for black legless lizard, silvery legless lizard, and coast horned lizard to conduct preconstruction surveys for legless lizards and coast horned lizards within 24 hours prior to the initiation of ground disturbing activities or vegetation clearing in suitable habitats such as central dune scrub, coast sage scrub, and central maritime chaparral.

1. Prior to conducting the surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for the lizards, and identifies nearby relocation sites where the lizards would be relocated if found during the preconstruction surveys. Surveys shall be conducted at relocation sites to determine the existing lizard population size and ensure that the relocation sites will not become overpopulated. Only relocation sites that are not overpopulated and have suitable habitat conditions (e.g., soils, moisture content, vegetation, aspect) shall be used. The relocation plan shall be submitted to CDFW for approval prior to the start of construction activities.

2. Legless lizard surveys shall be conducted by hand raking soil and leaf litter beneath brush. If Legless lizards are encountered, they shall be salvaged and relocated per the relocation plan.

3. Coast horned lizard surveys shall be conducted by walking transects spaced appropriately to allow for 100 percent visual coverage in search of lizards under shrubs, along gravelly-sandy areas, or any other suitable habitat. Any lizard encountered shall be relocated per the relocation plan.

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1h applies to the Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, New Transmission Main and New Transmission Main Optional Alignment, and staging areas.

Mitigation Measure 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl.

The following measures shall be implemented to avoid and minimize impact on western burrowing owl:

1. Prior to the start of construction activities in or around suitable burrowing owl habitat, the Lead Biologist shall appoint a qualified biologist to conduct protocol surveys for burrowing owl. The survey methodology shall be consistent with the methods outlined in the *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012). The surveys shall consist of walking parallel transects spaced 7 to 20 meters (23 to 65 feet) apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. A copy of the protocol survey results shall be submitted to the CPUC and CDFW upon request. Protocol surveys shall be conducted within both the breeding and non-breeding seasons to determine the presence/absence of burrowing owls.

2. A qualified biologist shall conduct preconstruction surveys of the permanent and temporary impact areas in or around suitable burrowing owl habitat to locate active breeding or wintering burrowing owl burrows not more than less than 14 days prior to construction and/or prior to exclusion fencing installation. The methodology for the preconstruction surveys shall be consistent with the methods outlined in the *Staff Report on Burrowing Owl Mitigation*.

3. If no burrowing owls are detected, no additional action is necessary.

4. In areas positive for burrowing owl presence, the Lead Biologist or qualified biological monitor shall be onsite during all construction activities in areas where burrowing owls are determined to be present.

5. If burrowing owls are detected during the nesting and fledging seasons (April 1 to August 15 and August 16 to October 15, respectively), no ground-disturbing activities shall be permitted within the distances specified in **Table 4.6-8** from an active burrow, unless otherwise authorized by CDFW. The specified buffer distance ranges from 656 feet to 1,640 feet, according to the time of year and the level of disturbance. Buffers shall be established in accordance with **Table 4.6-8** and occupied burrows shall not be disturbed during the nesting season unless a qualified biologist approved by CDFW verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. Burrowing owls shall not be moved or excluded from burrows during the breeding season (April 1 to October 15). The buffer distance can be reduced with authorization from CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young.

6. During the non-breeding (winter) season (October 16 to March 31), consistent with **Table 4.6-8**, ground-disturbing work shall maintain a distance ranging from 164 to 1,640 feet from any active burrows, depending on the level of disturbance, to be determined through coordination with CDFW. The buffer distance can be reduced with authorization from CDFW if construction activities would not cause the owl to abandon its winter burrow. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be displaced from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation*.

TABLE 4.6-8
BURROWING OWL BURROW BUFFERS

Location	Time of Year	Level of Disturbance		
		Low	Medium	High
Nesting sites	April 1–August 15	656 feet	1,640 feet	1,640 feet
Nesting sites	August 16–October 15	656 feet	656 feet	1,640 feet
Any occupied burrow	October 16–March 31	164 feet	328 feet	1,640 feet

SOURCE: CDFG, 2012.

7. Burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed by the Lead Biologist, approved by CDFW, and submitted to the CPUC. At a minimum, the plan shall include the following:

   a. Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding the use of a scope to visually inspect the burrow;

   b. Specifications regarding the type of scope to be used and the appropriate timing of using a scope to visually inspect burrows to avoid disturbance of individual owls;

c. Occupancy factors to look for and what shall guide determination of vacancy and excavation timing;

d. Methods for burrow excavation. Excavation using hand tools with refilling to prevent reoccupation is preferable;

e. Removal of other potential owl burrow surrogates or refugia onsite;

f. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

g. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use and to avoid take;

h. Methods to ensure the impacted site shall continually be made inhospitable to burrowing owls and fossorial23 mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

8. Site monitoring shall be conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Prior to exclusion activities, daily monitoring shall be conducted for one week to confirm young owls have fledged if the exclusion occurs immediately after the end of the breeding season.

9. If burrowing owls are found on-site, compensatory mitigation for loss of breeding and/or wintering habitat shall be implemented onsite or offsite in accordance with burrowing owl *Staff Report on Burrowing Owl Mitigation* guidance and in consultation with CDFW. If compensatory mitigation is necessary, CalAm shall detail the compensatory mitigation in a Burrowing Owl Habitat Mitigation Plan (which shall be incorporated into the Habitat Mitigation and Monitoring Plan described in **Mitigation Measure 4.6-1n**). At a minimum, the following measures shall be implemented:

   a. Temporarily disturbed habitat shall be restored to pre-construction conditions, including soil decompaction and revegetation.

   b. Permanent impacts on nesting, occupied and satellite burrows, and any other burrowing owl habitat shall be mitigated such that the habitat acreage, number of burrows, and number of burrowing owls impacted are replaced. Compensatory mitigation may include the permanent conservation of lands with similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) as those lands where the permanent loss of habitat would occur. Conservation lands shall provide habitat for burrowing owl nesting, foraging, wintering, and/or dispersal (i.e., during breeding and nonbreeding seasons) comparable to or better than that of the impact area, and with sufficiently large acreage, and presence of fossorial mammals.

      Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.

23 Adapted to digging or burrowing.

Mitigation Measure 4.6-1i applies to all project components.

Mitigation Measure 4.6-1i: Avoidance and Minimization Measures for Nesting Birds.

This measure applies to all nesting birds protected by the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, except for western snowy plover and western burrowing, which are addressed in Mitigation Measure 4.6-1d and 4.6-1h, respectively.

Nesting birds may be present at all of the proposed facility sites. A qualified biologist shall conduct preconstruction avian nesting surveys prior to initiation of construction activities at all facility sites, unless otherwise indicated below.

1. No preconstruction surveys or avoidance measures are required for construction activities that would be completed entirely during the non-nesting season (September 16 to January 31).
2. For all construction activities scheduled to occur during the nesting season (February 1 to September 15), the qualified biologist shall conduct a preconstruction avian nesting survey no more than 10 days prior to the start of staging, site clearing, and/or ground disturbance. Copies of the survey results shall be submitted to the CPUC.
3. If construction activities at any given facility site begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required as long as a similar type of construction continues.
4. If there is a break of 10 days or more in construction activities during the breeding season, a new nesting bird survey shall be conducted before reinitiating construction.
5. The surveying biologist shall be capable of determining the species and nesting stage without causing intrusive disturbance. The surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds.

If active nests are found in the project area or vicinity (500 feet for raptors and 300 feet for other birds), the nests shall be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline and, once work commences, all nests shall be continuously monitored to detect any behavioral changes as a result of the project, if feasible. If behavioral changes are observed, work causing the change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. The avoidance and minimization measures shall ensure that the construction activities do not cause the adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young.

If continuous monitoring is not feasible, a no-disturbance buffer (at least 500 feet for raptors and 250 feet for other birds [or as otherwise determined in consultation with CDFW and USFWS] shall be created around the active nests). The buffer distance can be reduced with authorization from CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the project operator shall require that ground disturbance be delayed until after the birds have fledged.

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1j applies to the MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1j: Avoidance and Minimization Measures for American Badger.

The following measures shall be implemented to avoid and minimize impacts on American badger:

1. A qualified biologist shall conduct preconstruction surveys for American badger dens prior to the start of construction at potentially affected sites. The survey results shall be submitted to the CPUC.

2. Areas of suitable habitat for American badger in the project area include fallow agricultural and grazing land and non-native grasslands. Surveys shall be conducted wherever these vegetation communities exist within 100 feet of the project area boundary. Along pipeline alignments surveys shall be phased to occur within 14 days prior to disturbance along that portion of the alignment.

3. If no potential American badger dens are found during the preconstruction surveys, no further action is required.

4. If the biologist determines that any potential dens identified during the preconstruction surveys are inactive, the biologist shall excavate the dens by hand with a shovel to prevent use by badgers during construction.

5. If active badger dens are found during the course of preconstruction surveys, the following measures shall be taken to avoid and minimize adverse effects on American badger:

    a. Relocation shall be prohibited during the badger pupping season (typically February 15 to June 1).

    b. Construction activities shall not occur within 50 feet of active badger dens observed outside of the project area.

    c. The Lead Biologist shall contact CDFW immediately if natal badger dens are detected. Construction activities shall not occur within 200 feet of an active natal badger den. This buffer may be reduced, if approved by CDFW, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.

If the biologist determines that potential dens within the project area, and outside the breeding season, may be active, the biologist shall notify the CDFW. Badgers shall be passively relocated from active dens during the nonbreeding season. Passive relocation may include incrementally blocking the den entrance with soil, sticks, and debris for three to five days to discourage use of these dens prior to project disturbance. After the qualified biologist determines that badgers have abandoned any active dens found within the project area, the dens shall be hand-excavated with a shovel to prevent re-use during construction.

Mitigation Measure 4.6-1k applies to the Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1k: Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat.

The following measures shall be implemented to avoid and minimize impacts on Monterey dusky-footed woodrat:

1. A qualified wildlife biologist shall conduct preconstruction surveys for Monterey dusky-footed woodrat. The surveys shall be conducted within 14 days prior to the start of construction in suitable habitat and shall identify any woodrat nests located within 50 feet of anticipated construction disturbance areas.

2. If woodrat nests are found during the preconstruction surveys, the wildlife biologist shall conduct additional surveys throughout the duration of construction activities at the potentially affected facility site to identify any newly constructed woodrat nests.

3. If nests are observed outside of the construction area, the qualified biologist shall demarcate a minimum 50-foot buffer area with orange construction fencing and require that all construction activities and disturbance remain outside of the fencing.

4. Active woodrat nests located within the anticipated construction disturbance areas shall be relocated. Nests shall be relocated outside of the peak breeding season, (peak breeding season is typically February through November) to minimize disturbance to young woodrats. Relocation of woodrats and/or their nests shall be conducted by the Lead Biologist or qualified wildlife biologist as follows:

    a. Clear understory vegetation from around the nest using hand tools.

    b. After all vegetative cover has been cleared around the nest, the biologist shall gently disturb the nest to encourage the woodrat(s) to abandon the nest and seek cover in adjacent habitat.

    c. Once the woodrats have left the nest, the biologist shall carefully relocate the nest sticks to suitable habitat outside of the construction disturbance area, piling the sticks at the base of trees or large shrubs if available. If multiple nests are relocated, the stick piles shall be placed at least 25 feet from one another.

    d. The Lead Biologist shall ensure potential health hazards to the biologists moving nests are addressed to minimize the risk of contracting diseases associated with woodrats and woodrat nests. These include hantavirus, Lyme disease, and plague. The biologists that relocate nests shall take the following precautionary safety measures:

        i. Wear a Cal/OSHA-certified facial respirator to reduce inhalation of potential disease causing organisms.

        ii. Wear a white Tyvec protective suit to provide a barrier for ticks and fleas and facilitate their detection and removal and use gloves.

e. If young are encountered during dismantling of the nest, nest material shall be replaced and a 50-foot no-disturbance buffer shall be established around the active nest. The buffer shall remain in place until young have matured enough to disperse on their own accord and the nest is no longer active. Nesting substrate shall then be collected and relocated to suitable oak woodland habitat outside of the project area.

Mitigation Measure 4.6-1l applies to the MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System–Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1l: Avoidance and Minimization Measures for Special-status Bats.

A qualified biologist who is experienced with bat surveying techniques (including auditory sampling methods), behavior, roosting habitat, and identification of local bat species shall be consulted prior to initiation of construction activities to conduct a preconstruction habitat assessment to characterize potential bat habitat and identify active roost sites. The preconstruction habitat assessment shall be conducted within 100 feet of construction activities.

Should potential roosting habitat or potentially active bat roosts be identified during the habitat assessment in trees and/or structures to be disturbed under the project, the following measures shall be implemented:

1. Removal or disturbance of trees or structures identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 – August 31) and periods of winter torpor (approximately October 15 – February 28).

2. If removal or disturbance of trees and structures identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist will conduct pre-construction surveys within 14 days prior to disturbance to further evaluate bat activity within the potential habitat or roost site.

    a. If active bat roosts are not identified in potential habitat during preconstruction surveys, no further action is required prior to removal of- or disturbance to trees and structures within the preconstruction survey area.

    b. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species.

        i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist in coordination with CDFW. Such measures may include

postponing the removal of structures or trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.

Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.

ii. If a non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under 3).

3. The qualified biologist shall be present during tree and structure disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees and structures with active non-maternity or hibernation roosts or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when nighttime temperatures are at least 50°F, and when wind speeds are less than 15 mph.

   a. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites shall follow a two-step removal process:

      i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws).

      ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe).

      iii. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches.

   b. Disturbance to or removal of structures containing or suspected to contain active bat (non-maternity or hibernation) or potentially active bat roosts shall be done in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal will be completed the subsequent day.

4. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats will be avoided.

Mitigation Measure 4.6-1m applies to the Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine.

A qualified botanist or arborist shall conduct surveys for native stands of Monterey pine prior to completion of final project design documents. Individual Monterey pine trees existing within the construction work area shall be evaluated to determine if they are native occurrences, relics, or otherwise naturally-occurring remnants of the past historic range. Maps depicting the results of these surveys shall be prepared for consideration during final facility design. Native stands of Monterey pine could occur at the identified facility sites and pipeline alignments based on the historical extent of native Monterey pines and biological reconnaissance surveys.

To the extent feasible, project facilities shall be sited and construction activities planned to avoid impacts on native stands of Monterey pine. Any native stands of Monterey pines located within the anticipated construction disturbance area shall be fenced or flagged for avoidance prior to construction, and a biological monitor shall be present to ensure compliance with off-limits areas.

If removal of native stands of Monterey pine cannot be avoided, trees shall be replaced at a 2:1 ratio for trees removed or directly impacted by construction activities. Only local Monterey pine genetic stock shall be used for replanting at the project site. Replacement plantings shall be planted contiguous with other individuals of the same species in areas that are determined to have suitable site conditions. Protective fencing shall be installed around the seedlings to protect against disturbance. Replacement trees shall be maintained and monitored for a period of five years and have a minimum of 70 percent survival in the fifth monitoring year to ensure success. The Habitat Mitigation and Monitoring Plan to be prepared in accordance with **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)** shall detail the monitoring requirements and success criteria.

This mitigation measures applies to native stands of Monterey pines. Independent of whether Monterey pines in the project area are considered native stands, individual trees may be subject to local tree ordinances; see **Mitigation Measure 4.6-5 (Compliance with Local Tree Policies and Ordinances)**.

Mitigation Measure 4.6-1n applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan.

CalAm shall develop and submit a Habitat Mitigation and Monitoring Plan (HMMP) to the appropriate resource agencies (CCC, CDFW, CCRWQCB, USACE, USFWS, and local agencies that require a habitat mitigation and monitoring plan) for approval prior to project construction. The HMMP will be a comprehensive document that will describe all of

restoration and compensatory mitigation requirements, including the required performance standards, identified in **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover, Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants, Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly, Mitigation Measure 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl, Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine, Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander and Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas**. The HMMP shall be implemented at all areas where special-status species habitat or sensitive natural communities will be restored, created, or enhanced to mitigate for project impacts either prior to, concurrently with, or following project construction, as specified in the HMMP. The HMMP shall outline measures to be implemented to, depending on the mitigation requirements, restore, improve, or re-establish special-status species habitat, sensitive natural communities, and critical habitat on the site, and shall include the following elements:

1. Name and contact information for the property owner of the land on which the mitigation will take place
2. Identification of the water source for supplemental irrigation
3. Identification of depth to groundwater
4. Site preparation guidelines to prepare for planting, including coarse and fine grading
5. Plant material procurement, including assessment of risk of introduction of plant pathogens through use of nursery-grown container stock vs. collection and propagation of site-specific plant materials, or use of seeds
6. Planting plan outlining species selection, planting locations and spacing, for each vegetation type to be restored
7. Planting methods, including containers, hydroseed or hydromulch, weed barriers and cages, as needed
8. Soil amendment recommendations
9. Irrigation plan, with proposed rates (in gallons per minute), schedule (i.e. recurrence interval), and seasonal guidelines for watering
10. Site protection plan to prevent unauthorized access, accidental damage and vandalism
11. Weeding and other vegetation maintenance tasks and schedule, with specific thresholds for acceptance of invasive species
12. Performance standards by which successful completion of mitigation can be assessed in comparison to a relevant baseline or reference site, and by which remedial actions will be triggered; success criteria shall include the minimum performance standards described in Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover, Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants, Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly, Mitigation Measure 4.6-1h: Avoidance and

Minimization Measures for Western Burrowing Owl, Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine, Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander and Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.

13. Monitoring methods and schedule

14. Reporting requirements and schedule

15. Adaptive management and corrective actions to achieve the established success criteria

16. Educational outreach program to inform operations and maintenance departments of local land management and utility agencies of the mitigation purpose of restored areas to prevent accidental damages

17. Description of any other compensatory mitigation in the form of land purchase, establishment of conservation easements or deed restrictions, contribution of funds in lieu of active restoration, or purchase of mitigation bank credits, or other means by which the mitigation site will be preserved in perpetuity.

Mitigation Measure 4.6-1o applies to the MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline and Castroville Pipeline Optional Alignments, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas.

Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.

A preconstruction survey for California red-legged frog and California tiger salamander shall be conducted by a qualified biologist in suitable habitat where there is a moderate to high potential for these species to occur prior to vegetation removal or grading, as specified below:

1. Prior to conducting the surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for California red-legged frog and California tiger salamander, and identifies nearby relocation sites where individuals would be relocated if found during the preconstruction surveys. The relocation plan shall be submitted to USFWS and CDFW for approval prior to the start of construction activities. The animal shall be relocated to a similar type of habitat or better from where it was relocated and shall only be relocated with authorization from USFWS and CDFW, as appropriate.

2. Preconstruction surveys shall be conducted within 5 days prior to, and immediately prior to, vegetation removal, grading, or installation of exclusion fence to identify any California red-legged frog, California tiger salamander, and any small mammal burrows.

3. Small mammal burrows identified during preconstruction surveys shall be surveyed (through hand-excavation, scoping, or other suitable methods to be determined in

consultation with USFWS and CDFW) to identify any California red-legged frog or California tiger salamander. Once the burrow is confirmed to be vacant, the burrow shall be collapsed.

4. If California red-legged frog or California tiger salamander are observed within the construction area, a qualified biologist shall relocate the individual according to the relocation plan above and only with authorization from USFWS and CDFW, as appropriate.

5. Exclusion fencing shall be installed around construction areas where there is a moderate to high potential for these species to occur as specified in **Mitigation Measure 4.6-1c (General Avoidance and Minimization Measures)** and only with authorization from USFWS and CDFW.

6. The qualified biologist shall monitor vegetation removal and grading inside the exclusion fence as specified in **Mitigation Measure 4.6-1c (General Avoidance and Minimization Measures)**.

7. If take authorization is not obtained from CDFW and USFWS for California tiger salamander, then all small mammal burrows within dispersal distance of a known or potential breeding pond shall be avoided by a minimum buffer of 50 feet.

Upon completion of construction activities, CalAm shall restore California tiger salamander and California red-legged frog habitat temporarily impacted during construction. Compensatory mitigation for permanent impacts shall be provided either onsite or offsite at a minimum ratio of 2:1. Compensation for permanent impacts may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum, the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:

a. Temporarily impacted areas are returned to pre-project or improved conditions;

b. Vegetation cover shall be at least 80 percent of baseline vegetation cover in the impact area; and

c. No more cover by invasive plants than in the baseline conditions of the impact area.

Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)**. Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.

Mitigation Measure 4.6-1p applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, and staging areas.

Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants.

Construction best management practices shall be implemented in construction areas within or adjacent to lands with native plant communities that may be susceptible to non-native

plant species invasion to prevent the spread of invasive plants, seed, propagules, and pathogens through the following actions:

1) Avoid driving in or operating equipment in weed-infested areas outside of fenced work areas and restrict travel to established roads.

2) Avoid leaving exposed soil or construction materials in areas with the potential for invasive plants (e.g., in staging areas). Non-active stockpiles shall be covered with plastic or a comparable material.

3) Clean tools, equipment, and vehicles before transporting materials and before entering and leaving worksites (e.g., wheel washing stations at Project site access points). Inspect vehicles and equipment for weed seeds and/or propagules stuck in tire treads or mud on the vehicle to minimize the risk of carrying them to unaffected areas. Designate areas within active construction sites for cleaning and inspections.

4) An environmental inspector, under direction of the Lead Biologist or appointed qualified biologist (see **Mitigation Measure 4.6-1a**) shall inspect vehicles and equipment prior to project initiation at applicable work areas (listed above) for weed seeds and plant fragments that could colonize within the site or be transported to other sites. At project initiation, all construction vehicles must be cleaned to remove soil and plant fragments at designated locations, and vehicles or equipment that are not clean shall be rejected until clear of weed seed and plant fragments. Wheel washing stations or other methods to remove and contain seeds or other plant fragments from vehicles, equipment, boots, and tools shall be established in designated areas.

5) All equipment and tools involved in soil disturbance at applicable work areas shall be disinfected using a 10% bleach or 70% isopropyl alcohol solution prior to initial use or prior to returning to applicable work areas if used on another project site.

6) Only certified, weed-free, plastic-free imported erosion control materials (or rice straw in upland areas) shall be used for the project.

7) Within U.S. Army-owned land, control measures for invasive species also shall conform to guidelines in the Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community (e.g., Section 9.2.4, Undesirable Plant Pests).

This measure also applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1q applies to HDD installation of the Castroville Pipeline beneath Tembladero Slough.

Mitigation Measure 4.6-1q: Frac-out Contingency Plan.

CalAm shall retain a licensed geotechnical engineer to develop a Frac-out Contingency Plan (Plan). CalAm will submit the plan to the appropriate resource agencies (CDFW, CCRWQCB, USACE, USFWS, NMFS, and local agencies with land use jurisdiction) for approval prior to the start of construction of any pipeline that will use HDD installation. The Plan shall be implemented at all areas where HDD installation under a waterway would occur to avoid, minimize, or mitigate for project impacts either prior to, concurrently with, or following HDD installation, as specified in the Plan. The plan shall include, at a minimum:

1) Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck, etc.), and disposal of released bentonite slurry, and agency notification protocols;

2) Methods for preventing frac-out including maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil.

3) Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations.

4) Protocols CalAm and/or its contractors will follow if there is a loss of circulation or other indicator of a release of slurry.

5) Cleanup and disposal procedures and equipment CalAm and/or its contractors will use if a frac-out occurs.

6) If a frac-out occurs, CalAm and/or its contractors shall immediately halt work, implement the measures outlined in Item 5 of the Plan to contain, clean-up, and dispose of the bentonite slurry, and notify and consult with the staffs of the agencies listed above before HDD activities can begin again.

CalAm shall implement this plan to ensure that measures are implemented to prevent frac-out and if a frac-out occurs, then CalAm and/or its contractor shall implement measures to contain, clean-up, and dispose of the bentonite slurry.

Mitigation Measure 4.12-1b applies to the subsurface slant wells and Source Water Pipeline west of Highway 1.

Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment)

(See Impact 4.12-1 in Section 4.12, Noise and Vibration, for description.)

Mitigation Measure 4.14-2 applies to subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), and New Transmission Main and New Transmission Main Optional Alignment.

Mitigation Measure 4.14-2: Site-Specific Nighttime Lighting Measures.

(See Impact 4.14-2 in Section 4.14, Aesthetic Resources, for description.)

Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction. (*Less than Significant with Mitigation*)

This impact addresses impacts on the sensitive natural communities (including riparian habitat) and ESHA described in Section 4.6.1.5, and on designated critical habitat, described in Section 4.6.1.9. Section 4.6.1.10, Sensitive Terrestrial Biological Resources in the Project Area, above, describes how sensitive natural communities and ESHA are distributed throughout the project area.

Table 4.6-4 in Section 4.6.2.3, Regulatory Framework, above, presents an evaluation of project consistency with the applicable LCP policies that relate to ESHAs. Wetlands and other waters may also be considered ESHAs and sensitive natural communities; however, potential impacts on wetlands or other waters are addressed below under Impact 4.6-3.

Consultation will include addressing any destruction or adverse modification of critical habitat that is described in Section 4.6.2.1, Federal Regulations. Impacts within critical habitat are generally only considered significant if they adversely affect the primary constituent habitat elements required by the corresponding species.

Sensitive communities, ESHA, and critical habitat within or adjacent to project construction areas could be temporarily or permanently impacted during project construction. A discussion of the potential construction-related impacts on sensitive communities, ESHA, and critical habitat associated with each project facility is provided below.

Impact acreages are provided below for each facility when appropriate and are provided as an approximation based on the current proposed project footprint. Since many of the facilities overlap, the impact acreages provided below may overlap with the impact acreages for other facilities and optional alignments. The final impact acreages for the entire project would be based on whether the proposed project uses the proposed alignments or optional alignments.

Subsurface Slant Wells

Sensitive Natural Communities. Central dune scrub occurs in and around the subsurface slant well site. As described in Section 4.6.1.4, Vegetation Communities and Habitat Types, central dune scrub in this area varies between relatively undisturbed central dune scrub, formerly disturbed sand dunes that are revegetating with native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil in actively mined areas.

As described in Section 3.3.2 of Chapter 3, Description of the Proposed Project, slant well construction would disturb approximately 9 acres in the CEMEX mining area. The 9-acre area includes 8 acres for temporary staging, materials, storage, stockpiling areas, and spoils placement (as described for the subsurface slants wells in Impact 4.6-1) and 1 acre for new permanent above-ground facilities. A portion of this construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline and Source Water Pipeline using the optional alignment. The majority of this disturbance area is central dune scrub, although there are some existing

disturbed areas. Slant well construction (including drilling, staging, and truck access) would temporarily disturb sensitive central dune scrub through direct removal of vegetation and changes to topography. Construction of the nine permanent subsurface slant wells in the CEMEX mining area is expected to take a total of 15 months to complete, but could occur anytime during the 24-month construction duration. Temporary disturbance to central dune scrub during construction would be a significant impact.

The components of the proposed subsurface slant wells that would be below the mean high water line would be within the MBNMS. Impacts to marine biological resources from the slant well components that would be located within the MBNMS are described in Section 4.5 Marine Biological Resources. The facility components that are evaluated in this section would be located above the mean high water line and outside of the MBNMS.

Within the 9-acre disturbance area, new permanent facilities would be constructed within central dune scrub. These permanent facilities include five new concrete pads with associated aboveground infrastructure at Well Sites 2 through 6; each well site would include one to three wellhead vaults, above-ground mechanical piping, an electrical control cabinet, and a pump-to-waste vault. A graded access road also would be constructed. These features would result in the permanent loss of approximately 1.0 acre of central dune scrub. The remaining 8 acres would be temporarily disturbed.[24]

Environmentally Sensitive Habitat Areas. Construction of the subsurface slant wells would occur in the coastal zone and would be subject to the City of Marina LCLUP. As described in Section 4.6.1.10, Sensitive Terrestrial Biological Resources in the Project Area, the entire subsurface slant well area would likely be considered primary habitat protected under the City of Marina's LCLUP and ESHA by the CCC. Construction of subsurface slant wells would result in the permanent loss of approximately 1.0 acre and temporary loss of approximately 8.0 acres of primary habitat/ESHA. Temporary and permanent disturbance to ESHA would be a significant impact.[25]

Critical Habitat. Subsurface slant well construction would occur outside of western snowy plover critical habitat and would not result in direct impacts on critical habitat. However, conversion of the test slant well to a permanent well and construction of aboveground facilities at Site 1 would occur approximately 240 feet east of critical habitat for western snowy plover. Slant well construction could indirectly impact the primary constituent elements of this critical habitat if worker foot traffic extends beyond the designated construction work area, if trash and debris is

[24] Impacts from maintenance activities on central dune scrub are analyzed in Impact 4.6-7. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of central dune scrub. This maintenance area is assumed to be located within the 8-acre temporary construction footprint. Therefore, the proposed project (including construction and maintenance) would result in a permanent impact to 7 acres and temporary impact to 2 acres of central dune scrub.

[25] Impacts from maintenance activities on primary habitat/ESHA are analyzed in Impact 4.6-7. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of primary habitat/ESHA. This maintenance area is assumed to be located within the 8-acre temporary construction footprint. Therefore, the proposed project (including construction and maintenance) would result in a permanent impact to 7 acres and temporary impact to 2 acres of primary habitat/ESHA.

left behind following construction, or if invasive plant species are introduced or spread at the site. These indirect impacts on critical habitat would be significant.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities and critical habitat resulting from slant well construction to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce impacts on sensitive natural communities, ESHA, and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade sensitive habitat such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; ensuring the project conforms to ESHA policies (including local coastal plan policies); and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

MPWSP Desalination Plant

The proposed MPWSP Desalination Plant is described in Chapter 3, Description of the Proposed Project, Section 3.2.2 and would be constructed on the upper terrace (approximately 25 acres) of a 46-acre vacant parcel on Charles Benson Road. This facility would be located outside of the MBNMS. It would take approximately 24 months to construct.

Sensitive Natural Communities. The majority of the MPWSP Desalination Plant site is non-native grassland; however, there is a small patch of yellow bush lupine scrub, a type of northern coastal scrub, located in the northeastern corner of the site. Construction of the MPWSP Desalination Plant would permanently impact approximately 0.06 acre of northern coastal scrub, which would be a significant impact. This community could also be indirectly impacted through the dispersal or spread of invasive plant species, which would be a significant impact.

Environmentally Sensitive Habitat Areas. The MPWSP Desalination Plant site is outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. There is no critical habitat at the 25-acre MPWSP Desalination Plant site. However, critical habitat for south/central California coast steelhead and tidewater goby occurs along the Salinas River, approximately 670 feet north of the proposed MPWSP Desalination Plant development area. Construction of the MPWSP Desalination Plant would not directly impact south/central California coast steelhead or tidewater goby critical habitat. However, soil-disturbing activities at the site could result in soil erosion and the migration of eroded soil and sediment downgradient towards the Salinas River. As discussed under Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, project construction activities that disturb more than 1 acre are subject to the NPDES Construction General Permit requirements. Per the requirements, a SWPPP would be prepared by a Qualified SWPPP Developer and a Qualified SWPPP Practitioner would oversee its implementation. The SWPPP, which would include site-specific erosion and stormwater control measures to be implemented during construction of the MPWSP Desalination Plant, would reduce or eliminate the off-site migration of pollutants and sediment. Mandatory compliance with the NPDES Construction General Permit would avoid substantial adverse effects on water quality in critical habitat along the Salinas River. Thus, the impact on critical habitat along the Salinas River would be less than significant, and no mitigation is necessary.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities resulting from construction of the MPWSP Desalination Plant to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce impacts on sensitive natural communities by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to

ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade sensitive habitat such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

Pipelines and Other Conveyance Facilities North of Reservation Road

Source Water Pipeline

The Source Water Pipeline and Source Water Pipeline Optional alignments are described in Chapter 3, Description of the Proposed Project, Section 3.2.1.2. This facility would be located outside of the MBNMS. Construction of this pipeline would take approximately 6 months.

Sensitive Natural Communities. Central dune scrub occurs along the portions of the Source Water Pipeline alignment. As described in Section 4.6.1.4, Vegetation Communities and Habitat Types, the occurrence of central dune scrub in this area ranges from relatively undisturbed areas dominated by native species, to disturbed areas dominated by a combination of native and non-native invasive species.

Earthmoving activities associated with installation of the Source Water Pipeline could result in the temporary loss of approximately 6.7 acres of central dune scrub (upon completion of construction, the site would be graded and revegetated). A portion of the 6.7-acre central dune scrub impact area also falls within the new Desalinated Water Pipeline and Castroville Pipeline alignments described below and may overlap with some of the impact area for the subsurface slant wells described above. The movement of construction vehicles and equipment over vegetated areas, as well as inadvertent discharges of pollutants to these areas via stormwater runoff, could result in direct and indirect impacts on central dune scrub located within and adjacent to the construction work areas. Temporary and indirect impacts on central dune scrub would be significant.

Environmentally Sensitive Habitat Areas. Undeveloped areas within the coastal zone in the City of Marina would likely be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC. Undeveloped areas outside of the City of Marina, but within the coastal zone may be designated as ESHA under the North County Land Use Plan Local Coastal Program and by the CCC. Earthmoving activities associated with installation of the Source Water Pipeline could result in the temporary impacts on approximately 11.8 acres of ESHA (including areas that may be considered primary habitat by the City of Marina) similar to the impacts described above for sensitive natural communities. A portion of this impact area also falls within the new Desalinated Water Pipeline and Castroville Pipeline alignments described below and may overlap with some of the impact area for the subsurface slant wells described above. Temporary disturbance of ESHA would be significant.

Critical Habitat. Critical habitat for western snowy plover is located outside of and approximately 240 feet west of the western end of the Source Water Pipeline project area. Installation of the Source Water Pipeline would not result in direct impacts on critical habitat. However, pipeline installation could indirectly impact the nearby primary constituent elements of critical habitat for western snowy plover if construction worker foot traffic extends beyond the designated construction area, if trash and debris is left behind following construction, and/or if invasive plant species are introduced or spread at the site. These indirect impacts on critical habitat would be significant.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities and critical habitat associated with construction of the Source Water Pipeline to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover)**, **4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. As summarized above in the impact discussion for the subsurface slant wells, these measures would reduce impacts on sensitive natural communities, ESHA, and critical habitat by requiring implementation of general and specific protective measures.

Since the Source Water Pipeline and Source Water Pipeline using the optional alignment would impact the same type and the same amount of sensitive natural community habitat and ESHA, the same impacts and mitigation measures would apply to the Source Water Pipeline using the optional alignment as apply to the Source Water Pipeline.

New Desalinated Water Pipeline

The Desalinated Water Pipeline is described in Chapter 3, Description of the Proposed Project, Section 3.2.3.3. This facility would be located outside of the MBNMS. The construction footprint is approximately 35.4 acres. A portion of the construction footprint for the new Desalinated Water Pipeline overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, and Castroville Pipeline using the optional alignment 2. Construction of this pipeline, combined with the new Transmission Main described below, would take approximately 15 months.

Sensitive Natural Communities. Central dune scrub, coast live oak woodland, and riparian woodland and scrub occur along portions of the Desalinated Water Pipeline alignment. Central dune scrub and coast live oak woodland in this alignment are relatively disturbed and are dominated by a combination of native and non-native invasive species. Riparian woodland and scrub forms a riparian corridor along the Locke-Paddon Park pond.

Earthmoving activities associated with installation of the Desalinated Water Pipeline could result in the temporary loss of approximately 9.4 acres of central dune scrub, 0.2 acre of coast live oak

woodland, and 0.4 acre of riparian woodland and scrub (upon completion of construction, the site would be graded and revegetated to its pre-construction condition). A portion of the 9.4-acre central dune scrub impact area also falls within the Source Water Pipeline alignment described above and Castroville Pipeline alignment described below. The movement of construction vehicles and equipment over vegetated areas, as well as inadvertent releases of pollutants to these areas via stormwater runoff, could result in direct and indirect impacts on central dune scrub, coast live oak woodland, and riparian woodland and scrub located within and adjacent to the construction corridor. These communities could also be indirectly impacted through the dispersal or spread of invasive plant species, which would be a significant impact. Temporary and indirect impacts on central dune scrub, coast live oak woodland, and riparian woodland and scrub would be significant.

Environmentally Sensitive Habitat Areas. Undeveloped areas within the City of Marina would likely be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC. Undeveloped areas outside of the City of Marina, but within the coastal zone, may be designated as ESHA under the North County Land Use Plan Local Coastal Program and/or by the CCC. Earthmoving activities associated with installation of the Desalinated Water Pipeline could result in the temporary impacts on approximately 16.9 acres of ESHA (including areas that may be considered primary habitat by the City of Marina) similar to the impacts described above for sensitive natural communities. A portion of this impact area also falls within the Source Water Pipeline alignment described above and Castroville Pipeline alignment described below. Temporary disturbance of ESHA would be significant.

Critical Habitat. There is no critical habitat within, or adjacent to, the Desalinated Water Pipeline alignment. Therefore, installation of the Desalinated Water Pipeline would have no impact on critical habitat.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities associated with installation of the Desalinated Water Pipeline to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**.

These measures would reduce impacts on sensitive natural communities, ESHA, and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent

sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade sensitive habitat such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; ensuring the project conforms to ESHA policies (including local coastal plan policies); and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

Since the new Desalinated Water Pipeline and new Desalinated Water Pipeline using the optional alignment would impact the same type and the same amount of sensitive natural community habitat and ESHA, the same impacts and mitigation measures would apply to the new Desalinated Water Pipeline using the optional alignment as apply to the new Desalinated Water Pipeline.

Castroville Pipeline

The Castroville Pipeline and Castroville Optional alignments (1 and 2) are described in Chapter 3, Description of the Proposed Project, Section 3.2.3.9. This facility would be located outside of the MBNMS. The construction footprint is approximately 15.0 acres. A portion of the Castroville Pipeline construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment. Construction of this pipeline would take approximately 4 months.

Sensitive Natural Communities. Central dune scrub, northern coastal scrub, riparian woodland and scrub, and freshwater marsh occur along the Castroville Pipeline alignment. The central dune scrub and northern coastal scrub areas are relatively isolated and somewhat disturbed. The riparian woodland and scrub and freshwater marsh occur in association with the Salinas River, in an isolated patch along the pipeline, and in an area north of Tembladero Slough.

The pipeline would be installed on the underside of an existing bridge over the Salinas River and beneath Tembladero Slough using HDD techniques to avoid direct impacts on those features, but would be installed using open trench techniques for the remainder of the pipeline. Earthmoving activities associated with installation of the Castroville Pipeline could result in the temporary loss of approximately 0.004 acre of central dune scrub, 0.15 acre of northern coastal scrub, and 0.9 acre of riparian woodland and scrub (upon completion of construction, the site would be revegetated to its pre-construction condition, although the pipeline would remain). A portion of the 0.004-acre central dune scrub impact area also falls within the Source Water Pipeline and new Desalinated Water Pipeline alignments described above. The movement of construction vehicles and equipment over vegetated areas, as well as inadvertent releases of pollutants to these areas via stormwater runoff, could result in direct and indirect impacts on central dune scrub, northern

coastal scrub, riparian woodland and scrub, and freshwater marsh located within and adjacent to the construction corridor. These communities could also be indirectly impacted through the dispersal or spread of invasive plant species, which would be a significant impact. Temporary and indirect impacts on central dune scrub, northern coastal scrub, riparian woodland and scrub, and freshwater marsh would be significant.

Environmentally Sensitive Habitat Areas. A small segment of the proposed Castroville Pipeline alignment is located within the coastal zone. Undeveloped areas within this area may be designated as ESHA under the North County Land Use Plan Local Coastal Program and by the CCC. Earthmoving activities associated with installation of the Castroville Pipeline could result in temporary impacts on approximately 0.4 acre of ESHA similar to the impacts described above for sensitive natural communities. A portion of the impact area also falls within the Source Water Pipeline and new Desalinated Water Pipeline alignments described above. Temporary disturbance of ESHA would be significant.

Critical Habitat. The Castroville Pipeline would be installed on the underside of an existing bridge over the Salinas River using a barge and beneath Tembladero Slough using HDD. The Salinas River and Tembladero Slough are part of the south/central California coast steelhead Salinas Hydrologic critical habitat unit. The Salinas River is within the tidewater goby Unit MN-2 (Salinas River) critical habitat unit. As discussed under Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, a SWPPP would be prepared, which would include site-specific erosion and stormwater control measures (such as installing sediment barriers like silt fencing and fiber rolls and maintaining equipment and vehicles used for construction) to be implemented during construction of the Castroville Pipeline, which would reduce or eliminate the off-site migration of pollutants and sediment. Mandatory compliance with the SWPPP would avoid substantial adverse effects from upland erosion on water quality in critical habitat along the Salinas River and Tembladero Slough. If a frac-out occurs during HDD, bentonite slurry could be released into Tembladero Slough, which could degrade water quality and adversely impact steelhead critical habitat (Tembladero Slough), a significant impact. Use of the barge to install the pipeline over the Salinas River would have a relatively small, short-term increase in shading, so impacts from the barge would be less than significant.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities associated with installation of the Castroville Pipeline to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-1q (Frac-out Contingency Plan)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce impacts on sensitive natural communities, ESHA, and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present

to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade sensitive habitat such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on sensitive habitat; ensuring the project conforms to ESHA policies (including local coastal plan policies); and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

The Castroville Pipeline using the optional alignment 1 would impact approximately 0.9 acre of riparian woodland and scrub, 0.01 acre of freshwater marsh, and 0.15 acre of northern coastal scrub. The Castroville Pipeline using the optional alignment 2 would impact approximately 0.9 acre of riparian woodland and scrub and 0.15 acre of northern coastal scrub. Both optional alignments would impact the same amount of ESHA as the Castroville Pipeline. The Castroville Pipeline using the optional alignments would generally result in the same type of impact as described for the Castroville Pipeline. The same impact conclusion and mitigation measures would apply to the Castroville Pipeline using the optional alignments as apply to the Castroville Pipeline.

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

The Brine Discharge Pipeline and Brine Mixing Box and the Pipeline to CSIP Pond are described in Sections 3.2.2.5 and 3.2.3.10, respectively, of Chapter 3, Description of the Proposed Project. These facilities would be located outside of the MBNMS. The Brine Discharge Pipeline would take approximately 3 months to install, the Brine Mixing Box would take approximately 5 months to install, and the Pipeline to CSIP Pond would take approximately 2 months to install. The construction footprint for both of these pipelines and the Brine Mixing Box combined is approximately 7.4 acres, including the Brine Mixing Box construction staging area.

Sensitive Natural Communities. The proposed Brine Discharge Pipeline and Pipeline to CSIP Pond contain developed/landscaped and ruderal areas and a few patches of non-native grassland. The Brine Mixing Box would be installed in non-native grassland. No sensitive natural communities were identified within these construction footprints during reconnaissance level surveys conducted in preparation of this EIR/EIS. No impact on sensitive natural communities would result from construction of the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond, and no mitigation is necessary.

Environmentally Sensitive Habitat Areas. The proposed Brine Discharge Pipeline, Pipeline to CSIP Pond, and Brine Mixing Box are outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. There is no critical habitat within the proposed Brine Discharge Pipeline and Pipeline to CSIP Pond alignments or the Brine Mixing Box construction footprint. The Salinas River, which is designated as critical habitat for south/central California coast steelhead and tidewater goby, is located approximately 1,200 feet north of the northern terminus of both pipelines. Construction of the Brine Discharge Pipeline and Pipeline to CSIP Pond would not result in significant indirect impacts on south/central California coast steelhead and tidewater goby critical habitat. Similar to the discussion above for the MPWSP Desalination Plant, pipeline and Brine Mixing Box installation activities would also be subject to the NPDES Construction General Permit requirements and the SWPPP would include erosion and stormwater control measures to be implemented during construction. These measures would help to prevent pollutants and sediment generated during installation activities from migrating downstream and entering the Salinas River. Mandatory compliance with the NPDES Construction General Permit would avoid substantial adverse effects on water quality in critical habitat along the Salinas River. Thus, the impact on critical habitat along the Salinas River would be less than significant, and no mitigation is necessary.

Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline)

The proposed ASR Facilities are described in Chapter 3, Description of the Proposed Project, Section 3.2.4. These facilities would be located outside of the MBNMS. Construction of the ASR-5 and ASR-6 Wells would take approximately 12 months. Construction of the ASR Pipelines (ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) would take approximately 5 months. The construction footprint for both of the ASR Wells is expected to be approximately 0.9 acre. The construction footprint of the area where water would be conveyed is approximately 7.0 acres. The construction footprint for all three ASR pipelines is approximately 8.8 acres. A portion of the construction footprint for the ASR pipelines overlaps with a portion of the construction footprints for the new Transmission Main and the new Transmission Main using the optional alignment.

Sensitive Natural Communities. Coast live oak woodland and central maritime chaparral occur at the various proposed ASR facility sites. In the vicinity of these proposed facility sites, these communities occur on sandy soils and are dominated by native species.

Coast live oak woodland occurs at the proposed ASR-5 and ASR-6 Well sites. Construction of the ASR-5 and ASR-6 Wells would likely result in the temporary loss of up to 0.9 acre of coast live oak woodland and permanent loss of up to 0.04 acre of coast live oak woodland. The temporary and permanent loss of oak woodland would be a significant impact. In addition, water produced during development of the ASR-5 and ASR-6 Wells would be conveyed to a natural depression located east of the intersection of San Pablo Avenue and General Jim Moore Boulevard that includes central maritime chaparral. Conveyance of water to this area has potential to temporarily impact

approximately 4.6 acres of central maritime chaparral. However, implementation of the mitigation measures prescribed below would reduce the impact to a less-than-significant level.

The ASR Pipelines would be constructed within the developed General Jim Moore Boulevard and would not have a direct temporary or permanent impact any sensitive natural communities. However, coast live oak woodland, northern coastal scrub, and central maritime chaparral border portions of the pipeline alignments and could be indirectly impacted during construction from accidental foot traffic or equipment use outside of the construction boundary or the introduction or spread of invasive plant species. Temporary impacts on oak woodland, northern coastal scrub, and central maritime chaparral are considered significant.

Environmentally Sensitive Habitat Areas. The proposed ASR Facilities would be located outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. No critical habitat occurs within the proposed ASR Facilities. Monterey spineflower critical habitat occurs approximately 50 feet east of the area where the water produced during development of the ASR-5 and ASR-6 Wells would be conveyed to and percolated into the ground. Construction of these ASR facilities would remain outside of critical habitat and would not impact critical habitat. No impact would result, and no mitigation is necessary.

Implementation of the following mitigation measures would reduce impacts on sensitive natural communities at the proposed ASR Facilities to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. As summarized above in the impact discussion for the MPWSP Desalination Plant, these measures would reduce impacts on sensitive natural communities by requiring implementation of general and specific protective measures.

Pipelines and Other Conveyance Facilities South of Reservation Road

New Transmission Main

The new Transmission Main and new Transmission Main Optional alignments are described in Chapter 3, Description of the Proposed Project Proposed, Section 3.2.3.4, of this EIR/EIS. This facility would be located outside of the MBNMS. Construction of this pipeline and the new Desalinated Water Pipeline would take approximately 15 months to complete. The construction footprint is approximately 27.1 acres. A portion of the new Transmission Main construction footprint overlaps with a portion of the ASR pipelines construction footprint.

Sensitive Natural Communities. Central dune scrub, coast live oak woodland, and northern coastal scrub occur along the new Transmission Main alignment. The occurrence of central dune scrub in this area ranges from areas dominated by non-native species to areas with higher cover of

native dune scrub species. Coast live oak woodland and northern coastal scrub along the alignment is interspersed with single family residences.

Installation of the Transmission Main would temporarily impact approximately 1.9 acres of central dune scrub and 0.07 acre of coast live oak woodland through direct removal of vegetation during open-trench excavation activities or from trampling of the vegetation from construction vehicle access. Additionally, central dune scrub, coast live oak woodland, and northern coastal scrub occur adjacent to the construction area and could be indirectly impacted if worker foot traffic were to extend beyond the designated construction work area, if trash and debris is left behind following construction, and/or if invasive plant species are introduced or spread at the site. No permanent impacts on central dune scrub would result from installation of the Transmission Main. Temporary impacts on central dune scrub, coast live oak woodland, and northern coastal scrub during construction would be significant.

Environmentally Sensitive Habitat Areas. The pipeline segment between the Highway 1 overcrossing and the Highway 1/Lightfighter Driver interchange is located within the coastal zone. Undeveloped areas within the coastal zone in the City of Marina may be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC, undeveloped areas within the City of Seaside in the coastal zone may be designated as ESHA by the City of Seaside Local Coastal Program Land Use Plan and by the CCC, and undeveloped areas in the coastal zone and outside of a local coastal plan area may be considered ESHA by the CCC. Earthmoving activities associated with installation of the Transmission Main could result in temporary impacts on approximately 5.4 acres of ESHA (including areas that may be considered primary habitat by the City of Marina) similar to the impacts described above for sensitive natural communities. Temporary disturbance of ESHA would be significant.

Critical Habitat. The majority of the Transmission Main alignment is located a minimum of 150 feet east of Monterey spineflower critical habitat. Construction of the new Transmission Main would remain outside of critical habitat and would not impact critical habitat. No impact would result and no mitigation is necessary.

Implementation of the following mitigation measures would reduce temporary impacts on sensitive natural communities resulting from installation of the new Transmission Main to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. As summarized above in the impact discussion for the Desalinated Water Pipeline, these measures would reduce temporary impacts on sensitive natural communities by requiring implementation of general and specific protective measures.

Since the new Transmission Main and new Transmission Main using the optional alignment would impact the same type and approximately the same amount of sensitive natural community habitat (The new Transmission Main would impact approximately 1.9 acres of central dune scrub, while the Transmission Main using the optional alignment would impact approximately 1.4 acre of central dune scrub. Both alignments would impact the same amount of coast live oak woodland) and the same type and approximately the same amount of ESHA (the new Transmission Main would impact approximately 5.4 acres of ESHA, while the Transmission Main using the optional alignment would impact 5.7 acres of ESHA), the same impacts and mitigation measures would apply to the new Transmission Main using the optional alignment as apply to the new Transmission Main.

Carmel Valley Pump Station

The proposed Carmel Valley Pump Station is described in Section 3.2.3.8 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. Construction would take approximately 6 months to complete. The construction footprint for the pump station and associated pipelines is approximately 0.2 acre.

Sensitive Natural Communities. The Carmel Valley Pump Station site includes non-native annual grassland, landscaped, and developed areas and does not contain any sensitive natural communities. No impact on sensitive natural communities would result. No mitigation is necessary.

Environmentally Sensitive Habitat Areas. The proposed Carmel Valley Pump Station site is outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. The Carmel Valley Pump Station site is located within California red-legged frog critical habitat unit MNT-2 (Carmel River). Non-native grassland within the Carmel Valley Pump Station site provides California red-legged frog upland habitat as described in Section 4.6.1.9. Construction of the Carmel Valley Pump Station would permanently impact 0.01 acre and temporarily impact 0.12 acre of non-native grassland upland habitat. This would be a significant impact on California red-legged frog critical habitat.

Steelhead critical habitat is located approximately 280 feet south of the Carmel Valley Pump Station site. As discussed under Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, a SWPPP would be prepared, which would include site-specific erosion and stormwater control measures to be implemented during construction of the Carmel Valley Pump Station, which would reduce or eliminate the off-site migration of pollutants and sediment. Mandatory compliance with the SWPPP would avoid substantial adverse effects on water quality in critical habitat along the Carmel River. Thus, the impact on steelhead critical habitat along the Carmel River would be less than significant and no mitigation is necessary.

Impacts to critical habitat associated with construction of the Carmel Valley Pump Station would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1n**

(Habitat Mitigation and Monitoring Plan), 4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander), and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**.

These measures would reduce impacts on sensitive natural communities and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

Ryan Ranch-Bishop Interconnection Improvements

The proposed Ryan Ranch–Bishop Interconnection Improvements are described in Section 3.2.3.11 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. The construction footprint is approximately 7.3 acres.

Sensitive Natural Communities. The majority of the Ryan Ranch-Bishop Interconnection Improvements site is located within road right-of-ways, although a small extent of non-native grassland also occurs within the project area. Coast live oak woodland and northern coastal scrub occur adjacent to the Ryan Ranch-Bishop Interconnection Improvements project area. Construction of the Ryan Ranch-Bishop Interconnection Improvements could indirectly impact adjacent sensitive natural communities if worker foot traffic extends beyond the designated construction work area. Indirect impacts on sensitive natural communities would be significant.

Environmentally Sensitive Habitat Areas. The Ryan Ranch-Bishop Interconnection Improvements site is outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. No critical habitat occurs within the Ryan Ranch-Bishop Interconnection Improvements site. The closest critical habitat to this site is Monterey spineflower critical habitat located approximately 0.7 mile to the north and California red-legged frog critical habitat located approximately 1.0 mile to the south. Due to the distance between the anticipated construction disturbance area for the Ryan Ranch-Bishop Interconnection Improvements and the critical habitat, no impact would result from the construction of these improvements, and no mitigation is necessary.

Impacts to sensitive natural communities associated with construction of the Ryan Ranch-Bishop Interconnection Improvements would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan),** and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**.These measures would reduce impacts on sensitive natural communities and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

Main System-Hidden Hills Interconnection Improvements

The proposed Main System-Hidden Hills Interconnection Improvements are described in Section 3.2.3.11 of Chapter 3, Description of the Proposed Project. This facility would be located outside of the MBNMS. The construction footprint for the Main System-Hidden Hills Interconnection Improvements is 1.1 acre.

Sensitive Natural Communities. The Main System-Hidden Hills Interconnection Improvements is located entirely within road right-of-ways and existing facilities and would not have direct impacts on sensitive natural communities. Coast live oak woodland occurs adjacent to the Main System-Hidden Hills Interconnection Improvements project area and could be indirectly affected if worker foot traffic extends beyond the designated construction work area. Indirect impacts on sensitive natural communities would be significant.

Environmentally Sensitive Habitat Areas. The Main System- Hidden Hills Interconnection Improvements site is outside of the coastal zone and would not be subject to the Coastal Act.

Critical Habitat. The Main System-Hidden Hills Interconnection Improvements site is located within California red-legged frog critical habitat. All construction activities would occur within paved or developed surfaces that do not contain the primary constituent elements for California red-legged frog described in Section 4.1.6.9. However, the adjacent coast live oak woodland provides upland dispersal habitat for California red-legged frog. Construction of the Main System-Hidden Hills Interconnection Improvements could indirectly impact adjacent critical habitat if worker foot traffic extends beyond the designated construction work area. Indirect impacts on critical habitat would be significant.

Impacts to sensitive natural communities and critical habitat associated with construction of the Main System-Hidden Hills Interconnection Improvements would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander),** and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**.These measures would reduce impacts on sensitive natural communities and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

Staging Areas

The proposed Staging Areas are described in Section 3.3.1.2 of Chapter 3, Description of the Proposed Project. These facilities would be located outside of the MBNMS.

Sensitive Natural Communities. There are eight staging areas located throughout the project area. The majority of the staging areas are located within developed or highly disturbed areas. However, some staging areas contain northern coastal scrub and coast live oak woodland, which are considered sensitive natural communities. **Table 4.6-9** below describes which staging area contains, or is adjacent to, a sensitive natural community and the type of temporary impact. If sensitive natural communities occur in the staging area, use of the staging area could result in direct temporary loss of that community. Use of the staging areas could indirectly impact adjacent sensitive natural communities if worker foot traffic extends beyond the designated construction work area. Temporary direct or indirect impacts on central dune scrub, coast live oak woodland, and northern coastal scrub would be significant.

TABLE 4.6-9
CONSTRUCTION STAGING AREAS SENSITIVE NATURAL COMMUNITY IMPACTS

Location	Staging Area Footprint (acre)	Sensitive Natural Community Present	Estimated Temporary Impact on Sensitive Natural Communities
2nd Avenue/Lightfighter Drive in Seaside	0.5	Central Dune Scrub	Potential indirect impacts
West side of General Jim Moore Boulevard, near Gigling Road, in Seaside	0.3	Coast Live Oak Woodland	0.03 acre temporary impact
East side of General Jim Moore Boulevard, near Gigling Road, in Seaside	0.2	Coast Live Oak Woodland	0.002 acre temporary impact
West side of General Jim Moore Boulevard, near Seaside Middle School, in Seaside	0.1	Northern Coastal Scrub	0.1 acre temporary impact

Environmentally Sensitive Habitat Areas. The staging area located at Beach Road is located within the coastal zone in the City of Marina and undeveloped areas adjacent to the staging area may be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC. Use of the staging area could result in indirect impacts on primary habitat/ESHA similar to the impacts described above for sensitive natural communities. These indirect impacts on primary habitat/ESHA would be significant.

Impacts to sensitive natural communities, including potential primary habitat/ESHA, associated with the use of the staging areas listed in **Table 4.6-9** would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas),** and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce impacts on sensitive natural communities, ESHA, and critical habitat by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; ensuring the project conforms to ESHA policies (including local coastal plan policies); and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat.

No other staging areas have potential to impact sensitive natural communities or ESHA.

Critical Habitat. There is no critical habitat within, or adjacent to, any of the staging areas. Therefore, use of the staging areas would have no impact on critical habitat.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction could be inconsistent with applicable regulatory requirements related to sensitive natural communities, critical habitat, and ESHAs that were adopted for the purpose of avoiding or mitigating an environmental effect. Specifically, the project could be inconsistent with the FESA, the Coastal Act, City of Marina General Plan Policies 4.112, 4.114, 4.115, 4.116, 4.118, 4.119, 4.120, and 2.10; City of Marina LCLUP Policies 8, 19, 25, 26 and Planning Guideline entitled Rare and Endangered Species: Habitat Protection; Fort Ord Dunes State Park General Plan and Environmental Impact Report BIO-8; City of Seaside Local Coastal Program Land Use Plan Policies NCR-CZ 1.1.C, NCR-CZ 1.2.A, NCR-CZ 1.2.B, LUD-CZ 3.1.A, and LUD-CZ 3.1.B; Seaside General Plan Policies COS-4.1 and COS-4.3; Monterey County Carmel Valley Master Plan Policy CV-3.7; Monterey County Greater Monterey Peninsula Area Plan Policy GMP-3.9; Monterey County General Plan Policies OS-5.1, OS-5.2, OS-5.4, OS-5.5, OS-5.6, OS-5.11, OS-5.13, OS-5.16, OS-5.17, OS-5.23; Monterey County North County Land Use Plan Policies 2.3.2.1 through 2.3.2.6, 2.3.2.8, 2.3.2.9, 2.3.3.C2, NC-3.3, and NC-3.5, and Key Policy 4.3.4; Fort Ord Reuse Plan (Seaside) Biological Resources Policies A-4 and C-1; Fort Ord Reuse Plan (Monterey County) Biological Resources Policies A-9 and C-1; and California Coastal Act Section 30240, which were established to avoid or mitigate sensitive natural community, critical habitat, and ESHA impacts. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander), 4.6-1p (Control Measures for Spread of Invasive Plants), 4.6-1q (Frac-out Contingency Plan), 4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** would reduce impacts on sensitive natural communities, critical habitat and ESHA by designating a lead biologist to oversee and ensure implementation of sensitive natural community protective measures; requiring worker training regarding sensitive natural communities potentially present to ensure that workers are aware of sensitive natural communities that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent sensitive natural communities and other measures to avoid and minimize impacts on sensitive natural communities; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual

construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring measures to avoid and minimize impacts on California red-legged frog and California tiger salamander such as pre-construction surveys to determine if these species are present and implementing minimization measures to minimize construction impacts on these species, if present, and compensating for permanent impacts; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade sensitive habitat such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on sensitive habitat; ensuring the project conforms to ESHA policies; and requiring measures to avoid and minimize impacts on sensitive natural communities such as requiring that staging areas are located away from sensitive communities to minimize project impacts to these resources and compensating for loss of habitat. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Impacts on sensitive natural communities and ESHA are described for each project facility above; however, portions of the work areas for some facilities overlap with the work area for other facilities. This section includes a summary of the overall project impacts on sensitive natural communities and ESHA, which accounts for areas of overlap. Overall, construction of the entire proposed project has the potential to temporarily impact approximately 23 acres and permanent impact approximately 1 acre of central dune scrub,[26] temporarily impact approximately 0.2 acre and permanently impact approximately 0.06 acre of northern coastal scrub, temporarily impact approximately 11 acres of central maritime chaparral, temporarily impact approximately 0.7 acre and permanently impact approximately 0.04 acre of oak woodland, temporarily impact approximately 0.06 acre of freshwater marsh, and temporarily impact approximately 1.3 acre of riparian woodland and scrub.

[26] Impacts from maintenance activities on central dune scrub are analyzed in Impact 4.6-7. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of central dune scrub. This maintenance area is assumed to be located within the 8-acre temporary subsurface slant well construction footprint. The proposed project (including construction and maintenance) would result in a permanent impact on 7 acres of central dune scrub (from construction and maintenance of the subsurface slant wells) and temporary impact on 17 acres from construction of all facilities.

Overall, construction of the MPWSP would temporarily impact approximately 35 acres and permanently impact approximately 1 acre of ESHA.[27] Areas of ESHA overlap with the vegetation types described above in the coastal zone.

Construction of the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), new Transmission Main and new Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas would result in less than significant impacts on riparian habitat, sensitive natural communities, ESHA, and/or critical habitat when mitigation measures are implemented.

The Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would have less than significant impacts on riparian habitat, sensitive natural communities, ESHA, or critical habitat.

Overall, the impact on riparian habitat, sensitive natural communities, ESHA, and critical habitat, would be reduced to a less than significant level with implementation of the prescribed mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1b applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR

[27] Impacts from maintenance activities on primary habitat/ESHA are analyzed in Impact 4.6-7. Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of primary habitat/ESHA. This maintenance area is assumed to be located within the 8-acre temporary subsurface slant well construction footprint. The proposed project (including construction and maintenance) would result in a permanent impact on 7 acres of primary habitat/ESHA (from construction and maintenance of the subsurface slant wells) and temporary impact on 29 acres of from construction of all facilities.

Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas.

Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1c applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas.

Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1d applies to the subsurface slant wells and Source Water Pipeline and Source Water Pipeline Optional Alignment.

Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1n applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas.

Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1o applies to the Main System-Hidden Hills Interconnection Improvements and the Carmel Valley Pump Station.

Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1p applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Conveyance

Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), and New Transmission Main and New Transmission Main Optional Alignment.

Mitigation Measure 4.6-1p: Control Measures for Invasive Plants.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1q applies to HDD installation of the Castroville Pipeline beneath Tembladero Slough.

Mitigation Measure 4.6-1q: Frac-out Contingency Plan

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-2a applies to the Subsurface Slant Wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, New Transmission Main and New Transmission Main Optional Alignment, and Staging Areas.

Mitigation Measure 4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.

Some parts of the project area occur within the Coastal Zone and development within the Coastal Zone would require a Coastal Development Permit. Prior to the initiation of ground-disturbing activities CalAm shall consult with the CCC or local jurisdiction and obtain the necessary permit(s) in order to proceed with the MPWSP. The CCC or local agency would authorize the project if it conforms to ESHA policies or other policies of the Coastal Act.

Mitigation Measure 4.6-2b applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Staging Areas.

Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.

CalAm and/or its construction contractor(s) shall implement the following avoidance, minimization, and compensation measures for sensitive natural communities, the special-status species that utilize these sensitive communities, environmentally sensitive habitat areas (ESHA) as defined by the California Coastal Commission (CCC) or in a local coastal plan (LCP), and primary habitat as defined in the City of Marina's Local Coastal Land Use Plan (LCLUP). Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells shall only be applied once and would not be applied for each five-year maintenance event.

a) Project facilities shall be sited and designed to avoid disturbance of central maritime chaparral, central dune scrub, coast live oak woodland, and riparian woodland and

scrub, any areas defined as ESHA by the CCC or in a LCP, primary habitat as defined in the LCLUP, any sensitive communities defined by local jurisdictions, and any other sensitive natural communities, including critical habitat, identified within the project area.

b) Where direct impacts on sensitive natural communities, ESHA, primary habitat, or critical habitat cannot feasibly be avoided, CalAm shall implement the following measures:

i. Any temporarily impacted sensitive natural communities, ESHA, primary habitat, and critical habitat, shall be restored to previous conditions or better at the end of construction. Compensatory mitigation for permanent impacts on sensitive natural communities shall occur at a ratio of 2:1 or greater. Compensation for loss of sensitive natural communities may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:

a. Temporarily impacted areas are returned to pre-project conditions or greater

b. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover

c. No more cover by invasives than the baseline/impact area

Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan).

Alternatively, credits purchased through an approved mitigation bank, or approved Habitat Conservation Plan.

ii. Topsoil shall be salvaged during grading and earthmoving activities, stockpiled separately from subsoil, and protected from erosion (e.g., covered or watered). Composting additives shall be used to amend the soil, if needed, and compacted topsoil shall be properly prepared prior to reuse for post-construction restoration of temporarily disturbed areas. A minimum of 12 inches of topsoil shall be salvaged (or if there is less than 12 inches of topsoil initially, as much as is available practicable).

iii. For HMP sensitive natural communities on former Fort Ord lands, plants shall be salvaged, under the direction of a qualified biologist, as necessary per the requirements of the HMP, and in accordance with any requirements from USFWS and CDFW.

b) Any areas used for staging, laydown, material storage, equipment storage, job trailers, employee parking, or other project-related support activities that do not need to be located adjacent to the active construction area shall be located away from jurisdictional areas, sensitive communities, and shall be protected from stormwater runoff using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers.

c) All potential contaminants shall be stored on impervious surfaces, plastic ground covers, or in secondary containment to prevent any spills or leakage from contaminating the ground, and shall be located at least 100 feet from adjacent habitat, unless required for construction activities to be located adjacent to the active construction area.

d) Any spillage of pollutants or construction material shall be contained immediately in accordance with the project SWPPP. The contaminated area shall be cleaned and any contaminated materials properly disposed of. The Lead Biologist shall be notified of all spills.

Further, CalAm and/or its construction contractor(s) shall implement the following avoidance, minimization, and compensation measures for any areas that are identified as secondary habitat as defined in the City of Marina's LCLUP (and not within ESHA as defined by the CCC) through the coastal permitting process:

a) Development shall be designed to prevent significant adverse impacts on primary habitat areas. Adverse impacts that shall be avoided may include indirect impacts such as operational noise impacts on wildlife, introduction of the spread of invasive plant and wildlife species, increased erosion, introduction of trash that would invite predators, increased human disturbance, and decreased water quality.

b) All temporarily impacted areas shall be restored to pre-construction conditions or better at the end of construction. Compensatory mitigation for permanent impacts on sensitive natural communities shall occur at a ratio of 1:1 or greater. Compensation for loss of sensitive natural communities may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:

   i. Temporarily impacted areas are returned to pre-project conditions or greater

   ii. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover

   iii. No more cover by invasives than the baseline/impact area

   Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan).

   Alternatively, credits purchased through an approved mitigation bank, or approved Habitat Conservation Plan.

Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction. (*Less than Significant with Mitigation*)

This impact addresses impacts on federal wetlands, federal other waters, and/or waters of the state described in Sections 4.6.1.6 and 4.6.2.

A wetland delineation for the project has not been verified by the USACE, RWQCB, and CCC. For the purposes of this analysis, the project area was evaluated for the presence of waters of the U.S./waters of the state (including wetlands under CCC jurisdiction) through examination of NWI maps (USFWS, 2016) and field surveys conducted for the MPWSP by AECOM between 2014 and 2016 (AECOM, 2016), and by ESA in 2013, 2014, and 2016 (ESA, 2013, 2014, 2016), and a wetland delineation prepared for the proposed project (AECOM, 2017). Many potentially jurisdictional wetlands and waters occur within the study area such as riparian woodland and scrub, freshwater marsh, open water, and other small culverts and drainages. The proposed project may have direct effects on these potential waters of the U.S. and/or waters of the state. Direct impacts on those wetlands could include removal of vegetation, soil, or structures and/or the placement of fill in the wetland/other water, or hydrological modifications (i.e., altering the flow of water in or out of the wetland or water). Temporarily impacted areas include those areas that would be returned to pre-project conditions following construction. Permanently impacted areas include those areas that would be permanently lost following construction.

Waters of the U.S. and waters of the state occur off-site in close proximity to many project components and could be subject to indirect impacts as a result of project construction. Indirect impacts could occur if construction activities inadvertently extend beyond the designated construction work area, if construction worker foot traffic extends beyond the designated construction work area and into these features, and/or if trash and debris is left in the features following construction. Other indirect impacts include sedimentation as a result of increased soil erosion from grading or trenching activities and degradation of water quality from pollutants (e.g., oil, hydraulic fluid) that are conveyed by surface water runoff from the construction site to offsite waters of the U.S./waters of the state.

The following discussion of project-related impacts on waters of the U.S. and/or waters of the state is organized by facility.

Impact acreages are provided below for each facility when appropriate and are provided as an approximation based on the current proposed project footprint. Since many of the facilities overlap, the impact acreages provided below may overlap with the impact acreages for other facilities and optional alignments. The final impact acreages for the entire project would be based on whether the proposed project uses the proposed alignments or optional alignments.

Subsurface Slant Wells

The construction footprint for the subsurface slant wells is 9 acres. A portion of this construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline and Source Water Pipeline using the optional alignment. The components of the proposed subsurface slant wells that would be below the mean high water line would be within the MBNMS. Impacts to marine biological resources from the slant well components that would be located within the MBNMS are described in Section 4.5 Marine Biological Resources. The facility components that are evaluated in this section would be located above the mean high water line and outside of the MBNMS.

Construction of the subsurface slant wells is not expected to directly impact any waters of the U.S. or waters of the state as none occur within the subsurface slant well site in the CEMEX active mining area. Some potential waters of the U.S. and/or waters of the state are located in the vicinity of the slant well Site 1. The CEMEX dredging pond and Pacific Ocean are located over 350 feet from the slant well Site 1. Due to the distances between the construction work area and these potential waters of the U.S./waters of the state, construction activities would not be expected to inadvertently extend beyond the construction work area and impact these features. Moreover, implementation of BMPs in the project-specific SWPPP would require measures to manage soil erosion and protect water quality that would avoid impacts on water quality in these potential wetlands/waters. Therefore, impacts on the CEMEX dredging pond and Pacific Ocean during conversion of the test slant well to a permanent slant well and construction of the aboveground facilities at Site 1 would be less than significant and no mitigation is necessary.

The CEMEX settling ponds are located approximately 50 feet from the slant well Site 1. Indirect impacts on water quality are not expected as the settling ponds are surrounded by berms and are not downgradient of the slant well construction work area. Additionally, mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality. However, due to proximity of the ponds to the slant well site, potentially significant impacts could result from construction-related activity extending beyond the designated construction work area and into these features.

Implementation of the following mitigation measures would reduce the potential impact on the CEMEX settling ponds to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program),** and **4.6-1c (General Avoidance and Minimization Measures)**. These measures would reduce impacts on potentially jurisdictional waters by designating a lead biologist to oversee and ensure implementation of jurisdictional waters protective measures; requiring worker training regarding jurisdictional waters potentially present to ensure that workers are aware of jurisdictional waters that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; and requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent jurisdictional waters and other measures to avoid and minimize impacts on jurisdictional waters.

MPWSP Desalination Plant

No waters of the U.S. or waters of the state exist within the 25-acre[28] MPWSP Desalination Plant site. Therefore, construction of the desalination plant and supporting facilities would not result in direct impacts on waters of the U.S. and/or waters of the state. The Salinas River is located about 670 feet to the north of the site and freshwater forested/shrub wetland mapped by the NWI is located about 110 feet north of the site. Due to the distances between the construction work area and these features, it is unlikely that construction activities would inadvertently extend beyond the construction work area and directly impact these features. Soil disturbing activities at the site

[28] As stated in Section 3.2.2 of Chapter 3, Description of the Proposed Project, all proposed project facilities would be constructed on the upper terrace (25 acres) of the 46-acre parcel.

could increase soil erosion and the eroded soil could migrate downgradient to the potential wetland and the Salinas River. However, mandatory compliance with the NPDES Construction General Permit, including implementation of BMPs in the project's SWPPP, would manage soil erosion and protect water quality, thereby avoiding significant impacts on water quality in the potential wetland and the Salinas River. Therefore, the impact on the Salinas River and the potential wetland would be less than significant and no mitigation is necessary.

The MPWS Desalination Plant would be located outside of the MBNMS.

Pipelines and Other Conveyance Facilities North of Reservation Road

Source Water Pipeline

The construction footprint for the Source Water Pipeline is approximately 16.4 acres. A portion of this footprint overlaps with a portion of the construction footprints for the subsurface slant well, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, Castroville Pipeline using the optional alignment 2, the new Desalinated Water Pipeline, and the new Desalinated Water Pipeline using the optional alignment. The Source Water Pipeline would be located outside of the MBNMS.

Several waters of the U.S./waters of the state occur in the vicinity of the proposed Source Water Pipeline alignment. The Pacific Ocean and the CEMEX dredging pond are located over 350 feet to the north and west of the western terminus of the proposed Source Water Pipeline alignment. A third feature mapped as a freshwater emergent wetland by the NWI is located west of Lapis Road, east of Highway 1, and northeast of the CEMEX access road, approximately 160 feet west of the proposed Source Water Pipeline alignment. A fourth feature mapped as a freshwater emergent wetland by the NWI is located south of the CEMEX access road, approximately 580 feet south of the proposed pipeline alignment. Due to the distances between the construction work area and these features, it unlikely that construction activities would inadvertently extend beyond the construction work area and impact these features. Construction-related soil erosion or the inadvertent discharge of toxic construction chemicals could result in significant adverse effects on these off-site features. However, implementation of BMPs in the project's SWPPP would manage soil erosion from the construction work area and protect water quality in these potential wetlands/waters. Therefore, the impact would be less than significant and no mitigation is necessary.

The CEMEX settling ponds are located 50 feet north of the western terminus of the proposed Source Water Pipeline alignment. Indirect impacts on water quality related to soil erosion and potential releases of toxic construction chemicals are not expected as the settling ponds are surrounded by berms and are not located downgradient of the construction work area. Additionally, mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality in the ponds and prevent significant impacts on water quality. However, due to proximity of the ponds to the slant well site, potentially significant impacts could result from construction-related activity extending beyond the designated construction work area and into these features.

Implementation of the following mitigation measures would reduce the significant impact on the CEMEX settling ponds to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program),** and **4.6-1c (General Avoidance and Minimization Measures)**. As summarized above in the impact discussion for the subsurface slant wells, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

Since the Source Water Pipeline and Source Water Pipeline using the optional alignment would have the same potential impacts, the same impacts and mitigation measures would apply to the Source Water Pipeline using the optional alignment as apply to the Source Water Pipeline.

New Desalinated Water Pipeline

The construction footprint for the new Desalinated Water Pipeline is approximately 35.4 acres. A portion of the construction footprint for the new Desalinated Water Pipeline overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, Castroville Pipeline, Castroville Pipeline using the optional alignment 1, and Castroville Pipeline using the optional alignment 2. The new Desalinated Water Pipeline would be located outside of the MBNMS.

Riparian woodland and scrub at Locke-Paddon Park and near the intersection of Marina Green Drive and Del Monte Boulevard are potential waters of the U.S./waters of the state. Pipeline installation activities could temporarily impact 0.42 acre of riparian woodland and scrub. Temporary impacts on these potential waters of the U.S./waters of the state would be significant.

Direct impacts on these features would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures),** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)**. These measures would reduce impacts on potentially jurisdictional waters by designating a lead biologist to oversee and ensure implementation of jurisdictional waters protective measures; requiring worker training regarding jurisdictional waters potentially present to ensure that workers are aware of jurisdictional waters that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent jurisdictional waters and other measures to avoid and minimize impacts on jurisdictional waters; and requiring the project to be designed to avoid and/or minimize direct impacts on jurisdictional waters to the extent feasible, using HDD or other trenchless methods to install pipeline underneath wetlands or waters (with some exceptions), and compensating for loss of jurisdictional waters.

Indirect impacts could occur from construction-related soil erosion and related effects on water quality. However, mandatory compliance with the NPDES Construction General Permit,

including implementation of the project SWPPP, would avoid significant indirect impacts on water quality and no mitigation measures are required.

Since the new Desalinated Water Pipeline and the new Desalinated Water Pipeline using the optional alignment would have the same potential impacts, the same impacts and mitigation measures would apply to the new Desalinated Water Pipeline using the optional alignment as apply to the new Desalinated Water Pipeline.

Castroville Pipeline

The construction footprint for the Castroville Pipeline is approximately 15.0 acres. A portion of the Castroville Pipeline construction footprint overlaps with a portion of the construction footprints for the Source Water Pipeline, Source Water Pipeline using the optional alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline using the optional alignment. The Castroville Pipeline would be located outside of the MBNMS.

There are a few potentially jurisdictional waters of the U.S./water of the state within the Castroville Pipeline alignment which include the Salinas River, Tembladero Slough, riparian woodland and scrub communities, freshwater marsh communities, and a few culverts and ditches.

Pipeline installation activities could temporarily impact approximately 0.9 acre of riparian woodland and scrub, and additional culverts and ditches. Additionally, a barge would be temporarily used within the Salinas River to install the pipeline on the existing bridge over the river. Temporary impacts on these potential waters of the U.S./waters of the state would be significant.

The pipeline would be installed on the underside of an existing bridge over the Salinas River using a barge and beneath Tembladero Slough using HDD. The Salinas River, Tembladero Slough, and other potentially jurisdictional features are located adjacent to the alignment and the construction area. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect impacts on water quality in these features from upland erosion. Due to proximity of these features to the construction site, potentially significant impacts could result from construction-related activity extending beyond the designated construction work area and into these features. Additionally, if a frac-out occurs during HDD, bentonite slurry could be released into Tembladero Slough, which could degrade water quality, a significant impact.

Direct impacts on these features would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1q (Frac-out Contingency Plan)**, and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)**. These measures would reduce impacts on potentially jurisdictional waters by designating a lead biologist to oversee and ensure implementation of jurisdictional waters protective measures; requiring worker training regarding jurisdictional waters potentially present to ensure that workers are aware of jurisdictional waters that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring

general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent jurisdictional waters and other measures to avoid and minimize impacts on jurisdictional waters; requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on special-status species and their habitat; and requiring the project to be designed to avoid and/or minimize direct impacts on jurisdictional waters to the extent feasible, using HDD or other trenchless methods to install pipeline underneath wetlands or waters (with some exceptions), and compensating for loss of jurisdictional waters.

The Castroville Pipeline using the optional alignment 1 would impact approximately 0.9 acre of riparian woodland and scrub, 0.01 acre of freshwater marsh, and additional culverts and ditches. The Castroville Pipeline using the optional alignment 2 would impact approximately 0.9 acre of riparian woodland and scrub and additional culverts and ditches. The Castroville Pipeline using the optional alignments would generally result in the same type of impact as described for the Castroville Pipeline. The same impact conclusion and mitigation measures would apply to the Castroville Pipeline using the optional alignments as apply to the Castroville Pipeline.

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

The construction footprint for the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond combined is approximately 7.4 acres. These facilities would be located outside of the MBNMS.

The Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would have no direct impacts on waters of the U.S./waters of the state because as described below none are assumed to be located within these component footprints. The CSIP pond is located within the Pipeline to CSIP Pond alignment and is mapped as a freshwater pond by the NWI. The Monterey Regional Water Pollution Control Agency (MRWPCA) operates this concrete-lined, man-made, industrial pond as part of their wastewater treatment and recycled water facilities. For this reason, this EIR/EIS assumes the ponds are not waters of the U.S. or waters of the state. No direct impact on waters of the U.S. or waters of the state would occur from installation of the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond.

A potentially jurisdictional pond is located approximately 60 feet south of these components. Water quality within this feature could be indirectly impacted from soil erosion and potential releases of toxic construction chemicals. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality in the pond and prevent significant impacts on water quality. However, due to proximity of the pond to the pipeline alignment, potentially significant impacts could result from construction-related activity extending beyond the designated construction work area and into these features.

Implementation of the following mitigation measures would reduce the significant impact on the pond to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program),** and **4.6-1c (General Avoidance and Minimization Measures)**. As summarized above in the impact discussion for the

subsurface slant wells, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline)

The ASR Facilities include the ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline. These facilities would be located outside of the MBNMS. The construction footprint for both of the ASR Wells is expected to be approximately 0.9 acre. The construction footprint of the area where water would be conveyed is approximately 7.0 acres. The construction footprint for all three ASR pipelines is approximately 8.8 acres. A portion of the construction footprint for the ASR pipelines overlaps with a portion of the construction footprints for the new Transmission Main and the new Transmission Main using the optional alignment.

There are no potential waters of the U.S./waters of the state within the Proposed ASR Facilities project area. Two potential waters of the U.S./waters of the state mapped by the NWI occur over 400 feet from the ASR Pipelines alignment. The project's distance from these features ensures that construction activities would not impact them. Furthermore, mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would avoid adverse impacts on offsite waters of the U.S./waters of the state. Therefore, there are no direct impacts and potential indirect impacts on these potential waters of the U.S./waters of the state would be less than significant and no mitigation is necessary.

Pipelines and Other Conveyance Facilities South of Reservation Road

New Transmission Main

The construction footprint for the new Transmission Main is approximately 27.1 acres. A portion of the new Transmission Main construction footprint overlaps with a portion of the ASR pipelines construction footprint. The new Transmission Main would be located outside of the MBNMS.

There are no potential waters of the U.S./waters of the state within the new Transmission Main alignment. There is one potentially jurisdictional feature located adjacent to the new Transmission Main project area, an ephemeral drainage located south of the 8th Street overpass. Water quality within this feature could be indirectly impacted from soil erosion and potential releases of toxic construction chemicals. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality in the pond and prevent significant impacts on water quality. However, due to proximity of the drainage to the pipeline alignment, potentially significant impacts could result from construction-related activity extending beyond the designated construction work area and into these features.

Indirect impacts on potential waters of the U.S./waters of the state associated with installation of the new Transmission Main would be significant. However, implementation of **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program),** and

4.6-1c (General Avoidance and Minimization Measures) would reduce these indirect impacts to a less-than-significant level. As summarized above in the impact discussion for the subsurface slant wells, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

Other potential waters of the U.S./waters of the state mapped by the NWI are located at least 400 feet from the new Transmission Main alignment. The project's distance from these features ensures that construction activities would not impact them. Additionally, mandatory compliance with the NPDES Construction General Permit would avoid significant impacts on the water quality. Therefore, construction of the new Transmission Main would not be expected to impact these offsite potential waters of the U.S./waters of the state.

Since the new Transmission Main and the new Transmission Main using the optional alignment would have the same potential impacts, the same impacts and mitigation measures would apply to the new Transmission Main using the optional alignment as apply to the new Transmission Main.

Carmel Valley Pump Station

The construction footprint for the Carmel Valley Pump Station, including associated pipelines, is approximately 0.2 acre. This facility would be located outside of the MBNMS.

There is a potentially jurisdictional wetland feature mapped by the NWI within the Carmel Valley Pump Station study area. Carmel Valley Pump Station construction activities could temporarily impact 0.005 acre of this feature.

Direct impacts on this potentially jurisdictional feature would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures),** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)**. As summarized above in the impact discussion for the new Desalinated Water Pipeline, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

The Carmel River is located approximately 280 feet south of the Carmel Valley Pump Station site. The project's distance from this feature ensures that construction activities would not impact it. Moreover, mandatory compliance with the NPDES Construction General Permit, including implementation of BMPs in the project's SWPPP would avoid impacts on water quality in the River and distance makes it unlikely that construction activities would inadvertently extend into the River. Therefore, indirect impacts on the off-site potential water of the U.S./water of the state would be less than significant and no mitigation is necessary.

Ryan Ranch-Bishop Interconnection Improvements

The construction footprint for the Ryan Ranch-Bishop Interconnection Improvements is approximately 7.3 acres. This facility would be located outside of the MBNMS.

The NWI has mapped a wetland drainage that appears to pass through a culvert underneath Lower Ragsdale Drive near the intersection of Lower Ragsdale Drive and Ryan Court within the Ryan Ranch-Bishop Interconnection Improvements site. This drainage may be considered a water of the U.S./waters of the state. Installation of the Ryan Ranch-Bishop Interconnection Improvements could temporarily impact 0.24 acre of the wetland drainage. Temporary impacts on this potential water of the U.S./water of the state would be significant. Other drainages mapped by the NWI are also located adjacent to the construction area. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality in these features and prevent significant impacts on water quality.

However, due to proximity of the potentially jurisdictional drainage to the pipeline alignment, potentially significant impacts to the potentially jurisdictional feature could result from construction-related activity extending beyond the designated construction work area and into these features.

Direct impacts on these features would be reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures),** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)**. As summarized above in the impact discussion for the new Desalinated Water Pipeline, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

Main System-Hidden Hills Interconnection Improvements

The construction footprint for the Main System-Hidden Hills Interconnection Improvements is 1.1 acre. This facility would be located outside of the MBNMS.

A wetland drainage, mapped by the NWI, is located approximately 600 feet downslope of the majority of the Main System-Hills Interconnection Improvements site, but appears to run either beneath or adjacent to the Middle Tierra Grande Booster Station. Depending on construction methods, construction activities at the Middle Tierra Grande Booster Station could temporarily directly impact the wetland drainage or indirectly impact the wetland drainage if construction worker foot traffic extends into this feature. Direct or indirect impacts would be a significant impact. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project SWPPP, would protect water quality in these features and prevent significant impacts on water quality.

Direct impacts on this feature would be further reduced to a less-than-significant level with implementation of the following mitigation measures: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures),** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)**. As summarized above in the impact discussion for the new Desalinated

Water Pipeline, these measures would reduce impacts on potentially jurisdictional waters by requiring implementation of protective measures.

Staging Areas

No potential waters of the U.S./waters of the state occur within any of the eight staging areas located throughout the project area.

Mandatory compliance with the NPDES Construction General Permit, including implementation of BMPs in the project's SWPPP would avoid impacts on any unknown potential waters outside of the boundary of the 8 staging areas. Therefore, use of the 8 staging areas would not result in direct or indirect impacts on waters of the U.S. and/or waters of the state. This impact is less than significant and no mitigation is necessary.

All staging areas would be located outside of the MBNMS.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction could be inconsistent with applicable regulatory requirements related to waters of the U.S. and/or waters of the state. Specifically, the project could be inconsistent with the Sections 404 and 401 of the CWA, Section 10 of the Rivers and Harbors Act, the Porter-Cologne Act, the Coastal Act, City of Marina General Plan Policies 4.112, 4.114, 4.116, 4.118, 4.119, 4.121, and 2.10; City of Marina LCLUP Policies 24 and 26 and Planning Guidelines entitled Rare and Endangered Species: Habitat Protection and Wetlands Protection; City of Seaside Local Coastal Program Land Use Plan Policies NCR-CZ 1.1.C, NCR-CZ 1.2.A, NCR-CZ 1.2.B, NCR-CZ 1.3.A, NCR-CZ 1.3.B, LUD-CZ 3.1.A, LUD-CZ 3.1B; Seaside General Plan Policies COS-4.1; Monterey County Carmel Valley Master Plan Policy CV-3.7; Monterey County Greater Monterey Peninsula Area Plan Policy GMP-3.6; and Monterey County General Plan Policies OS-5.16, OS-5.18, OS-5.22, which were established to avoid or mitigate impacts on waters of the U.S. and/or waters of the state. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures), 4.6-1q (Frac-out Contingency Plan),** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)** would reduce impacts on waters of the U.S. and/or waters of the state by designating a lead biologist to oversee and ensure implementation of jurisdictional waters protective measures; requiring worker training regarding jurisdictional waters potentially present to ensure that workers are aware of jurisdictional waters that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as staking or flagging the construction area to ensure work is restricted to the construction footprint and avoids adjacent jurisdictional waters and other measures to avoid and minimize impacts on jurisdictional waters; requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on special-status species and their habitat; and requiring the project to be designed to avoid and/or minimize direct impacts on jurisdictional waters to the extent feasible, using HDD or other trenchless methods to install pipeline underneath

wetlands or waters (with some exceptions), and compensating for loss of jurisdictional waters. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Impacts on waters of the U.S./waters of the state are described for each project facility above. Overall, construction of the entire proposed project has the potential to temporarily impact approximately 1.6 acre of federal wetlands, federal other waters, and/or waters of the state.

For all project facilities, mandatory compliance with the NPDES Construction General Permit, including implementation of the project-specific SWPPP, would ensure the construction-related impact on water quality in waters of the U.S./waters of the state related to increased soil erosion and/or inadvertent releases of toxic construction chemicals is less than significant.

Implementation and construction of the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, Castroville Pipeline and Castroville Pipeline Optional alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, new Transmission Main and new Transmission Main Optional alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements, have the potential to significantly impact waters of the U.S./waters of the state as a result of placement of fill, removal of a water/wetland feature, and/or the potential for construction activities or construction worker foot traffic to extend beyond the designated construction work area. For these facilities, implementation of the proposed mitigation measures would reduce impacts on waters of the U.S./waters of the state to less than significant.

The impact is less than significant for the MPWSP Desalination Plant, proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), and staging areas.

Overall, the project has potential to impact waters of the U.S./waters of the state. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1b applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1c applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1q applies to HDD installation of the Castroville Pipeline beneath Tembladero Slough.

Mitigation Measure 4.6-1q: Frac-out Contingency Plan

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-3 applies to the New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, New Transmission Main and New Transmission Main Optional Alignment, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvement, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-3: Avoid, Minimize, and or Mitigate Impacts to Wetlands.

1. A jurisdictional wetland delineation shall be conducted to determine the extent of waters of the U.S. and waters of the state within the project component footprints and anticipated construction disturbance area.

2. The proposed project shall be designed to avoid and/or minimize direct impacts on wetlands and/or waters under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and/or the California Coastal Commission to the extent feasible. Horizontal Directional Drilling or other trenchless or above water methods will be used at all pipeline crossings of wetlands and other waters of the U.S. and of the state, except some small order seasonal or ephemeral drainages which do not support riparian woodland, riparian scrub, marsh or other wetland vegetation, and which would be crossed during the dry season in the absence of flow or standing water.

3. Where disturbance to jurisdictional waters cannot be avoided, any temporarily impacted jurisdictional water shall be restored to pre-construction conditions or better at the end of construction. Compensation for permanent impacts shall be provided at a 2:1 or greater ratio. Compensation for loss of jurisdictional waters may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:

    a. Temporarily impacted areas are returned to pre-project conditions or greater

    b. Wetlands restored or constructed as federal wetlands meet the federal criteria for jurisdictional wetlands and wetlands restored or constructed as state wetlands meet the state criteria for jurisdictional wetlands

    c. No more cover by invasives than the baseline/impact area

    Compensation shall be detailed on a project-specific basis and shall include development of a Wetland Mitigation and Monitoring Plan (WMMP), which shall be developed prior to the start of construction and in coordination with permit applications and/or conditions. At a minimum, the WMMP shall include:

    a. Name and contact information for the property owner of the land on which the mitigation will take place;

    b. Identification of the source for supplemental irrigation;

    c. Identification of depth to groundwater;

    d. Baseline information, including a summary of the findings in any other recent wetland delineations applicable to the project disturbance area;

    e. Anticipated habitat enhancements to be achieved through compensatory actions;

    f. Monitoring methods and schedule;

    g. Performance and success criteria for wetland creation and/or enhancement, with success criteria in tabular form.

    h. Roles and responsibilities for mitigation funding, implementation, maintenance, monitoring, and reporting.

    i. Identification of the mechanism that will preserve the mitigation site in perpetuity, if necessary.

    Alternatively, offsite mitigation credits may be purchased at an approved mitigation bank; if no banks are available, then alternative mitigation may be achieved through payment of in-lieu fees.

Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or local tree ordinances. (*Significant and Unavoidable*)

Potential inconsistencies with the City of Marina LCLUP and local tree ordinances are described below.

Potential inconsistencies with all other local policies and ordinances protecting biological resources are addressed throughout this section rather than in a stand-alone impact discussion. Potential conflicts were identified in Table 4.6-4, above. In instances where the consistency analysis concluded the project may conflict with a policy or ordinance, the reader is referred to specific impact discussions (Impacts 4.6-1, 4.6-2, 4.6-3, etc.) addressing those specific biological resource issues.

City of Marina LCLUP

Several project facilities would occur in areas that may qualify as primary habitat according to the City of Marina LCLUP. These facilities include the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the staging area located at Beach Road.

The subsurface slant wells would be located in dune vegetation and wildlife habitat that would likely be considered qualify as primary habitat according to the City of Marina LCLUP, and therefore the project would result in impacts on primary habitat. Through design and facility siting, impacts on sensitive biological resources including special-status species and habitat have been minimized. Nonetheless, impacts could result from vegetation removal, grading, excavation, vehicle movements, or construction of the slant wells, and from periodic maintenance of the well heads. These activities have the potential to disturb vegetation, including nesting habitat for western snowy plover, host plants for Smith's blue butterfly, and sandy substrate for silvery legless lizard. Maintenance activities also could result in exacerbating dune erosion, and hazardous material spills (i.e., fuel, oil, lubricants) in sensitive habitat areas.

Construction and operation of the subsurface slant wells would permanently disturb up to 6 acres of central dune scrub and ice plant mats. The majority of the dune scrub vegetation is currently in a disturbed condition, situated in an inactive sand mining and material handling area that has been retired from use and subject to ice plant control. Typical dominant plant species of intact dune scrub vegetation are largely absent or just beginning to colonize the site, but a sizable population of Monterey spineflower, which often follows disturbance, is present, as are coast buckwheat host plants for Smith's blue butterfly.

Maintenance of the slant well heads would occur approximately every 5 years, and would require re-disturbance of a portion of the initial construction impact area. This would keep these sites in a permanent state of recovery from disturbance, whereby dune scrub vegetation would not be allowed to mature. Therefore, this would be considered a permanent loss of habitat for the special-status species that have the potential to recolonize the slant well head location if it were restored or allowed to recover naturally.

Similar to the subsurface slant wells, construction of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the staging area located at Beach Road could temporarily impact areas that would likely be considered primary habitat. Impacts on primary habitat, are described in Impact 4.6-2.

Compensation for permanent impacts on sensitive biological resources would occur through implementation of **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover**, **Mitigation Measures 4.6-1e: Avoidance and Minimization Measures for Special-Status Plants**, **Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly**, and **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas**, which would describe compensation requirements for western snowy plover, special-status plants, Smith's blue butterfly, sensitive communities, and ESHA, and development and implementation of a Habitat Mitigation and Monitoring Plan described in **Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan**, which describes restoration and preservation of these sensitive biological resources that would occur within the Monterey Bay coastal dune ecosystem.

The Marina LCLUP prohibits development in primary habitat that is not protective of and dependent upon that habitat. The LCLUP states, "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas" (City of Marina, 2013).

Implementation of **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover**, **Mitigation Measures 4.6-1e: Avoidance and Minimization Measures for Special-Status Plants**, **Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly**, **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat**, and **Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan** would reduce impacts on special-status species habitat by requiring implementation of appropriate compensation and development and implementation of a mitigation and monitoring plan for temporarily and permanently impacted special-status species habitat to ensure that temporary and permanent losses are fully compensated as required. However, construction and maintenance of the subsurface slant wells, new Desalinated Water Pipeline, new Transmission Main and the staging area located at Beach Road are not uses or developments dependent on the sensitive resources that comprise the primary habitat present. Therefore, these facilities would be inconsistent with the City of Marina LCLUP policies governing protection of primary habitat, a significant and unavoidable impact.

The CCC reached a similar conclusion in its review of the test slant well Coastal Development Permit application, on appeal. The CCC staff report for the test slant well states:

> "Although the project is proposed to be located in portions of the CEMEX site that have been subject to disturbance, the entire area in which the project would be located is primary habitat and ESHA under the LCP. The proposed project is not a resource dependent use, so it cannot be approved consistent with the LCP's habitat protection policies. (CCC, 2014)"

The CCC staff report noted that development of the test slant wells in the proposed location would also conflict with Coastal Act policies related to protection of ESHA (30240).

The CCC was ultimately able to approve the project consistent with the Coastal Act by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned.

Local Tree Ordinances

In general, the types of trees protected by local tree ordinances vary by jurisdiction. **Table 4.6-10**, below, summarizes the local plan, policy, or ordinance that regulates tree removal at each proposed facility site and describes the trees that are protected under the respective plan, policy, or ordinance. The table also includes a description of whether each proposed facility has potential to be inconsistent with a local tree ordinance by removing or impacting a protected tree.

Subsurface Slant Wells

The CEMEX mining area contains relatively undisturbed central dune scrub, formerly disturbed sand dunes that are slowly being occupied by native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil in actively mined areas. There are no trees within the subsurface slant well site. Therefore, no impact would result and no mitigation is necessary.

Staging Areas

There are 8 staging areas located throughout the project area. Some staging areas have trees located along the edge of the staging area boundary; however, no trees would be removed during project implementation. Therefore, no impact would result and no mitigation is necessary.

All Other Proposed Project Facilities and Pipelines

To the extent feasible, all other proposed project facilities would be sited so as to minimize tree removal and avoid impacts on trees. Depending on final siting and design of the proposed project facilities, as well as the construction methods and techniques, implementation of the proposed project could necessitate tree removal at various locations throughout the project area. Any trees removed during project construction may be inconsistent with local tree ordinances. This would be a potentially significant impact.

Implementation of **Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances),** which summarizes the local tree ordinances and permit requirements that would be implemented if trees were removed, would reduce potential impacts from being inconsistent with local tree ordinances to less than significant by ensuring compliance with local tree ordinances. This measure would reduce impacts on local tree ordinances by requiring conformance with local tree policies and ordinances.

TABLE 4.6-10
APPLICABLE LOCAL PLANS, POLICIES, AND ORDINANCES RELATED TO TREE REMOVAL

Proposed Facility	Jurisdiction	Local Plans, Policies, and Ordinances Related to Tree Removal	Protected Trees	Potential to be Inconsistent with Tree Ordinance
Subsurface Slant Wells	City of Marina	City of Marina Zoning Ordinance and General Plan	A tree removal permit is required to be obtained from the city for any tree that shall be removed or relocated. Oak woodland shall be protected to the greatest extent possible in recognition both of its relatively high biological and aesthetic resource value and its important role in California's and Monterey County's natural heritage. In areas supporting oak woodland, a site survey of this resource should be completed for all new subdivisions and commercial projects as part of a preliminary site and development review. All stands of oak woodland and individual specimens with a diameter of 6 inches or more when measured 4.5 feet from ground level should be identified on a base map. To the greatest extent possible, development plans shall then attempt to incorporate the oak woodland or individual specimens into the plan as an integral feature of the natural and built environment. All oak trees shall be replaced and maintained with new trees of the same stock as those found onsite or in the site vicinity according to the following replacement formula: a minimum one-for-one (one replacement tree for each tree removed) where replacement trees are proposed to be the same diameter or greater than those to be removed; a minimum three-to-one (three replacement trees for each tree removed) for replacement trees of lesser diameter than those proposed for removal, unless, as determined by arborist, the site's specific environmental conditions would not sufficiently support a healthy oak habitat. All diameter measurements shall be taken at 4.5 feet from ground level. Replacement trees shall be a mixture of sizes.	Consistent. There are no trees at the subsurface slant well site.
MPWSP Desalination Plant	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	The following trees are protected under this ordinance (tree diameters are measured 2 feet above the ground surface): ● oak trees 6 inches or more in diameter in the areas designated as Resource Conservation; Residential; Commercial; Industrial; Industrial, Mineral Extraction; or Agricultural ● landmark oak trees (trees 24 inches or more in diameter, trees which are visually significant, historically significant, or exemplary of their species) ● any oak tree removed for commercial harvesting purposes The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio. Additionally, the removal of healthy, native oak, Monterey pine, and redwood trees shall be discouraged.	Potentially Inconsistent. Several trees along Charles Benson Road may require removal to accommodate the proposed access driveways.

TABLE 4.6-10 (Continued)
APPLICABLE LOCAL PLANS, POLICIES, AND ORDINANCES RELATED TO TREE REMOVAL

Proposed Facility	Jurisdiction	Local Plans, Policies, and Ordinances Related to Tree Removal	Protected Trees	Potential to be Inconsistent with Tree Ordinance
MPWSP Desalination Plant (cont.)	Monterey County	Monterey County Code	Oak trees within areas designated as Resource Conservation, Residential, Commercial, or Industrial cannot be removed without the approval of necessary permits. Exceptions include removal of oak trees pursuant to the purpose and standards required in areas designated as Agriculture, Industrial, and or Mineral Extraction. In addition, Title 20, Parts 2-5, addresses native tree removal and protection in the Coastal Zone and Title 21 outside the Coastal Zone. Chapter 16 of the Monterey County Municipal Code also addresses oak and other native tree protection. Native trees in Monterey County, as defined in the ordinance, include Santa Lucia fir, black cottonwood, Fremont cottonwood, box elder, willows, California laurel, sycamores, oaks and madrones. Trees must be at least six inches in diameter two feet above the ground level in order to be subject to these regulations. A landmark oak tree is defined as an oak tree that is 24 inches or more in diameter when measured two feet above ground level or one that is visually significant, historically significant, or exemplary of its species. Removal of any landmark tree is prohibited unless approved by the County Director of Planning and Building Inspection. The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	
Source Water Pipeline and Source Water Pipeline Optional Alignment	City of Marina	City of Marina Zoning Ordinance and General Plan	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, implementation of this pipeline could require tree removal or construction within the driplines of trees at the CEMEX sand mining facility and/or along Charles Benson Road.
	Monterey County	Monterey County Zoning Ordinance (North County Land Use Plan Local Coastal Program)	The following trees are protected under this ordinance (tree diameters are measured 2 feet above the ground surface): ● oak trees 6 inches or more in diameter in the areas designated as Resource Conservation; Residential; Commercial; Industrial; Industrial, Mineral Extraction; or Agricultural ● landmark oak trees (trees 24 inches or more in diameter, trees which are visually significant, historically significant, or exemplary of their species) ● any oak tree removed for commercial harvesting purposes The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	
	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	See above.	
	Monterey County	Monterey County Code	See above.	

TABLE 4.6-10 (Continued)
APPLICABLE LOCAL PLANS, POLICIES, AND ORDINANCES RELATED TO TREE REMOVAL

Proposed Facility	Jurisdiction	Local Plans, Policies, and Ordinances Related to Tree Removal	Protected Trees	Potential to be Inconsistent with Tree Ordinance
New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment	City of Marina	City of Marina Zoning Ordinance and General Plan	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, implementation of this pipeline could require tree removal or construction within the driplines of trees along Charles Benson Road or Del Monte Boulevard.
	Monterey County	Monterey County Zoning Ordinance (North County Land Use Plan Local Coastal Program)	See above.	
	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	See above.	
	Monterey County	Monterey County Code	See above.	
Castroville Pipeline and Castroville Pipeline Optional Alignments	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, implementation of this pipeline could require tree removal or construction within the driplines of trees located along Charles Benson Road, the Salinas River, north of Tembladero Slough, and in other isolated locations along the alignment.
	Monterey County	Monterey County Zoning Ordinance (North County Area Plan)	The following trees are protected under this ordinance (tree diameters are measured 2 feet above the ground surface): ● oak or madrone trees 6 inches or more in diameter ● landmark oak trees (trees 24 inches or more in diameter, trees which are visually significant, historically significant, or exemplary of their species) ● any oak tree removed for commercial harvesting purposes The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	
	Monterey County	Monterey County Zoning Ordinance (Greater Salinas Area Plan)	The following trees are protected under this ordinance (tree diameters are measured 2 feet above the ground surface): ● oak trees 6 inches or more in diameter in the areas designated as Resource Conservation; Residential; Commercial; Industrial; Industrial, Mineral Extraction; or Agricultural ● landmark oak trees (trees 24 inches or more in diameter, trees which are visually significant, historically significant, or exemplary of their species) ● any oak tree removed for commercial harvesting purposes The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	
	Monterey County	Monterey County Code	See above.	

TABLE 4.6-10 (Continued)
APPLICABLE LOCAL PLANS, POLICIES, AND ORDINANCES RELATED TO TREE REMOVAL

Proposed Facility	Jurisdiction	Local Plans, Policies, and Ordinances Related to Tree Removal	Protected Trees	Potential to be Inconsistent with Tree Ordinance
Brine Discharge Pipeline and Pipeline to CSIP Pond	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, implementation of these pipelines could require tree removal or construction within the driplines of trees located along Charles Benson Road and along the MRWPCA Regional WTTP access roads.
	Monterey County	Monterey County Code	See above.	
Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline)	City of Seaside	City of Seaside Municipal Code	A tree permit is required to be obtained from the City for removal or alteration of any tree on private property. The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	Potentially Inconsistent. Although not anticipated, depending on final design, installation of the ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline could require tree removal or construction within the driplines of trees located at these sites.
New Transmission Main and New Transmission Main Optional Alignment	City of Marina	City of Marina Zoning Ordinance and General Plan	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, implementation of this pipeline could require tree removal or construction within the driplines of trees located along Del Monte Boulevard, the TAMC right-of-way, Lightfighter Drive, and General Jim Moore Boulevard.
	City of Seaside	City of Seaside Municipal Code	See above.	
	City of Monterey	City of Monterey Municipal Code	A tree permit is required to be obtained from the City for removal or excessive pruning of any protected tree. Protected trees are defined as a) trees located on a vacant private parcel that are more than two inches (2”) in diameter when measured at a point four feet six inches (4’6”) above the tree’s natural grade; and, b) trees located on a private, developed parcel that are more than six inches (6”) when measured at a point four feet six inches (4’6”) above the tree’s natural grade.	
Carmel Valley Pump Station	Monterey County	Monterey County Zoning Ordinance (Carmel Valley Master Plan)	The following trees are protected under this ordinance (tree diameters are measured 2 feet above the ground surface): ● oak, madrone, or redwood trees 6 inches or more in diameter ● landmark oak trees (trees 24 inches or more in diameter, trees which are visually significant, historically significant, or exemplary of their species)	Potentially Inconsistent. Although not anticipated, depending on final design, installation of the Carmel Valley Pump Station could require tree removal or construction within the driplines of trees located at this site.
Carmel Valley Pump Station (cont.)			● any oak tree removed for commercial harvesting purposes The applicant would be required to relocate or replace each removed protected tree on a one-to-one ratio.	
	Monterey County	Monterey County Code	See above.	

TABLE 4.6-10 (Continued)
APPLICABLE LOCAL PLANS, POLICIES, AND ORDINANCES RELATED TO TREE REMOVAL

Proposed Facility	Jurisdiction	Local Plans, Policies, and Ordinances Related to Tree Removal	Protected Trees	Potential to be Inconsistent with Tree Ordinance
Ryan Ranch–Bishop Interconnection Improvements	City of Monterey	City of Monterey Municipal Code	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, installation of the Ryan Ranch-Bishop Interconnection Improvements could require tree removal or construction within the driplines of trees located at this site.
	Monterey County	Monterey County Zoning Ordinance (Greater Monterey Peninsula Area Plan)	See above.	
	Monterey County	Monterey County Code	See above.	
Main System–Hidden Hills Interconnection Improvements	Monterey County	Monterey County Zoning Ordinance (Carmel Valley Master Plan)	See above.	Potentially Inconsistent. Although not anticipated, depending on final design, installation of the Main System-Hidden Hills Interconnection Improvements could require tree removal or construction within the driplines of trees located at this site.
	Monterey County	Monterey County Code	See above.	

Consistency with Regulatory Requirements

In addition to the impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction could be inconsistent with applicable regulatory requirements related to the City of Marina LCLUP policy protecting primary and secondary habitat and trees.

With respect to the City of Marina LCLUP policy protecting primary and secondary habitat, the project would be inconsistent with the City of Marina LCLUP Policy 25, "Rare and Endangered Species: Habitat Protection." Implementation of **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover**, **Mitigation Measures 4.6-1e: Avoidance and Minimization Measures for Special-Status Plants**, **Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly**, **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat**, and **Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan** would reduce impacts on special-status species habitat by requiring implementation of appropriate compensation and development and implementation of a mitigation and monitoring plan for temporarily and permanently impacted special-status species habitat to ensure that temporary and permanent losses are fully compensated as required. However, given that project facilities proposed for such habitats are not resource-dependent, and because the LCLUP policy provides no exception to the requirement that developments within such habitats be resource-dependent, potential conflicts with this policy would remain unresolved. The effect would be would be significant and unavoidable.

Regarding tree protection requirements, the project could be inconsistent with City of Marina General Plan Policy 4.120, City of Marina Municipal Code Chapter 17.51, Monterey City Code Chapter 37, Seaside Municipal Code Chapter 8.54, Carmel Valley Master Plan Policy CV-3.11, Monterey County Greater Monterey Peninsula Area Plan Policy GMP-3.5, Monterey County Code Section 21.64.260, Monterey County General Plan Policy OS-5.11, and Monterey County North County Area Plan Policy NC-3.4, which were established to avoid or mitigate impacts on trees. As discussed in the preceding paragraphs, **Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances),** which summarizes the local tree ordinances and permit requirements that would be implemented if trees were removed, would reduce potential impacts related to conflicts with local tree ordinances to less than significant. This measure would reduce impacts on local tree ordinances by requiring conformance with local tree policies and ordinances. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Implementation and construction of the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, and potentially the new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, new Transmission Main and new Transmission Main Optional alignment, and the staging area located at Beach Road would be inconsistent with the City of Marina LCLUP and impacts would be significant and unavoidable.

Implementation and construction of the MPWSP Desalination Plant, Castroville Pipeline and Castroville Pipeline Optional alignments, Brine Discharge Pipeline and Pipeline to CSIP Pond, proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements have the potential to be inconsistent with local tree ordinances. For these facilities, implementation of the proposed mitigation measures would reduce potential impacts from being inconsistent with local tree ordinances to less than significant.

Use of the remaining staging areas would be consistent with local tree ordinances. There would be no impact from these facilities and no mitigation is necessary.

Overall, the project would be inconsistent with local policies or ordinances protecting biological resources. The impact would be significant and unavoidable.

Mitigation Measures

Mitigation Measure 4.6-1d applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment.

Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover

(See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-1e applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, new Transmission Main and new Transmission Main Optional alignment, and Staging Areas.

Mitigation Measures 4.6-1e: Avoidance and Minimization Measures for Special-Status Plants

(See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-1f applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, new Transmission Main and new Transmission Main Optional alignment, and Staging Areas.

Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly

(See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-2b applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, new Transmission Main and new Transmission Main Optional alignment, and Staging Areas.

Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat

(See Impact 4.6-2, above, for description)

Mitigation Measure 4.6-1n applies to the subsurface slant wells, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, new Transmission Main and new Transmission Main Optional alignment, and Staging Areas.

Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan

(See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-4 applies to the MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Brine Discharge Pipeline and Pipeline to CSIP Pond, New Transmission Main and New Transmission Main Optional Alignment, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measure 4.6-4: Compliance with Local Tree Ordinances.

1. The project applicant shall perform a comprehensive survey within the project footprint to identify, measure, and map trees subject to local tree removal ordinances (as specified in Table 4.6-10) at least 30 days prior to start of planned ground disturbance or tree removal.
2. Any trees that are subject to local tree removal ordinances shall be avoided to the extent practicable.
3. If tree removal cannot be avoided by project construction, then the applicant shall comply with the applicable local tree policies or ordinances, obtain appropriate tree removal permits from applicable local agencies, and comply with those permits.
4. Tree removal, preservation, or mitigation on Army property would be done in accordance with the Integrated Natural Resource Management Plan Presidio of Monterey and Ord Military Community (November, 2008).

Impact 4.6-5: Introduce or spread an invasive non-native species during construction. (*Less than Significant with Mitigation*)

Project construction activities could contribute to the spread of invasive plants and/or introduce new invasive plants to the project area or adjacent lands with native plant communities through earth moving, transport of vehicles, equipment and materials, and unanticipated sediment dispersal during rain events, which would be a significant impact. Invasive species include those species that are rated by the California Invasive Plant Council as a 'high' or 'moderate' invasive species.[29]

[29] The California Invasive Plant Council defines high and moderate invasive species as follows (Cal-IPC, 2016):
High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, through establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Construction activities at the following facilities have potential to spread or introduce invasive species to native plant communities in or adjacent to the project area: subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, Castroville Pipeline and Castroville Pipeline Optional alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), and new Transmission Main and new Transmission Main Optional alignment. These facilities are either located within or are adjacent to native plant communities. Introducing or spreading invasive species to native plant communities is a significant impact. Implementation of **Mitigation Measure 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)** and **4.6-1p (Control Measures for Spread of Invasive Plants)** would reduce impacts to less than significant by designating a lead biologist to oversee and ensure implementation of special-status species and sensitive natural community protective measures and requiring implementation of measures, such as cleaning tools and equipment, to reduce the introduction or spread of invasive species.

Construction activities at the following facilities would not be expected to spread or introduce invasive species: Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas. The project areas for these facilities are either developed or largely surrounded by developed areas. Therefore, there would be no impact from the introduction or spread of the invasive species at these facilities and no mitigation is necessary.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction could be inconsistent with applicable regulatory requirements related to the introduction or spread of invasive species. Specifically, the project could be inconsistent with Executive Order 13112, which was established to avoid or mitigate impacts from the introduction or spread of invasive species. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)** and **4.6-1p (Control Measures for Spread of Invasive Plants)** would reduce impacts from the introduction or spread of invasive species by designating a lead biologist to oversee and ensure implementation of special-status species and sensitive natural community protective measures and requiring implementation of measures, such as cleaning tools and equipment, to reduce the introduction or spread of invasive species. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirement.

Impact Conclusion

Implementation and construction of the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional alignment, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional alignment, Castroville Pipeline and Castroville Pipeline Optional alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells,

ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), and new Transmission Main and new Transmission Main Optional alignment has the potential to introduce or spread invasive species. For these facilities, implementation of the proposed mitigation measures would reduce potential impacts from introducing or spreading invasive species to less than significant.

Implementation and construction of the Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas would not introduce or spread invasive species. There would be no impact from these facilities and no mitigation is necessary.

Overall, the project has potential to introduce or spread invasive species, which would be a significant impact. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), and New Transmission Main and New Transmission Main Optional Alignment.

Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures

(See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-1p applies to the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), and New Transmission Main and New Transmission Main Optional Alignment.

Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants

(See Impact 4.6-1, above, for description)

4.6.5.2 Operational and Facility Siting Impacts

With the exception of the MPWSP Desalination Plant, which would be staffed 24 hours a day, 365 days a year, all other proposed project facilities would be operated remotely via Supervisory Control and Data Acquisition (SCADA) and would not be regularly manned. Approximately every 5 years, periodic maintenance of the subsurface slant wells would require use of heavy construction equipment and would result in substantial ground disturbance in the CEMEX active mining area. CalAm facility operators would conduct routine inspections and maintenance of all

aboveground facilities but none of the other facilities would result in ground disturbance during routine operations.

It is assumed that CalAm maintenance staff would make pipelines repairs when needed. Because the location, nature, and extent of disturbance associated with future pipeline repairs cannot be predicted, it would be too speculative to analyze the potential site-specific adverse effects associated with future pipeline repairs at this time. However, certain pipeline repairs may be subject to future CEQA/NEPA review. For these reasons, only known, reasonably foreseeable, operational impacts are evaluated below.

Impact 4.6-6: Result in a substantial adverse effect on candidate, sensitive, or special-status species during project operations. (*Less than Significant with Mitigation*)

As described in Impact 4.6-1 and shown in **Table 4.6-2**, above, many special-status plants and animals are either known to occur, or have the potential to occur at the proposed facility sites. Operation of some project facilities would generate noise and increase ambient noise levels in the vicinity of the facility site. In addition, some of the aboveground facilities would include nighttime lighting. Depending on the existing conditions at the facility sites, operational noise and/or nighttime lighting could disturb migrating birds and other special-status wildlife species in the vicinity. These effects are described below. Routine site visits by CalAm facility operators to conduct inspections and monitor facility operations are not expected to generate substantial noise or result in adverse effects on special-status plants and wildlife.

Subsurface Slant Wells

CalAm facility operators would access the slant well sites using the existing CEMEX access road and the improved access road that would run north-south from Site 6 to the CEMEX access road (see **Figure 3-3a**). There is no proposed night lighting at this facility.

The slant wells would require periodic maintenance approximately every 5 years. During periodic maintenance, mechanical brushes would be lowered into the wells to mechanically clean the screens and, if needed, environmentally inert chemical cleaning products would be used. Periodic maintenance of the slant wells would result in approximately 6 acres of ground disturbance in the CEMEX active mining area. Maintenance of the 10 slant wells would occur over a period of 9 to 18 weeks every 5 years. Maintenance would be conducted between October and February to avoid the western snowy plover nesting season.

Several special-status species, as listed in **Table 4.6-2** and discussed in Impact 4.6-1, have potential to occur within central dune scrub in the immediate vicinity of the subsurface slant wells. These include Monterey spineflower, western snowy plover, Smith's blue butterfly, globose dune beetle, black legless lizard, and silvery legless lizard.

Additionally, western snowy plovers are known to breed and winter in this area and have potential to occur within the slant well site. As mentioned above, periodic maintenance would

occur between October and February and outside of the western snowy plover breeding season (breeding season is typically between March and September), so this maintenance would have no impact on breeding western snowy plover individuals. The disturbance area is located in and around the wellheads. Although western snowy plovers have not been recently documented breeding in the back dune area, nests have been historically observed in the back dunes, and this area continues to provide potential breeding habitat for this species. Continual disturbance of this 6-acre area every 5 years may preclude plovers from nesting in this location in the future. Therefore, this would be a permanent loss of up to 6 acres of western snowy plover habitat, which includes a mix of relatively undisturbed central dune scrub, formerly disturbed sand dunes that are revegetating with native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil in actively mined areas, which would be a significant impact. This 6-acre maintenance area would overlap with the 8-acre temporary disturbance area described in Impact 4.6-1. Therefore, the project (including both construction and maintenance) would result in a net permanent impact on 7 acres and temporary impact on 2 acres of western snowy plover habitat.

Maintenance activities would largely occur within the backdunes, away from the beach and foredunes where flocks of plovers are typically found in this season. However, wintering plovers could occur throughout the maintenance area and noise or disturbance from maintenance activities could directly or indirectly impact wintering plovers, in the manner described in *Overview of Potential Construction Effects on Wildlife* in Impact 4.6-1, a potentially significant impact. Maintenance work may also displace wintering birds that may utilize the beach or back dunes. Abundant wintering habitat is available elsewhere along the Monterey Bay shoreline to support any wintering western snowy plovers displaced during maintenance, since they are not reliant on a stationary location, such as a nest, during winter. Permanent impacts to plover habitat were addressed in the previous paragraph.

Steelhead have potential to occur in the Salinas River and Tembladero Slough. As described in Impact 4.4-3 in Section 4.4.5.2, slant well pumping would not directly pull surface water from the Salinas River, but it could draw in groundwater that would otherwise discharge to the river. The proposed project would remove approximately 400 afy of groundwater from the river recharge system. The annual volume of water flowing through the Salinas River to the ocean in 2012 was approximately 250,000 afy. Therefore, the 400 afy reduction would be approximately 0.16 percent of the total flow volume, a minor reduction in surface water supply. This same conclusion applies to Tembladero Slough where the removal of approximately 65 afy of groundwater discharge would constitute a minor reduction in surface water supply. Since project operations would not result in a substantial reduction in surface water supply in the Salinas River or Tembladero Slough, operations would not result in a substantial impact on steelhead or their habitat. Therefore, impacts on steelhead would be less than significant.

Coast buckwheat, host plant for Smith's blue butterfly, occurs within the proposed subsurface slant wells site (ESA, 2013; 2014). Removal of or impacts on these plants and associated soil during maintenance could impact individual adult butterflies, their eggs, or larvae, if present. Impacts to any life form of the Smith's blue butterfly would result in a significant impact. Additionally, maintenance activities have potential to impact up to approximately 1.6 acre of Smith's blue butterfly habitat. Since maintenance activities would disturb these areas every

5 years, it is considered a permanent loss of habitat, which would be a significant impact. This 1.6-acre impact area would overlap with the 1.6-acre temporary disturbance area described in Impact 4.6-1. Therefore, the project (including both construction and maintenance) would result in a net permanent impact on 1.6 acre of Smith's blue butterfly habitat.

Monterey spineflower, black legless lizard, silvery legless lizard, and other special-status species listed under subsurface slant wells in **Table 4.6-6** could be directly or indirectly impacted during maintenance of the subsurface slant wells during the 9- to 18-week construction period every 5 years in a similar manner to the impacts described under the headings *Overview of Potential Construction Effects on Plants* and *Overview of Potential Construction Effects on Wildlife* in Impact 4.6-1. These impacts would be potentially significant.

Globose dune beetle has potential to occur within central dune scrub at the slant well site. If present, maintenance activities could degrade habitat for this species, which would be a significant impact.

Impacts from subsurface slant well maintenance on central dune scrub, which is habitat for globose dune beetle, black legless lizard, silvery legless lizard, and coast horned lizard, are addressed below under Impact 4.6-7.

Implementation of the following mitigation measures would ensure that impacts on sensitive species at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard), 4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.14-2 (Site-Specific Nighttime Lighting Measures).** These measures would reduce impacts on special-status species from maintenance of the subsurface slant wells as described for the subsurface slant wells in impact 4.6-1.

Operation of the well pumps in the subsurface slant wells would generate noise. As stated in Section 4.12, Noise and Vibration, noise from pump operations would attenuate as it passes through both soil and the subsurface concrete casing. Simultaneous operation of 10 well pumps would conservatively generate a noise level of approximately 66 dBA at 50 feet. At 150 feet, this noise level would be no greater than the ambient noise generated by breaking waves (57 dBA). Since ambient noise levels at the CEMEX active mining area include noise generated from heavy machinery and mining vehicles associated with the CEMEX operations (85 dBA at 50 feet), crashing waves at the Pacific Ocean (57 dBA at 300 feet), and vehicle traffic along Highway 1, the 66 dBA attenuated noise level from pump operations would be less than the combination of these existing sources. Since the attenuated noise from the pumps would not exceed ambient

noise levels, the pumps would not be expected to impact migratory birds or other special-status wildlife at the site. Impacts would be less than significant.

As described in Section 4.12.14, Evaluation Criteria in Section 4.12, Noise and Vibration, operation of the proposed project would not involve equipment that would produce ground borne vibration. Since operation of the well pumps would not produce ground borne vibration, there would be no impact on western snowy plover from such vibration.

MPWSP Desalination Plant

The 3-million-gallon brine storage basin at the MPWSP Desalination Plant would be approximately 1.5 acres in extent. Research on impacts of hypersaline waterbodies on birds indicates that waterfowl using large highly saline lakes or ponds can become sick or die, particularly if there is not a source of fresh water in the vicinity. These waterbodies varied in size between 140 to approximately 3,200 acres in size (Gordus et al., 2002; Windingstand et al., 1987; USGS, 2004).

In 1985, approximately 150 waterfowl died and 250 were sickened from salt poisoning in White Lake, an approximately 3,200-acre waterbody (Windingstand et al., 1987). Sodium concentrations at that time were over 17,000 mg/l. In 1998 and 1999, approximately 200 dead and sick ruddy ducks were collected from an approximately 140-acre agricultural evaporation basin located in the San Joaquin Valley. Sodium concentrations were approximately 39,000 mg/l in the basin that year (Gordus et al., 2002).

The salinity of the brine in the MPWSP brine storage basis is expected to range between 57 and 58 parts per thousand (ppt; Flow Science, Inc., 2014). Waterfowl using the brine storage basin over long periods of time could become sick or die from salt toxicosis. The brine storage basin would be much smaller in size compared to the large hypersaline ponds described above and it is unlikely that the brine storage basin would impact the same number of birds as the ponds described above. Additionally, the freshwater pond located within Locke-Paddon Park, approximately 2 miles south of the proposed brine storage basin, is similar in size to the proposed basin and would provide a freshwater alternative to the basin. Although it is unlikely that many birds would become sick or die at the brine storage basin annually, over the life of the project, some migratory waterfowl could become sick or die from use of the brine storage basin, a significant impact.

Implementation of **Mitigation Measure 4.6-6 (Installation and Monitoring of Bird Deterrents at the Brine Storage Basin)** would reduce potential impacts on migratory waterfowl by discouraging them from using the basin. Bird deterrent measures (such as use of a falconer, bird whistles, and fine ropes placed over the pond) are used at the adjacent MRWPCA Regional Wastewater Treatment Plant to successfully deter most birds from their ponds (Holden, 2015).

The MPWSP Desalination Plant would use lighting for safety and security. Lighting would be similar to the existing light sources in the vicinity and would not change existing night lighting conditions or impact special-status wildlife in the vicinity. Pumps for the RO system would be located within the treatment building and would not generate substantial noise. Some noise would be generated from the emergency diesel-powered generator for approximately 20 to 30 minutes each week. As stated in Section 4.12, Noise and Vibration, generators of the size proposed

typically generate a noise level of 81 dBA L_{max} at 50 feet, similar to that of a diesel truck. Given the existing volume of diesel truck pass-by events on Charles Benson Road currently occurring from operations of the adjacent Monterey County Landfill, relatively infrequent noise from the generator, coupled with the sites proximity to an existing landfill and water treatment facility, would not significantly impact special-status wildlife in the vicinity. Lighting and noise impacts on special-status wildlife would be less than significant.

ASR-5 and ASR-6 Wells

Nighttime lighting may need to be installed at the ASR-5 and ASR-6 Wells for site safety and security. Lighting would be similar to existing light sources adjacent to the site (from the adjacent street lights, the golf course on the opposite side of General Jim Moore Boulevard, and adjacent residences) and would not significantly add to existing light sources or impact special-status wildlife in the vicinity of this site. Lighting impacts would be less than significant.

Each of the ASR-5 and ASR-6 Wells would be equipped with a pump that would be enclosed in a standard concrete pump house to attenuate pump noise. As stated in Section 4.12, Noise and Vibration, placing the motors in a standard concrete pump house would result in a resultant noise level of 57.5 dBA L_{max} at 50 feet. Ambient noise levels at the ASR-5 and ASR-6 Well sites (52 dBA) are the result of recreational activities at the golf course and vehicle traffic along General Jim Moore Boulevard. Substantial increases in the ambient noise level could adversely affect special-status wildlife within 50 feet of the ASR-5 and ASR-6 Well sites, a potentially significant impact. As described in Impact 4.12-5 in Section 4.12.6.2, implementation of **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)** would ensure that noise levels are maintained no greater than 5 dBA above existing monitored ambient values. This would ensure that the pumps would not substantially increase noise levels and would not significantly impact special-status wildlife in the vicinity of the site. Noise impacts on special-status wildlife would be less than significant with mitigation.

Brine Mixing Box

There would be two above-ground components associated with the Brine Mixing Box: a laboratory and a control building. The Brine Mixing Box would be operated remotely via SCADA. Trucks would occasionally bring brine samples to the laboratory. Night lighting would not be used at these facilities and noise from operations and use of the laboratory is not expected to exceed ambient noise levels. Therefore, operation of the Brine Mixing Box would not impact special-status species.

Carmel Valley Pump Station

Minimal nighttime lighting would be used at the Carmel Valley Pump Station for security. As the Carmel Valley Pump Station is located in the vicinity of the Carmel River riparian corridor, which provides habitat for migratory birds and bats, the new lighting would introduce a new source of substantial light to the area that could impact migratory birds or bats by causing them to abandon their nests or roosts, which is a significant impact. However, with implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, the impact would be

reduced to a less-than-significant level. The measure would reduce nighttime light and glare impacts on special-status wildlife species by requiring use of low-intensity lighting and that light be shielded or directed downward to prevent light spillage into adjoining areas where special-status wildlife species may occur.

Although CalAm would operate the Carmel Valley Pump Station via SCADA, CalAm facility operators would make routine visits to inspect the facilities and monitor operations. Routine visits would not generate substantial noise levels.

Operational pump noise could increase ambient noise levels in the immediate vicinity of the concrete pump houses. The Carmel Valley Pump Station is bordered by Carmel Valley Road to the north, the Carmel River and associated riparian corridor to the south, and residences to the east and west, and the existing ambient noise level at the site is 61.5 dBA. As stated in Section 4.12, Noise and Vibration, placing the pumps in an enclosed building would result in a resultant noise level of 62.6 dBA L_{eq} at 50 feet. Operation of the pump would not generate noise substantially above ambient levels. Therefore, noise impacts on special-status wildlife species would be less than significant.

Main System-Hidden Hills Interconnection Improvements

There would be no changes to the nighttime lighting at the Upper Tierra Grande Booster Station and Middle Tierra Grande Booster Station.

Upgraded pumps would replace existing pumps at the Upper Tierra Grande Booster Station and the Middle Tierra Grande Booster Station. Although the new replacement pumps would generate more noise than the existing pumps, they would still be located within existing buildings that would attenuate noise. Both pumps would be located alongside existing roadways and within existing residential developments. As stated in Section 4.12, Noise and Vibration, placing the pumps in the building enclosure would result in resultant noise levels of 61.1 dBA L_{eq} at 50 feet and 55.4 dBA L_{eq} at 50 feet at the Upper Tierra Grande Booster Station and Middle Tierra Grande Booster Station, respectively. Ambient noise levels at the site (44.7 dBA) are the result of existing residential activities at the site. Noise from these upgraded pumps would substantially increase noise levels. Substantial increases in the ambient noise level could adversely affect special-status wildlife within 50 feet of the booster stations. As described in Impact 4.12-5 in Section 4.12.6.2, implementation of **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)** would ensure that noise levels are maintained no greater than 5 dBA above existing monitored ambient values. This would ensure that the pumps would not substantially increase noise levels and would not significantly impact special-status wildlife in the vicinity of the site. Noise impacts on special-status wildlife would be less than significant with mitigation.

All Pipelines

Operation of the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline, and Ryan Ranch-Bishop Interconnection Improvements would not generate noise because these pipelines and pipeline

connections would be located underground and would not include pumps or any other noise-generating facilities. Pipeline operations would have no impact on special-status species. No mitigation is required.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP operations could be inconsistent with applicable regulatory requirements related to special-status species that were adopted for the purpose of avoiding or mitigating an environmental effect. Specifically, the project could be inconsistent with the FESA, Federal Migratory Bird Treaty Act, CESA, California Fish and Game Code, City of Marina General Plan Policies 4.112, 4.114, 4.118, 4.119, and 2.10; City of Marina Local Coastal Land Use Plan Policies 25 and 26 and Planning Guideline entitled Rare and Endangered Species: Habitat Protection, which were established to avoid or mitigate special-status species impacts, respectively. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly), 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard), 4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **Mitigation Measure 4.6-6 (Installation and Monitoring of Bird Deterrents at the Brine Storage Basin), 4.12-1b (General Noise Controls for Construction Equipment)**, **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)**, and **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** would reduce impacts on special-status species from MPWSP operations by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, conducting pre-construction surveys to determine if plovers are present and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat; requiring specific measures to avoid and minimize impacts on special-status plants such as avoiding individual plants to the extent feasible and compensating for temporary or permanent loss of special-status plants at a level acceptable to the applicable resource agencies; requiring specific measures to avoid and minimize impacts on Smith's blue butterfly such as avoiding host plants to the extent feasible to avoid impacts to individuals, relocating host plants, duff, and/or soil that cannot be avoided, and providing

compensatory mitigation for permanent impacts; requiring specific measures to avoid and minimize impacts on black legless lizard, silvery legless lizard, and coast horned lizard such as relocating individuals to areas outside of the construction area to avoid injury or mortality from construction; requiring specific measures to avoid and minimize impacts on nesting birds such as limiting construction to the non-nesting season when feasible to avoid impacts to active nests and requiring a no-disturbance buffer around active nests if work is scheduled during the nesting season; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; requiring implementation of measures to reduce the introduction or spread of invasive species that may degrade habitat for special-status species such as cleaning tools and equipment before entering and leaving worksites, avoiding driving or operating equipment in weed-infested areas, and covering non-active stockpiles; discouraging migratory waterfowl from using the Brine Storage Basin; requiring implementation of noise controls for construction equipment to reduce noise impacts on special-status wildlife species; ensuring that noise levels are maintained no greater than 5 dBA above existing monitored ambient values to reduce noise impacts on special-status wildlife species; and requiring use of low-intensity lighting and that light be shielded or directed downward to prevent light spillage into adjoining areas where special-status wildlife species may occur.

Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Periodic maintenance of the subsurface slant wells and regular operation of the MPWSP Desalination Plant and Carmel Valley Pump Station have the potential to impact special-status species. Implementation of the proposed mitigation measures would reduce impacts on special-status species to less than significant.

Operations and maintenance of the ASR-5 and ASR-6 Wells and Main System-Hidden Hills Interconnection Improvements would have less-than-significant impacts on special-status species. No mitigation is required.

Operations and maintenance of the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline, and Ryan Ranch-Bishop Interconnection Improvements, would not impact special-status species. Therefore, no impact would result and no mitigation is required.

Mitigation Measures

Mitigation Measure 4.6-1a applies to periodic maintenance of the subsurface slant wells.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1b applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1c applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1d applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1e applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1f applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1g applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1i applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1i: Avoidance and Minimization Measures for Nesting Birds.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1n applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1p applies to periodic maintenance of the subsurface slant wells.

Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-6 applies only to the MPWSP Desalination Plant.

Mitigation Measure 4.6-6: Installation and Monitoring of Bird Deterrents at the Brine Storage Basin.

Bird deterrents (such as reflective flagging, whistles, or a falconer) shall be utilized at the Brine Storage Basin. The type of bird deterrent shall be determined by the lead biologist and shall be modified if, through monitoring (as described below), the bird deterrents are either not sufficient at deterring birds from the Brine Storage Basin or pose a risk to wildlife.

Monitoring of the Brine Storage Basin shall include the following:

- ***Daily Monitoring:*** CalAm operational staff will monitor the brine pond on a daily basis as part of their regular routine. If staff see regular use of the pond by birds, any dead animals, or any unusual siting, USFWS will be notified within one working day.
- ***Monthly Monitoring*:** A qualified biologist and/or qualified biological monitor shall regularly survey the Brine Storage Basin at least once per month starting with the first month of operation of the Brine Storage Basin. The purpose of the surveys shall be to determine if the bird deterrents are effective in excluding birds and to assess whether the deterrents serve as a hazard to birds or wildlife. The monthly surveys shall be conducted in one day for a minimum of two hours following sunrise (i.e., dawn), a minimum of one hour mid-day (i.e., 1100 to 1300), and a minimum of two hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Operations staff at the MPWSP Desalination Plant shall also report finding any dead birds or other wildlife at the Brine Storage Basin to the Lead Biologist within one day of the detection of the carcass. The Lead Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to CalAm, CDFW, and USFWS.
- ***Quarterly Monitoring*:** If after 12 consecutive monthly site visits (described above) no bird or wildlife deaths are detected at the Brine Storage Basin by or reported to the Lead Biologist, monitoring can be reduced to quarterly visits.
- ***Biannual Monitoring*:** If after 12 consecutive quarterly site visits (described above) no bird or wildlife deaths are detected by or reported to the Lead Biologist, future surveys may be reduced to two surveys per year, during the spring nesting season and during fall migration.
- ***Modification of Monitoring Program*:** The Lead Biologist shall modify the monitoring program based on information acquired during monitoring if any changes are needed, and determine adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are observed.

Mitigation Measure 4.12-1b applies to the subsurface slant wells.

Mitigation Measure 4.12-1b: General Noise Controls for Construction Equipment.

(See Impact 4.12-1 in Section 4.12, Noise and Vibration, for description.)

Mitigation Measure 4.15-5 applies to ASR-5 and ASR-6 Wells and Main System-Hidden Hills Interconnection Improvements

Mitigation Measure 4.12-5: Stationary-Source Noise Controls.

(See Impact 4.12-5 in Section 4.12, Noise and Vibration, for description.)

Mitigation Measure 4.14-2 applies to the subsurface slant wells and Carmel Valley Pump Station.

Mitigation Measure 4.14-2: Site-Specific Nighttime Lighting Measures.

(See Impact 4.14-2 in Section 4.14, Aesthetic Resources, for description.)

Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations. (*Less than Significant with Mitigation*)

As described above under Impact 4.6-2, the following sensitive natural communities occur within or in the vicinity of the project area: central dune scrub, central maritime chaparral, northern coastal scrub, riparian woodland and scrub, freshwater marsh, and coast live oak woodland. Critical habitat is also considered a sensitive natural community for the purposes of this analysis. ESHA, as defined by the CCC and in local coastal plans, and primary habitat, as defined by the City of Marina's LCLUP occurs within the project area. (Potential operational impacts on wetlands or other waters, which are also considered sensitive natural communities, are addressed below under Impact 4.6-8.)

Project operations would largely be confined to water transport within the new facilities and would not result in any new ground disturbance. Maintenance activities at the subsurface slant wells would include periodic ground disturbance, which may result in impacts on sensitive natural communities. Foreseeable maintenance activities at the remaining proposed facilities would not result in any new ground disturbance and would not result in impacts on sensitive natural communities.

Subsurface Slant Wells

Maintenance of the slant wells would be required approximately every 5 years and would disturb a total of up to 6 acres of central dune scrub and areas that are currently actively disturbed for sand mining activities. This disturbance area includes relatively undisturbed central dune scrub, formerly disturbed sand dunes that are revegetating with native and non-native dune scrub vegetation, and unvegetated disturbed sandy soil areas. The total duration for maintenance activities would be 9 to 18 weeks every 5 years. Disturbance every 5 years would keep these sites in a permanent state of recovery from disturbance and dune scrub vegetation would not be allowed to mature. Therefore, this maintenance is considered a permanent impact. As stated above under Impact 4.6-2, the site is in the coastal zone and the entire maintenance area would likely be considered primary habitat under the City of Marina LCLUP and ESHA by the CCC. Impacts to central dune scrub and primary habitat/ESHA would be potentially significant. The

6-acre maintenance area would overlap with the 8-acre temporary disturbance area described in Impact 4.6-2. Therefore, both construction and maintenance of the subsurface slant wells would result in a net permanent impact on 7 acres and temporary impact on 2 acres of central dune scrub/primary habitat/ESHA.

Additionally, as described under Impact 4.6-2, western snowy plover critical habitat is located approximately 240 feet west of well Site 1. Slant well maintenance at well Site 1 could indirectly impact this critical habitat if worker foot traffic extends beyond the designated construction work area, if trash and debris is left behind following construction, and/or if invasive plant species are introduced or spread at the site. Indirect impacts on critical habitat would be significant.

Implementation of the following mitigation measures would ensure that maintenance impacts on sensitive natural communities, including critical habitat for western snowy plover, and primary habitat/ESHA, at this site are reduced to a less-than-significant level: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce impacts on sensitive natural communities, critical habitat, and primary habitat/ESHA during maintenance activities at the subsurface slant well as described for subsurface slant wells in Impact 4.6-2.

All Other Facilities

Operations and maintenance of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), new Transmission Main, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System–Hidden Hills Interconnection Improvements would include periodic maintenance and inspections of existing facilities. Known maintenance efforts and inspections would be limited to already developed areas, which do not support sensitive natural communities or primary constituent elements of critical habitat. No impact on sensitive natural communities or critical habitat from operations and maintenance of these facilities are expected. No mitigation is required.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP operations could be inconsistent with applicable regulatory requirements related to sensitive natural communities, critical habitat, and primary habitat/ESHA that were adopted for the purpose of avoiding or mitigating an environmental effect. Specifically, the project could be inconsistent with the FESA, the Coastal Act, City of Marina General Plan Policies 4.112, 4.114, 4.116, 4.118, and 2.10; City of Marina LCLUP Policies 8, 19, 25, 26 and

Planning Guideline entitled Rare and Endangered Species: Habitat Protection, which were established to avoid or mitigate sensitive natural community, critical habitat, and primary habitat/ESHA impacts. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas)**, and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** would reduce impacts on sensitive natural communities, critical habitat, and primary habitat/ESHA as described for subsurface slant wells in Impact 4.6-2. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Operations of underground components and project facilities within previously disturbed project footprints, which do not support sensitive natural communities, ESHA, or primary constituent elements of critical habitat, are not expected to impact on sensitive natural communities. No mitigation is required.

Maintenance of the subsurface slant wells has potential to impact sensitive natural communities, primary habitat/ESHA, and critical habitat. Implementation of the proposed mitigation measures would reduce impacts on sensitive natural communities, primary habitat/ESHA and critical habitat to less than significant.

Foreseeable maintenance at the other facilities would not disturb any new areas. Therefore, no impact would result. No mitigation is required.

Overall, the project has potential to impact sensitive communities, which would be a significant impact. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1b applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1c applies to the subsurface slant wells.

Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1d applies to the subsurface slant wells.

Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1n applies to the subsurface slant wells.

Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-2a applies to subsurface slant wells.

Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants.

(See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-2a applies to subsurface slant wells.

Mitigation Measure 4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.

(See Impact 4.6-2, above, for description.)

Mitigation Measure 4.6-2b applies to subsurface slant wells.

Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.

(See Impact 4.6-2, above, for description.)

Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during project operations. (*Less than Significant with Mitigation*)

As described in Impact 4.6-3, waters of the U.S./waters of the state under the jurisdiction of the CCC, RWQCB, and/or USACE occur within and adjacent to the project area. Project operations would largely be confined to water transport within the new facilities and would not result in any new ground disturbance. Maintenance activities at the subsurface slant wells would include ground disturbance, which may result in impacts on waters of the U.S./waters of the state within or adjacent to the project area. Foreseeable maintenance activities at the remaining proposed facilities would not result in any new ground disturbance and would not result in impacts on waters of the U.S./waters of the state.

Subsurface Slant Wells

Maintenance of the subsurface slant wells would require cleaning of well heads approximately for a total duration of 9 to 18 weeks every 5 years. Maintenance activities would not occur in potential waters of the U.S./waters of the state.

The CEMEX settling ponds, potentially waters of the U.S./waters of the state, are located approximately 50 feet from the slant well Site 1. Indirect impacts on water quality are not expected as these ponds are surrounded by berms and slope should attenuate any potential project related discharges to these features. Furthermore, maintenance activities would disturb approximately 6 acres of land, and similar to construction activities, would require coverage under the NPDES Construction General Permit and preparation and implementation of a SWPPP. Mandatory compliance with the NPDES Construction General Permit, including implementation of the project-specific SWPPP, would further reduce the potential for water quality impacts. However, due to proximity, construction crews could inadvertently impact wetlands by walking or driving through them during maintenance, which would be a significant impact.

Implementation of the following mitigation measures would ensure that potential impacts on adjacent waters of the U.S./waters of the state would be reduced to less-than-significant levels: **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, and **4.6-1c (General Avoidance and Minimization Measures).** These measures would reduce impacts on waters of the U.S./waters of the state from maintenance of the subsurface slant wells as described for subsurface slant wells in Impact 4.6-3.

All Other Facilities

Operations and maintenance of the MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline), new Transmission Main, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System–Hidden Hills Interconnection Improvements would include periodic inspections and repairs when needed. Any foreseeable disturbance associated with facility inspections, maintenance, and operations would be limited to developed areas that do not support waters of the U.S/waters of the state. No impact on waters of the U.S./waters of the state would result from maintenance and operations activities. No mitigation is required.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP operations could be inconsistent with applicable regulatory requirements related to waters of the U.S. and/or waters of the state. Specifically, the project could be inconsistent with the Sections 404 and 401 of the CWA, Section 10 of the Rivers and Harbors Act, the Porter-Cologne Act, the Coastal Act, City of Marina General Plan Policies 4.112, 4.114, 4.116, 4.118, and 2.10; City of Marina LCLUP Policy 26 and Planning Guidelines entitled Rare and Endangered Species: Habitat Protection, which were established to avoid or mitigate impacts

on waters of the U.S. and/or waters of the state. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program),** and **4.6-1c (General Avoidance and Minimization Measures)** would reduce impacts on waters of the U.S. and/or waters of the state as described for subsurface slant wells in Impact 4.6-3. Therefore, with these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Operations of underground components and project facilities within previously disturbed project footprints, which do not contain waters of the U.S./waters of the state, would result in no impact on waters of the U.S./waters of the state. No mitigation is required.

Maintenance of the subsurface slant wells has potential to impact potential waters of the U.S./waters of the state. Implementation of the proposed mitigation measures would reduce impacts on waters of the U.S/waters of the state to less than significant.

Foreseeable maintenance at the other facilities are not expected to disturb any new areas. Therefore, no impact is expected. No mitigation is required.

Overall, the project has potential to impact waters of the U.S./waters of the state, which would be a significant impact. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1b applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.**
>
> (See Impact 4.6-1, above, for description.)

Mitigation Measure 4.6-1c applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.**
>
> (See Impact 4.6-1, above, for description.)

Impact 4.6-9: Introduce or spread an invasive non-native species during project operations. (*Less than Significant with Mitigation*)

Periodic maintenance activities at the subsurface slant wells would include ground disturbance, which could contribute to the spread of invasive plants and/or introduce new invasive plants to the project area or adjacent lands with native plant communities through earth moving, transport of vehicles, equipment and materials, and unanticipated sediment dispersal during rain events, which would be a significant impact.

Implementation of **Mitigation Measure 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures) and 4.6-1p (Control Measures for Spread of Invasive Plants)** would reduce impacts to less than significant by designating a lead biologist to oversee and ensure implementation of special-status species and sensitive natural community protective measures and requiring implementation of measures, such as cleaning tools and equipment, to reduce the introduction or spread of invasive species.

Foreseeable maintenance activities at the remaining proposed facilities would not result in any new ground disturbance and would not spread or introduce invasive species.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP operations could be inconsistent with applicable regulatory requirements related to the introduction or spread of invasive species. Specifically, the project could be inconsistent with Executive Order 13112, which was established to avoid or mitigate impacts from the introduction or spread of invasive species. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)** and **4.6-1p (Control Measures for Spread of Invasive Plants)** would reduce impacts from the introduction or spread of invasive species by designating a lead biologist to oversee and ensure implementation of special-status species and sensitive natural community protective measures and requiring implementation of measures, such as cleaning tools and equipment, to reduce the introduction or spread of invasive species. Therefore, with these measures implemented, the MPWSP would be brought into conformance with Executive Order 13112.

Impact Conclusion

Operations of underground components and project facilities within previously disturbed project footprints would not have the potential to introduce or spread invasive species into native plant communities. Therefore, no impact would result from operations of these facilities and no mitigation is required.

Maintenance of the subsurface slant wells has potential to introduce or spread invasive species into native plant communities. Implementation of the proposed mitigation measures would reduce impacts from the introduction or spread of invasive species to less than significant.

Foreseeable maintenance at the other facilities would not disturb any new areas. Therefore, no impact is expected. No mitigation is required.

Overall, the project has potential to introduce or spread invasive species, which would be a significant impact. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-1p applies to the subsurface slant wells.

> **Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants.**
>
> (See Impact 4.6-1, above, for description)

Impact 4.6-10: Be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan during construction or operations. (*Less than Significant with Mitigation*)

The proposed project's consistency with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan during construction or operations is addressed below. Impacts to HMP special-status species and sensitive natural communities with potential to occur and be impacted by the proposed project are addressed in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7 above.

New Transmission Main

The portion of the new Transmission Main along the Monterey Peninsula Recreational Trail is located within the HMP area. It is located within an area designated as Development with Reserve Areas or Development with Restrictions. This designation includes lands that are slated for development in the HMP that contain inholdings of habitat reserve land or require development restrictions to protect habitat within or adjacent to the parcel. The new Transmission Main would pass through the HMP's Caltrans State Route 1 Area within the Development with Reserve Areas or Development with Restrictions category. The management requirements for these parcels specify that in conjunction with any transportation work conducted by Caltrans, Caltrans will restore and enhance native coastal strand, dune scrub, and sand hill maritime chaparral habitats in the road shoulders and medians in areas that will not conflict with anticipated highway expansion, improvements, operations, or maintenance. Even though the HMP only describes the potential for Caltrans transportation in this corridor, for the purpose of this analysis, we assume that the intent of the measure was to ensure that any projects that

temporarily disturbed native habitat would restore and enhance these areas following construction. Construction of the new Transmission Main would temporarily impact central dune scrub habitat, which would be inconsistent with the HMP, which is a significant impact.

Implementation of **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan),** and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** would ensure that the proposed project is not inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan and would reduce potential impacts to a less-than-significant level. These measures would reduce impacts by designating a lead biologist to oversee and ensure implementation of special-status species and sensitive natural community protective measures; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; and requiring measures to minimize and/or mitigate impacts on sensitive natural communities such as restoration of temporarily impacted sensitive communities, to ensure no net loss of habitat; and ensuring that measures that may be required to be implemented as part of the HMP are implemented for the proposed project.

Similar to the HMP, the new Transmission Main alignment is located within an area designated as a Development with Reserve Areas or Development with Restrictions. If the Draft HCP is approved and permitted before the proposed project is implemented, this facility may be subject to additional mitigation measures required under the approved HCP, which cannot be known at this time.

Since the new Transmission Main and the new Transmission Main using the optional alignment would have the same potential impacts, the same impacts and mitigation measures would apply to the new Transmission Main using the optional alignment as apply to the new Transmission Main.

Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) and Staging Areas

The proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) and some staging areas are located within the HMP area. However, these proposed facilities are located within designated development areas that do not border a NRMA. Per the HMP, no resource conservation or resource management requirements are associated with projects in these parcels. Therefore, construction of these facilities would be consistent with adopted habitat conservation plans or natural community conservation plans or other approved local, regional, or state habitat conservation plans. No impact is expected. Impacts to HMP special-status species and sensitive natural communities with potential to occur and be impacted by the proposed ASR Facilities are addressed in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7 above.

Similar to the HMP, the proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) and some staging areas are

located within Designated Development Areas in the Draft HCP. If the Draft HCP is approved and permitted before the proposed project is implemented, these facilities may be subject to additional mitigation measures required under the approved HCP, which cannot be known at this time.

All Other Proposed Project Facilities

Implementation of the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System–Hidden Hills Interconnection Improvements are not located within the HMP or HCP areas and therefore would not be subject to conformance with adopted habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans during construction as none occur at these facility sites. No impact is expected.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.6.2, Regulatory Framework, MPWSP construction and operations could be inconsistent with applicable regulatory requirements related to an approved HMP or HCP. Specifically, the project could be inconsistent with the City of Marina General Plan Policy 4.115, which was established to reduce impacts on species and habitat areas within an approved HMP or HCP. As discussed in the preceding paragraphs, **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan),** and **4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)** would reduce potential inconsistencies with an approved HMP or HCP as described above for the new Transmission Main. Therefore, with these measures implemented, the MPWSP would be consistent with the above-noted regulatory requirements.

Impact Conclusion

The portion of the new Transmission Main along the Monterey Peninsula Recreational Trail is located within the approved HMP area and construction and operations of this component could be inconsistent with the HMP, which would be a significant impact. Implementation of **4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1n (Habitat Mitigation and Monitoring Plan), and 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**would reduce potential impacts to a less-than-significant level by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring implementation of measures, such as cleaning tools and equipment, to reduce the introduction or spread of invasive species; developing and implementing a mitigation and monitoring plan for temporarily and permanently impacted sensitive habitats to ensure that temporary and permanent losses are fully compensated as required; and requiring measures to minimize and/or mitigate impacts on sensitive natural communities such as restoration of temporarily impacted sensitive communities, to ensure no net loss of habitat.

The proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) and some staging areas are located within the HMP area. However, these proposed facilities are located within designated development areas and construction and operations of these facilities would be consistent with the HMP. The remaining facilities are not located within the HMP area and would not be subject to conformance with the HMP. No impact and no mitigation required.

Overall, the project would be inconsistent with the HMP, which would be a significant impact. The impact would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure 4.6-1a applies to the New Transmission Main and New Transmission Main Optional alignment.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> (See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-1n applies to the New Transmission Main and New Transmission Main Optional alignment.

> **Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan.**
>
> (See Impact 4.6-1, above, for description)

Mitigation Measure 4.6-2b applies to the New Transmission Main and New Transmission Main Optional alignment.

> **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas**
>
> (See Impact 4.6-2, above, for description)

4.6.6 Cumulative Effects of the Proposed Project

Impact 4.6-C: Cumulative impacts related to terrestrial biological resources (*Significant and Unavoidable*)

The geographic scope of analysis for cumulative impacts on terrestrial biological resources includes sites proposed for MPWSP components, as well as biologically linked terrestrial areas within approximately 5 miles of these sites. This cumulative impact analysis considers the incremental effects of the proposed project, when combined with the effects of past, present, and reasonably foreseeable projects (as listed in **Table 4.1-2** and shown on **Figure 4-1**) on special-status species, riparian habitat, critical habitat, or other sensitive natural communities, ESHA, wetlands or other waters of the U.S. or state, and trees protected by local tree ordinances.

Special-Status Species and Sensitive Natural Communities

Many of the projects within the geographic scope of analysis occur on former Fort Ord lands, including the East Garrison Specific Plan (No. 2), Cypress Knolls Senior Residential Project (No. 8), Marina Heights (No. 9), Marina Airport Economic Development Area (No. 11), Rockrose Gardens (No. 39), CSUMB North Campus Housing Master Plan (No. 13), ITCD Academic Building (CSUMB) (No. 40), The Seaside Resort (No. 16), Monterey Downs and Horse Park and Central Coast Veteran's Cemetery Specific Plan (No. 17), Main Gate Specific Plan (No. 18), Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 1) (No. 29), Seaside Groundwater Basin Aquifer Storage and Recovery (Phase 2) (No. 30), and Fort Ord Dunes State Park Campground (No. 46). The Fort Ord HMP, which cover the former Fort Ord lands, has established designated development areas and habitat reserves on former Fort Ord lands to mitigate impacts from projects within development areas on biological resources, such as Monterey spineflower, sandmat manzanita, Smith's blue butterfly, black legless lizard, California red-legged frog, California tiger salamander, and western snowy plover, on a regional scale. The preservation of certain habitat types such as maritime chaparral and central dune scrub within these habitat reserves also protects habitat for other species not directly impacted by the HMP, such as coast horned lizard, globose dune beetle, Salinas kangaroo rat, and badger. The preservation of habitat reserves not only benefits these species within the former Fort Ord, but also benefits these same species on a regional scale within the southern Monterey Bay Area.

As noted, the HMP proposes actions that mitigate the effects of projects within the Fort Ord Reuse Plan area on habitat communities and associated species explicitly identified for conservation in the HMP. It is possible that the MPWSP and additional projects proposed within the HMP area could affect other habitat types that are not explicitly identified for conservation in the HMP (e.g., non-native grassland, coastal sage scrub, and oak woodland). If not properly mitigated, cumulative impacts from these projects on such habitats and dependent special-status species could be significant, and the proposed project could have a cumulatively significant contribution. As discussed in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7, most of the impacts from the MPWSP on such habitat communities would be temporary, although some permanent impact would result. As summarized in the following subsections, with mitigation, the residual effect of the MPWSP on these habitat types would be negligible. As a result, after implementation of mitigation, the MPWSP would have a less than significant cumulative impact on habitats within the HMP area.

Western Snowy Plover

As described in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7, and as summarized in **Table 4.6-6**, construction and operation of the MPWSP components could impact special-status species and the sensitive natural communities that support these species. The MPWSP would result in temporary and permanent impacts on western snowy plover that, given the sensitivity of this species, could result in a significant contribution to a significant cumulative impact. Cumulative projects identified in **Table 4.1-2** and within the geographic scope of cumulative impact analysis could also impact western snowy plover. Specifically, the CEMEX Removal Plan (No. 63), Monterey Shores Resort (No. 19), 90-Inch Bay Avenue Outfall Phase 1 (No. 43), Slant Test Well Project (No. 47), Moss Landing Community Plan (No. 37), and The Collection at Monterey Bay Resort (No. 56) would

affect beach or dune areas that may support western snowy plover. Implementation of the CEMEX Removal Plan, Monterey Bay Shores Resort and Moss Landing Community Plan projects could occur at the same time as the proposed MPWSP construction and therefore could adversely affect western snowy plover and its habitat through heavy equipment use, dust generation, elevated noise levels, increased human activity, and loss of habitat. The exact acreage of western snowy plover habitat that would be impacted from these cumulative projects is unknown, but could be 40 to 60 acres of coastal dune habitat. Although not all of this is within mapped western snowy plover critical habitat, for purposes of comparison, this would be a small percentage compared to the approximately 1,600 acres of mapped western snowy plover critical habitat within the Monterey Bay area. Additionally, other coastal dune habitat provides habitat for western snowy plovers beyond this 1,600 acres of mapped critical habitat. While removal of structures required by the CEMEX Removal Plan could temporarily disturb snowy plover habitat, the plan also requires restoration of the affected area with grading and seeding; therefore, the CEMEX Removal Plan could eventually provide beneficial impacts to snowy plover habitat. However, these overall effects of these projects would be cumulatively significant. Implementation of **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures); 4.6-1b (Construction Worker Environmental Awareness Training and Education Program); 4.6-1c (General Avoidance and Minimization Measures); 4.6-1d (Protective Measures for Western Snowy Plover); 4.6-1n (Habitat Mitigation and Monitoring Plan); 4.6-1p (Control Measures for Spread of Invasive Plants); 4.6-2a (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas); 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas); 4.6-6 (Installation and Monitoring of Bird Deterrents at the Brine Storage Basin); 4.12-1b (General Noise Controls for Construction Equipment);** and **4.14-2 (Site-Specific Nighttime Lighting Measures)** would reduce project-specific impacts to a less-than-significant level as described above under Impact 4.6-1, 4.6-2, 4.6-6, and 4.6-7. The proposed project would implement several measures including: avoiding work in the breeding season, ensuring any work that is conducted during the breeding season would not impact nesting western snowy plover, and implementing measures to minimize impacts on wintering western snowy plover. With implementation of these measures, the proposed project would minimize impacts on individual birds and would not adversely impact the western snowy plover population in the region. In regards to habitat impacts, the subsurface slant wells would be located within and adjacent to potential western snowy plover nesting habitat, and operation of the wells, including maintenance around the well heads could prevent use of the backdune habitat for nesting, which has been documented previously. Overall, the proposed project would result in 7 acres of permanent and 2 acres of temporary impact on western snowy plover habitat. Following implementation of **Mitigation Measure 4.6-1d**, residual temporary impacts on snowy plovers (i.e., during construction and subsurface slant well maintenance) would be minimal, and permanent loss of western snowy plover habitat would be compensated at a minimum 3:1 ratio through on-site or off-site creation, restoration, enhancement, or preservation of habitat for western snowy plover. Implementation of this measure would ensure that there is no overall permanent loss of available and functional western snowy plover habitat within the region. Thus, after mitigation, the permanent loss of snowy plover habitat attributable to the proposed project would be less than significant. The MPWSP Desalination Plant and Carmel Valley Pump Station also would have

operational impacts beyond the construction phase, but are not located in western snowy plover habitat. For these reasons, with mitigation, the incremental effects of the MPWSP would have a less than significant contribution to cumulative effects on western snowy plover.

Migrating Waterfowl

As described in Impact 4.6-6, operation of the brine storage basin at the MPWSP Desalination Plant could impact migrating waterfowl. The Dredge Laguna Grande and Roberts Lake Project (No. 42) could potentially impact migratory waterfowl by disturbing them during dredging activities, but this would be a short-term effect. The exact acreage of disturbance is unknown, but may be up 20 acres. Through implementation of the CEMEX Removal Plan (No. 63), the existing dredge pond located at the CEMEX property, which provides habitat for migratory waterfowl, would be reclaimed by natural processes. This reclamation would result in the eventual loss of the 1.5-acre dredge pond. Although the impacts to migratory waterfowl would be short-term (for dredging of Laguna Grande and Roberts Lake) and small (for reclamation of the dredge pond), these projects could contribute to a significant cumulative impact on migrating waterfowl, when viewed in combination with the proposed project's significant impact. Implementation of **Mitigation Measure 4.6-6 (Installation and Monitoring of Bird Deterrents at the Brine Storage Basin)** would reduce project-specific impacts to a less-than-significant level as described above under Impact 4.6-6. Additionally, the potential residual impacts from the brine pond, which may include illness or mortality of a few birds that aren't deterred from the brine storage basin, would only occur when it is in use periodically. Thus, after mitigation, the effects of these projects would not combine to result in a significant cumulative impact on migrating waterfowl due to the intermittent and/or short-term nature of the impacts. Therefore, with mitigation, the residual effects of the MPWSP would have a less than significant contribution to the cumulative effect.

Sensitive Vegetation Types, ESHA, and Wildlife Habitat

Construction and operation of the MPWSP would temporarily impact approximately 11 acres and permanently impact approximately 16 acres of non-native grassland, temporarily impact approximately 17 acres and permanent impact approximately 7 acres of central dune scrub, temporarily impact approximately 0.2 acre and permanently impact approximately 0.06 acre of northern coastal scrub, temporarily impact approximately 11 acres of central maritime chaparral, and temporarily impact approximately 0.7 acre and permanently impact approximately 0.04 acre of oak woodland. Construction and operation of the MPWSP would temporarily impact approximately 29 acres and permanently impact approximately 7 acres of ESHA. Areas of ESHA overlap with the vegetation types described above in the coastal zone. Disruption to these habitat communities could also affect special-status species that rely upon these habitats, including: Monterey spineflower, robust spineflower, seaside bird's beak, Menzies' wallflower, sand gilia, Yadon's rein orchid, Smith's blue butterfly, California tiger salamander, California red-legged frog, Hickman's onion, Hooker's manzanita, Toro manzanita, Pajaro manzanita, sandmat manzanita, Monterey Coast paintbrush, Monterey ceanothus, Congdon's tarplant, branching beach aster, Eastwood's goldenbush, sand-loving wallflower, Kellogg's horkelia, Carmel Valley bush-mallow, marsh microseris, northern curly-leaved monardella, south coast branching phacelia, Michael's rein orchid, Monterey pine, Santa Cruz microseris, Santa Cruz clover, Pacific

Grove clover, globose dune beetle, black legless lizard, silvery legless lizard, coast horned lizard, Coast Range newt, western burrowing owl, Monterey dusky-footed woodrat, Monterey shrew, American badger, and special-status bats and birds (Impact 4.6-1). Cumulative projects identified in **Table 4.1-2** and within the geographic scope of cumulative impact analysis could also adversely affect the above-listed habitat communities and associated species. Specifically, the Salinas Valley Water Project Phase II (No. 1), Laguna Seca Villas (No. 3), Omni Enterprises, LLC (No. 4), Ferrini Ranch Subdivision (No. 5), Marina Downtown Vitalization Specific Plan (No. 10), Marina Station (No. 12), Monterey Bay Shores Resort (No. 19), Rancho Canada Village (No. 27), Rancho Canada Golf Club (No. 28), RUWAP Desalination Element (No. 31), RUWAP Recycled Water Element (No. 35), Moss Landing Community Plan (No. 37), TAMC Monterey Peninsula Light Rail Project (No. 38), Slant Test Well Project (No. 47), The Collection at Monterey Bay Resort (No. 56), and 90-Inch Bay Avenue Outfall Phase 1 (No. 43) could have impacts on non-native grassland, central dune scrub, northern coastal scrub, central maritime chaparral, and/or oak woodland as well as ESHA. Implementation of the CEMEX Removal Plan (No.63) may result in short-term impacts on central dune scrub (which may be considered ESHA), but overall would restore and enhance this sensitive resource. Concurrent construction and/or operation of these projects could result in a significant cumulative impact on sensitive habitat communities and associated special-status species and ESHA through vegetation trimming or removal, elevated noise and dust levels, and increased human presence. The exact acreage of these habitats that would be impacted from these cumulative projects is unknown. A review of other environmental documents prepared for some of these projects indicate that there could be several hundreds of acres of grassland impacted, 70 to 100 acres of central dune or coastal scrub impacted, and several hundreds of acres of oak woodland impacted. Most MPWSP effects would be limited to the 24-month construction phase, with restoration of temporarily disturbed areas to previous conditions or better at the end of construction. Implementation of **Mitigation Measures 4.6-1a; 4.6-1b; 4.6-1c; 4.6-1e (Avoidance and Minimization Measures for Special-status Plants); 4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly); 4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard); 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl); 4.6-1i (Avoidance and Minimization Measures for Nesting Birds); 4.6-1j (Avoidance and Minimization Measures for American Badger); 4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat); 4.6-1l (Avoidance and Minimization Measures for Special-Status Bats); 4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine); 4.6-1n; 4.6-1o (Avoidance and Minimization Measures for California red-legged frog and California tiger salamander); 4.6-1p (Control Measures for Spread of Invasive Plants), 4.6-2a; 4.6-2b; 4.6-6; 4.12-5 (Stationary Source Noise Controls)** and **4.14-2** would mitigate for any potential permanent effects and reduce project-specific impacts to less-than-significant levels as described in Impacts 4.6-1, 4.6-2, 4.6-6, and 4.6-7 above. The proposed project would implement several measures including conducting pre-construction surveys for special-status species and relocating species outside of the construction area, avoiding impacts to sensitive habitats, and, if direct impacts cannot be avoided, providing appropriate compensation in the form of on-site or off-site restoration, enhancement or preservation. Implementation of these measures would ensure that there is minimal injury or death of individuals and the project would not adversely impact special-status species populations

in the region. Additionally, through restoration and compensation, implementation of these measures would ensure that impacts to functional special-status species and sensitive habitat would be adequately mitigated. Given the limited extent and duration of effects at any given MPWSP component site, the prevalence of such habitats within the geographic scope of analysis relative to the areas of MPWSP effect, the nearby availability of such habitats for use by species displaced during the construction period, and the required implementation of the proposed mitigation measures, the MPWSP's residual incremental contribution to cumulative effects on sensitive natural communities would be less than significant.

Construction of MPWSP components would temporarily impact approximately 0.06 acre of freshwater marsh and approximately 1.3 acre of riparian woodland and scrub. Disruption to these habitat communities could also affect special-status species reliant upon these habitats, such as western pond turtle and tricolored blackbird. Three foreseeable projects within the geographic scope of cumulative analysis could also affect freshwater marsh and riparian woodland and scrub habitats: the Ferrini Ranch Subdivision (No. 5), Rancho Canada Village (No. 27) and TAMC Monterey Peninsula Light Rail Project (No. 38). Construction of these projects could cause direct or indirect impacts on the sensitive freshwater marsh and riparian vegetation and wildlife habitat, and associated special-status species, resulting in a significant cumulative effect to which the proposed project could have a significant contribution. The exact acreage of freshwater marsh and riparian vegetation that would be impacted from these cumulative projects is unknown, but could be approximately 15 acres. The MPWSP would avoid two perennial water features (the Salinas River and Tembladero Slough) through attaching the pipeline to an existing bridge horizontal directional drilling (an option not available to the three cumulative projects), which would substantially minimize its contribution to cumulative impacts. Additionally, implementation of **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1i, 4.6-1n, 4.6-1p, 4.6-2a,** and **4.6-2b** would reduce the project-specific impacts to less-than-significant levels as described in Impacts 4.6-1 and 4.6-2 above. These mitigation measures would include installation of best management practices to reduce indirect impacts from erosion, ensuring equipment is fueled at least 50 feet from drainages, avoiding direct impacts to these features, and, if direct impacts cannot be avoided, requiring restoration of temporarily impacted areas and permanent compensation for permanent loss. Implementation of these measures would ensure that there would be minimal indirect impacts and there would be no net loss of available and functional wetland and riparian habitat. The Ferrini Ranch Subdivision is located over 5 miles from the MPWSP and, because of this distance, construction of these two projects would not impact the same specific sensitive habitat feature, although it could affect the same habitat type. Additionally, due to the limited duration of potential effects, the restoration of disturbed areas following construction, the availability of other similar habitats for use by displaced species during construction, and the required implementation of the proposed mitigation measures, the cumulative effects from the MPWSP would be less than significant.

Wetlands or Other Waters

As described in Impacts 4.6-3 and 4.6-8, MPWSP construction and operation could temporarily impact approximately 1.6 acre of federal wetlands, federal other waters, and/or waters of the state. These impacts would be temporary and, upon completion of construction, any affected

wetlands would be restored to their approximate pre-construction condition. Many of the projects listed in **Table 4.1-2** could cause temporary or permanent impacts on federal wetlands, federal other waters, and/or waters of the state. Specifically, the TAMC Monterey Peninsula Light Rail Project (No. 38), Ferrini Ranch Subdivision (No. 5), Marina Station (No. 12), Moss Landing Community Plan (No. 37), Dredge Laguna and Roberts Lake (No. 42), Monterey Pacific Grove ASBS Stormwater Management Project (No. 45), and Route 156 West Corridor Project (No. 53) would result in temporary or permanent impacts on wetlands and other waters. Other projects listed in **Table 4.1-2** may have similar effects. The exact acreage of wetland and other waters that would be impacted from these cumulative projects is unknown, but could be 35 acres. Concurrent construction and/or operation of these projects could result in significant cumulative impacts on these resources through wetlands fill or draining and increased human presence, to which the proposed project could have a significant contribution. Implementation of **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c,** and **4.6-3 (Avoid, Minimize, and or Mitigate Impacts to Wetlands)** would reduce the project-specific impacts to less-than-significant levels as described in Impacts 4.6-3 and 4.6-8, above. The proposed project would implement several measures including: installation of best management practices to reduce indirect impacts from erosion, ensuring equipment is fueled at least 50 feet from drainages, avoiding direct impacts to these features, and, if direct impacts cannot be avoided, requiring restoration of temporarily impacted areas and compensation for permanent loss. Implementation of these measures would ensure that there would be minimal indirect impacts and there would be no net loss of available and functional wetlands and waters. The MPWSP's effects on federal wetlands, federal other waters, and/or waters of the state would be temporary and limited to a small percentage of wetland habitat in the geographic scope of analysis – the MPWSP would potentially temporarily impact a maximum of approximately 1.6 acre of wetlands or other waters compared to approximately 5,500 acres of potential freshwater wetlands within the geographic scope of analysis as mapped by the National Wetland Inventory (USFWS, 2016). Additionally, a considerable amount of nearby wetlands habitat available for displaced species and ecological function would remain within the geographic scope of analysis, and the MPWSP effects would be temporary and fully restored upon completion of construction. Also, the Corps, RWQCB, CDFW, and/or the CCC may take jurisdiction over many of the water features that could be impacted by these other cumulative projects. If these other cumulative projects impact jurisdictional wetland or water features, those actions would be regulated by the Corps, RWQCB, CDFW, and/or the CCC and these agencies would impose measures to minimize and/or compensate for impacts on jurisdictional resources. Therefore, the MPWSP's incremental contribution to an adverse cumulative impact on wetlands habitat would be less than significant with mitigation.

City of Marina Local Coastal Program Land Use Plan

As described in Impact 4.6-4, construction of MPWSP components would be inconsistent with the City of Marina LCLUP since the project is not a resource-dependent use. Implementation of **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover**, **Mitigation Measures 4.6-1e: Avoidance and Minimization Measures for Special-Status Plants**, **Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly**, **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat**, and **Mitigation**

Measure 4.6-1n: Habitat Mitigation and Monitoring Plan would reduce impacts on special-status species habitat, as described in Impact 4.6-4 above, but the project would still be inconsistent with the LCLUP.

The test slant well at the CEMEX site is a cumulative project that is within the geographic scope of this analysis. The test slant well was also found to be inconsistent with the City of Marina LCLUP. Implementation of the proposed project would have a significant contribution to this test slant well impact related to inconsistencies with the city of Marina LCLUP. No mitigation measures are available that would reduce this impact to a level that is less than significant (*significant and unavoidable*).

Local Tree Ordinances

A significant cumulative impact would result if the incremental effects of the MPWSP combined with those of cumulative projects to be inconsistent with local tree ordinances. As described in Impact 4.6-4, construction of MPWSP components could require trimming or removal of protected trees, inconsistent with local tree ordinances. Other projects identified in **Table 4.1-2** that are within the geographic scope of cumulative impacts analysis may also need to trim or remove trees that are subject to local tree protection ordinances. For example, the Ferrini Ranch Subdivision (No. 5), Monterey Downs and Horse Park and Central Coast Veteran's Cemetery Specific Plan (No. 17) and Route 156 West Corridor Project (No. 53) would involve removal of a substantial number of trees. Local governments with jurisdiction over the geographic scope of cumulative impacts analysis (e.g., Seaside and Monterey County) have tree ordinances established for the purpose of protecting important trees and compensating for their removal. If the MPWSP and cumulative projects within the geographic scope of cumulative impact analysis involved tree removal and failed to comply with applicable tree ordinances, a significant cumulative effect would result, to which the proposed project could have a significant contribution. Implementation of **Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances)** would reduce the project-level impacts to less-than-significant levels as described in Impact 4.6-4, above. Avoiding the removal of trees, or compliance with tree removal permit requirements by replacing protected trees at a minimum one-to-one ratio as required in Table 4.6-10, would minimize or mitigate impacts on locally protected trees such that residual impacts on trees would be minimal and would no longer be inconsistent with local tree ordinances. Therefore, with mitigation, the residual effects of the MPWSP regarding being inconsistent with local tree ordinances would be minimal and would have a less than contribution to a significant cumulative impact.

Inconsistent with an adopted Habitat Conservation Plan

As described in Impact 4.6-10, portions of the Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance Pipeline, and ASR Recirculation Pipeline) located east of General Jim Moore Boulevard, and portions of the new Transmission Main and new Transmission Main using the optional alignment are located within the *1997 Installation-Wide Multispecies* HMP. As described above, many cumulative projects occur on former Fort Ord lands within the boundaries of the HMP. Construction and operation of these projects may include activities subject to HMP resource conservation and management

requirements. Failure of the MPWSP and one or more cumulative project to implement an applicable HMP conservation and/or management requirement would constitute a significant cumulative impact to which the proposed project could have a significant contribution. Installation of the new Transmission Main facilities would be required to comply with HMP-prescribed measures which would be implemented through project-level mitigation, including **4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), Mitigation Measures 4.6-1p (Control Measures for Spread of Invasive Plants), and 4.6-2b (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas)**. These measures would reduce project-level impacts to less-than-significant levels as described in Impact 4.6-10 above as the project would be consistent with the HMP. Therefore, with mitigation, the effects of the MPWSP regarding being inconsistent with an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan would be less than significant with mitigation.

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Zander Associates, 2014. Email from Leslie Zander, Zander Associates, to Chris Rogers, Environmental Science Associates regarding special status plant observations from the April 24, 2014 survey at CEMEX. May 9, 2014.

4.7 Hazards and Hazardous Materials

Sections	Figures	Tables
4.7.1 Setting / Affected Environment	4.7-1 Environmental Cases Near Project Components – Northern Portion	4.7-1 Environmental Cases Identified Within 0.25 Mile of the Project Area
4.7.2 Regulatory Framework	4.7-2 Environmental Cases Near Project Components – Southern Portion	4.7-2 Schools in the Vicinity of Project Components
4.7.3 Evaluation Criteria		4.7-3 Applicable Regional and Local Plans and Polices Relevant to Hazards and Hazardous Materials
4.7.4 Approach to Analysis		4.7-4 Summary of Impacts - Hazards and Hazardous Materials Impacts
4.7.5 Direct and Indirect Effects of the Proposed Project		4.7-5 MPWSP Desalination Plant (9.6 mgd) - Water Treatment Chemicals
4.7.6 Cumulative Effects of the Proposed Project		

This section evaluates the potential for construction and operation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to result in adverse impacts associated with hazards or hazardous materials, including releases of hazardous materials through routine use or accidents, being located near schools, airports, or within a high fire hazard area, or impairing emergency routes. The analysis is based on review of available hazards and hazardous materials websites, reports, and maps of the project area and vicinity, including reports and information posted on websites by the State Water Resources Control Board and the Department of Toxic Substances Control, and project-specific investigations conducted for various project components.

Comments received on the 2015 Draft EIR requested information on a hazardous materials site located along 1st Avenue in the City of Marina, noted the mis-location of one hazardous materials site on a figure and requested locating nearby schools on a map; the Fort Ord - University Villages site has been included and discussed in Section 4.7.1.1, the list and locations of hazardous materials sites has been updated and Figures 4.7-1 and 4.7-2 have been revised. Commenters requested a discussion on the possibility of frac-out during drilling, spill prevention measures, and a soil sampling and analyses for hazardous materials; these are now addressed in Impact 4.7-1 and Impact 4.7.2. Commenters requested the specific locations where trenchless drilling would be used for pipeline installation, and this is now discussed in Section 3.3.5.2.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Additional language about CalAm's potential responsibility under CERCLA is the MPWSP were to adversely affect the ongoing cleanup activities.*

4.7.1 Setting/Affected Environment

The study area for evaluation of hazards and hazardous materials impacts includes the project components and the vicinity adjacent to the components. In addition, the vicinity up to 0.25 mile from project components is considered relative to schools and up to 2 miles relative to airports. There is no known soil or groundwater contamination or wildfire hazard within MBNMS, nor any

existing hazardous material usage within MBNMS that could be affected by the proposed project. Therefore, MBNMS resources are not described in the environmental setting/affected environment.

4.7.1.1 Soil and Groundwater Conditions

This section assesses the potential for hazardous materials to be present in soil and groundwater in the project area as a result of past and present land uses, and documented releases of hazardous materials in the project vicinity. This discussion is based on review of regulatory agency databases and hazardous materials investigation reports available on regulatory agencies' websites, information available on the Fort Ord Reuse Authority (FORA) website, available environmental assessments prepared for the Transportation Agency for Monterey County (TAMC) corridor and the 46-acre MPWSP Desalination Plant site, and site reconnaissance.

Past and Present Land Uses in the Project Vicinity

Various past and current land uses associated with the use, generation, or disposal of hazardous materials exist in the project vicinity: the Monterey Regional Waste Management District (MRWMD) landfill, the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant, the former Fort Ord military base, commercial buildings, gasoline stations, railroad tracks, agricultural fields, residences, and recreational and open spaces. In some cases, these land uses have contributed to subsurface contamination that could be exposed during project construction and result in adverse environmental and health effects.

There is a potential for the following land uses in the project vicinity to have caused soil and/or groundwater contamination in the project area:

- ***Commercial/Industrial Uses.*** Commercial and industrial land uses include former and current gasoline service stations, dry cleaners, and other facilities that typically involve the use and storage of fuel, lubricants and oil, solvents, and other hazardous materials. Facilities with known releases of hazardous materials that have affected soil or groundwater are discussed below under the heading, Regulatory Agency Database Searches.
- ***Agricultural Uses.*** Portions of the proposed Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and Brine Discharge Pipeline are located within agricultural areas, and the proposed MPWSP Desalination Plant site is adjacent to agricultural fields. Historical agricultural land uses may leave behind residual levels of pesticides and herbicides in soils. In addition, farm equipment typically uses petroleum products and cleaning solvents (for equipment maintenance), which, in some cases, may have been released during use or storage. According to the Phase I Environmental Assessment for the 46-acre MPWSP Desalination Plant parcel,[1] the site was formerly owned by the Dole Food Company; however, the site appears to have historically been utilized as vacant land and no evidence of hazardous substances or petroleum products were noted (RBF Consulting, 2012).
- ***Railroad Operations.*** A preliminary environmental assessment of the Transportation Agency of Monterey County (TAMC) railroad corridor identified environmental concerns regarding the railroad alignment that would also overlap or be near portions of the proposed

[1] As described in Section 3.2.2 of Chapter 3, Description of the Proposed Project, the MPWSP Desalination Plant would be constructed on the upper terrace (approximately 25 acres) of the 46-acre parcel.

Castroville Pipeline, Source Water Pipeline, new Desalinated Water Pipeline, and the new Transmission Main Pipeline alignments (Kleinfelder, 2010). Soil along the railroad alignment may have been affected by fuel, oil, lubricants, and metals (e.g., cadmium, chromium, copper, nickel, and lead) leaking from railroad engines and cars over time. The railroad ties are typically wood that has been treated with creosote and less commonly copper, chrome, arsenic, and/or pentachlorophenol. Vegetation control is typically conducted using rail-mounted equipment that sprays herbicides along rail alignments.

- ***Sand Mining.*** The proposed Seawater Intake System and a portion of the Source Water Pipeline would be located within the CEMEX sand mining facility. Mining operations typically require the use of fuels and lubricants for equipment. The CEMEX facility was not listed as having a permitted UST or recorded releases in the regulatory agency database search discussed below under the heading, Regulatory Agency Database Searches.
- ***Former Fort Ord Military Base.*** Fort Ord was listed on the National Priorities List in 1990. Contaminated areas include munitions response sites; the Fritzsche Airfield Fire Drill Pit (Operable Unit [OU] 1); the Fort Ord landfill (OU2); firing ranges; hazardous waste storage areas; and unregulated disposal areas. Both soil and groundwater were impacted by contaminants in these areas, which have been investigated separately. The proposed ASR-5 and ASR-6 Wells, ASR Pipelines, and portions of the new Transmission Main would be within the Fort Ord Seaside Munitions Response site (LFR et al, 2011), which has potential unexploded ordnance hazards.[2] The former Fort Ord military base site is discussed in more detail below.

Regulatory Database Searches of Hazardous Materials Sites

Regulatory agency databases of hazardous materials sites that are compiled pursuant to Government Code Section 65962.5 were reviewed to identify documented releases of hazardous materials in soil and groundwater[3] within 0.25 mile (1,320 feet) of the project components, including the California State Water Resources Control Board (SWRCB) GeoTracker database and the California Department of Toxic Substances Control (DTSC) EnviroStor database. The relevant individual site documents are cited below. A 0.25-mile search radius from the project area was utilized to encompass the potential for migration of shallow groundwater contaminant plumes from typical leaking underground storage tank cases to adversely affect groundwater in the project area. Open environmental cases and their distance from project components are summarized in **Table 4.7-1** and shown on **Figures 4.7-1** and **4.7-2**. Leaking underground storage tank (LUST) sites that have been closed by the regulatory agency are not discussed because site closure indicates that the regulatory agency considers these sites to pose a low threat to human health and groundwater quality. The Fort Ord OU1 site was recently closed but is shown on Figure 4.7-1 for informational purposes. Some other closed sites located close to project components are also listed because they were closed some years ago and the older closure standards may result in residual contamination above current standards.

2 *Unexploded ordnance* refers to explosive weapons (bombs, bullets, shells, grenades, land mines, etc.) that did not explode when they were employed and still pose a risk of detonation, potentially many decades after they were used or discarded.

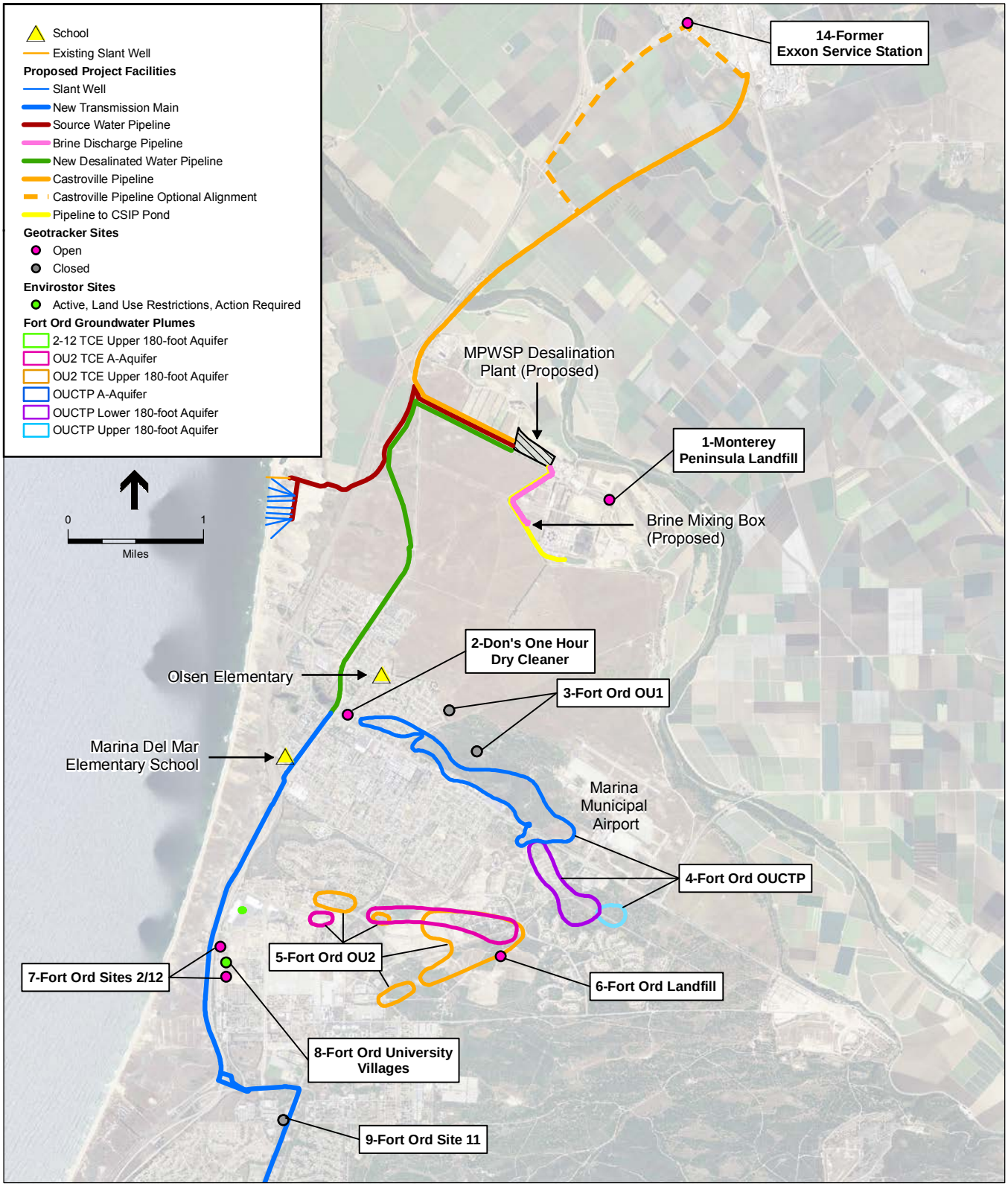
3 Unless listed in association with a documented release, it is assumed that facilities permitted to use, store, generate, or dispose of hazardous materials handle such materials in accordance with applicable laws and would not affect soil or groundwater in the project area.

TABLE 4.7-1
ENVIRONMENTAL CASES IDENTIFIED WITHIN 0.25 MILE OF THE PROJECT AREA

Map ID	Site Name/Address	Approximate Distance and Direction from Project Area	Status and Comments
1	Monterey Peninsula Class III Landfill	0.5 mile east of pipeline to CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box	Active – No environmental issues outside of landfill; does not underlie project components
2	Don's One Hour Dry Cleaners	530 feet east of new Desalinated Water Pipeline & new Transmission Main Pipeline	Active – Groundwater remediation in progress; does not underlie project components
3	Fort Ord OU1	0.9 mile east of new Desalinated Water Pipeline	Closed – Groundwater cleanup completed
4	Fort Ord OUCTP	1,100 feet east of new Desalinated Water Pipeline	Active – Groundwater remediation in progress; does not underlie project components
5	Fort Ord OU2	0.6 mile east of new Transmission Main Pipeline	Active – Groundwater remediation in progress; does not underlie project components
6	Fort Ord Sanitary Landfill	Two miles east of new Transmission Main Pipeline	Active – Groundwater remediation in progress; does not underlie project components
7	U.S. Army Fort Ord Sites 2 and 12	425 feet east of new Transmission Main Pipeline	Active – Groundwater remediation in progress; does not underlie project components
8	U.S. Army Fort Ord University Villages	800 feet east of new Transmission Main Pipeline	Active – Areas adjacent to Highway 1 have been remediated; does not underlie project components
9	Fort Ord Site 11	At staging area at northwest corner of General Jim Moore Blvd. & Gigling Road	Closed – Removed USTs and cleanup completed
10	Fort Ord Site 39 – Inland Ranges	0.5 mile east of ASR facilities	Closed – Cleanup complete along General Jim Moore Boulevard
11	Fort Ord Military Base Seaside Munitions Response Area	Within project area (ASR-5/ASR-6 wastewater infiltration area, southern part of new Transmission Main)	Closed – Cleanup complete along General Jim Moore Boulevard
12	Fort Ord Del Rey Oaks	0.8 mile north of Ryan Ranch-Bishop Interconnection Improvements	Closed in project area; still open inland – Cleanup complete along General Jim Moore Boulevard
13	Fort Ord York School Agreement	1,200 feet northeast of Ryan Ranch-Bishop Interconnection Improvements	Closed – Cleanup complete
14	Former Exxon Service Station	Adjacent to Castroville Pipeline Optional Alignment on northeast side of Merritt Street (Highway 183)	Active – Soil and groundwater remediation in progress

NOTE: Map ID numbers keyed to Figures 4.7-1 and 4.7-2.

SOURCES: Ahtna, 2016a, 2016b, 2016c; FORA, 2015; FORA, 2016a, 2016b; FOSET, 2007; LFR et al, 2008, 2011; Regenesis, 2016; RMC Geoscience, 2016; RRM, 2016; RWQCB, 2016; U.S. Army, 1997, 2012; USEPA, 2016; West, 2007

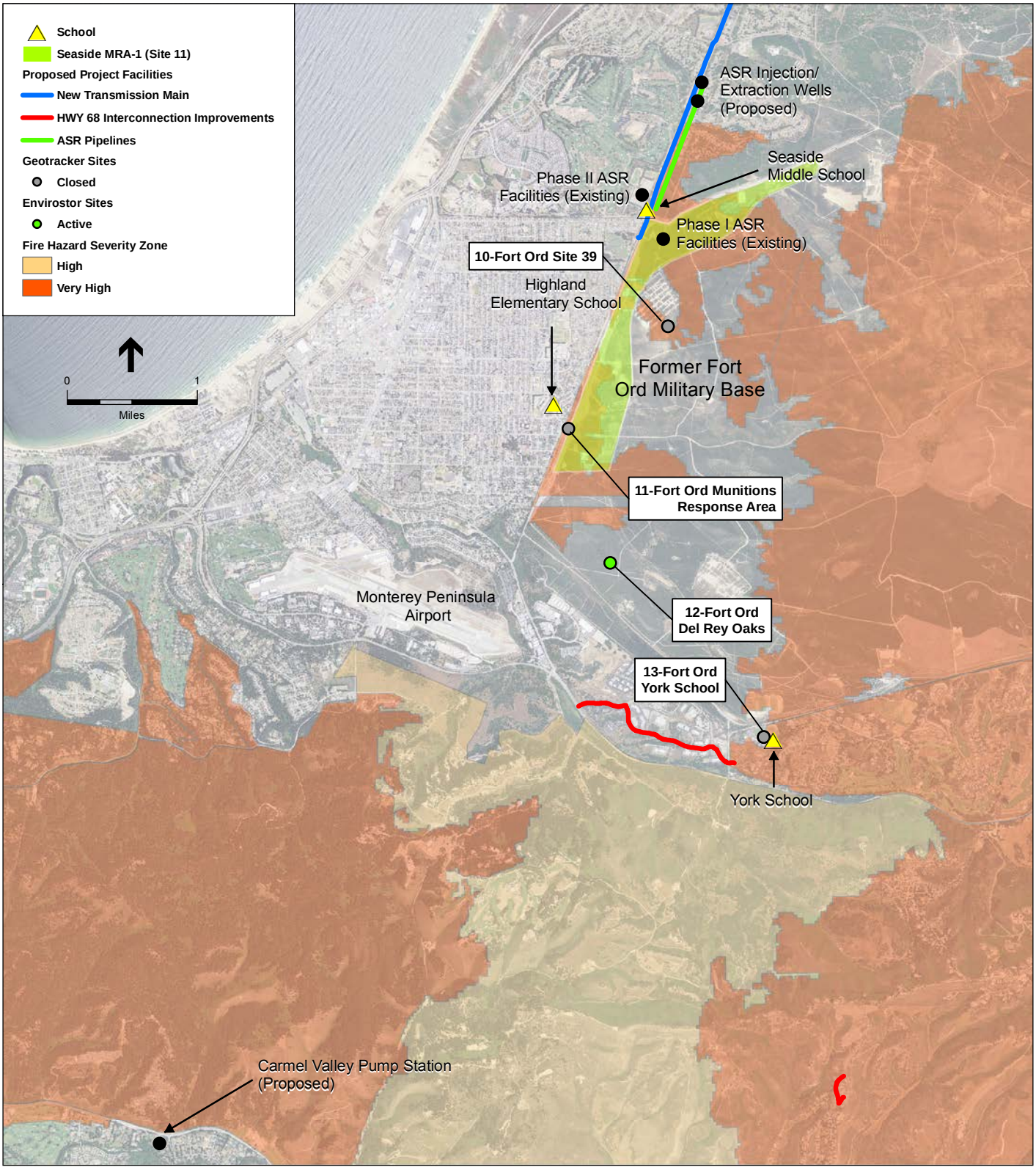


SOURCE: ESRI, 2007; RMC Geoscience, 2016; RWQCB, 2016; Regenesis, 2016; Ahtna, 2016a, 2016b, 2016c; West, 2007; FORA, 2016b

205335.01 Monterey Peninsula Water Supply Project

Figure 4.7-1

Environmental Cases Near Project Components - Northern Portion



SOURCE: CAL FIRE, 2007; CAL FIRE 2008; DTSC, 2016; ESRI, 2013; USEPA, 2016; FORA, 2015; U.S. Army, 1997; Arcadis, 2016; Leidos, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.7-2

Environmental Cases Near Project Components - Southern Portion

Sites associated with past hazardous materials use and environmental cases identified during the regulatory agency database review that are considered to have a high potential to impact soil and/or groundwater in the project area based on remedial investigation findings, proximity to individual project component sites, and/or groundwater gradient (i.e., the site is upgradient from the project area with respect to the direction of groundwater flow) are discussed below with Map ID numbers keyed to Table 4.7-1, and Figures 4.7-1 and 4.7-2.

Monterey Peninsula Class III Landfill

Non-hazardous waste has been deposited since 1966 in both unlined and lined areas of the Monterey Peninsula Class III Landfill (**Map ID 1**) (RMC Geoscience, 2016). On-going monitoring includes groundwater, surface water, leachate, and landfill gas. Groundwater flow in the -2-Foot Aquifer is generally from the Salinas River toward the landfill (southwesterly), although flow direction reversals have occurred. The flow direction in the perched 35-Foot Aquifer generally flows to the northeast and produces a series of intermittent springs and seeps along the bluff face along the northeast side of the landfill. This water is managed using a series of subdrains and surface drains that discharge or drain to a storm water percolation pond. Trace detections of volatile organic compounds (VOCs) are occasionally detected in groundwater within the interior of the landfill but not at the perimeter detection monitoring wells.

Former Don's One Hour Dry Cleaners

Don's One Hour Dry Cleaners is a former dry cleaning operation that is undergoing remediation for dry cleaning solvents released to groundwater beneath the site (**Map ID 2**) (Regenesis, 2016). Groundwater was treated with a proprietary compound injected into groundwater to remediate perchlorothene (aka tetrachloroethene; PCE) and its degradation daughter products (trichloroethene, 1,2-dichloroethene, vinyl chloride). Injections of proprietary compounds to treat dry cleaning solvents is a common method accepted by regulatory agencies. Post-treatment monitoring indicates that only vinyl chloride is still present at a low concentration in one onsite well. Regenesis has proposed to conduct a follow-up injection to complete the site remediation.

Fort Ord Military Base Seaside Munitions Response Area Including Site 39 Inland Ranges and Former Fort Ord York School

From 1917 until its deactivation in 1994, the Fort Ord military base served as a training and staging facility for United States Army (U.S. Army) infantry troops. Industrial chemicals, and munitions and explosives of concern (MECs) have been detected in soil and groundwater at numerous locations across the former base. In 1990, the United States Environmental Protection Agency (USEPA) placed the military base on the National Priorities List, indicating that the Superfund cleanup process would be applied to the site. This action was taken primarily due to the presence of unexploded ordnance (UXO) on the surface and subsurface of the property (USEPA, 2016).

Investigations regarding the locations of MEC were initiated by the U.S. Army in 1993. These investigations resulted in the delineation of Munitions Response Areas (MRAs) that include approximately 12,000 acres of the former Fort Ord military base (U.S. Army, 2012). Smaller units, known as Munitions Response Sites (MRS), are defined within the MRA. Cleanup at the

former Fort Ord military base is the responsibility of the U.S. Army, which is conducting ordnance cleanup for 8,000 acres. The U.S. Army has also entered into an Environmental Services Cooperative Agreement (ESCA) with the Fort Ord Reuse Authority (FORA) for MEC remediation and transfer of the remaining 3,340 acres (USEPA, 2016; FORA, 2015). These 3,340 acres, referred to as the Seaside MRA, will be available for redevelopment under a redevelopment plan adopted by FORA once remediation is complete. The Terminal Reservoir, and its inlet and outlet pipelines are proposed within the Seaside MRA (**Map ID 11** on **Figure 4.7-2**), specifically within the Munitions Response Site 1 (MRS-15 SEA 01), which is adjacent to and extends east of General Jim Moore Boulevard. The southern 700 feet of the new Transmission Main just south of Eucalyptus Boulevard/Coe Avenue is within MRS-15 SEA 03; however, the Transmission Main alignment would be within the west side of the previously cleared and constructed General Jim Moore Boulevard (FORA, 2017). The remaining pipeline alignments, the proposed ASR Pipelines, and the ASR-5 and ASR-6 Wells are not within delineated MRSs. The Inland Ranges (Site 39; **Map ID 10**) and the Del Rey Oaks site (**Map ID 12**) are located further inland and further away from all project components.

Beginning in 1997, the U.S. Army performed sampling and removal investigations on the four Seaside MRSs (MRS-15 SEA 01 through 04). During these investigations, 4,900 MEC items, 50,000 pounds of munitions debris, and 115,000 pounds of Army cultural debris were identified and removed from the MRSs (FORA, 2015). As of 2015, the MEC remediation field activities have been completed and the regulatory agencies have agreed that remediation is complete. Phase II investigations in the Seaside MRA took place initially for the roadway alignment and utility corridor along General Jim Moore Boulevard (LFR et al, 2008) and then subsequently for the areas outside the roadway alignment and utility corridor (LFR et al, 2011). Together, these actions resulted in removal of detected MEC to a depth of 4 feet, except in a few areas where anomalies were left in place because they were likely the result of existing infrastructure (e.g., transmission towers, culverts, fence posts, monitoring wells), and completed the Phase II removal action for the Seaside MRA (LFR et al, 2011).

The Findings of Suitability for Early Transfer (FOSET) agreement (FOSET, 2007) was established to restrict the use of the Seaside MRS parcels for any purposes other than investigation and remediation of MEC and installation of utilities (including water supply infrastructure) until site remediation activities were deemed complete by the responsible agencies. FORA will retain ownership of the Seaside MRS parcels until remediation is complete and the parcels are transferred to the City of Seaside. As of 2016, the remediation has been deemed complete and the parcels are ready for transfer. The Final Remedial Investigation Report for the Seaside MRA concluded that "assessment of the available literature, grid sampling and removal results, and equipment performance results indicate that the investigations and removal actions conducted in the Seaside MRA successfully detected, excavated, and recovered MEC items that may present an imminent safety hazard. It is possible, however, for residual MEC to remain undetected in the Seaside MRA" (FORA, 2017).

Documentation of the completed remediation activities and transfer of the property is anticipated to be complete by 2019 (FORA, 2016a). Until then, all ground-disturbing activity in this area

requires a Right of Entry agreement with FORA and compliance with the Ordnance Remediation District Regulations of the City of Seaside.

The former Fort Ord York School also is within an inland range area that was investigated for the presence of MECs (U.S. Army, 1997). The Wilson Road portion of the Ryan Ranch Bishop Interconnection Improvements extends into this former range area (**Map ID 13**). Investigations of this local area did not identify any MECs and the property was cleared for transfer to the County of Monterey.

Former Fort Ord Groundwater Contamination Sites

In addition to hazards related to UXO and military munitions, groundwater in the aquifers located beneath the former Fort Ord military base is contaminated with volatile organic compounds (VOCs), mostly trichloroethene (TCE) and carbon tetrachloride (CT). Investigation and remediation of these contaminant plumes have been organized into operable units (OUs), as discussed below. These plumes have undergone investigation, source removal, and remedial action, including continued operation of groundwater treatment systems. The groundwater contamination plumes currently above action levels, and undergoing investigation and remediation are shown on **Figure 4.7-1**. The status of each plume is summarized below.

- **Fort Ord OU1 (Fritzsche Army Airfield Fire Drill Area; Onsite and Offsite Plumes) (Map ID 3):** The Fire Drill Area was established in 1962 as a training area for the Fort Ord Fire Department. This area consisted of an unlined burn pit, a drum loading area, a storage tank, and underground piping that connected the storage tank to a discharge nozzle. During training exercises, fuel was pumped into the burn pit, ignited, and then extinguished. Training activities ceased in 1985. These training activities are believed to have resulted in the release of contaminants to soil and groundwater. This site previously had VOCs in groundwater consisting mostly of TCE, perfluorooctanoic acid, and perfluorooctane sulfonate (RWQCB, 2016). The site has been remediated and chemical concentrations are below action levels. The site is awaiting documentation of formal closure.

- **Fort Ord OUCTP (Map ID 4):** The status of the OUCTP plume is documented in the *Fourth Quarter 2014 through Third Quarter 2015 Groundwater Monitoring Report* (Ahtna, 2016a). Carbon tetrachloride was apparently disposed of at a location near what is now Lexington Court (within the former Fort Ord) possibly sometime in the 1950s as part of various training and maintenance activities where carbon tetrachloride and other solvents were used. Carbon tetrachloride and other VOCs to a lesser extent entered the underlying A-Aquifer and migrated north along the western edge of a groundwater divide, then west-northwest parallel to Reservation Road. The A-Aquifer is being treated using enhanced in situ bioremediation, followed by monitored natural attenuation. This method involves enhancing naturally-occurring microbes to metabolize (break down) the contaminants to non-toxic compounds and does not require the extraction of groundwater.

  The carbon tetrachloride plume migrated downward into the Upper 180-Foot Aquifer through two known vertical conduits in the Fort Ord-Salinas Valley Aquitard (FO-SVA), creating two distinct parallel plumes. These vertical conduits (monitoring wells installed with inadequate sanitary seals) were decommissioned in 1999 and 2005. The two parallel plumes commingled and continued to migrate southeastward toward a natural vertical conduit (a discontinuity in the Intermediate 180-Foot Aquitard) south of monitoring well

MW-OU2-64-180. Since the decommissioning of the two monitoring wells, carbon tetrachloride concentrations in the southern Upper 180-Foot Aquifer plume have attenuated, and only the northern plume remains. The Upper 180-Foot Aquifer groundwater remedy has been in operation since September 2011 and includes one groundwater extraction well (EW-OU2-09-180) connected to the OU2 groundwater treatment system (GWTS) where extracted groundwater is treated with granular activated carbon (GAC).

Carbon tetrachloride migrated further downward into the Lower 180-Foot Aquifer likely through the same vertical conduit through which it entered the Upper 180-Foot Aquifer, and also through the natural hole in the 180-Foot Aquitard, creating two distinct plumes: one north and one south of Reservation Road. VOC concentrations associated with OUCTP in the Lower 180-Foot Aquifer south of Reservation Road are commingled with VOC concentrations associated with the OU2 plume. Monitored natural attenuation was implemented as the groundwater remedy for the Lower 180-Foot Aquifer in March 2011. Additionally, there is a contingency plan for treatment of groundwater (via granular activated carbon or air stripping) extracted from the Lower 180-Foot Aquifer by potable water supply wells at the well-head if chemicals associated with OUCTP are detected in these wells.

- **Fort Ord OU2 and Former Sanitary Landfill (Map IDs 5 and 6):** The status of the OU2 plume is documented in the *Fourth Quarter 2014 through Third Quarter 2015 Groundwater Monitoring and Treatment System Report* (Ahtna, 2016b). The former Fort Ord Landfills were active from 1955 to 1987 and were used for residential and on-base waste disposal typical of municipal landfills during that time. Waste was placed in parallel trenches 10 to 30 feet deep and then covered over with the native dune sand excavated during trenching operations. Detailed disposal records are not available; however, information gathered during field activities and from other sources indicates that household and on-base commercial refuse, dried sewage sludge, construction debris, and small amounts of chemical waste (such as paint, oil, pesticides, electrical equipment, ink, and epoxy adhesive) were placed in the Fort Ord Landfills. These activities led to release of contaminants to the underlying unconfined A-Aquifer. The OU2 plume, primarily consisting of TCE, migrated west to the edge of the FO-SVA where it migrated downward into the Upper 180-Foot Aquifer, then east, and then down into the Lower 180-Foot Aquifer through a natural discontinuity in the intermediate 180-Foot Aquitard. Low concentrations of chemicals associated with OU2 plume co-mingle in the Lower 180-Foot Aquifer with the OUCTP plume, discussed above. The groundwater treatment system consists of a groundwater pump and treatment system with twenty-five extraction wells, two injection wells and two infiltration galleries. Groundwater is treated using granular activated carbon and reinjected or recharged back into the aquifer.

- **Fort Ord Sites 2/12 (Map ID 7)**: The status of the Fort Ord Sites 2/12 plume is documented in *Sites 2 and 12 Fourth Quarter 2014 through Third Quarter 2015 Groundwater Monitoring and Soil Gas Monitoring and Treatment System Report* (Ahtna, 2016c). The groundwater aquifer of interest within Sites 2/12 is the unconfined Upper 180-Foot Aquifer. Depth to groundwater in the Upper 180-Foot Aquifer is between 45 and 260 feet below ground surface (bgs). Groundwater in the Upper 180-Foot Aquifer generally flows southwest. The original source of the chemical plume is assumed to be historical use and improper disposal of solvents in the Site 12 area. The Upper 180-Foot Aquifer chemical plume appears to have originated within Site 12 and was subsequently transported over 3,000 feet to the southwest by groundwater flow, passing beneath Highway 1 and into the Site 2 area. The Sites 2/12 groundwater plume is characterized by the presence of eight VOCs in groundwater at concentrations above their respective action levels: chloroform,

1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, total 1,3-dichloropropene, PCE, TCE, and vinyl chloride. TCE and PCE concentrations are used to define the extent of the groundwater plume in the Sites 2/12 area. VOCs are also present in soil gas in the vadose zone[4] above the groundwater. Soil gas is being remediated using soil gas extraction and treatment where the soil gas is pumped out of the ground and through granular activated carbon that captures the VOCs. Groundwater is being remediated using groundwater extraction and treatment where groundwater is pumped out of the ground and through granular activated carbon followed by secondary treatment by air stripper, both of which capture the VOCs. The treated water is then recharged back into the aquifer using two injection wells and three infiltration galleries.

Fort Ord University Villages

The US Army investigated pre-1978 structures to assess the potential presence of lead in soil from historical use of lead-based paint (West, 2007). The soil investigations revealed the presence of lead from lead-based paint in soil at various locations, including the Fort Ord University Villages, located just east of Highway 1 (**Map ID 8**). Soil with lead-based paint around former buildings was excavated and removed from the portions along Highway 1 where the new Transmission Main pipeline would be located.

Fort Ord Site 11

The USTs at the former Fort Ord fueling station were previously located in the southern portion of the current service station located on the west side of General Jim Moore Boulevard, just north of the northwest corner of General Jim Moore Boulevard and Gigling Road (**Map ID 9**) (FORA, 2016b). The previous USTs were removed and the site remediated prior to 1998. The site was subsequently rebuilt to the current service station configuration.

Former Exxon Service Station

A fuel service station formerly occupied the eastern corner of the intersection of Merritt Street (Highway 183), Haro Street, and the on and off ramps for Highway 156 (**Map ID 14**) (RRM, 2016). The underground storage tanks, contaminated soil, and buildings site have been removed, and the site is being remediated using air sparging and soil vapor extraction. The depth to groundwater ranged from about 24 to 33 feet below ground surface from 2009 to 2016. The Castroville Pipeline Optional Alignment would pass just west of and adjacent to this site.

4.7.1.2 Structural and Building Components

Hazardous materials, such as asbestos, lead, and polychlorinated biphenyls, may occur in older building materials and be released during demolition or renovation of existing facilities. Because the proposed project does not include demolition or renovation of existing facilities, buildings, or structures, hazardous materials in building debris would not be encountered and, therefore, are not discussed in detail in this section.

[4] The vadose zone is the unsaturated soil zone above the water table. Soil gas is located in the spaces between soil particles.

4.7.1.3 Existing Hazardous Materials Usage

Hazardous materials are currently used at the existing ASR injection/extraction wells (ASR-1, ASR-2, ASR-3, and ASR-4) and existing California American Water Company (CalAm) pump station sites. Operation of the ASR wells involves the storage and use of carbon dioxide, lime, sodium hypochlorite solution (bleach), and other substances required for water treatment. Existing CalAm pump stations are powered by electricity, but may store fuel for backup emergency generators, and minor amounts of solvents and lubricants for maintenance.

4.7.1.4 Nearby Airports

The new Desalinated Water Pipeline would be located 1.7 miles west of the Marina Municipal Airport, which is north of the intersection of Reservation Road and Imjin Road in Marina (see **Figure 4.7-1**). The new Transmission Main Pipeline would be located 0.3 miles north of the Monterey Peninsula Airport, which is east of Highway 1 and north of Highway 68 in Del Rey Oaks (see **Figure 4.7-2**).

4.7.1.5 Nearby Schools

Schools are considered sensitive receptors for hazardous materials because children are more susceptible than adults to the effects of hazardous materials. Schools that are located within 0.25 mile of the project are listed in **Table 4.7-2** and shown on **Figures 4.7-1** and **4.7-2**.

TABLE 4.7-2
SCHOOLS IN THE VICINITY OF PROJECT COMPONENTS

Project Component	Schools within 0.25 Mile of Project Components
New Desalinated Water Pipeline	• Olsen Elementary 261 Beach Road, Marina
New Transmission Main	• Marina Del Mar Elementary School 3066 Lake Drive, Marina • Seaside Middle School 999 Coe Avenue, Seaside
ASR Pipelines	Seaside Middle School 999 Coe Avenue, Seaside
Ryan Ranch-Bishop Interconnection Improvements	• York School 9501 York Rd, Monterey
Castroville Pipeline, Source Water Pipeline, and Brine Discharge Pipeline; Main System-Hidden Hills Interconnection Improvements; Carmel Valley Pump Station	None

SOURCE: MPUSD, 2016; NMCUSD, 2016.

4.7.1.6 Wildfire Hazards

California Department of Forestry and Fire Protection (CAL FIRE) maps identify fire hazard severity zones in state and local responsibility areas for fire protection. Portions of the southern project area are situated either within or near a Very High or High Fire Hazard Severity Zone (CAL FIRE, 2007, 2008). Project components located within and near these areas include the

new Transmission Main, ASR Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station (see Figure 4.7-2).

4.7.2 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to hazards and hazardous materials. A brief summary of each is provided, along with a finding regarding the project's conformity with those regulatory requirements. The conformity findings concern the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact topic within EIR/EIS Section 4.7.5, Direct and Indirect Effects of the Proposed Project, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.7.5 includes identification of feasible mitigation that would resolve or minimize the potential inconsistency.

4.7.2.1 Federal Regulations

Comprehensive Environmental Response, Compensation, and Liability Act, Superfund Amendments and Reauthorization Act of 1986 (42 USC Section 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as CERCLA, created the federal Superfund program that provides for the response and cleanup of hazardous substances that may endanger public health or the environment. The Superfund Amendments and Reauthorization Act (SARA) amended CERCLA in 1986 to increase state involvement and required Superfund actions to consider state environmental laws and regulations. SARA also established a regulatory program for the Emergency Planning and Community Right-to-Know Act. The applicable part of SARA for the MPWSP is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986. Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances. Key provisions require notification when extremely hazardous substances are present above their threshold planning quantities, immediate notification to the local emergency planning committee and the state emergency response commission when a hazardous material is released in excess of its reportable quantity, and that material safety data sheets for all hazardous materials or a list of all hazardous materials be submitted to the state and local emergency planning agencies and local fire department. Contractors during construction activities and CalAm during operations would be required to prepare Hazardous Materials Business Plans, as required under the state Hazardous Materials Release Response Plans and Inventory Act, described below, which would make the proposed project consistent with CERCLA as amended by SARA.

The cleanup projects being conducted at the former Fort Ord, described above in Section 4.7.1 Setting/Affected Environment, are being conducted under CERCLA. If the MPWSP were to adversely affect the ongoing cleanup activities, CalAm may be considered a potentially responsible party as defined in CERCLA.

Toxic Substances Control Act (15 USC 2605)/Resource Conservation and Recovery Act (42 USC 6901 et seq.)/Hazardous and Solid Waste Act

The federal Toxic Substances Control Act of 1976 and the Resource Conservation and Recovery Act of 1976 authorized the USEPA to regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. Contractors would be required to comply with state regulations including the Hazardous Materials Release Response Plans and Inventory Act, Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, License to Transport Hazardous Materials, and Hazardous Materials Storage and Handling, which would make the proposed project consistent with the Toxic Substances Control Act.

U.S. Department of Transportation Hazardous Materials Transport Act (49 USC 5101)

The U.S. Department of Transportation, in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 directs the U.S. Department of Transportation to establish criteria and regulations regarding the safe storage and transportation of hazardous materials. 49 CFR 171–180, regulates the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. Contractors would be required to comply with state regulations including the Hazardous Materials Release Response Plans and Inventory Act, Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, License to Transport Hazardous Materials, and Hazardous Materials Storage and Handling, which would make the proposed project consistent with the U.S. Department of Transportation Hazardous Materials Transport Act.

Occupational Safety and Health Act (29 USC 15)

The Occupational Safety and Health Act of 1970 was passed to address employee safety in the workplace. The Act created the Occupational Safety and Health Administration (OSHA), whose mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. The OSHA staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs. Contractors would be required to comply with California OSHA regulations, described below, which would make the proposed project consistent with the federal OSHA.

4.7.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to hazards and hazardous materials is a Coastal Act policy concerning oil and hazardous substance spills. A preliminary assessment of project consistency with this priority is provided here. Final determinations regarding project consistency are reserved for the Coastal Commission. The MPWSP would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan and comply with the California Fire Code, both of which would provide procedures to store hazardous materials and respond to accidents. With implementation of this required plan, the project would be consistent with Coastal Act policy concerning oil and hazardous substance spills.

Safe Drinking Water and Toxics Enforcement Act, Proposition 65 - Health and Safety Code, Section 25249.5 et seq.

This law identifies chemicals that cause cancer and reproductive toxicity, provides information for the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. Businesses are required to notify Californians about the chemicals in products they purchase, in the workplace, or that are released to the environment. By providing this information, individuals are able to make informed decisions about protecting themselves from exposure to these chemicals. Contractors would be required to comply with state regulations including the Hazardous Materials Release Response Plans and Inventory Act, Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, and Hazardous Materials Storage and Handling, which would make the proposed project consistent with the state Safe Drinking Water and Toxics Enforcement Act.

Aboveground Petroleum Storage Act - Health and Safety Code, Section 25270

Health and Safety Code Sections 25270 to 25270.13 ensure compliance with the federal Clean Water Act. The law applies to facilities that operate a petroleum aboveground storage tank with a capacity greater than 660 gallons or combined aboveground storage tanks capacity greater than 1,320 gallons or oil-filled equipment where there is a reasonable possibility that the tank(s) or equipment may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare a Spill Prevention Control and Countermeasure Plan which would make the proposed project consistent with the Aboveground Petroleum Storage Act.

Hazardous Materials Release Response Plans and Inventory Act - Health and Safety Code, Section 25500 et seq.

The Hazardous Materials Release Response Plans and Inventory Act of 1985, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a Hazardous Materials Business Plan that describes their facilities, inventories, emergency response plans, and training

programs. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed. This Act and the related regulations in Title 19 of the California Code of Regulations (CCR) Section 2620, et seq., require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a Hazardous Materials Business Plan (HMBP) to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services. The California Office of Emergency Services is responsible for implementing the accident prevention and emergency response programs established under the Act and its implementing regulations. Contractors would be required to prepare and submit Hazardous Materials Business Plans, which would make the proposed project consistent with the Hazardous Materials Release Response Plans and Inventory Act.

Hazardous Waste Control Act – Health and Safety Code, Section 25100 et seq.

The Hazardous Waste Control Act of 1972 created the State hazardous waste management program, which is similar to but more stringent than the federal Resource Conservation and Recovery Act program. The Act is implemented by regulations contained in Title 26 of the CCR,[5] which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling treatment, storage and disposal facilities; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and its implementing regulations in Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC. Contractors would be required to comply with the Hazardous Waste Control Act, which would make the proposed project consistent.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) – Health and Safety Code Sections 25404 et seq.

This program requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The following Program Elements are consolidated under the Unified Program:

- Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (a.k.a. Tiered Permitting)
- Aboveground Petroleum Storage Tanks
- Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or "Community-Right-To-Know")

[5] Title 26 is a compilation of all environmental and hazardous waste regulations issued by state regulatory agencies published in a single title of the California Administrative Code. These toxics regulations are also found in the original titles assigned to each agency, and are repeated in Title 22 and in Title 23.

- California Accidental Release Prevention Program
- UST Program
- Uniform Fire Code Plans and Inventory Requirements

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. The local CUPA for this project is the Monterey County Environmental Health Division. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA. Contractors would be required to comply with the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, which would make the proposed project consistent.

California Occupational Safety and Health Act – California Labor Code, Section 6300 et seq.

The California Occupational Safety and Health Act of 1973 addresses California employee working conditions, enables the enforcement of workplace standards, and provides for advancements in the field of occupational health and safety. The Act also created the California Occupational Safety and Health Administration (Cal OSHA), the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal OSHA's standards are generally more stringent than federal regulations. Under the former, the employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. All contractors are required to comply with Cal OSHA, which would make the proposed project consistent.

License to Transport Hazardous Materials – California Vehicle Code, Section 32000.5 et seq.

A valid Hazardous Materials Transportation License, issued by the California Highway Patrol, is required by the State of California Vehicle Code Section 32000.5 for transportation of hazardous materials shipments for which the display of placards is required by State regulations; or hazardous materials shipments of more than 500 pounds.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the California Highway Patrol under the authority of the State Vehicle Code Sections 32100 – 33002. Transportation of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (Title 14, CCR, Chapter 6, Article 1, Sections 1150-1152.10). Inhalation hazards face similar, more restrictive rules and regulations (Title 13, CCR, Chapter 6, Article 2.5, Sections 1157-1157.8). Contractors that transport hazardous materials are required to acquire the license for and comply with the requirements of the License to Transport Hazardous Materials regulations, which would make the proposed project consistent.

Water Main Separation – California Code of Regulations, Title 22, Section 64572

California Code of Regulations, Title 22, Section 64572 states that new water mains and supply lines shall not be within the same trench as, and must be located least 10 feet horizontally from, any parallel pipeline conveying sewage, secondary-treated recycled water, and hazardous fluids such as fuels, industrial wastes, and wastewater sludge. In addition, new water mains may not be installed within 100 horizontal feet of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 horizontal fee of the nearest edge of any cesspool, septic tank, sewage leach field, underground hazardous material storage tank, or groundwater recharge site. None of the proposed project's pipelines will be co-located with sewer lines; contractors are required to comply with the water main separation regulations, which would make the proposed project consistent.

Utility Notification Requirements – California Code of Regulations, Title 8, Section 1541

Title 8 CCR Section1541 requires excavators to determine the approximate locations of subsurface installations, such as sewer, telephone, fuel, electric, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. The California Government Code (Section 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. According to Section 4216.1, operators of subsurface installations who are members of, participate in, and share in the costs of a regional notification center, such as Underground Services Alert, are in compliance with this section of the code. Underground Services Alert (known as USA North 811) receives planned excavation reports from public and private excavators and transmits those reports to all participating members of USA North that may have underground facilities at the location of excavation. Members will mark or stake their facilities, provide information, or give clearance to dig (USA North, 2016). Contractors are required to comply with the Utility Notification Requirements, which would make the proposed project consistent.

Prohibited Activities in Forests, Forestry and Range and Forage Lands – California Public Resources Code, Section 4411 et seq.

The California Public Resources Code (PRC) restricts the use of internal combustion engines in forest-, brush-, and grass-covered lands; specifies requirements for the safe use of gasoline-powered tools in fire hazard areas; and specifies fire suppression equipment that must be provided onsite for various types of work in fire-prone areas. More specifically, the PRC requires the following:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor[6] to reduce the potential for igniting a wildland fire (PRC Section 4442).

[6] A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

- Appropriate fire suppression equipment must be maintained during the highest fire danger period—from April 1 to December 1 (PRC Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire suppression equipment (PRC Section 4427).
- On days when a burning permit is required, use of portable tools powered by gasoline-fueled internal combustion engines are prohibited within 25 feet of any flammable materials (PRC Section 4431).

Contractors would be required to comply with state restrictions regarding the use of internal combustion engines in forest-, brush-, and grass-covered lands, which would make the proposed project consistent.

Hazardous Materials Storage and Handling, California Fire Code, California Code of Regulations, Title 24, Part 9, Section 2700 et seq.

The California Fire Code (Chapter 27) includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following specific design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition, or appropriate distance separation.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code (Chapter 14) also addresses fire safety during construction and demolition and includes requirements for smoking, waste disposal, cutting and welding, fire protection equipment, fire reporting, access for firefighting. Contractors would be required to comply with the Hazardous Materials Storage and Handling regulations, which would make the proposed project consistent.

Screening Levels for Hazardous Materials in Soil or Groundwater

The RWQCB Environmental Screening Levels (ESLs) are guidelines used to evaluate the potential risk associated with chemicals found in soil or groundwater where a release of hazardous materials has occurred. The RWQCB has established ESLs for both residential and commercial/industrial land uses, and for construction workers. Residential screening levels are the most restrictive; soil with chemical concentrations below these levels generally would not require remediation and would be suitable for unrestricted uses if disposed of offsite.

Commercial/industrial screening levels are generally less restrictive than residential screening levels because they are based on potential worker exposure to hazardous materials in the soil (and these are generally less than residential exposures). Screening levels for construction workers are also less restrictive than for commercial/industrial workers because construction workers are only exposed to the chemical of concern during the duration of construction, while industrial workers are assumed to be exposed over a working lifetime.

The California Environmental Project Agency (Cal/EPA) has also developed screening levels for human exposure to potentially hazardous chemicals. The California Human Health Screening Levels (CHHSLs) are concentrations of 54 hazardous chemicals in soil or soil gas that Cal/EPA considers to be below thresholds of concern for risks to human health. The CHHSLs can be used to screen sites for potential human health concerns where releases of hazardous chemicals have occurred. The presence of a chemical at concentrations in excess of a CHHSL does not indicate that adverse impacts are occurring or will occur, but suggests that further evaluation is warranted. The CHHSLs are guidance, and not regulatory cleanup standards. The proposed project could be inconsistent with soil or groundwater screening levels for hazardous materials if the screening levels were not applied during soil excavation activities. This is addressed below in Impact 4.7-2.

4.7.2.3 Local Regulations

Table 4.7-3 describes the regional and local land use plans, policies, and regulations pertaining to hazards and hazardous materials that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. Also included in Table 4.7-3 is an analysis of project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project may conflict with the applicable plan, policy, or regulation, the reader is referred to Section 4.7.5, Direct and Indirect Effects of the Proposed Project, for additional discussion. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

TABLE 4.7-3
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO HAZARDS AND HAZARDOUS MATERIALS

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone)	City of Marina Local Coastal Program Land Use Plan	Policies	Subsurface Slant Wells, Source Water Pipeline, New Desalinated Water Pipeline, and New Transmission Main	***Policy 20:*** The policy of the City of Marina shall be: To seek assistance and direction in protecting Marina's beach resources from destruction by oil spills and other hazardous substances.	The intent of this policy is to protect beach resources from the damaging effects of hazardous material releases.	Consistent: The project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, both of which would provide procedures to store hazardous materials and respond to accidents.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface Slant Wells, Source Water Pipeline, New Desalinated Water Pipeline, and New Transmission Main	***Policy 4.103:*** To protect the public from heath threats posed by hazardous materials, the following policies shall be adhered to: 1. The City shall support all local, regional and state efforts directed at preventing injuries and avoiding environmental contamination due to the uncontrolled release of hazardous substances. The City shall follow all applicable regulations and procedures related to the use, storage and transportation of toxic, explosive and other hazardous materials to prevent uncontrolled discharges. 2. The City shall require discretionary review and approval of all commercial and industrial uses which will generate more than 27 gallons of hazardous wastes monthly (the limitation imposed by Monterey Regional Waste Management District for non-household hazardous wastes). City approval of these uses shall be contingent upon preparation and approval by the County Health Department of a hazardous-waste-disposal plan for these uses prepared in accordance with the requirements of the Monterey County Health Department. 3. All uses involving the handling of significant amounts of hazardous materials shall be subject to discretionary approval. Hazardous materials management and disposal plans shall be prepared in accordance with the requirements of the Monterey County Health Department for all such projects prior to the granting of any entitlements by the City. The City shall ensure that proposed industrial or commercial projects that will use or generate hazardous materials shall be compatible with surrounding uses as designated by the General Plan. Residential uses and other sensitive uses such as schools shall be adequately buffered from adjoining uses which involve the use or generation of hazardous materials.	This policy is intended to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: The project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, both of which would provide procedures to store hazardous materials and respond to accidents.
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 15.56 - Digging and Excavation the Former Fort Ord	Subsurface Slant Wells Source Water Pipeline, New Desalinated Water Pipeline, and New Transmission Main	***Chapter 15.56 - Digging and Excavation the Former Fort Ord*** establishes special standards and procedures for digging and excavation on those properties in the former Fort Ord which are suspected of containing ordnance and explosives. This ordinance requires that a permit be obtained from the City for any excavation, digging, development or ground disturbance of any type involving the displacement of ten cubic yards or more of soil. The permit requirements include providing each site worker a copy of the notice; complying with all requirements placed on the property by the Army and DTSC; obtaining ordnance and explosives construction support; ceasing soil disturbance activities upon discovery of suspected ordnance, and reporting of project findings.	This section of municipal code is intended to protect the public, workers, and the environment from uncontrolled detonation of ordnance.	Consistent: Some of the project components would result in excavation in areas within the Former Fort Ord. Although cleanup activities have removed known contamination, previously-unknown contamination may be discovered. This issue is addressed in **Impact 4.7-2**, which requires compliance with relevant regulations**.**
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 8.12 – Hazardous Materials Storage and Registration	Subsurface Slant Wells, Source Water Pipeline, New Desalinated Water Pipeline, and New Transmission Main	***Section 8.12.050: Hazardous materials registration form.*** Any person who owns or operates an establishment that contains at any one time during the year, hazardous materials as defined in Section 8.12.020 shall file a completed hazardous material registration form with the health department within ninety days of the effective date of this chapter (1983).	This policy is intended to protect the public and the environment from health risks associated with uncontrolled releases of hazardous materials.	Consistent: There would be no facilities within the City of Marina that store hazardous materials.
City of Monterey (inland areas)	Monterey City Code	Chapter 13 – Fire Protection	Ryan Ranch-Bishop Interconnection Improvements	***Chapter 13:*** Defines standards for fire protection, hazardous substances clean up, and the establishment of fire hazard severity zones within the City of Monterey. The City of Monterey has adopted the 2013 California Fire Code, with amendments. The Fire Chief may require that fire hydrants be installed on private property if the Chief determines that development of the property creates an additional fire hazard that cannot be adequately served by publicly maintained fire hydrants.	The intent of this city code is to protect the public and the environment from fire hazards and uncontrolled hazardous material releases.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
City of Monterey (inland areas)	Monterey City Code	Chapter 9 – Building Regulations	Ryan Ranch-Bishop Interconnection Improvements	***Chapter 9, Article 8:*** Contains digging and excavation standards that apply to land once part of the former Fort Ord, including prohibition of digging, excavation, and development of this land until ordnance or explosive remediation is completed.	This policy is intended to protect the public, workers, and the environment from uncontrolled detonation of ordnance.	Potentially Inconsistent: Some of the project components would result in excavation in areas within the Former Fort Ord. Although cleanup activities have removed known contamination, previously-unknown contamination may be discovered. This issue is addressed in **Impact 4.7-2**.

TABLE 4.7-3 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO HAZARDS AND HAZARDOUS MATERIALS

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Safety	New Transmission Main, ASR Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy S-2.2:*** Minimize the risk to community associated with hazardous materials.	The intent of this policy is to protect the public and the environment from health risks associated with hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Safety	New Transmission Main, ASR Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Implementation Plan S-2.2.1:*** Hazardous Materials. Minimize public health risk and environmental risks from the use, transport, storage, and disposal of hazardous materials by: ● Cooperating with federal, State, and County agencies to effectively regulate the management of hazardous materials and hazardous waste, especially on the former Fort Ord; ● Cooperating with the County of Monterey to reduce the per capita production of household hazardous waste in accordance with the County Hazardous Waste Management Plan; ● Identifying roadway transportation routes for conveyance of hazardous materials (the City does not exercise jurisdiction over transportation of freight along railroad right-of-way or state highways); ● Implementing a Multihazard Emergency Plan for accidents involving hazardous materials; and ● Cooperating with the Certified Unified Program Agency (CUPA) for Seaside (the County of Monterey, Environmental Health Division) and the Seaside Fire Department to administer Risk Management Plans for businesses within the City.	This plan is intended to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 15.34 - Digging and Excavation the Former Fort Ord	New Transmission Main, ASR Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Chapter 15.34: Digging and Excavation the Former Fort Ord*** contains the "Ordnance Remediation District Regulations of the City" (Ord. 924 (part)) and establishes special standards and procedures for digging and excavation on those properties in the former Fort Ord military base which are suspected of containing ordnance and explosives. This ordinance requires that a permit be obtained from the City for any excavation, digging, development, or ground disturbance of any type involving the displacement of ten cubic yards or more of soil. The permit requirements include providing each site worker a copy of the Ordnance and Explosives Safety Alert; complying with all requirements placed on the property by an agreement between the City, FORA, and DTSC; obtaining ordnance and explosives construction support; ceasing soil disturbance activities upon discovery of suspected ordnance and notifying the Seaside Police department, the Presidio law enforcement, the Army and DTSC; coordinating appropriate response actions with the Army and DTSC; and reporting of project findings.	The intent of this code is to protect the public, workers, and the environment from health risks associated with uncontrolled ordnance detonation.	Potentially Inconsistent: Some of the project components would result in excavation in areas within the Former Fort Ord. Although cleanup activities have removed known contamination, previously-unknown contamination may be discovered. This issue is addressed in **Impact 4.7-2**.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.50 – Hazardous Materials Registration	New Transmission Main, ASR Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Chapter 8.50: Hazardous Materials Registration*** requires that any person who owns or operates an establishment that contains hazardous materials any time during the year file a completed hazardous material registration form with the department of health. This form must be updated annually to ensure that the City has current information regarding hazardous substances and materials being used in the city.	This policy is intended to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
County of Monterey (coastal zone)	North County Land Use Plan	2.3 Environmentally Sensitive Habitats	Source Water Pipeline and New Desalinated Water Pipeline	***2.3.3.B.8*** Oil and other toxic substances shall not be allowed to enter or drain into the estuarine system. Oil spill and toxic substance discharge contingency plans shall be developed by the appropriate agencies of Monterey County to coordinate emergency procedure for clean-up operations of all foreseeable conditions. New development shall be permitted adjacent to estuarine areas only where such development does not increase the hazard of oil spill or toxic discharge into the estuaries.	This policy is intended to protect estuaries from the unintended release of hazardous substances.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
County of Monterey (coastal zone)	North County Land Use Plan	2.8 Hazards	Source Water Pipeline and New Desalinated Water Pipeline	***2.8.2 (1):*** All development shall be sited and designed to minimize risk from geologic, flood, tsunami or fire hazards to a level generally acceptable to the community. Areas of a parcel which are subject to high hazard(s) shall generally be considered unsuitable for development. Any proposed development in high hazard areas shall require the preparation of an environmental or geotechnical report prior to County review of the project.	This policy is intended to protect the public and property from natural hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, which would provide procedures to store hazardous materials, reduce fire hazards, and respond to accidents. Geologic and flood hazards are addressed in Section 4.2, Geology, Soils, and Seismicity.

TABLE 4.7-3 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO HAZARDS AND HAZARDOUS MATERIALS

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 10.65 – Hazardous Materials Registration	Source Water Pipeline, MPWSP Desalination Plant, New Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Chapter 10.65: Hazardous Materials Registration*** requires that any person who owns or operates an establishment that contains hazardous materials at any one time during the year file a completed hazardous materials registration form to the Department of Health. An updated completed hazardous material form must be submitted to the Department of Health annually.	The intent of this policy is to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 10.67 - Hazardous Materials Emergency Response	Source Water Pipeline, MPWSP Desalination Plant, New Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Chapter 10.67: Hazardous Materials Emergency Response*** establishes a surcharge that applies to businesses that use, store, or otherwise handle hazardous materials. The surcharge funds current or future Fire Hazardous Material Emergency Response Teams that would respond to threats to life, property, or natural resources arising from the use, storage, or handling of hazardous materials by these businesses.	This code is intended to protect public health and the environment from risks associated with the uncontrolled release of hazardous materials from businesses that use, store, or handle these substances.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	MPWSP Desalination Plant Carmel Valley Pump Station	***Policy S-4.11:*** The County shall require all new development to be provided with automatic fire protection systems (such as fire breaks, fire-retardant building materials, automatic fire sprinkler systems, and/or water storage tanks) approved by the fire jurisdiction.	This policy is intended to protect the public and the environment from fire hazards associated with New development.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, which would provide procedures to store hazardous materials, reduce fire hazards, and respond to accidents.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	MPWSP Desalination Plant	***Policy S-4.13:*** The County shall require all new development to have adequate water available for fire suppression. The water system shall comply with Monterey County Code Chapter 18.56, NFPA Standard 1142, or other nationally recognized standard. The fire authority having jurisdiction, the County Departments of Planning and Building Services, and all other regulatory agencies shall determine the adequacy and location of water supply and/or storage to be provided.	The intent of this policy is to ensure that New development would be served by water supplies adequate to protect the public and the environment from fire hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and comply with the California Fire Code, which would provide procedures to store hazardous materials, reduce fire hazards, and respond to accidents.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, New Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.14:*** Water systems constructed, extended, or modified to serve a new land use or a change in land use or an intensification of land use, shall be designed to meet peak daily demand and recommended fire flow.	This policy is intended to ensure that water utility systems have capacity to protect the public and the environment from fire hazards associated with changes in land use within the County.	Consistent: As described in the Description of the Proposed Project, the purpose of this project is to replace public water supply that would be constrained by the state Cease and Desist Order limitations to the use of Carmel River water.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, New Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.21:*** All permits for residential, commercial, and industrial structural development (not including accessory uses) shall incorporate requirements of the fire authority having jurisdiction.	The intent of this policy is to protect the public and the environment from fire hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the California Fire Code.

TABLE 4.7-3 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO HAZARDS AND HAZARDOUS MATERIALS

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, New Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.22:*** Every building, structure, and/or development shall be constructed to meet the minimum requirements specified in the current adopted state building code, state fire code, Monterey County Code Chapter 18.56, and other nationally recognized standards.	This policy is intended to protect the public and the environment from hazards associated with structures, including fire hazards and seismic hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the California Fire Code. Compliance with the California Building Code is addressed in Section 4.2, Geology, Soils, and Seismicity.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.26*:** When public facilities and above-ground utilities are located in high or very high fire hazard areas, special precautions shall be taken to mitigate the risks from wildfire and to ensure uninterrupted operation.	This policy is intended to protect the public, the environment, and utility systems from wildfire hazards.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the California Fire Code, which would reduce fire hazards.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.31:*** A zone that can inhibit the spread of wildland fire shall be required of New development in fire hazard areas. Such zones shall consider irrigated greenbelts, streets, and/or Fuel Modification Zones in addition to other suitable methods that may be used to protect development. The County shall not preclude or discourage a landowner from modifying fuel within the Fuel Modification Zone, or accept any open space easement or other easement over land within a Fuel Modification Zone that would have that effect.	The intent of this policy is to protect people and structures from risk of loss, injury, or death associated with wildland fires.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the California Fire Code, which would reduce fire hazards.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Carmel Valley Pump Station Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy S-4.32:*** Property owners in high, very high, and extreme fire hazard areas shall prepare an overall Fuel Modification Zone plan in conjunction with permits for new structures, subject to approval and to be performed in conjunction with the CDFFP and/or other fire protection agencies in compliance with State Law.	The intent of this policy is to protect people and structures from risk of loss, injury, or death associated with wildland fires.	Consistent: As discussed in the Regulatory Framework, the project would be required to comply with the California Fire Code, which would reduce fire hazards.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Safety	New Transmission Main, ASR Conveyance Pipelines, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Hazardous and Toxic Materials Safety Policy C-1:*** The City of Seaside shall require hazardous materials management and disposal plans for any future projects involving the use of hazardous materials.	This policy is intended to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan that would provide procedures to store, manage, and dispose of hazardous materials.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Safety	Ryan Ranch–Bishop Interconnection Improvements	***Hazardous and Toxic Materials Safety Policy C-1:*** The County of Monterey shall require hazardous materials management and disposal plans for any future projects involving the use of hazardous materials.	This policy is intended to protect the public and the environment from health risks associated with the use, storage, transport, and uncontrolled release of hazardous materials.	Consistent: As discussed in the Regulatory Framework, the project would be required to prepare a Hazardous Materials Business Plan and a Storm Water Pollution Prevention Plan, and comply with the California Fire Code, all of which would provide procedures to store hazardous materials and respond to accidents.

SOURCES: City of Marina, 2006, 2013; City of Seaside, 2004; FORA, 1997; Monterey County, 1999, 2010

4.7.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to hazards and hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- Be located within an area covered by an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area;
- Be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Based on the nature of the proposed project, there would be no impacts related to the following criteria for the reasons described below:

- ***Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school during operations.*** The project components that would be located within 0.25 mile of a school would be underground pipelines. There would be no storage or use of hazardous materials associated with the pipelines; therefore, no release of hazardous emissions would occur within 0.25 mile of a school during operations.
- ***Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area.*** The proposed project would not be located within the vicinity of a private airstrip; therefore, no safety hazard would result from project implementation.
- ***Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*** The Monterey County Emergency Operations Plan provides an overview of agency roles and responsibilities during emergencies (Monterey County Office of Emergency Services, 2011). The proposed project would not interfere with the designated agency responsibilities and reporting in the event of an emergency

because no roads would be completely closed, and some work activities would not occur on public roads.

- ***Increase risk of wildland fire during operations.*** Operation of the proposed project would not introduce potentially flammable activities in fire-prone areas. Project components that would be located within high fire hazard areas consist of underground water pipelines. Operation of the Carmel Valley Pump Station, which is located just south of an area of high fire hazard, could require temporary and intermittent use of a diesel-powered generator that would be stored onsite. This backup generator would be installed in accordance with applicable NFPA standards and other requirements for generators, and its operation would not be expected to increase wildfire risk. Accordingly, there would be no increased risk of wildland fire hazards.

4.7.4 Approach to Analysis

Hazards and hazardous materials information for the project area was derived from various sources and compiled in this chapter to develop a comprehensive understanding of the potential constraints and hazards associated with project construction and operations. Information sources include findings resulting from regulatory agency database searches, review of hazardous materials investigation reports, site reconnaissance, applicable regulations and guidelines, and proposed project construction and operations. Significant impacts would occur if the location or activities of project components resulted in conflicts with known hazardous materials sites.

As described in more detail below, the analysis of hazards and hazardous materials impacts in this section takes into account the various existing federal, state, and local regulations that apply to hazards and hazardous materials. Through compliance with the existing regulations, CalAm would be required to use, transport, store, and dispose of hazardous materials using procedures that would avoid hazards or reduce the potential for hazardous materials incidents.

4.7.5 Direct and Indirect Effects of the Proposed Project

Table 4.7-4 summarizes the proposed project's impacts and significance determinations related to hazards and hazardous materials.

TABLE 4.7-4
SUMMARY OF IMPACTS – HAZARDS AND HAZARDOUS MATERIALS

Impacts	Significance Determinations
Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during construction.	LS
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.	LSM
Impact 4.7-3: Project facilities would be located on a known hazardous materials site.	LS
Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of a school during construction.	LS
Impact 4.7-5: Increased risk of wildland fires during construction.	LS

TABLE 4.7-4 (Continued)
SUMMARY OF IMPACTS – HAZARDS AND HAZARDOUS MATERIALS

Impacts	Significance Determinations
Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.	LS
Impact 4.7-C: Cumulative impacts related to hazards and hazardous materials.	LSM

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation

4.7.5.1 Construction Impacts

Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during construction. (*Less than Significant*)

All Project Components

Petroleum products, such as gasoline, diesel fuel, lubricants, and cleaning solvents would be utilized to fuel and maintain construction vehicles and equipment for all project components. As discussed in Section 3.3.2.1, the proposed slant wells would be drilled using mud rotary drilling techniques. Drilling fluids, such as bentonite mud, would be used to drill through the shallow dry dune sands to prevent loose dry sand from locking up the drill bit inside the conductor casing. Once the drill bit reaches groundwater, the construction contractor would pump out all of the sand-bentonite mud slurry and put it in a storage container for offsite hauling and disposal. Below the top of the groundwater table, only the water already present in the sand, and possibly additional potable water, would be used to circulate the drill cuttings. As discussed in Section 3.3.2.2, Wells ASR-5 and ASR-6 would be installed using a reverse rotary drilling technique. Bentonite drilling fluids would not be used during ASR well drilling; however, non-corrosive, environmentally inert, biodegradable additives might be used to keep the borehole open, as discussed in Section 4.4, Groundwater Resources. The well drilling methods would not use pressurized drilling techniques, and frac-out events are not anticipated. The routine use or reasonably foreseeable upset and accident conditions could result in inadvertent releases of small quantities of hazardous materials, which could adversely affect construction workers, soil, and surface water. Neither of the drilling methods would use fracking techniques or the chemicals used in fracking.[7]

Construction activities are required to comply with numerous hazardous materials and stormwater regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials to affect stormwater and downstream receiving water bodies (see Section 4.7.2, Regulatory Framework). The HMBP would require that

[7] Hydraulic fracturing (also fracking, hydrofracturing or hydrofracking) is a well-stimulation technique in which rock is fractured by a pressurized liquid.

hazardous materials used for construction are stored in appropriate containers, with secondary containment to contain a potential release. The California Fire Code would require measures for the safe storage and handling of hazardous materials. As discussed in Section 4.3, Surface Water Hydrology and Water Quality, the construction contractor would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System (NPDES) General Construction Permit requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction and describe spill prevention measures, equipment inspections, equipment and fuel storage, and protocols for responding immediately to spills. In addition, the drilling operations would not be conducted using pressure methods and would only use water or non-corrosive, environmentally inert, biodegradable additives.

Impact Conclusion

Through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, hazardous materials impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would be less than significant for all project components.

Mitigation Measures

None proposed.

Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction. (*Less than Significant with Mitigation*)

All Pipelines and Conveyance Facilities

The proposed project involves excavation, trenching, and grading for the construction of water conveyance pipelines, building footings, and utilities. As identified in **Table 4.7-1**, some sites with known soil and/or groundwater contamination are located within 0.25 mile of project facilities and may have affected subsurface conditions at various locations along the project area. In addition, although previous site cleanup activities have remediated known contamination at some sites, it is still possible that undiscovered contamination may be present, given the land use history in the project area. The contaminants anticipated to be encountered during project construction activities include petroleum hydrocarbons, VOCs, PAHs, and metals from gasoline service stations, and dry cleaners. Construction activities conducted within the former Fort Ord military base, a National Priorities List site, could result in exposure to UXO, which is discussed separately under Impact 4.7-3, below. Soil disturbance during construction could further disperse existing contamination into the environment and expose construction workers and the public to contaminants. If substantial hazardous materials are present in excavated soils, health and safety risks to workers and the public could occur. Such risks could occur from stockpiling, handling, or transportation of soils that have been contaminated by hazardous materials from previous spills or leaks. The dewatering of contaminated groundwater could also present risks to public health and

safety, and the environment, if the contaminated groundwater (i.e., dewatering effluent) is not handled properly. The potential for contaminated soil and groundwater to be released into the environment during project construction would be considered a significant impact.

Impacts resulting from the potential release of or exposure to hazardous materials in soil or groundwater would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.7-2a (Health and Safety Plan)** and **4.7-2b (Soil and Groundwater Management Plan)**. **Mitigation Measure 4.7-2a** would require that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations. The plan would specify personal protective equipment for workers, outline construction measures to reduce the potential for workers' exposures to hazardous materials in soil and groundwater, and describe procedures for handling accidental hazardous materials releases and unanticipated contamination. **Mitigation Measure 4.7-2b** requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater, when encountered. With implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, the potential for harmful exposure to hazardous materials present in soil or groundwater during pipeline and other conveyance facility construction would be reduced to a less-than-significant level.

All Other Project Components

Although hazardous materials sites are not currently identified in proximity to other proposed project components, newly discovered sites may arise prior to the time of construction that could affect subsurface conditions in the project area. Encountering unanticipated soil or groundwater contamination could result in potential exposures to construction workers, the public, or the environment, resulting in a significant impact. However, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**.

Consistency with Plans & Policies

As discussed above, the construction of the project has the potential to discover previously unknown contamination from previous land uses. This would be inconsistent with the City of Marina's Chapter 15.56; and the City of Monterey's Chapter 9, Article 8, as discussed above in Table 4.7-3. The construction of the project would be made consistent with the implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, and through compliance with applicable hazardous materials laws and regulations.

Impact Conclusion

There is a potential to encounter contaminated soil and/or groundwater during construction of all proposed project components. Thus, the potential for contaminated soil and groundwater to be released into the environment during project construction is considered a significant impact for all project components. However, with implementation of **Mitigation Measures 4.7-2a (Health and Safety Plan)** and **4.7-2b (Soil and Groundwater Management Plan)**, and through compliance with applicable hazardous materials laws and regulations, the potential for exposure to hazardous

materials in soil and groundwater during construction would be reduced to a less-than-significant level and the MPWSP would be brought into conformance with the above-noted policies.

Mitigation Measures

Mitigation Measure 4.7-2a applies to all project components.

Mitigation Measure 4.7-2a: Health and Safety Plan.

The construction contractor(s) shall prepare and implement a site-specific Health and Safety Plan as required by and in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. This plan shall be submitted to the California Public Utilities Commission for review prior to commencement of construction. The Health and Safety Plan shall include, but is not limited to, the following elements:

- Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site health and safety plan;
- A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals;
- Specified personal protective equipment and decontamination procedures, if needed;
- Emergency procedures, including route to the nearest hospital; and
- Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered. These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release, notifying Monterey County Department of Environmental Health, and retaining a qualified environmental firm to perform sampling and remediation.

Mitigation Measure 4.7-2b applies to all project components.

Mitigation Measure 4.7-2b: Soil and Groundwater Management Plan.

In support of the Health and Safety Plan described above, CalAm or its contractor shall develop and implement a Soil and Groundwater Management Plan that includes a materials disposal plan specifying how the construction contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan must identify protocols for soil testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste. Contract specifications shall mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent.

As part of the Soil and Groundwater Management Plan, CalAm or its contractor shall develop a groundwater dewatering control and disposal plan specifying how contaminated groundwater (dewatering effluent), if encountered, will be handled and disposed of in a safe, appropriate and lawful manner. The plan must identify the locations at which groundwater dewatering is likely to be required, the method to analyze groundwater for

hazardous materials, and the appropriate treatment and/or disposal methods. If the dewatering effluent contains contaminants that exceed the requirements of the *General WDRs for Discharges with a Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001), the construction contractor shall contain the dewatering effluent in a portable holding tank for appropriate offsite disposal or discharge (see Section 4.5.3 in Section 4.3, Surface Water Hydrology and Water Quality, for more information regarding this NPDES permit). The contractor can either dispose of the contaminated effluent at a permitted waste management facility or discharge the effluent, under permit, to a publicly owned treatment works such as the MRWPCA Regional Wastewater Treatment Plant. This plan shall be submitted to the California Public Utilities Commission and Monterey Bay National Marine Sanctuary for review and approval prior to commencement of construction.

Impact 4.7-3: Project facilities would be located on a known hazardous materials site. (*Less than Significant*)

Portions of New Transmission Main

As discussed above in Section 4.7.1.1, Soil and Groundwater Conditions, the southern 700 feet of the new Transmission Main would be located in the former Fort Ord Seaside MRA. This is a known former hazardous materials site and is identified on the National Priorities List. However, the pipeline alignment would be entirely with General Jim Moore Boulevard, a previously disturbed area (roadway construction) and cleared of UXO by the U.S. Army (FORA, 2017). Although the U.S. Army has conducted UXO investigation and removal in this area, the U.S. Army also states that undetected UXO may still be present. Construction activities within this area have the potential to encounter undiscovered UXO, which, if not identified and properly handled, could cause injury to or death of construction workers.

As discussed in the setting section, above, the investigations and remedial actions conducted for the Seaside MRSs are complete within the footprint of the project components. However, specific regulations still apply to any ground-disturbing activities within these areas, including the City of Seaside's Ordnance Remediation District regulations and the environmental protection provisions of the FOSET agreement. Prior to construction within the southernmost portion of the new Transmission Main, the applicant or its contractor would need to obtain a Right of Entry agreement from FORA and obtain a permit for digging and excavation from the City of Seaside. As part of the permit application, CalAm or its contractors would be required to provide proposed project plans, a technical summary of ordnance removal activities performed on the property in the past (see FORA, 2017), a soils management plan, a UXO support workplan, an oversight reimbursement agreement, and confirmation of DTSC approval. Compliance with the City of Seaside digging and excavation permit and FORA Right of Entry requirements would ensure that all personnel authorized to access the former Fort Ord Seaside MRAs receive MEC recognition training, coordinate with a qualified Ordnance and Explosive Safety Specialist during all activities on the site, and comply with all requirements placed on the property by an agreement between the City of Seaside, FORA, and DTSC. All permits require ceasing soil disturbance activities and notification to the Seaside Police Department, the Presidio law enforcement, the

U.S. Army, and DTSC of any suspected UXO immediately upon discovery. Compliance with the foregoing regulations for construction work at the former Fort Ord military base would ensure the potential impact of encountering UXO during project construction would be less than significant.

All Other Project Components

None of the other project components would be located on known hazardous materials sites. Therefore, no impact associated with the siting of these facilities on a known hazardous materials site would occur. The potential for contaminated soil or groundwater from nearby hazardous materials sites to migrate into the project area and then be encountered during project construction is addressed above under Impact 4.7-2.

Impact Conclusion

Portions of the New Transmission Main within the Seaside MRA would be located on a known hazardous materials site. However, with compliance with the above-described regulations, the project would ensure the impact is less than significant. None of the other project components are located within a known hazardous materials site.

Mitigation Measures

None proposed.

Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of a school during construction. (*Less than Significant*)

New Desalinated Water Pipeline, new Transmission Main, ASR Pipelines, and Ryan Ranch-Bishop Interconnection Improvements

These project components would be located within 0.25 mile of a school. As discussed above under Impact 4.7-1, project construction could require the use of small quantities of fuel, lubricants, paints, and solvents.

The hazardous materials storage and stormwater permitting requirements discussed under Impact 4.7-1, above, impose performance standards on the construction activities that would ensure the risk of release of hazardous materials during construction would be low. Therefore, the potential for a hazardous materials release during construction to result in increased exposure to hazardous materials at the nearby schools (see Figure 4.7-1 and 4.7-2) is remote; therefore, this impact is less than significant.

Hazardous air emissions are toxic air contaminants identified by the California Air Resources Board. Construction would result in the short-term emissions of diesel particulate matter (DPM), a toxic air contaminant, within 0.25 mile of schools. However, based on a screening-level analysis discussed in Section 4.10, Air Quality, DPM emissions would be less than the Monterey Bay Unified Air Pollution Control District's increased cancer risk threshold. Thus, this would be a less-than-significant impact.

All Other Project Components

None of the other proposed project components are located within 0.25-mile of a school. No impact would result.

Impact Conclusion

The new Desalinated Water Pipeline, new Transmission Main, ASR Pipelines, and Ryan Ranch-Bishop Interconnection Improvements Pipeline would result in a less-than-significant impact from the handling of hazardous materials within 0.25 mile of schools during construction.

Mitigation Measures

None proposed.

Impact 4.7-5: Increased risk of wildland fires during construction. (*Less than Significant*)

New Transmission Main, ASR Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station

As illustrated in **Figure 4.7-2**, the new Transmission Main, ASR Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station are proposed in or near areas classified by CAL FIRE as High or Very High Fire Hazard Severity Zones.

California regulations governing the use of construction equipment in fire prone areas are designed to minimize the risk of wildland fires during construction activity (e.g., PRC Sections 4411 et seq.). These regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire prone areas. In addition, the California Fire Code addresses the fire safety of general construction operations. The construction contractor must comply with these regulations and any additional requirements imposed by CAL FIRE or the local fire protection departments. With compliance, the impact associated with an increased risk of wildland fires during construction of the Highway 68 interconnection improvements and the Carmel Valley Pump Station would be less than significant.

Further, as noted above under Impact 4.7-3, portions of the New Transmission Main and ASR Pipelines are located in an area with the potential for undiscovered UXO. This area is also a Very High Fire Hazard Severity Zone as shown on Figure 4.7-2. Explosions of ordnance could result in wildfires that could be severe. As described under Impact 4.7-3, compliance with permit requirements from the City of Seaside would ensure that if UXO is encountered, it is safely handled, reducing the risk of wildfire caused by accidental detonation of UXO to a level that is less than significant.

All Other Proposed Facilities

None of the other project facilities are located within or near an area classified by CAL FIRE as a High or Very High Fire Hazard Severity Zone; however, construction activities could temporarily increase fire risk. With compliance with California Fire Code regulations for construction, the potential impact associated with an increased risk of fire during construction of all other project components would be less than significant.

Impact Conclusion

The proposed project would result in a less-than-significant impact from potential increased fire risk during construction.

Mitigation Measures

None proposed.

4.7.5.2 Operational and Facility Siting Impacts

Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations. (*Less than Significant*)

Project components that would involve the storage and use of hazardous materials are discussed below.

Subsurface Slant Wells

Periodic maintenance of the subsurface slant wells would be required every 5 years. Maintenance workers would lower mechanical brushes into the slant wells to mechanically clean the screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used.

Access to and the use of cleaning equipment for well maintenance would require the use of the same types of vehicles and equipment used during construction. Similar to construction, petroleum products, such as gasoline, diesel fuel, lubricants, and cleaning solvents could be utilized to fuel and maintain maintenance vehicles and equipment. The routine use or reasonably foreseeable upset and accident conditions could result in inadvertent releases of small quantities of these hazardous materials into soil and surface water. However, compliance with the various regulations regarding the safe transport, use, and storage of hazardous materials (see Section 4.7.2, Regulatory Framework) as well as the NPDES General Construction Permit requirements would ensure this impact is less than significant, similar to as discussed above in Impact 4.7-1. The SWPPP would identify the hazardous materials to be used during slant well maintenance and would describe spill prevention measures, equipment inspection requirements, equipment and fuel storage, and spill response protocols. No mitigation measures are proposed.

MPWSP Desalination Plant

The operation of the MPWSP Desalination Plant is discussed in Section 3.2.2., The desalination process would use chemicals during the pretreatment of the seawater, the post treatment of the desalination water and for cleaning the membranes; they are listed in Table 4.7-5 and include sodium hypochlorite, sodium bisulfite, sodium hydroxide, zinc orthophosphate, strong bases or acids, carbon dioxide, lime, sodium hydroxide, and flocculating agents.

The MPWSP Desalination Plant operations would involve the use and storage of chemicals to remove performance-reducing deposits from the pretreatment filtration system and reverse osmosis (RO) membranes, as well as chemicals to adjust product water quality. The types and amounts of chemicals that would be utilized in the MPWSP Desalination Plant treatment processes are listed in **Table 4.7-5**.

TABLE 4.7-5
MPWSP DESALINATION PLANT (9.6 MGD) – WATER TREATMENT CHEMICALS

Chemical	Application	Approximate Chemical Usage (pounds/year)
Sodium Hypochlorite	Pretreatment / Post-treatment	140,000 / 55,000
Sodium Bisulfite	Pretreated source water	85,000
Carbon Dioxide	Post-treatment	420,000
Lime	Post-treatment	960,000
Sodium Hydroxide	Post-treatment	55,000
Orthophosphate	Post-treatment	30,000
RO Cleaning Chemicals (various)	RO membrane cleaning	To be determined
Coagulant (if needed)	Pretreatment	To be determined

SOURCE: RBF Consulting, 2013; CalAm, 2014.

Pretreatment Process. As discussed in Section 3.2.2 of Chapter 3, Description of the Proposed Project, source water would be pretreated using pressure filters or multimedia gravity filters to remove suspended solids, microbes, and other contaminants such as iron and manganese. Routine backwashing of the pretreatment filters would occur each day. Backwashing the pretreatment filters would require that a chlorine solution (sodium hypochlorite, similar to bleach) be added to the backwash water supply to control bacterial growth on the filters. If data collected during the pilot program indicates that a chemical coagulant (e.g., ferric chloride, a commonly used coagulant) is needed in the pretreatment process, the backwash effluent would be treated to remove the coagulant chemical prior to discharge. Waste effluent produced during backwashing would flow by gravity from the pretreatment filters to two 0.25-acre, 6-foot-deep lined backwash settling basins. Suspended solids in the waste effluent would settle to the bottom of the basins, and the clarified water would be decanted. Approximately 0.4 million gallons per day (mgd) of decanted backwash water may be pumped to the Brine Discharge Pipeline, blended with brine produced by the RO system in the Brine Mixing Box, and discharged to the existing MRWPCA ocean outfall. Alternatively, the decanted backwash water could be blended with source water before undergoing

pretreatment and the RO process. Sludge formed by the solids in the backwash effluent would be periodically removed from the backwash settling basin and disposed of at a sanitary landfill.

RO System. The RO system would remove salts and other minerals from the seawater. The RO membranes would be cleaned to remove the accumulation of silts or scale, which reduces membrane performance. The RO system is expected to require cleaning two to three times per year. The RO membranes would be cleaned by circulating a cleaning solution (comprised of strong bases or acids) through the membranes and then flushing the membranes with clean water to remove the spent cleaning solution and waste effluent from the RO system. The spent cleaning solution and waste effluent would be discharged into a collection sump, chemically neutralized, then pumped into tank trucks and transported to an offsite disposal site.

Desalination Plant Post-Treatment Process. Desalinated water would be disinfected and treated with chemicals to adjust alkalinity and hardness. The primary disinfectant is a solution of sodium hypochlorite.

Bulk storage of these chemicals would be located in various 5,000- to 10,000-gallon tanks with secondary containment located within the process and electrical building. The capacity of the chemical storage tanks would vary by chemical. The design of the process and electrical building would incorporate all regulatory requirements for hazardous materials storage, such as spill containment features that exceed the capacity of the tanks; segregation of individual chemicals to prevent mixing in the case of accidental spillage; and appropriate alarm and fire sprinklers. Chemicals that have specific reactivity risks with one another will be stored at opposite ends of the storage area to reduce the potential risk of mixing. Lime and carbon dioxide would be used for post-treatment. In addition, a 750-kilowatt (KW) emergency diesel-gas powered generator and 2,000-gallon double-walled, aboveground diesel storage tank would be installed adjacent to the process and electrical building for emergency backup.

CalAm would be required to implement the project in accordance with all applicable laws and regulations governing hazardous materials storage, handling, and disposal. These regulations are designed to protect worker safety, provide for the safe storage and use of hazardous materials, reduce the potential for accidental releases, track and clean up accidental releases, and ensure that hazardous wastes are disposed of appropriately. A summary of these laws and regulations is provided in Section 4.7.2, Regulatory Framework. For example, California Fire Code, Article 80, requires all chemical storage and handling systems be designed and constructed to ensure the safe storage and handling of hazardous materials. Some of the requirements specifically applicable to the proposed project include spill control in all storage, handling and dispensing areas, separate secondary containment for each chemical storage system, and separation of incompatible materials with a non-combustible partition. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible materials that could pose a risk to workers, the public, and the environment.

As required by law, CalAm would submit a HMBP for the proposed project to the Monterey County Environmental Health Division prior to the start of project operations. The HMBP is required to include information on hazardous material handling and storage, including containment,

site layout, and emergency response and notification procedures in the event of a spill or release. In addition, the plan requires annual employee health and safety training. The plan must be approved by the County prior to commencement of project construction and the proposed project would be subject to post-construction compliance inspections. The HMBP would also provide the local agencies with the information they need to plan appropriately for a chemical release, fire, or other incident, which would reduce the potential for an accidental release to cause harmful health effects to workers or the public or substantial degradation to soil or water quality.

Transportation and disposal of wastes, such as spent cleaning solutions, would also be subject to regulations for the safe handling, transportation, and disposal such as the California Labor Code, Section 6300 et seq., California Vehicle Code Sections 32000 et seq., and Health and Safety Code, Sections 25100 et seq. Transporters licensed to haul hazardous wastes are required to meet requirements for training, secondary containment, and placarding to reduce the potential for a release of hazardous materials during transport to disposal facilities. Compliance with these various regulations would ensure this impact is less than significant. No mitigation measures are proposed.

ASR-5 and ASR-6 Wells

Water recovered from the two proposed ASR injection/extraction wells would be chlorinated using sodium hypochlorite for disinfection prior to being conveyed into the distribution system. The existing disinfection system has sufficient capacity to treat ASR product water extracted from all six ASR injection/extraction wells (e.g., the four existing ASR injection/extraction wells [ASR-1, ASR-2, ASR-3, and ASR-4] and the two new wells [ASR-5 and ASR-6] proposed under the MPWSP). The disinfection chemicals for the proposed ASR-5 and ASR-6 wells would be stored at the existing chemical/electrical control building at the Phase I ASR facilities site. The existing disinfection system includes a 5,000-gallon sodium hypochlorite tank with double containment, vent fume neutralizers, and a forced-air ventilation system. The proposed project would increase the annual quantity of sodium hypochlorite handled by the disinfection system, but the amount stored on-site would be the same. Sodium hypochlorite solution (12.5 percent NaOCl) would be delivered to the existing ASR disinfection facility by tanker trucks approximately once per month to replenish the system. With all six wells in operation, the expected chemical use would be less than 150 gallons per day of sodium hypochlorite.

Additional chemicals of concern are generated from the injection of chlorinated water into a groundwater aquifer. This process is known to result in the formation of disinfection byproducts (DBPs) including trihalomethanes (THMs) and haloacetic acids (HAAs) from reactions with organic matter present in the aquifer. Studies regarding the fate and stability of DBPs injected into the groundwater aquifer at the MPWMD Santa Margarita Test Injection Well (Pueblo Water Resources, 2013) indicate that THMs appear to increase during the first 60 days of storage, then decline slowly over the following 90 to 150 days to below initial injection levels. According to the studies, HAAs declined steadily during aquifer storage, reaching non-detectable levels within 90 days. Groundwater extracted for drinking water supply would be required to meet drinking water requirements. The DBP data collected during the 2012 water year show that THMs were below regulatory limits for drinking water. Refer to Section 4.4, Groundwater Resources, for further discussion of groundwater quality.

With compliance with applicable regulations, the potential impact resulting from an accidental release of hazardous materials used during operation the ASR-5 and ASR-6 Wells would be less than significant.

Carmel Valley Pump Station

A portable 50 kW portable diesel-powered generator would be stored at the Carmel Valley Pump Station to provide backup power in the event of a power outage. The generator would be operated in compliance with all hazardous materials regulations. Therefore, the potential impact related to release of hazardous materials during operation of the Carmel Valley Pump Station would be less than significant.

All Other Proposed Facilities

Operation of all pipelines, Ryan Ranch-Bishop Interconnection Improvements, and the Main System-Hidden Hills Interconnection Improvements would not involve the routine storage or use of hazardous materials. No impact related to the inadvertent release of hazardous materials during operation of these project components would result.

Impact Conclusion

Through compliance with existing state and federal laws and regulations regarding hazardous materials storage and management, the potential for environmental impacts due to the accidental release of hazardous materials associated with project operations would be less than significant.

Mitigation Measures

None proposed.

4.7.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects. As discussed in Section 4.7.3, above, the project would have no impact with respect to the use of hazardous materials within 0.25 mile of a school (during operations), the location of project components within 2 miles of an airport, interference with an adopted emergency response plan or emergency evacuation plan, or wildland fire hazards (during operations). Accordingly, the proposed project could not contribute to cumulative impacts related to these topics.

Impact 4.7-C: Cumulative impacts related to hazards and hazardous materials. (*Less than Significant with Mitigation*)

The geographic scope of analysis for cumulative hazards and hazardous materials impacts encompasses the project area and nearby areas that: (1) could affect soil and groundwater conditions within the project area; or (2) are in or near areas classified by CAL FIRE as High or

Very High Fire Hazards Severity Zones. The former types of impacts are generally site-specific and depend on past, present, and future land uses and existing soil, sediment, and groundwater conditions. The latter tend to be in suburban or rural areas, within or adjacent to large tracts of densely vegetated upland open spaces. The timeframe during which the MPWSP could contribute to cumulative hazards and hazardous materials effects includes the construction and operations phases.

Cumulative Impacts during Project Construction

Significant cumulative impacts related to hazards could occur if the incremental impacts of the MPWSP combined with the incremental impacts of one or more projects identified in **Table 4.1-2** to: (1) substantially increase risk that people or the environment would be exposed to hazardous materials (as described in Impacts 4.7-1 through 4.7-4); or (2) substantially increase risk of wildfire (as described in Impact 4.7-5).

The following cumulative projects described in Table 4.1-2 in Section 4.1 would potentially be geographically adjacent to or overlap with components of the proposed project, and could result in ground disturbance and construction activities that would overlap in time with project construction:

- Laguna Seca Villas (No. 3)
- Marina Downtown Vitalization Specific Plan (No. 10)
- Marina Station (No. 12)
- Main Gate Specific Plan (No. 18)
- TAMC's Monterey Peninsula Light Rail Project (No. 38)
- CEMEX Removal Plan and Restoration Plan (No. 63)

Because potential impacts related to the release of hazardous materials and risk of wildfire are highly site-specific, this analysis first addresses the potential for impacts of the proposed project and the above projects to combine at these specific locations, and then describes the potential cumulative impacts that could occur if the impacts do combine.

The Laguna Seca Villas Project would be located approximately 350 feet from the eastern end of the Ryan Ranch-Bishop Interconnection Improvements pipeline. Although the construction schedule for the Laguna Seca Villas Project is currently unknown, the likelihood that both projects would be under construction at the same time is remote because construction of the Ryan Ranch-Bishop Interconnection pipeline would proceed at about 250 feet per day, and so would only be in the immediate vicinity of the Laguna Seca project location for several days at most, while construction of the Laguna Seca project is unknown and could occur after the proposed project construction has been completed in this location. As described in Section 4.7.1.1 and shown in Figure 4.7-2, there is one site (former Fort Ord York School) within 0.25 mile of this location that was investigated for the presence of MECs, but none were identified and the property was cleared for transfer; therefore, no existing environmental contamination, including contaminated groundwater, is expected to be present at this location.

The reasonably foreseeable physical environmental changes associated with the proposed Marina Downtown Vitalization Specific Plan include construction on the east side of Del Monte Boulevard at Reservation Road, where the new Desalinated Water Pipeline would connect to the new Transmission Main. Although the construction schedule for this component of the specific plan is currently unknown, the likelihood that both projects would be under construction at the same time is remote because the specific plan has not been adopted and no projects have been approved at this intersection, and because construction of the new Desalinated Water Pipeline and new Transmission Main would proceed at about 250 feet per day, and so would only be in the immediate vicinity of the Del Monte Boulevard/Reservation Road intersection for several days. As described in Section 4.7.1.1 and shown in Figure 4.7-2, the former Don's One Hour Dry Cleaners site is undergoing remediation for dry cleaning solvents released to groundwater beneath the site, located at the Del Monte Boulevard/Reservation Road intersection. While the specific plan project on the north side of Reservation Road at Del Monte Boulevard would be located on the remediation site, as noted in Table 4.7-1, the groundwater remediation at this location does not underlie proposed project components. Therefore, the proposed project would not contribute to a potential cumulative impact associated with disturbing or dewatering contaminated groundwater at this location.

The Marina Station project would be located along Del Monte Boulevard in the vicinity of the new Desalinated Water Pipeline. For the same reasons described for the Marina Downtown Vitalization Specific Plan above, the potential for construction of the new Desalinated Water Pipeline to occur at the same time as the proposed Marina Station project is remote. No existing environmental contamination, including contaminated groundwater, is expected to be present within 0.25 mile of the Marina Station project.

The adopted Main Gate Specific Plan is located near the junction of Highway 1 and Lightfighter Drive in the vicinity of the new Transmission Main. For the same reasons described for the Marina Downtown Vitalization Specific Plan above, the potential for construction of the new Transmission Main to occur at the same time as the proposed Main Gate Specific Plan projects is remote. No existing environmental contamination, including contaminated groundwater, is expected to be present within 0.25 mile of the location of the Main Gate Specific Plan projects.

TAMC's Monterey Peninsula Light Rail Project would be located adjacent to approximately 9 miles of proposed project pipelines, including portions of the Castroville Pipeline, new Desalinated Water Pipeline, and new Transmission Main. Because the light rail project is on hold indefinitely until TAMC can secure funding, its construction schedule is unknown. Because that project must undergo environmental review and permitting prior to construction. The U.S. Army Fort Ord Sites 2 and 12 and University Villages are located on the other side of Highway 1 from the TAMC right-of-way, and as shown in Table 4.7-1, remediation for those sites does not underlie proposed project components and therefore also does not underlie the TAMC right-of-way.

Activities associated with implementation of the CEMEX Removal Plan and Reclamation Plan would be located adjacent to the subsurface slant wells, and removal and reclamation activities would be completed between 2020 and 2025; therefore, this project would occur in the same

geographic location and timeframe as slant well construction. Removal of some structures could cause accidental release of hazardous materials that are stored onsite. The Removal Plan is required to provide a contingency plan that addresses potential spills of fuel or other hazardous releases that may result from the use of mechanized equipment and responses to a potential spill, and the discharge of hazardous materials into any receiving waters is prohibited (CCC, 2017).

All of the above projects would be subject to the same regulatory requirements as the proposed project, including the implementation of health and safety plans and soil and groundwater management plans (implemented as **Mitigation Measures 4.7-2a** and **4.7-2b** for the proposed project), and therefore any cumulative projects involving releases of hazardous materials also would be required to remediate their respective sites to established regulatory standards. This would be the case regardless of the number, frequency, or size of the release(s), or the residual amount of chemicals present in the soil from previous spills. Therefore, while it is possible that the proposed project and other projects in the cumulative could result in releases of hazardous materials at the same location, the responsible party associated with each spill would be required to remediate site conditions to the same established regulatory standards. The proposed project would result in a significant impact resulting from the potential release of or exposure to hazardous materials in soil or groundwater that could have a significant contribution to a potentially significant cumulative impact resulting from such releases from more than one project. However, the proposed project's impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, which would require that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations and comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater, when encountered. The residual less-than-significant effects of the proposed project that would remain after mitigation would not combine with the potential residual effects of cumulative projects to cause a potential significant cumulative impact because residual impacts would be highly site-specific and, as described above, are highly unlikely to occur within the same timeframe such that multiple releases could occur before containment and/or mitigation can be implemented. Accordingly, with implementation of mitigation measures, the project would have a less than significant contribution to a cumulative impact with respect to the release of hazardous materials during construction.

As also described in Section 4.7.5.1, proposed project components located in or near areas classified by CAL FIRE as High or Very High Fire Hazard Severity Zones include Main System Hidden Hills Interconnection Improvements, Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station (CAL FIRE, 2007; 2008). As described in Impact 4.7-5, compliance with CAL FIRE's regulations governing the use of construction equipment in fire-prone areas (see Section 4.7.2, Regulatory Framework) and compliance with the state fire code would reduce the project-specific incremental impact to a less-than-significant level.

Two of the cumulative projects identified in **Table 4.1-2** – Rancho Cañada Village and Golf Club (Nos. 27 and 28) – are proposed for the Very High Fire Hazard Severity Zone within which the Carmel Valley Pump Station is proposed. Although the Rancho Cañada projects' construction schedules are unknown, there is some possibility that they could overlap with the timing of the

Carmel Valley Pump Station construction, and would involve the use of construction equipment or other vehicles with internal combustion engines and/or gasoline powered tools that are capable of producing a spark, flame, or fire. Concurrent activities could result in a cumulative increase in wildland fire risk in this location. This compounded increase in risk could place an additional burden on local fire departments, particularly if access for emergency vehicles were impeded. CAL FIRE's fire prevention regulations related to the use of construction equipment in fire-prone areas also would apply to all cumulative projects involving construction. The Rancho Cañada Village and Golf Club projects would be required to comply with these fire prevention regulations, including the use of spark arrestors and fire suppression equipment. Compliance with these regulations would reduce the potential for a significant cumulative impact with respect to substantial increase in wildfire risk, and would ensure that the project's incremental contribution is less than significant.

Cumulative Impacts during Project Operations

Significant cumulative impacts related to operational hazards could occur if the incremental impacts of the proposed project combined with those of one or more of the projects identified in **Table 4.1-2** to cause a substantial increase in risk that people or the environment would be exposed to hazardous materials used or encountered during the operations phase (Impact 4.7-6).

As discussed in Section 4.7.5.2, Subsurface Slant Wells, maintenance of the proposed subsurface slant wells would require use of cleaning materials and vehicles, introducing potential for inadvertent releases of hazardous materials into the soil and groundwater. MPWSP Desalination Plant operation would require the use of hazardous materials, such as fuels and water treatment chemicals, to be stored onsite. The ASR injection/extraction wells would require disinfection chemicals stored at the Phase I ASR facilities site to be used at a higher rate, but would not cause an increase in onsite storage volume. Compliance with the various regulations regarding the safe transport, use, and storage of hazardous materials (see Section 4.7.2, Regulatory Framework) would reduce the project-specific incremental impact to a less-than-significant level.

Many of the cumulative projects identified in **Table 4.1-2** also would require the transport, use, and storage of hazardous chemicals. However, none of the cumulative projects would be expected to store or handle large quantities of hazardous materials on or adjacent to sites of proposed project components that would also require storage or handling of such materials. As a result, no significant cumulative impact would occur in association with the storage or handling of hazardous materials. However, significant cumulative impacts involving hazardous materials releases could occur along transportation corridors used by the MPWSP and cumulative projects.

For all project components involving the handling, storage, and disposal of hazardous materials, CalAm and/or its contractors would be required to implement a Hazardous Materials Business Plan and comply with applicable regulations, including those governing containment, site layout, and emergency response and notification procedures in the event of a spill or release. Transportation and disposal of wastes, such as spent cleaning solutions, would also be subject to regulations for the safe handling, transportation, and disposal of chemicals and wastes (see Section 4.7.2, Regulatory Framework). As noted previously, such regulations include standards to

which parties responsible for hazardous materials releases must return spill sites, regardless of location, frequency, or size of release, or existing background contaminant concentrations. Therefore, compliance with existing laws and regulations regarding hazardous materials transport would reduce the risk of environmental or human exposure to such materials. The combined effects of the proposed project and cumulative projects would result in a less than significant cumulative impact.

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4.8 Land Use, Land Use Planning, and Recreation

Sections	Figures	Tables
4.8.1 Setting/Affected Environment	4.8-1 Coastal Zone	4.8-1 Overview of Designated Land Uses and Recreational Facilities within 0.25 mile of the Proposed Facilities
4.8.2 Regulatory Framework	4.8-2 Recreational Opportunities in the Northern Project Area	4.8-2 Applicable Regional and Local Land Use Plans and Policies Relevant to Land Use and Recreation
4.8.3 Approach to Analysis	4.8-3 Recreational Opportunities in the Southern Project Area	4.8-3 Summary of Impacts – Land Use and Recreation
4.8.4 Evaluation Criteria		
4.8.5 Direct and Indirect Effects of the Proposed Project		
4.8.6 Cumulative Effects of the Proposed Project		

This section analyzes the potential for the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to affect established land uses and recreational facilities, and evaluates project consistency with applicable plans, policies, and ordinances governing land use in the project area. Potential impacts on agricultural land uses are evaluated separately in Section 4.16, Agriculture.

Comments received on the April 2015 Draft EIR related to Land Use, Land Use Planning, and Recreation concern offshore/nearshore and beach recreational uses and access to the Monterey Bay National Marine Sanctuary, the MPWSP's relationship to and compatibility with Fort Ord Dunes State Park, as well as MPWSP consistency with applicable regulatory requirements. This section has been modified to address these comments. Revisions pertaining to land uses and recreational opportunities are presented in Section 4.8.1, Setting /Affected Environment. Revisions concerning compatibility with applicable regulatory requirements and potential effects of the proposed project are presented in Sections 4.8.2, Regulatory Framework and, 4.8.5, Direct and Indirect Effects of the Proposed Project, respectively.

4.8.1 Setting/Affected Environment

The study area for evaluation of land use and recreation impacts includes the lands on which MPWSP facilities are proposed, the adjacent lands, and recreational facilities and resources located within 0.25 mile of the proposed facility sites.

The project area extends approximately 10 miles, from the northern reach of the Castroville Pipeline on Merritt Street in Castroville, to the southern terminus of the new Transmission Main in Seaside, with proposed components extending further south for approximately 6 miles into the Carmel Valley and east to the unincorporated community of Hidden Hills along Highway 68. The project area includes portions of the cities of Marina, Seaside, Monterey, and unincorporated Monterey County, and federal lands (e.g., Presidio of Monterey, the Ord Military Community[1]). With the exception of the federal lands, land uses in the project area are generally governed by the local coastal programs, general plans, and zoning codes of the local jurisdictions. Land uses on federal lands are governed by the respective managing federal agency (e.g., U.S. Army).

1 These are lands retained by the U.S. government, following the Fort Ord Base Closure and Reuse Plan.

Lands within the former Fort Ord military reservation have mostly been transferred to state and local governments and are now subject to state and local land use plans and regulations. However, local agency land use decisions affecting transferred lands within the former Fort Ord remain subject to discretionary review by the Fort Ord Reuse Authority (FORA).

Land uses in the northern portion of the project area are dominated by agricultural and industrial uses; the remaining portions of the project area are generally urbanized and include residential, commercial, institutional, quasi-public, and industrial land uses. The westernmost portions of the project area lie within the coastal zone, as defined in the California Coastal Act and regulated by the California Coastal Commission (CCC).

There are a variety of recreational resources throughout Monterey County—from federal preserves to state beaches and small neighborhood parks. These resources include the Monterey Bay National Marine Sanctuary (MBNMS), along with designated parks, trails, and open spaces that provide for a diversity of active and passive recreational opportunities. Public access to the area's unique natural resources is an important component of recreation in Monterey County. The Monterey Bay shoreline hosts one of the most significant and rare dune landforms on the west coast. Public access to beaches, dunes, and hiking trails is available from numerous locations along the coast. There are also several designated bikeways throughout the project area that serve as both recreational facilities and alternative transportation routes.[2]

A more detailed overview of existing land uses, land use jurisdictions, and recreational resources adjacent to or within the vicinity (0.25 mile) of MPWSP components is provided in **Table 4.8-1** and described below. Many of the proposed project components would be buried entirely underground, and predominantly within existing public rights-of-way and at existing public water/wastewater facility sites. These include the Source Water Pipeline and optional alignment, new Desalinated Water Pipeline and optional alignment, Castroville Pipeline and optional alignments, Brine Discharge Pipeline, Pipeline to CSIP Pond, ASR Conveyance Pipelines, new Transmission Main and optional alignment, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Figure 4.8-1 presents the various local government jurisdictional boundaries and the extent of the coastal zone relative to the project area. **Figures 4.8-2** and **4.8-3** present parks and other recreational facilities in the project area.

[2] "Bikeway" is a general term used to refer to facilities that provide primarily bicycle travel. The Caltrans Bikeway Planning and Design section (Chapter 1000 of the State of California Highway Design Manual) categorizes bikeways into three types:

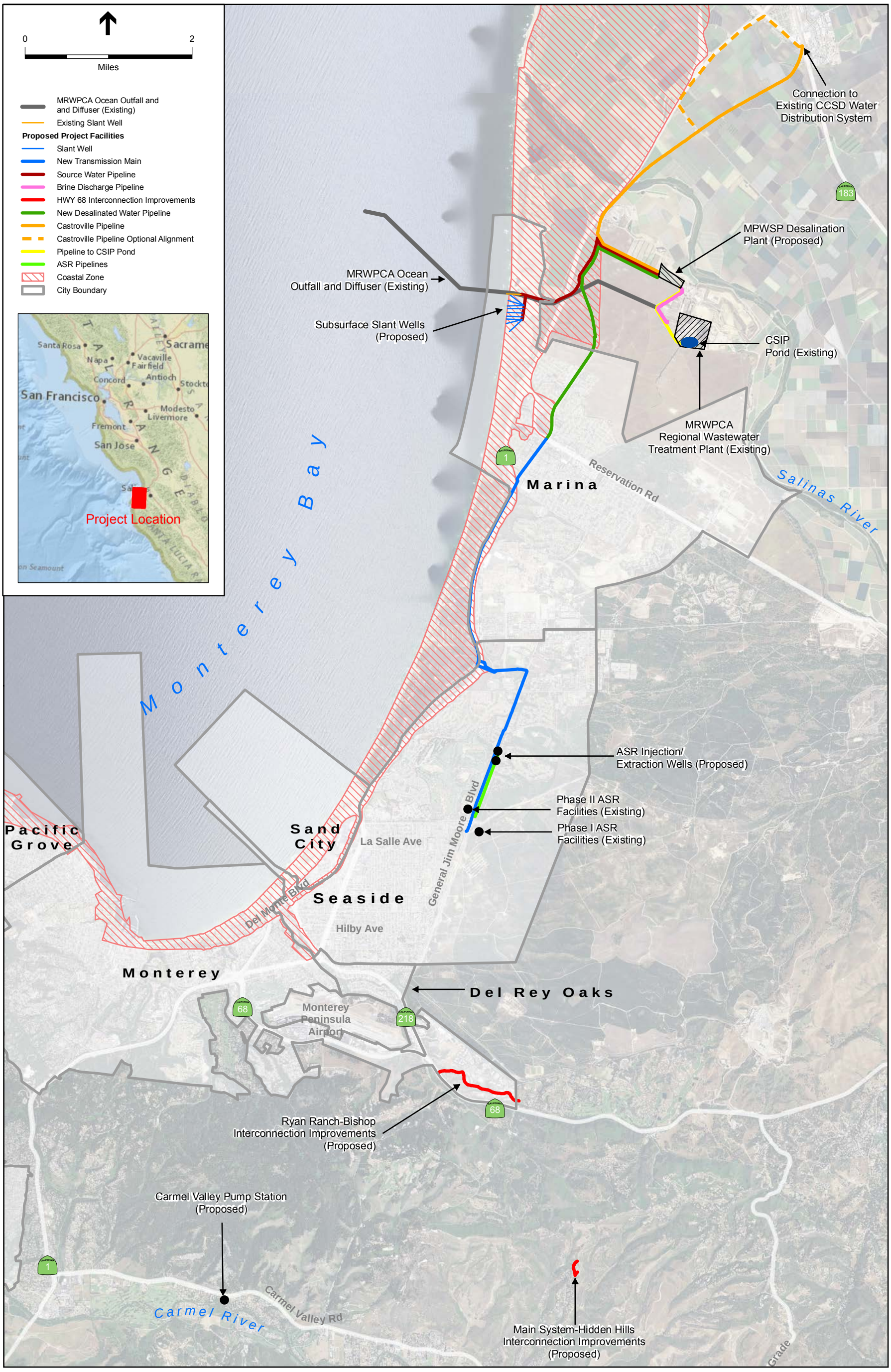
- Class I bikeways are bike paths and provide a completely separated right-of-way for the exclusive use of bicycle and pedestrian traffic with cross-flow minimized. Class I bikeways exist along General Jim Moore Boulevard between Normandy Road and Coe Avenue. The Monterey Peninsula Recreational Trail (also known as the Monterey Bay Coastal Trail), which extends approximately 18 miles between Castroville and Pacific Grove, is also a Class I bikeway.
- Class II bikeways are bike lanes and are indicated by a striped lane for one-way bike travel on a street or highway, typically with signage placed along the street segment. A Class II bikeway exists along General Jim Moore Boulevard between Coe Avenue and Canyon del Rey Boulevard.
- Class III bikeways are bike routes that involve shared use of the roadway with motor vehicle traffic. Typically these facilities are city streets with signage indicating the designated bike route without additional striping or improvements for bicyclists.

TABLE 4.8-1
OVERVIEW OF DESIGNATED LAND USES AND RECREATIONAL FACILITIES WITHIN 0.25 MILE OF THE PROPOSED FACILITIES

Proposed Facility	Location	Jurisdiction	Adjacent Land Uses	Public Recreational Areas Within 0.25 mile
Subsurface Slant Wells	On a 376-acre coastal parcel in north Marina, within a former CEMEX mining area.	City of Marina (coastal zone)	Agricultural / Industrial / Recreation (to the west)	Publicly accessible beach and MBNMS, west of CEMEX property
MPWSP Desalination Plant	On the upper 25-acre terrace of a 46-acre vacant parcel on Charles Benson Road, northwest of the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant.	Monterey County	Agricultural, Light Industrial, Public / Quasi-Public	None within 0.25 mile
Source Water Pipeline & Optional Alignment	Between the proposed subsurface slant wells in a former CEMEX mining area and the CEMEX building located approximately 0.5 mile inland.	City of Marina (coastal zone)	Agricultural / Industrial	Publicly accessible beach and MBNMS
	Between the CEMEX building and the intersection of Del Monte Boulevard and Charles Benson Road.	Monterey County (coastal zone)	Agricultural, Railroad	Monterey Peninsula Recreational Trail
	From the intersection of Del Monte Boulevard and Charles Benson Road to the proposed MPWSP Desalination Plant site.	Monterey County (inland)	Agricultural, Light Industrial, Public / Quasi-Public	Monterey Peninsula Recreational Trail
New Desalinated Water Pipeline & Optional Alignment	From the proposed MPWSP Desalination Plant site, west along Charles Benson Road, and south along Lapis Road and Del Monte Boulevard to the boundary between the city of Marina and unincorporated Monterey County.	Monterey County (inland and coastal zone)	Agricultural, Light Industrial, Public / Quasi-Public, Railroad	Monterey Peninsula Recreational Trail
New Desalinated Water Pipeline & Optional Alignment	From the boundary between the city of Marina and unincorporated Monterey County, south along Del Monte Boulevard to Reservation Road.	City of Marina (inland and coastal zone)	Residential, Commercial, Parklands Light Industrial	Monterey Peninsula Recreational Trail, Locke-Paddon Park, and Vince DiMaggio Park
Castroville Pipeline	From the proposed MPWSP Desalination Plant site, north to Merritt Street via Monte Road.	Monterey County (inland)	Agricultural, Light Industrial, Public / Quasi-Public, Railroad	Monterey Peninsula Recreational Trail
Castroville Pipeline Optional Alignment	From the proposed MPWSP Desalination Plant site, north to Merritt Street via Monte Road, Nashua Road, and Highway 156.	Monterey County (inland)	Agricultural, Light Industrial, Commercial, Residential, and Public / Quasi-Public, Railroad	Monterey Peninsula Recreational Trail and Cato Phillips Park
Brine Discharge Pipeline	Between the MPWSP Desalination Plant site and the headworks to the MRWPCA ocean outfall at the MRWPCA Regional Wastewater Treatment Plant.	Monterey County (Inland)	Agricultural, Light Industrial, Public / Quasi-Public	None within 0.25 mile
Brine Mixing Box	Between the Brine Discharge Pipeline and the headworks to the MRWPCA ocean outfall at MRWPCA Regional Wastewater Treatment Plant.	Monterey County (Inland)	Light Industrial, Public / Quasi-Public	None within 0.25 mile

TABLE 4.8-1 (Continued)
OVERVIEW OF DESIGNATED LAND USES AND RECREATIONAL FACILITIES WITHIN 0.25 MILE OF THE PROPOSED FACILITIES

Proposed Facility	Location	Jurisdiction	Adjacent Land Uses	Public Recreational Areas Within 0.25 mile
Pipeline to CSIP Pond	Between the proposed MPWSP Desalination Plant site and the existing CSIP pond located at the southern end of the MRWPCA Regional Wastewater Treatment Plant.	Monterey County (inland)	Agricultural, Light Industrial, Public / Quasi-Public	None within 0.25 mile
ASR-5 and ASR-6 Wells and ASR Conveyance Pipelines	Along General Jim Moore Boulevard between Ardennes Circle and Coe Avenue in the Fitch Park military housing area.	City of Seaside (the ASR-5 and ASR-6 Well sites are owned by U.S. Army; local land use regulations have limited application; inland) Presidio of Monterey – Ord Military Community (U.S. Army)	Residential, Open Space, Recreational, Public/Quasi-Public	Class I and II bikeway (General Jim Moore Boulevard); Bayonet and Blackhorse Golf Course
New Transmission Main & Optional Alignment	From Reservation Road south along the west side of Del Monte Boulevard to the Highway 1 undercrossing/onramp.	City of Marina (inland)	Residential, Commercial, Light Industrial, Public / Quasi-Public, Parklands, Railroad, Highway	Monterey Peninsula Recreational Trail, Locke-Paddon Park, Marina State Beach, Fort Ord Dunes State Park, Bayonet and Blackhorse Golf Course
New Transmission Main & Optional Alignment	From the Del Monte/Highway 1 undercrossing south to the Lightfigher Drive/Highway 1 undercrossing.	City of Marina (coastal zone)	Parklands, Railroad, Highway, Public/Quasi-Public	Monterey Peninsula Recreational Trail, Fort Ord Dunes State Park, Marina State Beach
New Transmission Main & Optional Alignment	From the Lightfigher Drive/Highway 1 undercrossing west and south to terminus at Coe Avenue/General Jim Moore Boulevard intersection.	City of Seaside (inland and coastal zone)	Parklands, Railroad, Highway, Public/Quasi-Public, Commercial, Recreational	Fort Ord Dunes State Park, Monterey Peninsula Recreational Trail, Stilwell Park, Class I and II bikeway (General Jim Moore Boulevard), Bayonet and Blackhorse Golf Course
Carmel Valley Pump Station	In Monterey County, near the Carmel Valley Road/Rancho San Carlos Road intersection	Monterey County (inland)	Open Space, Residential	Class II bikeway (Carmel Valley Road)
Ryan Ranch–Bishop Interconnection Improvements	Along Ragsdale Drive, Lower Ragsdale Drive, and Wilson Road.	City of Monterey (inland)	Residential, Commercial, Open Space/Parkland	Ryan Ranch Park, Class II bikeways (Ragsdale Drive, Lower Ragsdale Drive, and Wilson Road)
Main System–Hidden Hills Interconnection Improvements	Tierra Grande Drive	Monterey County (inland)	Residential, Open Space	None within 0.25 mile



SOURCE: ESA, 2016, CCC, 2014

205335.01 Monterey Peninsula Water Supply Project

Figure 4.8-1
Coastal Zone

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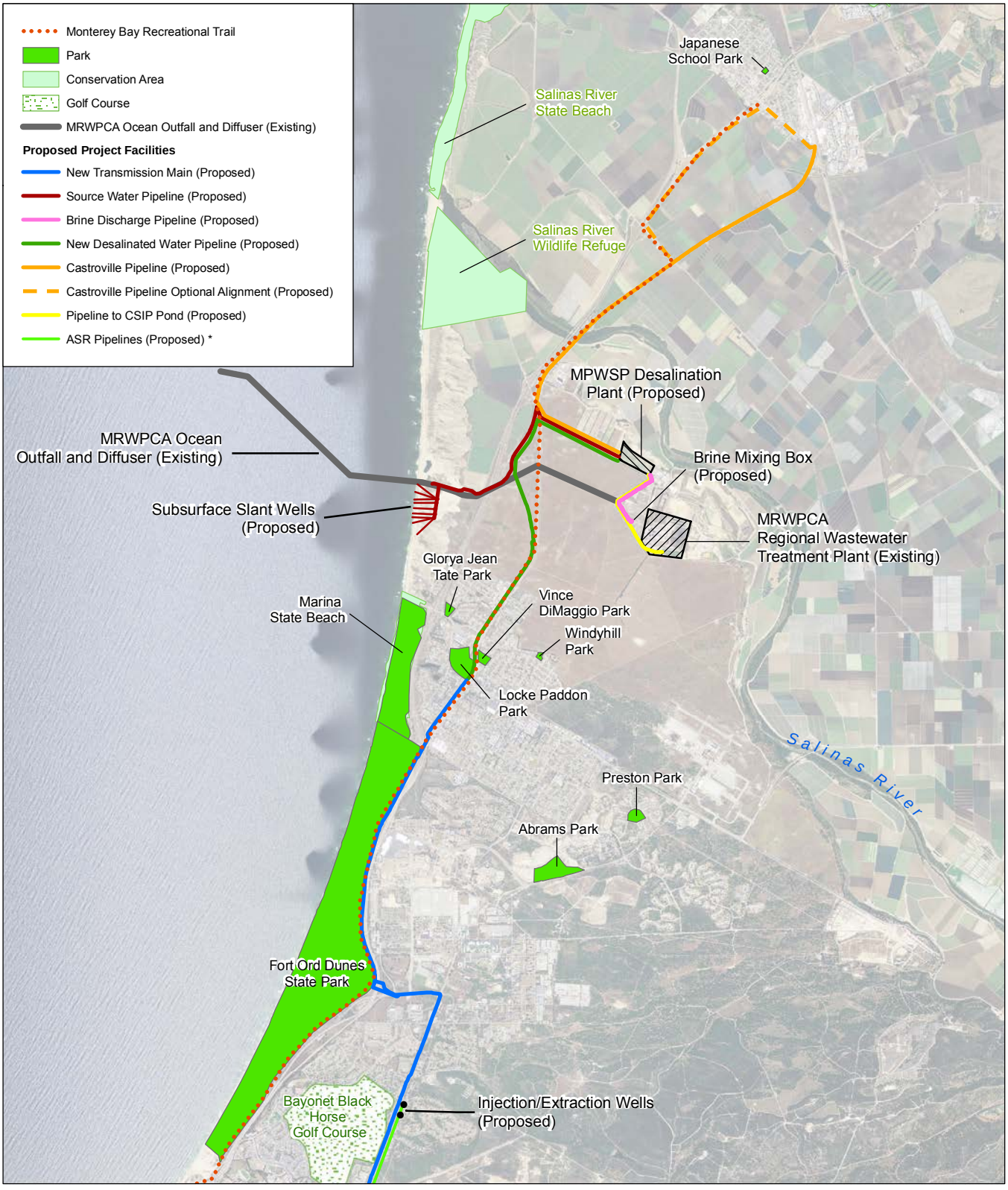


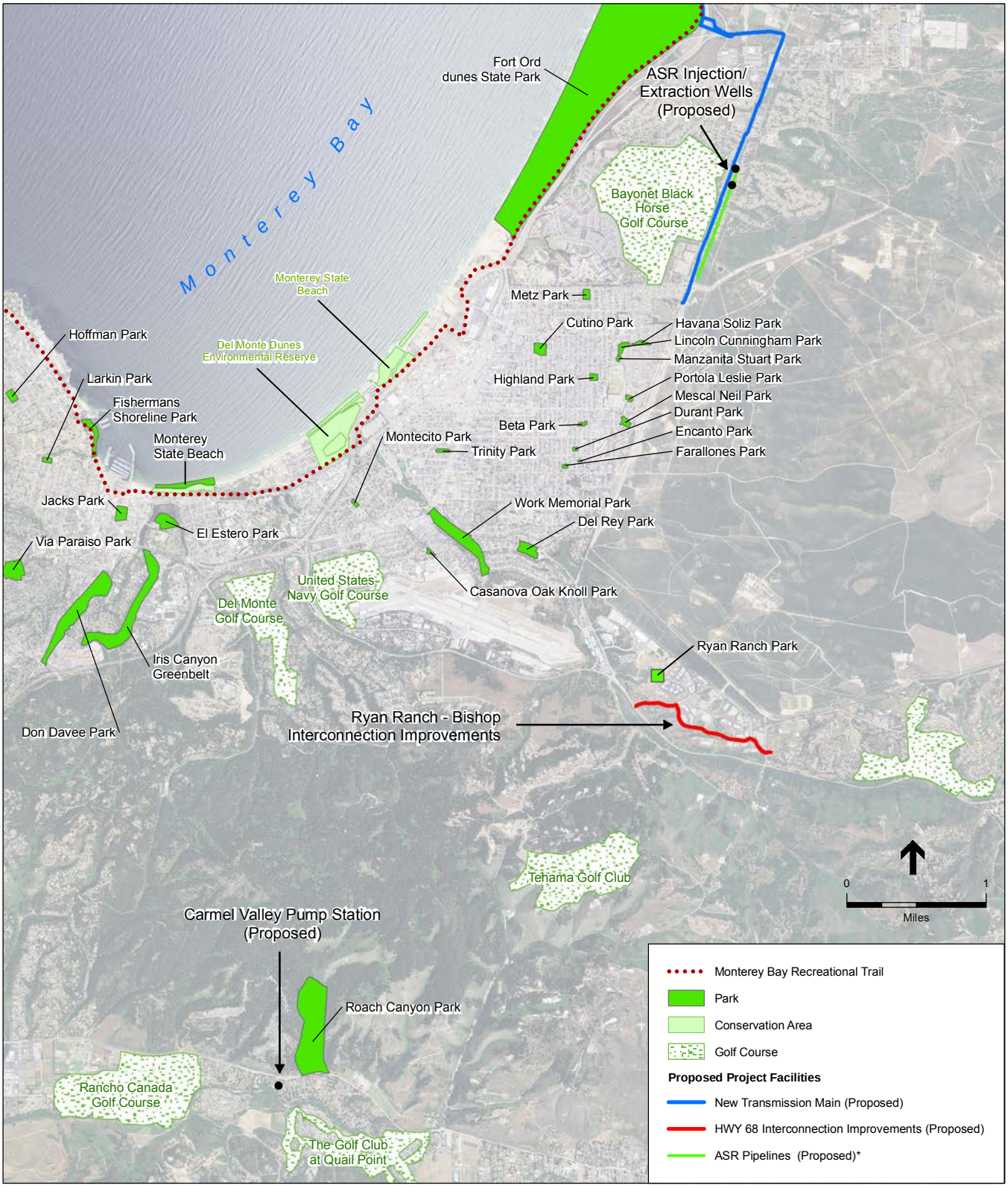
NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: GlobeXplorer, 2006; ESRI, 2007; ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.8-2

Recreational Opportunities in the Northern Project Area



NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: GlobeXplorer, 2006; ESRI, 2007; ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.8-3

Recreational Opportunities in the Southern Project Area

4.8.1.1 Subsurface Slant Wells

Land Use. A portion of the subsurface slant wells would be constructed above the maximum high-tide elevation, within the 376-acre CEMEX sand mining facility located on the coast in north Marina (Figure 3-3). CEMEX owns the coastal land above mean high tide; the California State Lands Commission owns the land below mean high tide. The sand mining operations at the CEMEX facility have been in existence since 1906. The sand mining facility is bounded to the west by beach and the Pacific Ocean, to the north and south by vegetated sand dunes, and to the east by open space, grazing and croplands, and Highway 1.

Recreation. The beach bordering the western edge of the CEMEX property is publicly accessible from paths to the beach which are located off public roads approximately 1 mile south at Marina Dunes Preserve and 1.25 miles north at the Salinas River National Wildlife Refuge. The Monterey Peninsula Recreational Trail is located approximately 1 mile east of the slant well site. The CEMEX property abuts the mean high water line representing the boundary of MBNMS, which extends out to approximately 30 miles offshore, and provides for a diversity of recreational opportunities, including swimming, kayaking, fishing, surfing, scuba diving, wildlife viewing, among many others. There are no other recreational resources on the site of the subsurface slant wells.

4.8.1.2 MPWSP Desalination Plant

Land Use. The MPWSP Desalination Plant would be constructed on an upper 25-acre portion of a 46-acre vacant parcel located on Charles Benson Road, in unincorporated Monterey County (see Figure 3-5). The site of the proposed MPWSP Desalination Plant is bounded to the west and north by open space, grazing, and agricultural lands, and to the east and south by public facility and industrial uses at the Monterey County Landfill and the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant.

Recreation. There are no parks or recreational facilities in the vicinity of the MPWSP Desalination Plant site.

4.8.1.3 Source Water Pipeline

Land Use. The Source Water Pipeline would traverse portions of northern Marina and unincorporated Monterey County (see Figures 3-3, 3-4, and 3-5). Lands adjacent to the proposed and optional alignments are used primarily for open space, grazing, and row crop farming, agricultural operations, and public/quasi-public uses (e.g. Monterey County Landfill and The Last Chance Mercantile Reuse Store).

Recreation. The Source Water Pipeline and optional alignment would cross the Monterey Peninsula Recreational Trail at the intersection of Del Monte Boulevard and Charles Benson Road. There are no parks or other recreational facilities in the vicinity of the proposed Source Water Pipeline alignment.

4.8.1.4 New Desalinated Water Pipeline

Land Use. The approximately 0.8-mile segment of the new Desalinated Water Pipeline between Del Monte Boulevard and the proposed MPWSP Desalination Plant site would be co-located with the Source Water Pipeline and the Castroville Pipeline and follow one of the two routes (proposed or optional alignments). The northern portion of the proposed alignment would cross both coastal and inland portions of unincorporated Monterey County; in the vicinity of Lapis Road and Del Monte Boulevard, the pipeline would be constructed within the Transportation Agency for Monterey County (TAMC) right-of-way (see Figures 3-4, 3-5 and 3-6).

Land uses in the vicinity of the Monterey County portion of the proposed new Desalinated Water Pipeline and optional alignment include primarily open space, grazing, and row crop farming, and public/quasi-public uses. The southern portion of the proposed alignment crosses portions of inland and coastal Marina (see Figures 3-6 and 3-7). Land uses in the vicinity of the Marina segment of the proposed new Desalinated Pipeline and optional alignment include residential, light industrial, commercial, parks, and public facilities.

Recreation. The new Desalinated Water Pipeline and optional alignment would cross the Monterey Peninsula Recreational Trail at the intersection of Del Monte Boulevard and Charles Benson Road. In addition, the segment between the Lapis Road/Del Monte Boulevard (southern) intersection and Del Monte Boulevard Reservation Road intersection would be constructed parallel to and west of the Monterey Peninsula Recreational Trail. Locke-Paddon (within Marina's coastal zone) and Vince DiMaggio Parks are located adjacent to the west and east, respectively, of the new Desalinated Water Pipeline proposed and optional alignment near its junction with the transmission main at Reservation Road.

4.8.1.5 Castroville Pipeline

Land Use. The Castroville Pipeline would be constructed within unincorporated Monterey County. The segment of the proposed alignment extending from Del Monte Boulevard to the CCSD Well #3 on Merritt Street would follow the TAMC right-of-way along Monte Road. The Castroville Pipeline Optional Alignment 1 would follow other public rights-of-way (see Figures 3-11 and 3-12). Land uses in the vicinities of both alignment options are predominantly agricultural, with adjacent lands primarily used for row crop production and grazing. Public and quasi-public and light industrial (e.g., Monterey County Landfill and former Dole Fresh Vegetables packaging plant) also occur along the proposed and optional alignments. Residential and commercial land uses are more prevalent along the segment of the Castroville Pipeline Optional Alignment 1 that extends along Merritt Street in Castroville.

Recreation. The Castroville Pipeline and Castroville Pipeline Optional Alignment 1 would cross the Monterey Peninsula Recreational Trail at the intersection of Del Monte Boulevard and Charles Benson Road. In addition, the segment of the Castroville Pipeline Optional Alignment 1 along Highway 156 between the Nashua Road and Merritt Street would be constructed parallel to and west of the Monterey Peninsula Recreational Trail. Optional alignment 1 would also pass within 0.25 mile of Cato Phillips Park.

4.8.1.6 Brine Discharge Pipeline and Brine Mixing Box

Land Use. The Brine Discharge Pipeline would extend from the MPWSP Desalination Plant to the Brine Mixing Box, which would connect to the MPWPCA outfall at the existing MRWPCA Regional Wastewater Treatment Plant (see Figure 3-5). The proposed Brine Discharge Pipeline alignment and Brine Mixing Box are within unincorporated Monterey County. Lands in the vicinity of these two components are used for open space, grazing, and the industrial operations of the Monterey County Landfill and MRWPCA Regional Wastewater Treatment Plant.

Recreation. There are no parks or recreational facilities in the vicinity of the proposed Brine Discharge Pipeline alignment or the Brine Mixing Box.

4.8.1.7 Pipeline to CSIP Pond

Land Use. The Pipeline to CSIP Pond would extend from the MPWSP Desalination Plant to a point of connection with the Castroville Seawater Intrusion Project, located within the MRWPCA Regional Wastewater Treatment Plant (see Figure 3-5). The proposed alignment is within unincorporated Monterey County. As with the Brine Discharge Pipeline, lands adjacent to the Pipeline to CSIP Pond alignment are used for open space, grazing, and the Monterey County Landfill and MRWPCA Regional Wastewater Treatment Plant.

Recreation. There are no parks or recreational facilities in the vicinity of the proposed Pipeline to CSIP Pond alignment.

4.8.1.8 Aquifer Storage and Recovery Facilities

Land Use. The proposed ASR injection/extraction wells (ASR-5 and ASR-6 Wells) would be located east of General Jim Moore Boulevard and south of Ardennes Circle, in the Fitch Park military housing area (Figure 3-9). These MPWSP components would be constructed in the former Fort Ord military base (Ord Military Community) on land owned by the U.S. Army. The sites of the proposed facilities are presently undeveloped. The ASR-5 and ASR-6 Wells would be constructed within 50 feet of existing residences. The ASR Recirculation Pipeline, ASR Conveyance Pipeline, and ACR Pump-to-Waste Pipeline (ASR pipelines) would be installed within the General Jim Moore Boulevard right-of-way, within city of Seaside jurisdiction. The alignment would connect the proposed ASR-5 and ASR-6 Wells with existing infrastructure near the General Jim Moore/Coe Avenue intersection. Land uses in the vicinity of these facilities are predominantly residential, recreational (e.g., Bayonet and Black Horse Golf Courses), and public/quasi-public (e.g., Seaside Middle School) in nature.

Recreation. Class I and II bikeways exists along General Jim Moore Boulevard, between Coe Avenue and Normandy Road. The ASR injection/extraction well sites and pipeline alignments occur within 0.25 miles of the Bayonet and Blackhorse Golf Courses.

4.8.1.9 New Transmission Main

Land Use. The new Transmission Main and optional alignment would extend approximately 6 miles from the new Desalinated Water Pipeline connection at the intersection of Del Monte Boulevard and Reservation Road in Marina to a connection with existing infrastructure near the General Jim Moore/Coe Avenue intersection (Figures 3-7, 3-8, and 3-9). Portions of the proposed and optional pipeline alignments would be located within the Marina and Seaside land use jurisdictions. Land use patterns along the alignment east of Highway 1 are within Marina, and are defined primarily by medium-density commercial and residential development. Public and quasi-public land uses also occur in this area (e.g., Marina Del Mar Elementary School). West of Highway 1, the pipeline would be constructed within the TAMC right-of-way. Land uses in this area include parklands and railroad to the west and highway to the east. Land use patterns along the alignment east of Highway 1 within Seaside are predominantly residential, recreational (e.g., Bayonet and Black Horse Golf Courses), public/quasi-public (e.g., CSUMB and Dual Language Academy of the Monterey Peninsula, and Ord Military Community).

Recreation. The segment of the new Transmission Main and optional alignment between the Del Monte Boulevard/Reservation Road intersection and Highway 1/Lightfigher Drive undercrossing would be constructed parallel to and west of the Monterey Peninsula Recreational Trail. The pipeline would also pass within 0.25 mile of Bayonet and Black Horse Golf Courses, Locke-Paddon Park, Marina State Beach, Fort Ord Dunes State Park, Stilwell Park, Monterey Peninsula Recreational Trail, and Class I and II bikeways (General Jim Moore Boulevard).

4.8.1.10 Carmel Valley Pump Station

Land Use. The Carmel Valley Pump Station would be located approximately 250 feet south of Carmel Valley Road and 500 feet west of Rancho San Carlos Road, in unincorporated Monterey County (Figure 3-10c). Land uses in the vicinity of the pump station site include low density residential development and open space.

Recreational. A Class II bikeway exists along Carmel Valley Road.

4.8.1.11 Interconnection Improvements for Highway 68 Satellite Systems

Land Use. The Ryan Ranch–Bishop Interconnection Improvements would be located within the city of Monterey adjacent to lands used for office park, light industrial, and parks and open space (Figure 3-10a). The proposed Main System–Hidden Hills Interconnection Improvements would be located in unincorporated Monterey County adjacent to low-density residential development, surrounded by open space (Figure 3-10b).

Recreation. The proposed Ryan Ranch–Bishop Interconnection Improvements would be located adjacent to Ryan Ranch Park (accessible via Ryan Ranch Road), an open space area with a network of unpaved hiking trails that is managed by the City of Monterey Parks Department. Class II bikeways also exist along Ragsdale Drive, Lower Ragsdale Drive, and Wilson Road. The Laguna

Seca Recreation Area is within 3 miles of the proposed Main System–Hidden Hills Interconnection Improvements.

4.8.2 Regulatory Framework

This section provides an overview of applicable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to land use and recreational resources. A brief summary of each is provided, along with a finding regarding the project's conformity with those regulatory requirements. The conformity findings concern the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact topic within EIR/EIS Section 4.8.5, Direct and Indirect Effects of the Project, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.8.5 includes the identification of feasible mitigation that would resolve or minimize the potential inconsistency.

4.8.2.1 Federal Regulations

Marine Protection, Research, and Sanctuaries Act of 1972

The Marine Protection, Research, and Sanctuaries Act of 1972, also known as the National Marine Sanctuaries Act (Act), provides for the identification, designation, and management of marine areas that are of special significance due to their recreational, ecological, historical, research, educational, or aesthetic qualities. Accordingly, a primary purpose of the Act's implementing regulations (15 CFR 922) is to protect, preserve, and manage recreational resources of national marine sanctuaries. The importance of recreation is further emphasized in the 2008 MBNMS *Final Management Plan*, which includes a desalination action plan and strategies to guide siting and development of desalination projects in a manner that is protective of MBNMS resources, including recreational opportunities. In addition, MBNMS worked with the National Marine Fisheries Service (NMFS) to develop desalination guidelines (NOAA, 2010). See EIR/EIS Section 6.4, Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines, for additional discussion.

Activities that would be subject to MBNMS jurisdiction, which extends seaward from the mean high water line out to approximately 30 miles, are generally limited to drilling the subsurface seawater intake pipelines into the submerged lands of MBNMS, and the discharge of brine from an existing ocean outfall, which is approximately two miles off shore and 90-110 feet below sea level. No MPWSP facilities are proposed for or would involve construction that would impede access to, or use of the MBNMS as a recreational resource. As proposed, implementation and operation of the MPWSP could have water quality and marine biological resources impacts that could affect recreational opportunities. Additional discussion of MPWSP effects related to water quality and marine biological resources is provided in EIR/EIS Section 4.3, Surface Water Hydrology and Water Quality, and Section 4.5, Marine Biological Resources.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. The California Coastal Commission has jurisdiction for CZMA implementation throughout the state.[3] The California Coastal Act contains numerous enforceable policies that are directed at protecting and, where feasible, restoring coastal resources. The California Coastal Commission applies the Coastal Act's policies when reviewing applications for coastal development permits in California state waters. The Coastal Commission also applies land use policies when reviewing federally licensed and permitted activities to ensure they are consistent with the State's coastal management program in accordance with the CZMA federal consistency provision. The Coastal Commission considers an application for a coastal development permit to cover the requirement for an applicant submitting a consistency certification to the Coastal Commission. Typically, the Coastal Commission will provide its response (concurrence, conditional concurrence, or objection) in its staff report for the coastal development permit.

Real Property Master Plan – Presidio of Monterey

The U.S. Army's 1983 Real Property Master Plan – Presidio of Monterey provides for the orderly development and maintenance of land, facilities, and infrastructure within the Presidio of Monterey Installation, which includes the Presidio of Monterey and the Ord Military Community. The Master Plan depicts Army Land Use Categories assigned to lands within these military planning areas. Use categories identified within these military planning areas include: Community, Professional/Institutional, Troop, and Residential. The Master Plan also describes the types of uses appropriate within each category. The document does not prohibit development of utilities in any of the land use categories. In February 2013, the U.S. Army Corps of Engineers completed an environmental impact statement (EIS) analyzing the potential environmental consequences of implementing a revised Real Property Master Plan. The EIS evaluated three alternatives for the Real Property Master Plan. The alternatives focus almost entirely on facilities improvements and new construction and would not involve revisions to existing land use designations. The U.S. Army is in the process of revising the Real Property Master Plan, based upon the findings of the EIS. The completion date for the revised Real Property Master Plan remains unknown. Elements of the project subject to the Real Property Master Plan include the ASR-5 and ASR-6 Wells. In 2010 and 2012, the U.S. Army prepared NEPA environmental assessments (EAs) analyzing the potential land use effects of the ASR-5 and ASR-6 wells proposed for the Presidio of Monterey. The EAs concluded that the proposed MPWSP facilities would have no impact with respect to conflict with any applicable land use plans, policies, or regulations (RBF Consulting, 2010; 2012).

[3] Except within the San Francisco Bay-Delta where the Bay Conservation and Development Commission has authority for implementation of CZMA within its jurisdictional area.

4.8.2.2 State Regulations

Fort Ord Reuse Authority and Fort Ord Reuse Plan

The 1994 Fort Ord Reuse Authority Act (California Government Code section 67650-67700); hereafter referred to as the "FORA Act") was passed with the goals of facilitating the transfer, reuse, and management of lands within the former Fort Ord military reservation. Pursuant to the Act, on May 20, 1994, the Fort Ord Reuse Authority (FORA) was established as a corporation of the State of California. The purpose of the FORA is to prepare, adopt, finance, and implement a plan for the land formerly occupied by Fort Ord. The FORA is governed by a 13-member board (FORA Board) comprised of representatives from the Monterey County Board of Supervisors, and city council members from each of the cities of Marina, Seaside, Carmel, Del Rey Oaks, Sand City, Monterey, Pacific Grove, and Salinas (member agencies). The FORA Act directs the Board to prepare and adopt a plan (Reuse Plan) for the future use and development of lands within the former Fort Ord Territory (FORA, 1997a).

The FORA Act requires that, with a few exceptions for universities, all Fort Ord land that has been transferred from the federal government must be used in a manner consistent with the Reuse Plan. This provision is affirmed and explained further in the Fort Ord Master Resolution, adopted in March of 1997 (FORA, 1997b). For member agencies with jurisdiction over lands within the former Fort Ord territory, the Master Resolution (Section 8.01.010(c)) requires all general plans, and "all policies and programs relating to the land use or the construction, installation, or maintenance of capital improvements or public works within the Fort Ord Territory, shall be consistent with the Reuse Plan…" Before any such plans or regulations may take effect, the member agency must first obtain from the FORA Board a determination that the plan or regulation is consistent with the Reuse Plan. Upon certification by the Board, development review authority is transferred to the member agency with jurisdiction over the FORA lands. However, pursuant to the FORA Act and Master Resolution (Section 8.01.030(c)), after certification of said general plan, policies, and programs, the Board may continue to review for consistency member agencies' development entitlement decisions in the former Fort Ord territory (FORA, 1997b).

The Fort Ord Reuse Plan, adopted in 1997, includes the information normally found in a general plan. It establishes the general plan context and rationale, addressing matters of community visioning, existing setting, use concepts, and implementation; and includes the Reuse Plan Elements, setting forth goals, objectives, policies, and programs by land use and jurisdiction for land use, circulation, recreation and open space, conservation, noise, and safety (FORA, 1997a).

MPWSP components proposed within former Fort Ord territory and subject to the Reuse Plan include the New Transmission Main and ASR pipelines (which would be located within Seaside's jurisdiction and subject to Seaside approvals), and a segment of the Ryan Ranch-Bishop Interconnection Improvements (which would occur within Monterey County's jurisdiction and subject to Monterey County's approvals). However, as noted above, the FORA Board may, at its discretion, decide to review local decisions with respect to Fort Ord Reuse Plan consistency.

Preliminary determinations by the EIR preparers regarding MPWSP consistency with the Reuse Plan policies related to land use and recreation are presented in **Table 4.8-2**. Analyses of consistency with Reuse Plan policies related to other topics presented in their respective topical sections of this EIR/EIS.

Fort Ord Dunes State Park General Plan

The Fort Ord Dunes State Park General Plan (General Plan) outlines the purpose and vision for the park; and sets forth management goals and guidelines for protection of the natural environment; resource restoration; and for the siting, design, and construction of future park improvements in a manner that avoids environmental effects. Prominent among the General Plan's guiding principles (and indeed the mission of California Department of Parks and Recreation) is the provision and management of recreational opportunities consistent with resource management and protection. The new Transmission Main and optional alignment would traverse an approximately 0.25-mile-long band of Fort Ord Dunes State Park lands between Divarty Street/1st Street and the alignments' Highway 1 undercrossing near Lightfighter Drive. The pipeline segment proposed for State Parks lands would be sited between the Monterey Peninsula Recreational Trail and the existing railroad. This area is presently inaccessible to the public, as the alignment area is fenced. Pipeline installation would temporarily disturb this area during construction, but would then be returned to its approximate pre-construction condition. As a result, new Transmission Main pipeline construction activities within Fort Ord Dunes State Park would not conflict with General Plan goals or guidelines related to recreation. Additional discussion of effects on Fort Ord Dunes State Park access is provided in Impacts 4.8-1 and 4.8-2.

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of the State's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act provides for the long-term management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act (Section 30103). The width of the coastal zone varies across the State, extending inland a couple hundred feet in some locations to 5 miles in others, and offshore out to 3 miles. A map of the coastal zone in the project vicinity is shown in **Figure 4.8-1**.

The Coastal Act created a unique partnership between the State (acting through the CCC) and local government entities (15 coastal counties and 61 coastal cities) to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program. This is accomplished primarily through the preparation of sets of policies and regulations adopted by coastal local governments to carry out Coastal Act policies at the local level, known as local coastal programs. Upon CCC certification of a local coastal program, authority for issuance of Coastal Development Permits is transferred from the State (via the CCC) to the certified local government. Decisions for major public works projects under certified local coastal programs are appealable to the CCC. Until a local coastal program is certified, responsibility for issuance of Coastal Development Permits remains with the CCC. The agency also retains jurisdiction over

certain coastal areas, such as tidelands and public trust lands. Local Coastal Programs applicable to the MPWSP are discussed below.

The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone (see Division 20 of the Public Resources Code). Of primary relevance to land use and recreation are Coastal Act policies concerning coastal public access and recreational opportunities, locating new development near existing development, and ensuring new or expanded public works facilities are designed and limited so as not to induce growth inconsistent with the Coastal Act. A preliminary assessment of project consistency with these priorities is provided here. Final determinations regarding project consistency are reserved for the Coastal Commission.

With respect to public access and recreation, MPWSP construction may have short-term effects on shoreline access (i.e., increased traffic and temporary park entrance detours) during the construction period. However, most MPWSP components in proximity to the coastal zone (i.e., pipelines) would be buried underground and would not substantially affect long-term public access to or along the coast. Coastal erosion and shoreline retreat may result in encroachment of the subsurface slant wells (Site 1) onto the beach, which could affect access along the shoreline. This issue is addressed further in Section 4.2, Geology, Soils, and Seismicity. Specifically, please refer to Table 4.2-6 for additional discussion of the project's conformity with applicable Coastal Act policies related to beach erosion.

Regarding locating new development, the new Transmission Main would be constructed below ground and within an existing developed right-of-way. The subsurface slant wells would be sited among existing industrial mining development. These MPWSP facilities would impose no long-term demands on area public services.

Concerning growth inducement, which is discussed more fully in Chapter 2, Water Demand, Supplies, and Water Rights, the MPWSP has been sized to meet the requirements of State Water Resources Control Board (SWRCB) Orders 95-10 and 2009-0060, and the 2006 groundwater basin adjudication, along with existing and anticipated future demands of existing water entitlement holders, the anticipated economic recovery of the local hospitality industry, and development of existing legal lots of record.

For these reasons, the MPWSP would not conflict with Coastal Act policies related to land use and recreation.

4.8.2.3 Local Regulations

County and City General Plans, Ordinances, and Regulations

California state law requires each county and city to adopt "a comprehensive, long-term general plan for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code Section 65300). State planning and zoning law (Government Code Section 65800 et seq.) also provides for local government adoption and

administration of zoning laws, ordinances, rules and regulations to implement such general plans. A summary of general plans and ordinances applicable to the project area is provided below.

Local Coastal Programs

The local coastal program typically includes a land use plan and implementing regulations (also referred to as an "implementation plan"). The land use plan that is part of the local coastal program sets forth the types, locations, and intensities of land uses, along with applicable resource protection and development policies for lands within the coastal zone. The implementation plan typically consists of zoning regulations, zoning map, and permit procedures. In general, a local coastal program is not considered certified until the CCC approves both the land use plan and implementation plan. Within the project area, several jurisdictions have certified local coastal programs, including: Monterey County and the cities of Marina, and Seaside (described below in Section 4.8.2.3). The CCC retains jurisdiction for issuance of Coastal Development Permits areas of the coastal zone where no LCP has been certified. Local coastal program policies related to land use and recreation and adopted for the purpose of avoiding or mitigating an environmental effect are presented in **Table 4.8-2** and discussed further in Section 4.8.5, Direct and Indirect Effects of the Project. Local coastal program policies related to other types of coastal resources are addressed in their respective topical sections of this EIR/EIS.

Monterey County Plans and Policies

The following sections describe documents prepared by Monterey County that govern land use decisions in the project area. Monterey County policies related to land use and recreation and adopted for the purpose of avoiding or mitigating an environmental effect are presented in **Table 4.8-2**. A discussion of the project's consistency with established land use plan and zoning designations within the project area is provided below.

2010 Monterey County General Plan

The *2010 Monterey County General Plan* includes area or master plans for 14 regional planning areas, including the four coastal land use plans (see "Local Coastal Programs," below) and ten inland area or master plans. The MPWSP would involve development within several of these 14 planning areas, including the Greater Monterey Peninsula, North County, North County LUP, Salinas, and Carmel Valley planning areas. The *2010 Monterey County General Plan* consists of policies that apply countywide and policies unique to specific regions. The Land Use Element contains countywide policies that are applicable to the entire unincorporated area. Area plans contain more focused policies that address specific regional or local issues (Monterey County, 2010).

Monterey County Local Coastal Program

The County's coastal zone is divided into four areas governed by land use plans and coastal implementation plans, which together comprise the County's Local Coastal Program. The four land use plans include those for Big Sur Coast, Carmel, Del Monte Forest (coastal portion), and North County (which also includes the Moss Landing Community Plan). The four land use plans

stand alongside the *1982 Monterey County General Plan*[4] and function as the general plan for the respective areas of the coastal zone. The MPWSP, as well as components of the Alternatives (discussed in Chapter 5, Alternatives), would involve development within the *North County Land Use Plan* area; the Big Sur Coast, Carmel Valley, and Del Monte Forest area land use plans are not applicable to lands within the project area.

Monterey County Zoning Ordinance

The Zoning Ordinance is the primary implementation tool for the land use policies identified in the *2010 Monterey County General Plan* and *North County Land Use Plan*. Land uses within the project area would be subject to the requirements of the Inland Zoning Ordinance (Title 21) and the Coastal Zoning Ordinance (Title 20). The Zoning Ordinance, which is applicable to unincorporated areas, implements the goals and policies of the General Plan and North County Land Use Plan by identifying specific types of land uses, intensity of uses and development standards to be used in guiding the development and use of land within unincorporated areas of the county.

Monterey County Municipal Health and Safety Code (Title 10) Section 10.72 (Not Applicable to MPWSP)

Although not applicable to the MPWSP (described below), this discussion is provided for informational purposes. In 1989, Monterey County adopted an ordinance governing the issuance, suspension and revocation of permits for the construction and operation of desalination facilities. Sections 10.72.010 et seq. establishes:

> *No person, firm, water utility, association, corporation, organization, or partnership, or any city, county, district, or any department or agency of the State shall commence construction of or operate any Desalination Treatment Facility (which is defined as a facility which removes or reduces salts from water to a level that meets drinking water standards and/or irrigation purposes) without first securing a permit to construct and a permit to operate said facility. Such permits shall be obtained from the Director of Environmental Health of the County of Monterey, or his designee, prior to securing any building permit.*

Applicants for desalination construction permits must give notice of an intent to construct; provide preliminary feasibility studies; show conformance with local land use zoning; and submit "specific detail engineering, construction plans and specifications;" submit a chemical analysis of the intake water, a study of groundwater extraction impacts, studies and plans for brine and other by-products disposal, and an alternative water supply contingency plan (Section 10.27.020A-F). The ordinance further requires public ownership of desalination plants and requires that each plant have a dual system, where one side is held in reserve in the event of a breakdown on the other side. Section 10.72.030(B) requires applicants to: "Provide assurances that each facility would be owned and operated by a public entity."

[4] A comprehensive update to the 1982 Monterey County General Plan was adopted in 2010. However, as described therein: "This General Plan does not amend and is not intended to amend the existing Monterey County Local Coastal Program (LCP). The County will review the LCP after adoption of the General Plan Update. If any of the goals, policies, and standards of the General Plan are to be incorporated into the LCP, such proposals would be subject to all appropriate public review procedures, including noticed public hearings, separate action by the County Board of Supervisors, and submission of major LCP amendments to the Coastal Commission for certification." Therefore, for purposes of implementation of the LCP, the relevant 1982 General Plan policies currently remain applicable.

On September 21, 2012, CPUC Administrative Law Judge Gary Weatherford issued a proposed "Decision Declaring Preemption of County Ordinance and the Exercise of Paramount Jurisdiction," stating in the first paragraph:

> This decision determines that the authority of the Commission in regard to this application preempts Monterey County Code of Ordinance, Title 10, Chapter 10.72, concerning construction, operation, and ownership of desalination plants. This decision further determines that the findings, conclusions, and orders herein are an exercise of jurisdiction that is paramount to that of a county Superior Court concerning the same subject (CPUC, 2012a).

On October 31, 2012, the CPUC issued a decision affirming the ALJ's ruling (CPUC, 2012b). On December 4, 2012, CalAm, the County of Monterey, and Monterey County Water Resources Agency entered into a settlement agreement to resolve pending lawsuits, among other matters. The settlement agreement acknowledges the CPUC Decision as final and binding, and also acknowledges that the Ordinance in question shall not apply to CalAm or the MPWSP (CalAm, 2012).

City Plans and Policies

The following sections describe documents prepared by the cities that govern land use decisions in the project area. A list of local government policies applicable to the project and relevant to land use and recreation is provided in **Table 4.8-2**. A discussion of the project's consistency with established land use plan and zoning designations within the project area is provided below.

City of Marina General Plan

The *City of Marina General Plan* was adopted on October 31, 2000 and last amended in November 2006. The two major purposes of the *City of Marina General Plan* are to guide long-term planning and development decisions by the City in a manner consistent with City goals, and to provide clear documentation of the City's goals and commitments. The *City of Marina General Plan* is only applicable to the portions of the project that are inside the coastal zone (slant wells and a portion of the source water pipeline); components outside the coastal zone would not require a Use Permit (Szymanis, 2014). *City of Marina General Plan* policies related to land use and recreation and applicable to the project are presented in **Table 4.8-2**.

City of Marina Local Coastal Land Use Plan

The *City of Marina Local Coastal Land Use Plan*, certified by the CCC in 1982, establishes appropriate land uses by type and density, and establishes a policy framework for plan implementation. The policy framework of the land use plan includes the policy statements, the plan guidelines, the land use map, narrative descriptions of the land use map, and the recreational access component. Marina Local Coastal Land Use Plan Policies related to land use and recreation and applicable to the project are presented in **Table 4.8-2**.

City of Marina Zoning Ordinance

The purpose of the Zoning Ordinance of the City of Marina (Title 17 of the Marina Municipal Code) is to "promote and protect the public health, safety, peace, morale, comfort, convenience

and general welfare, and for the accomplishment thereof…" (Chapter 17.02.030). The document sets forth a plan of development for the city and establishes districts and standards to guide, control, and regulate the city's future growth and development. The Zoning Ordinance also implements the city's Local Coastal Program.

City of Seaside General Plan

The City of Seaside General Plan, adopted in 2004, provides goals, policies, and a framework for decision-making and coordinated planning. The Land Use Element describes the balance of land uses, examines patterns of development, and considers water supply. City of Seaside General Plan policies related to land use and recreation and applicable to the project are presented in **Table 4.8-2**.

City of Seaside Local Coastal Program Land Use Plan

Seaside's Local Coastal Program Land Use Plan was comprehensively updated in 2012. The Land Use Plan provides specific goals, policies, and implementation actions that govern land and water use within Seaside's coastal zone. The Land Use Plan is organized into subareas, including a general coastal zone chapter, supported by the Laguna Grande, Roberts Lake, Beach, and Del Monte subarea chapters that focus on specific issues in each subarea. Seaside Local Coastal Program Land Use Plan Policies related to land use and recreation and applicable to the project are presented in **Table 4.8-2**.

City of Seaside Zoning Ordinance

The City of Seaside adopted its existing Zoning Ordinance (Title 17 of the Seaside Municipal Code) in 2006, and adopted substantial revisions in February of 2014. The purpose of the Seaside Zoning Ordinance is "to protect and to promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents, and businesses in the City (Chapter 17.10.10)." This is accomplished through the provision of standards and guidelines for the continuing orderly growth and development of Seaside. The Zoning Ordinance is used by the City to carry out the goals, objectives, and policies of the General Plan and Local Coastal Program. The City's Coastal Zoning Ordinance (Title 18, Section 18.10) serves as the City's Local Coastal Program - Coastal Implementation Plan, and sets forth additional regulations for properties within Seaside's coastal zone.

City of Monterey General Plan (Not Applicable to MPWSP)[5]

The *City of Monterey General Plan* is a statement of the community's vision for the future. Adopted in 2005 and amended through 2010, the General Plan is a long-range, comprehensive plan that coordinates all major components of the community's physical development for 1020 years. The Land Use and Open Space Elements contain goals, policies, and programs for land use designations, infrastructure and public services, and open space conservation. The *City of Monterey General Plan* is not applicable to the project as no project components proposed for the City of Monterey would require a Use Permit (Caraker, 2014).

[5] There are no project components proposed within the city of Monterey coastal zone. Therefore, the Monterey Local Coastal Land Use Plans, which are presently undergoing revision, are not discussed in this section.

City of Monterey Zoning Ordinance

The purpose of the City of Monterey Zoning Ordinance (Chapter 38 of the City Charter) is to protect and promote the public health, safety, and general welfare of Monterey, and to implement the policies of the General Plan. This is done through the establishment of land use, development, and administrative regulations to control the use and development of property. The Zoning Ordinance applies to pipelines proposed within the city boundaries.

MPWSP Consistency with Applicable Land Use and Recreation Plans and Policies

In keeping with CEQA's interest in addressing a project's potential conflicts with applicable regulatory requirements related to land use, **Table 4.8-2** describes the regional and local land use plans, policies, and regulations pertaining to land use and recreation that are relevant to the MPWSP. Also included in **Table 4.8-2** is an analysis of the project's potential conflicts with such plans, policies, and regulations. Where the analysis concludes the MPWSP would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes that the MPWSP may conflict with the applicable plan, policy, or regulation, the reader is referred to Section 4.8.5, Direct and Indirect Effects of the Project, for additional discussion. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

Land Use Plan and Zoning Designations

This subsection describes the land use plan and zoning designations on lands for which MPWSP components are proposed and provides a preliminary assessment of the project's potential to conflict with those designations. In most instances, the local land use regulations provide for conditional authorization of public utilities facilities with a Use Permit and/or Coastal Development Permit (CDP). In order for the local jurisdiction to issue such a permit, the body charged with permit administration must first make findings that the project meets the criteria for permit issuance (e.g., protective of public health, safety, and welfare). Land use policies and regulations flow from these concepts. Accordingly, determinations of a project's consistency with such criteria often include consideration for a project's compatibility with established land use policies and regulations. Thus, a project's consistency with local land use policies and regulations can serve as an indicator of its likelihood of meeting the criteria necessary for issuance of a Use Permit.

Determinations of consistency with these criteria are reserved for the governing body with jurisdiction. However, for purposes of environmental review and public disclosure, this EIR/EIS provides a preliminary assessment of project consistency with applicable local land use policies and regulations. Analyses of consistency in this EIR/EIS are presented in each Chapter 4 environmental topic's Regulatory Framework subsection (e.g., Section 4.8.2 of this Land Use, Land Use Planning, and Recreation section) and appear in tables entitled "Regional and Local Land Use Policies Relevant to [subject impact topic]". As noted in the preceding subsection, where potential conflicts are identified, the reader is referred to the respective environmental topic's subsection entitled Direct and Indirect Effects of the Project where the potential conflict is further evaluated.

TABLE 4.8-2
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO LAND USE AND RECREATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface Slant Wells, new Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Policy 1:*** To insure access to and along the beach, consistent with the recreational needs and environmental sensitivity of Marina Coastal area.	This policy is intended to protect the public's right of access to and along the shoreline – a public recreational resource.	Consistent: Project construction may have short-term effects on public shoreline access (i.e., increased traffic) during the construction period, but none would preclude or otherwise have direct effects on public shoreline access. With coastal erosion, there is potential for the beach to retreat back to the subsurface slant wells (Site 1), which could affect access along the shoreline. This issue is addressed further in Section 4.2, Geology, Soils, and Seismicity. Specifically, please refer to Table 4.2-6 for additional discussion of the project's conformity with applicable Coastal Act policies related to beach erosion.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface Slant Wells, Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Policy 8:*** To prohibit further degradation of the beach environment and conserve its unique qualities.	This policy is intended to protect the beach environment and associated uses from impacts of development.	Consistent: By locating the slant well system several hundred feet inland of the beach, within the CEMEX property's former mining area, impacts on the beach environment would be avoided. With coastal erosion, there is potential for the beach to retreat back to the subsurface slant wells (Site 1, which could degrade the beach environment. This issue is addressed further in Section 4.2, Geology, Soils, and Seismicity. Specifically, please refer to **Table 4.2-6** for additional discussion of the project's conformity with applicable Marina Local Coastal Land Use Plan policies related to beach erosion.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface Slant Wells, new Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Policy 32:*** To minimize adverse environmental affects, by concentrating new development within or adjacent to areas of existing development in the coastal zone.	This policy is intended to protect coastal resources from the impacts of sprawling new development.	Consistent: The proposed subsurface slant well site is in the vicinity of existing sand mining operations; pipelines would be located primarily in existing utility corridors and roadway rights-of-way.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface Slant Wells, new Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Policy 41:*** To give priority to coastal-dependent development on or near the shoreline and ensure that environmental effects are mitigated to the greatest extent possible.	This policy is intended to protect Marina's existing coastal land uses and resources from incompatible land uses, and to preserve future opportunities for use of shoreline areas for developments that are compatible with those uses and resources.	Consistent: The seawater intake system is the only MPWSP component proposed for a parcel adjacent to Marina's shoreline. The proposed development is coastal dependent as it requires proximity to the shore to function. The seawater intake system would not conflict with existing adjacent land uses. With coastal erosion, there is potential for the beach to retreat back to the subsurface slant wells (Site 1), which could affect access along the shoreline. This issue is addressed further in Section 4.2, Geology, Soils, and Seismicity. Specifically, please refer to **Table 4.2-6** for additional discussion of the project's conformity with applicable Marina Local Coastal Land Use Plan policies related to beach erosion.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface Slant Wells, new Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Policy 4.112***: The policies of the Community Land Use Element are designed to protect areas with significant agricultural or natural-habitat value from being displaced by development, and they are designed to protect and conserve air, water and energy resources.	This policy is intended to protect important agricultural, biological, air, water, and energy resources from impacts of development.	Potentially Inconsistent: The project's implications for agricultural, biological, air, and energy resources are discussed in EIR/EIS Sections 4.16, 4.6, 4.10, and 4.18, respectively. The project's implications for surface water and groundwater resources are discussed in EIR/EIS Sections 4.3 and 4.4. Specifically, refer to **Tables 4.16-2, 4.6-2, 4.10-3, 4.18-2, 4.3-5,** and **4.4-6** for additional discussion of the project's conformity with applicable Marina General Plan policies related to agricultural, biological, air, and energy resources, respectively. In all but one instance related to compatibility with established land use policies regarding biological resources (i.e., Impact 4.6-4), potential land use policy and regulation conflicts are resolvable with the implementation of recommended mitigation. Because this policy pertains to topics other than land use and recreation and is addressed elsewhere in the EIR/EIS, it is not discussed further in Section 4.8.

TABLE 4.8-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO LAND USE AND RECREATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Subject Project Components	Specific Goal, Policy, or Program	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Policies and Programs
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Infrastructure	Subsurface Slant Wells, new Transmission Main, Source Water Pipeline, and new Desalinated Water Pipeline	***Primary Policy 3.3.14:*** Support water resource programs, including desalinization and reclamation efforts, to provide an adequate water supply to accommodate General Plan permitted growth.	This policy is intended to ensure water availability within the planning area to accommodate future growth.	Consistent: The project would facilitate the production and transmission of desalinated water, which would be available for use within the Marina General Plan area.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Public Access and Recreation	New Transmission Main	***Policy PAR-DM 1.1.B –*** *Management of Public Access and Recreational Opportunities – Southern Pacific Railroad:* The City shall maintain (keep free of debris, trash, etc.) the portions of the Southern Pacific Railroad right-of way transportation corridor that are within the Del Monte Subarea (III.B.3.b.3).	This policy is intended to protect public access to and use of recreational facilities.	Consistent: Project construction may have short-term, temporary, and direct effects on the TAMC right-of-way and/or Monterey Peninsula Recreational Trail access (i.e., closures during pipeline installation). However, the pipelines would be buried underground and would not substantially impede long-term public access and recreation to or along the right-of-way and/or trail.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy NCR-CZ 1.1.C –*** *Coastal Resources:* New development shall be located in areas where it will not have a significant adverse effect either individually or cumulatively on natural coastal resources and public access and recreation.	This policy is intended to protect coastal resources, public access, and recreation from significant adverse effects associated with new development.	Consistent: The new Transmission Main and new Monterey Pipeline would be located within existing developed or disturbed utility corridors and road/railroad rights-of-way. Public access through work areas would be temporarily disrupted during construction. However, the pipelines would be buried underground and would not substantially impede long-term public access and recreation.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy PAR-CZ 1.1.B –*** Protection of Public Access and Recreational Opportunities: Maximize and protect public access including pedestrian and bicycle connectivity and recreational opportunities in the coastal zone consistent with resource conservation principles, public safety, public rights, and the rights of private property owners.	This policy is intended to protect the public's right of access to shoreline access points – a public recreational resource.	Consistent: The new Transmission Main and new Monterey Pipeline would be located within existing developed or disturbed utility corridors and road/railroad rights-of-way. Public access through work areas would be temporarily disrupted during construction. However, the pipelines would be buried underground and would not substantially impede long-term public access and recreation.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy LUD-CZ 2.1.B –*** *Compliance with Land Use Plan Policies:* New development shall be required to demonstrate compliance with the Land Use Plan policies applicable to the particular project under consideration.	This policy is intended to ensure new development is compatible with adjacent land uses and that coastal resources and public access are protected.	Consistent: The new Transmission Main and new Monterey Pipeline would be buried below ground and would not present any land use conflicts. Furthermore, CalAm would be required to demonstrate land use plan policy consistency through the Coastal Development Permit application process, prior to project implementation.
City of Seaside (coastal zone)	City of Seaside Local Coastal Program Land Use Plan	Coastal Zone	New Transmission Main	***Policy LUD-CZ 2.1.D -*** *Coastal Development Permit Required:* A Coastal Development Permit shall be required for all development within the coastal zone.	This policy is intended to ensure that all development proceeds in a manner that is consistent with the coastal resource planning and management policies of the Seaside Local Coastal Program and the Coastal Act.	Consistent: As noted in Chapter 3, Project Description, CalAm would apply for all necessary local permits, including a Coastal Development Permit
City of Seaside (coastal zone & inland area)	Seaside General Plan	Land Use	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy LU-5.1:*** Review development proposals to ensure that adequate water supply, treatment, and distribution capacity is available to meet the needs of the proposed development without negatively impacting the existing community.	This policy is intended to ensure that adequate water supply, treatment, and distribution capacity is available.	Consistent: The purpose of the project is to improve the reliability and sustain adequacy of water supply, treatment, and distribution capacity. Discussed more fully in Chapter 2, Water Demand, Supplies, and Water Rights, the MPWSP is sized to meet the requirements of SWRCB Orders 95-10 and 2009-0060, and the 2006 groundwater basin adjudication, along with existing and anticipated future demands of existing water entitlement holders, the anticipated economic recovery of the local hospitality industry, and development of existing legal lots of record.
City of Seaside (coastal zone & inland area)	Seaside General Plan	Land Use	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy LU-5.2:*** Work cooperatively with local and regional water suppliers to ensure adequate water reserves.	This policy is intended to ensure adequate water reserves.	Consistent: The purpose of the project is to improve the reliability and sustain adequacy of water supply, treatment, and distribution capacity locally and regionally. Additional discussion of CalAm and MPWSP coordination with other water providers in the region is provided in Chapter 3.
City of Seaside (coastal zone & inland area)	Seaside General Plan	Land Use	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy LU-5.4:*** Promote the use of recycled water for irrigation of parks, golf courses, and public landscaped areas in the community.	This policy is intended to promote the use of recycled water for irrigation.	Consistent: The MPWSP would not preclude opportunities to promote and expand use of recycled water for irrigation in Seaside.

TABLE 4.8-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO LAND USE AND RECREATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Subject Project Components	Specific Goal, Policy, or Program	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Policies and Programs
City of Seaside (coastal zone & inland area)	Seaside General Plan	Conservation/Open Space Element	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy COS-2.1:*** Work with regional and local water providers to ensure that adequate supplies of water are available to meet existing development and future growth.	This policy is intended to ensure that adequate supplies of water are available.	Consistent: The purpose of the project is to improve the reliability and sustain adequacy of water supply, treatment, and distribution capacity locally and regionally. Additional discussion of CalAm and MPWSP coordination with other water providers in the region is provided in Chapter 3.
City of Seaside (coastal zone & inland area)	Seaside General Plan	Conservation/Open Space Element	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy COS-2.2:*** Encourage the production, distribution, and use of recycled water.	This policy is intended to encourage the use of recycled water.	Consistent: The MPWSP would not preclude opportunities to produce, distribute, and use recycled water in Seaside.
City of Seaside (coastal zone & inland area)	Seaside General Plan	Conservation/Open Space Element	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Policy COS-2.3:*** Participate in and implement local and regional programs that promote water conservation as a means of improving water supply and water.	This policy is intended to promote water conservation.	Consistent: The project would not preclude opportunities to participate in and implement local and regional programs that promote water conservation as a means of improving water supply and water.
County of Monterey (inland areas)	Greater Monterey Peninsula Area Plan	Public Services and Facilities	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, and Ryan Ranch–Bishop Interconnection Improvements	***Policy GMP-5.2:*** Each development proposal shall be evaluated to determine the extent to which such development may help further the County's park and recreation facility goals, objectives, and policies.	This policy is intended to protect and enhance the County's parklands and recreational facilities.	Consistent: MPWSP construction would temporarily affect parklands and restrict access to recreational facilities. However, project components that could disrupt park access and recreation would be buried underground. As a result, the project would not adversely affect long-term park access or use.
County of Monterey (inland areas)	Monterey County Code	Chapter 10.72 – Desalinization Treatment Facility	MPWSP Desalination Plant	***Sections 10.72.010*** et seq. establishes: No person, firm, water utility, association, corporation, organization, or partnership, or any city, county, district, or any department or agency of the State shall commence construction of or operate any Desalination Treatment Facility (which is defined as a facility which removes or reduces salts from water to a level that meets drinking water standards and/or irrigation purposes) without first securing a permit to construct and a permit to operate said facility. Such permits shall be obtained from the Director of Environmental Health of the County of Monterey, or his designee, prior to securing any building permit.	This policy is intended to regulate ownership of desalination facilities within Monterey County.	*Pursuant to CPUC's October 31, 2012 decision affirming Administrative Law Judge (ALJ) Gary Weatherford's September 12, 2012 proposed "Decision Declaring Preemption of County Ordinance and the Exercise of Paramount Jurisdiction", this ordinance is not applicable to the MPWSP.*
County of Monterey (inland areas)	Monterey County General Plan	Land Use	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	***Policy LU-5.7:*** Industrially designated areas shall be compatible with surrounding land uses.	This policy is intended to ensure compatibility of adjacent land uses.	Consistent: The proposed MPWSP Desalination Plant would be sited next to the existing Monterey County Landfill and the MRWPCA Regional Wastewater Treatment Plant, and would not preclude continued use of nearby lands for agriculture and grazing.
County of Monterey (inland areas)	Monterey County General Plan	Land Use	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	***Policy LU-1.11:*** Development proposals shall be consistent with the General Plan Land Use Map designation of the subject property and the policies of this plan.	This policy is intended to ensure development proceeds in a manner that is compatible with existing and anticipated future development.	Consistent: Lands with a General Plan land use designation of Permanent Grazing may need to be redesignated to accommodate the proposed MPWSP Desalination Plant unless the County issues a Use Permit, which would occur through the requisite local planning and permit review processes. The proposed MPWSP Desalination Plant would be compatible with the adjacent Monterey County Landfill and the MRWPCA Regional Wastewater Treatment Facility.

TABLE 4.8-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO LAND USE AND RECREATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Subject Project Components	Specific Goal, Policy, or Program	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Policies and Programs
County of Monterey (inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	**Policy PS-13.2:** All new utility lines shall be placed underground, unless determined not to be feasible by the Director of the Resource Management Agency.	This policy is intended to protect the existing visual and architectural character of the planning area.	Consistent: All proposed pipelines would be placed below ground.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Key Policy 4.3.4:*** All future development within the North County coastal segment must be clearly consistent with the protection of the area's significant human and cultural resources, agriculture, natural resources, and water quality.	This key policy is intended to provide long-term resource management and protection.	Potentially Inconsistent: Impacts related to cultural, agricultural, and biological resources and water quality, are discussed in EIR/EIS Sections 4.15, 4.16, 4.6, and 4.3, respectively. Specifically, please refer to **Tables 4.15-6, 4.16-2, 4.6-2,** and **4.3-5** for additional discussion of the project's conformity with applicable North County Land Use Plan policies related to cultural, agricultural, terrestrial biological resources, and water quality, respectively. In all but one instance related to compatibility with established land use policies regarding biological resources (i.e., Impact 4.6-4), potential land use policy and regulation conflicts are resolvable with the implementation of recommended mitigation. Because this policy pertains to topics other than land use and recreation and is addressed elsewhere in the EIR/EIS, it is not discussed further in Section 4.8.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 4.3.5.4:*** Where there is limited land, water, or public facilities to support development, coastal dependent agriculture, recreation, commercial and industrial uses shall have priority over residential and other non-coastal dependent uses.	This policy is intended to preserve and protect opportunities for coastal-related and coastal-dependent uses within coastal areas where the availability of land, water, or public facilities is limited.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline are coastal-dependent or coastal-related, due to their reliance on coastal areas for water intake and transmission. These facilities would be buried below ground and would not otherwise limit use of land, water, or public facilities in the coastal zone.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.3.5.6:*** Industrial uses shall be located near major transportation facilities and population centers. The only industrial facilities appropriate for the area are coastal or agriculture-dependent industries which do not demand large quantities of fresh water and contribute low levels of air and water pollution. Industries not compatible with the high air quality needed for the protection of agriculture shall be restricted.	This policy is intended to protect air quality and water availability in the coastal zone, and the agricultural operations dependent thereon.	Consistent: The Source Water Pipeline is coastal dependent. The Source Water Pipeline and new Desalinated Water Pipeline are public utilities. They would be buried below ground and they would have no long-term impact on air quality or traffic within the North County Land Use Plan area, nor would they require large quantities of fresh water. Traffic and air quality impacts are addressed in EIR/EIS Sections 4.9 and 4.10, respectively. Water availability impacts are addressed in EIR/EIS Sections 4.3 and 4.4. Specifically, please refer to **Tables 4.9-2, 4.10-3, 4.3-5,** and **4.4-6** for additional discussion of the project's conformity with applicable North County Land Use Plan policies related to these resource areas, respectively.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 4.3.5.8:*** Development within the North County coastal zone shall be consistent with the land uses shown on the plan map and as described in the text of this plan.	This policy is intended to protect coastal resources and direct development is a way that is consistent with the Coastal Act.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline would be sited along existing roadway and railroad rights-of-way and would not preclude land uses shown on the plan map.
County of Monterey (coastal zone)	North County Land Use Plan	Land Use and Development	Source Water Pipeline and new Desalinated Water Pipeline	***Specific Policy 4.3.6 F4:*** A basic standard for all new or expanded industrial uses is the protection of North County's natural resources. Only those industries determined to be compatible with the limited availability of freshwater and the high air quality required by agriculture shall be allowed. New or expanded industrial facilities shall be sited to avoid impacts on agriculture of environmentally sensitive habitats.	This policy is intended to protect air quality and water availability in the coastal zone, and the agricultural operations dependent thereon.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline are not industrial facilities, would be buried below ground, and would have no long-term impact on natural resources, air quality, or water availability within the North County Land Use Plan area. Biological resources and air quality impacts are addressed in EIR/EIS

TABLE 4.8-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO LAND USE AND RECREATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Subject Project Components	Specific Goal, Policy, or Program	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Policies and Programs
County of Monterey (coastal zone) (cont.)						Sections 4.6 and 4.10, respectively. Water availability impacts are addressed in EIR/EIS Sections 4.3 and 4.4. Specifically, please refer to **Tables 4.6-2, 4.10-3, 4.3-5,** and **4.4-6** for additional discussion of the project's conformity with applicable North County Land Use Plan policies related to these resource areas, respectively.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Land Use	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, and Ryan Ranch–Bishop Interconnection Improvements	***Residential Land Use Policy B-1:*** The City of Seaside shall encourage land uses that are compatible with the character of the surrounding districts or neighborhoods and discourage new land use activities which are potential nuisances and/or hazards within and in close proximity to residential areas.	This policy is intended to minimize nuisance and hazards that could result from incompatible land uses.	Consistent: Project components subject to the Base Reuse Plan's Seaside planning area would be constructed at or below ground, and therefore would be compatible with existing land use character. Additional discussion of land use compatibility is presented in Section 4.14, Aesthetic Resources. The Ryan Ranch-Bishop Interconnection Improvements would be constructed below ground surface and would have no effect related to nuisance, hazard, or other land use compatibility issue.

SOURCES: City of Marina, 1982, 2000; City of Seaside, 2004b, 2013; FORA, 1997a; Monterey County, 1999, 2010.

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In all but one instance related to specific MPWSP components' compatibility with established land use policies related to biological resources (i.e., Impacts 4.6-4), potential land use policy and regulation conflicts are resolvable with the implementation of recommended mitigation. And in those instances in which potential conflicts could remain after mitigation is implemented, the proposed use would not be fundamentally inconsistent with intent of the respective site's established land use and zoning classification, nor would the effects substantially conflict with the public health, safety, and welfare criteria underlying most Use Permit decisions. Therefore, based upon the analyses presented herein, the local body overseeing land use and development decisions should be able to make the consistency findings necessary for Use Permit and/or CDP issuance.

Subsurface Slant Wells

The subsurface slant wells are proposed in a retired portion of the CEMEX sand mining operation in northern Marina. This area is identified on the land use plan as Habitat Reserve and Other Open Spaces, and zoned for Coastal Conservation and Development (CD) uses. According to the *City of Marina General Plan*, lands designated as Habitat Reserve and Other Open Spaces are "intended for permanent retention in open space to protect significant plants and wildlife inhabiting these areas" (City of Marina, 2000). The *City of Marina General Plan* recognizes the presence of the CEMEX sand mining facility and provides for the continuation, modification, and expansion of sand mining activities on the property in accordance with the provisions of the Local Coastal Program and Reclamation Plan (City of Marina, 2000). The *City of Marina Local Coastal Program* and zoning regulations provide for conditional approval of coastal-dependent industrial land uses, including, but not limited to surf zone and offshore sand extraction and dune mining, within the CD district (City of Marina, 1982; 2009). CalAm will need to obtain a CDP from the City of Marina for implementation of the subsurface slant wells. Per the above discussion of project consistency with applicable land use policies and regulations, the City of Marina should be able to make findings in support of CDP issuance for the subsurface slant wells. With the requisite CDP, the proposed subsurface slant wells would not conflict with land use plan and zoning designations.

MPWSP Desalination Plant

The MPWSP Desalination Plant would be located in unincorporated Monterey County. The site is identified as Permanent Grazing (PG) in both the *Monterey County General Plan* Land Use Map and County Zoning Map. Per the *Monterey County General Plan*, the PG designation allows a range of uses that conserve and enhance productive grazing lands. According to the *Monterey County General Plan*, greenhouse operations notwithstanding, building coverage on PG lands shall be limited to 5 percent of the property (Monterey County, 2010). The Monterey County Zoning Ordinance provides for public and quasi-public uses, such as public utilities, within PG districts provided applicants obtain a Use Permit (Monterey County, 1997). The minimum building site is 40 acres. Per the zoning regulations, projects such as the MPWSP involving building coverage in excess of the 5 percent limit would require a variance. Chapter 21.72 establishes and outlines the process for obtaining a variance. The variance notwithstanding, per the above discussion of project consistency with applicable land use policies and regulations, the

County of Monterey should be able to make findings in support of Use Permit issuance for the MPWSP Desalination Plant. Through adherence to the variance process, and with the Zoning Administrator's finding that the criteria for a variance have been met, the MPWSP Desalination Plant would not conflict with land use plan and zoning designations.

Pipelines North of Reservation Road

Conveyance facilities north of Reservation Road would include the Source Water Pipeline and optional alignment, new Desalinated Water Pipeline and optional alignment, Castroville Pipeline and optional alignments, Brine Discharge Pipeline (including the Brine Mixing Box and appurtenances), and Pipeline to CSIP Pond. These facilities would be constructed within portions of Marina and unincorporated Monterey County. Pipeline alignments would generally follow the TAMC right-of-way, Monterey Peninsula Recreational Trail, and existing road rights-of-way. Land uses along these pipeline alignments are identified on the land use plans as Habitat Reserve and Other Open Space Preserve (coastal Marina); Agricultural Preservation and Light Industrial (coastal Monterey County); and Mixed Use, Low Density Residential, Farmland, and Permanent Grazing (inland Monterey County). Zoning designations for these lands include Coastal Conservation and Development (coastal Marina); Resource Conservation, Coastal Agricultural Preservation, and Light Industrial (coastal Monterey County); and Permanent Grazing, Farmland, Mixed Use, Low Density Residential, and Public/Quasi-Public uses (inland Monterey County). Marina (Section 17.06.020.D) and Monterey County (Sections 20.64.160.C and 21.64.160.C) zoning regulations allow public utility distribution and transmission facilities in all zone districts. Marina and Monterey County require project applicants to obtain one or more approvals (such as a Use Permit or a CDP, and/or planning commission review) prior to construction of any portion of the pipelines. Per the above discussion of project consistency with applicable land use policies and regulations, the City of Marina and Monterey County should be able to make findings in support of Use Permit and/or CDP authorization, as applicable, for MPWSP pipelines north of Reservation Road. With the requisite Use Permit and/or CDP, as applicable, the proposed pipelines would not conflict with underlying land use plan and zoning designations.

ASR-5 and ASR-6 Wells

The proposed ASR-5 and ASR-6 Wells would be constructed along the east side of General Jim Moore Boulevard in Seaside, entirely on federally-owned land within the former Fort Ord military base. As noted previously, land use decisions in this area are under the jurisdiction of the U.S. Army and are guided by the *Real Property Master Plan*. The U.S. Army analyzed the potential land use effects of the proposed ASR-5 and ASR-6 Wells in the *Final Environmental Assessment and Finding of No Significant Impact, Monterey Bay Regional Water Project – Aquifer Storage and Recovery*. The *Environmental Assessment* concluded the proposed ASR-5 and ASR-6 Wells would have no impact with respect to conflict with any applicable land use plans, policies, or regulations (RBF Consulting, 2010). As these components would be constructed entirely within lands under federal jurisdiction and not subject to local land use regulation, no determination regarding potential conflicts with established land use and zoning designations is provided.

Pipelines South of Reservation Road

Conveyance facilities south of Reservation Road would include the new Transmission Main and optional alignment, ASR pipelines, Main System–Hidden Hills Interconnection Improvements, and Ryan Ranch–Bishop Interconnection Improvements. These components would cross portions of the cities of Marina, Seaside, Monterey, and unincorporated Monterey County. The proposed pipeline alignments would generally follow the Monterey Peninsula Recreational Trail, TAMC right-of-way, and other road rights-of-way. Land use plan designations for property within or adjacent to these pipeline alignments range from Parks and Open Space Preserve, to Military and Industrial. Zoning along the pipeline alignments also spans a similarly broad range of designations. As noted for conveyance pipelines north of Reservation Road, Marina and Monterey County zoning regulations allow public utilities in all zone districts with a Use Permit, Coastal Development Permit, and/or planning commission review. Zoning regulations for the cities of Seaside and Monterey also allow major public utilities in all such districts with a Use Permit. Per the above discussion of project consistency with applicable land use policies and regulations, the cities of Seaside and Monterey should be able to make findings in support of Use Permit authorization, as applicable, for MPWSP pipelines south of Reservation Road. With the requisite Use Permit, as applicable, the proposed pipelines would not conflict with underlying land use plan and zoning designations.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be constructed on lands in unincorporated Monterey County. The proposed site, which is located approximately 240 feet south of Carmel Valley Road (west of Rancho San Carlos Road), has land use plan and zoning designations Residential – Low Density (LDR/2.5-D-S-RAZ). The Carmel Valley Pump Station would be consistent with the Residential – Low Density land use classifications. The County of Monterey Zoning Ordinance for Inland Areas (Section 21.14.050.B) allows public and quasi-public uses, including public utility facilities, in the LDR zone with a Use Permit. Public utility facilities include facilities for the "production, storage, transmission, distribution, and recovery of water…" (21.06.910). Per the above discussion of project consistency with applicable land use policies and regulations, Monterey County should be able to make findings in support of Use Permit authorization. With the requisite Use Permit, the proposed pump station would not conflict with underlying land use plan and zoning designations.

4.8.2.4 Special Districts

Transportation Agency for Monterey County (TAMC)

Portions of the new Desalinated Water Pipeline, new Transmission Main, and Castroville Pipelines, and their respective optional alignments, would be located generally within the TAMC right-of-way. For these segments an easement or encroachment permit may be required from TAMC (refer to Chapter 3, Project Description). TAMC has identified potential future plans to utilize its existing right-of-way to extend commuter service in Salinas and passenger service to and from the Monterey Peninsula. CalAm and the MWPSP design engineer are coordinating with TAMC to ensure the proposed facilities do not conflict with potential future TAMC plans for use of the right-of-way.

Monterey Peninsula Water Management District

The Monterey Peninsula Water Management District (MPWMD) manages the production of surface water supplies from the Carmel River and groundwater pumped from municipal and private wells in Carmel Valley and the Seaside coastal area. The MPWMD's jurisdictional boundary generally corresponds to CalAm's Monterey District service area, with the exception of an area north and east of Seaside and Sand City that is within the MPWMD's jurisdiction but is served by the Marina Coast Water District. MPWMD was created by the California Legislature in 1977 as a special district and approved by local voters in 1978. MPWMD regulates water allocation, delivery, and use within its jurisdictional boundary. The location of the facility or water source, quantity of water, and delivery determine the type of permit required from MPWMD and conditions of approval. Even if the proposed treatment facility is not located within MPWMD jurisdiction, the delivery and use of the desalinated water produced by the project ("product water") within the jurisdiction is still subject to MPWMD regulations. That is, if any of the proposed facility components are within the MPWMD's jurisdictional boundary, CalAm must apply for an amendment to its Water Distribution System Permit (MPWMD, 2001). Portions of the proposed project would be within the MPWMD jurisdiction; therefore, CalAm would be required to obtain an amendment to its Water Distribution System Permit for project operation.

4.8.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to land use, land use planning, and recreational resources if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any applicable habitat conservation plan or natural community conservation plan;
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- Disrupt or preclude public access to or along the coast.

4.8.4 Approach to Analysis

The analysis considers the proposed project's potential to conflict with applicable plans, policies, and regulations governing land use decisions. This analysis addresses the potential for temporary impacts on land use and recreation during construction, as well as long-term impacts resulting from project siting and operations. Where the project would result in a significant impact or

conflict with a regulatory requirement, mitigation measures are recommended to reduce the impact significance and/or resolve or minimize the potential regulatory conflict.

4.8.5 Direct and Indirect Effects of the Proposed Project

Based on the nature of the proposed project, the following significance criteria are not addressed further in the section:

Physically divide an established community. All of the linear facilities that are proposed as part of the project (e.g., pipelines) would be located underground, and the overlying areas would be restored after construction. Aboveground structures that would be constructed include the subsurface slant wells vaults and housings, MPWSP Desalination Plant, the ASR-5 and ASR-6 Wells (pump houses), and the Carmel Valley Pump Station. None of the aboveground facilities would divide an established community or established land uses. Thus, the criterion related to the division of an established community is not applicable to the proposed project and is not discussed further.

Conflict with any applicable habitat conservation plan or natural community conservation plan. This criterion is addressed in Impact 4.6-8 in Section 4.6, Terrestrial Biological Resources, of this EIR/EIS.

Increase the use of existing neighborhood and regional parks or other recreational facilities. The project does not propose to construct new homes or businesses and would not increase the number of residents in the project area. The project would occur in the vicinity of and could be noticeable to users of recreational facilities, such as golf courses, parks, and ballfields. The project would not directly affect these types of facilities. Nor would the project be expected to cause permanent displacement of users from these facilities, such that other facilities experienced an increased level of use that resulted in physical impacts. Therefore, this significance criterion is not applicable to the proposed project and is not discussed further.

Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The proposed project does not include recreational facilities and would not result in the need for new or expanded recreational facilities. Thus, the significance criterion related to the construction or expansion of recreational facilities is not applicable to the proposed project and is not discussed further.

Disrupt or preclude public access to or along the coast during project operations. The proposed project does not involve any permanent aboveground facilities whose operations would affect coastal public access. All project facilities proposed within the Coastal Zone would be either buried below ground surface or sited on private land, outside of any public access areas. With coastal erosion, there is potential for the beach to retreat landward to the subsurface slant wells (Site 1), which could affect access along the shoreline. This issue is addressed further in Section 4.2, Geology, Soils, and Seismicity, which calls for coastal erosion monitoring and removal of portions of the slant well that could encroach into the public beach, prior to anticipated date of beach exposure. No other project components have potential to affect public access. Therefore, the significance criterion related to project operations impacts on public access to or along the coast is not discussed further.

Table 4.8-3 summarizes the MPWSP's impacts and significance determinations related to land use and recreation.

TABLE 4.8-3
SUMMARY OF IMPACTS – LAND USE AND RECREATION

Impacts	Significance Determinations
Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect.	LS
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.	LSM
Impact 4.8-C: Cumulative impacts related to land use and recreation.	LSM

NOTES:
LS = Less than Significant
LSM = Less than Significant impact with mitigation

Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect. (*Less than Significant*)

Section 15125(d) of the CEQA Guidelines requires analysis of potential "conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect." There are numerous plans, policies, and regulations that either are implicated by relevant significance criteria or were adopted for environmental purposes and thus are evaluated under the appropriate topical sections of this EIR/EIS. As an example, Section 4.6, Terrestrial Biological Resources, evaluates whether the project would conflict with the provisions of an adopted Habitat Conservation Plant or similar plan. As such, consistency with applicable Habitat Conservation Plans is discussed in Section 4.6.

This section evaluates overall project consistency with applicable plans, policies, and regulations pertaining to land use and recreation. The applicable plans, policies, and regulations related to these topics are presented in **Table 4.8-2**, above. The table also establishes the relationship of the plan, policy, or regulation to avoiding or mitigating an environmental effect. The range of issues represented in **Table 4.8-2** include: land use compatibility and protection of land use values, development clustering, protection of public access and recreational opportunities, and coastal-dependency and priority land uses in the coastal zone. As presented in the table, the project would not be expected to conflict with plans, policies, and regulations related to these issue areas. Because many of the proposed pipelines would be installed along recreational trails, bike routes, and pedestrian paths, additional discussion regarding the proposed project's effects on recreational resources is provided below to support the analysis of project consistency with plans, policies, and regulations pertaining to recreational resources. Recognizing that the affected jurisdiction has the ultimate authority over consistency determinations, the table was prepared in consultation with the potentially affected jurisdictions. A more focused discussion of potential effects on public access to and along the coast is provided in **Impact 4.8-2**, below.

Construction activities associated with the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, Castroville Pipeline, Ryan Ranch–Bishop Interconnection Improvements, ASR pipelines, and their respective optional alignments, would overlap geographically with recreational trails, bicycle routes, and pedestrian pathways and could directly affect the use of such recreational facilities during the construction period. As discussed in Section 4.9, Traffic and Transportation (Impact 4.9-5), pipeline construction activities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, could disrupt established bicycle and pedestrian facilities located along the pipeline alignments. However, since pipeline construction would proceed at a rate of 150 to 250 feet per day, the total duration of disturbance at any one location would generally be 1 to 2 weeks. Upon completion of construction, the areas disturbed during pipeline installation activities would be returned to their approximate pre-construction condition.

Construction of subsurface slant wells would occur within the CEMEX sand mining facility. The wells would be constructed approximately 500 feet landward of the back of beach. No work on the beach is proposed. Given their locations within a former sand mining site, landward of existing mining activities, subsurface slant well construction would not be expected to disrupt recreational beach use in the area. See **Impact 4.8-2** for additional discussion.

The plans, policies, and regulations related to land use and recreation in **Table 4.8-2**, above, reflect the long-term visions of the respective jurisdictions with respect to land use and development and are not directly relevant to temporary construction activities. Further, construction-related effects on adjacent land uses and on recreational facilities would be temporary and no long-term disruptions would result. None of the project components would substantially conflict with plans, policies, or regulations that were adopted for the purpose of avoiding or mitigating an adverse environmental effect related to land use or recreation. Therefore, the proposed project would have a less-than-significant effect with respect to land use and recreational policy conflicts.

Impact Conclusion

Based upon an initial review of consistency, the MPWSP would not be expected to conflict with applicable land use policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Although construction of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the Ryan Ranch–Bishop Interconnection Improvements, and ASR pipelines could affect recreational facilities, any disruptions would be temporary and limited to the construction phase. Therefore, the proposed project would not substantially conflict with plans, policies related to land use or recreation. The impact would be less than significant.

Mitigation Measures

None proposed.

Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction. (*Less than Significant with Mitigation*)

The National Marine Sanctuaries Act, the California Coastal Act, and local coastal programs, among other planning and regulatory documents applicable to the project area, each emphasize the importance of maintaining public access and recreation opportunities to and along the coast. As noted in Impact 4.8-1 and Section 4.9, Traffic and Transportation (Impact 4.9-5), project construction would temporarily disrupt transportation routes in the project area, some of which are used for recreation (e.g., Monterey Peninsula Recreational Trail). Potential effects on such resources are not reanalyzed here. Rather, this impact evaluates the potential for project construction to disrupt existing vertical (i.e., between land and shore) and lateral (i.e., along the shoreline) access within the project area. An impact related to vertical or lateral access would be significant if project construction activities were to temporarily or permanently preclude the public's utilization of established vertical or lateral coastal public accessways.

Project components proposed for construction in locations within the Coastal Zone include the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main. The Source Water Pipeline, and new Desalinated Water Pipeline are proposed for areas where no coastal public access impacts would occur; there is no vertical access in the vicinity of the Source Water Pipeline, and the new Desalinated Water Pipeline would be constructed well inland (approximately 0.7 to 0.9 miles) of the nearest vertical accessway. The remaining project components would be constructed outside of the Coastal Zone boundary, in areas where no potential effects on vertical or lateral public access would occur. As such, this section evaluates the potential effects on project construction on vertical and lateral access in the vicinity of the subsurface slant wells and the new Transmission Main.

Subsurface Slant Wells

The subsurface slant wells are proposed for the CEMEX property, which is located west of Highway 1, in northern Marina. There is no vertical public access within the CEMEX facility. Although use levels are low, the beach seaward of the CEMEX site is used by the public; the nearest vertical public accessways are located 1 mile south at Marina Dunes Preserve and 1.25 miles north at the Salinas River National Wildlife Refuge. All of the subsurface slant well construction activities would occur on private CEMEX property, approximately 500 feet inland of the beach. While some of this work may be visible from the publicly accessible beach, none would occur on the beach or in areas that would otherwise disrupt or preclude lateral access along the shore. As a result, construction of the subsurface slant wells would have a less-than-significant impact related to public access to or along the coast.

New Transmission Main

The segment of the new Transmission Main proposed within the Coastal Zone would be constructed within or adjacent to the TAMC right-of-way or the Monterey Peninsula Recreational Trail. Along the proposed new Transmission Main alignment to the north, the Monterey Peninsula Recreational Trail and TAMC right-of-way run north-south adjacent to Fort Ord Dunes State Park; the State Park provides public opportunities for vertical access. In this area, the Monterey Peninsula

Recreational Trail serves as a primary bicycle and pedestrian access route from Marina, Sand City, and Seaside to the park. The proposed new Transmission Main and optional alignment would intersect three Fort Ord Dunes State Park entrances. From north to south, these include the Beach Range Road access, the 8th Street access, and the Divarty Street/1st Street access.

At Beach Range Road, the Fort Ord Dunes State Park is accessible via the at-grade intersection with the Monterey Peninsula Recreational Trail. Pipeline construction at the Beach Range Road/Monterey Peninsula Recreational Trail intersection would impede access into the park. At 8th Street, the park is accessible via bridge over the Monterey Peninsula Recreational Trail and TAMC right-of-way. The new Transmission Main would be constructed beneath the bridge and would not impede park access. At Divarty Street/1st Street, the park is accessible via a tunnel beneath the TAMC right-of-way and Monterey Peninsula Recreational Trail. The new Transmission Main would be constructed beneath the bridge and would not impede park access. At Divarty Street/1st Street, the park is accessible via a tunnel beneath the TAMC right-of-way and Monterey Peninsula Recreational Trail. The new Transmission Main would be constructed atop the tunnel, alongside the trail. However, temporary tunnel closures during pipeline installation over the tunnel would be required for public safety reasons.

Pipeline construction activities would progress at a rate of 150 to 250 feet per day. As such, construction-period impacts at park entrances would typically be limited to a period of one or two weeks. During this period, the public's ability to access Fort Ord Dunes State Park through the above-listed entrances would be impeded. Temporary closures of these entrances would affect access into the Park at specific locations. However, other entrances would remain open and public access to and use of existing vertical and lateral public accessways within Fort Ord Dunes State Park would not be obstructed. Following construction, the affected Park entrance areas would be returned to their approximate pre-construction condition. No permanent effects on park access would result.

The effects of new Transmission Main construction on public access to vertical and lateral public accessways within Fort Ord Dunes State Park would be significant. **Mitigation Measure 4.9-1, Traffic Control and Safety Assurance Plan**, would require the preparation and implementation of a traffic control safety plan that would apply to all project construction activities that could affect the public right-of-way, including roads and trails leading into Fort Ord Dunes State Park, and include measures that would provide for continuity of vehicular, pedestrian, and bicyclist access. With implementation of Mitigation Measure 4.9-1, the effects of new Transmission Main construction on public access would be reduced to a less-than-significant level.

Impact Conclusion

Construction-related impacts on public access to or along the coast would be significant for the new Transmission Main. These impacts could be reduced to a less-than-significant level with implementation of the mitigation measure identified below.

Mitigation Measures

Mitigation Measure 4.9-1 applies to all MPWSP facilities and associated construction activities; however, with respect to disruptions to coastal public access, only construction of the proposed new Transmission Main and optional alignment would require implementation of this measure to reduce impacts to a less-than-significant level.

Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.

(See Section 4.9, Traffic and Transportation, Impact 4.9-1, for description.)

4.8.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.8-C: Cumulative impacts related to land use and recreation. (*Less than Significant with Mitigation*)

As analyzed in Section 4.8.5, above, the proposed project would not divide an established community, increase the use of existing neighborhood parks or other recreational facilities, include or require the construction of recreational facilities, or disrupt or preclude public access to or along the coast (operations phase); therefore, it could not cause or contribute to any cumulative impact related to these issues. The potential for the proposed project to individually or cumulatively conflict with an applicable habitat conservation plan or natural community conservation plan is addressed in Section 4.6, Terrestrial Biological Resources, and is not addressed in this section.

The geographic scope of potential cumulative impacts on land use and recreation encompasses the lands and recreational resources that would be affected by proposed project construction. The timeframe during which the proposed project could contribute to cumulative land use and recreation effects includes the construction phase. A significant cumulative impact on land use and recreation would result if the construction-phase effects of the MPWSP, combined in space and time with those of cumulative projects, would create a conflict with applicable land use plans or policies or to impede coastal public access.

As discussed in Impact 4.8-1, the proposed project would disrupt use of and/or access to recreational facilities within the project area, which could result in a conflict with applicable land use plans, policies, and regulations related to protecting public access to such facilities (see Table 4.8-2). However, these effects would be temporary, mainly limited to the construction period, and no long-term effects would result. Because the applicable land use plans, policies, and regulations pertaining to public access and recreational opportunities reflect the long-term visions of the respective jurisdictions with respect to land use and development, they are not directly relevant to temporary construction activities. Therefore, the proposed project would not substantially conflict with any plans, policies, or regulations related to land use or recreation that were adopted for the

purpose of avoiding or mitigating an environmental effect. The residual impacts on public access and recreational opportunities following the completion of construction would be negligible, if any. Therefore, the proposed project would have a less than significant contribution to the cumulative impact related to conflicts with plans, policies, and regulations adopted to protect public access or recreational facilities.

As discussed in Impact 4.8-2, proposed project construction would temporarily obstruct specific Fort Ord Dunes State Parks entry points, and thus disrupt public access to existing vertical and lateral coastal accessways within the park. The Fort Ord Dunes Campground project (No. 46 in Table 4.1-2) is the only cumulative project whose effects could combine with those of the proposed project to further impact coastal public access within the park. The implementation schedule remains unknown. However, if the two projects were constructed at the same time or in sequence, the duration of disruption to Beach Range Road access and the Divarty Street/1st Street access points could be extended. As discussed in Impact 4.8-2, the impacts of the proposed project would be temporary, limited to the construction phase, and affected areas would thereafter be returned to their approximate pre-construction condition. During the construction period, alternative access entry points into the park would remain open, and vertical and lateral access within the park would not be impacted; however, the cumulative impact resulting from more than one project affecting coastal public access would be significant. Following implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, the contribution of the proposed project to this potentially significant cumulative impact would be reduced to a level that is less than significant because signage would be posted in advance of and during construction to notify bicyclists and pedestrians of construction activity and advise them about detour routes, and construction schedules would minimize impacts during periods of heavy recreational use.

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4.9 Traffic and Transportation

Sections	Tables
4.9.1 Setting/Affected Environment	4.9-1 Characteristics of Roads that Could be Directly Affected by Project Construction Activities
4.9.2 Regulatory Framework	4.9-2 Applicable Regional and Local Land Use Plans and Policies Relevant to Traffic and Transportation
4.9.3 Evaluation Criteria	4.9-3 Summary of Impacts – Traffic and Transportation
4.9.4 Approach to Analysis	4.9-4 Estimated Maximum Daily Vehicle Trips During Project Construction
4.9.5 Direct and Indirect Effects of the Proposed Project	
4.9.6 Cumulative Effects of the Proposed Project	

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Revisions to Mitigation Measures 4.9-1, Traffic Control and Safety Assurance Plan, and 4.9-6, Roadway Rehabilitation Program.*

This section analyzes the potential impacts on traffic, transportation, and circulation that could result from implementation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). The analysis is based on estimates of workers and vehicles associated with construction and operation of the various components of the proposed project; California Department of Transportation (Caltrans) data on state highway traffic volumes; Transportation Agency for Monterey County (TAMC) data on local roadway traffic volumes; a field reconnaissance by a professional traffic engineer; and review of available maps of transit routes, bike routes, and recreational paths. The analysis focuses primarily on construction-related impacts because most impacts on traffic and transportation would occur during project construction. However, impacts related to long-term project operations and maintenance activities are also discussed.

4.9.1 Setting/Affected Environment

The study area for the evaluation of project impacts on traffic and transportation is comprised of the regional highways and local roadways in the project vicinity. It includes the cities of Marina, Sand City, Seaside, and Monterey, and unincorporated areas of Monterey County. Construction workers and construction vehicles would use regional highways and local roadways to transport materials and equipment and excavated spoils and fill material to and from the construction work areas. In addition, construction workers would install approximately 21 miles of pipeline within or adjacent to roadways and recreational trails. There are no MBNMS resources that would be affected by impacts identified in this section; all impacts related to traffic and transportation would occur outside of MBNMS boundaries. Therefore, MBNMS resources are not described in the environmental setting/affected environment.

4.9.1.1 Regional Roadways

Regional transportation within Monterey County, and within the project area, is supported by a system of highways, including U.S. Highway 101 (Highway 101) and several state routes (Highways 1, 68, 156, 183, and 218). These roadways provide regional access to the project area, the rest of Monterey County, and beyond. These roadways and their associated traffic volumes are summarized below, using the most recent data published by Caltrans (Caltrans, 2015).

Highway 101 is a multi-lane freeway that connects to San Jose and points north and San Luis Obispo and points south. Regional traffic on Highway 101 connects to the project area via interchanges at Highway 156 in Prunedale and Highway 68 in Salinas. The average daily traffic volume on Highway 101 ranges from about 83,700 vehicles north of the Highway 156 interchange; from 58,900 to 73,900 vehicles between Highway 156 and Highway 68; and about 58,500 vehicles south of Highway 68.

Highway 1 varies from a two-lane surface state highway (with at-grade intersections) to a multi-lane freeway (with ramp interchanges). Highway 1 runs north-south directly through the project area, providing direct access to construction work areas in Marina and Seaside, and connecting with regional highways such as Highway 156 in Castroville, Highway 218 in Seaside and Del Rey Oaks, and Highway 68 in Monterey. The average daily traffic volume on Highway 1 ranges from 42,000 to 47,000 vehicles between Highway 156 and Marina; and from 50,000 to 83,000 vehicles between Marina and the Monterey southern city limits.

Highway 68, also known as the Monterey-Salinas Highway, is a surface highway connecting Monterey with Salinas.[1] It is primarily a two-lane road, but there are four-lane segments as well as segments with a center two-way left-turn median. The intersections on Highway 68 at Highway 218–Monterra Road, Ragsdale Drive, and York Road (where turning movements by project-generated trips would occur) are signalized with separate turn lanes. The average daily traffic volume on Highway 68 ranges from 21,800 to 29,000 vehicles between the interchanges with Highway 1 in Monterey and with Reservation Road in Spreckels.

Highway 156 is a predominantly two-lane highway connecting Highway 101 with Highway 1 near Castroville. At Castroville Road it widens to four lanes and becomes a freeway, with interchanges at Highway 183 (Merritt Street) and Highway 1. The average daily traffic volume on Highway 156 ranges from 29,000 to 31,000 vehicles between Highway 1 and Highway 101.

Highway 183, also referred to as Merritt Street in the town of Castroville and Market Street in the city of Salinas, is a predominantly two-lane surface highway connecting Castroville (Highway 1) with Salinas (Highway 101); there are segments with four lanes or a center two-way left-turn median in Castroville. The average daily traffic volume on Highway 183 ranges from 12,000 to 38,200 vehicles between Highway 1 and Highway 101.

[1] Highway 68 (Holman Highway) also connects Carmel with Pacific Grove, and overlaps with Highway 1 between Carmel and Monterey.

Highway 218, also known as Canyon Del Rey Boulevard, is a surface highway connecting Highway 1 (at a freeway interchange) with Highway 68. It has four lanes (plus turn lanes) through Seaside, narrowing to two lanes east of Fremont Street. The average daily traffic volume on Highway 218 ranges from 12,200 to 23,000 vehicles between Highway 1 and Del Rey Oaks, and from 13,000 to 14,600 vehicles between Del Rey Oaks and Highway 68.

4.9.1.2 Local Roadways

The project area has a network of roads that serve various purposes. *Arterial streets* are designed to carry the traffic of local and collector streets to and from freeways and other major streets, generally providing direct access to nonresidential properties. *Collector streets* are designed to move traffic between arterials to local roadways. *Local roads* generally provide direct access to residential land uses. The roadways that would be most affected by project construction activities (and, to a lesser extent, project operations) are primarily two-lane roads, although some potentially affected roadways have four travel lanes (two in each direction).

Table 4.9-1 presents roadway characteristics (e.g., number of travel lanes, bike lanes, parking availability, public transit service, etc.) for the local roadways that would be directly affected by project construction activities (i.e., installation of pipelines within road rights-of-way).

4.9.1.3 Railroads

Amtrak provides passenger rail service in Monterey County. The Coast Starlight, which has daily northbound and southbound departures (with Seattle and Los Angeles as the final destinations), serves Salinas. The Union Pacific Railroad (UPRR) provides freight service in Monterey County.

The TAMC owns a 13-mile segment of railroad right-of-way between Castroville (where it connects with the UPRR) and Monterey (where it terminates at Cannery Row). Known as the Monterey Branch Line, the right-of-way passes through the cities of Marina and Seaside as well as the former Fort Ord military base. In Seaside and Monterey, several portions of the TAMC right-of-way have been paved over to accommodate recreational trails.

4.9.1.4 Public Transit

The Monterey-Salinas Transit (MST) line provides bus service within northern Monterey County and southern Santa Cruz County. In Monterey County, bus service is provided between the cities of Monterey and Salinas, Marina and Watsonville, Salinas and Watsonville, and south from Salinas to Gonzales. In addition, the MST also provides bus service within the cities of Marina, Monterey, Pacific Grove, and Seaside. Bus routes within and around the project area include Routes 2, 7, 8, 10, 11, 12, 14, 16, 18, 19, 21, 22, 24, 27, 28, 56, 69, 70, 71, 74, 75, 93, 94, Jazz A, Jazz B, and Jazz C (MST, 2016). **Table 4.9-1**, above, indicates the project area roadways that are shared with public transit routes.

TABLE 4.9-1
CHARACTERISTICS OF ROADS THAT COULD BE DIRECTLY AFFECTED BY PROJECT CONSTRUCTION ACTIVITIES[a]

Roadway / Segment	No. of Travel Lanes	Average Daily Traffic Volumes[b]	Bike Route?	On-Street Parking?	Public Transit Lines[c]	Figure Reference
Source Water Pipeline						
CEMEX Access Road: ● Under Highway 1 to Railroad R-O-W	2 lanes	--	No	No	N/A	Figure 3-3
Lapis Road: ▪ CEMEX access road to Del Monte Boulevard	2 lanes	–	No	No	N/A	Figure 3-4
Del Monte Boulevard: ▪ Lapis Road to Charles Benson Road	2 lanes	3,800	No	No	MST 27	Figure 3-4
Charles Benson Road: ▪ Del Monte Boulevard to MPWSP Desalination Plant	2 lanes	–	No	No	N/A	Figure 3-4 Figure 3-5
New Desalinated Water Pipeline						
Charles Benson Road: ▪ Del Monte Boulevard to MPWSP Desalination Plant	2 lanes	–	No	No	N/A	Figure 3-4 Figure 3-5
Del Monte Boulevard: ▪ Charles Benson Road to Lapis Road	2 lanes	3,800	No	No	MST 27	Figure 3-4
Lapis Road: ▪ Del Monte Boulevard to Del Monte Boulevard	2 lanes	–	No	No	N/A	Figure 3-4 Figure 3-6
Crossing of Marina Green Drive	2 lanes	--	No	No	N/A	Figure 3-6
Crossing of Beach Road	2 lanes	--	No	No	MST 16, 27	Figure 3-6
Crossing of Reservation Road	3 lanes	–	Yes	No	MST 16	Figure 3-7a
New Transmission Main						
Marina Drive ▪ Reservation Road to Reindollar Avenue	2 lanes	--	No	No	N/A	Figure 3-7a
Crossing of Palm Avenue	3 lanes	--	No	No	MST 27	Figure 3-7a
Lightfighter Drive ▪ 1st Avenue to General Jim Moore Boulevard	4 lanes (divided)	15,570	No	No	MST 12, 19, 75	Figure 3-8
General Jim Moore Blvd: ▪ Lightfighter Drive to s/o Coe Avenue / Eucalyptus Road	4 lanes (divided)	6,970 to 9,610	Yes	No	MST 12, 18, 75	Figure 3-8 Figure 3-9a
Carmel Valley Pump Station						
▪ Rancho San Carlos Road	2 lanes	--	No	No	N/A	Figure 3-10c
Ryan Ranch–Bishop Interconnection Improvements						
Ragsdale Drive: ▪ Highway 68 to Lower Ragsdale Drive	4 lanes	–	No	No	MST 8, 93	Figure 3-10a

TABLE 4.9-1 (Continued)
CHARACTERISTICS OF ROADS THAT COULD BE DIRECTLY AFFECTED BY PROJECT CONSTRUCTION ACTIVITIES

Roadway / Segment	No. of Travel Lanes	Average Daily Traffic Volumes[b]	Bike Route?	On-Street Parking?	Public Transit Lines[c]	Figure Reference
Ryan Ranch–Bishop Interconnection Improvements (cont.)						
Lower Ragsdale Drive: ▪ Ragsdale Drive to Wilson Road	2 lanes	–	Yes	No	N/A	
Wilson Road: ▪ Lower Ragsdale Drive to Citation Court	2 lanes	–	Yes	No	MST 8, 93	
Main System–Hidden Hills Interconnection Improvements						
Terra Grande Drive: ▪ Telerana Way to terminus	2 lanes	–	No	No	N/A	Figure 3-10b
Castroville Pipeline						
Crossing of Del Monte Avenue	2 lanes	–	No	No	N/A	Figure 3-12
Crossing of Neponset Road	2 lanes	--	No	No	N/A	Figure 3-11a
Castroville Pipeline Optional Alignment						
Merritt Street: ▪ Del Monte Avenue to Haro Street	2 lanes	--	No	No	MST 28	Figures 3-11b and 3-13
Haro Street: ● Merritt Street to Rec Trail	2 lanes	--	No	No	N/A	
Nashua Road: ● Rec Trail to UPRR	2 lanes	--	No	No	N/A	

NOTES:

[a] The exact locations of the proposed pipelines relative to the roadways listed in this table (i.e., within the travel lanes, within the right-of-way but not within the travel lanes, or outside the right-of-way) are not known at this time. To inform the reader of potential impacts (as described under Impact 4.9-2), the information in the table is based on the conservative assumption that roadway travel lanes would be affected.

[b] Average daily traffic volumes provided by the Transportation Agency for Monterey County (TAMC, 2015).
– = no data available

[c] Public transit information provided by Monterey-Salinas Transit (MST, 2016).
N/A = not applicable

[d] MST routes along this segment of Fremont Street include Routes 2, 12, 14, 18, 19, 21, 22, 24, 56, 69, 93, 94, and Jazz A/B/C.

SOURCE: ESA, 2016.

4.9.1.5 Bicycle Routes and Pedestrian Paths

Within Monterey County, bicycle travel for both commuting and recreational purposes is common. A network of bicycle facilities, including Class I (bicycle paths), Class II (bicycle lanes, striped in roads), and Class III (bicycle routes without striping), extend throughout the county (as well as the project area) and are frequently located along the right-of-way of roadways or railroads. For example, the 18-mile-long Class I Monterey Peninsula Recreational Trail (also known as the Monterey Bay Coastal Bike Path) originates at Merritt Street in Castroville and heads south along Del Monte Boulevard to Canyon Del Rey Boulevard in Seaside. From there the trail follows the TAMC right-of-way and terminates in Pacific Grove near Forest Avenue. As part of the proposed project, approximately 9 miles of underground pipeline would be installed within or adjacent to the

TAMC right-of-way, with 6 of the 9 miles located alongside the Monterey Peninsula Recreational Trail. There are numerous other designated bike routes, some with designated bike lanes, in and around the project area. **Table 4.9-1** indicates the project area roadways that have bikeways.

The level of pedestrian facilities (e.g., sidewalks versus edge-of-road paths) and volumes of pedestrians vary depending on location.

4.9.2 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to traffic and transportation, and analyses of the proposed project's conformity with such regulatory requirements, without mitigation.

4.9.2.1 Federal and State

California Department of Transportation

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in Monterey County. In California, Caltrans implements federal interstate highway standards. Caltrans requires that project proponents seeking to conduct construction activities within a state-owned right-of-way obtain a Caltrans encroachment permit.

California Coastal Commission

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to traffic and transportation are Coastal Act policies concerning minimizing vehicle miles traveled, protecting public access, and maintaining recreational opportunities within the coastal zone. A preliminary assessment of project consistency with these priorities provided here. Final determinations regarding project consistency are reserved for the Coastal Commission. With respect to vehicle miles traveled, any increase in the number of vehicle trips associated with operation of project components in the coastal zone negligible. Maintenance activities would include periodic inspections and repairs, but would not generate a substantial number of new vehicle trips. With respect to public access and recreation, project construction may have short-term indirect effects on shoreline access (i.e., increased traffic and lane closures) during the construction period. However, pipelines would be buried underground and would not substantially affect long-term public access to or along the coast. For these reasons, the project would be consistent with Coastal Act policies related to traffic and transportation.

4.9.2.2 Local

Transportation Agency for Monterey County

The TAMC is an independent association of local officials that oversees planning and funding of regional transportation improvements throughout Monterey County. The agency prepares the Regional Transportation Plan and oversees the implementation of its recommended improvements.

Association of Monterey Bay Area Governments

The Association of Monterey Bay Area Governments (AMBAG) is the federally-designated Metropolitan Planning Organization (MPO) for the tri-county Monterey Bay region. It is the lead agency responsible for developing and administering the transportation plans and programs that receive federal funds in Monterey, San Benito, and Santa Cruz Counties. As the MPO, AMBAG acts as a forum for cooperative decision-making in the development of transportation plans, programs, and recommendations. AMBAG also develops and maintains a regional travel-demand forecasting model used to plan regional transportation facilities and assess development proposals.

Local Jurisdictions

The incorporated cities of Monterey, Marina, Sand City, and Seaside have adopted General Plans, policies, and capital improvement programs that regulate development and transportation improvements within their jurisdictions. The cities administer encroachment permits for work performed within the rights-of-way of their respective roadways.

Monterey County Public Works Department

The Monterey County Public Works Department is responsible for maintaining roads, bridges, and related facilities within the unincorporated area of the county. The Public Works Department works with the Monterey County Planning Department to review land development applications for compliance with local and state regulations (i.e., private roads, driveways, and county-maintained roads). The Public Works Department administers encroachment permits for work performed within county rights-of-way (such as underground utility work, and driveways and road approaches); permits street closures; and issues transportation permits for county roads.

4.9.2.3 Applicable Regional and Local Land Use Plans, Policies, and Regulations

Table 4.9-2 identifies the traffic- and transportation-related regional and local land use plans, policies, and regulations relevant to the MPWSP that were adopted for the purpose of avoiding or mitigating an environmental effect, and indicates project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project would be potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to the specific impact discussion in Section 4.9.5, Direct and Indirect Effects of the Proposed Project, where the potential inconsistency is addressed in more detail. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.9-2
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TRAFFIC AND TRANSPORTATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Infrastructure	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 3.3*:** The intent of the General Plan Transportation and Infrastructure Element is to ensure that the requirements for transportation, water supply, wastewater collection and treatment, storm water drainage, and solid-waste disposal generated by existing and future development are adequately provided for. It is also the intent of this section to ensure, to the maximum extent possible, that the provision of such services does not have a deleterious effect on either natural resources or the quality of life of residents of Marina or other potentially affected areas. The major concerns of this section are outlined below: 6. Protect existing and future residential areas from through-traffic that creates safety, noise, and pollution problem.	This policy is intended to protect residential areas from traffic-induced safety hazards, disruptive noise levels, and air pollutants.	Consistent: The subsurface slant wells would not be staffed. Routine and periodic site visits from CalAm personnel would be minimal (no more than 4 roundtrips or 8 one-way trips per day) and would not generate traffic in residential areas. Pipelines would be periodically inspected and repaired, as needed, but would not generate a substantial number of new vehicle trips.
City of Marina (coastal zone)	City of Marina Local Coastal Program Land Use Plan	Policies	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 1*:** Insure access to and along the beach, consistent with the recreational needs and environmental sensitivity of Marina Coastal area.	This policy is intended to maintain public access to and along the shoreline.	Consistent: Project construction may have short-term indirect effects on shoreline access (i.e., increased traffic and lane closures) during the construction period. None of the project components proposed within the coastal zone would permanently preclude public access to or along the coast. Refer to Table 4.2-6 for additional discussion of the project's conformity with applicable Marina Local Coastal Land Use Plan policies related to beach erosion.
City of Seaside (coastal zone and inland areas)	City of Seaside General Plan	Circulation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy C-1.7*:** Reduce impacts on residential neighborhoods from truck traffic and related noise.	This policy is intended to protect residential areas from traffic congestion and disruptive noise levels.	Potentially Inconsistent: Construction-related traffic increases could result in substantial adverse effects on traffic conditions along neighborhood (residential) streets in Seaside. This issue is addressed further in Impact 4.9-1, which identifies a mitigation measure whose implementation would minimize or avoid this potential inconsistency. Traffic-related noise is addressed in EIR/EIS Section 4.12, Noise and Vibration. (Refer to **Table 4.12-3** for additional discussion of the project's conformity with applicable Seaside General Plan policies related to noise and vibration.)
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Circulation	MPWSP Desalination Plant, Source Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, new Desalinated Water Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, Ryan Ranch-Bishop Interconnection Improvements	***Policy C-3.4*:** Strategies to encourage travel in non-peak hours shall be supported.	This policy is intended to avoid traffic congestion.	Potentially Inconsistent: Project construction would temporarily increase traffic and congestion during peak hours. This issue is addressed in Impact 4.9-1, which identifies a mitigation measure whose implementation would minimize or avoid this potential inconsistency.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Circulation	MPWSP Desalination Plant, Source Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, new Desalinated Water Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements	***Policy C-4.3*:** The needs of bicyclists and pedestrians, as well as provisions for utilities and drainage, shall be considered and, where appropriate, provided in all public rights-of-way in a manner that minimizes impacts on adjacent land uses.	This policy is intended to protect bicycle and pedestrian modes of transportation.	Consistent: Project construction may have short-term indirect effects on pedestrian and bicycle use within public rights-of-way (i.e., increased traffic and lane closures) during the construction period. However, all project components proposed within public rights-of-way would ultimately be buried underground and would not substantially impede use of these rights-of-way for long-term pedestrian and bicycle use.
County of Monterey	Castroville Community Plan	Economic Development	Castroville Pipeline	**Policy 12.2:** The road improvements, flood control improvements, and slough enhancements included in the Community Plan shall be implemented to result in a smooth flowing circulation system, an increase in redevelopment potential, and an attractive public amenity along the Tembladero Slough that will attract new quality businesses and visitors.	This policy is intended to ensure that road improvements, flood control improvements, and slough replacements result in a smooth flowing circulation system.	Consistent: The Castroville Pipeline would be buried underground and would not substantially affect the circulation system.

TABLE 4.9-2 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO TRAFFIC AND TRANSPORTATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Seaside and Monterey County)	Fort Ord Reuse Plan	Circulation	New Transmission Main, ASR Conveyance Pipelines, ASR Pump-to-Waste Pipeline, and Ryan Ranch–Bishop Interconnection Improvements	***Pedestrian and Bicycles Policy B-1*:** Each jurisdiction shall provide and maintain an attractive, safe and comprehensive bicycle system. ***Program B-1.2*:** Each jurisdiction shall review new development to provide bicycle system facilities consistent with the Reuse Plan and the Bicycle System Plan concurrently with development approval.	This policy is intended to maintain a safe bicycle system.	Consistent: Project construction may have short-term indirect effects on the existing bicycle network within the former Fort Ord area (i.e., increased traffic and lane closures) during the construction period. However, all project components potentially affecting the bicycle network would ultimately be buried underground and would not substantially impede long-term use of the bicycle network.
Fort Ord Reuse Authority (Seaside and Monterey County)	Fort Ord Reuse Plan	Circulation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, and Ryan Ranch–Bishop Interconnection Improvements	***Transportation Demand Management Policy A-1*:** Transportation demand management (TDM) programs shall be encouraged. ***Program A-1.3*:** Require new development to incorporate design features that will strengthen TDM programs.	This policy is intended to provide adequate service levels for the local transportation system.	Consistent: Implementation of the proposed project would result in a negligible long-term increase in traffic volumes.
Fort Ord Reuse Authority (Seaside and Monterey County)	Fort Ord Reuse Plan	Circulation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, and Ryan Ranch–Bishop Interconnection Improvements	***Land Use and Transportation Objective A*:** A transportation system that supports the planned land use development patterns. ***Program A-1.2*:** Each jurisdiction with lands at former Fort Ord shall require new developments to conduct a traffic analysis to determine impacts on traffic conditions, require measures such as TDM programs and traffic impact fees to mitigate these impacts.	This policy is intended to provide adequate service levels for the local transportation system.	Consistent: Implementation of the proposed project would result in a negligible long-term increase in traffic volumes.

SOURCE: City of Marina, 1982, 2000; City of Seaside, 2004; FORA, 1997; Monterey County, 2007, 2010

4.9.3 Evaluation Criteria

The proposed project would have a significant impact related to traffic and transportation if it would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel as well as relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including but not limited to level of service (LOS) standards, travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

Further discussion of significance criteria follows Table 4.9-2.

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would cause substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;
- Substantially increase traffic safety hazards;
- Cause substantial damage or wear of public roadways by increased movement of heavy vehicles; or
- Result in parking interference during construction.

Based on the nature of the proposed project, no impacts related to the following significance criteria would result for the reasons described below:

- ***Conflict with the applicable congestion management program, including LOS standards.*** The operating conditions of a roadway, as measured by the level of traffic congestion experienced by motorists, are described as the level of service (LOS). There are six service levels ranging from LOS A as the best operating condition (free-flow conditions with limited travel delays) to LOS F as the worst-case condition (congested or overloaded roadways with extremely long delays). LOS A through D generally represent traffic volumes that are less than roadway capacity, while LOS E represents at-capacity conditions. The LOS of a particular roadway segment is based on several factors, including traffic volumes, number of lanes, type of intersection control, speed and travel time, traffic interruptions, and driving comfort and convenience. LOS standards established by jurisdictions and agencies are intended to regulate long-term (permanent) traffic increases associated with new development and do not apply to short-term (temporary) traffic increases that occur during construction. As discussed under Impact 4.9-8, long-term operations of the MPWSP Desalination Plant would generate approximately 33 round-trips (66 one-way trips) per day (60 commute trips and 6 midday trips). The greatest long-term

increase in vehicle trips from MPWSP Desalination Plant operations would occur on Charles Benson Road. Based on existing traffic conditions and the industrial nature of the surrounding land uses on Charles Benson Road, the projected increase is well within the roadway carrying capacity of this two-lane road and would not affect traffic conditions. None of the other proposed facilities (subsurface slant wells, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station) would be routinely staffed. However, routine and periodic site visits by CalAm staff to monitor operations and conduct maintenance would be required. The long-term operations and maintenance requirements for these proposed project facilities would be similar to those required for existing CalAm operations in the Monterey District service area. They would be incorporated into existing routine site visits and activities and would not generate a significant number of new vehicle trips. Any additional increase in the number of vehicle trips associated with these facilities would be negligible. Pipelines would be periodically inspected and repaired, as necessary, but otherwise would not generate vehicle traffic. Because implementation of the proposed project would not result in substantial long-term, ongoing effects related to traffic and congestion, typical LOS calculations were not performed for this traffic analysis, and county LOS standards were not used to evaluate potential project impacts. Temporary traffic impacts caused by the project were analyzed (see Impacts 4.9-1 and 4.9-2) using a non-LOS-based methodology (see Section 4.9.4 Approach to Analysis). No impact related to conflicts with the applicable congestion management program or LOS standards would occur, and this significance criterion is not discussed further.

- ***Changes in air traffic patterns.*** Construction and operation of the proposed project facilities would not affect air traffic patterns. Neither the construction equipment proposed for use during project construction nor the proposed facilities, once completed, would exceed the height restrictions established by nearby airports (Monterey Peninsula Airport and Marina Municipal Airport). Therefore, this significance criterion is not applicable and is not discussed further.

- ***Permanent increases in traffic safety hazards due to a design feature or incompatible uses.*** The proposed project would not introduce new design features (e.g., new facilities or obstructions within public roadways) or alter existing features (e.g., road realignment). In addition, traffic generated during operation of the proposed project would be compatible with the mix of vehicle types (autos and trucks) currently using regional and local roadways. Therefore, this significance criterion is not applicable and is not discussed further. Temporary increases in traffic safety hazards during project construction are addressed under Impact 4.9-3, below.

- ***Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.*** In general, adopted policies, plans, and programs pertaining to public transit, bicycle, and pedestrian travel are intended to be used for long-term planning purposes and do not apply to construction activities. Implementation of the proposed project would not permanently change the existing or planned transportation network in the affected jurisdictions in Monterey County, nor would the proposed project directly or indirectly eliminate alternative modes of transportation, transportation corridors, or facilities (e.g., bicycle paths, lanes, or routes; bus turnouts or bus routing; walkways, sidewalks, or crosswalks, etc.). Further, the proposed project would not prevent the use of any roads on which public transit routes operate, nor would it generate increased traffic volumes on roads used as public transit routes to a degree that would cause lengthy delays for transit riders or eliminate and/or reduce access to such transit facilities. Therefore, the proposed project would not conflict with policies, plans, or programs related to transit, bicycle, or pedestrian travel. Temporary impacts related to alternative modes of transportation during project

construction are addressed in Impact 4.9-3 (increased traffic safety hazards) and Impact 4.9-5 (temporary disruptions to public transit during construction).

- ***Result in substantial traffic delays or increase safety hazards for commercial vessels, or result in the permanent displacement of commercial vessels.*** Implementation of the MPWSP would not involve construction or operations activities that would require the use of ocean vessels, and would not involve the temporary or permanent placement of any facilities in the Monterey Bay or adjacent harbors. Therefore, implementation of the proposed project would have no effect on commercial vessel traffic or movement. Therefore, this criterion is not applicable to the proposed project and is not discussed further.

4.9.4 Approach to Analysis

Most impacts on traffic and transportation would occur during project construction. As a result, the following analysis is focused primarily on construction-related effects, although impacts related to long-term project operations and maintenance activities are addressed under Impact 4.9-8. As discussed below in Section 4.9.5, Direct and Indirect Effects of the Proposed Project, project operations and maintenance activities would generate a very small increase in traffic (up to 10 workers per shift at the MPWSP Desalination Plant, and a negligible increase for all other proposed facilities compared to existing CalAm operations in the Monterey District service area), thus eliminating the need to perform LOS calculations (because of the reasonable expectation that LOS would not be adversely affected).

Construction of the project components would temporarily affect segments of the roadway network in the project area by increasing traffic volumes on roads that provide access to the construction work areas. There is also a potential for project construction to result in temporary lane closures and detours, particularly along pipeline segments that require construction within vehicle travel lanes or road shoulders. Construction-related traffic and changes in traffic circulation patterns could have an impact on traffic flow and traffic safety conditions on area roads, including roads used for recreation and coastal access (see Section 4.8, Land Use, Land Use Planning and Recreation). Construction characteristics, including crew sizes, techniques, materials and equipment, and the rate of construction, were used to estimate the number of vehicles that would be required for construction of the individual facilities.

This analysis relies on published information regarding roadway characteristics and existing traffic volumes; preliminary construction information provided by the project applicant (CalAm); and estimates of daily vehicle trips for construction activities and for long-term maintenance and operations, augmented by the professional traffic analyst's knowledge of the project area. Existing traffic volumes on project area roadways were gathered from the Caltrans website (for state highways) and the TAMC website (for local roads). Estimates of project-related traffic increases were added to existing traffic volumes, and a qualified expert in traffic analysis evaluated the effect of that percent increase on traffic flow, based upon professional experience and knowledge of the relevant roadways. The following factors were considered in the evaluation of construction-related traffic impacts on area roadways: (1) workers would commute to and from the construction work areas earlier and/or later than project-related construction truck trips (i.e., those trips would not happen at the same time); (2) daily traffic volumes on public roads

typically vary from day-to-day (by about 10 percent, ±5 percent), and any increased traffic within the typical daily fluctuation would not be perceptible to the average motorist; and (3) although construction-related vehicle trips would increase traffic volumes on local, two-lane roadways in the project area, the increase would not substantially affect traffic flow if the traffic volumes remained within the carrying capacity of the roads (roughly 10,000 to 15,000 vehicles per day for two-lane roads, depending on design features).

Construction activities associated with the subsurface slant wells and MPWSP Desalination Plant would occur 24 hours a day, 7 days a week, as would construction activities during 8 weeks of development and completion of the proposed ASR-5 and ASR-6 Wells. To the extent feasible, pipeline installation and construction of all other proposed facilities would be conducted during daytime hours. However, some construction might be performed at night to expedite construction and meet the project schedule. The following describes typical construction methods to be used for proposed project components:

- Construction of non-linear facilities (e.g., the MPWSP Desalination Plant, Carmel Valley Pump Station, the proposed ASR injection/extraction wells) would typically involve site preparation, grading and excavation, equipment and materials deliveries, concrete formwork, building construction, installation of support equipment, installation of security fencing, and revegetation. Earthmoving activities would be performed using heavy construction equipment such as bulldozers, backhoes, cranes, and graders. Construction workers would pour concrete footings for tanks, lay pipelines, and make pipeline connections.
- Most pipelines would be installed using conventional open-trench construction techniques. However, trenchless technologies would be used where open-cut trenching is not feasible or desirable (e.g., state highway crossings, stream and drainage crossings, and areas with high utility congestion). It is anticipated that trenchless technologies would be used in at least seven locations (see Section 3.3.5.2 in Chapter 3, Project Description).
- Upon the completion of construction activities, roadways (and all other areas) disturbed during pipeline installation would be restored to their preconstruction condition.

Construction activities would generate daily vehicle trips by construction work crews commuting to and from work each day; trucks hauling equipment and materials to the construction work areas; and trucks hauling excavated spoils and construction debris offsite for disposal. The number of construction-related trips would vary during the 24 months of project construction depending on the construction phase, the facilities being constructed, and the nature of the construction activities taking place. The impact analysis presented below is based on the estimated maximum number of daily and hourly vehicle trips that would be generated during periods of peak construction activity, based on a worst-case scenario that assumes all project components would be constructed simultaneously. Due to the construction durations associated with individual project components, the duration of overlap between components would be limited, and the actual traffic volumes generated during project construction are likely to be lower than described below.

The average pace of work for pipeline installation would be 150 to 250 feet per day. It is estimated that project construction activities would generate an estimated 25,110 cubic yards of

excavated spoils and construction materials that would be hauled to the Monterey Materials Recovery Facility to be recycled or the Monterey Peninsula Landfill for disposal. The average capacity for haul trucks would be 10 cubic yards per truck. Vehicle trips associated with spoils hauling and placement would occur throughout the 24-month construction duration. However, as noted below, not all of the proposed facilities are anticipated to generate excess spoils and construction debris that would be hauled offsite.

Construction equipment and materials associated with the subsurface slant wells, MPWSP Desalination Plant, and ASR injection/extraction wells would be stored within the respective construction work areas or at designated staging areas (see **Table 3-4** in Chapter 3, Project Description). Construction equipment and materials associated with pipeline installation would be stored along the pipeline easements and at nearby designated staging areas. To the extent feasible, parking for construction and worker vehicles would be accommodated within the construction work areas and on adjacent roadways.

The discussion of construction-related impacts relies on the following: estimates of construction worker vehicle trips and construction truck trips associated with each project component, and assumptions related to potential overlap of individual facility construction. As described in Chapter 3, Project Description, Section 3.3.10, all project components would be constructed over the 24-month project construction period, with multiple facilities being constructed concurrently. The final construction schedule and phasing could vary from that presented in this assessment. However, the construction scenarios described in this section (estimated vehicle trips for the construction of each project component and the combined impacts associated with concurrent construction of multiple components) are conservative and have been developed to allow for a reasonable assessment of the nature and magnitude of potential construction impacts.

4.9.5 Direct and Indirect Effects of the Proposed Project

Table 4.9-3 summarizes the proposed project's impacts and significance determinations related to traffic and transportation.

TABLE 4.9-3
SUMMARY OF IMPACTS – TRAFFIC AND TRANSPORTATION

Impacts	Significance Determinations
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.	LSM
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.	LSM
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	LSM
Impact 4.9-4: Impaired emergency access during construction.	LSM
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.	LSM
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.	LSM
Impact 4.9-7: Parking interference during construction.	LSM

TABLE 4.9-3 (Continued)
SUMMARY OF IMPACTS – TRAFFIC AND TRANSPORTATION

Impacts	Significance Determinations
Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance.	LS
Impact 4.9-C: Cumulative impacts related to traffic and transportation.	SU

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable, even with implementation of feasible mitigation

4.9.5.1 Construction Impacts

Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips. (*Less than Significant with Mitigation*)

Construction-related vehicle traffic could result in increased congestion and delays for vehicles, which could cause temporary conflicts with local jurisdictions' measures of effectiveness for the performance of the circulation system. Because multiple project components would be constructed simultaneously, and the construction traffic for many of the components would use the same roads, the total number of construction-related vehicle trips along common construction access routes could be higher than the maximum number of daily vehicle trips associated with a single project component. Thus, the analysis below considers the estimated maximum number of daily construction-related vehicle trips and the construction access routes for each project component, the potential for the timing of construction of the various project components to overlap, and the total combined number of additional vehicle trips along the common access routes resulting from all concurrent construction activities. Project components that would increase traffic along common roads or road segments are grouped by area, and the effects of the combined construction-related traffic increases are compared to existing traffic volumes and road carrying capacities. Note that because total trips would be dispersed over various roads and road segments (based on the origins and/or destinations of those trips), the total trips generated by project components in a given area do not necessarily represent the total increase in vehicle trips on any single common road or road segment.

Construction-related traffic occurring on access roadways in the "peak" direction on weekdays from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. would coincide with peak-period commuter traffic and therefore would have the greatest potential to impede traffic flow. Traffic volume increases caused by project construction would be most noticeable on local, two-lane roads (and, conversely, would be less noticeable on regional, multi-lane roads like Highway 1 and major arterials like Del Monte Boulevard). Project-generated truck trips would be dispersed throughout the day, thus lessening the effect on peak-hour traffic. Drivers could experience delays if they were traveling behind a construction truck. This analysis conservatively assumes that construction workers would commute to and from the worksites during the morning and afternoon peak traffic hours.

Table 4.9-4 presents the estimated number of daily construction worker trips and truck trips generated by construction activities for each project component. The total trips for each area reflect the maximum increase in traffic during periods of peak construction activities; peak construction periods are limited to the maximum duration of overlap among project components (i.e., the duration of the facility with the shortest construction duration in each area).

TABLE 4.9-4
ESTIMATED MAXIMUM DAILY VEHICLE TRIPS DURING PROJECT CONSTRUCTION

Project Facility	Duration (months)	Maximum Daily Totals		Daily Vehicle Trips			
				Workers[a]		Trucks	
		Workers	Trucks	Round-trip	One-Way	Round-trip	One-Way
North of Reservation Road (maximum duration of peak construction activities = 4 month)							
Subsurface Slant Wells[b]	15	30	20	33	66	20	40
MPWSP Desalination Plant	24	88	55	97	194	55	110
Source Water Pipeline	6	25	12	28	56	12	24
Brine Discharge Pipeline and Brine Mixing Box	9	12	6	14	28	6	12
Castroville Pipeline	4	12	6	14	28	6	12
New Desalinated Water Pipeline	8	25	12	28	56	12	24
TOTAL TRIPS[c] =		192	111	214	428	111	222
Marina/Seaside Area (maximum duration of peak construction activities = 5 months)							
New Transmission Main	8	25	12	28	56	12	24
ASR Pipelines (ASR Conveyance, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline)	5	25	12	28	56	12	24
ASR Injection/Extraction Wells	12	25	12	28	56	12	24
TOTAL TRIPS[c] =		75	36	84	168	36	72
Monterey Area (maximum duration of peak construction activities = 3 months)							
Ryan Ranch–Bishop Interconnection Improvements	4	12	6	14	28	6	12
Main System–Hidden Hills Interconnection Improvements	3	12	6	14	28	6	12
TOTAL TRIPS[c] =		24	12	28	56	12	24
Carmel Valley Area							
Carmel Valley Pump Station	6	12	6	14	28	6	12

NOTES:

[a] Worker round-trips are increased by 10 percent to account for miscellaneous midday trips by some of the workers.

[b] Accounts for the nine permanent subsurface slant wells that would be constructed *after* construction of the test slant well and completion of the pilot program.

[c] Because total trips would be dispersed over various roads and road segments (based on the origins and/or destinations of those trips), the total trips generated by project components in a given area do not necessarily represent the total increase in vehicle trips on a single common road or road segment.

SOURCE: ESA, 2016.

Project Components North of Reservation Road

Assumptions about the construction duration, timing, and work hours for the components below are described in Section 3.3.9, Construction Schedule.

Subsurface Slant Wells. Construction access for the subsurface slant wells in the coastal area of northern Marina would use Highway 1, Del Monte Boulevard, Lapis Road, Reservation Road, and the existing CEMEX access road located off Lapis Road. As shown in **Table 4.9-4**, up to 30 workers would be needed to construct the intake facilities located in the coastal area. Construction workers would generate up to 33 round-trips (66 one-way trips) per day (60 commute trips and six midday trips). Materials and equipment deliveries would generate an estimated 20 truck round-trips (40 one-way trips) per day. There would be no truck trips related to the offsite disposal of excess spoils because excavated sand would be spread onsite.

MPWSP Desalination Plant. Construction vehicles would most likely use Highway 1, Del Monte Boulevard, Reservation Road, and Charles Benson Road to access the MPWSP Desalination Plant site. As shown in **Table 4.9-4**, up to 88 workers would be needed to construct the MPWSP Desalination Plant. Construction workers would generate up to 97 round-trips (194 one-way trips) per day (176 commute trips and 18 midday trips). Materials and equipment deliveries would generate an estimated 55 truck round-trips (110 one-way trips) per day. There would be no truck trips related to the offsite disposal of excess spoils because excavated soils not used for backfill would be spread or reused onsite.

Source Water Pipeline. Construction-related traffic would access the work areas for the 2.2-mile Source Water Pipeline using Highway 1, Del Monte Boulevard, Reservation Road, and Charles Benson Road. As shown in **Table 4.9-4**, construction of the Source Water Pipeline is estimated to require up to 25 workers. Construction workers would generate up to 28 round-trips (56 one-way trips) per day (50 commute trips and six midday trips). This project component would generate an estimated 12 truck round-trips (24 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

Brine Discharge Pipeline and Brine Mixing Box. Construction traffic for the 2.3-mile Brine Discharge Pipeline and Brine Mixing Box and appurtenances would access the pipeline alignment and MRWPCA property using Highway 1, Del Monte Boulevard, Reservation Road, and Charles Benson Road. As shown in **Table 4.9-4**, construction of the pipeline and Brine Mixing Box would require up to 12 workers. Construction workers would generate up to 14 round-trips (28 one-way trips) per day (24 commute trips and four midday trips). This project component would generate an estimated six truck round-trips (12 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

Castroville Pipeline. Construction traffic for the 4.5-mile-long Castroville Pipeline would access the pipeline alignment using Highway 1, Highway 156, Highway 183 (Merritt Street/Castroville Road), Monte Road, and Charles Benson Road. As shown in **Table 4.9-4**, construction of this project component would require up to 12 workers. Construction workers would generate up to 14 round-trips (28 one-way trips) per day (24 commute trips and four midday trips). This project

component would generate an estimated six truck round-trips (12 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

New Desalinated Water Pipeline. Construction traffic for the 3.3-mile new Desalinated Water Pipeline would access the pipeline alignment using Highway 1, Del Monte Boulevard, Lapis Road, Reservation Road, Beach Road, and Charles Benson Road. As shown in **Table 4.9-4**, installation of this pipeline would require up to 25 workers. Construction workers would generate up to 28 round-trips (56 one-way trips) per day (50 commute trips and six midday trips). This project component would generate an estimated 12 truck round-trips (24 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

Combined Construction-Related Traffic Increases in North Marina Area

Based on assumptions developed by a professional traffic engineer regarding the origins and destinations of trips by construction workers and haul trucks, and the dispersal of construction traffic on area roadways, the estimated maximum increases in vehicle trips during peak construction periods on common regional roads and road segments are as follows:

- ***Highway 1 (north of Reservation Road):*** Traffic generated by concurrent construction of project components with trip origins and destinations in the Highway 1 and Highway 101 corridors north of Reservation Road would use this road. The total combined vehicle trips associated with the project components in this area (i.e., about 214 one-way worker vehicle trips per day, and about 112 one-way truck trips per day) represent an increase of up to about 0.8 percent above the current daily traffic volume (42,000 to 47,000 vehicles) on this road (Caltrans, 2015).
- ***Highway 1 (south of Reservation Road):*** Traffic generated by concurrent construction of project components with trip origins and destinations in the Highway 1 corridor south of Reservation Road would use this road. The total combined vehicle trips associated with the project components in this area (i.e., about 108 one-way worker vehicle trips per day, and 56 one-way truck trips per day) represent an increase of up to about 0.3 percent above the current daily traffic volume (50,000 to 83,000 vehicles) on this road (Caltrans, 2015).
- ***Reservation Road:*** Traffic generated by concurrent construction of project components with trip origins and destinations in the Highway 101 corridor southeast of the project area would use this road. The total combined vehicle trips associated with the project components in this area (i.e., about 108 one-way worker vehicle trips per day, and 56 one-way truck trips per day) represent a 0.6 to 2.8 percent increase above the current daily traffic volume on this road, which ranges from about 5,900 to 27,500 vehicles per day (TAMC, 2015).

Truck trips generated by concurrent construction activities would be dispersed throughout the day and over the area road network. The maximum increases in traffic resulting from concurrent construction of project components during peak periods of construction would fall within the daily fluctuations of traffic volumes and would not be noticeable to the average motorist on Highway 1 or on the higher-volume segments of Reservation Road. While the increased traffic would be noticeable by drivers on the lower-volume segments of Reservation Road, the traffic volumes would continue to be within the carrying capacity of this two-lane road (which is about

10,000 to 15,000 vehicles per day). Therefore, the impact would be less than significant for the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Castroville Pipeline, and new Desalinated Water Pipeline.

Project Components in Marina/Seaside Area

Assumptions about the construction duration, timing, and work hours for the components below are described in Section 3.3.9, Construction Schedule.

New Transmission Main. Depending on the location of each day's worksite, construction traffic for the 6-mile-long Transmission Main would access the pipeline alignment using different roads (e.g., Highway 1, Del Monte Boulevard, Reservation Road, Lightfighter Drive, 2nd Avenue, General Jim Moore Boulevard, Gigling Road, and 8th Street). As shown in **Table 4.9-4**, installation of this pipeline would require up to 25 workers. Construction workers would generate up to 28 round-trips (56 one-way trips) per day (50 commute trips and six midday trips). It is estimated that about 12 truck round-trips (24 one-way trips) per day (spread over the 9-hour workday) would be generated by materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline. Depending on the location of each day's construction work area, construction traffic for the three parallel 0.8-mile-long ASR pipelines (ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline) would access the work areas using Highway 1, Lightfighter Drive, Fremont Boulevard, Highway 68, Highway 218, and General Jim Moore Boulevard. As shown in **Table 4.9-4**, installation of these pipelines would require up to 25 workers. Construction workers would generate up to 28 round-trips (56 one-way trips) per day (50 commute trips and six midday trips). It is estimated that about 12 truck round-trips (24 one-way trips) per day (spread over the 9-hour workday) would be generated by materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells). Construction traffic for the proposed ASR injection/extraction wells would use Highway 1, Lightfighter Drive, Fremont Boulevard, Highway 68, Highway 218, and General Jim Moore Boulevard. As shown in **Table 4.9-4**, construction of the ASR injection/extraction wells would require up to 25 workers. Construction workers would generate up to 28 round-trips (56 one-way trips) per day (50 commute trips and six midday trips). Materials and equipment deliveries would generate an estimated 12 truck round-trips (24 one-way trips) per day. There would be no truck trips related to the offsite disposal of excess spoils because excavated soils not used for backfill would be spread or reused onsite.

Combined Construction-Related Traffic Increases in Marina/Seaside Area

Based on assumptions developed by a professional traffic engineer regarding the origins and destinations of trips by construction workers and haul trucks, and the dispersal of construction

traffic on area roadways, the estimated maximum increases in vehicle trips during peak construction periods on common regional roads and road segments are as follows:

- ***Highway 1 (north of Fremont Boulevard / Del Monte Boulevard):*** Traffic generated by concurrent construction of project components in the Seaside area with trip origins and destinations in the Highway 1 and Highway 101 corridors north of Fremont Boulevard / Del Monte Boulevard would use this road segment. The vehicle trips associated with the project components in this area (i.e., about 84 one-way worker vehicle trips per day, and 36 one-way truck trips per day) represent an increase of up to about 0.2 percent above the current daily traffic volume (58,000 to 83,000 vehicles) on this road segment (Caltrans, 2015).
- ***Highway 1 (south of Fremont Boulevard / Del Monte Boulevard)*:** Traffic generated by concurrent construction of project components in the Seaside area with trip origins and destinations in the Highway 1 corridor south of Fremont Boulevard / Del Monte Boulevard would use this road segment. The vehicle trips associated with the project components in this area (i.e., about 42 one-way worker vehicle trips per day, and 30 one-way truck trips per day) represent an increase of up to about 0.2 percent above the current daily traffic volume (50,000 to 77,000 vehicles) on this road segment (Caltrans, 2015).
- ***Other Common Roadways, including Highways 68 and 218*:** The combined vehicle trips on other common roadways associated with the project components in the Seaside area (i.e., up to about 42 one-way worker vehicle trips per day, and 30 one-way truck trips per day) represent an increase of up to about 0.3 percent above the current daily traffic volume (21,800 to 29,000 vehicles) on Highway 68 (Caltrans, 2015), up to about 0.6 percent above the current daily traffic volumes (12,200 to 23,000 vehicles) on Highway 218 (Caltrans, 2015), and from 0.5 to 1.2 percent above the current daily volumes on non-state roadways, which range from about 5,900 to 15,570 vehicles per day (TAMC, 2015).

Truck trips generated by concurrent construction activities would be dispersed throughout the day and over the area road network. Although the combined traffic increases resulting from concurrent construction activities would fall within the daily fluctuations of traffic volumes for the highway and arterial roadways in the area and would not be noticeable to the average motorist, these traffic increases along lower-volume local and neighborhood (residential) streets in the Marina/Seaside area are considered to potentially result in substantial adverse effects. Therefore, the effect of construction-related traffic on traffic congestion is considered a potentially significant impact for the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, and ASR-5 and ASR-6 Wells. However, with implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, the impact would be reduced to a less-than-significant level. The mitigation measure includes provisions for reducing construction-related traffic and traffic congestion impacts on local streets.

Project Components in Monterey Area

Assumptions about the construction duration, timing, and work hours for the components below are described in Section 3.3.9, Construction Schedule.

Ryan Ranch–Bishop Interconnection Improvements. Construction traffic for the Ryan Ranch–Bishop Interconnection Improvements would most likely use Highway 68, Ragsdale Drive, Lower Ragsdale Drive, and York Road to access the construction work area. As shown in **Table 4.9-4**, construction of this project component would require up to 12 workers. Construction workers would generate up to 14 round-trips (28 one-way trips) per day (24 commute trips and four midday trips). This project component would generate an estimated six truck round-trips (12 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

Main System–Hidden Hills Interconnection Improvements. Construction traffic for the Main System–Hidden Hills Interconnection Improvements would use Highway 1, Carmel Valley Road, and Tierra Grande Drive to access the construction work areas. As shown in **Table 4.9-4**, construction of this project component would require up to 12 workers. Construction workers would generate up to 14 round-trips (28 one-way trips) per day (24 commute trips and four midday trips). This project component would generate an estimated six truck round-trips (12 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite.

Combined Construction-Related Traffic Increases in Monterey Area

Based on assumptions developed by a professional traffic engineer regarding the origins and destinations of trips by construction workers and haul trucks, and the dispersal of construction traffic on area roadways, the estimated maximum increases in vehicle trips during peak construction periods on common regional roads and road segments are as follows:

- ***Highway 1 (north of Highway 68)*:** Traffic generated by concurrent construction of project components with trip origins and destinations north of the project area would use this road. The vehicle trips associated with the project components in this area (i.e., about 28 one-way worker vehicle trips and 12 one-way truck trips per day) represent an increase of up to about 0.1 percent above the current daily traffic volume (58,000 to 83,000 vehicles) along this segment of Highway 1 (Caltrans, 2015).
- ***Highway 1 (south of Highway 68)*:** Traffic generated by concurrent construction of project components with trip origins and destinations south of the project area would use this road. The vehicle trips associated with the project components in this area (i.e., about 14 one-way worker vehicle trips per day, and 6 one-way truck trips per day) represent less than a 0.1 percent increase above the current daily traffic volume (50,000 to 77,000 vehicles) along this segment of Highway 1 (Caltrans, 2015).
- ***Highways 68 and 218*:** Traffic generated by concurrent construction of project components with trip origins and destinations east of the project area would use these roads. The vehicle trips associated with the project components in this area (i.e., up to about 14 one-way worker vehicle trips per day, and 6 one-way truck trips per day) represent an increase of up to about 0.1 percent above the current daily traffic volume (21,800 to 29,000 vehicles) on Highway 68, and up to about 0.2 percent above the current daily traffic volumes (12,200 to 23,000 vehicles) on Highway 218 (Caltrans, 2015).

As described above, truck trips generated by concurrent construction would be dispersed throughout the day and over the area road network. The combined traffic increases resulting from

concurrent construction activities would fall within the daily fluctuations of traffic volumes for the regional highways and arterial roadways in the area and would continue to be within the carrying capacities of the two-lane roads (i.e., about 10,000 to 15,000 vehicles per day). The effect of construction-related traffic on traffic congestion would be a potentially significant impact for the Ryan Ranch-Bishop Interconnection Improvements and Main System-Hidden Hills Interconnection Improvements. However, with implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, the impact would be reduced to a less-than-significant level.

Traffic Increases in Carmel Valley Area

Carmel Valley Pump Station. Construction traffic for the Carmel Valley Pump Station would use Highway 1 and Carmel Valley Road to access the construction work area. There are no other facilities proposed in the Carmel Valley area that could contribute additional vehicle trips during project construction. As shown in **Table 4.9-4**, construction of this project component would require up to 12 workers. Construction workers would generate up to 14 round-trips (28 one-way trips) per day (24 commute trips and four midday trips). This project component would generate an estimated six truck round-trips (12 one-way trips) per day for materials and equipment deliveries and hauling of excess spoils and construction debris offsite. The increases in traffic resulting from construction of the Carmel Valley Pump Station would fall within the daily fluctuations of traffic volumes for Carmel Valley Road and this segment of Highway 1, and would not be noticeable to the average motorist. Therefore, this impact would be less than significant for the Carmel Valley Pump Station.

Impact Conclusion

Project-related construction activities would result in a temporary increase in traffic from construction workers and trucks traveling to and from the construction work areas. Although the estimated maximum increase in traffic along regional roadways would remain within the carrying capacities of the regional roadways and would not substantially affect traffic flow, construction-related traffic increases along local and neighborhood (residential) streets could result in adverse traffic conditions. For reasons described above, this impact would be less than significant for all project components located north of Reservation Road and for the Carmel Valley Pump Station. This impact would be potentially significant for the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, ASR-5 and ASR-6 Wells, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements. However, implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)** would reduce this potentially significant impact related to increased traffic to a less-than-significant level.

Consistency with Regulatory Requirements

In addition to the impact described above, as noted in **Table 4.9-2**, project construction could conflict with applicable land use policies and ordinances related to increased traffic congestion. These policies and ordinances include Seaside General Plan Policy C-1.7 and Monterey County

General Plan Policy C-3.4. Implementation of **Measure 4.9-1 (Traffic Control and Safety Assurance Plan)** would require that CalAm or its contractors develop project-specific circulation and detour plans to reduce traffic congestion to the extent feasible. Therefore, with this measure implemented, the MPWSP would be brought into conformance with the above-noted policies and ordinances.

Mitigation Measures

Mitigation Measure 4.9-1 has been developed for the project as a whole (to comply with road encroachment requirements for applicable jurisdictions) and applies to all project components and associated construction activities; however, with respect to construction-related increases in traffic and traffic congestion impacts, only the following project components would require implementation of this measure to reduce impacts to a less-than-significant level: the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, ASR-5 and ASR-6 Wells, Ryan Ranch–Bishop Interconnection Improvements, and Main System–Hidden Hills Interconnection Improvements.

Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.

CalAm and/or the construction contractor(s) shall obtain any necessary road encroachment permits (e.g., from Caltrans and/or the U.S. Army) prior to constructing each project component and shall comply with the conditions of approval attached to all project permits and approvals. As part of the road encroachment permit process, a qualified traffic engineer shall prepare a traffic control and safety assurance plan in accordance with professional engineering standards and submit the plan to the agencies with jurisdiction over the affected roads and recreational trails, as well as to the California Public Utilities Commission, for review and approval. For all project construction activities that could affect the public right-of-way (e.g., roadways, sidewalks, and walkways), the plan shall include measures that would provide for continuity of vehicular, pedestrian, and bicyclist traffic; reduce the potential for traffic accidents; and ensure worker safety in construction zones. Where project construction activities could disrupt mobility and access for bicyclists and pedestrians, the plan shall include measures to ensure safe and convenient access, including recreation and coastal, would be maintained.

The traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project. The plan shall include, but not necessarily be limited to, the elements listed below:

- Develop circulation and detour plans to minimize impacts on local streets. Haul routes that minimize truck traffic on local roadways and residential streets shall be used. As necessary, signage and/or flaggers shall be used to guide vehicles through the construction work areas.
- Control and monitor construction vehicle movements by enforcing standard construction specifications through periodic onsite inspections.
- Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction's standards (e.g., the *California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones*).

- Schedule truck trips outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (i.e., if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications).
- Post detour signs along affected roadways to notify motorists of alternative routes.
- Perform construction that crosses on-street and off-street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic.
- At least two weeks prior to construction, post signage along all potentially affected recreational trails and coastal access points; Class I, II, and II bicycle routes; and pedestrian pathways, including the Monterey Peninsula Recreational Trail, to warn bicyclists and pedestrians of construction activities. The signs shall include information regarding the nature of construction activities, duration, and detour routes. Signage shall be composed of or encased in weatherproof material and posted in conspicuous locations, including on park message boards, and existing wayfinding signage and kiosks, for the duration of the closure period. At the end of the closure period, CalAm or its contractors shall retrieve all notice materials.
- CalAm and its contractors shall schedule construction activities to minimize impacts during heavy recreational use periods (e.g., weekends and holidays).
- Implement a public information program to notify motorists, bicyclists, nearby residents, and adjacent businesses of the impending construction activities (e.g., media coverage, email notices, websites, etc.). Notices of the location(s) and timing of road closures shall be published in local newspapers and on available websites to allow motorists to select alternative routes. This provision shall be implemented in conjunction with **Mitigation Measure 4.12-1a (Neighborhood Notice)**.
- Consult with non-jurisdictional parties (e.g., CEMEX), as appropriate, regarding strategies for reducing increased traffic on roads that would provide access to construction work areas.
- Store all equipment and materials in designated contractor staging areas.
- Maintain alternate one-way traffic flow past the construction zone where possible.
- Install detour signs to direct traffic to alternative routes around the closed road segment if alternate one-way traffic flow cannot be maintained past the construction zone.
- Limit lane closures during peak hours.
- Restore roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress.
- Comply with roadside safety protocols to reduce the risk of accidents. Provide “Road Work Ahead” warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. Train construction personnel to apply appropriate safety measures as described in the traffic control and safety assurance plan.
- Maintain access for emergency vehicles at all times. Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit

stations, hospitals, and schools. Provide advance notification to local police, fire, and emergency service providers of the timing, location, and duration of construction activities that could affect the movement of emergency vehicles on area roadways.

- Develop a school traffic and pedestrian safety plan to minimize adverse impacts associated with truck trips and lane closures (e.g., in the vicinity of the Marshall Elementary School east of the General Jim Moore Boulevard / Normandy Road intersection).
- Avoid truck trips through designated school zones during the school drop-off and pickup hours to the extent feasible.
- Provide flaggers in school areas at street crossings to manage traffic flow and maintain traffic safety during the school drop-off and pickup hours on days when pipeline installation would occur in designated school zones.
- Coordinate with Monterey-Salinas Transit so the transit provider can temporarily relocate bus stops in work zones as deemed necessary.

Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction. (*Less than Significant with Mitigation*)

Whereas Impact 4.9-1 addresses increased vehicle traffic, this impact relates to construction activities occurring within vehicle travel lanes and road shoulders that could require temporary lane closures and/or detours. These lane closures and detours would temporarily reduce roadway capacities and result in increased traffic delays during project construction, which could cause temporary conflicts with local jurisdictions' measures of effectiveness for the performance of the circulation system.

All Proposed Pipelines

The proposed project would include installation of approximately 21 miles of new pipelines. **Table 4.9-1**, above, presents the roads that would be directly affected by project construction activities (i.e., construction would occur within or adjacent to, or across, the road rights-of-way).

Pipeline installation would generally be accomplished using conventional open-trench methods; however, where it is not feasible to perform open-cut trenching—such as state highway crossings, stream and drainage crossings, and areas of high utility congestion—trenchless technologies (e.g., jack-and-bore or horizontal directional drilling) would be used. At a minimum, trenchless methods of pipeline installation would be necessary at seven locations:

1. Installation of the Source Water Pipeline beneath the TAMC right-of-way at Lapis Road, just north of the CEMEX access Road;
2. Installation of the new Desalinated Water Pipeline beneath the TAMC right-of-way near the southern intersection of Lapis Road/Del Monte Boulevard;
3. Installation of the new Transmission Main beneath the TAMC right-of-way near Marine Drive/Del Monte Boulevard/Reindollar Avenue;

4. Installation of the new Transmission Main Optional Alignment at Highway 1 and Lightfighter Drive;
5. Installation of the Castroville Pipeline under the Salinas River; and
6. Installation of the Castroville Pipeline under Trembladero Slough.

Trenchless technologies would not reduce the number or available width of travel lanes because pits used for bore-and-jack and directional drilling would be located out of public roadways. The use of trenchless construction methods beneath Highway 1 and Highway 68 would avoid traffic flow disruptions. Each roadway crossing presents unique conditions, and construction methods at other roadway crossings would vary depending on such factors as the available construction area, possible utility interference, and the contractor's preferred method of construction.

The average open-trench width and depth for pipeline installation would be 6 feet and 8 feet, respectively. Pipeline installation would progress at a rate of approximately 150 to 250 feet per day. The active work area along open trenches would be wider than the trenches themselves to accommodate access by trucks and loaders. Staging areas are proposed at strategic locations throughout the project area (see Table 3-4 in Chapter 3, Project Description).

Depending on the final pipeline alignments, where construction would occur in vehicle travel lanes or the adjacent road shoulder, and the width of roads, temporary lane closures and/or detours could be needed to accommodate the construction zone. Some roadway segments would have sufficient pavement width outside of the construction zone to accommodate two-way traffic flow, but other roadways would not, and alternate one-way traffic flow would be maintained on pavement as narrow as 10 feet.

Where feasible and appropriate, construction contractors would install pipelines so as to avoid construction within vehicle travel lanes and to minimize impacts on roadway capacity and function. Detailed information regarding the final pipeline alignments (i.e., whether the pipelines would require construction in road rights-of-way) and associated construction activities would be developed during final project design. This analysis conservatively assumes that all pipelines could require construction within or adjacent to vehicle travel lanes and could require temporary lane closures and/or detours. Impacts on roadway capacities and traffic flow related to pipeline installation are considered to be potentially significant for all proposed pipelines. However, with implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, which includes measures to minimize the adverse effects of roadway construction and detours, these impacts would be reduced to a less-than-significant level.

All Other Proposed Facilities

Installation of non-linear facilities (e.g., subsurface slant wells, MPWSP Desalination Plant, Brine Mixing Box, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station) would not involve construction within road rights-of-way and would not result in temporary lane closures or detours. Therefore, the impact would be less than significant.

Impact Conclusion

Traffic delays resulting from temporary lane closures and detours would be a potentially significant impact for all of the proposed pipelines, but implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)** would reduce the impact to a less-than-significant level. For all other proposed facilities, the impact would be less than significant because none of the non-linear facilities would require temporary lane closures or detours.

Mitigation Measures

Mitigation Measure 4.9-1 has been developed for the project as a whole (to comply with road encroachment requirements for applicable jurisdictions) and applies to all project components and associated construction activities; however, with respect to reduced road capacity resulting from temporary lane closures and detours during project construction, only construction of the proposed pipelines would require implementation of this measure to reduce impacts to a less-than-significant level.

Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.

(See Impact 4.9-1, above, for description.)

Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and area trails, sidewalks and other pathways, during construction. (*Less than Significant with Mitigation*)

All Proposed Project Facilities

Construction vehicles traveling to and from the project area, including trucks delivering equipment and supplies to the construction work areas and trucks hauling excavated materials offsite for disposal, would share the area roadways with other vehicles. Also, pipeline construction would take place within or adjacent to the road for a length of approximately 21 miles. The greatest number of daily construction-related truck trips would occur along Highway 1 and Del Monte Boulevard. During project construction, bicyclists and pedestrians could be required to enter the adjacent road shoulder or use other temporary detours to circumvent construction work areas.

Project construction activities could increase traffic safety hazards in the project area due to:

- Conflicts between haul trucks and other large construction vehicles (with slower speeds and wider turning radii than automobiles) and automobiles, bicyclists, and pedestrians using the roadways;
- Conflicts related to the movement of traffic on travel lanes adjacent to construction work areas, particularly at entry and egress points where construction-related vehicles would access public roadways; and
- Confusion on the part of bicyclists and pedestrians due to temporary changes in bicycle and pedestrian circulation along the Monterey Peninsula Recreational Trail, designated bicycle routes, and sidewalks and other public pathways.

Potential increases in traffic safety hazards during project construction would be a potentially significant impact. However, implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)** would reduce this potential impact to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.9-1 applies to all proposed project facilities and associated construction activities.

> **Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.**
>
> (See Impact 4.9-1, above, for description.)

Impact 4.9-4: Impaired emergency access during construction. (*Less than Significant with Mitigation*)

All Proposed Pipelines

As discussed above for Impact 4.9-2, pipeline installation activities (including the Brine Mixing Box) could require construction within vehicle travel lanes and road shoulders. Temporary reductions in travel lanes and roadway capacity to accommodate the construction work areas could result in delays for emergency vehicles. Trenching and paving along roadways during pipeline installation could also disrupt emergency vehicle access to adjacent land uses. This impact is potentially significant. However, implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, which contains provisions to maintain access during construction, would reduce the impact to a less-than-significant level.

All Other Proposed Facilities

Construction activities and staging areas for the subsurface slant wells, MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station are not expected to require construction in roadways or road shoulders. As such, construction of these facilities would not obstruct access for emergency vehicles in the vicinity of the construction work areas. Therefore, impacts related to disrupted access to adjacent land uses for emergency vehicles would be less than significant.

Mitigation Measures

Mitigation Measure 4.9-1 has been developed for the project as a whole (to comply with road encroachment requirements for applicable jurisdictions). However, with respect to disruptions to emergency access, only construction of the proposed pipelines would require implementation of this measure to reduce impacts to a less-than-significant level.

> **Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.**
>
> (See Impact 4.9-1, above, for description.)

Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction. (*Less than Significant with Mitigation*)

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

Construction activities for the Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would occur on or adjacent to private roads and would not impede vehicular, bicycle, or pedestrian traffic flow or disrupt public transportation. As such, there would be no impacts on public transportation and bicycle and pedestrian facilities from construction of these facilities.

All Other Proposed Pipelines

Pipeline installation activities could temporarily affect public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails in the project area. About 21 miles of pipelines would be installed, with 6 of those miles located within or adjacent to the Monterey Peninsula Recreational Trail.

Construction activities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, could disrupt established bicycle and pedestrian facilities located along the pipeline alignments. The proposed Source Water Pipeline alignment crosses the Monterey Peninsula Recreational Trail at the intersection of Del Monte Boulevard and Charles Benson Road. The new Desalinated Water Pipeline would be installed on the west side of Del Monte Boulevard, alongside the Monterey Peninsula Recreational Trail and the TAMC right-of-way between Charles Benson Road and Reservation Road. Roughly 3 miles of the new Transmission Main would be constructed along the TAMC right-of-way and the Monterey Peninsula Recreational Trail. This segment of the new Transmission Main would also border the eastern boundary of Fort Ord Dunes State Park. The Monterey Peninsula Recreational Trail serves as a primary bicycle and pedestrian access route into the Fort Ord Dunes State Park from Marina, Sand City, and Seaside. The Ryan Ranch-Bishop Interconnection Improvements would be installed along Ragsdale Drive, Lower Ragsdale Drive, and Wilson Road, all of which have designated Class II bikeways.

Construction activities within or adjacent to vehicle travel lanes could disrupt access to bus stops operated by MST, require that bus stops be temporarily relocated, and/or conflict with bicycle traffic along roads with designated bike lanes. Pipeline installation activities along the Monterey Peninsula Recreational Trail could conflict with bicycle and pedestrian traffic. Construction-related impacts on alternative transportation modes and facilities during pipeline installation activities would be potentially significant. However, implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, which includes measures that would minimize impacts on public transportation and provide for continuity of pedestrian and bicyclist traffic during construction, would reduce the impact to a less-than-significant level.

All Other Proposed Facilities

Construction activities for the subsurface slant wells, MPWSP Desalination Plant, ASR injection/extraction wells, and Carmel Valley Pump Station would occur in off-road areas and would not impede vehicular, bicycle, or pedestrian traffic flow or disrupt public transportation.

As such, there would be no impacts on public transportation and bicycle and pedestrian facilities from construction of these facilities.

Consistency with Regulatory Requirements

In addition to the impact described above, as noted in **Table 4.9-2**, project construction could conflict with applicable land use plans, policies, and/or ordinances related to alternative modes of transportation (e.g., public transit, bicycle, pedestrian). These include City of Monterey Del Monte Beach Land Use Plan Policy 13 and Monterey Harbor Land Use Plan Policy 3.K. Implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)** includes several provisions for addressing the potential adverse effects on these resources and facilities during project construction. With this measure implemented, the MPWSP would be consistent with the above-noted policy and ordinances.

Mitigation Measures

Mitigation Measure 4.9-1 has been developed for the project as a whole (to comply with road encroachment requirements for applicable jurisdictions). However, with respect to disruptions to public transportation and bicycle/pedestrian facilities, only construction of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and Castroville Pipeline would require implementation of this measure to reduce impacts to a less-than-significant level.

> **Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.**
>
> (See Impact 4.9-1, above, for description.)

Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles. ***(Less than Significant with Mitigation)***

All Project Components

The use of trucks to transport equipment and material to and from the construction work areas could affect road conditions on the designated haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the road. Freeways and major arterials (e.g., Highways 1, 68, 101, 156, 183, and 218, Del Monte Boulevard, and Fremont Boulevard / Fremont Street) are designed to handle a mix of vehicle types, including heavy trucks; therefore, the impacts of project-related construction traffic are expected to be negligible on those roads. However, some of the smaller roadways and residential streets may not have been constructed to support use by heavy construction trucks and vehicles, and project-related increases in construction truck trips could cause excessive wear-and-tear on these roadways, a potentially significant impact. However, implementation of **Mitigation Measure 4.9-6 (Roadway Rehabilitation Program)**, which requires rehabilitation of any roadways damaged following construction, would reduce this impact to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.9-6 applies to all proposed facilities and associated construction activities.

Mitigation Measure 4.9-6: Roadway Rehabilitation Program.

Prior to commencing project construction, CalAm and the affected jurisdiction(s) shall enter into an agreement detailing the preconstruction condition of all major project-related construction access and haul routes, in addition to any appropriate post-construction roadway rehabilitation requirements (e.g., who would make the roadway repair, and by when). Temporary detour routes may also be included in the inventory of preconstruction road conditions, if appropriate. The construction routes identified in the rehabilitation program must be consistent with those identified in the construction traffic control and safety assurance plan developed under Mitigation Measure 4.9-1. Roads damaged by project-related construction vehicles shall be repaired to a structural condition equal to that which existed prior to construction activities. CalAm shall be responsible for paying for all repairs needed to fix the damage caused by project-related construction vehicles.

Impact 4.9-7: Parking interference during construction. (*Less than Significant with Mitigation*)

Assuming construction workers would drive to construction work areas alone in their own vehicles (i.e., they would not carpool), project-related construction activities would increase parking demand at certain locations in the project area. Worker parking demand would vary among the individual project components and would also depend on the construction phase and the nature of construction activities taking place. In addition, depending on the final pipeline alignments and the width of the vehicle travel lanes or adjacent road shoulders where construction would occur, construction activities could displace parking spots and adversely affect parking conditions. **Table 4.9-1** shows roadways that could be directly affected by project construction activities and indicates whether these roads have on-street parking spaces. Where feasible and appropriate, construction contractors would install pipelines so as to avoid construction within vehicle travel lanes and minimize parking displacement. Detailed information regarding pipeline alignments (i.e., whether the pipelines would require construction in road rights-of-way) and associated construction activities would be developed during project design. This analysis assumes that pipeline installation activities could require construction within or adjacent to vehicle travel lanes and could require temporary displacement of parking spaces.

All Proposed Pipelines

Installation of the proposed pipelines in unincorporated Monterey County and in the cities of Marina and Seaside, could temporarily displace parking spaces along the affected roadways that have on-street parking. However, field observations show that, in general, the roadways along these other pipeline alignments have less-than-substantial demand for the available on-street parking spaces, and/or alternative parking spaces are present nearby. Therefore, impacts associated with temporary displacement of on-street parking during installation of these other pipelines would be less than significant, and no mitigation is necessary.

Subsurface Slant Wells

Construction of subsurface slant wells and support facilities would occur entirely within the CEMEX sand mining facility and would have no effect on parking availability in public areas. Further, construction worker parking demand for the subsurface slant wells could be accommodated within the construction work areas and in other previously disturbed areas of the CEMEX sand mining facility. Thus, no impact would result.

MPWSP Desalination Plant

Construction worker parking demand for the MPWSP Desalination Plant could easily be accommodated within the 46-acre parcel, which is currently vacant. Construction activities at the MPWSP Desalination Plant site would have no effect on parking availability in public areas. Thus, no impact would result.

ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline and ASR Recirculation Pipeline

Construction of the ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline could increase parking demand in the vicinity of General Jim Moore Boulevard in the former Fort Ord area. However, field observations show that there is ample on-street parking available in the former Fort Ord area to accommodate this increase. Thus, this impact would be less than significant.

Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements

The Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements are located in low-density areas with ample parking available to accommodate construction worker vehicles. Any on-street parking displaced during installation of proposed improvements in roadways could also be accommodated on adjacent roadways. This impact would be less than significant.

Staging Areas

Many of the proposed staging areas (see Table 3-4 in Chapter 3, Project Description) would occupy portions of parking lots (e.g., a lot that serves Cal State Monterey, and a Walmart parking lot). The temporary displacement of parking spaces would be potentially significant. However, implementation of **Mitigation Measure 4.9-7 (Construction Parking Requirements)** would reduce this impact to a less-than-significant level. **Mitigation Measure 4.9-7** requires that the construction contractor coordinate with the affected jurisdictions (i.e., Cal State Monterey, and the cities of Marina and Seaside) to design the staging areas to avoid or minimize parking impacts in the publicly used parking lots.

Impact Conclusion

Provision of staging areas in publicly used parking lots would result in potentially significant parking impacts due to temporary increases in parking demand associated with construction

worker vehicles and/or temporary displacement of parking spaces in publicly used parking lots for staging areas (off-street). However, implementation of **Mitigation Measure 4.9-7 (Construction Parking Requirements)** would reduce this impact to a less-than-significant level. Construction activities for the subsurface slant wells and MPWSP Desalination Plant would have no effect on parking. Parking displacement impacts resulting from construction of the proposed ASR-5 and ASR-6 Wells, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and all other proposed pipelines would be less than significant.

Mitigation Measures

Mitigation Measure 4.9-7 applies only to staging areas in publicly used parking lots.

> **Mitigation Measure 4.9-7: Construction Parking Requirements.**
>
> Prior to commencing project construction, the construction contractor(s) shall coordinate with the affected jurisdictions (i.e., Monterey County, Cal State Monterey, and the cities of Marina and Seaside), and affected parties (i.e., the Walmart Superstore at 150 Beach Road), to design the staging areas to avoid or minimize parking impacts in the publicly used parking lots.

4.9.5.2 Operational and Facility Siting Impacts

Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance. (*Less than Significant*)

Operation- and maintenance-related vehicle traffic could result in increased congestion and delays for vehicles, which could cause conflicts with local jurisdictions' measures of effectiveness for the performance of the circulation system.

MPWSP Desalination Plant

The MPWSP Desalination Plant would be operated 24 hours per day, 365 days per year, and is estimated to require approximately 25 to 30 full-time workers (facility operators and support personnel) to operate, monitor, and maintain the desalination facilities. There would be up to 10 workers for each of the following three shifts: 9:00 a.m. to 5:00 p.m., 4:00 p.m. to 1:00 a.m., and 12:00 a.m. to 9:00 a.m., and based on that assumption, approximately 66 one-way trips (33 round trips) would occur throughout each day (30 commute trips and 3 midday trips) during long-term operations and maintenance of the MPWSP Desalination Plant.

The greatest long-term increase in vehicle trips from MPWSP Desalination Plant operations would occur on Charles Benson Road, and based on existing traffic conditions and the industrial nature of the surrounding land uses on Charles Benson Road, the projected increase is well within the roadway carrying capacity of this two-lane road and would not adversely affect traffic conditions. Given that the minimal number of daily vehicle trips associated with worker

commutes and deliveries would be dispersed onto different roads farther removed from Charles Benson Road, long-term operations and maintenance of the MPWSP Desalination Plant would not adversely affect traffic conditions on the overall existing circulation system over the long term. Therefore, the impact would be less than significant.

All Other Proposed Facilities

All other proposed facilities (i.e., the subsurface slant wells, Brine Mixing Box, ASR-5 and ASR-6 Wells, Carmel Valley Pump Station, and all pipelines) would be operated remotely using Supervisory Control and Data Acquisition systems, with periodic visits by CalAm personnel for operations review and maintenance. Maintenance activities include such tasks as landscape maintenance, visual inspections of facilities, performance monitoring, servicing of pumps, testing and servicing of valves, backflushing the ASR-5 and ASR-6 Wells, and minor pipeline repairs. The vehicle trips generated by these routine and periodic site visits would be similar in number to those required for existing CalAm operations in the Monterey District service area and would not constitute a significant increase in new vehicle trips on area roadways. Overall, any increases in traffic generated by facility operations and maintenance would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, the long-term traffic impact for all other proposed facilities would be less than significant.

Impact Conclusion

The impact related to long-term increases in vehicle trips during project operations and maintenance is less than significant for all project facilities.

Mitigation Measures

None proposed.

4.9.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.9-C: Cumulative impacts related to traffic and transportation. (Significant and Unavoidable, even with implementation of feasible mitigation)

The MPWSP would result in no impact with respect to conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards due to a design feature or incompatible uses, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, it could not cause or contribute to any cumulative effects related to these traffic and transportation topics, and these topics are not discussed further.

The geographic scope for the cumulative traffic impact analysis encompasses the local and regional roadways and highways that would be used for project-related construction and operational activities and for access by construction worker and operational employee vehicles. A significant cumulative effect on transportation and traffic could occur if the incremental impacts of the MPWSP combined with those of one or more of the projects listed in **Table 4.1-2** that would use the same transportation network as the MPWSP during the life of the project to substantially and adversely affect the effectiveness of the circulation system or to result in inadequate emergency access.

Cumulative Impacts during Project Construction

As discussed above in Sections 4.9.4 and 4.9.5, the MPWSP's significant impact related to increased congestion from construction traffic would be reduced with the implementation of **Mitigation Measures 4.9-1 (Traffic Control and Safety Assurance Plan)**, **4.9-6 (Roadway Rehabilitation Program)**, and **4.9-7 (Construction Worker Parking Requirements)**. However, the residual impacts after implementation of these mitigation measures are discussed below. Due to increased traffic and transportation network disruptions, concurrent construction of the MPWSP and the projects listed in **Table 4.1-2** would result in potentially significant cumulative impacts on traffic and transportation access and facilities. Such impacts would include a short-term increase in vehicle traffic, reductions in the number or the available width of travel lanes on roads where construction would occur, increased wear-and-tear on the designated haul routes used by construction vehicles, and increases in demand for parking spaces to accommodate construction worker vehicles, among others. In addition, concurrent construction of these projects could create traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways. Access to adjacent land uses and streets for both general traffic and emergency vehicles could be disrupted. The MPWSP's contributions to these impacts would occur along routes adjacent to most pipeline alignments and above-ground project components south of Reservation Road.

Although the construction schedule for many of the projects listed in **Table 4.1-2** is unknown, the construction schedule for several future cumulative projects could overlap with the anticipated MPWSP construction schedule, thereby causing the types of regional and local traffic and transportation impacts described above. These projects include projects in Monterey County (Nos. 1, 2, 4, and 54), Marina (Nos. 7, 9, 47, and 63), Seaside (Nos. 14 and 17), Beach Junction Structure (No. 61), and Pacific Grove (No. 45). The other projects identified in **Table 4.1-2** are in various stages of planning or entitlement processes and also could occur during the MPWSP's anticipated construction timeframe of summer 2018 through summer 2020.

Potentially significant cumulative traffic and transportation access and facility impacts of the types described above could occur along regional transportation corridors, including Highways 1, 68, and 218, in the vicinity of proposed MPWSP components. Such impacts also would be expected along local arterial and neighborhood roadways connecting regional thoroughfares with specific project construction sites. Based upon the anticipated MPWSP and cumulative project construction schedules (**Table 4.1-2**), potentially significant cumulative impacts on local roadways would likely be concentrated in the cities of Marina, Seaside, and Sand City. However, as discussed, several other projects whose construction timelines remain unknown also could be

constructed within the anticipated MPWSP construction window and have similar transportation effects. Accordingly, this analysis conservatively assumes that at least some of the cumulative projects whose construction schedules remain unknown would be constructed concurrent with the MPWSP. Therefore, the possibility for potential significant cumulative impacts in the cities of Monterey and Pacific Grove as well as in Monterey County cannot be ruled out. The Monterey Pipeline and Pump Station project (No. 60), recently approved and currently under construction, will adversely affect traffic in Seaside and Pacific Grove, but is expected to be completed prior to the start of MPWSP construction.

As discussed above in Sections 4.9.4 and 4.9.5, CalAm would be required to implement **Mitigation Measures 4.9-1 (Traffic Control and Safety Assurance Plan), 4.9-6 (Roadway Rehabilitation Program), and 4.9-7 (Construction Parking Requirements)**, each of which would lessen the MPWSP's contribution to cumulative construction-related traffic and transportation impacts. Specifically, these measures would reduce MPWSP's incremental contribution to congestion and traffic delays on area roadways, safety hazards, emergency access, alternative transportation facilities, wear and tear, and parking impacts. However, given the size of the MPWSP, along with the number of cumulative projects and uncertainty regarding cumulative project construction timing, the residual MPWSP transportation impacts could still contribute substantially to cumulative local and regional traffic and roadway capacity disruptions, a cumulatively significant impact.

Mitigation Measure 4.9-C, presented below, is designed to further reduce the MPWSP's incremental contribution to address the potential cumulative impact. However, there is no guarantee that local agencies would participate in such coordination efforts. Therefore, even though this mitigation measure could reduce MPWSP's cumulative contribution to a less-than-significant level, the conclusion remains that the proposed project's incremental contribution to potential significant cumulative effects would be significant and unavoidable.

Mitigation Measure 4.9-C: Construction Traffic Coordination Plan.

CalAm shall coordinate with the appropriate planning agency within each affected jurisdiction to develop and implement a Construction Traffic Coordination Plan. The purpose of the plan shall be to lessen the cumulative effects of MPWSP and local development project construction-related traffic delays and congestion. The plan shall address construction-related traffic associated with all project sites in the vicinity of MPWSP project components (i.e., within 1 mile or would use the same roads) and whose construction schedules overlap that of the MPWSP. The construction traffic coordination plan shall, at a minimum, include the following components:

- Identification of all projects located in the vicinity of MPWSP project components (within 1 mile or would use the same roads) and whose construction schedules overlap that of the MPWSP.
- Consideration for the types of construction-related vehicles and corresponding numbers and timing of trips associated with each said project.
- An evaluation of roadways affected by construction activities and measures to minimize roadway and traffic disturbances (e.g., lane closures and detours). Impact

minimization measures shall include, but not necessarily be limited to, elements that are part of the MPWSP's Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1).

- Phasing of construction activities, as necessary to prevent degradation of levels of service on affected roadways.
- A program that provides for continual coordination with the affected agencies to allow for adjustments and refinements to the plan once construction is underway.

The construction traffic plan may be modeled after or included within the plan described in **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**. If necessary, separate construction traffic coordination plans (i.e., one for each affected jurisdiction) may be prepared, provided each is compatible.

Cumulative Impacts during Project Operations

A significant cumulative impact associated with long-term traffic increases would occur if the traffic or transportation-related effects of MPWSP operations, combined with those of one or more cumulative projects identified in **Table 4.1-2**, were to cause traffic on local and regional roadways to exceed established level of service standards. The number of new vehicle trips that would occur in association with operation of the projects in **Table 4.1-2** remains unknown. Given the large number and nature of these projects, the cumulative operations-related traffic is expected to be substantial.

As described in Section 4.9.5, above, the MPWSP would have less-than-significant long-term traffic increases on regional and local roadways during project operations and maintenance. As discussed under Impact 4.9-8, the MPWSP would require approximately 25 to 30 full-time workers (project facility operators and support personnel) to operate, monitor, and maintain the desalination facilities (all other facilities would be operated remotely by computer and require infrequent maintenance visits). MPWSP Desalination Plant workers would add up to an estimated 66 daily one-way trips to the local and regional road network. The anticipated increase in traffic associated with these vehicle trips would not be noticeable to other motorists and would not affect the users of alternative travel modes (e.g., pedestrians and bicyclists).

The combined effects of operations-related traffic from the projects identified in Table 4.1-2 could have a potentially significant cumulative impact on local and regional traffic. However, the addition of traffic associated with MPWSP operation and maintenance would not contribute substantially to those impacts; they would be mostly limited to Charles Benson Road and Highway 1. The only cumulative projects identified on Table 4.1-2 expected to affect Charles Benson Road are the RUWAP elements (Nos. 31 and 35), whose operational traffic would be between zero and four one-way trips daily (Denise Duffy & Associates, 2004). As a result, the MPWSP's incremental contribution to cumulative operations-related traffic impacts would be less than significant.

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4.10 Air Quality

Sections	Tables
4.10.1 Setting/Affected Environment	4.10-1 Ambient Air Quality Monitoring Summary (2011–2015)
4.10.2 Regulatory Framework	4.10-2 State and Federal Ambient Air Quality Standards and Attainment Status for North Central Coast Air Basin
4.10.3 Evaluation Criteria	4.10-3 Applicable Regional and Local Land Use Plans and Policies Relevant to Air Quality
4.10.4 Approach to Analysis	4.10-4 Summary of Impacts – Air Quality
4.10.5 Cumulative Effects of the Proposed Project	4.10-5 Estimated Maximum Daily Construction Emissions
4.10.6 Cumulative Effects of the Proposed Project	4.10-6 Maximum DPM Concentrations, Cancer Risks, and Chronic Health Indices
	4.10-7 Proposed Action Operational Emissions

This section evaluates the potential impacts on regional and local air quality that would result from construction and operation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). The analysis is based on estimates of project-related air pollutant emissions, review of existing air quality conditions in the region, and applicable air quality regulations and guidelines. Impacts specific to greenhouse gas (GHG) emissions and climate change are evaluated in Section 4.11, Greenhouse Gas Emissions.

Comments received on the April 2015 Draft EIR expressed concerns regarding the potential for the project to release naturally occurring asbestos during construction; however, there are no areas in the project area that are likely to contain naturally occurring asbestos (CDC, 2000); therefore, this issue is not addressed further in this EIR/EIS. Some commenters suggested that indirect emissions of criteria pollutants associated with electricity use should be quantified and evaluated. This issue is addressed in Section 4.10.5.2, under Impact 4.10-4. Some comments suggested that the operational emissions associated with the periodic excavation and mechanical cleaning of the subsurface slant wells should be quantified. Subsequent to the release of the April 2015 Draft EIR, the layout of project facilities at the CEMEX active mining area was modified such that the well heads, valves, and other slant well facilities are now aboveground and readily accessible for maintenance, thereby reducing the disturbance area associated with periodic maintenance. See Impact 4.10-4 for quantification of emissions associated with slant well maintenance. Comments pertaining to regulatory guidance on health risk assessments are addressed in Impact 4.10-3. Comments associated with construction-related $PM_{2.5}$, NO_2, and ROG emissions are addressed in Impact 4.10-3.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. The most substantive changes include:

- *The addition of the Asbestos Program to Section 4.10.2.2, Regional Agencies and Regulations;*
- *Revisions to Mitigation Measures 4.10-1a and 1b to include requirements for Tier 4 emissions standards and alternative power provisions, and more stringent idling requirements, respectively; and,*

- *Addition of Mitigation Measure 4.10-1e, which requires implementation of an off-site mitigation program to offset construction-related NOx emissions.*

4.10.1 Setting/Affected Environment

The study area for impacts on air quality is the North Central Coast Air Basin (Air Basin). Air quality is a function of both the amount and location of pollutant emissions under the influence of meteorological conditions and topographic features that affect pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, the presence of sunlight, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, all of which affects air quality.

4.10.1.1 Regional Topography, Meteorology, and Climate

Topography and meteorology greatly influence air quality. Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of air pollutants. Marine breezes from Monterey Bay dominate the climate of this portion of the Air Basin; westerly winds predominate in all seasons, but are strongest and most persistent during the spring and summer.

The Air Basin covers 5,159 square miles along the central coast of California and is generally bounded by the Monterey Bay to the west, the Santa Cruz Mountains to the northwest, the Diablo Range on the northeast, with the Santa Clara Valley between them. The southern part of the Santa Clara Valley extends into the northeastern tip of the Air Basin and transitions into the San Benito Valley, which runs northwest-southeast and is bounded on the west by the Gabilan Range. To the west of the Gabilan Range is the Salinas Valley, which extends from the city of Salinas at the northwest end to King City at the southeast end. The western edge of the Salinas Valley is formed by the Sierra de Salinas, which is also the eastern edge of the Carmel Valley. The Santa Lucia Range along the Pacific coast defines the western edge of the Carmel Valley.

The mountain ridges in the Air Basin restrict and channel summer onshore air currents. Hot temperatures in the inland valleys warm the ground and intensify onshore airflow during the afternoon and evening. In the fall, the surface winds weaken and the marine layer becomes shallow and eventually dissipates. The airflow is occasionally reversed, creating weak offshore winds.

A semi-permanent high-pressure cell in the eastern Pacific Ocean is the basic controlling factor in the climate of the Air Basin. In the summer, the high-pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific high-pressure cell (Pacific High), forming a stable temperature inversion of hot air over a cool coastal layer of air. The onshore air currents pass over cool ocean waters to bring fog and relatively cool air into the coastal valleys. The warmer air aloft can inhibit vertical air movement.

The stationary air mass held in place by the Pacific High pressure cell can allow pollutants to build up over a period of days. These conditions also occur when north or east winds cause pollutant transport from the San Francisco Bay Area or the Central Valley into the Air Basin. In

the winter, the Pacific High moves south and has a lesser influence on the Air Basin; wind flows southeasterly from the Salinas and San Benito Valleys, especially during the night and morning. Northwest winds are still dominant in winter, but easterly winds are more frequent in the winter than the summer. Air quality usually remains good in the winter and early spring due to the absence of deep, persistent regional subsidence inversions and the presence of occasional storms. Typically, year-round marine airflow allows coastal areas to maintain good air quality.

The project area typically has average maximum and minimum winter (i.e., January) temperatures of 60 degrees Fahrenheit (ºF) and 43 ºF, respectively, while average summer (i.e., July) maximum and minimum temperatures are 68 ºF and 52 ºF, respectively. The warmest month is typically September, with an average maximum high of 72 ºF. Because of the moderating marine influence, which decreases with distance from the ocean, monthly and annual temperature variations are greatest inland and smallest at the coast. The project area is mostly along the coast with temperature variations that are relatively moderate. Precipitation in the project area averages approximately 20 inches per year (WRCC, 2016).

The presence and intensity of sunlight is another important factor that affects air pollution. Typically, ozone is formed at higher temperatures. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases (ROGs) and nitrogen oxides (NO_x) react to form secondary photochemical pollutants, including ozone. Since temperatures in many of the Air Basin inland valleys are so much higher than near the coast, these inland areas are much more prone to photochemical air pollution.

4.10.1.2 Criteria Pollutants

The U.S. Environmental Protection Agency (USEPA) has identified criteria air pollutants that are a threat to public health and welfare. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria (see Section 4.10.2, Regulatory Setting, below). Below are descriptions of criteria pollutants that are a concern in the study area.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_x. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Particulate Matter

Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that can pose a health risk. Particulates can also damage materials and reduce visibility.

Other Criteria Pollutants

Sulfur dioxide (SO_2) is produced through combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM_{10} and $PM_{2.5}$) and can contribute to sulfuric acid formation in the atmosphere that could precipitate downwind as acid rain. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead.

4.10.1.3 Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including Diesel Particulate Matter (DPM) emissions from diesel-fueled engines (CARB, 2011).

4.10.1.4 Valley Fever

Valley Fever is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human induced ground disturbing activities such as construction, farming, etc. There are about 100,000 new cases of Valley Fever per year in the southwestern United States. Cases of Valley Fever in Monterey County between 2011 through 2013 ranged between 68 and 75 cases per year, which equaled rates of 16.2 to 17.8 cases per populations of 100,000. In 2014 and 2015, cases of Valley Fever dropped substantially to 20 and 34 cases, respectively, which were equal to rates of 4.7 and 7.9 per population of 100,000, respectively (CDPH, 2016); however, the unofficial number of Valley Fever cases in 2016 rose back to pre-2014 levels with 78 cases (MCHD, 2017).

4.10.1.5 Existing Air Quality

Monterey Bay Unified Air Pollution Control District (MBUAPCD) operates a regional monitoring network that measures the ambient air quality in the Air Basin. Existing levels of air pollutants in the project area can generally be inferred from ambient air quality measurements conducted by MBUAPCD at its closest stations. The closest station is the Salinas #3 Monitoring Station located approximately 7 miles to the east of the MPWSP Desalination Plant site. The Salinas #3 Monitoring Station measures concentrations of ozone, $PM_{2.5}$, CO, and nitrogen dioxide (NO_2). The only monitoring station in the Air Basin that measures concentrations of PM_{10} is the Hollister-Fairview Road Monitoring Station, which is located approximately 24 miles to the east-northeast of the MPWSP Desalination Plant site. In addition, PM_{10} monitoring at the Hollister-Fairview Road Monitoring Station uses only federal reference or equivalent methods, so the data can only be compared to the federal standard.

Ambient concentrations of air pollutants in a given area are determined by the quantity of pollutants emitted by local sources in the area and the atmosphere's ability to transport and dilute such emissions. Areas located close together and exposed to similar wind conditions typically have similar background pollutant concentrations. **Table 4.10-1** shows a five-year (2011–2015) summary of monitoring data for $PM_{2.5}$, CO, and NO_2 collected at the Salinas #3 Monitoring Station, and PM_{10} collected at the Hollister-Fairview Road Monitoring Station. The data are compared with the applicable California Ambient Air Quality Standards (state standards) and National Ambient Air Quality Standards (federal standards). As indicated in the table, there were no recorded violations of the state or federal standards from 2011 through 2015.

4.10.1.6 Sensitive Receptors

For the purposes of air quality and public health, sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from air pollutants associated with project construction and/or operation. Sensitive receptor land uses generally include schools, day care centers, hospitals, and residential areas. Some sensitive receptors are considered to be more sensitive than others to air pollutants. The reasons for greater

TABLE 4.10-1
AMBIENT AIR QUALITY MONITORING SUMMARY (2011–2015)

Pollutant*	Standard	Monitoring Data by Year				
		2011	2012	2013	2014	2015
Ozone						
Maximum 1-hour concentration (ppm)	0.09 ppm	0.07	0.07	0.07	0.07	0.07
Days over State Standard		0	0	0	0	0
Maximum 8-Hour Average (ppm)	0.070 ppm	0.057	0.055	0.062	0.062	0.062
Days over State Standard		0	0	0	0	0
Respirable Particulate Matter (PM_{10})						
Maximum 24-Hour Average (µg/m^3)	150 µg/m^3	23	105	98	48	66
Estimated Days over National Standard		0	0	0	0	0
Fine Particulate Matter ($PM_{2.5}$)						
Maximum 24-Hour Average (µg/m^3)	35 µg/m^3	20	16	20	20	23
Estimated Days over National Standard Exceedances/Samples[e]		0	0	0	0	0
State Annual Average (µg/m^3)	12 µg/m^3	6	6	7	5	5
Nitrogen Dioxide (NO_2)						
Maximum Hourly Average (ppm) Highest 24-hour average, µg/m^3[c]	0.18 ppm	0.04	0.04	0.04	0.04	0.03
Days over State Standard Exceedances/Samples[e]		0	0	0	0	0
Carbon Monoxide (CO)						
Maximum 8-Hour Average (ppm)	9.0 ppm	0.99	1.39	-	-	-
Days over State Standard		0	0	-	-	-

NOTES:

"-" indicates that data were not collected for the year and are not available; ppm = parts per million; µg/m^3 = micrograms per cubic meter. Emissions data for ozone, $PM_{2.5}$, NO_2, and CO were collected at the Salinas No. 3 Monitoring Station, and the emissions data for PM_{10} were collected at the Hollister-Fairview Road Monitoring Station.

SOURCE: CARB, 2016a.

than average sensitivity include pre-existing health problems, proximity to emission sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality.

Many locations along the various proposed pipeline segments would be adjacent to sensitive receptors, including residences. However, pipeline segments would be installed in a linear sequence and would progress at a rate of 150 feet to 250 feet per day, which would limit the duration of exposure for any given receptor to construction-related pollutants. In addition to the proposed

pipelines, the MPWSP would include several facilities such as the MPWSP Desalination Plant, the aquifer storage and recovery (ASR) injection/extraction wells (ASR-5 and ASR-6 Wells), Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch-Bishop Interconnection Improvements. Several of the proposed facilities are located in close proximity to sensitive receptors. The following paragraphs provide summary descriptions of the sensitive receptors in the vicinity of the proposed project components.

Subsurface Slant Wells

The closest sensitive receptors to the proposed slant wells in the CEMEX active mining area are residences at the Marina Dunes RV Park on Dunes Drive located approximately 0.4 mile (2,100 feet) south-southeast of the southern-most slant well site, and residences on Drew Street located approximately 0.5 mile (2,600 feet) south-southeast of the southern-most slant well site.

Source Water Pipeline

The section of the proposed Source Water Pipeline located along Charles Benson Road and Del Monte Boulevard would be between 0.1 mile (600 feet) and approximately 0.2 mile (1,100 feet) south of a rural residence on Neponset Road.

MPWSP Desalination Plant

The closest sensitive receptors to the proposed MPWSP Desalination Plant site are the two rural residences on Neponset Road located approximately 0.4 mile (2,200 feet) and 0.75 mile (3,900 feet) west of the site, respectively. Residences off Monte Road on the north bank of the Salinas River, the second closest set of sensitive receptors, are approximately 0.95 mile (5,000 feet) from the MPWSP Desalination Plant site.

New Desalinated Water Pipeline

The new Desalinated Water Pipeline would pass within 0.1 mile (600 feet) to 0.2 mile (1,100 feet) of two residences on Neponset Road. The southern 0.65 mile (3,500 feet) of the new Desalinated Water Pipeline alignment would be within 100 feet of residences and within 0.25 mile (1,350 feet) of Miss Barbara's Child Care Center at 266 Beach Road and the Marina Children's Center at 261 Beach Road.

New Transmission Main

The northernmost 0.5 mile (2,650 feet) of the new Transmission Main is within 100 feet of residences in Marina. The Crescita Early Education Center/Marina Child Development Center at 3066 Lake Drive in Marina is within 0.25 mile (1,300 feet) of the new Transmission Main alignment. South of the Highway 1 overpass where the new Transmission Main parallels the west side of the highway, the pipeline is 500 feet or more from the nearest sensitive land uses. Along Lightfighter Drive, the new Transmission Main would pass within 200 feet of a baseball field at California State University, Monterey Bay. Along General Jim Moore Boulevard, the pipeline would pass within 250 of residences along 4th Army Road, within 150 feet of Marshall West

Elementary School, within 100 feet of residences in the Fitch Park military housing area, and within 300 feet of Seaside Middle School.

ASR Pipelines

The ASR Conveyance Pipeline, ASR Recirculation Pipeline, and the ASR Pump-to-Waste Pipeline would be within 250 feet of Seaside Middle School, and within 50 to 100 feet of residences in the Fitch Park military housing area along Hatten Road and Ardennes Circle.

ASR-5 and ASR-6 Wells

The ASR-5 and ASR-6 Wells would each be within 50 feet of residences in the Fitch Park military housing area on Ardennes Circle.

Castroville Pipeline

The section of the proposed Castroville Pipeline along Charles Benson Road would be approximately 0.2 mile (1,100 feet) south of a residence on Neponset Road and a part of the pipeline in the Monterey TAMC right-of-ways would be approximately 250 feet from a residence along Neponset Road. On the east side of Salinas River, the Castroville Pipeline would pass adjacent to about a dozen residences. The pipeline would pass about 200 feet south of a residence along Nashua Road, approximately 300 west of a residence at Castroville Road, and would terminate approximately 700 feet southeast of residences in Cypress Court.

Carmel Valley Pump Station

Carmel Valley Pump Station would be within 150 of two residences along Rancho San Carlos Road.

Interconnections with Highway 68 Satellite Systems

The Ryan Ranch-Bishop Interconnection Improvements would be located in a business park area with few sensitive receptors, with the exception of the Ryan Ranch Children's Center and York School, both of which are located approximately 0.2 mile (1,000 feet) from the proposed improvements.

The proposed Main System-Hidden Hills Interconnection Improvements are located in a residential neighborhood, with residences located as close as 50 feet to the proposed pipeline route.

4.10.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, and regulations relevant to air quality. A brief summary of each is provided, along with a finding regarding the proposed project's consistency with those regulatory requirements. The consistency findings concern the proposed project, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would

be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.10.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is discussed in more detail. Where applicable, the discussion in Section 4.10.5 identifies feasible mitigation that would resolve or minimize the potential inconsistency.

Federal, state, and regional regulations provide the framework for analyzing and controlling air pollutant emissions and thus general air quality. The United States Environmental Protection Agency (USEPA) is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and reviewing State Implementation Plans (SIPs), described further below. However, the USEPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

In California, the California Air Resources Board (CARB) is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California SIP, securing approval of this plan from the USEPA, and identifying TACs. CARB also regulates mobile emissions sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. The MBUAPCD is the regional agency primarily responsible for regulating stationary emission sources at facilities within its geographic area (i.e., Monterey, Santa Cruz, and San Benito counties) and for preparing the air quality plans that are required under the federal Clean Air Act and the 1988 California Clean Air Act.

4.10.2.1 Federal and State Regulations

The federal Clean Air Act Amendments of 1977 established federal ambient air quality standards, and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there are considerable differences between some of the state and federal standards. As shown in **Table 4.10-2**, the state standards tend to be at least as protective as federal standards, and are often more stringent.

Federal ambient air quality standards (federal standards) exist for seven criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. In addition, California has established state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The ambient air quality standards are intended to protect public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, referred to as sensitive receptors, including people with asthma, the very young, elderly, people weak from other illness or disease, or people engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above the ambient air quality standards before adverse health effects are observed.

TABLE 4.10-2
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS FOR NORTH CENTRAL COAST AIR BASIN

Pollutant	Averaging Time	State Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.070 ppm	N-T	0.070 ppm	U*
	1 Hour	0.09 ppm	N-T	N/A	N/A
Carbon Monoxide	8 Hour	9.0 ppm	U	9 ppm	U
Nitrogen Dioxide	Annual Average	0.030 ppm	A	0.053 ppm	U
	1 Hour	0.18 ppm	A	0.100 ppm	U
Sulfur Dioxide	24 Hour	0.04 ppm	A	N/A	N/A
	3 Hour	N/A	N/A	0.5 µg/m^3	A
	1 Hour	0.25 ppm	A	0.075 ppm	A
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N	N/A	N/A
	24 Hour	50 µg/m^3	N	150 µg/m^3	U
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	A	12.0 µg/m^3	U
	24 Hour	N/A	N/A	35 µg/m^3	U
Sulfates	24 Hour	25 µg/m^3	A	N/A	N/A
Lead	30-Day Average	1.5 µg/m^3	A	N/A	N/A
	3-Month Rolling Average	N/A	N/A	0.15 µg/m^3	U
Hydrogen Sulfide	1 Hour	0.03 ppm	U	N/A	N/A
Vinyl Chloride	24 Hour	0.01 ppm	U	N/A	N/A
Visibility Reducing Particles	8 Hour	Extinction of 0.23/km; visibility of 10 miles or more	U	N/A	N/A

NOTES: A = attainment; N = nonattainment; N-T = nonattainment-transitional; U = unclassified but attainment can be assumed; N/A = not applicable or no applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

* On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Attainment status is relative to the previous 0.075 ppm standard. USEPA will make recommendations on attainment designations for 2015 standard by October 1, 2016, and issue final designations October 1, 2017.

SOURCES: CARB, 2015 and CARB, 2016b

Federal Clean Air Act

The 1977 Clean Air Act (last amended in 1990; Title 42 United States Code Section 7401 et seq.) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled to achieve all standards within the deadlines specified in the Clean Air Act.

The USEPA is responsible for implementing programs developed under the federal Clean Air Act, such as establishing and reviewing the federal standards for CO, ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The federal Clean Air Act also requires the USEPA to designate areas (counties

or air basins) as attainment or non-attainment with respect to each criteria pollutant, depending on whether the area meets the federal standards. If an area is designated as non-attainment, it does not meet a federal standard and is required to create and maintain a SIP for achieving compliance with the applicable federal standard. Conformity to the SIP is defined under the 1990 Clean Air Act amendments as conformity with the plan's purpose in eliminating or reducing the severity and number of violations of the federal standards and achieving expeditious attainment of these standards.

The Clean Air Act General Conformity Rule helps states improve air quality in areas that do not attain the federal standards by ensuring that federal actions conform to the SIP. The MPWSP is not subject to the General Conformity Rule because it would be located in an area that meets federal standards and the area is not subject to a maintenance plan with conformity requirements.[1]

California Clean Air Act

The California Clean Air Act was approved in 1988 and requires each local air district in the state to prepare an air quality plan to achieve compliance with the state standards. CARB is the agency delegated responsibility for preparing and submitting the SIP to the USEPA. CARB also oversees air quality policies in California and has established state standards for NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, ozone, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Similar to the USEPA, CARB designates counties or air basins in California as attainment or non-attainment with respect to the state standards.

Regulations for Mobile Sources of Air Pollutants

The following air quality regulations apply to mobile sources and are directly relevant to the project. On road vehicles with a gross vehicular weight rating of 10,000 pounds or greater shall not idle for longer than 5 minutes at any location (Title 13 California Code of Regulations (CCR) Section 2485). This restriction does not apply when vehicles remain motionless during traffic or when vehicles are queuing. Off-road equipment engines shall not idle for longer than 5 minutes (Title 13 CCR Section 2449(d)(3)). Exceptions to this rule include: idling when queuing; idling to verify that the vehicle is in safe operating condition; idling for testing, servicing, repairing or diagnostic purposes; idling necessary to accomplish work for which the vehicle was designed (such as operating a crane); and idling required to bring the machine to operating temperature as specified by the manufacturer.

[1] The Phase 1 final rule to implement the 8-hour Ozone standard was published on April 30, 2004. The anti-backsliding provisions in that rule set forth specific requirements for areas that are designated attainment for the 8-hour Ozone standard and that were at the time of the 8-hour designations (generally June 15, 2004) either attainment areas with maintenance plans for the 1-hour standard, such as the Air Basin; or nonattainment for the 1-hour standard. Specifically, 40 CFR part 51, section 51.905(a)(3) and (4) requires these areas to submit a maintenance plan under section 110(a)(1) of the Clean Air Act. That maintenance plan must demonstrate maintenance for 10 years post designation; however, this maintenance plan does not carry with it any conformity obligations (unlike maintenance plans required under Section 175A of the Act).

Attainment Status

Under amendments to the federal Clean Air Act, USEPA has classified air basins or portions thereof as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the federal standards have been achieved. The California Clean Air Act, which is patterned after the federal Clean Air Act, also requires areas to be designated as "attainment" or "non-attainment" for the state standards. Thus, areas in California have two sets of attainment/ non-attainment designations: one set with respect to the federal standards and one set with respect to the state standards. Table 4.10-2 shows the attainment status of the Air Basin with respect to the federal and state ambient air quality standards for different criteria pollutants. As indicated in the table, the Air Basin is designated as attainment for all federal standards and is designated non-attainment for ozone and PM_{10} under the state standards.

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to air quality is a Coastal Act policy requiring that new development be consistent with applicable air pollution control district or the State Air Resources Board requirements. A preliminary assessment of project consistency with this priority is provided here. Final determinations regarding project consistency are reserved for the Coastal Commission. The MPWSP subsurface slant wells would use electricity from PG&E's electrical power grid; therefore, these facilities would not be subject to air district or State requirements. As such, the project would be consistent with Coastal Act policies related to air quality.

4.10.2.2 Regional Agencies and Regulations

Monterey Bay Unified Air Pollution Control District

The MBUAPCD is the regional agency responsible for air quality regulation within the North Central Coast Air Basin (Air Basin). The MBUAPCD regulates air quality through its planning and review activities. The MBUAPCD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, impose emission limits, set fuel or material specifications, and establish operational limits to reduce air emissions. The MBUAPCD regulates new or expanding stationary sources of toxic air contaminants.

State law assigns local air districts the primary responsibility for control of air pollution from stationary sources, under CARB's oversight. The MBUAPCD is responsible for developing regulations governing emissions of air pollution, permitting and inspecting stationary sources of air pollution, monitoring of ambient air quality, and air quality planning activities, including implementation of transportation control measures (MBUAPCD, 2008).

Air Quality Management Plan for the Monterey Bay Region

In 1991, the MBUAPCD adopted the *Air Quality Management Plan for the Monterey Bay Region* (AQMP) in response to the California Clean Air Act of 1988, which established specific planning

requirements to meet the ozone standards. The California Clean Air Act requires that AQMPs be updated every 3 years. The MBUAPCD has updated the AQMP five times. The most recent update, the *Triennial Plan Revision 2009-2011* (2012 AQMP), was adopted in 2013 (MBUAPCD, 2013). The 2012 AQMP relies on a multilevel partnership of federal, State, regional, and local governmental agencies. These agencies (USEPA, CARB, local governments, Association of Monterey Bay Area Governments [AMBAG]), and the MBUAPCD are the primary agencies that implement the AQMP programs. The 2012 AQMP documents the MBUAPCD's progress toward attaining the state 8-hour ozone standard, which is more stringent than the state 1-hour ozone standard. The 2012 AQMP builds on information developed in past AQMPs and includes a review and update to the 2008 AQMP. The primary elements from the 2008 AQMP that were updated in the 2012 revision include the air quality trends analysis, emission inventory, and mobile source programs. The MPWSP would be potentially inconsistent with the 2012 AQMP because it would contribute to a temporary exceedance of an ozone ambient air quality standard. This issue is addressed in Impact 4.10-1.

Stationary emission sources continue to be the smallest portion of both the ROG and NO_x emissions inventories. Mobile sources are the main contributor to ROG and NO_x emissions in the region. The 2012 AQMP identifies a continued trend of declining ozone emissions in the Air Basin primarily related to lower vehicle miles traveled. Based on monitoring data for 2009-2011, there were fewer exceedance days in the time period 2009-2011 compared to 2006-2008. Therefore, the control measures presented in the 2008 AQMP have not been implemented because the MBUAPCD determined progress was continuing to be made toward attaining the 8-hour ozone standard (MBUAPCD, 2013).

Rules for Stationary Sources

The MBUAPCD regulates new and modified stationary sources through its Rule 207, which incorporates state and federal requirements for new and modified stationary sources as well as MBUAPCD-specific regulations. When net emissions from a new or modified facility exceed State offset thresholds (i.e., 10 tons per year for any criteria pollutant), the increase must be offset from an existing source, with certain exceptions, such as emergency internal combustion engines used during power outages or operated less than 60 hours per year for emergency pumping of water. Rule 207 also requires application of Best Available Control Technology when a source would emit 25 pounds per day or more of ROG or NO_x emissions. All proposed stationary diesel engines would be subject to the MBUAPCD's air toxic control measures, which require emission controls and limits on testing and maintenance. In addition, pursuant to Rule 1010, the MBUAPCD requires permits for all emergency standby engines. Rule 1010, Subsection 3.2.1.3.1, requires the following operating requirements and diesel particulate emission standards for new stationary emergency standby diesel engines over 50 horsepower (hp) (MBUAPCD, 2010):

- Diesel particulate matter limit of less than 0.15 grams per brake horsepower-hour; or
- Off-road Engine Certification Standard for an off-road engine of the same hp rating; and
- Less than 50 hours per year for non-emergency operation.

Permits to operate each of the proposed emergency generators would be secured by CalAm from MBUAPCD. Therefore, the MPWSP would be consistent with MBUAPCD Rules 207 and 1010.

Asbestos Program

The purpose of the Asbestos Program is to protect the public from uncontrolled emissions of asbestos through enforcement of the federal Asbestos Standard and Air District Rule 424. The Program covers most renovations and demolition projects and may be triggered if asbestos containing pipes or materials are encountered during open trenching for pipeline installations. Elements of the program include survey and notification requirements prior to beginning a project, as well as work practice standards and disposal requirements. The program operates on a "cradle to grave" basis through the regulation of all aspects related to the handling of asbestos materials from discovery and removal, through transportation and disposal (MBUAPCD, 2017).

4.10.2.3 Applicable Land Use Plans, Policies, and Regulations

Table 4.10-3 presents the regional and local land use plans, policies, and regulations pertaining to air quality relevant to the MPWSP that were adopted for the purpose of avoiding or mitigating an environmental effect and indicates project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the project would be potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to the specific impact in Section 4.10.5, Direct and Indirect Effects of the Proposed Project). In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

TABLE 4.10-3
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO AIR QUALITY

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System–Hidden Hills Interconnection Improvements, and Ryan Ranch–Bishop Interconnection Improvements	***Policy OS-10.6:*** The Monterey Bay Unified Air Pollution Control District's air pollution control strategies, air quality monitoring, and enforcement activities shall be supported.	This policy is intended to protect and enhance Monterey County's air quality.	Potentially Inconsistent: Construction activities in unincorporated Monterey County would generate emissions in the air basin that could conflict with implementation of the applicable air quality plan. This is addressed in Impact 4.10-1.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space		***Policy OS-10.8:*** Air quality shall be protected from naturally occurring asbestos by requiring mitigation measures to control dust and emissions during construction, grading, quarrying, or surface mining operations. This policy shall not apply to Routine and Ongoing Agricultural Activities except as required by state and federal law.	This policy is intended to protect and enhance Monterey County's air quality with respect to naturally occurring asbestos.	Consistent: The components of the MPWSP are not proposed in areas that are likely to contain naturally occurring asbestos.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space		***Policy OS-10.9:*** The County of Monterey shall require that future development implement applicable Monterey Bay Unified Air Pollution Control District control measures. Applicants for discretionary projects shall work with the Monterey Bay Unified Air Pollution Control District to incorporate feasible measures that assure that health-based standards for diesel particulate emissions are met. The County of Monterey will require that future construction operate and implement MBUAPCD PM_{10} control measures to ensure that construction-related PM_{10} emissions do not exceed the MBUAPCD's daily threshold for PM_{10}. The County shall implement MBUAPCD measures to address off-road mobile source and heavy duty equipment emissions as conditions of approval for future development to ensure that construction-related NO_x emissions from non-typical construction equipment do not exceed the MBUAPCD's daily threshold for NO_x.	This policy is intended to protect and enhance Monterey County's air quality with respect to criteria pollutants.	Consistent: Pursuant to Rule 1010, Subsection 3.2.1.3.1, emergency generators would be required to follow operating requirements and diesel particulate emission standards for new stationary emergency standby diesel engines over 50 hp (see Section 4.10.2.2). Construction-related PM_{10} emissions would be mitigated to ensure that emissions would not exceed the MBUAPCD's daily threshold for PM_{10}. Although NO_x emissions from all construction equipment would exceed the MBUAPCD's significance threshold, it is unlikely that emissions from only non-typical construction equipment would exceed the MBUAPCD's daily threshold for NO_x.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.40 Air Pollution	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Section 8.40.030 Prohibited Discharges.*** A. No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is: 1. As dark or darker in shade as that designated as No. 2 on the Ringlemann Chart, as published by the United States Bureau of Mines; or 2. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subdivision 1 of this subsection. B. No person shall discharge into the atmosphere from any single source particulate matter in excess of 0.4 grains per cubic foot of gas at a gas temperature of sixty degrees Fahrenheit and a gas pressure of 14.7 pounds per square inch absolute. C. No person shall discharge into the atmosphere from any single source of emission whatsoever sulfur compounds exceeding 0.2 percent by volume calculated as sulfur dioxide (SO_2) at the point of discharge.	This section is intended to protect the people of the city from undesirable air contaminants.	Potentially Inconsistent: Short-term construction activities in the city of Seaside would generate fugitive dust emissions that could conflict with this municipal code. This issue is addressed in Impact 4.10-1, which identifies mitigation measures that would minimize or avoid this potential inconsistency.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 8.40 Air Pollution	New Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline	***Section 8.40.040: Nuisance declared – Abatement.*** No person shall discharge from any source whatsoever such quantities of air contaminants or other material as will: A. Cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or B. Endanger the comfort, repose, health, or safety of any such persons or public; or C. Cause or have a natural tendency to cause injury or damage to business or property. Such discharge is declared to be a public nuisance and shall be abated.	This section is intended to protect the people of the city from undesirable air contaminants.	Potentially Inconsistent: Short-term construction activities in the city of Seaside would generate fugitive dust and fuel exhaust emissions that could conflict with this municipal code. This issue is addressed in Impact 4.10-1, which identifies mitigation measures that would minimize or avoid this potential inconsistency.

SOURCE: Monterey County, 2010.

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4.10.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

This EIR/EIS relies on the significance criteria established by MBUAPCD to assess the impacts of the proposed project on air quality. Because the MBUAPCD is a responsible agency under CEQA, the criteria pollutant thresholds and analytical guidelines developed by the MBUAPCD are framed in the context of CEQA; however, given that the MPWSP is not subject to the federal General Conformity Rule because it would be located in an area that meets federal standards and the area is not subject to a maintenance plan with conformity requirements, a separate discussion of air quality analysis requirements for NEPA is not provided.

The MBUAPCD has adopted two different sets of CEQA guidelines: Guidelines for Implementing the California Environmental Quality Act (2016 guidelines) for the MBUAPCD's implementation of CEQA as a lead or responsible agency (MBUAPCD, 2016a), and CEQA Air Quality Guidelines (2008 guidelines) that provide guidance for lead agencies that prepare project-specific CEQA and NEPA documentation for projects within the air district (MBUAPCD, 2008). The 2016 guidelines establish criteria pollutant significance thresholds for construction emissions, which were not included in the 2008 guidelines. Although the purpose of the 2016 guidelines is to describe the MBUAPCD's procedures for enforcing CEQA, the MBUAPCD recommends that lead agencies use the new criteria pollutant mass emissions thresholds identified in the 2016 guidelines for projects that would include a large construction effort (MBUAPCD, 2016b).

Due to the substantial amount of project-related construction activities that would occur within the Air Basin, the CPUC and Sanctuary have determined that the criteria pollutant mass emissions significance thresholds identified in the MBUAPCD's 2016 guidelines are appropriate to evaluate the regional air quality impacts that would be associated with the project. The 2016 guidelines state that a project would not have a significant air quality effect on the environment if construction or operation of the project would emit less than 137 pounds per day of NO_x or ROG, 82 pounds per day of PM_{10}, 55 pounds per day of $PM_{2.5}$, or 550 pounds per day of CO.

For the purpose of this EIR/EIS analysis, the MBUAPCD considers temporary emissions of a carcinogenic TAC that can result in a hazard index greater than 1 for acute or chronic impacts

and/or a cancer risk greater than 10 incidents per population of 1,000,000 to be significant (MBUAPCD, 2016a).

4.10.4 Approach to Analysis

Evaluation of potential impacts on air quality from construction and operation of the proposed project included reviewing relevant regulatory guidelines, characterizing the existing air quality environment throughout the project area, and estimating pollutant emissions from construction and operation of project facilities. Individual and cumulative impacts were assessed by comparing the MBUAPCD significance thresholds to estimated levels of pollutant emissions. The following discussions provide an overview of the approach to analysis for air quality impacts.

4.10.4.1 Consistency with Air Quality Plans

Any project that could conflict with the MBUAPCD's goal of attaining the state 8-hour ozone standard would be considered to conflict with the intent of the 2012 AQMP. The measures for determining whether a project would conflict with the intent of the 2012 AQMP is consistency with the CEQA mass emissions thresholds of significance for NO_x and ROG, and/or whether a project would contribute to population growth not accounted for in the 2012 AQMP. If the CEQA thresholds of significance are exceeded, or if the project would result in population growth not accounted for the 2012 AQMP, then the project would be considered to conflict with the intent of the 2012 AQMP and the associated impact would be significant.

4.10.4.2 Violate a Standard or Contribute to a Violation

Construction Emissions

For the purposes of this evaluation, the NO_x significance threshold represents emissions of all oxides of nitrogen, including NO_2. Given the low ambient levels of SO_2 and lead in the Air Basin, short-term construction-related SO_2 and lead emissions associated with the proposed project are not expected to result in significant effects and were not calculated.

For off-road equipment, emissions were estimated using the California Emissions Estimator Model version 2013.2.2 (CalEEMod v2013.2.2), with assumptions for construction equipment inventories, equipment horsepower ratings, and construction phasing developed by the CPUC and the Sanctuary in coordination with CalAm for this EIR/EIS analysis. It is assumed that each piece of equipment associated with construction of the proposed MPWSP Desalination Plant would operate for up to 12 hours per day, the drill rigs required to excavate the slant wells and ASR injection/extraction wells would operate for up to 24 hours per day, the other equipment required to construct the slant wells and associated facilities would operate for up to 12 hours per day, and construction equipment associated with all other proposed components (e.g., pipelines, pump stations, ASR facilities) would operate up to 8 hours per day. Emission factors for on-road trucks and worker vehicles were derived using CARB's EMFAC2014 Burden Model. The worst-case daily trip rates for each project component are presented in Table 4.9-4 of Section 4.9, Traffic and Transportation.

Emission factors and process information from *AP-42, Compilation of Air Pollutant Emission Factors* (USEPA, 2006) and the CalEEMod emissions model results were used to calculate fugitive dust emissions from project-related construction activities. Maximum daily fugitive dust emissions were evaluated for the following activities: general site preparation and earthmoving for the MPWSP Desalination Plant, subsurface slant wells, ASR-5 and ASR-6 Wells, Carmel Valley Pump Station, and Brine Mixing Box; soil handling associated with 1,250 feet of trenching for seven pipeline segments (assuming pipeline installation rates of 150 to 250 feet per day); and travel on unpaved roads. For general site preparation and earth-moving activities, an emission rate of 20 pounds of PM_{10} per acre graded per day was used (CARB, 2002). Fugitive dust that would be associated with pipeline trench excavation activities was estimated using emission factors of 0.001 pound PM_{10} and 0.0002 pound per $PM_{2.5}$ per cubic yard material handled based on the truck loading emission factor formula used by CalEEMod (CAPCOA, 2013). $PM_{2.5}$ fractions for soil disturbance activities developed by the South Coast Air Quality Management District (SCAQMD) were used to estimate $PM_{2.5}$ fugitive dust emissions that would be associated with site preparation activities (SCAQMD, 2006). Fugitive dust in the form of PM_{10} and $PM_{2.5}$ resulting from travel on unpaved roads was estimated using USEPA methodology identified in *AP-42, Compilation of Air Pollutant Emission Factors* (USEPA, 2006). The MBUAPCD does not recommend quantification of entrained road dust from travel on paved roads (MBUAPCD, 2008).

ROG off-gassing that would be associated with project-related asphalt paving activities was estimated using the CalEEMod emission factor of 2.62 pounds ROG per acre paved per day (CAPCOA, 2013).

Operational Emissions

Long-term emissions estimates for the proposed project were based on the proposed emergency generators at the MPWSP Desalination Plant site, and the Carmel Valley Pump Station, vehicle trips associated with commuting workers and truck deliveries, and off-road equipment use associated with periodic maintenance at the slant well sites. Although the emergency generators would be relatively large (between 68 hp and 1,000 hp), it is anticipated that operation of the generators would be limited to 50 hours per year per generator and less than 5 hours per month for testing per generator based on MBUAPCD requirements. Emission factors for the emergency generators were obtained from the dealer specifications of standby diesel generator sets similar to the size of the proposed emergency generators, with an adjustment to particulate emissions limits per MBUAPCD Rule 1010. Emissions associated with vehicle trips were estimated using emission factors derived from CARB's EMFAC2014 Burden Model. Vehicle trips associated with operation of the proposed facilities were estimated as part of the impact analysis presented in Section 4.9, Traffic and Transportation (see Table 4.9-4). For off-road equipment associated with operational maintenance of the slant wells that would be required every five years, emissions were estimated using CalEEMod v2013.2.2, under the assumption that four pieces of heavy-duty off-road equipment would operate between five and eight hours per day for periods of up to 18 weeks.

4.10.4.3 Impacts on Sensitive Receptors

Construction of the proposed project would result in short-term diesel exhaust emissions from onsite heavy duty equipment and from material deliveries and hauling of excess spoils and debris. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by CARB in 1998. Construction of the project would pose a potential cancer and chronic health risk. These risks would primarily result when construction would be located in close proximity to sensitive receptors for an extended duration.

Construction of several components of the proposed project would occur in the immediate vicinity (i.e., within 1,000 feet) of sensitive receptor locations for durations ranging from several days to 6 months. Pipeline construction activities would proceed linearly at a rate of 150 feet to 250 feet per day, which would limit the duration of exposure for any given receptor. The three construction sites that pose the highest health risks include the Carmel Valley Pump Station and the ASR-5 and ASR-6 Wells. A health risk assessment was conducted for each of these three construction sites. The assessment includes estimations of DPM emissions based on PM_{10} exhaust emissions estimates made using the CalEEMod model that were then converted to maximum emissions concentrations, which were used to generate the maximum concentrations to estimate health risks. DPM concentrations for the three sites were modeled using the USEPA's AERMOD dispersion model (version 12060). The AERMOD modeling used several technical assumptions and inputs, including:

- rural dispersion coefficients;
- five years of meteorological data collected at the Monterey Airport from 2009 through 2013;
- PM10 emission rates for onsite construction exhaust estimated using CalEEMod;
- an area source (or sources) representing the construction area; and
- x, y, and z coordinates for sensitive receptors located in the project vicinity.

The maximum concentrations were converted to cancer and chronic health risks using the health risk assessment guidance issued by the California Office of Environmental Health Hazard Assessment (OEHHA, 2015) and the anticipated construction durations for each of the project facilities. The cancer risk estimate assumed a six-month exposure for sensitive receptors near the two pump station sites, with three months of exposure in the third trimester of pregnancy and three months in the 0 to 2 year age category. For the ASR-5 and ASR-6 Wells, a one-year DPM exposure period was used, with three months of exposure in the third trimester of pregnancy and nine months in the 0 to 2 year age category. For these three facilities the cancer risks for the third trimester assumed a daily breathing rate of 361 liters of air per kilogram of body weight-day, a child risk factor of 10, and 85 percent of the time spent at home. The health risk for the 0 to 2 year age category assumed a daily breathing rate of 1,090 liters of air per kilogram of body weight-day, a child risk factor of 10, and 85 percent of the time spent at home.

Operation of the proposed project would result in negligible long-term onsite TAC emissions, which would not be in the vicinity of any sensitive receptors that could pose a public health risk; therefore, the health risk analysis in this EIR/EIS relative to long-term project operations is qualitative.

4.10.5 Direct and Indirect Effects of the Proposed Project

Table 4.10-4 provides a summary of air quality impacts for the MPWSP.

TABLE 4.10-4
SUMMARY OF IMPACTS – AIR QUALITY

Impacts	Significance Determinations
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	SU
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	SU
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *Coccidioides immitis* spores or create objectionable odors affecting a substantial number of people during construction.	LS
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	LS
Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	LS
Impact 4.10-C: Cumulative impacts related to air quality.	SU

NOTES:
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable, even with implementation of mitigation

4.10.5.1 Construction Impacts

Impact 4.10-1: Generate emissions of criteria air pollutants that could contribute to a violation of an ambient air quality standard during construction. (*Significant and Unavoidable, even with implementation of mitigation*)

Project construction would involve the use of a variety of off-road diesel-fueled equipment, including graders, backhoes, excavators, loaders, etc., that would emit exhaust containing air pollutants at the construction sites. In addition, construction vehicles and workers' vehicles would generate exhaust emissions offsite, and fugitive dust would be generated by onsite ground disturbing and material handling activities as well as by truck travel on unpaved roads. Average daily emissions associated with the construction components that could occur simultaneously were combined to determine the "worst-case" scenario for daily emissions. The worst-case daily emissions scenario is estimated to occur in May and June of 2019 and includes simultaneous construction of the proposed subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Castroville Pipeline, Pipeline to CSIP, new Transmission Main, ASR Pipelines, ASR Injection and Extraction Wells, and Carmel Valley Pump Station. Emissions summaries are presented below for off-road (e.g., tractors, graders, backhoes) and on-road (i.e., light duty trucks and heavy haul trucks) exhaust sources as well as for sources of fugitive dust (e.g., dust entrainment from travel on unpaved roads and earth moving activities such as grading and excavation) and ROG off-gassing from paving. Assumptions used

to estimate construction emissions are summarized in Section 4.10.4, above, and are presented in detail in **Appendix G1**. A summary of the estimated maximum daily construction emissions is presented in **Table 4.10-5**.

TABLE 4.10-5
ESTIMATED MAXIMUM DAILY CONSTRUCTION EMISSIONS (pounds/day)

Emission Source	ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Off-road Construction Equipment and On-road Vehicle Exhaust*					
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Subsurface Slant Wells	3.57	48.28	23.09	1.84	1.56
Source Water Pipeline	2.51	31.10	19.34	1.31	1.12
Brine Discharge Pipeline	2.34	26.99	17.21	1.18	1.04
Brine Mixing Box	2.34	26.99	17.21	1.18	1.04
Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Pipeline to CSIP	2.34	26.99	17.21	1.18	1.04
New Transmission Main	2.54	31.52	19.62	1.32	1.13
ASR Pipelines	2.47	30.74	19.10	1.30	1.10
ASR Injection and Extraction Wells	1.45	20.36	10.73	0.70	0.55
Carmel Valley Pump Station	1.09	13.62	7.56	0.51	0.44
Subtotal	29.41	374.27	217.14	15.05	12.79
Fugitive Dust	N/A	N/A	N/A	189.88	36.04 27.56
Off-gassing from Paving	4.53	N/A	N/A	N/A	N/A
Total	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
MBUAPCD CEQA Significance Threshold	137	137	550	82	55
Exceeds Threshold Without Mitigation?	No	Yes	No	Yes	No
Exceeds Threshold With Mitigation?	No	Yes	No	No	No

NOTE: N/A = not applicable.

* The on-road vehicle emissions of PM_{10} and $PM_{2.5}$ identified in this table include emissions associated with break and tire wear.

SOURCE: ESA, 2017. See **Appendix G1**.

Gaseous Criteria Pollutant Emissions

As shown in Table 4.10-5, maximum daily construction equipment and vehicle exhaust emissions of NO_x would be approximately 374 pounds per day, which would exceed the MBUAPCD's significance threshold of 137 pounds per day, resulting in a significant impact. Emissions of ROG and CO would not exceed the MBUAPCD's respective significance criteria; therefore, impacts associated with these pollutants would be less than significant. Implementation of **Mitigation Measures 4.10-1a (Equipment with High-Tiered Engine Standards), 4.10-1b (Idling Restrictions)**, and **4.10-1e (Off-site Mitigation Program)** would reduce NO_x emissions by requiring CalAm and/or its construction contractor(s) to make a good faith effort to use

construction equipment that meets the highest USEPA-certified tiered emission standards, to ensure on-road and off-road equipment idling is minimized, and to fund an off-site mitigation program. Although the exact amount of mitigated emissions cannot be substantiated at this time due to the uncertainty in equipment availability and unknown feasibility of the off-site mitigation program, for informational purposes, if compliance with Mitigation Measure 4.10-1a would result in equipment emissions that would be equivalent to those that would be associated with use of engines that comply with Tier 3 engine standards, implementation of this mitigation measure would decrease maximum daily construction emissions of NO_x to approximately 316 pounds per day, which would continue to result in a significant impact with respect to contributing to an exceedance of an ozone and/or NO_2 ambient air quality standard. With regard to the emission reductions that would be associated with Mitigation Measure 4.10-1b, because the emission estimates summarized in Table 4.10-5 do not include emissions associated with idling vehicles, implementation of this measure would not reduce NO_x exhaust emissions calculated for the proposed project. In addition, it cannot be substantiated at this time that off-site mitigation in the form of emissions offsets is feasible given the schedule of proposed construction activities and schedule uncertainties associated with implementing such a program; therefore, off-site emission reductions that would be associated with Mitigation Measure 4.10-1e cannot be quantified.

Particulate Matter

The majority of PM_{10} construction emissions would result from fugitive dust associated with earth moving activities and vehicle travel on unpaved roadways. The worst-case scenario assumes that a total of up to approximately 3.8 acres would be disturbed on the maximum emissions day by grading and other earthmoving site preparation activities at the proposed MPWSP Desalination Plant (2 acres per day), slant wells (1 acre), Brine Mixing Box (0.5 acre), ASR facilities (0.25 acre), and Carmel Valley Pump Station (0.08 acre) sites. Regarding pipeline installation activities, it is assumed that a maximum of 3,556 cubic yards of soil material would be handled each day to excavate and backfill the pipeline trenches. For motor vehicle travel on unpaved roads, it is assumed that there would be a maximum of approximately 57 miles of vehicle travel on unpaved roads associated with construction of the subsurface slant wells and Castroville Pipeline.

As identified in Table 4.10-5, estimated maximum daily construction emissions of PM_{10} would be approximately 205 pounds per day, which would exceed the MBUAPCD's significance threshold of 82 pounds per day, resulting in a significant impact. Emissions of $PM_{2.5}$ would not exceed the MBUAPCD's respective significance criterion; therefore, impacts associated with this pollutant would be less than significant. Implementation of **Mitigation Measures 4.10-1a** and **4.10-1b** would reduce PM_{10} exhaust emissions by requiring CalAm and/or its construction contractor(s) to make a good faith effort to use construction equipment that meets the highest USEPA-certified tiered emission standards as well as to ensure on-road and off-road equipment idling is minimized. Implementation of Mitigation Measure 4.10-1a would decrease the maximum daily construction exhaust emissions of PM_{10} identified in Table 4.10-5 by approximately 2 pounds per day, while the decrease that would be associated with implementation of Mitigation Measure 4.10-1b cannot be quantified (see above).

With regard to reducing PM_{10} emissions of fugitive dust, **Mitigation Measure 4.10-1c (Construction Fugitive Dust Control Plan)**, would require CalAm to implement a comprehensive construction dust control plan. It is estimated that implementation of the Construction Fugitive Dust Control Plan would decrease fugitive dust emissions during earth disturbance activities by 65 percent, and would decrease unpaved road travel fugitive dust emissions in the vicinity of the subsurface slant wells at the CEMEX active mining area and the access road to the Castroville Pipeline by as much as 75 percent based on mitigation control efficiency factors published by SCAQMD (SCAQMD, 2007; see **Appendix G1** for all mitigation reduction assumptions).

It is estimated that implementation of Mitigation Measures 4.10-1a through 4.10-1c (see below) would reduce maximum daily construction emissions of PM_{10} to approximately 68 pounds per day, which would be below the MBUAPCD PM_{10} significance threshold of 82 pounds per day. It should be noted that if CalAm is unsuccessful securing all equipment with Tier 4 engine standards, the PM_{10} emissions would continue to be less than significant, given the relatively low potential emission reductions that would be associated with Mitigation Measure 4.10-1a compared to Mitigation Measure 4.10-1c. Therefore, with implementation of mitigation, it can be concluded that short-term emissions associated with construction of the MPWSP would not contribute to an exceedance of a PM_{10} state or federal standard. Therefore, this impact would be mitigated to a less-than-significant level.

Consistency with Regulatory Requirements

As noted in Section 4.10.2, Regulatory Framework, the MPWSP would be potentially inconsistent with City of Seaside Municipal Code Sections 8.40.030 and 8.40.040. **Mitigation Measures 4.10-1a** through **4.10-1e** would reduce pollutant emissions, but project-related construction emissions could still be inconsistent with these municipal code sections.

Impact Conclusion

Short-term emissions associated with construction of the proposed project could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and, PM_{10} based on the estimated maximum daily mass emissions levels presented in Table 4.10-5, which would exceed the MBUAPCD significance threshold for PM_{10}. However, this impact with respect to the ozone and NO_2 standards would be significant and unavoidable even with implementation of Mitigation Measures 4.10-1a and 4.10-1b. This significant impact could increase the susceptibility of sensitive individuals to respiratory infections. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of Mitigation Measures 4.10-1a through 4.10-1c. Short-term construction emissions associated with other criteria pollutants, including ROG, CO, and $PM_{2.5}$, would not be expected to contribute to an exceedance of an ambient air quality standard and the associated impact for all other criteria pollutants would be less than significant.

Mitigation Measures

Mitigation Measure 4.10-1a applies to all of the proposed project components.

Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.

For diesel-fueled off-road construction equipment of more than 50 horsepower, CalAm and/or its construction contractor shall make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards or is alternatively powered (e.g., with electricity, natural gas, propane, methanol and ethanol blends, or gasoline) construction equipment. For all pieces of equipment that would neither meet Tier 4 emission standards nor be alternatively powered, CalAm or its construction contractor shall provide to the CPUC documentation from two local heavy construction equipment rental companies that indicate that the companies do not have access to higher-tiered equipment or alternatively powered equipment for the given class of equipment. Such documentation shall be provided to the CPUC at least two weeks prior to the anticipated use of those pieces of equipment.

Mitigation Measure 4.10-1b applies to all proposed project components.

Mitigation Measure 4.10-1b: Idling Restrictions.

In order to ensure that idling time for on road vehicles with a gross vehicular weight rating of 10,000 pounds or greater does not exceed the 5-minute limit established in Section 2485 of Title 13 CCR Section 2485, and that idling time for off-road engines does not exceed the 5-minute limit established in Title 13 CCR Section 2449(d)(3), CalAm and/or its construction contractor(s) shall prepare and implement a written idling policy and distribute it to all equipment operators. The idling policy shall extend the 5-minute idling limit to cover all on road vehicles (regardless of gross vehicular weight rating) and shall further require that for all diesel-powered off-road engines, the idling limit is reduced to 2 minutes, while maintaining the exceptions specified in Title 13 CCR Section 2449(d)(3). Clear signage of these requirements shall be provided for construction workers at all access points to construction areas.

Mitigation Measure 4.10-1c applies to all of the proposed project components.

Mitigation Measure 4.10-1c: Construction Fugitive Dust Control Plan.

CalAm shall require its construction contractor(s) to implement a dust control plan that includes, at minimum, the following dust control measures:

- Water all active construction areas at least three times daily;
- Cover all trucks hauling soil, sand, and other loose materials and require trucks to maintain at least 2 feet of freeboard;
- Apply water three times daily, or apply (non-toxic) soil stabilizers, on unpaved access roads, parking areas, and staging areas at construction sites;
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites;
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more);
- Enclose, cover, or water twice daily exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 miles per hour;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant native, drought-tolerant vegetation in disturbed areas as quickly as possible;
- Wheel washers shall be installed and used by truck operators at the exits of the construction sites to the MPWSP Desalination Plant, the slant wells, and the ASR well facilities; and
- Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District (MBUAPCD) shall also be visible to ensure compliance with MBUAPCD rules.

Mitigation Measure 4.10-1e applies to all of the proposed project components.

Mitigation Measure 4.10-1e: Off-site Mitigation Program.

CalAm shall work with the Monterey Bay Air Resources District (MBARD) and put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NO_x. CalAm shall provide to the lead agencies documentation showing that it has reached an agreement with MBARD to fund an off-site emissions mitigation program that shall include offsets to be executed during construction of the project. If such a program is determined by CalAm and MBARD to be infeasible given the construction schedule of the project, CalAm shall provide documentation to the Lead Agencies that substantiates such a determination. All documentation shall be provided to the Lead Agencies at least two weeks prior to the commencement of construction.

Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan. (*Significant and Unavoidable, even with implementation of mitigation*)

The most recently adopted air quality plan for the project area is the 2012 AQMP. The 2012 AQMP documents the MBUAPCD's progress toward attaining the state 8-hour ozone standard. Any project that could conflict with the MBUAPCD's goal of attaining the state 8-hour ozone standard would be considered to conflict with the intent of the 2012 AQMP. To determine whether construction of the proposed project would conflict with the intent of the 2012 AQMP, construction emissions were compared to the MBUAPCD thresholds for the ozone precursors NO_x and ROG.

As presented in the previous impact discussion, the project-related short-term construction emissions with mitigation measures incorporated would exceed the significance threshold for

NO_X (see Impact 4.10-1, above); therefore, the project would not support the primary goal of the 2012 AQMP, and the impact associated with conflicting or obstructing implementation of the applicable air quality plan would be significant.

Consistency with Regulatory Requirements

As noted in Section 4.10.2, Regulatory Framework, the MPWSP would be potentially inconsistent with the 2012 AQMP, which was established to reduce ozone emissions to below ambient air quality standards, because it could contribute to a temporary exceedance of an ozone ambient air quality standard. As discussed in the preceding paragraphs, **Mitigation Measures 4.10-1a**, **4.10-1b, and 4.10-1e** would reduce ozone precursor emissions, but not to the extent that impacts contributing to ozone standard exceedances would be avoided.

Impact Conclusion

As identified under Impact 4.10-1, implementation of **Mitigation Measures 4.10-1a, 4.10-1b, and 4.10-1e** would not reduce project-related NO_X emissions to below the significance threshold. Therefore, this impact is considered to be significant and unavoidable, even with implementation of mitigation.

Mitigation Measures

Mitigation Measure 4.10-1a applies to the project as a whole.

> **Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.**
>
> (See Impact 4.10-1, above, for description.)

Mitigation Measure 4.10-1b applies to all project components.

> **Mitigation Measure 4.10-1b: Idling Restrictions.**
>
> (See Impact 4.10-1, above, for description.)

Mitigation Measure 4.10-1e applies to all project components.

> **Mitigation Measure 4.10-1e: Off-site Mitigation Program.**
>
> (See Impact 4.10-1, above, for description.)

Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *coccidioides immitis* spores or create objectionable odors affecting a substantial number of people during construction. (*Less than Significant*)

Sensitive Receptor Exposure to TACs

Construction of the proposed project would result in the short-term generation of DPM emissions from the use of off-road diesel equipment. These emissions could result in the short-term exposure

of local sensitive receptors to TACs (i.e., DPM). The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance.

As discussed in Section 4.10.4, the two construction sites that pose the greatest health risks include the Carmel Valley Pump Station and the ASR Injection/Extraction Wells site. PM_{10} exhaust emissions are conservatively used here as a surrogate for DPM. AERMOD, as described in Section 4.10.4, was used to estimate maximum annual PM_{10} concentrations at sensitive receptors in the vicinity of these sites and those concentrations were then converted to health risks. **Table 4.10-6** shows the maximum estimated DPM concentrations for each construction site as well as the associated estimated cancer risks and chronic health hazards. Construction of the Carmel Valley Pump Station would pose a cancer risk of 5.2 per million and a chronic health hazard of 0.027. Construction of the ASR Injection/Extraction Wells would pose a maximum cancer risk of 6.4 per million and a chronic health hazard of 0.034. For both sites, all values are less than the cancer risk and health hazard index significance thresholds established by the MBUPACD (i.e., the proposed project would not result in a hazard index greater than 1 for acute or chronic impacts and/or cancer risk greater than 10 incident per 1,000,000 population). Therefore, impacts associated with the proposed project's potential to expose sensitive receptors to substantial pollutant concentrations would be less than significant.

TABLE 4.10-6
MAXIMUM DPM CONCENTRATIONS, CANCER RISKS, AND CHRONIC HEALTH INDICES

Construction Site	Maximum DPM Concentration (µg/m^3)	Cancer Risk (per million)	Chronic Health Index
Carmel Valley Pump Station	0.137	5.2	0.027
ASR Injection/Extraction Wells Site	0.168	6.4	0.034
Significance Threshold	---	10	1

SOURCE: ESA, 2016. See **Appendix G1**.

Sensitive Receptor Exposure to Coccidioides Immitis Spores

Construction activities that include ground disturbance would have the potential to release coccidioides immitis spores. However, it is likely that much of the population of Monterey County has already been exposed to Valley Fever and would continue to be exposed because of the various earthmoving activities that have historically occurred and continue to occur as a result of agricultural and construction activities throughout the region. As a result of the endemic nature of the disease and the number of earthmoving activities in the County (e.g., grading and excavation for agriculture, as well as new residential, commercial, and industrial development, and surface mining operations), there are new cases of Valley Fever documented in the County each year; however, many people who are exposed do not develop symptoms.

Valley Fever-related impacts associated with the project would not be considered significant because ongoing ground-disturbing activities in the County currently represent a continual source of

spores that contribute to the low number of Valley Fever cases reported each year. Construction activities associated with the project would result in similar localized ground disturbing activities to those that occur continually within the County and the project would not result in a substantial increase in spore release. Therefore, construction of the project would not represent an increased risk to public health. In addition, implementation of Mitigation Measure 4.10-1c (see above), which requires implementation of fugitive dust control measures, would ensure that fugitive dust that could contain coccidioides immitis spores would be controlled to the maximum extent feasible. Valley Fever-related impacts would be less than significant.

Sensitive Receptor Exposure to Odors

Construction activities that would be associated with the proposed project could result in temporary odors from use of diesel-fueled equipment. These odors would be temporary and would dissipate quickly, and would be unlikely to create objectionable odors that would affect a substantial number of people.

Impact Conclusion

Short-term construction activities that would be associated with the MPWSP would not expose sensitive receptors to substantial pollutant concentrations or substantial increased risk associated with coccidioides immitis spores, and would not create objectionable odors that would affect a substantial number of people. The associated impact would be less than significant.

Mitigation Measures

None required.

4.10.5.2 Operational and Facility Siting Impacts

The proposed project would not conflict with or obstruct implementation of the applicable air quality plan during project operations. With regard to long-term operations, there would be no permanent stationary sources of air pollutant emissions associated with the proposed project, with the exception of emergency generator testing, and mobile sources would be limited. In addition, any additional growth that could be served by the proposed project would be consistent with the levels of growth anticipated in the adopted land use plans of jurisdiction in CalAm's Monterey District service area (see Section 6.3, Growth-Inducement). For these reasons, long-term operation of the proposed project would not conflict with or obstruct implementation of the 2012 AQMP and this issue is not addressed further in this EIR/EIS.

Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations. (*Less than Significant*)

Operation of the proposed project would rely on electrical power supplied from Pacific Gas and Electric Company (PG&E)'s existing regional power grid. It is generally not possible to

determine the exact generation source(s) of electricity on the power grid that would supply the proposed project, or whether or not the electricity would even be generated within the Air Basin. Therefore, indirect emissions of criteria pollutants associated with electricity use from the regional power grid are not addressed in this air quality analysis because it would be impractical/impossible to do so.

MPWSP Desalination Plant, Carmel Valley Pump Station, and ASR Pump Station

Direct emission sources that would be associated with the proposed project include on-road vehicles, emergency generators at the MPWSP Desalination Plant, and the Carmel Valley Pump Station, and off-road equipment required for period maintenance of the slant wells. Mobile emission sources would include the daily commute trips of up to 30 facility operators and support personnel and three daily delivery truck trips that would be required to operate the desalination facilities. It is estimated that these activities would result in approximately 60 light-duty one-way truck trips and 6 heavy-duty one-way truck trips each day. Estimated mobile source emissions associated with the operations of the proposed project are presented below in **Table 4.10-7**. Refer to **Appendix G1** for the calculation sheets that were used to estimate the operational emissions that would be associated with the proposed project.

TABLE 4.10-7
PROPOSED PROJECT OPERATIONAL EMISSIONS (pounds/day)

Source	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
On-road Vehicle Exhaust	0.09	1.46	2.36	0.10	0.04
Emergency Generator Testing	0.32	16.92	1.93	1.10	1.02
Slant Well Maintenance (off-road equipment)	0.94	8.28	6.30	0.31	0.29
Total	**1.35**	**26.66**	**10.59**	**1.51**	**1.35**
MBUAPCD CEQA Significance Threshold	137	137	550	82	55
Exceeds Threshold Without Mitigation?	No	No	No	No	No

NOTE: N/A = no applicable threshold.

SOURCE: ESA, 2016. See **Appendix G1**.

The only onsite emission sources that would be associated with the proposed project would be stand-by emergency diesel generators that would be installed at the MPWSP Desalination Plant and the Carmel Valley Pump Station to provide emergency back-up power, as well as off-road equipment that would be required every five years to maintain the slant wells. Securing permits from the MBUAPCD for the emergency standby generators would ensure less-than-significant operational impacts related to the use of such generators through adherence to MBUAPCD Rule 1010. Estimated emissions that would be associated with emergency generator testing and off-road equipment are presented above in Table 4.10-7.

All Other Proposed Project Components

None of the other proposed project components would result in the direct emission of criteria pollutants during operations and maintenance. Therefore, no impact would result.

Impact Conclusion

As identified in Table 4.10-7, combined operational emissions that would be associated with the MPWSP Desalination Plant, Carmel Valley Pump Station, and the slant wells would not exceed any of the significance thresholds; therefore, operational emissions would not be expected to result in or contribute to an exceedance of an ambient air quality standard and the associated impact would be considered to be less than significant. No impact would result from operation and maintenance of all other project components.

Mitigation Measures

None required.

Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations. (*Less than Significant*)

Sensitive Receptor Exposure to TACs

MPWSP Desalination Plant and Carmel Valley Pump Station. The only onsite DPM emissions sources that would be associated with the MPWSP would be the emergency generators at the MPWSP Desalination Plant and the Carmel Valley Pump Station. DPM emissions (in the form of $PM_{2.5}$) from routine testing and maintenance of these emergency generators would be less than 1 pound per day and would average up to 0.03 pound per day on an annual basis. Given the negligible amount of emissions that would be generated, long-term operations of the emergency generators would not exceed the MBUAPCD TAC significance threshold (i.e., the proposed project would not result in a hazard index greater than 1 for acute or chronic impacts and/or cancer risk greater than 10 incident per 1,000,000 population). Therefore, overall, the increased health risk from long-term project DPM emissions would be negligible and this impact would be less than significant.

All Other Proposed Facilities. None of the other proposed project facilities would include onsite DPM emissions sources, or emission sources of other TACs. Therefore, no impact related to the exposure of sensitive receptors to substantial pollutant concentrations would result from operation of all other project facilities.

Objectionable Odors

MPWSP Desalination Plant and ASR Wells. The chemical storage and chemical feed facilities at the MPWSP Desalination Plant and ASR-5 and ASR-6 wells would be closed systems. For open-air facilities, such as the backwash treatment facilities and residuals handling systems, including the sludge drying beds, odors would generally be managed through operational controls, such as to reduce detention times in basins. Operators could also use chemical stabilization techniques to control odor. For example, they could apply chemicals such as lime directly to the sludge drying bed and prevent odors from releasing to the atmosphere. Additionally, the MPWSP Desalination

Plant would be co-located with the MRWPCA Regional Treatment Plant and the Monterey Regional Environmental Park, which are currently sources of odors in the area.

While operation of the MPWSP Desalination Plant could result in limited onsite odors associated with sludge management, due to the lack of nearby sensitive receptors in the immediate vicinity and the location of the site within an industrialized area that is an existing source of odor, the proposed project would not be expected to create objectionable odors that would affect a substantial number of people.

All Other Proposed Facilities. None of the other proposed project facilities would include onsite odor sources. Therefore, no impact related to the objectionable odors affecting a substantial number of people would result from operation of all other project facilities.

Impact Conclusion

Long-term operations that would be associated with the MPWSP would not expose sensitive receptors to substantial pollutant concentrations or create objectionable odors that would affect a substantial number of people. The impact would be less than significant.

Mitigation Measures

None required.

4.10.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.10-C: Cumulative impacts related to air quality (*Significant and Unavoidable, even with implementation of mitigation*)

The geographic scope of analysis for potential cumulative air quality impacts is the North Central Coast Air Basin. As indicated in Table 4.10-2, the air basin does not attain the state standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, existing conditions in the air basin are considered to be cumulatively significant with respect to attaining the state standards for ozone and PM_{10}. The timeframe during which the MPWSP could contribute to cumulative air quality effects includes the construction phase, as well as the anticipated approximately 40-year operations phase.

In developing thresholds of significance for air pollutants, MBUAPCD considered the emission levels for which a project's individual emissions would be cumulatively significant. Based on MBUAPCD thresholds and CEQA guidance, if individual project emissions would exceed the identified significance thresholds, a significant cumulative air quality impact would occur and the project's contribution to the cumulative impact would be considered significant. If project

emissions would not exceed the significance thresholds, the project's incremental contribution to any potential cumulative impact would not be significant.

Cumulative Construction Impacts

As described in the Impact 4.10-1 discussion, MPWSP construction activities would generate short-term NO_x emissions in quantities that would exceed the MBUAPCD threshold, even with implementation of **Mitigation Measures 4.10-1a (Equipment with High-Tiered Engine Standards)**, **4.10-1b (Idling Restrictions)**, and **4.10-1e (Off-site Mitigation Program)**. Therefore, the cumulative impact of project construction emissions associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan and would be significant when combined with the emissions associated with the cumulative projects in Table 4.1-2, and the MPWSP's incremental contribution to the cumulative impact would be cumulatively significant. No further feasible mitigation measures are available that would reduce the project's significant cumulative impact to a less than significant level *(significant and unavoidable)*.

With regard to emissions of PM_{10}, proposed project emissions would be significant and would therefore result in a significant cumulative impact. However, **Mitigation Measures 4.10-1a** through **4.10-e** would reduce emissions of PM_{10} during MPWSP construction activities to a level that would be below the MBUAPCD threshold. The air quality construction thresholds established by MBUAPCD were designed for the North Central Coast Air Basin and are intended to address the incremental contributions of individual projects on the quality of the air basin as a whole. Therefore, conformance with the MBUAPCD threshold ensures that an individual project would not have a cumulative impact with respect to overall air quality within the air basin. As a result, the MPWSP's incremental contribution of construction-related PM_{10} emissions would result in a less than significant cumulative impact.

With regard to impacts on sensitive receptors, the total diesel particulate matter (DPM) and fugitive dust emissions exposure periods from onsite equipment that would be required to construct MPWSP components would be limited to between several days and 24 months depending on the specific facility (see Impact 4.10-3 discussion relative to sensitive receptor exposure to TACs and coccidioides immitis spores). Nearby cumulative projects with construction schedules that overlap with the MPWSP would also be expected to expose sensitive receptors to DPM emissions and coccidioides immitis spores. While these emissions could be substantial, they would be temporary and generally limited to a period of a couple years or less for a given project. In addition, the project would not result in a substantial increase in spore release relative to localized ground disturbing activities associated with the cumulative projects. Also, none of the cumulative project locations illustrated in Figure 4-1, *Cumulative Projects*, would be located within 0.5 mile of the ASR Injection/Extraction or Carmel Valley Pump Station construction sites. The effects of MPWSP construction and cumulative projects would not be expected to result in long-term exposure of sensitive receptors to TAC emissions. As a result, a less than significant cumulative impact would occur from the identified projects.

In addition, construction of the MPWSP would result in diesel emissions-based odors, which would result in a negligible and short-term effect on nearby sensitive receptors (see Impact 4.10-3 discussion relative to sensitive receptor exposure to odors). Cumulative projects could also contribute to increases in diesel emissions-based odors. However, as noted previously, such increases would be limited in duration and extent. As a result, a less than significant cumulative effect related to odors would occur from the proposed project.

Cumulative Operational Impacts

Noted previously, pursuant to MBUAPCD CEQA Guidelines, a project's operational emissions would result in a significant cumulative impact if they exceed adopted significance thresholds. As discussed in Impacts 4.10-4 and 4.10-5, MPWSP operations would not cause emissions that would exceed the MBUAPCD significance thresholds. Therefore, the MPWSP would have a less than significant cumulative impact related to emissions of criteria pollutants.

With regard to impacts on sensitive receptors, onsite DPM emissions from project operation would be limited to emergency generators at the MPWSP Desalination Plant and the Carmel Valley Pump Station. DPM emissions (in the form of $PM_{2.5}$) from routine testing and maintenance of these emergency generators would be less than 1 pound per day and would average up to 0.03 pound per day on an annual basis. As discussed in Impact 4.10-5, such emissions would be negligible and would result in a less than significant cumulative impact.

Also discussed in Impact 4.10-5, MPWSP operation would not contribute substantially to offsite exposure of sensitive receptors to objectionable odors. To the extent the MPWSP would result in any objectionable odors, they would likely result from MPWSP Desalination Plant operation. The MPWSP Desalination Plant site is located within an industrial area with no sensitive receptors in the immediate vicinity. As a result, the MPWSP would result in a less than significant cumulative impact with respect to TACs or odors.

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4.11 Greenhouse Gas Emissions

Sections	Tables
4.11.1 Setting/Affected Environment	4.11-1 California GHG Emissions
4.11.2 Regulatory Framework	4.11-2 Summary of Impacts – GHG Emissions
4.11.3 Evaluation Criteria	4.11-3 Total GHG Emissions from Project Construction
4.11.4 Approach to Analysis	4.11-4 Total GHG Emissions from Project Operations
4.11.5 Direct and Indirect Effects of the Proposed Project	4.11-5 Total Amortized GHG Emissions
4.11.6 Cumulative Effects of the Proposed Project	

This section evaluates issues related to greenhouse gas (GHG) emissions resulting from implementation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). The section presents an overview of climate change; describes the various GHGs that have been identified as sources of climate change; discusses pertinent regulations, including those relevant at the federal and state levels; identifies the criteria used for determining the significance of environmental impacts; and analyzes the potential GHG impacts that would be associated with implementation of the MPWSP. Mitigation measures are prescribed to address significant impacts. For discussion of effects related to climate change-induced sea level rise, refer to the *Coastal Flooding and Sea Level Rise* discussion in Section 4.3.1.4 and Impact 4.3-11, *Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise*, in Section 4.3.5.2.

The CPUC received several comment letters related to the GHG emissions analysis in the April 2015 Draft EIR. Some commenters requested that emissions generated during periodic maintenance of the subsurface slant wells be included in the operational emissions. Subsequent to the release of the April 2015 Draft, the layout for the seawater intake system at the CEMEX active mining area was modified such that the well heads, valves, and other slant well facilities are now aboveground and readily accessible for maintenance, thereby reducing the disturbance activities and related GHG emissions associated with periodic maintenance. See Impact 4.11-1 for a quantification of GHG emissions associated with project operations, including emissions from slant well maintenance. Other commenters questioned the efficacy of the mitigation measures that were identified to reduce GHG emissions and suggested that CalAm be required to purchase offsets from the State's cap-and-trade program to lower the project's emissions to less than significant and comments were received requesting that CO_2 degassing from intake water to the atmosphere be analyzed. These issues are addressed under Impact 4.11-1.

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section and include:

- *Revision of Mitigation Measure 4.11-1 to require net zero indirect emissions from electricity use during operation (reducing the significance of all impacts related to greenhouse gas emissions from significant and unavoidable to less than significant with mitigation).*

4.11.1 Setting/Affected Environment

The study area for impacts related to GHGs is the state of California.

4.11.1.1 Climate Change

Overview

There is scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Gases that trap heat in the atmosphere are often called GHGs. Emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to increases in global temperatures. The potential effects of climate change in California include sea level rise and reductions in snowpack, as well as an increased number of extreme-heat days per year, high ozone days, large forest fires, and drought years (CARB, 2009). Globally, climate change could affect numerous environmental resources through potential, though uncertain, changes in future air temperatures and precipitation patterns. According to the International Panel on Climate Change (IPCC), the projected effects of climate change are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures (fewer cold days and frost days over nearly all land areas);
- Reduced diurnal temperature range over most land areas;
- Increase in heat index over most land areas; and
- More intense precipitation events.

In addition, many secondary effects are projected to result from climate change, including a global rise in sea level, ocean acidification, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity. The possible outcomes and feedback mechanisms involved are not fully understood, and much research remains to be done; however, over the long term, the potential exists for substantial environmental, social, and economic consequences. Secondary effects of climate change with the most potential to affect the project area include sea level rise and ocean acidification. For discussion of effects related to climate change-induced sea level rise, refer to the *Coastal Flooding and Sea Level Rise* discussion in Section 4.3.1.4. See below for discussion of climate change-induced ocean acidification.

Ocean Acidification

Atmospheric CO_2 has risen by about 40 percent above pre-industrial levels. The ocean absorbs about a quarter of human-caused emissions of CO_2 annually, which is changing seawater chemistry and decreasing pH, making seawater more acidic. Surface ocean pH has declined by 0.1 units, equivalent to a 30 percent increase in ocean acidity, since pre-industrial times. Ocean acidification will continue in the future due to the interaction of atmospheric CO_2 and ocean water. Regional differences in ocean pH occur as a result of variability in regional or local conditions, such as upwelling that brings subsurface waters up to the surface. Locally, coastal waters and estuaries can also exhibit acidification as the result of pollution and excess nutrient inputs (GCRP, 2014).

More acidic waters disrupt the marine food chain. For example, calcium carbonate is a skeletal component of a wide variety of organisms in the oceans, including corals. The chemical changes caused by the uptake of CO_2 make it more difficult for these living things to form and maintain calcium carbonate shells and skeletal components and increases erosion of coral reefs, resulting in alterations in marine ecosystems that will become more severe as present-day trends in acidification continue or accelerate (GCRP, 2014). It should be noted that ocean acidification has little effect on the operations of desalination plants since the reverse osmosis process is not affected by pH.

4.11.1.2 Greenhouse Gas Emissions

GHG emissions that result from human activities primarily include carbon dioxide (CO_2), with much smaller amounts of nitrous oxide (N_2O), methane (CH_4, often from unburned natural gas), sulfur hexafluoride (SF_6) from high-voltage power equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. Because these GHGs have different warming potentials (i.e., the amount of heat trapped in the atmosphere by a certain mass of the gas), and CO_2 is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO_2-equivalent (CO_2e) emissions. For example, while SF_6 represents a small fraction of the total annual GHGs emitted worldwide, this gas is very potent, with 22,800 times the global warming potential of CO_2. Therefore, an emission of 1 metric ton of SF_6 would be reported as 22,800 metric tons CO_2e. The global warming potential of CH_4 and N_2O are 25 times and 298 times that of CO_2, respectively (CARB, 2016a). The principal GHGs resulting from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide

CO_2 is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic (human) sources. Key anthropogenic sources include the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, wood products, and other biomass, as well as industrially relevant chemical reactions such as those associated with manufacturing cement. CO_2 is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane

Like CO_2, CH_4 is emitted from both natural and anthropogenic sources. Key anthropogenic sources of CH_4 include gaseous emissions from landfills, releases associated with mining and materials extraction industries (in particular coal mining), and fugitive releases associated with the extraction and transport of natural gas and crude oil. CH_4 emissions also result from livestock and agricultural practices. Small quantities of CH_4 are released during fossil fuel combustion.

Nitrous Oxide

N_2O is also emitted from both natural and anthropogenic sources. Important anthropogenic sources include industrial activities, agricultural activities (primarily the application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

Fluorinated Gases

HFCs, PFCs, and SF_6 are synthetic gases emitted from a variety of industrial processes, and they contribute substantially more to the greenhouse effect on a pound for pound basis than the GHGs described previously. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in small quantities, but because of their potency they are sometimes referred to as "high global warming potential gases." Fluorinated gases would not be emitted by any of the proposed construction or operational equipment that would be associated with the proposed project.

4.11.1.3 Greenhouse Gas Sources

Anthropogenic GHG emissions in the United States are derived mostly from the combustion of fossil fuels for transportation and power production. Energy-related CO_2 emissions resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. More than half of the energy-related emissions come from large stationary sources, such as power plants; approximately one-third derive from transportation; and a majority of the remaining sources include: industrial processes, agriculture, commercial, and residential (USEPA, 2016a).

Statewide emissions of GHG from relevant source categories for 2008 through 2014 are summarized in **Table 4.11-1**. Specific contributions from individual air basins, such as the North Central Coast Air Basin (Air Basin), which encompasses the project area, are included in the emissions inventory but are not itemized by air basin. In 2014, California produced 441.5 million gross metric tons of CO_2e emissions. Transportation was the source of 37 percent of the state's GHG emissions, followed by industrial at 24 percent, electricity generation at 20 percent, commercial and residential sources at 11 percent, and agriculture and forestry comprised the remaining 8 percent (CARB, 2016b). Although not included as an emission inventory category, water use requires significant amounts of energy. Approximately one-fifth of the electricity and one-third of the non-power plant natural gas consumed in the state are associated with water delivery, treatment, and use.

Existing Greenhouse Gas Emissions at the Project Site

No industrial, residential, or other emitters of GHGs currently are located or operating at the MPWSP Desalination Plant site, slant wells site, Carmel Valley Pump Station site, or ASR injection well sites. There are no other existing onsite operations that result in the combustion of fossil fuel, or otherwise result in direct anthropogenic emissions of GHGs at the project sites. There is, however, existing grassland or scrub type vegetation located at these project sites that provide ongoing natural carbon uptake. The natural carbon uptake expressed in CO_2 associated with grassland and scrub vegetation types are 4.3 metric tons and 14.3 metric tons of CO_2 per acre-year, respectively (CAPCOA, 2013). These rates of carbon uptake were calculated by multiplying total biomass (metric tons dry matter per acre) from IPCC data by the carbon fraction in plant material (i.e., 0.47), then using the ratio of molecular weights (44/12) to convert from metric tons of carbon to metric tons of CO_2.

TABLE 4.11-1
CALIFORNIA GHG EMISSIONS (million metric tons CO_2E)

Emission Inventory Category	2008	2009	2010	2011	2012	2013	2014	
Transportation	176.17	169.51	166.20	162.90	162.94	161.46	163.02	37%
Electricity Generation (In State)	54.50	53.51	46.92	41.36	51.18	49.60	51.81	12%
Electricity Generation (Imports)	65.92	48.13	43.67	46.94	44.15	40.24	36.56	8%
Commercial	17.74	18.74	20.20	20.85	21.11	21.64	21.63	5%
Industrial	99.31	97.26	100.88	100.76	101.09	103.76	104.22	24%
Residential	30.55	30.33	31.43	32.25	30.30	31.47	27.40	6%
Agriculture and Forestry	36.37	34.06	34.92	35.85	36.78	35.36	36.11	8%
Not Specified (Solvents & Chemicals)	0.85	0.79	0.82	0.79	0.78	0.79	0.79	0%
Total Gross Emissions	**481.4**	**452.3**	**445.0**	**441.7**	**448.3**	**444.3**	**441.5**	100%

NOTE: The GHG percentages of the total gross emissions for year 2014 were rounded to the nearest whole number.

SOURCE: CARB, 2016b.

4.11.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, and regulations relevant to GHGs. A summary of each is provided, along with a finding regarding the proposed project's consistency with those regulatory requirements. The consistency findings concern the proposed project without mitigation. Where the proposed project would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.11.5, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is discussed in more detail.

4.11.2.1 Federal Regulations

Clean Air Act

On April 2, 2007, in *Massachusetts v. USEPA* (549 US 497), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the USEPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making such decisions, the USEPA is required to follow the language of Section 202(a) of the Clean Air Act, which obligates it to prescribe (and from time to time revise) standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines. The Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more than a dozen environmental, renewable energy and other organizations.

On April 17, 2009, the USEPA Administrator signed proposed "endangerment" and "cause or contribute" findings for GHGs under Section 202(a) of the Clean Air Act. The USEPA found that six GHGs, taken in combination, endanger both the public health and the public welfare of current and future generations. The USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under Clean Air Act Section 202(a). Pursuant to 40 CFR Part 52, *Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule*, USEPA has mandated that Prevention of Significant Deterioration (PSD) and Title V requirements apply to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year (USEPA, 2016b). The proposed project would not trigger PSD or Title V permitting under this regulation because it would generate less than 100,000 tons of CO_2e emissions per year.

U.S. Supreme Court Decision in Utility Air Regulatory Group v. USEPA

On June 23, 2014, the U.S. Supreme Court held that USEPA may not treat GHG emissions as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). In accordance with the Supreme Court decision, on April 10, 2015, the D.C. Circuit issued an amended judgment in *Coalition for Responsible Regulation, Inc. v. U.S. Environmental Protection Agency*, which vacated the PSD and Title V regulations under review in that case to the extent that they require a stationary source to obtain a PSD or Title V permit solely because the source emits or has the potential to emit GHGs above the applicable major source thresholds. The D.C. Circuit also directed USEPA to consider whether any further revisions to its regulations are appropriate, and if so, to undertake to make such revisions. In response to the Supreme Court decision and the D.C. Circuit's amended judgment, the USEPA intends to conduct future rulemaking action to make appropriate revisions to the PSD and operating permit rules (USEPA, 2016b).

4.11.2.2 State Regulations

A variety of statewide rules and regulations mandate the quantification and, if emissions exceed established thresholds, the reduction of GHGs. CEQA requires Lead Agencies to evaluate project-related GHG emissions and the potential for projects to contribute to climate change and to provide appropriate mitigation in cases where the Lead Agency determines that a project would result in a significant addition of GHGs to the atmosphere.

Executive Order S-3-05

In June 2006, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which established the following statewide emission-reduction targets through the year 2050:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

This executive order does not contain any requirements that directly pertain to the proposed project; however, future actions taken by the State of California to implement these goals may affect the proposed project, depending on the specific implementation measures that are developed.

Assembly Bill 32

California Assembly Bill (AB) 32, *the Global Warming Solutions Act of 2006*, required the California Air Resources Board (CARB) to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. AB 32 required CARB to adopt regulations that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and CARB is authorized to enforce compliance with the program. Under AB 32, CARB also was required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. CARB established this limit in December 2007 at 427 million metric tons of CO_2e. This is approximately 30 percent below forecasted "business-as-usual" emissions of 596 million metric tons of CO_2e in 2020, and about 10 percent below average annual GHG emissions during the period of 2002 through 2004 (CARB, 2009). In the interest of achieving the maximum technologically feasible and cost-effective GHG emission reductions, AB 32 permits the use of market-based compliance mechanisms and requires CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts.

Climate Change Scoping Plan (AB 32 Scoping Plan)

In December 2008, CARB approved the AB 32 Scoping Plan outlining the State's strategy to achieve the 2020 GHG emissions limit. The Scoping Plan estimates a reduction of 174 million metric tons CO_2e (about 191 million tons) from the transportation, energy, agriculture, forestry, and high climate-change-potential sectors, and proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The Scoping Plan must be updated every five years to evaluate the mix of AB 32 policies to ensure that California is on track to achieve the 2020 GHG reduction goal. Appendices C and E of the adopted 2008 AB 32 Scoping Plan include a list of 39 recommended action measures to reduce GHG emissions (CARB, 2009). Of the action measures, *W-3: Water System Energy Efficiency,* is the only measure that is directly applicable to the proposed project. The purpose of this measure is to reduce the magnitude and intensity of energy use in California's water systems through implementation of energy-efficient production, treatment, and conveyance infrastructure. CARB has set a 20 percent electricity use reduction target from 2006 levels for this measure. The CPUC cannot substantiate that the proposed project's electricity use would be reduced by 20 percent; therefore, the MPWSP would be potentially inconsistent with Measure W-3. This issue is addressed in Impact 4.11-3.

The AB 32 Scoping Plan must be updated every five years to evaluate the adopted mix of AB 32 policies to ensure that California is on track to achieve the 2020 GHG reduction goal. CARB

released its first Scoping Plan Update in May 2014 (CARB, 2014). There are no recommended actions identified in the Scoping Plan Update that are directly applicable to the proposed project.

Mandatory Reporting Requirements

Pursuant to California Code of Regulations Title 17, Sections 95100 through 95158, operations of large industrial stationary combustion and process emissions sources that emit 10,000 metric tons CO_2e or more per calendar year are required to report and verify their GHG emissions to CARB. As indicated in **Table 4.11-5** under Impact 4.11-1, below, the total amortized GHG emissions for the proposed project would be 7,638 metric tons per year, which is below the AB 32 reporting threshold; therefore, the proposed project would not be subject to the AB 32 mandatory reporting requirements. In addition, many of the proposed project's sources of GHG emissions are not directly subject to CARB's reporting program because they are non-stationary sources, or are indirect emissions from electricity generating facilities which separately are subject to this program.

Market-Based "Cap-and-Trade" Compliance Mechanism

AB 32 allows the use of market-based compliance mechanisms to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 also requires CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts. In response, CARB adopted a cap-and-trade program that covers major sources of GHG emissions such as refineries and power plants. The program includes an annual emissions cap that declines over time. CARB's cap-and-trade program applies to facilities that would emit 25,000 metric tons or more of CO_2e per year. Since the total amortized GHG emissions for the proposed project are estimated at 7,638 metric tons per year, the cap-and-trade program would not apply to the proposed project (see Section 4.11.5 for a discussion and breakdown of the construction-related and operational GHG emissions associated with the proposed project). The fossil fuel power plants that would generate the electricity that could be used by the project are already subject to and participate in CARB's cap-and-trade program.

Senate Bill 97

In 2007, the California State Legislature passed SB 97, which required amendment of the CEQA Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The amendments took effect March 18, 2010. The amendments added Section 15064.4 to the CEQA Guidelines, specifically addressing the potential significance of GHG emissions. Section 15064.4 calls for a "good faith effort" to "describe, calculate or estimate" GHG emissions and indicates that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would:

- Increase or reduce GHG emissions;
- Exceed a locally applicable threshold of significance; or
- Comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

The CEQA Guidelines also state that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (14 Cal. Code Regs. §15064(h)(3)). Importantly, however, the CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Executive Order B-30-15

In April 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. Reaching this emission reduction target will make it possible for California to reach its ultimate goal of reducing emissions 80 percent under 1990 levels by 2050, as identified in Executive Order S-3-05. Executive Order B-30-15 also specifically addresses the need for climate adaptation and directs state government to:

- Incorporate climate change impacts into the State's Five-Year Infrastructure Plan;
- Update the Safeguarding California Plan, the state climate adaption strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change;
- Factor climate change into state agencies' planning and investment decisions; and
- Implement measures under existing agency and departmental authority to reduce GHG emissions (OGB, 2015).

Executive Order B-30-15 requires CARB to update the AB 32 Climate Change Scoping Plan to incorporate the 2030 target. The 2030 Draft Scoping Plan (Draft Scoping Plan) will serve as the framework to define the State's climate change priorities for the next 15 years and beyond. In June 2016, CARB released the 2030 Target Scoping Plan Update Concept Paper to describe potential policy concepts to achieve the 2030 target that can be incorporated in the Draft Scoping Plan. The concept paper presents four potential high-level concepts for achieving the needed GHG reductions (CARB, 2016c). The MPWSP would be potentially inconsistent with Executive Order B-30-15's GHG emissions goal because it would generate direct and indirect emissions of GHG emissions that could have a significant impact on the environment. This issue is addressed in Impacts 4.11-1 and 4.11-2.

4.11.2.3 Applicable Regional and Local Land Use Plans and Policies

As described above, the AB 32 Scoping Plan outlines the State's overall strategy to achieve the 2020 GHG emissions limit. Although state, regional, and local land use plans, policies, and regulations generally do not address GHG emissions at the project level, numerous state, regional, and local agencies with jurisdiction over the proposed project have adopted plans, policies, and regulations related to air quality and energy consumption that also have the effect of reducing GHG emissions. Project consistency with such plans, policies, and regulations is analyzed in Sections 4.10, Air Quality, and 4.18, Energy Conservation, of this EIR/EIS.

4.11.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to GHG emissions if it would:

- Generate GHG emissions, either directly or indirectly, that could have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

The GHG analysis in this EIR/EIS relies on significance criteria identified by staff of the local air pollution control district, Monterey Bay Unified Air Pollution Control District (MBUAPCD). In February 2014, the MBUAPCD staff recommended that its Board of Directors approve an operational significance threshold of 10,000 metric tons CO_2e per year for stationary source projects that rely on operational processes and equipment that are subject to MBUAPCD permitting requirements. For land use projects, the MBUAPCD staff recommended to its board in February 2014 that it adopt the following options (i.e., if adopted, land use projects would be required to apply one of these options to demonstrate a less-than-significant impact): (a) a "bright line" significance threshold of 2,000 metric tons CO_2e per year; (b) incorporate mitigation measures to reduce all project GHG emissions by 16 percent compared to unmitigated emissions; or (c) or demonstrate compliance with an applicable adopted GHG reduction plan/climate action plan (MBUAPCD, 2014). In February 2016, the MBUAPCD adopted the staff-recommended significance threshold of 10,000 metric tons for stationary source projects (MBUAPCD, 2016a). As of June 2016, the MBUAPCD Board of Directors has not adopted any of the thresholds recommended by its staff for land use projects (MBUAPCD, 2016b). However, for the reasons set forth below, this EIR/EIS nonetheless uses the significance threshold of 2,000 metric tons CO_2e per year to evaluate whether the proposed project's emissions could have a significant impact on the environment.

For land use projects, the MBUAPCD staff-recommended bright line significance threshold is 2,000 metric tons CO_2e per year, which is based on a similar threshold that has been developed for Ventura County and represents an "emissions capture rate" of 75 percent of all commercial and residential land use development projects in Ventura County.[1] This recommended threshold is based on emissions data suggesting that commercial and residential projects that emit greater than 2,000 metric tons CO_2e per year are responsible for 75 percent of GHG emissions associated with those land uses. Therefore, use of this threshold effectively requires mitigation for the top 75 percent of emissions generated by new land use projects. If all land use-project emissions are mitigated to below this threshold, it would represent an overall reduction in new land use project-related emissions of up to 75 percent. Since the issuance of Executive Order B-30-15, the GHG emissions reductions goal of lowering GHG emissions to 40 percent below 1990 levels by 2030, is roughly equivalent to reducing emissions by 44 percent below current levels. This analysis uses

[1] A "75 percent emissions capture rate" means that 75 percent of the total emissions from all new projects would be subject to analysis in an environmental impact report prepared pursuant to CEQA, including analysis of feasible alternatives and imposition of feasible mitigation measures.

the staff-recommended bright line threshold to determine if the proposed project would generally be consistent with this goal.

It is acknowledged that the 2,000 metric ton significance threshold focuses on new commercial and residential development rather than industrial uses; however, similar to the emissions that would be associated with the proposed project, GHG emissions associated with commercial and residential development projects tend to be indirect in nature, primarily as a result of automobile and electricity use. This significance threshold falls short of meeting the Executive Order S-3-05 emissions reduction goal of lowering emissions to 80 percent below 1990 levels by 2050, which is equivalent to lowering emissions to 84 percent below current levels. The MBUAPCD staff and CARB have not yet provided guidance or recommendations for significance thresholds to evaluate consistency with the 2050 emissions reduction goal.[2]

MBUAPCD staff has not identified a specific significance threshold for short-term construction-related GHG emissions. Therefore, GHG emissions from MPWSP construction and periodic slant well maintenance are evaluated based on guidance developed by the San Luis Obispo County Air Pollution Control District (SLOCAPCD). For construction-related GHGs, SLOCAPCD recommends that total emissions from construction be amortized over a period equal to the estimated life of the project (in this case 40 years) and added to operational emissions, and then compared to the operational significance threshold (SLOCAPCD, 2012).

4.11.4 Approach to Analysis

The following discussions provide an overview of the approach to analysis for GHG emissions impacts. The assumptions used to estimate construction and operational GHG emissions are provided in **Appendix G1**.

4.11.4.1 Construction Emissions

Assumptions regarding construction equipment, equipment horsepower (hp) ratings, and construction phasing were developed by the CPUC and the Sanctuary in coordination with CalAm to populate the off-road equipment GHG emissions model used in this analysis. For off-road equipment, emissions were estimated using the California Emissions Estimator Model version 2013.2.2 (CalEEMod v2013.2.2). It is assumed that each piece of equipment associated with construction of the proposed MPWSP Desalination Plant would operate for up to 12 hours per day, the drill rigs for installation of the subsurface slant wells and ASR-5 and ASR-6 Wells would operate for up to 24 hours per day, the other equipment required to construct the slant wells and associated facilities would operate for up to 12 hours per day, and construction

[2] On July 13, 2017, the California Supreme Court issued its opinion, reversing and remanding the 4th District Court of Appeals prior decision, in *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497. There, the Supreme court held that the greenhouse gas analysis in the EIR SANDAG prepared for its SB 375 regional transportation plan was not required to "explicitly engage in an analysis of the consistency of the projected 2050 emissions" with the 80 percent reduction goal called for in Executive Order No. S-3-05, and in dicta, advised lead agencies to ensure that CEQA analysis discloses long-term greenhouse gas emissions, and "stays in step with evolving scientific knowledge and state regulatory schemes."

equipment associated with all other project components (e.g., pipelines, and pump stations) would operate up to 8 hours per day.

GHG emissions from project-related on-road construction vehicles were estimated using CARB's most recent version of its motor vehicle emissions burden model (EMFAC2014). Since the EMFAC2014 model provides GHG emissions factors for CO_2 only, N_2O emission factors for gasoline and diesel combustion were obtained from The Climate Registry (TCR, 2016). GHG emissions in the form of CO_2e were calculated by multiplying the estimated total miles that would be traveled by construction worker vehicles and haul trucks by the GHG emission factors, multiplying the N_2O and CH_4 emissions by their respective global warming potential, and adding the CO_2, N_2O, and CH_4 emissions. Consistent with the SLOCAPCD's recommended approach for construction emissions, this analysis amortizes the proposed project's construction emissions over a 40-year project lifetime and adds them to the proposed project's estimated annual operational emissions, and then compares the total combined emissions to the 2,000 metric tons CO_2e per year significance threshold.

4.11.4.2 Operational Emissions

Indirect Emissions

The existing power demand needed to produce, treat, and convey water supplies for the Monterey District Service area used in this analysis is based on the average annual actual energy used in 2011, 2012, 2013, and 2015, multiplied by the 10-year average (2006 through 2015) of water production. Existing operational power demand is approximately 11,466 megawatt-hours (MWh) per year (CalAm, 2016). This amount represents the baseline electrical demand for this analysis.

The indirect emissions associated with the proposed project's electricity use were estimated using Pacific Gas and Electric Company's (PG&E) power grid emission factor for year 2020 [i.e., 290 pounds CO_2 per MWh; PG&E, 2015], which would be the first year the project would be operational. N_2O and CH_4 emission factors for electricity use were obtained from TCR (2016). CalAm initially estimated that the proposed project's annual electricity demand would be approximately 63,164 MWh per year (CalAm, 2016); and subsequent adjustments in the project description increased this estimate to 63,364 MWh per year. Therefore, the net increase in electrical power demand as of 2020 would be approximately 51,898 MWh per year. GHG emissions were estimated for CO_2, N_2O, and CH_4, the total CO_2e associated with project power demand was calculated by multiplying the N_2O and CH_4 emissions by their respective global warming potential, and then those values were added to the CO_2 emissions.

Exhaust Emissions

GHG emissions would also be generated from project-related vehicle travel during project operations and maintenance, from emergency generator testing at the MPWSP Desalination Plant, Monterey Pump Station, and Carmel Valley Pump Station, and off-road equipment use associated with periodic maintenance of the subsurface slant wells. GHG emissions from vehicles that would be used during project operations and maintenance were estimated using the same methodology described above for construction-related vehicle emissions. Emissions associated with up to

30 commuting workers each day and up to 3 material deliveries per day were calculated using EMFAC2014 emissions factors for light-duty trucks and heavy-duty diesel trucks, and multiplied by the respective estimated long-term vehicle miles per year for each vehicle type.

Routine operation of the emergency generators would be limited to 50 hours per year per generator for testing and maintenance. Fuel consumption factors for the emergency generators were obtained from manufacturer specifications of standby diesel generator sets similar to the size of the proposed emergency generators. GHG emissions associated with emergency generator testing were estimated by multiplying the total diesel fuel estimated to be consumed by CO_2, N_2O, and CH_4 emission factors obtained from TCR (TCR, 2016). N_2O and CH_4 emission values were multiplied by their respective global warming potentials and added to the CO_2 emissions to obtain CO_2e emissions.

For off-road equipment associated with maintenance of the slant wells that would be required every five years, GHG emissions were estimated using CalEEMod v2013.2.2. It was assumed that this maintenance would require four pieces of heavy-duty off-road equipment operating between six and eight hours per day in the CEMEX active mining area for periods ranging from 12 weeks to 18 weeks. Because this maintenance work would occur every five years, this analysis amortizes the slant well maintenance emissions over the five-year maintenance interval for comparison to the 2,000 metric ton significance threshold.

Brine Degassing Emissions

CO_2 degassing from groundwater to the atmosphere has been identified by a member of the public as a potential GHG emissions issue associated with the proposed project. Groundwater CO_2 partial pressures are typically 10 to 100 times higher than atmospheric CO_2 partial pressures. Therefore, when groundwater is extracted and brought to the surface, CO_2 degassing from the groundwater to the atmosphere occurs. To determine the amount of CO_2 degassing from subsurface water extraction that occurs when the groundwater equilibrates with the atmosphere, geochemical speciation modeling of the water would be required (Macpherson, 2009).

The GHG emissions analysis in this EIR/EIS includes consideration of the CO_2 that would be released from the discharged brine. The source water would be extracted from below the ocean floor using subsurface slant wells and conveyed to the desalination plant in an enclosed pipe. Therefore, the source water would behave like extracted groundwater, and degassing would occur when it would be brought to the surface if not treated. Approximately 43 percent of the water would pass through the seawater reverse osmosis system and become drinking water. The drinking water would be treated with lime to elevate the pH such that no CO_2 would be released. The remaining 57 percent would be discharged to the brine storage basin where it would temporarily be stored and have the opportunity to come to equilibrium with the atmosphere thereby releasing CO_2. To calculate the amount of CO_2 that could be released from source water during operation of the proposed project, Trussell Technologies (2016) used data from water quality samples drawn from the test slant well in June 2016 (see Appendix G2). The State Water Resources Control Board and the Central Coast Regional Water Quality Control Board have peer reviewed Trussell Technologies' analysis and the results of the Trussell Technologies analysis is included in this EIR/EIS.

Carbon Sequestration

The rate of existing carbon sequestration that occurs at the proposed project sites that would be permanently disturbed has been estimated under the assumption that the ongoing natural carbon uptake by vegetation and biological soil crusts associated with the general vegetation types of grassland and scrub are equivalent to 4.3 metric tons and 14.3 metric tons of CO_2 per acre, respectively (see Section 4.11.1.3, Greenhouse Gas Sources). The acreages of vegetation types that would be permanently disturbed by the proposed project or one of the action alternatives were obtained from Section 4.6, Terrestrial Biological Resources.

4.11.4.3 Evaluation of GHG Emissions

The proposed project would include three new emergency backup generators that would be operated intermittently. With the exception of these backup generators that would emit less than one half of one percent of the total annual project-related GHG emissions (see Table 4.11-4), the proposed project would include no other stationary sources of emissions that would require a MBUAPCD permit. Although the proposed project would be a heavy industrial land use type, it would primarily result in indirect emissions associated with use of electricity from PG&E's electrical grid by stationary sources at power plants. These sources are regulated and permitted by local air districts throughout California; however, they are outside of the control of CalAm and are not under the jurisdiction of the CPUC. Because the sources of the indirect emissions are already regulated and permitted by the local air districts where the power plants reside, no permit or other MBUAPCD approval would be required for the proposed project's demand for electricity. For this reason, the stationary source threshold of 10,000 metric tons CO_2e per year is not an appropriate threshold to gauge impact significance for the proposed project; use of one of the threshold options developed for land use projects, which do not require MBUAPCD permits for stationary sources, is more appropriate. While the 10,000 metric tons CO_2e per year significance threshold is not used, indirect emissions associated with electricity consumption are calculated and impacts are fully assessed in this chapter.

As mentioned above and elaborated in the discussion of Impact 4.11-1, below, the vast majority of GHG emissions associated with the proposed project would be indirect emissions related to the project's use of electricity from PG&E's electrical power grid. The estimated future average annual energy use for the proposed project is based on aggregate energy use factors for the existing and proposed production facilities and the volume of desalinated product water that would be produced from each. The energy requirements for desalination depend on several factors, including source water, RO membrane properties, and pre- and post-treatment requirements. However, based on the information currently available for the proposed project, it is not possible to quantify with reasonable certainty whether or not the proposed project emissions can be reduced by 16 percent (even with implementation of mitigation discussed in the analysis, below), as recommended by MBUAPCD staff as one of the options to demonstrate a less-than-significant impact, as described above in Section 4.11.3. In addition, there is no existing local or regional GHG reduction plan/climate action plan that would be applicable to the proposed project, such that compliance with an applicable adopted GHG reduction plan/climate action plan could be demonstrated for this project. Therefore, neither the mitigated 16-percent reduction in GHG emissions nor the compliance

with an GHG reduction plan/climate action plan thresholds for assessment of land use projects are considered practicable for evaluation of the proposed project.

4.11.5 Direct and Indirect Effects of the Proposed Project

Table 4.11-2 summarizes the proposed project's GHG-related impacts and significance determinations.

TABLE 4.11-2
SUMMARY OF IMPACTS – GHG EMISSIONS

Impacts	Significance Determinations
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	LSM
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	LSM
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	LSM
Impact 4.11-C: Cumulative impacts related to greenhouse gas emissions	LSM

NOTE:
LSM = Less than Significant with implementation of mitigation.

Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project. (*Less than Significant with implementation of mitigation*)

Implementation of the proposed project would result in short-term construction and long-term operational emissions. Construction and operation emissions that would be associated with the proposed project are discussed separately below; however, the impact conclusion is based on the sum of amortized construction emissions and the operational emissions (see Section 4.11.4, Approach to Analysis, for additional information regarding the methods used to estimate the proposed project's short-term construction and long-term operation emissions). In the Draft EIR/EIS, Impact 4.11-1 was deemed Significant and Unavoidable due to the lack of available information to quantify the reductions from the proposed mitigation measures. Since publication, the project proponent has committed to a detailed GHG emissions reduction plan that enables quantification of GHG reductions with sufficient certainty. This determination, due to the adoption of the revised mitigation measures described below, has been changed to less than significant with implementation of mitigation. This change reflects a decrease in anticipated impacts, adopts measures previously discussed in the Draft EIR/EIS, and reflects a commitment to mitigation measures in response to comments received during the public comment period.

Construction Emissions

As shown in **Table 4.11-3**, GHG emissions generated by construction of the proposed project would total approximately 14,291 metric tons CO_2e over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e

(refer to Section 4.11.4.1, Construction Emissions, for details on the approach this analysis uses relative to short-term construction emissions; and **Appendix G1** for all assumptions associated with the GHG construction emissions).

TABLE 4.11-3
TOTAL GHG EMISSIONS FROM PROJECT CONSTRUCTION

Construction Emission Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	873.98
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	249.65
Ryan Ranch-Bishop Interconnection Improvements	264.03
Main System-Hidden Hills Interconnection Improvements	198.02
Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**

SOURCE: ESA, 2017. See **Appendix G1.**

Operational Emissions

The proposed project would generate long-term GHG emissions associated with electrical power consumption, vehicle travel, operation of diesel-fueled emergency generators, and off-road equipment use associated with periodic maintenance at the slant well sites. As described in Section 4.11.4.2, indirect emissions would result from a total project-related net increase in electricity demand of approximately 51,898 MWh per year. Other emission sources that would occur during operations of the proposed project would include up to 66 one-way vehicle trips per day associated with commuting workers and material deliveries, up to 50 hours per year of routine testing and maintenance of each of the two emergency generators at the MPWSP Desalination Plant site (1,000 hp) and at the Carmel Valley Pump Station (68 hp), off-road equipment that would be required every five years to maintain the slant wells, CO_2 degassing from discharged brine water, and loss of carbon sequestration due to permanent vegetation removal. The estimated annual emissions that would be associated with each of these operational sources are presented in **Table 4.11-4**. As indicated in the table, total net CO_2e emissions associated with operation of the proposed project would be approximately 8,008 metric tons per year.

TABLE 4.11-4
TOTAL GHG EMISSIONS FROM PROJECT OPERATIONS

Operation Emissions Source	Operational Emissions (total metric tons)			
	CO_2	N_2O	CH_4	CO_2e
Baseline Electricity Consumption	1,508.27	0.03	0.16	1,521.11
Electricity Consumption with Project	8,308.83	0.16	0.89	8,406.07
Net Increase in Electricity Consumption	6,800.56	0.13	0.73	6,884.96
Vehicle Trips	233.58	0.02	0.01	239.66
Emergency Generator Testing	24.86	<0.01	<0.01	25.09
Off-road Equipment for Slant Well Maintenance (amortized over 5 years)	14.81	<0.01	<0.01	14.86
Degassing from Discharged Brine Water*	735.00	---	---	735.00
Loss of Carbon Sequestration	107.98	---	---	107.98
Total	**7,916.79**	**0.15**	**0.74**	**8,007.54**

SOURCES: ESA, 2017. See **Appendix G1** and Trussell, 2016, **Appendix G2**.

As listed in **Table 4.11-4**, the vast majority of GHG emissions associated with long-term operation of the proposed project would be indirect emissions from the project's use of electricity, which would be provided by the local PG&E electrical power grid.

Due to California's Renewables Portfolio Standard (RPS) program that requires investor-owned utilities to increase procurement from eligible renewable energy sources to 33 percent of total procurement by 2020, PG&E has steadily increased the amount of renewables in its energy production portfolio, which lowers the overall indirect emissions associated with use of its electricity. The mix of sources of electricity that PG&E delivered to its customers in 2015 is described in Section 4.18.1.2 and Table 4.18-1. In fact, indirect emissions associated with use of PG&E's electricity will continue to drop as more and more electricity from renewable power generators is brought onto the grid. PG&E estimates that its emissions rate for its current (i.e., year 2016) energy production portfolio is 370 pounds of CO_2 per MWh generated, and that its emissions rate estimate for year 2020 is 290 pounds of CO_2 per MWh generated (PG&E, 2015). This will equal a reduction in indirect GHG emissions associated with electricity use in the PG&E service area of approximately 22 percent over the next four years. In addition, in October 2015, Governor Brown signed Senate Bill 350 which expanded the RPS program goal to 50 percent by 2030. As a result of this expansion, PG&E's electricity emissions rate (and thus the carbon footprint of the proposed project's electricity consumption) will continue to decrease throughout the life of the proposed project.

Consistency with Regulatory Requirements

As noted in Section 4.11.2, Regulatory Framework, the MPWSP would be potentially inconsistent with Executive Order B-30-15's GHG emissions goal because it would generate direct and indirect emissions of GHG emissions that could have a significant impact on the environment. As discussed

in the following paragraphs of Impact 4.11-1 conclusions and under Impact 4.11-2, **Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** and **4.11-1 (GHG Emissions Reduction Plan)** would reduce the carbon footprint of the proposed project and the impact associated with GHG emissions would be reduced to less than significant.

Impact Conclusion

As shown in **Table 4.11-5**, the sum of the 40-year amortized construction GHG emissions and the total net operation emissions that would be associated with the proposed project is approximately 8,365 metric tons CO_2e per year. These emissions would exceed the 2,000 metric tons per year significance threshold; therefore, a significant impact would occur, and the proposed project would be considered to contribute to the primary and secondary adverse effects of climate change, such as increases in global temperatures, global rise in sea level, ocean acidification, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity. Of these adverse effects, global rise in sea level would have the most potential to impact the project. See Impact 4.3-11, *Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise*, in Section 4.3.5.2, for a discussion of how global rise in sea level would affect the project.

TABLE 4.11-5
TOTAL AMORTIZED GHG EMISSIONS

Emissions Source	CO_2e (metric tons per year)
40-Year Amortized Construction Emissions	357
Total Net Operational Emissions	8,008
Total Project Emissions	**8,365**

SOURCE: ESA, 2017. See **Appendix G1**.

Implementation of **Mitigation Measure 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** would ensure that construction activities are conducted in a fuel-efficient manner (see Impact 4.18-1 in Section 4.18, Energy Conservation), which would also limit the generation of GHG construction-related emissions.

With regard to operation-related GHG emissions, the vast majority of emissions would be a result of increased electricity consumption. The MPWSP Desalination Plant is being designed with state of the art energy recovery and energy efficient features; however, additional energy-reducing features may be available to further reduce the electrical consumption associated with the proposed project. In addition, it would be feasible for CalAm to obtain "clean" renewable energy for operations of the proposed project, which would reduce the overall carbon footprint of the project. Therefore, implementation of **Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)** is required to reduce the overall carbon footprint of the proposed project.

Implementation of **Mitigation Measures 4.11-1** and **4.18-1** would ensure that the proposed project is constructed and operated in an energy-efficient manner and that the overall carbon footprint of the proposed project would be reduced to less than 2,000 metric tons CO_2e per year. The mitigated

amortized project emissions would be approximately 1,480 metric tons CO_2e per year, representing the total unmitigated amortized GHG emissions of 8,365 metric tons CO_2e per year minus the mitigated net GHG increase related to annual electricity consumption of 6,885 metric tons CO_2e per year. Therefore, this impact would be mitigated to a less-than-significant level.[3]

CARB's cap-and-trade program applies to facilities that would emit 25,000 metric tons or more of CO_2e per year. As discussed above, the proposed project would primarily result in indirect emissions associated with electricity use from PG&E's power grid that would be substantially less than 25,000 metric tons CO_2e per year. MBUAPCD considers operations of any project that would be in accordance with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions [such as, sources subject to the Cap-and-Trade requirements pursuant to Title 17, Article 5 (California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms)] to be less than significant. The fossil fuel power plants that would generate the electricity that would be used by the project are already subject to and participate in CARB's cap-and-trade program. \

Mitigation Measures

Since the publication of the Draft EIR/EIS, the project proponent, CalAm, has committed to an updated *GHG Emissions Reductions Plan.*

Mitigation Measure 4.11-1 applies to the project as a whole.

Mitigation Measure 4.11-1: GHG Emissions Reductions Plan.

(a) ***Energy Conservation Technologies*.** CalAm shall have a qualified professional (a licensed mechanical engineer or other appropriately certified professional approved by the CPUC) prepare and submit a GHG Emissions Reduction Plan (Plan) to the CPUC for approval prior to the start of project construction activities. Once approved by the CPUC, the Plan shall be implemented. The Plan shall include a detailed description of the carbon footprint for all operational components of the approved project (e.g., slant well pumping, the MPWSP Desalination Plant, transmission of source and product water, ASR system) based on manufacturer energy usage specification data for each piece of equipment and the most current power system emissions factor for GHG emissions based on the energy portfolio of PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable.

The Plan shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and shall include a commitment by CalAm to incorporate available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible. The carbon footprint estimate for the project shall include consideration of all proposed energy recovery and conservation technologies that will

[3] At the time of publication of the Draft EIR/EIS, it was not possible to substantiate numerically that the GHG emissions would be reduced to less than significant level. Since publication, a detailed mitigation strategy was developed that enabled quantification of reductions with sufficient certainty to support the determination of less than significant with mitigation.

be employed by the project, and shall describe the approximate GHG emissions reductions that will be associated with each technology.

(b) ***Renewable Energy.*** CalAm shall ensure that the approved project's operational electricity use results in net zero GHG emissions. In meeting this net zero GHG emissions requirement, subject to the procedures below, CalAm shall adhere to the following loading order:

(1) Obtain renewable energy from on-site solar photovoltaic (PV) panels and/or the adjacent Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility.

(2) Procure renewable energy from off-site sources within California via purchases from one or more of the following: (a) PG&E, (b) an Electric Service Provider under Direct Access service, or (c) Monterey Bay Community Power and its successors and assigns.

(3) Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities in California.

(4) Procure and retire Carbon Offsets, in a quantity equal to the GHG emissions attributable to the project's operational electricity use. "Carbon Offset" means an instrument issued by an Approved Registry and shall represent the past reduction or sequestration of one metric ton of CO_2e achieved by any GHG emission reduction project or activity within California. "Approved Registry" means: (i) the Climate Action Reserve, the American Carbon Registry, the Verified Carbon Standard, or the Clean Development Mechanism; or (ii) any other entity approved by the California Air Resources Board to act as an "offset project registry" under the state's Cap-and-Trade Program.

CalAm may meet this net zero GHG emissions requirement via any of the options, or their future equivalents, or any combination of options, or their future equivalents, included in the aforementioned loading order.

Further, CalAm shall progress through the loading order on the basis of the options' physical and economic feasibility, as reasonably determined by CalAm, with low-cost options preferred over high-cost options. In the event that options have equivalent costs, options enumerated earlier in the loading order shall be selected by CalAm over options enumerated later in the loading order. On or before June 1 of each year the approved project is in operation, CalAm shall submit documentation to the CPUC demonstrating that the project's operational electricity use in the immediately preceding calendar year resulted in net zero GHG emissions. Calculation of the GHG emissions attributable to the project's operational electricity use (if any) shall be calculated by CalAm on an annual basis using the most up-to-date emissions coefficient for purchased electricity (if any), as compiled or published by PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable. If the CPUC determines that CalAm failed to achieve net zero GHG emissions for the approved project's operational electricity use for a particular year, then the CPUC shall notify CalAm in writing of the exceedance within 45 days of receipt of the

documentation submitted by CalAm under this mitigation measure. The notice shall specify the metric tons of GHG emissions that exceeded the net zero obligation. Within 45 days of receipt of this notice, CalAm shall procure and retire Carbon Offsets in an amount at least equivalent to the exceedance, and will submit documentation to the CPUC demonstrating this procurement and retirement.

Secondary Impacts of Mitigation Measure 4.11-1:

Potential secondary impacts associated with implementation of solar PV panels as proposed by Mitigation Measure 4.11-1 are discussed below.

- ***Aesthetics/Glare*:** The solar PV panels would potentially be installed on the rooftop or as parking space cover in the parking lot of the MPWSP Desalination Plant, and would therefore share the same aesthetic setting as described for the Desalination Plant in Section 4.14.2.3. This site is characterized as Urban/Built Up, with agriculture, industrial operations, and local roads in the vicinity. The aesthetic visual quality is low. Due to the height of the PV panel installation, passersby may infrequently experience glare from the panels or panel frames at further distances, for fleeting moments at certain times of the year. The impact would be less than significant.
- ***Surface water runoff*:** Since solar PV panels would be installed on the rooftop or parking lot of the MPWSP Desalination Plant, they would displace impervious surfaces already examined in Section 4.3, Surface Water and Hydrology, in Impacts 4.3-7 and 4.3-8 for the Desalination Plant facility, including the parking lot. Overall, the Desalination Plant facility siting would have a less-than-significant impact related to surface water runoff which could cause the alteration of drainage patterns; solar PV panels would not increase this impact.

Mitigation Measure 4.18-1 applies to all project components.

Mitigation Measure 4.18-1: Construction Equipment and Vehicle Efficiency Plan.

(See Impact 4.18-1 in Section 4.18, Energy Conservation, for description.)

Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal. (*Less than Significant with implementation of Mitigation*)

All Proposed Project Facilities

As discussed under Impact 4.11-1, above, GHG emissions associated with the proposed project would exceed the emissions significance threshold, which indicates that implementation of the project would not be consistent with the GHG emission reduction goals for year 2030 identified in Executive Order B-30-15. Therefore, the proposed project would conflict with Executive Order B-30-15 and would result in a potentially significant impact.

Implementation of **Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)** described under Impact 4.11-1, above, and **Mitigation Measure 4.18-1 (Construction Equipment Efficiency Plan)** described under Impact 4.18-1 (see Section 4.18, Energy Conservation), respectively, would require CalAm to develop and implement a GHG Emissions Reduction Plan

and a Construction Equipment Efficiency Plan, which would reduce project-related GHG emissions to below the GHG significance threshold. Therefore, this impact is considered to be less than significant with implementation of mitigation.

Mitigation Measures

Mitigation Measure 4.11-1 applies to the project as a whole.

> **Mitigation Measure 4.11-1: GHG Emissions Reduction Plan.**
>
> (See Impact 4.11-1, above, for description.)

Mitigation Measure 4.18-1 applies to all project components.

> **Mitigation Measure 4.18-1: Construction Equipment Efficiency Plan.**
>
> (See Impact 4.18-1 in Section 4.18, Energy Conservation, for description.)

Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan. (*Less than Significant with implementation of mitigation*)

As identified in Section 4.11.2, Regulatory Framework, the only plan that would be directly applicable to the proposed project would be AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. CARB has set a 20 percent electricity use reduction target from 2006 levels for this measure. The intent of Measure W-3 is to compel water purveyors to: incorporate advanced technologies in the design and construction of water supply systems to lower energy consumption; examine opportunities to use energy sources that have lower GHG emissions; and identify new and innovative technologies and measures for mutually achieving energy and water efficiency savings. As described in Chapter 3, Description of the Project (Proposed Action), Section 3.2.2.2, Reverse Osmosis System, CalAm proposes to incorporate process and energy recovery systems that would utilize pressure-exchange technologies to transfer energy from the high-pressure brine stream to the source water stream to reduce energy demand as well as source water pumping requirements. The use of modern reverse osmosis technology would also ensure that the energy would be used efficiently. These recent technological advancements include less energy intensive membrane materials and more efficient pumps (Pacific Institute, 2013). In addition, the design and construction of the MPWSP Desalination Plant would incorporate various energy efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand (see Section 3.4.5 in Chapter 3, Description of the Proposed Project). These project elements would increase energy efficiency and reduce energy demand, thereby reducing indirect emissions of GHGs.

In addition to the proposed energy recovery system and use of energy efficient design elements, variable-frequency drives would be used where appropriate to reduce the operating speed of pumps to closely match the pump discharge pressure requirements, which would reduce energy usage (CDM Smith, 2014). Variable-frequency drives, which are electronic controllers that adjust the speed of an electric motor by modulating the power being delivered, provide continuous

control, matching motor speed to the specific demands of the work being performed (CPUC, 2016). In addition, energy-efficient motors, also called premium or high-efficiency motors, would be used for project motors ranging in size from 5 to 800 hp. These motors are up to 8 percent more efficient than standard motors. Energy-efficient motors contain design improvements including, for example, lengthening the core and using lower-electrical-loss steel, thinner stator laminations, more copper in the windings to reduce electrical losses, improved bearings, and smaller, more aerodynamic cooling fans (CPUC, 2016). Also, the pipeline system materials and sizing that would be used for the proposed project would be designed to limit pressure losses and reduce pumping and energy demand requirements (CDM Smith, 2014).

Impact Conclusion

CARB has set a 20 percent electricity use reduction target for Measure W-3. The MPWSP Desalination Plant designs already include state of the art energy recovery and energy efficient features in place of standard energy saving systems; although there may be additional feasible energy reducing features available to further reduce the electrical consumption associated with the project. Therefore, implementation of **Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)** is required to ensure that the proposed project is operated in an energy-efficient manner to the extent feasible. Although the CPUC cannot substantiate that the proposed project's electricity use would be reduced by 20 percent, pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply the project would be generated from renewable energy sources, and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Therefore, this impact is considered to be less than significant with implementation of mitigation.

Mitigation Measure

Mitigation Measure 4.11-1 applies to the project as a whole.

> **Mitigation Measure 4.11-1: GHG Emissions Reduction Plan.**
>
> (See Impact 4.11-1, above, for description.)

4.11.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.11-C: Cumulative impacts related to greenhouse gas emissions (*Less than Significant with implementation of mitigation*)

Because GHG emissions have global climate change implications, the evaluation of GHG emissions impacts is inherently a cumulative impact analysis. Through Executive Orders S-3-05 and B-30-15, as well as AB 32, the State has established goals and policies for reducing its contribution of GHG emissions. Accordingly, these policy documents provide goals against which

the significance of individual projects' emissions can be measured. Consistent with the emissions reduction goal for 2030 identified in Executive Order B-30-15, the numeric significance criterion used to evaluate operational emissions plus construction emissions amortized over the project's estimated 40-year lifetime is 2,000 metric tons CO_2e per year. The analysis also considers the MPWSP's consistency with applicable AB 32 Scoping Plan Measure W-3. If MPWSP construction and operations would result in GHG emissions greater than 2,000 metric tons CO_2e per year, or conflict with AB 32 Scoping Plan Measures, the MPWSP would not be considered consistent with the State's GHG reduction goals and the associated impact would be cumulatively significant. The timeframe during which the MPWSP could contribute to cumulative GHG emissions effects includes the 24-month construction phase, as well as the anticipated approximately 40-year operations phase.

As discussed in Impact 4.11-1, the MPWSP construction activities would generate approximately 14,291 metric tons CO_2e over the 24-month construction period. Amortized over the project's estimated 40-year lifetime, annual average emissions would be approximately 357 metric tons CO_2e (refer to **Appendix G1** for all assumptions associated with the GHG construction emissions). The Impact 4.11-1 discussion also discloses that the MPWSP operations total net emissions would be approximately 8,008 metric tons CO_2e per year, which would result in a significant impact and a significant contribution to the overall significant cumulative impact associated with climate change. Thus, the combined amortized annual construction emissions and annual operations emissions would be approximately 8,365 metric tons CO_2e. **Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)** requires CalAm to prepare and implement a GHG Emissions Reduction Plan to address project emissions. The plan would identify specific technologies CalAm would implement to maximize energy efficiency and use of renewable energy technologies, and would be subject to CPUC review prior to the start of construction. In addition, CalAm would be required to implement **Mitigation Measure 4.18-1 (Construction Equipment Efficiency Plan)** to ensure project construction activities are conducted in a fuel-efficient manner, which would also limit the generation of GHG construction-related emissions.

Implementation of these measures would reduce the overall carbon footprint of the project to a less-than-significant level. Therefore, with mitigation, the project's incremental contribution to the cumulative climate change impact related to GHG emissions would be less than significant.

The intent of AB 32 Scoping Plan Measure W-3 (Water System Energy Efficiency) is to encourage GHG emissions reductions through the incorporation of energy saving technologies. As described in the Impact 4.11-3 discussion, CalAm has committed to implementing project features to ensure that the MPWSP would be operated in an energy efficient manner; although there may be additional feasible energy-reducing features available to further reduce the electrical consumption associated with the project. Therefore, implementation of Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan) is required to ensure that the proposed project is operated in an energy-efficient manner to the extent feasible. CARB has set a 20 percent electricity use reduction target for Measure W-3. Although the CPUC cannot substantiate that the proposed project's electricity use would be reduced by 20 percent, pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply the project would be generated from renewable energy sources, and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or

retirement of Carbon Offsets. Therefore, the project's incremental contribution to the cumulative impact related to conflicts with the AB 32 Climate Change Scoping Plan would be less than significant with implementation of mitigation.

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4.12 Noise and Vibration

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As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Description of open window noise scenarios for sleep interference;*
- *Revision to Mitigation Measure 4.12-1a to specify noise complaint response and documentation system;*
- *Revision to Mitigation Measure 4.12-1d to ensure that barrier blankets sufficiently achieve performance standards; and,*
- *Revision to Mitigation Measure 4.12-1e to include temporarily hotel accommodations when nighttime construction noise would exceed 35 dBA with windows open.*

This section evaluates the potential noise and vibration impacts associated with construction and operation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). This section describes the existing noise environment and identifies nearby sensitive receptors, presents relevant local noise ordinances and standards, and evaluates the potential for the proposed project to result in noise and vibration impacts. This section focuses on noise and vibration impacts on humans and structures; potential noise and vibration effects on marine and

terrestrial wildlife are addressed in Sections 4.5, Marine Biological Resources, and 4.6, Terrestrial Biological Resources, respectively.

4.12.1 Key Concepts and Terminology

4.12.1.1 Noise

Sound is mechanical energy transmitted by pressure waves through a medium such as air or water; the manner in which sound travels through this medium is influenced by the physical properties of the medium (such as temperature, density, and humidity). Noise is often defined as unwanted sound. Of the various noise descriptors used to characterize the loudness of a sound, the sound pressure level has become the most common.

The human ear is not equally sensitive to all frequencies on the audible sound spectrum; for this reason, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The dBA, or A-weighted decibel, is a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA.

Sound can vary in intensity by over 1 million times within the range of human hearing; for this reason, the decibel scale is based on logarithms (a system used to shorten calculations in mathematics), which keeps sound pressure measurements within a convenient and manageable range. Because the decibel scale is logarithmic in nature, two noise sources do not combine in a simple additive fashion. For example, if two sources each produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. The noise levels presented in this section are expressed in dBA, unless otherwise indicated.

Stationary noise sources such as idling vehicles or onsite construction equipment are considered "point sources," and noise originating from these sources "attenuates," or decreases, based on certain physical principles (e.g., spherical spreading[1]). In accordance with these principles, this analysis assumes that noise originating from a point source within 200 feet of a receiver attenuates at a rate of 6.0 dBA per doubling of distance, and noise from a point source greater than 200 feet away attenuates at a rate of 7.5 dBA per doubling of distance (Caltrans, 2009). Application of these attenuation rates account for such factors as the absorption of noise waves into ground surfaces, vegetation, and intervening structures.

Noise Exposure and Community Noise

The sound pressure level is a measure of noise experienced by an individual at a given moment, and noise exposure is a measure of noise experienced over a period of time. However, consistent noise levels rarely persist over a long period of time. In fact, community noise varies continuously with time and in relation to the contributing sources of sound within the noise environment. Community noise is primarily the product of many distant noise sources that combine to create a relatively stable background noise environment, and individual contributors

1 Noise attenuates as sound waves spherically spread over hard and soft surfaces.

to the community noise level are generally unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources as well as changes in atmospheric conditions. The addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) makes community noise constantly variable throughout a day.

To appropriately characterize the community noise environment and evaluate noise impacts, noise exposure must be measured over a period of time. This time-varying nature of environmental noise is characterized using statistical noise descriptors. In addition to dBA, the following noise descriptors are used in this evaluation:

dB — The decibel (dB) scale is used to quantify sound intensity, with 0 dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

dBA — A-weighted decibels (dBA) are measured using a filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies.

L_{eq} — The energy-equivalent sound level (L_{eq}) provides a single numerical value for noise measured over a specified period of time. The L_{eq} is the average noise exposure level for the given time period.

L_{max} — The instantaneous maximum noise level (L_{max}) measured during the measurement period.

L_{dn} or DNL — The day-night average sound level (DNL) is the average of the A-weighted sound levels occurring during a 24-hour period and accounts for the greater sensitivity of most people to noise at night. DNL "penalizes" noise occurring between 10:00 p.m. and 7:00 a.m. by adding 10 dBA to nighttime noise levels.

CNEL — Similar to DNL, the community noise equivalent level treats each evening noise event as though it were three, which adds a 4.77-dB "penalty" for noise events occurring between 7:00 p.m. and 10:00 p.m. Nighttime events are multiplied by ten, which adds a 10-dB penalty to noise events occurring between 10:00 p.m. and 7:00 a.m.

Effects of Noise on People

The effects of noise on people can be placed into three categories: the subjective effects of annoyance, nuisance, and dissatisfaction; interference with activities such as speech, sleep, and learning; and physiological effects such as hearing loss or sudden startling. Environmental noise typically produces effects in the first two categories. Workers at industrial plants often experience noise in the third category. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important method of predicting human reactions to a new noise environment is to compare the new noise level to the existing noise level to which one has adapted (i.e., the ambient noise level). In general, the more a new noise level exceeds the former ambient noise level, the

less acceptable the new noise environment will be judged. A California Department of Transportation (2009) study reports the following human responses to changes in noise levels:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA increase is considered a "barely perceptible" difference (i.e., the change in noise is perceived but does not cause a human response).
- An increase of at least 5 dBA is considered a "readily perceptible" difference or the change required to elicit a noticeable change in human response.
- A 10-dBA increase is subjectively heard as an approximate doubling in loudness.

4.12.1.2 Groundborne Vibration

Vibration is an oscillatory motion through a solid medium. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for individuals to perceive vibration from sources such as buses and trucks, even in locations near major roads. However, some common vibration sources produce groundborne vibration that can be felt (e.g., construction activities such as blasting, pile driving, and operating heavy equipment).

There are several methods employed to quantify vibration. The measurement used in this analysis—peak particle velocity (PPV)—is defined as the maximum instantaneous peak of the vibration signal. PPV is used to describe vibration impacts on buildings and structures and is expressed in inches per second (in/sec). Typically, groundborne vibration generated by human activity attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures); people (residents, especially the elderly and sick); and locales with vibration-sensitive equipment such as hospitals and research labs.

4.12.2 Setting/Affected Environment

The study area for evaluation of noise and vibration impacts encompasses the project area and the nearest potentially affected sensitive receptors to the proposed facilities. There are no Monterey Bay National Marine Sanctuary (MBNMS) resources that would be affected by impacts identified in this section; all impacts related to noise and vibration would occur outside of MBNMS boundaries. Therefore, MBNMS resources are not described in the environmental setting/affected environment.

Applying a worst case daytime noise level (pile driving at 101 dBA at 50 feet) and the most restrictive daytime noise threshold (exterior speech interference level of 70 dBA, L_{eq}) results in a maximum potential impact distance of 1,800 feet without mitigation. Beyond this distance, all daytime construction noise impacts would be less than significant. Similarly, applying a worst case nighttime noise level (well drilling or open trench work at 81 dBA at 50 feet) and the most restrictive nighttime noise threshold (exterior sleep interference level of 60 dBA, L_{eq}) results in a maximum potential impact distance of 600 feet without mitigation. Beyond this distance, all

nighttime construction noise impacts would be less than significant. Consequently, the study area extends 1,800 feet from all trenchless construction receiving pits and 600 feet from all other project elements, including operational sources.

4.12.2.1 Existing Noise Environment

Much of the study area experiences relatively moderate (50 to 60 dBA, L_{eq}) noise levels due to its proximity to noise sources. Vehicle traffic is the predominant source of noise throughout the project area. During peak traffic hours, vehicle noise generally ranges between 50 and 80 dBA, L_{eq} depending on distance from the major roadways. Coastal winds can commonly generate noise levels in the range of 50 to 60 dBA, L_{max}. Typical noise sources in the vicinity of the proposed project components are described below.

Typical Noise Sources

Coastal Dunes and Agricultural Areas

Land uses in the vicinity of the proposed seawater intake system, MPWSP Desalination Plant, and new Desalinated Water Pipeline are dominated by farmland, grazing land, and industrial uses such as the CEMEX sand mining facility at the coast, and the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant and Monterey County Landfill to the east and southeast of the MPWSP Desalination Plant site, respectively. The proposed new Transmission Main would be aligned north-south along the Monterey Peninsula Recreational Trail, through the City of Marina and then crossing over to the west side of Highway 1. Once across Highway 1 the primary sources of noise in these areas are vehicle traffic along Highway 1, farm equipment, industrial vehicles (i.e., truck hauling) and equipment, and coastal winds.

Residential Areas

Southern portions of the new Desalinated Water Pipeline, new Transmission Main, ASR pipelines, ASR-5 and ASR-6 Wells, Carmel Valley Pump Station, and Main System–Hidden Hills Interconnection Improvements are located in residential areas. The primary noise sources are vehicle traffic, school children, and household appliances.

Office/Industrial Areas

Land uses adjacent to the proposed Ryan Ranch–Bishop Interconnection Improvements are primarily office and industrial, including various medical facilities and a school. Vehicles traveling along Ragsdale Drive and Highway 68 are the primary source of noise.

Noise Measurements

Short-term and long-term noise measurements were collected in March 2013, April 2014 and June 2016 to characterize ambient noise conditions at sensitive receptors located near project components. Short-term (10-minute) L_{eq} and L_{max} measurements were taken at thirteen locations during daytime hours. At locations where the potential exists for nighttime construction work, L_{eq} and L_{max} measurements were also taken during nighttime hours. **Tables 4.12-1** and **4.12-2** present

the measured short-term and long-term noise levels, respectively. **Figure 4.12-1** shows the noise monitoring locations where representative measurements were collected for each project component.

TABLE 4.12-1
SHORT-TERM NOISE MEASUREMENTS[a]

Map ID[b]	Measurement Location	Time	L_{eq}	L_{max}	Predominant Noise Source(s) during Monitoring
S1	Neponset Road and Lapis Road – Rural residence located 3,900 feet west of MPWSP Desalination Plant site	10:43 a.m. to 10:53 a.m.[c]	61.8	75.0	Vehicle traffic on Highway 1 and trucks at adjacent Dole Food Company processing plant
		10:51 p.m. to 11:01 p.m.[d]	50.5	65.2	
S2	Cosky Road – Residential area in northern Marina, 600 feet east of the new Desalinated Water Pipeline	11:05 a.m. to 11:15 a.m.[c]	66.4	79.8	Vehicle traffic, barking dog
		11:27 p.m. to 11:37 p.m.[d]	42.3	47.6	
S3	Dunes Drive – Marina Dunes RV Park, 3,700 feet west of the new Desalinated Water Pipeline and 4,000 feet south of subsurface slant wells	10:51 a.m. to 11:01 a.m.[d]	54.5	60.3	Distant vehicle traffic on Highway 1
		11:08 p.m. to 11:18 p.m.[d]	51.5	57.1	
S4	Ardennes Circle – Fitch Park military housing area, 50 feet northeast of ASR-5 Well site	12:02 p.m. to 12:12 p.m.[c]	54.3	62.4	Vehicle traffic
		11:55 p.m. to 12:05 a.m.[d]	52.0	72.9	
S6	Tierra Grande Drive – Residential area in unincorporated Monterey County, adjacent to proposed Main System–Hidden Hills Interconnection Improvements	3:13 p.m. to 3:23 p.m.[c]	44.7	64.7	Wind, birds
S7	Rancho San Carlos Road Drive – Residential area in rural Monterey adjacent to Carmel Valley Pump Station	10:04 a.m. to 10:14 a.m.[e]	61.5	73.7	Vehicle traffic
S8	York School located on York Road, 900 feet northeast of Ryan Ranch-Bishop Interconnection Improvements	10:24 a.m. to 10:34 a.m.[d]	45.8	60.1	Distant vehicle traffic
S9	Monte Road –Agricultural residences adjacent to proposed Castroville Pipeline on north side of Salinas River	1:00 p.m. to 1:10 p.m.[e]	75.1	93.3	Vehicle traffic on Highway 1, truck traffic on Monte Road and adjacent Dole Food Company processing plant
		11:51 p.m. to 12:01 a.m.[e]	56.8	65.8	
S10	4th Army Road Drive – Residential area in Seaside 200 feet from new Transmission Main	12:37 p.m. to 12:47 p.m.	50.1	62.3	Vehicle traffic
		12:14 a.m. to 12:24 a.m.	51.4	70.7	
S11	CEMEX active mining area	12:02 p.m.	57.9	60.0	Wave action on shore

NOTES:
[a] Noise measurements were taken at representative locations (see **Figure 4.12-1**) to characterize the existing noise environment in the project area.
[b] Map ID = Noise monitoring locations shown on **Figure 4.12-1**.
[c] Short-term (10-minute) noise measurement collected on March 20, 2013.
[d] Short-term (10-minute) noise measurement collected on April 13, 2014.
[e] Short-term (10-minute) noise measurement collected on June 15, 2016.

SOURCE: ESA, 2013; 2014; 2016.

TABLE 4.12-2
LONG-TERM NOISE MEASUREMENT – MPWSP DESALINATION PLANT

Map ID[a]	Measurement Location	Daytime L_{eq} (7:00 a.m. to 10:00 a.m.)	Nighttime L_{eq} (10:00 p.m. to 7:00 a.m.)	DNL	Predominant Noise Sources during Monitoring
L1	Charles Benson Road, adjacent to MPWSP Desalination Plant site	62	49	62	Agricultural and industrial equipment, haul trucks

NOTE:

[a] Map ID = Noise monitoring locations shown on **Figure 4.12-1**.

SOURCE: ESA, 2013.

As indicated in **Table 4.12-1**, average short-term daytime noise measurements ranged from 44.7 to 75.1 dBA L_{eq}, while maximum noise levels ranged from 60.3 to 93.3 dBA L_{max}. Although noise sources varied from location to location, automobile traffic was the predominant source of noise at most monitoring locations.

One long-term (24-hour) noise measurement was collected at the proposed MPWSP Desalination Plant site (see **Figure 4.12-1**) on March 21 and 22, 2013. This measurement demonstrates that the MPWSP Desalination Plant would operate in a location where the daytime ambient noise environment is dominated by truck traffic and agricultural operations. See **Table 4.12-2** for the measured average daytime L_{eq} (7:00 a.m. to 10:00 p.m.), nighttime L_{eq} (10:00 p.m. to 7:00 a.m.), and DNL values.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Noise at various levels can interfere with sleep, concentration, and communication and cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries (i.e., where people engage in prayer, study, and contemplation) are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive land uses. The distance of the sensitive receptors to project elements is provided in Figure 4.12-1.

4.12.3 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, and regulations relevant to noise and vibration and indicates whether the proposed project would be consistent with those regulatory requirements. The consistency findings concern the proposed project, without mitigation. Where the proposed project would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact topic within

Section 4.12.5, Direct and Indirect Effects of the Proposed Project, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.12.5 identifies feasible mitigation that would resolve the potential inconsistency.

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, whereas local agencies regulate stationary sources within their jurisdictions. Local noise regulation involves the implementation of general plan policies and noise ordinance standards. Local general plans identify broad principles intended to guide and influence development plans; local noise ordinances establish standards and procedures for addressing specific noise sources and activities.

4.12.3.1 Federal Regulations

Federal regulations establish noise limits for medium and heavy duty trucks (more than 4.8 gross tons) under the Code of Federal Regulations, Title 40, Part 205, Subpart B. The federal truck passby noise standard is 80 dBA, L_{max} at 50 feet from the vehicle pathway centerline. These standards are implemented through regulatory controls on truck manufacturers. The MPWSP would be consistent with the federal regulation regarding truck noise because they are required by law and implemented by truck manufacturers. Consequently all trucks used to haul materials to construct the proposed project would be consistent with these federal regulations.

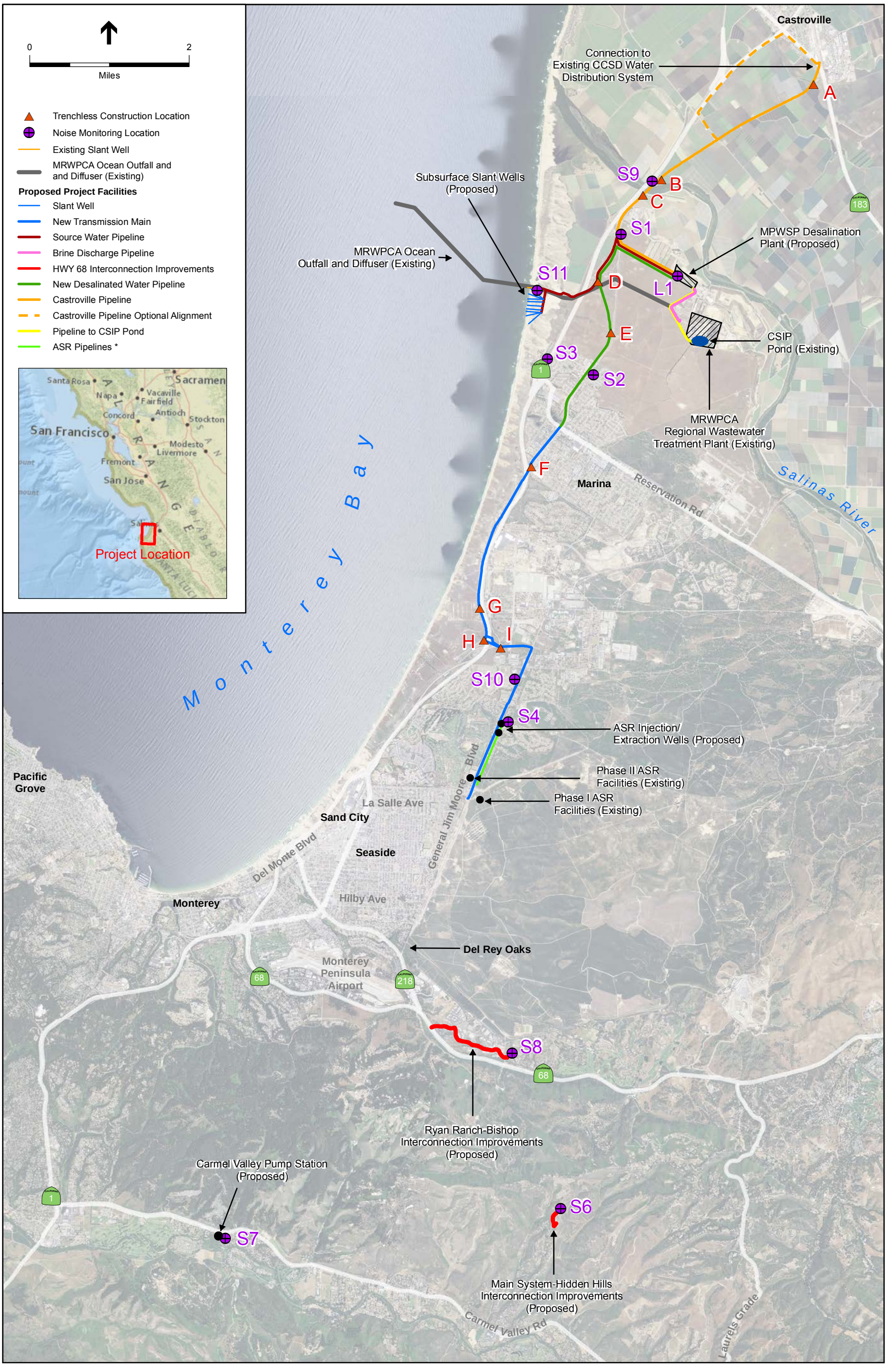
4.12.3.2 State Regulations

State noise regulations consist of requirements for the construction of new hotels, motels, and multi-family dwellings that are not applicable to a water supply project.

The MPWSP would be consistent with the State Title 24 requirements because CalAm would not be constructing residential land uses or any other land use that might be considered a sensitive noise receptor.

4.12.3.3 Applicable Regional and Local Land Use Plans and Policies

Table 4.12-3 presents the state, regional, and local land use plans, policies, and regulations pertaining to noise and vibration that were adopted for the purpose of avoiding or mitigating an environmental effect. Table 4.12-3 also indicates project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would be consistent with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project would be potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to the specific impact in Section 4.12.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.



NOTE:
*The ASR Pipelines are the ASR Conveyance Pipeline, the ASR Pump-to-Waste Pipeline, and the ASR Recirculation Pipeline. See Figure 3-9a for the individual pipeline alignments.

SOURCE: ESA, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.12-1
Noise Monitoring Locations

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TABLE 4.12-3
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	<table><tr><th rowspan="2">Duration</th><th colspan="2">Maximum Allowable Noise</th></tr><tr><th>Day (7:00 a.m. to 10:00 p.m.)</th><th>Night (10:00 p.m. to 7:00 a.m.)</th></tr><tr><td>Hourly L_{eq} in dB[a,b]</td><td>50</td><td>45</td></tr><tr><td>Maximum Level in dB[a,b]</td><td>70</td><td>65</td></tr><tr><td>Maximum Impulsive Noise in dB[a,c]</td><td>65</td><td>60</td></tr></table> NOTES: a As determined at the property line of the closest receptor. Noise barriers or other noise attenuation features may be used to achieve the noise standards at the closest sensitive receptor. b Sound level measurements should be made with slow meter response. c Sound level measurements should be made with fast meter response. SOURCE: City of Marina, 2006.	These noise standards are intended to prevent new or modified stationary noise sources from disrupting adjacent or nearby residential or other noise-sensitive land uses.	Consistent: Subsurface slant wells would each operate on a 300-hp submersible pump encased in a concrete vault and would be located 4,000 feet from the nearest receptor. As discussed in Impact 4.12-5, operational noise levels from slant well pumps would be attenuated to 29 dBA which is well below the allowable noise standards. There would be no stationary noise sources associated with operation of the new Desalinated Water Pipeline or the new Transmission Main.
City of Marina (coastal zone and inland areas)	Marina Municipal Code	Chapter 15.04 – General Provisions	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Section 15.04.055 - Construction hours and noise.*** Applies to any construction activities that require a building, grading, demolition, use, or other city permit. This section limits outside construction, repair work, or related activities that produce noise adjacent to residential uses, including transient lodging, to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m. However, no construction activities, tools, or equipment may produce a noise level of more than 60 dBA for twenty-five percent of an hour at any receiving property line.	This ordinance is intended to reduce construction noise levels and limit noisy construction activity to the least sensitive hours of the day.	Potentially Inconsistent: All construction activity is assessed with respect to noise level standards in local and regional plans and policies in Impact 4.12-2. Construction of the new Desalinated Water Pipeline, and new Transmission Main could occur as close as 100 feet from existing residences and could be deemed inconsistent if nighttime construction work were conducted or if daytime construction work were to exceed 60 dBA, L_{25}. Mitigation Measures 4.12-1b (General Noise Controls for Construction Equipment) and 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction) would ensure that construction of the new Desalinated Water Pipeline, and new Transmission Main would be consistent with the Marina Municipal Code. Nighttime construction of the subsurface slant wells and the Source Water Pipeline would not occur adjacent to a residential use.
Fort Ord Dunes State Park	Fort Ord Dunes State Park General Plan and Environmental Impact Report	Physical Resources	New Transmission Main	**NOI-3:** Develop noise abatement measures as part of the planning and design process for area-specific projects, to minimize disturbance to park visitors, neighbors, and sensitive wildlife identified as occurring in the area during construction. The following construction measures should be considered: ● Restrict construction activities to daytime hours, where feasible ● Use best available noise control techniques wherever feasible, including those for vehicles and construction equipment ● Use hydraulically or electrically powered impact tools when feasible ● Locate stationary noise sources as far from sensitive receptors as feasible ● To the extent feasible, avoid construction during the nesting/breeding seasons of sensitive wildlife known to occur in the project vicinity.	This policy is intended to minimize noise disturbance to park visitors, neighbors, and sensitive wildlife during construction.	Potentially Inconsistent: Construction of the new Transmission main would occur within the jurisdiction of Fort Ord Dunes State Park and could occur during nesting/breeding seasons of sensitive wildlife. This inconsistency is assessed in Impact 4.12-2 as well as in Impact 4.6-1 of the Terrestrial Biology Section. Implementation of Mitigation Measures 4.12-1a (Neighborhood Notice), 4.12-1b (General Noise Controls for Construction Equipment), and 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction) would ensure that construction of the new Transmission Main would be consistent with Policy NOI-3 of the Fort Ord Dunes State Park General Plan. Additionally, Mitigation Measures 4.6-1b, 1c, 1e, 1f, 1g, 1g, 1h. 1h, 1i, 1j, 1l and 1n of the Terrestrial Biology section address avoidance of construction impacts during wildlife nesting and breeding seasons.

TABLE 4.12-3 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Monterey (inland areas)	Monterey City Code	Chapter 38 – Zoning Ordinance	Ryan Ranch-Bishop Interconnection Improvements	***Section 38-112.2 – Limitation on Construction Hours.*** The following time restrictions are placed on construction activities: Monday through Friday, 7:00 a.m. to 7:00 p.m.; Saturday, 8:00 a.m. to 6:00 p.m.; and Sunday, 10:00 a.m. to 5:00 p.m. The City will consider requests to perform construction outside of these time limits under certain circumstances.	This ordinance is intended to limit noisy construction activity to the least sensitive hours of the day.	Potentially Inconsistent: Nighttime construction work could occur where allowed by ordinance. This inconsistency is assessed in Impact 4.12-4. All nighttime construction work would be conducted only with prior approval from the relevant jurisdictions.
City of Monterey (inland areas)	Monterey City Code	Chapter 38 – Zoning Ordinance	Ryan Ranch-Bishop Interconnection Improvements	***Section 38-111A – Performance Standards.*** Identifies performance standards for each zoning district, as shown below. Decibel levels must be compatible with neighboring uses, and new uses cannot cause ambient noise levels to exceed these standards. If the noise exposure resulting from a project would be greater than that identified in the table, the City of Monterey's community development director may require the project sponsor to perform an acoustical study. **CITY OF MONTEREY – MAXIMUM NOISE STANDARDS[a]** OS – Open Space District: 60 R – Residential Districts: 60 PS – Public and Semi-Public District: 60 C – Commercial District: 65 I – Industrial Districts: 70 PD – Planned Development: Study Required NOTE: a These noise standards shall be modified as follows to account for the effects of time and duration on the impact of noise levels: In R districts, the noise standard shall be 5 dB lower between 10:00 p.m. and 7:00 a.m.; noise that is produced for no more than a cumulative period of five minutes in any hour may exceed the standards above by 5 dB; and noise that is produced for no more than a cumulative period of one minute in any hour may exceed the standards above by 10 dB. SOURCE: City of Monterey, 2008.	These noise standards are intended to prevent new or modified stationary noise sources from disrupting adjacent or nearby residential or other noise-sensitive land uses.	Consistent: There are no stationary noise sources proposed for the Ryan Ranch-Bishop Interconnection Improvements.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Circulation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	**Policy C-1.7:** Reduce impacts on residential neighborhoods from truck traffic and related noise.	This policy is intended to protect residential areas from disruptive truck traffic and related noise. This policy is implemented through two measures: (1) establish truck routes for the trucking industry and (2) restrict truck parking within the city.	Consistent: Construction trucks would remove excavated material and bring in clean fill for pipelines. Construction-related truck trips would be dispersed throughout the day and would not substantially increase noise, as these trips would only marginally increase traffic on the local road network.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy N-1.1:*** Ensure that new development and reuse/revitalization projects can be made compatible with the noise environment and existing development *Implementation Plan N-1.1.1 Compatible Development:* Review discretionary development proposals for potential on- and offsite stationary and vehicular noise impacts per the California Environmental Quality Act (CEQA). Any proposed development located within a 60 dB or higher noise contour shall be reviewed for potential noise impacts and compliance with the noise and land use compatibility standards. The thresholds established in the Zoning Ordinance, Noise Ordinance, the Noise Contours Map and Tables of the Noise Element (seen in the table below) will be used to determine the significance of impacts. If potential impacts are identified, mitigation in the form of noise reduction designs/ structures will be required to reduce the impact to a level less than significant. If the impact cannot be reduced to a level less than significant or avoided with accepted noise reduction methods, the proposed project will be determined "Clearly Unacceptable" and will not be approved.	These noise standards are intended to prevent new or modified stationary and vehicular noise sources from disrupting adjacent or nearby residential or other noise-sensitive land uses.	Potentially Inconsistent: Operational noise from the ASR-5 and ASR-6 well pumps to exceed the land use compatibility standards This inconsistency is assessed in Impact 4.12-5. Only the ASR-5 and ASR-6 wells would have stationary noise sources (pumps) after construction and these would be enclosed. None of the other project components proposed in Seaside and on lands within federal jurisdiction would exceed the allowable noise standards for non-construction-related noise sources. While the potential exists for the ASR-5 and ASR-6 well pumps to exceed the land use compatibility standards, Mitigation Measure 4.12-5 Stationary Source Noise Controls would ensure project consistency with Policy N-1.1.

TABLE 4.12-3 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas) (cont.)				**CITY OF SEASIDE – LAND USE COMPATIBILITY GUIDELINES** **Community Noise Equivalent Level (CNEL)** **Land Use Category** / **55** / **60** / **65** / **70** / **75** / **80** Residential – Single-Family, Multifamily, and Duplex: A / A / B / B / C / U / U Residential – Mobile homes: A / A / B / C / C / U / U Transient Lodging – Hotels and Motels: A / A / B / B / C / C / U NOTES: A = Normally Acceptable. Specified land use is satisfactory based on the assumption that any new structures are conventional construction, without any special noise insulation requirements. B = Conditionally Acceptable. New construction or development may be undertaken only after completion of a detailed noise analysis and appropriate noise insulation features have been incorporated into the project design. New development is assumed to be conventional construction, but with closed windows and air circulation systems or air conditioning. C = Normally Unacceptable. New construction or development shall generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements shall be made and needed noise insulation features included in the design. U = Clearly Unacceptable. New construction or development that includes the specified land use is discouraged.		
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy N-2.1:*** Reduce noise impacts associated with motorized vehicles, aircraft and trains.	This qualitative noise ordinance is intended to protect the public from motorized vehicle, aircraft, and train noise.	Consistent. Project components proposed for Seaside would generate a small number of vehicle trips for occasional maintenance. Such trips would not cause substantial increases in traffic volumes or associated transportation noise. The proposed project would not generate increases in aircraft or train operations.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy N-3.1:*** Reduce the impacts of noise-producing land uses, activities, and businesses on noise-sensitive land uses. *Implementation Plan N-1.3.1: Enforcement of non-transportation noise standards.* Enforce the noise limits and construction and operation regulations contained in this Noise Element and in the City's Municipal Code. *Implementation Plan N-1.3.3: Construction noise limits.* Require all construction activity to comply with the limits (maximum noise levels, hours and days of allowed activity) established in the City noise regulations (Title 24 California Code of Regulations, Zoning Ordinance and Chapter 21A of the Municipal Code).	This policy is intended to prevent construction and new or modified stationary noise sources from disrupting adjacent or nearby noise-sensitive land uses.	Potentially Inconsistent: The project components proposed for Seaside would conflict with Implementation Plan N-1.3.3. Nighttime construction may be required for the new Transmission Main, which would exceed the time limits set forth in the City's noise regulations. This issue is addressed in Impact 4.12-4. Cal Am would seek prior approval from the City of Seaside to work outside of these hours. Because the City of Seaside Municipal Code could allow construction activity outside listed hours under certain circumstances, the construction activities would not violate local regulations.
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 17.30 - Standards for All Development and Land Uses	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Section 17.30.060 -*** establishes noise standards designed to ensure that noise producers do not adversely affect sensitive receptors. The table below identifies Seaside's regulatory noise levels. **CITY OF SEASIDE – MAXIMUM EXTERIOR AND INTERIOR NOISE STANDARDS** **Noise Standard in Community Noise Equivalent Level (CNEL)** **Land Use** / **Exterior (dBA)** / **Interior (dBA)** Residential: 65 / 45 Mixed-Use Residential: 70 / 45 Commercial: 70 / --- Office: 70 / 50 Industrial: 75 / 55 Public Facilities: 70 / 50 Schools: 80 / 50	These noise standards are intended to prevent new or modified stationary noise sources from disrupting adjacent or nearby residential or other noise-sensitive land uses.	Potentially Inconsistent: This inconsistency is assessed in Impact 4.12-5. Only the ASR-5 and ASR-6 wells would have stationary noise sources (pumps) after construction and these would be enclosed. None of the other project components proposed in Seaside and on lands within federal jurisdiction would exceed the allowable noise standards for non-construction-related noise sources. While the potential exists for the ASR-5 and ASR-6 well pumps to exceed exterior noise standards, Mitigation Measure 4.12-5 Stationary Source Noise Controls would ensure project consistency with Policy N-1.1.

TABLE 4.12-3 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

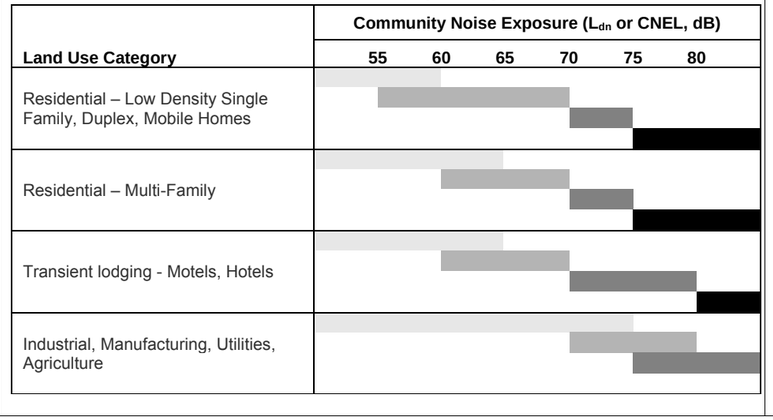
Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas)	Seaside Municipal Code	Chapter 9.12 – Noise Regulations	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Section 9.12.030 (D) -*** sets time limits for construction activities, including demolition, excavation, erection, alteration, or repair. These activities may not occur before 7:00 a.m. or after 7:00 p.m. (except on Saturday, Sunday, and holidays, when the allowable construction hours are 9:00 a.m. to 7:00 p.m.) unless authorized in writing by a building official.	This ordinance is intended to limit noisy construction activity to the least sensitive hours of the day.	Potentially Inconsistent: Some of the project components proposed for Seaside would be constructed during nighttime hours, outside of those specified in the municipal code. This issue is addressed in Impact 4.12-4. Cal Am would seek prior approval from the City of Seaside to work outside of these hours. Because the City of Seaside Municipal Code could allow construction activity outside listed hours under certain circumstances, the construction activities would not violate local regulations.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 10.60 – Noise Control	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Chapter 10.60.030 - Operation of noise-producing devices restricted.*** No person shall, within the unincorporated limits of the County of Monterey, operation of any machine, mechanism, device, or contrivance that produces a noise level exceeding 85 dBA at 50 feet from the source. The code does not apply to such noise sources when they are operated farther than 2,500 feet from any occupied dwelling unit.	These noise standards are intended to prevent new or modified stationary noise sources from disrupting adjacent or nearby residential or other noise-sensitive land uses.	Consistent: The only equipment that is proposed for project components within unincorporated Monterey County that would generate a noise level in excess of 85 dBA at 50 feet would be sheet pile drivers for potential jack-and-bore or other trenchless installation technologies for the Source Water Pipeline or the new Desalinated Water Pipeline. However, the probable locations of such activity would be greater than 2,500 feet from sensitive receptors.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.2:*** New development projects must incorporate design elements necessary to minimize noise impacts on surrounding land uses and to reduce noise in indoor spaces to acceptable levels.	This qualitative noise policy is intended to prevent new sensitive receptors from being impacted by existing noise sources as well as to prevent new or modified stationary noise sources from disrupting adjacent or nearby noise-sensitive land uses.	Potentially Inconsistent: The Main System-Hidden Hills Interconnection Improvements would generate noise at levels that could disrupt nearby land uses and/or generate potentially unacceptable indoor noise levels at nearby receptors. This issue is addressed in Impact 4.12-5. Mitigation Measure 4.12-5: Stationary-Source Noise Controls is identified to ensure that operational pump noise is consistent with Policy S.7-2.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.4:*** New noise generators may be allowed in areas where projected noise levels are "conditionally acceptable" only after a detailed analysis of the noise reduction requirements is made and needed noise mitigation features are included in project design. 	This policy is intended to ensure new noise generators do not adversely affect existing or future noise-sensitive land uses.	Consistent: The Carmel Valley Pump Station would create a new stationary noise source in an area where the projected noise levels are conditionally acceptable (see Table 4.12-1). This issue is addressed n Impact 4.12-6 and analysis provided to demonstrate consistency with Policy S.7-4. No other Monterey County project components propose new stationary noise sources adjacent to sensitive land uses within such areas.

TABLE 4.12-3 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.5:*** New noise generators are discouraged in areas identified as "normally unacceptable." (see Table in Policy S-7.4) Where such new noise generators are permitted, mitigation to reduce both the indoor and outdoor noise levels are required.	This policy is intended to ensure new noise generators do not adversely affect noise-sensitive land uses.	Consistent: The proposed project would not create new stationary noise sources in areas identified as "normally unacceptable".
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.6:*** Acoustical analysis shall be part of the environmental review process for projects when: b. Proposed noise generators are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors.	This policy is intended to ensure new noise-sensitive land uses are compatible with existing uses on adjacent lands, and to protect existing noise-sensitive land uses from new stationary sources.	Consistent: None of the proposed project components within this jurisdiction would create new noise-sensitive land uses nor generate noise levels exceeding the levels in the Community Noise Ordinance.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.8:*** All discretionary projects that propose to use heavy construction equipment that has the potential to create vibrations that could cause structural damage to adjacent structures within 100 feet shall be required to submit a pre-construction vibration study prior to the approval of a building permit. Projects shall be required to incorporate specified measures and monitoring identified to reduce impacts. Pile driving or blasting are illustrative of the type of equipment that could be subject to this policy.	This policy is intended to protect existing structures from construction-related vibration damage.	Consistent: Construction of the MPWSP Desalination Plant, in-County portions of the Source Water Pipeline, Desalinated Water Pipeline, Brine Discharge Pipeline, and Salinas Valley Return Pipeline would require the use of construction equipment but (sheet) pile driving would only potentially occur for the Source Water Pipeline and the new Desalinated Water Pipeline which are greater than 100 feet from the nearest in-County receptor. Heavy equipment would not cause structural damage to adjacent structures within 100 feet of their respective project sites. No other project components proposed for Monterey County would operate such equipment.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.9:*** No construction activities pursuant to a County permit that exceed "acceptable" levels listed in *Policy S-7.1* shall be allowed within 500 feet of a noise sensitive land use during the evening hours of Monday through Saturday, or anytime on Sunday or holidays, prior to completion of a noise mitigation study. Noise protection measures, in the event of any identified impact, may include but not be limited to: ● Constructing temporary barriers; or ● Using quieter equipment than normal.	This policy is intended to protect noise-sensitive land uses from construction-related noise disruption.	Potentially Inconsistent: Construction of the Castroville Pipeline would generate noise in excess of acceptable levels and occur within 500 feet of a noise sensitive land use. This inconsistency is assessed in Impact 4.12-2. Implementation of Mitigation Measure 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction) would ensure that construction activities would be consistent with Policy S-7.9 and reduce the nighttime construction noise impact to a less-than-significant level.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Safety	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Road Interconnection Improvements	***Policy S-7.10:*** Construction projects shall include the following standard noise protection measures: ● Construction shall occur only during times allowed by ordinance/code unless such limits are waived for public convenience; ● All equipment shall have properly operating mufflers; and ● Laydown yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical.	This policy is intended to protect noise-sensitive land uses from construction-related noise disruption.	Potentially Inconsistent: Project components within unincorporated Monterey County that would require nighttime construction include a portion of the Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Castroville Pipeline and the Pipeline to the CSIP Pond. Construction of these facilities would operate equipment and require staging areas. This issue is addressed in Impacts 4.12-1 and 4.12-2.

TABLE 4.12-3 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO NOISE AND VIBRATION

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Noise Policy B-2:*** By complying with the noise guidelines presented in Tables 4.5-3 and 4.5-4, the City shall ensure that new development does not adversely affect existing or proposed uses. ***Noise Policy B-3:*** The City shall require that acoustical studies be prepared by qualified acoustical engineers for all new development that could result in noise environments above noise range I (normally acceptable environment), as defined in Table 4.5-3. The studies shall identify the mitigation measures that would be required to comply with the noise guidelines, specified in Tables 4.5-3 and 4.5-4, to ensure that existing or proposed uses will not be adversely affected. The studies should be submitted prior to accepting development applications as complete.	This policy is intended to protect existing and potential future noise-sensitive land uses from new noise generators.	Potentially Inconsistent: Only the ASR-5 and ASR-6 wells would have stationary noise sources (pumps) after construction and these would be enclosed. None of the other project components proposed in FORA jurisdiction would exceed the allowable noise standards for non-construction-related noise sources. This inconsistency is assessed in Impact 4.12-6.While the potential exists for the ASR-5 and ASR-6 well pumps to exceed exterior noise standards, Mitigation Measure 4.12-5 Stationary Source Noise Controls would ensure project consistency with Policy B-2.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Noise Policy B-8:*** If the ambient DNL exceeds the normally acceptable noise range for public or institutional uses (passively and actively used open spaces; auditoriums, concert halls, and amphitheaters; schools, libraries, churches, hospitals and nursing homes; golf courses, riding stables, water recreation areas, and cemeteries), as identified in Table 4.5-3, new development shall not increase ambient L_{dn} by more than 3 dBA measured at the property line.	This policy is intended to limit noise level increases from new development to 3 dBA, if the existing noise levels exceed normally acceptable standards for public or institutional land uses.	Consistent: Proposed project components within FORA that would be located near a public or institutional land use include the ASR Conveyance Pipeline, ASR pump-to Waste Pipeline and the ASR recirculation Pipeline. Operation of these pipelines would not increase ambient L_{dn} by more than 3 dBA.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Noise	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Noise Policy B-9:*** The City shall require construction contractors to employ noise-reducing construction practices.	This policy is intended to minimize construction noise.	Potentially Inconsistent: Construction activities within the city of Seaside and FORA jurisdiction would need to include noise-reducing construction practices to be consistent with this policy. This issue is addressed under Impact 4.12-2. Implementation of Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment) would ensure that construction contractors to employ noise-reducing construction practices. With implementation of this mitigation, the project would be consistent with the intent of Noise Policy B-9.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Noise	Ryan Ranch–Bishop Interconnection Improvements	***Noise Policy B-2:*** By complying with the noise guidelines presented in Tables 4.5-3 and 4.5-4, the County shall ensure that new development does not adversely affect existing or proposed uses. ***Noise Policy B-3:*** The County shall require that acoustical studies be prepared by qualified acoustical engineers for all new development that could result in noise environments above noise range I (normally acceptable environment), as defined in Table 4.5-3. The studies shall identify the mitigation measures that would be required to comply with the noise guidelines, specified in Tables 4.5-3 and 4.5-4, to ensure that existing or proposed uses will not be adversely affected. The studies should be submitted prior to accepting development applications as complete.	This policy is intended to protect existing and potential future noise-sensitive land uses from new noise generators.	Potentially Inconsistent: Ryan Ranch–Bishop Interconnection Improvements would have stationary noise sources (pumps) after construction and these would be enclosed. This inconsistency is assessed in Impact 4.12-6. While the potential exists for the pumps to exceed exterior noise standards, Mitigation Measure 4.12-5 Stationary Source Noise Controls would ensure project consistency with Policy B-2 and B-3.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Noise	Ryan Ranch–Bishop Interconnection Improvements	***Noise Policy B-8:*** If the ambient DNL exceeds the normally acceptable noise range for passively and actively used open spaces; auditoriums, concert halls, and amphitheaters; schools, libraries, churches, hospitals and nursing homes; golf courses, riding stables, water recreation areas, and cemeteries), as identified in Table 4.5-3, new development shall not increase ambient L_{dn} by more than 3 dBA measured at the property line.	This policy is intended to limit noise level increases from new development to 3 dBA, if the existing noise levels exceed normally acceptable standards for public or institutional land uses.	Consistent: Although the Ryan Ranch–Bishop Interconnection Improvements would be within 900 feet of a school, it would have no stationary sources.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Noise	Ryan Ranch–Bishop Interconnection Improvements	***Noise Policy B-9:*** The County shall require construction contractors to employ noise-reducing construction practices.	This policy is intended to minimize construction noise.	Potentially Inconsistent: Construction activities of the Ryan Ranch–Bishop Interconnection Improvements within FORA jurisdiction would need to include noise-reducing construction practices to be consistent with this policy. This issue is addressed under Impact 4.12-2. Implementation of Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment) would ensure that construction contractors to employ noise-reducing construction practices. With implementation of this mitigation, the project would be consistent with the intent of Noise Policy B-9.

SOURCE: California State Parks, 2004; City of Marina, 2000; City of Seaside, 2004; FORA, 1997; Monterey County, 2010.

4.12.4 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to noise and vibration if it would:

- Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies;
- Expose people or structures to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction;
- Conflict with the construction time limits established by the local jurisdiction;
- For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels; or
- For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Due to the nature of the proposed facilities, no impacts related to the following significance criteria would result for the reasons described below:

- ***Expose people or structures to or generate excessive groundborne noise levels.*** The second criterion above relates to groundborne vibration and groundborne noise levels but only the issue of groundborne vibration is relevant to the proposed project. Groundborne noise occurs when vibrations transmitted through the ground result in secondary radiation of noise. Groundborne noise is generally associated with underground railway operations and with construction activities such as blasting, neither of which would result from project implementation. Operation of the Project would not involve equipment that would produce ground borne vibration; therefore no impacts related to the exposure of people or structures to, or the generation of, excessive groundborne noise levels would occur in connection with Project operations. The potential for construction activities to result in groundborne vibration is addressed in Impact 4.12-3.

- ***Be located within an airport land use plan area or within 2 miles of a public airport or public use airport and expose people to excessive noise levels.*** The closest public airport to the project area is the Monterey Peninsula Airport, which is approximately 0.3 miles south of the new Transmission Main. The Marina Municipal Airport, which is located north of the intersection of Reservation Road and Imjin Road in Marina, is located 1.7 miles east of the new Desalinated Water Pipeline. In addition, the Ryan Ranch-Bishop Interconnection Improvements would be located within the 65 dBA CNEL noise contour on the "Noise Exposure Map for Forecast Conditions" in the *Comprehensive Land Use Plan for Monterey Peninsula Airport* (Monterey County Airport Land Use Commission, 1987). Even though some project components would be within 2 miles of an airport and certain facilities would be sited within the 65 dBA CNEL noise contour established in the applicable airport plan, none of the facilities located within 2 miles of an airport would result in operational noise increases, nor would they constitute noise-sensitive land uses (i.e., the proposed project

does not include the construction of new housing or other noise-sensitive receptors that would be subject to aviation noise). As a result, there would be no impacts related to the fifth criterion and this issue is not addressed further below.

- ***Be located in the vicinity of a private airstrip and expose people to excessive noise levels.*** None of the proposed facilities would be sited in the vicinity of a private airstrip. Therefore, the proposed project would have no impact related to this criterion and this issue is not discussed further below.

4.12.5 Approach to Analysis

4.12.5.1 Temporary or Periodic Increases in Ambient Noise Levels

A "substantial" noise increase is defined as one that would interfere with human activities during the day and/or night (as opposed to an absolute, numerical increase over ambient noise levels).

This evaluation uses speech interference as an indicator that construction noise could cause a substantial adverse impact on daytime and evening activities, and sleep interference as an indicator that construction noise could cause a substantial adverse impact on nighttime activities. The speech and sleep interference criteria are based on objective research of speech and sleep interference (as opposed to subjective surveys of annoyance) can be used to evaluate a project's noise impacts. The speech and sleep interference criteria used in this EIR/EIS are defined below:

- **Speech Interference.** A speech interference threshold, in the context of impact duration and time of day, is used to identify substantial increases in noise from temporary construction activities. This analysis assumes noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the buildings exceeds 45 dBA. A typical building can reduce noise levels by approximately 25 dBA with the windows closed (USEPA, 1974). This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 70 dBA L_{eq} would maintain an acceptable interior noise environment of 45 dBA during the day and evening hours. Noise levels would vary depending on the phase of construction and the types of construction equipment being used.

  In addition to the decibel level of noise, the duration of exposure at any given noise-sensitive receptor is an important factor in determining an impact's significance. Generally, temporary construction noise that occurs during the day for a relatively short period of time would not be significant because most people of average sensitivity who live in suburban or rural agricultural environments are accustomed to a certain amount of construction activity or heavy equipment noise from time to time. The loudest construction-related noise levels would be sporadic rather than continuous because different types of construction equipment would be used throughout the construction process. Therefore, an exterior noise level that exceeds 70 dBA Leq during the daytime is used as the threshold for substantial construction noise where the duration of construction noise exceeds two weeks.[2]

[2] The two-week (10 working days) duration is used as a duration threshold by some local noise ordinances, less than which louder construction noise exposure is more tolerable (e.g., Noise Ordinance No. 11895, City of Oakland, 1996; Construction Noise Threshold Criteria and Control Plan, Ventura County, 2010).

- **Sleep Interference.** Based on available sleep data, an interior nighttime level of 35 dBA is considered acceptable for sleeping (USEPA, 1974). Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 60 dBA would maintain an acceptable interior noise environment of 35 dBA at night. Therefore, a significant impact would occur if the proposed project were to generate exterior noise levels above the 60 dBA L_{eq} sleep interference threshold with the windows closed, or 35 dBA at night with the windows open, for one or more nights.

This analysis is based on monitored ambient noise levels at sensitive receptors throughout the project area (see **Table 4.12-1**),[3] the anticipated construction work hours for each facility, published equipment noise levels, and the attenuated construction equipment noise levels at the sensitive receptor, calculated using published noise propagation equations (FHWA, 2006). Standard mitigation measures to reduce construction-related noise levels have been demonstrated to reduce equipment noise by 5 to 10 dBA (Bolt et. al., 1971). Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014). Static sound barrier curtains can provide sound transmission loss of 16 to 40 dBA, depending on the frequency of the noise source (ENC, 2014).

Noise Levels Standards

Consistency with local noise standards are determined by comparing the applicable noise level standard to published equipment noise levels. In some cases this requires calculating noise levels at various distances (i.e., to a property line or sensitive receptor) using widely published noise propagation equations (FHWA, 2006) in order to assess whether a potential conflict could occur.

Separate assessments are made for noise generated during project construction (see Impact 4.12-2) versus noise generated during project operations (see Impact 4.12-5). While all of the jurisdictions have established land use noise compatibility standards for ambient noise levels, only a few jurisdictions have established noise level standards for construction. For jurisdictions that do not have established construction noise level standards, no analysis is provided for construction noise. The construction time limits adopted by many jurisdictions are not considered a significance threshold for the assessment of construction noise impacts related to the generation of noise levels in excess of established construction noise level standards; however, construction time limits are considered in the analysis of project consistency with regional and local plans and policies (see Impact 4.12-4).

Groundborne Vibration during Construction

The proposed project would result in significant impacts if it were to generate vibration levels substantial enough to damage nearby structures or buildings, or result in vibration levels that are commonly accepted as an annoyance to sensitive land uses.

With the exception of the *Monterey General Plan*, which specifies submission of a vibration study for projects that would involve pile driving or blasting, none of the other local regulations address vibration or provide numerical thresholds for identifying groundborne vibration impacts. In the absence of local standards for construction equipment vibration, the evaluation presented

[3] Existing ambient noise levels were monitored at some but not all of the sensitive receptors; in some cases the ambient noise level is based on monitored ambient noise levels at representative sensitive receptor locations.

under Impact 4.12-3 uses the vibration thresholds presented in **Table 4.12-4**. For adverse human reaction, this analysis applies the "strongly perceptible" threshold of 0.1 in/sec PPV (Caltrans, 2004). For risk of architectural damage to historic buildings and structures, this analysis applies a threshold of 0.12 in/sec PPV (Wilson, Ihrig, & Associates et al., 2012). A threshold of 0.3 in/sec PPV is used for all other buildings. The Federal Transit Administration (FTA) provides an equation that may be used to estimate vibration at different distances based on a reference PPV of 25 feet for various construction equipment. Using the FTA equation, the distances at which vibration-generating construction equipment would be lower than the annoyance or damage thresholds were calculated and compared to potential distances to receiving buildings.

TABLE 4.12-4
VIBRATION THRESHOLDS

	Maximum Peak Particle Velocity (PPV), inches per second (in/sec)
Adverse human reaction (human annoyance)[a] Historic buildings and structures[b]	0.1 0.12
All other structures	0.3

NOTE: The vibration criteria is based on continuous or frequent intermittent sources, including impact pile drivers, pogo-stick compactors, crack and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCES: [a]Caltrans, 2004; [b]Wilson, Ihrig & Associates et al., 2012.

4.12.5.2 Permanent Increases in Ambient Noise Levels

For the analysis of long-term operational impacts on the existing ambient noise environment, impacts are considered significant if operation of the project facilities would result in a substantial increase in noise levels in the project area. This evaluation uses a 5-dBA increase in noise exposure—which Caltrans identifies as a readily perceptible noise increase (Caltrans, 2009) —to assess the significance of operational noise increases on ambient noise levels in the project vicinity.

4.12.6 Direct and Indirect Effects of the Proposed Project

Table 4.12-5 summarizes the MPWSP's impacts and significance determinations related to noise and vibration.

TABLE 4.12-5
SUMMARY OF IMPACTS – NOISE AND VIBRATION

Impacts	Significance Determinations
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.	SU
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.	LSM
Impact 4.12-3: Expose people to or generate excessive groundborne vibration during construction.	LSM
Impact 4.12-4: Conflict with the construction time limits established by the local jurisdictions.	LSM
Impact 4.12-5: Result in a substantial permanent increase in ambient noise levels in the project vicinity during project operations.	LSM

TABLE 4.12-5 (Continued)
SUMMARY OF IMPACTS – NOISE AND VIBRATION

Impacts	Significance Determinations
Impact 4.12-6: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during project operations.	LS
Impact 4.12-C: Cumulative impacts related to noise and vibration.	SU

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable, even with implementation of mitigation

4.12.6.1 Construction Impacts

Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. (*Significant and Unavoidable, even with implementation of mitigation*)

Construction of the proposed facilities would occur over a 24-month period and would temporarily increase noise levels in the project vicinity. The noise levels generated during construction of each facility would vary, depending on the construction phase and the types of construction equipment being used.

Implementation of the subsurface slant wells, MPWSP Desalination Plant, and ASR-5 and ASR-6 Wells would require nighttime construction. The proposed pipelines and pump station would be constructed during daytime hours to the extent feasible. This analysis assumes that the ASR Recirculation Pipeline, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and some portions of the new Desalinated Water Pipeline and the new Transmission Main within the City of Marina and the City of Seaside would be constructed only during daytime hours (see **Mitigation Measure 12.4-4 (Nighttime Construction Restrictions in Marina)**; however, nighttime construction could be required for all other pipelines to meet the project schedule. All nighttime construction work would be conducted only with prior approval from the relevant jurisdictions. Pipeline installation would occur at a rate of approximately 150 to 250 feet per day.

The operation of trucks, backhoes, bulldozers, excavators, front-end loaders, compactors, scrapers, and other heavy-duty construction equipment would generate relatively high noise levels. These types of equipment would typically be operated for 1 or 2 minutes at full power followed by 3 to 4 minutes at lower power settings, compared to other equipment such as directional drill rigs, which tend to operate at a continuous power level.

Table 4.12-6 presents the maximum noise levels that would be heard at the sensitive receptors during operation of the loudest pieces of construction equipment. The table shows the existing ambient noise levels at sensitive receptors, the construction equipment noise levels at 50 feet, and the attenuated construction equipment noise levels at the distance from the receptors, and the

TABLE 4.12-6
SUMMARY OF NOISE LEVELS AT SENSITIVE RECEPTORS DURING CONSTRUCTION

Project Facility	Construction Equipment (Number of Pieces)	Equipment Noise Level at 50 feet (dBA L_{max})[a]	Distance from Nearest Sensitive Receptor (feet)	Attenuated Construction Equipment Noise Level at Nearest Sensitive Receptor (dBA L_{eq})[b]	Existing Ambient Noise Level at Nearest Sensitive Receptor (dBA L_{eq})[c]	Resultant Noise Level at Nearest Sensitive Receptor during Construction (dBA L_{eq})[d]	Exceeds Speech (70 dBA L_{eq}) or Sleep (60 dBA L_{eq}) Interference Thresholds?
Subsurface Slant Wells	Mobile Cranes (2) Bore/Drill Rigs (2)	81 82	4,000	N/A – Outside Study Area	N/A	N/A	N/A
MPWSP Desalination Plant	Mobile Cranes (2) Dozer (1) Dump Truck (1)	81 82 76	2,200	N/A – Outside Study Area	N/A	N/A	N/A
Pipeline Installation (Open Trench Construction)	Backhoe (1) Compactor (1) Mobile Crane (1)	78 83 81	50[e]	80.4	Daytime – 75.1 Nighttime – 56.8	88.2 88.0	Speech – YES Sleep – YES[f]
Pipeline Installation (Trenchless Construction)	Bore/Drill Rigs (1) Pile Driver (1)	84 101	50[e]	94.3	Daytime – 59.1 Nighttime – 45.8	94.3	Speech – YES Sleep – YES[f]
ASR-5 and ASR-6 Wells	Backhoe (1) Bore/Drill Rigs (1) Compactor	78 84 83	50	80.8	Daytime – 54.3 Nighttime – 52.0	80.8 80.8	Speech – YES Sleep – YES
Main System-Hidden Hills Interconnection Improvements	Backhoe (1) Dump Truck (1) Mobile Crane (1)	78 76 81	50	77.7	Daytime – 44.7	77.7	Speech – YES Sleep – n/a
Ryan Ranch-Bishop Interconnection Improvements	Backhoe (1) Dump Truck (1) Mobile Crane (1)	78 76 81	900	N/A – Outside Study Area	N/A	N/A	N/A
Carmel Valley Pump Station	Backhoe (1) Dump Truck (1) Mobile Crane (1)	78 76 81	50	77.7	Daytime – 61.5	77.9	Speech – YES Sleep – n/a

NOTES:

n/a = This facility would not involve nighttime construction; therefore, the sleep interference threshold does not apply.

[a] With the exception of noise levels for the drill rig for the subsurface slant wells, which are based on empirical monitoring conducted for CalAm's test slant well, reference noise levels for construction equipment are derived from FHWA, 2006.

[b] Attenuated construction equipment noise levels at the nearest sensitive receptors were calculated using FHWA Roadway Construction Noise Model Version 1.1. This value represents hourly average noise levels based on the estimated percentage of time the various pieces of construction equipment would be operating.

[c] Based on ambient noise levels at representative noise monitoring locations (see **Figure 4.12-1** and **Table 4.12-1**).

[d] Resultant noise level is the result of logarithmic addition of the values in the two previous columns (i.e., the attenuated noise from operation of all pieces of construction equipment in combination with ambient noise level at the sensitive receptor). This represents the noise level that could be experienced by a human at the sensitive receptor location.

[e] Distance between the proposed pipeline alignments and the nearest sensitive receptors varies by pipeline.

[f] Construction work hours would vary by pipeline; not all pipelines are anticipated to involve nighttime construction.

resultant noise levels at the residential receptors assuming all pieces of construction are operating simultaneously. The resultant noise level represents the maximum noise level that would be experienced by a person at the sensitive receptor location. As indicated in the table, at a distance of 50 feet from the construction work areas, individual pieces of non-impact construction equipment could generate noise levels as high as 84 dBA L_{max}. The attenuated construction equipment noise levels presented in **Table 4.12-6** are hourly average noise levels as calculated by the FHWA Roadway Construction Noise Model for the multiple pieces of equipment identified for each facility. Other construction-related noise would be brief and intermittent (e.g., placement of heavy equipment or materials into position, or the hydraulic movement of machinery lifts).

In addition to noise generated at the construction work areas, vehicle traffic related to materials and equipment deliveries, hauling of excess spoils, and construction worker commute trips would cause sporadic noise increases along project access routes. However, construction-related truck trips would be dispersed throughout the day and over the local road network and would not substantially increase noise, as these trips would only marginally increase traffic noise on the regional roadways (which already have relatively high traffic volumes). Impact 4.9-1 of Section 4.9 Traffic and Transportation identified construction-related traffic increases of no more than 2.8 percent. A doubling of traffic volumes would result in a 3-dBA increase in traffic noise levels which Caltrans characterizes as a barely perceptible increase in roadway noise. Because construction traffic would not double local traffic volumes, the increase in noise levels from construction-related vehicle trips would be minimal.

Subsurface Slant Wells

Up to 9 new subsurface slant wells[4] would be constructed in the CEMEX active mining area in northern Marina. Multiple slant wells would be constructed simultaneously, for a total of 15 months of slant well construction. Construction of the slant wells could occur anytime during the 24-month construction period and would occur 24 hours a day, 7 days a week.

The two closest sensitive receptors to the subsurface slant wells are residences at the Marina Dunes RV Park on Dunes Drive in Marina (4,000 feet to the south) and residences on Drew Street in Marina (4,300 feet to the southeast) and are beyond the 600 foot study area for noise from non-impact construction equipment (see Section 4.12.2) because construction-related noise increases at sensitive receptors would not exceed the speech interference threshold of 70 dBA, or exceed the sleep interference threshold of 60 dBA. Therefore, impacts related to nighttime noise level increases from slant well construction would be less than significant.

MPWSP Desalination Plant

Implementation of the proposed MPWSP Desalination Plant would involve the construction and installation of various structures and treatment facilities in an industrial and agricultural area of unincorporated Monterey County. The desalination facilities include a pretreatment system, a reverse osmosis system, a post-treatment system, pump station, storage tanks, pipelines, various

[4] The seawater intake system would include up to 10 permanent slant wells. As part of the proposed project, CalAm proposes to convert the test slant well into a permanent well and construct up to nine additional subsurface slant wells.

support structures, and buildings. Construction at the MPWSP Desalination Plant site on Charles Benson Road would occur over 24 months construction period and would require 24-hour construction.

The nearest sensitive receptors to the MPWSP Desalination Plant site are two rural residences on Neponset Road that are located 2,200 feet and 3,900 feet to the west, respectively which are beyond the 600 foot study area for noise from non-impact construction equipment (see Section 4.12.2) because construction-related noise increases at sensitive receptors would not exceed the speech interference threshold of 70 dBA, or exceed the sleep interference threshold of 60 dBA. Therefore, impacts related to nighttime noise level increases from construction activities at the MPWSP Desalination Plant site would be less than significant.

Pipelines North of Reservation Road

Under the proposed project, the following pipelines would be constructed north of Reservation Road: the Source Water Pipeline, new Desalinated Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and the Castroville Pipeline. To the extent feasible, pipelines would be installed during daytime hours. However, nighttime construction could be required at certain locations to meet the project schedule or avoid peak hour traffic impacts. CalAm would abide by local noise ordinances (including obtaining variances where needed) with regard to nighttime construction operations.

Table 4.12-7 presents the estimated resultant noise levels at the closest sensitive receptors during pipeline installation activities based on the anticipated construction method that would be used. Most pipelines would be installed using open trench construction methods. However, trenchless methods would be required at railroad crossings, river crossings, highway crossings, and other locations where open trench construction is not feasible.

As discussed in Section 4.12.5, Approach to Analysis, a significant construction noise impact would occur if noise levels at sensitive noise receptors remained above the 70 dBA speech interference threshold for longer than two consecutive weeks. Construction of the pipelines located north of Reservation Road would progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Thus, residential receptors would experience peak noise levels for less than the two week threshold.

Source Water Pipeline, Pipeline to the CSIP Pond, and Brine Discharge Pipeline

The residences on Neponset Road are the closest sensitive receptors to the Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box. These receptors are located at a distance of 1,100 feet, 3,600 feet, 3,600 feet, and 5,800 feet from the proposed pipeline alignments, respectively, and are beyond the 600 foot study area for noise from non-impact construction equipment (see Section 4.12.2) because construction-related noise increases at sensitive receptors would not exceed the speech interference threshold of 70 dBA, or exceed the sleep interference threshold of 60 dBA. Therefore, impacts related to nighttime noise level increases from standard installation techniques of these pipelines would be less than significant. The Brine Mixing Box would not require nighttime installation.

TABLE 4.12-7
CONSTRUCTION NOISE LEVELS – PIPELINES NORTH OF RESERVATION ROAD

Pipeline (Construction Method)	Closest Sensitive Receptor(s)	Distance to Receptor (feet)	Existing Ambient Noise Level at Receptor(s) (dBA L_{eq})	Attenuated Construction Equipment Noise Level at Receptor(s) (dBA L_{eq})[a]	Resultant Noise Level at Receptor(s) during Construction (dBA L_{eq})[b]	Exceeds Day/nighttime threshold?
Source Water Pipeline (Open Trench Construction)	Residences on Neponset Road	1,100	N/A – Outside Study Area	N/A	N/A	N/A
Source Water Pipeline – (Trenchless Construction)	Residences on Neponset Road	3,500	N/A – Outside Study Area	N/A	N/A	N/A
New Desalinated Water Pipeline (Open Trench Construction)	Residences on Marina Drive	100	Daytime – 66.4[d] Nighttime – 42.3	74.0	Daytime – 74.7 Nighttime – 74.0	Yes/Yes
New Desalinated Water Pipeline (Trenchless Construction)	Residences on Marina Drive	100	Daytime – 66.4[d]	87.8	Daytime – 87.8	Yes/NA
Pipeline to the CSIP Pond and Brine Discharge Pipeline (Open Trench Construction)	Residences on Neponset Road	3,600	N/A – Outside Study Area	N/A	N/A	N/A
Castroville Pipeline (Open Trench Construction)	Residence on Monte Road	200	Daytime – 75.1[e] Nighttime – 56.8	68.0	Daytime – 75.9 Nighttime – 68.3	Yes/Yes
Castroville Pipeline Optional Alignment 1 (Open Trench Construction)	Residences on Cypress Circle and Merritt Way	30	Daytime – 75.5[f] Nighttime – 62.5	84.5	Daytime – 85.0 Nighttime – 84.5	Yes/Yes
Castroville Pipeline (Trenchless Construction)	Residence on Castroville Road near Salinas River crossing	800	Daytime – 75.5[f]	69.7	Daytime – 76.5	Yes/NA

NOTES:

[a] Attenuated construction equipment noise levels at the nearest sensitive receptors were calculated using FHWA Roadway Construction Noise Model Version 1.1. This value represents hourly average noise levels based on the estimated percentage of time the various pieces of construction equipment would be operating.

[b] Resultant noise level is the result of logarithmic addition of the values in the two previous columns (i.e., the attenuated construction equipment noise in combination with the ambient noise level at the sensitive receptor). This represents the noise level that could be experienced by a human at the sensitive receptor location.

[c] Based on daytime and nighttime ambient noise level at short-term noise monitoring location S1 (see **Figure 4.12-1** and **Table 4.12-1**).

[d] Based on daytime and nighttime ambient noise level at short-term noise monitoring location S2.

[f] Based on peak hour traffic modeling and Caltrans traffic volumes for daytime. Nighttime assumes 5% of peak hour traffic.

Approximately 500 feet east of Highway 1, the Source Water Pipeline would veer northeast along a dirt path for roughly 1,000 feet to Lapis Road. At this location, a jack and bore method would be applied to install the pipeline under the existing railroad tracks 3,500 feet from the nearest receptors, which is beyond the 1,800 foot study area for noise from impact construction equipment (see Section 4.12.2) because construction-related noise increases at sensitive receptors would not exceed the speech interference threshold of 70 dBA, or exceed the sleep interference threshold of 60 dBA noise impacts associated with construction of these pipelines would be less than significant.

New Desalinated Water Pipeline

Residences on Marina Drive are as close as 100 feet from the proposed new Desalinated Water Pipeline alignment. The existing daytime ambient noise level at residences on Cosky Road (noise monitoring location S2) was monitored at 66.4 dBA L_{eq}. Based on proximity and existing land uses of the two receptors, the ambient noise level at the Cosky Road residences is considered to be representative of the ambient noise level at residences at Marina Drive. The resultant noise levels associated with pipeline installation at the Marina Drive residences could be as high as 74.7 dBA L_{eq} (see **Table 4.12-7**). Speech interference becomes pronounced at levels in excess of 70 dBA.

Construction of the new Desalinated Water Pipeline is estimated to progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Consequently, although construction noise at adjacent residences could exceed the speech interference threshold of 70 dBA, the duration of the impact at any given sensitive noise receptor would be less than two weeks. Therefore, the construction noise impact associated with increases in daytime noise levels would be less than significant.

If nighttime work were to be conducted along the portion of the new Desalinated Water Pipeline in Marina, noise from construction equipment could exceed the sleep interference threshold of 60 dBA, a significant impact. Implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would reduce the severity of this impact below the sleep interference threshold of 60 dBA, L_{eq} (14 dBA of reduction).

Mitigation Measure 4.12-1a (Neighborhood Notice) would require that CalAm provide advanced notice to affected receptors which, although does not reduce noise levels, allows affected receptors to avoid peak noise impact periods if possible. **Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment)** requires muffled exhaust systems on all combustion engines, external jackets on impact tools, and the use of temporary noise barriers. **Mitigation Measure 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would require the use of noise barriers or other noise-attenuating measures. Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014). The duration of this significant nighttime noise impact would be limited to 1 to 3 days at any given sensitive receptor. With implementation of feasible mitigation measures, the nighttime noise impact would be reduced to a less-than-significant level by requiring barriers or other measures that would reduce the resultant noise level below the sleep interference threshold of 60 dBA, L_{eq}.

On some portions of the new Desalinated Water Pipeline where it is not feasible or desirable to perform open-cut trenching, trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, and/or microtunneling could be employed. Such work typically requires excavation and shoring of the jacking and receiving pits by using impact or vibratory sheet pile drivers that would operate only during daytime hours. Jack-and-bore methods would also be used for pipeline segments that cross beneath Highway 1 or drainages. Should this method be used for the new Desalinated Water Pipeline, localized noise levels would be substantially increased (up to 88 dBA, L_{eq} at 100 feet) during installation of sheet piles. The duration of this potential daytime noise impact would be limited to 1 to 3 days at any given sensitive receptor and therefore, the impact would be less than significant.

Castroville Pipeline

From the MPWSP Desalination Plant, the Castroville Pipeline would head west along Charles Benson Road to Del Monte Boulevard, at which point the pipeline would head north along Del Monte Boulevard to Lapis Road and along the west side of Lapis Road within the Monterey TAMC right-of-way. The pipeline would cross beneath the Salinas River Bridge to Nashua Road and continue north along the Union Pacific railroad tracks and the agricultural road to Highway 183. From Highway 183 the alignment would continue north, turn west across Del Monte Avenue and connect to CCSD Well #3 at the north corner of Del Monte Avenue and Merritt Street. The Castroville Pipeline alignment is within 20 feet of a single cluster of rural residential residences at the northern end of the Salinas River Bridge.

The existing daytime ambient noise level at the driveway of the rural residences on Monte Road on the northern site of the Salinas River (noise monitoring location S9) was monitored at 75.1 dBA L_{eq}. The resultant noise levels associated with pipeline installation at the Salinas River residences could be as high as 75.9 dBA L_{eq} (see **Table 4.12-7**).

Construction of the Castroville Pipeline is estimated to progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Consequently, the construction noise impact associated with increases in daytime noise levels would be less than significant.

If nighttime work were required for installation of the Castroville Pipeline, noise from construction equipment could exceed the sleep interference threshold of 60 dBA at the one portion within 200 feet of the Monte Road residence north of the Salinas River, a significant impact. Implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice), 4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would reduce the severity of this impact below the sleep interference threshold of 60 dBA, L_{eq} (9 dBA of reduction).

The Castroville Pipeline would be installed beneath the Salinas River and Tembladero Slough using trenchless construction methods. Trenchless construction typically requires excavation and shoring of an entry pit and a receiving pit using impact or vibratory sheet pile drivers. Localized noise levels would be substantially increased (up to 88 dBA, L_{eq} at 100 feet) during installation of

sheet piles. At the Salinas River crossing, these pits are approximately 800 feet from sensitive receptors on the north side of the Salinas River. At this distance, the noise from sheet pile driving would be 70 dBA, L_{eq} and would be less than significant.

The proposed Tembladero Slough entry and receiving pits are approximately 430 feet from sensitive residential receptors on Castroville Road. At this distance, noise from sheet pile driving during the day (no nighttime sheet pile driving is proposed) would exceed the speech interference threshold of 70 dBA, but would be less than significant because these noise levels would be limited to a period of 1 to 3 days at any one location.

Castroville Pipeline Optional Alignment 1

This alignment is within 30 feet of residential dwellings on Cypress Circle and Merritt Way. Because the existing daytime ambient noise level at these residences is 75.5 dBA L_{eq} the resultant noise levels associated with pipeline installation along Merritt Street could be as high as 85 dBA L_{eq} (see **Table 4.12-7**). However, because the duration of the impact at these sensitive noise receptors would be less than the two week threshold, the noise levels would result in a less than significant impact.

If nighttime work were to be conducted along the portion of the Castroville Pipeline Optional Alignment 1, the resultant noise level could be as high as 84.5 dBA and exceed the sleep interference threshold of 60 dBA for 1 to 3 days at locations within 200 feet of the pipeline such as residences on Cypress Circle and Merritt Way, a significant impact. Implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment**), and 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction) would reduce the severity of this impact (16 dBA of reduction), but not to the degree necessary to reduce construction noise below the threshold of 60 dBA, L_{eq} (25 dBA of reduction). Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014). Consequently, although the impact at any given receptor would be limited in duration, the impact would remain significant and unavoidable even with implementation of mitigation measures.

New Transmission Main

The new Transmission Main passes within 100 feet of residences located on Marina Drive in the city of Marina. Short-term monitoring at location S2, where the ambient daytime noise level was measured at 66.4 dBA L_{eq} and the ambient nighttime noise level was measured at 42.3 dBA L_{eq}, represents the noise environment at the closest residential receptors to the new Transmission Main (see **Table 4.12-8** and **Figure 4.12-1**). The resultant daytime construction noise level at these receptors could be as high as 74.7 dBA. The impact associated with construction-related increases in daytime noise levels would be less than significant because the impact duration would be less than the two week threshold.

Two options for crossing Highway 1 are considered. Under both the preferred alignment and the new Transmission Main Optional Alignment, the pipeline would be installed beneath Highway 1 using trenchless construction methods. The nearest sensitive receptors are located over 1,300 feet away from the trenchless pit locations. At this distance the resultant noise level would be less than 70 dBA and would be less than significant.

TABLE 4.12-8
MAXIMUM CONSTRUCTION NOISE LEVELS – NEW TRANSMISSION MAIN

Pipeline (Construction Method)	Closest Sensitive Receptor(s)	Distance to Receptor (feet)[a]	Existing Ambient Daytime Noise Level at Receptor(s) (dBA L_{eq})	Attenuated Construction Equipment Noise Level at Receptor(s) (dBA L_{eq})[a]	Resultant Noise Level at Receptor(s) during Construction (dBA L_{eq})[b]	Exceeds Day/ nighttime Threshold?
New Transmission Main (Open Trench Construction)	Residences (various)	100	Daytime – 66.4[c] Nighttime – 42.3	74.0	Daytime – 74.7 Nighttime – 74.0	Yes/Yes
		180	Daytime – 50.1[d] Nighttime – 51.4	68.9	Daytime – 69.5 Nighttime –69.5	No/Yes
New Transmission Main (Trenchless Construction)	Residences on Marina Drive	100	Daytime – 66.4[c]	87.8	87.8	Yes/NA

NOTES:

[a] Attenuated construction equipment noise levels at the nearest sensitive receptors were calculated using FHWA Roadway Construction Noise Model Version 1.1. This value represents hourly average noise levels based on the estimated percentage of time the various pieces of construction equipment would be operating.

[b] Resultant noise level is the result of logarithmic addition of the values in the two previous columns (i.e., the attenuated construction equipment noise in combination with the ambient noise level at the sensitive receptor). This represents the noise level that could be experienced by a human at the sensitive receptor location.

[c] Based on daytime and nighttime ambient noise level at short-term noise monitoring location S2 (see **Figure 4.12-1** and **Table 4.12-1**).

[d] Based on daytime ambient noise level at short-term noise monitoring location S10.

If needed, nighttime construction for the new Transmission Main would be limited to areas outside of the City of Marina and the City of Seaside (Mitigation Measure 4.12-4 prohibits nighttime construction work within 500 feet of residences in the City of Marina). The closest residential receptors are on 4th Army Street at a distance of 250 feet and the resultant nighttime noise levels at these residences receptors could be as high as 69.5 dBA, L_{eq}, which would exceed the sleep interference threshold of 60 dBA. Implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would reduce the severity of this impact, to below the sleep interference threshold of 60 dBA, L_{eq} (10 dBA of reduction).

ASR-5 and ASR-6 Wells

The proposed ASR injection/extraction wells (ASR-5 and ASR-6 Wells) would be constructed at the intersection of General Jim Moore Boulevard and Ardennes Circle, in the Fitch Park military housing area. The closest residential receptors to the proposed wells are located 50 feet away on Ardennes Circle. Noise monitoring location S4 represents the noise environment at the Fitch Park residential receptors (see **Table 4.12-1** and **Figure 4.12-1**).

Each proposed ASR injection/extraction well would require 24-hour construction activities for up to 4 weeks during well drilling and development, for a total of 8 weeks of 24-hour construction. As discussed in Section 3.3.2.2 in Chapter 3, Description of the Proposed Project, temporary noise attenuators (sound walls) would be installed at each well site to reduce construction noise. Accounting for the attenuation provided by the temporary sound wall, the resultant daytime and

nighttime construction noise levels at the Fitch Park residential receptors could be as high as 80.8 dBA L_{eq}. This level exceeds the speech interference and sleep interference thresholds of 70 dBA and 60 dBA (with windows closed, or 35 dBA with windows open), respectively, and would result in a significant impact. **Figures 4.12-2** and **4.12-4** illustrate the noise contours for construction of ASR-5 and ASR-6 wells, respectively, without mitigation. While it is possible that implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, **4.12-1d (Additional Noise Controls for ASR-5 and ASR-6 Wells)**, and **4.12-1e (Offsite Accommodations for Substantially Affected Receptors)** would reduce the daytime noise impact to a less-than-significant level, this mitigation would not be sufficient to reduce noise to below the more stringent nighttime threshold. The maximum level of attenuation that is reasonably achievable with implementation of the mitigation measures is 16 to 40 dBA of sound reduction, depending on the frequency of the noise source (ENC, 2014). **Figures 4.12-3** and **4.12-5** illustrate the noise contours for construction of ASR-5 and ASR-6 wells, respectively, with mitigation. The nighttime noise impact would remain significant and unavoidable.

ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline

The three 0.9-mile-long ASR pipelines would be installed along General Jim Moore Boulevard between the ASR-5 and ASR-6 Wells and Coe Avenue. Nighttime construction work is not proposed for these pipelines; therefore, there would be no impact related to nighttime noise increases.

The pipelines would be installed as close as 300 feet east of Seaside Middle School. The attenuated construction equipment noise level at 300 feet would be 65.2 dBA L_{eq} (see **Table 4.12-9**). However, because the school is situated at a lower elevation than General Jim Moore Boulevard, the effective earthen berm created by the difference in elevation would shield the school and provide an additional 15 to 20 dBA of noise attenuation (Caltrans, 2009). Consequently, the resultant daytime noise level at Seaside Middle School during pipeline installation activities would be 50.2 dBA L_{eq} and would be less than significant.

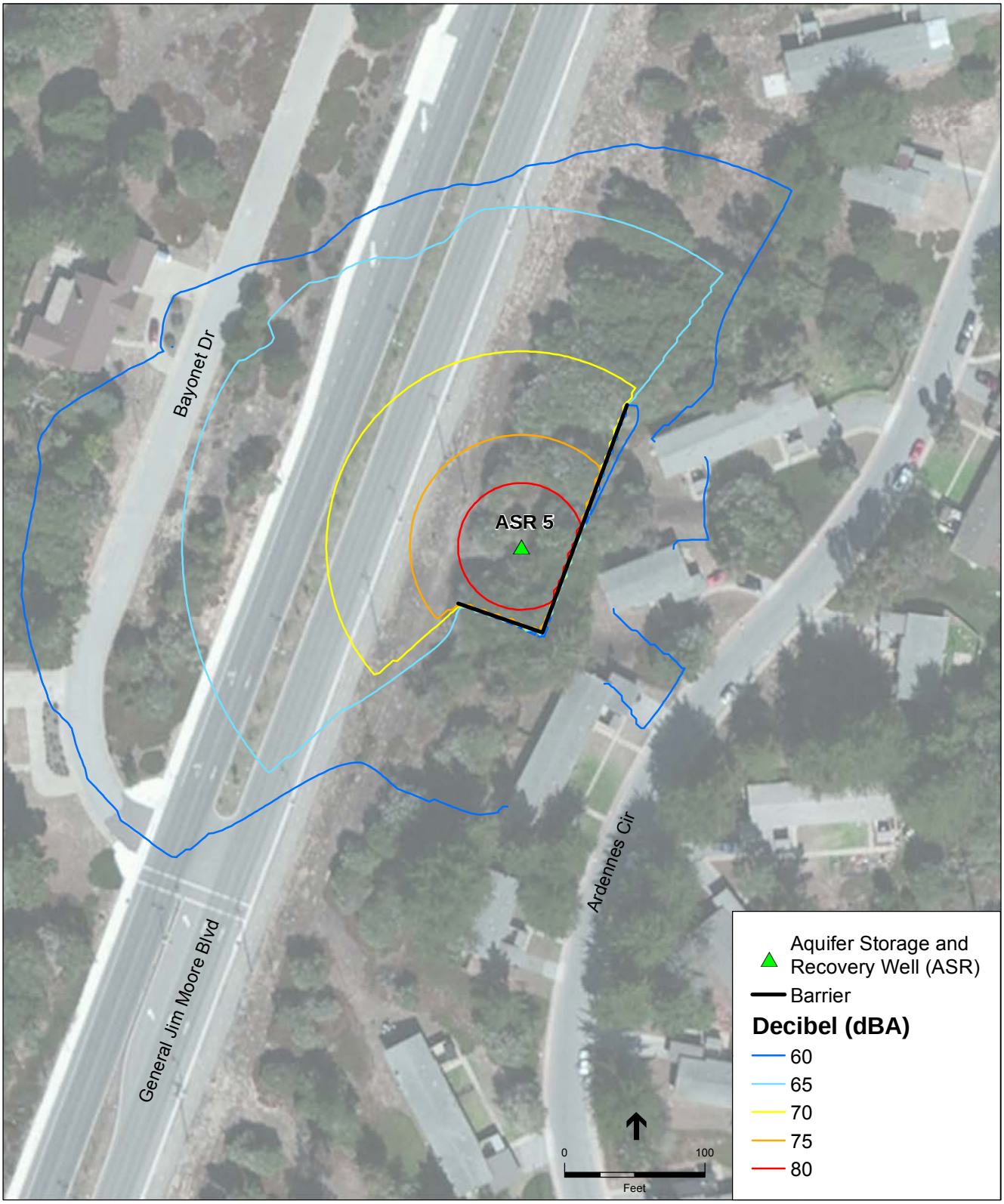
These pipeline alignments are as close as 100 feet from residential receptors, including residences on Ardennes Circle. The resultant daytime noise level at residential receptors during pipeline construction would be as high as 74.0 dBA L_{eq}. Assuming a pipeline installation rate of 250 feet per day, these residential receptors would be exposed to the 74.0-dBA noise levels for 1 to 3 days. Therefore, the construction noise impact associated with increases in daytime noise levels from pipeline installation would be less than significant.

SOURCE: ESA, 2017

205335.01 Monterey Peninsula Water Supply Project

Figure 4.12-2

Construction Noise Contours for Well ASR-5

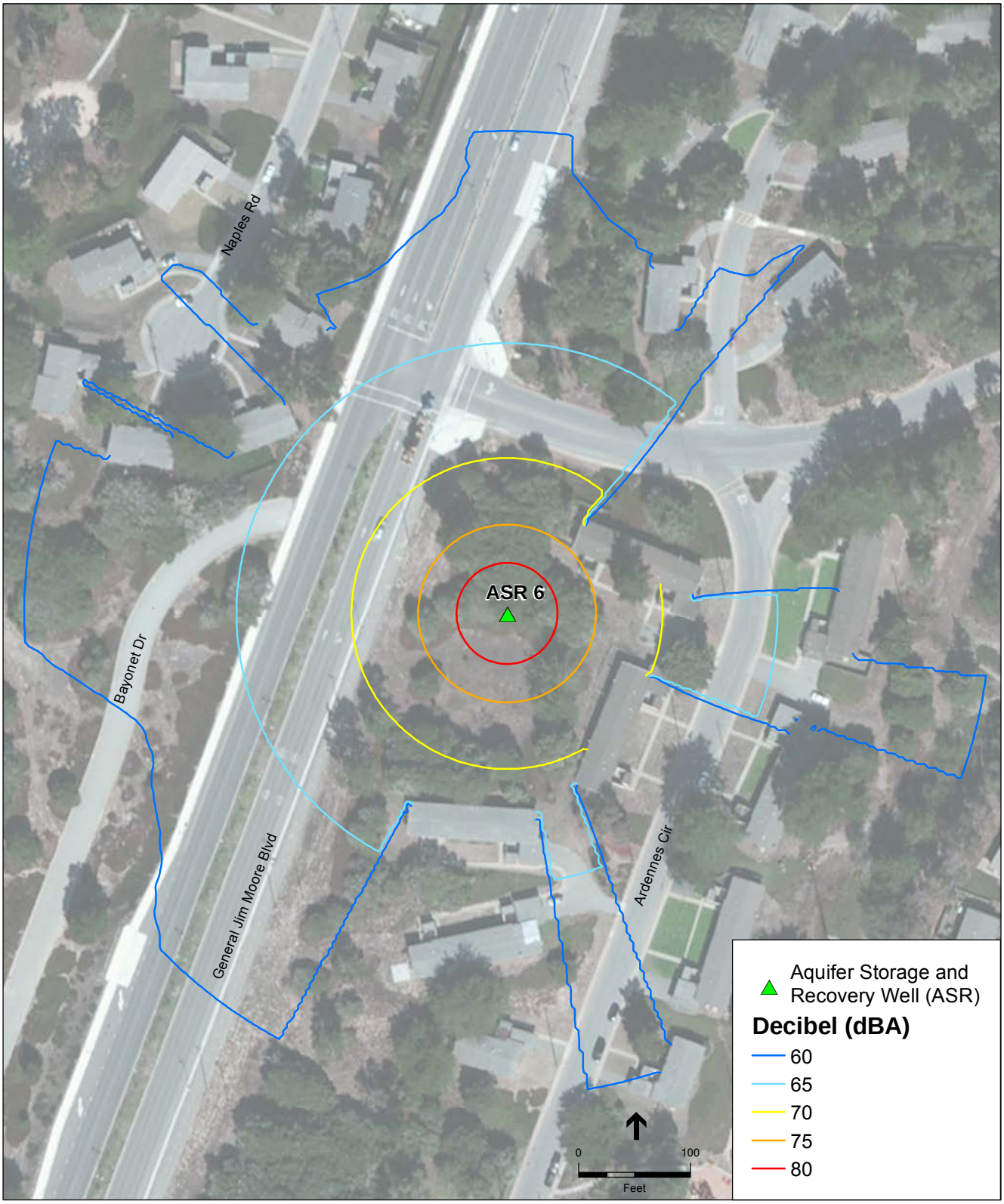


SOURCE: ESA, 2017

205335.01 Monterey Peninsula Water Supply Project

Figure 4.12-3

Construction Noise Contours for Well ASR-5 with10-foot barrier

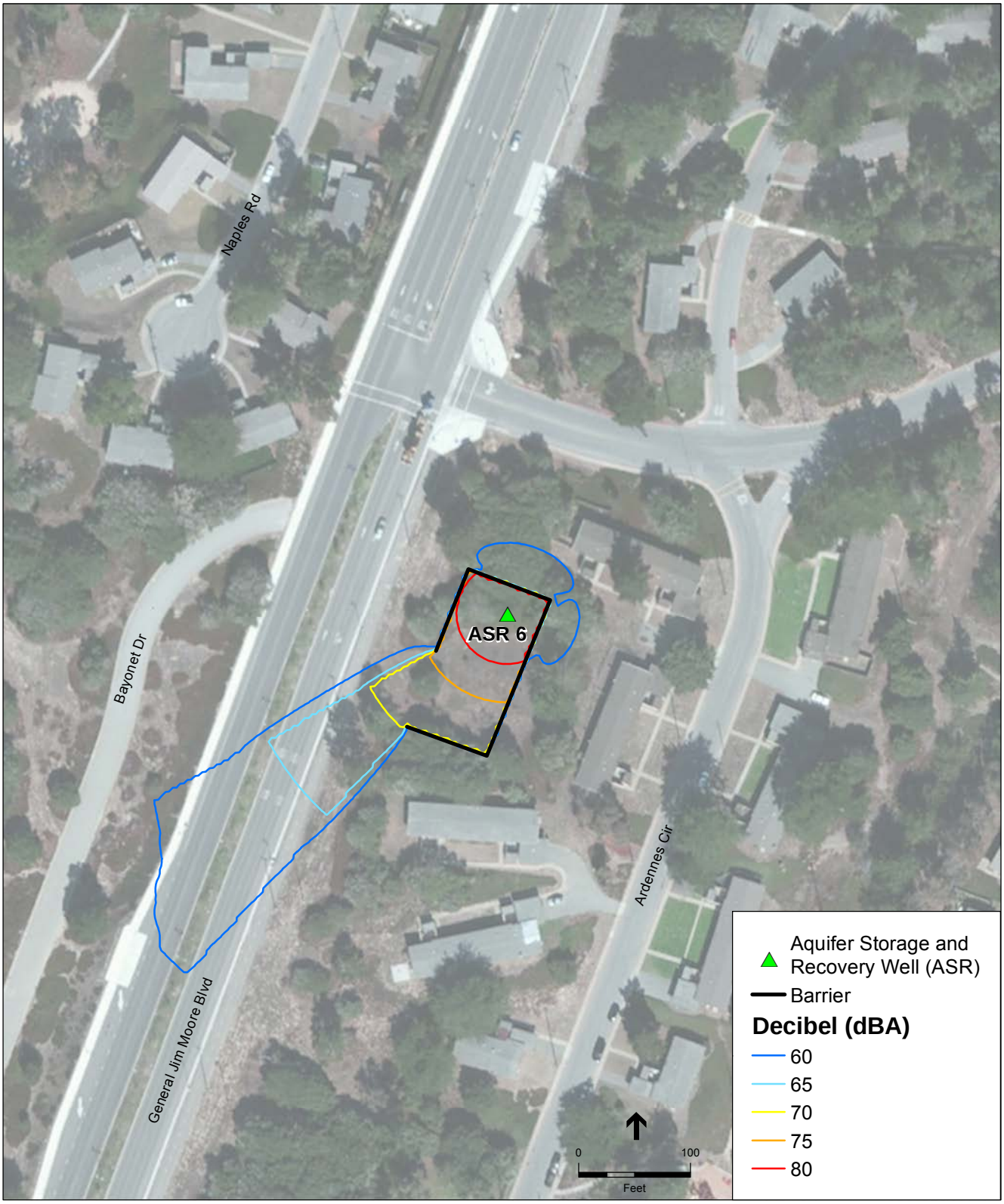


SOURCE: ESA, 2017

205335.01 Monterey Peninsula Water Supply Project

Figure 4.12-4

Construction Noise Contours for Well ASR-6



SOURCE: ESA, 2017

205335.01 Monterey Peninsula Water Supply Project

Figure 4.12-5

Construction Noise Contours for Well ASR-6 with 15-foot barrier

TABLE 4.12-9
MAXIMUM CONSTRUCTION NOISE LEVELS – ASR PIPELINES

Project Component	Closest Sensitive Receptor(s)	Distance to Receptor (feet)	Existing Ambient Noise Level at Receptor(s) (dBA L_{eq})	Attenuated Construction Equipment Noise Level at Receptor(s) (dBA L_{eq})[a]	Resultant Noise Level at Receptor(s) during Construction (dBA L_{eq})[b]	Exceeds Daytime Threshold?
ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline and ASR Recirculation Pipeline (Open Trench Construction)	Residences at Fitch Park military housing area (Ardennes Circle)	100	Daytime – 54.3[c]	74.0	Daytime – 74.0	Yes
ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline and ASR Recirculation Pipeline (Open Trench Construction)	Seaside Middle School	300	Daytime – 50.7[c]	50.2	Daytime – 53.5	Yes

NOTES:

[a] Attenuated construction equipment noise levels at the nearest sensitive receptors were calculated using FHWA Roadway Construction Noise Model Version 1.1. This value represents hourly average noise levels based on the estimated percentage of time the various pieces of construction equipment would be operating.

[b] Resultant noise level is the result of logarithmic addition of the values in the two previous columns (i.e., the attenuated construction equipment noise in combination with the ambient noise level at the sensitive receptor). This represents the noise level that could be experienced by a human at the sensitive receptor location.

[c] Based on daytime and nighttime ambient noise level at short-term noise monitoring location S4 (see **Figure 4.12-1** and **Table 4.12-1**).

[d] Estimated noise levels during well drilling and development do not reflect the noise attenuation provided by sound walls.

Carmel Valley Pump Station

Construction activities for the Carmel Valley Pump Station are expected to last for approximately 6 months and would occur during daytime hours only. The closest residence is located approximately 50 feet to the north and east of the pump station site. Noise measurements taken at monitoring location S7 (see **Figure 4.12-1**) represent the noise environment at this sensitive receptor (61.5dBA L_{eq}). As shown in **Table 4.12-6**, during construction, the resultant daytime noise level at this sensitive receptor could be as high as 77.9 dBA, L_{eq}, which is a significant impact. However, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)** and **4.12-1b (General Noise Controls for Construction Equipment)**.

Interconnections with Highway 68 Satellite Water Systems

The proposed project would improve existing interconnections for three satellite water systems in the unincorporated communities of Ryan Ranch, Bishop, and Hidden Hills along the Highway 68 corridor. These improvements would be constructed during daytime hours and would not involve nighttime construction.

Ryan Ranch–Bishop Interconnection Improvements

The Ryan Ranch–Bishop Interconnection Improvements would be located in a business park area (i.e., medical offices and general office space). The closest noise-sensitive land use is the York School located 900 feet to the northeast of the proposed improvements on York Road, which is beyond the 600 foot study area for noise from non-impact construction equipment (see **Section 4.12.2**) because construction-related noise increases at sensitive receptors would not exceed the speech interference threshold of 70 dBA, or exceed the sleep interference threshold of 60 dBA. Therefore, the impact related to temporary increases in daytime noise levels would be less than significant.

Main System–Hidden Hills Interconnection Improvements

The proposed Main System–Hidden Hills Interconnection Improvements involve the installation of a 1,200-foot-long, 6-inch-diameter pipeline along Tierra Grande Drive. This is a rural residential area where daytime noise levels are typically below 50 dBA. The pipeline and valves would be installed over approximately 5 days. Assuming a distance of 50 feet from the nearest residence, the resultant daytime noise levels at the closest residence could be as high as 77.7 dBA L_{eq}, which would exceed the 70-dBA L_{eq} threshold. Although daytime construction noise at adjacent residences could exceed the threshold of 70 dBA L_{eq}, the duration of the impact would be less than two weeks and the impact would be less than significant.

Impact Conclusion

Construction of the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box would result in less-than-significant daytime and nighttime noise impacts. Construction of the ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements would result in a less-than-significant impact related to temporary increases in daytime noise levels and no impact related to nighttime noise. Significant impacts related to temporary increases in daytime noise levels would result during construction of the ASR-5 and ASR-6 Wells and the Carmel Valley Pump Station, but these impacts would be reduced to less-than-significant levels with implementation of the prescribed mitigation measures. Significant nighttime noise impacts would result during construction of the new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, and the ASR-5 and ASR-6 Wells. With the exception of nighttime noise impacts associated with the Castroville Pipeline Optional Alignment 1 and ASR-5 and ASR-6 Wells, implementation of **Mitigation Measures 4.12-1a** through **4.12-1c** would reduce all other construction-related nighttime noise impacts to a less-than-significant level. Nighttime noise impacts during installation of the Castroville Pipeline Optional Alignment 1 and during drilling and development of the ASR-5 and ASR-6 Wells would remain significant and unavoidable, even with implementation of mitigation.

Mitigation Measures

Mitigation Measure 4.12-1a applies to the new Desalinated Water Pipeline, Castroville Pipeline and Optional Alignment, new Transmission Main, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station.

Mitigation Measure 4.12-1a: Neighborhood Notice and Construction Disturbance Coordinator

The combination of public notice and the establishment of a construction disturbance coordinator can result in a lessening of the adversity of the impact at a given receptor by allowing them to prepare for pending construction activities and providing a contact to report any disturbances or violations to CalAm for appropriate response actions, including additional mitigation. Residents and other sensitive receptors within 300 feet of a daytime construction area and within 900 feet of a nighttime construction area shall be notified of the construction location, nature of activities, and schedule, in writing, at least 14 days prior to the commencement of construction activities. The notice shall also be posted along the proposed pipeline alignments, near the proposed facility sites, and at nearby recreational facilities. CalAm or the contractor(s) shall designate a construction disturbance coordinator who would be responsible for responding to construction complaints. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. CalAm and/or its contractor shall return all calls within 24 hours to answer noise questions and handle complaints. Documentation of the complaint and resolution shall be submitted to the CPUC weekly. A contact number for the construction disturbance coordinator shall be conspicuously placed on construction site fences and included in the notice. Prior to distributing the notice to nearby residences, CalAm or the contractor(s) shall first submit the notice to the respective city planning and services manager for review and approval. This measure shall be implemented in conjunction with the noticing provisions in Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan).

Mitigation Measure 4.12-1b applies to the new Desalinated Water Pipeline, Castroville Pipeline Optional Alignment, new Transmission Main, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station.

Mitigation Measure 4.12-1b: General Noise Controls for Construction Equipment and Activities.

The construction contractor(s) shall assure that construction equipment with internal combustion engines have sound control devices at least as effective as those provided by the original equipment manufacturer. No equipment shall be permitted to have an unmuffled exhaust.

Impact tools (i.e., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler shall be placed on the compressed air exhaust to lower noise levels by up to approximately 10 dBA. External jackets shall be used on impact tools, where feasible, in order to achieve a further reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.

The construction contractor(s) shall locate staging areas and stationary noise sources as far from nearby receptors as possible, and shall muffle and enclose them in temporary sheds, incorporate noise barriers, or implement other noise control measures to the extent feasible. The noise controls shall be sufficient to reduce noise levels during drilling and development of ASR-5 and ASR-6 Wells, and pump station construction activities below the threshold of 70 dBA L_{eq}.

Mitigation Measure 4.12-1c applies to the new Desalinated Water Pipeline, Castroville Pipeline and Optional Alignment, and new Transmission Main.

Mitigation Measure 4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.

CalAm or a representative of CalAm shall submit a Noise Control Plan for all nighttime pipeline work to the California Public Utilities Commission for review and approval prior to the commencement of project construction activities. The Noise Control Plan shall identify all feasible noise control procedures to be implemented during nighttime pipeline installation in order to reduce noise levels to the extent practicable at the nearest residential or noise sensitive receptor. At a minimum, the Noise Control Plan shall require use of moveable noise screens, noise blankets, or other suitable sound attenuation devices be used to reduce noise levels during nighttime pipeline installation activities below 60 dBA L_{eq}.

Mitigation Measure 4.12-1d applies only to the ASR-5 and ASR-6 Wells.

Mitigation Measure 4.12-1d: Additional Noise Controls for ASR-5 and ASR-6 Wells.

In addition to the general noise controls that will be implemented as part of Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment), CalAm or its construction contractor(s) for the ASR-5 and ASR-6 Wells shall identify feasible noise controls for implementation during well drilling development activities at the Fitch Park military housing community. The construction contractor(s) shall locate all stationary noise-generating equipment as far as possible from nearby noise-sensitive receptors. Drill rigs within 500 feet of noise-sensitive receptors shall be equipped with noise-reducing engine housings or other noise-reducing technology. Additionally, acoustic barriers and/or enclosures shall be used with a goal of reducing noise from well drilling activities to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area. There are a number of options available to achieve this performance standard. Barrier blankets are available with a sound transmission class rating of 32, which can provide 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014). The realized sound transmission reduction of barrier blankets needs to be sufficient to achieve the performance standard of 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area.

Mitigation Measure 4.12-1e applies only to the ASR-5 and ASR-6 Wells.

Mitigation Measure 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors.

CalAm shall provide temporary hotel accommodations for all residences and any other nighttime sensitive receptors:

1. That would be exposed to 24-hour project construction activities and

2. Where nighttime construction noise would exceed 60 dBA with windows closed or 35 dBA with windows open, even with implementation of acoustic barriers and/or shielding measures.

The accommodations shall be provided for the duration of 24-hour construction activities. CalAm shall provide accommodations reasonably similar to those of the impacted residents in terms of number of beds and amenities. If identified accommodations do not include typical residential kitchen facilities (e.g., cooktop, oven, full size refrigerator), then CalAm shall provide displaced individuals with a per diem allowance to offset costs of meals for the period of relocation.

Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction. (*Less than Significant with Mitigation*)

Subsurface Slant Wells

Section 15.04.055 of the Marina Municipal Code limits outside construction, repair work, or related activities that produce noise adjacent to residential uses and restricts construction noise to 60 dBA for 25 percent of an hour at the property line of sensitive receptors. As shown in **Table 4.12-3**, nighttime construction of the subsurface slant wells and the Source Water Pipeline would not occur adjacent to a residential use. Consequently, construction of the proposed slant wells would have a less than significant impact with regard to generation of noise levels in excess of standards.

MPWSP Desalination Plant

The residences on Neponset Road are located in unincorporated Monterey County and subject to the *Monterey County General Plan*. As indicated in Table 4.12-3, the only policy or ordinance for which the proposed MPWSP Desalination Plant would be potentially inconsistent is Policy S-7.10 of the Monterey County General Plan. Policy S-7.10 applies the following standard noise protection measures:

- Construction shall occur only during times allowed by ordinance/code unless such limits are waived for public convenience;
- All equipment shall have properly operating mufflers; and
- Laydown yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical

Construction of the MPWSP Desalination Plant facilities would operate equipment and require staging areas. However, implementation of **Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment and Activities)** addresses these policy-driven mitigation measures by prohibiting equipment with unmuffled exhaust and requiring that staging areas and stationary noise sources be located as far from nearby receptors as possible.

Therefore, the impact of construction noise from the MPWSP Desalination Plant related to generation of noise in excess of regulatory noise standards would be less than significant.

Pipelines North of Reservation Road

Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box

The closest sensitive receptors to the Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box are residences on Neponset Road in unincorporated Monterey County. These pipelines could require nighttime construction, but the Brine Mixing Box would only be constructed during daytime hours. Construction of these pipelines would be subject to the *Monterey County General Plan*. Monterey County General Plan Policy S-7.9 restricts evening construction activities within 500 feet of a sensitive land use. As discussed above under Impact 4.12-1, the residences on Neponset Road are the closest sensitive receptors to the Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box at 1,100 feet, 3,600 feet, 3,600 feet, and 5,800 feet respectively, which are all greater than 500 feet away from proposed pipeline construction areas. Therefore, such construction activities would be consistent with Policy S-7.9.

Monterey County Code Section 10.60.030 limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source. The equipment used to install the Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box (see **Table 4.12-6**) would not exceed these levels.

Portions of the Source Water Pipeline would be within the jurisdiction of the City of Marina. The City of Marina Municipal Code restricts construction noise to 60 dBA for 25 percent of an hour at any receiving property line. There are no residences or other sensitive receptors located within the study area for the Source Water Pipeline (see **Table 4.12-7**). This would be a less than significant impact with regard to the generation of noise in excess of regulatory noise standards in the city of Marina.

Consequently, construction activities associated with the installation of the Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box would be consistent with standards established in the applicable general plans and noise ordinances. Therefore, construction noise from installation of these pipelines related to generation of noise in excess of regulatory noise standards would be less than significant.

New Desalinated Water Pipeline

Construction of this pipeline would be subject to the *Monterey County General Plan.* Monterey County General Plan Policy S-7.9 restricts construction activities within 500 feet of a sensitive land use during evening hours. There are no residences within unincorporated Monterey County that are within 500 feet of the new Desalinated Water Pipeline and construction activities would be consistent with Policy S-7.9.

As indicated in Table 4.12-3, all project elements in Monterey County would be consistent with Monterey County Code Section 10.60.030 which limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source.

The Noise Element of the *City of Marina General Plan* does not address construction noise. The Municipal Code restricts construction noise to 60 dBA for 25 percent of an hour at any receiving property line. The daytime and nighttime resultant noise levels associated with pipeline installation at the Marina Drive residences could be as high as 74.7 and 74.0 dBA L_{eq}, respectively (see **Table 4.12-7**). This would be a significant impact with regard to generation of noise in excess of regulatory noise standards. However, with implementation of **Mitigation Measures 4.12-1b (General Noise Controls for Construction Equipment)** and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)**, which would require that construction contractor's implement noise control measures, including temporary sound enclosures, if necessary, would reduce the resultant daytime and nighttime noise levels below 60 dBA. Moveable sound barrier curtains can provide 15 dBA of sound attenuation (INC, 2014) reducing resultant noise levels to 59.7 dBA which is below the nighttime sleep interference threshold. These mitigation measures would reduce the impact to a less-than-significant level. Additionally, Mitigation Measure 4.12-4 prohibits nighttime construction work within 500 feet of residences in the City of Marina, further reducing the potential nighttime construction noise impact.

Trenchless construction methods would be required to install the new Desalinated Water Pipeline beneath railroad tracks. The resultant noise levels would be up to 96 dBA, L_{eq} at a distance of 50 feet during installation of sheet piles. Monterey County Code Section 10.60.030 limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source. If sheet piles were required, the equipment used to install them would exceed these levels. However, implementation of **Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment)** would provide 15 dBA of sound attenuation (INC, 2014), which would be sufficient to reduce the impact of sheet pile driving to less than the 85 dBA threshold of the Monterey County Code.

The City of Marina Municipal Code restricts construction noise to 60 dBA for 25 percent of an hour at any receiving property line. The Roadway Construction Noise Model identifies pile driving as having a usage percentage of 20 percent of an hour. Consequently, pile driving noise would be exempt from the restrictions of the City's municipal Code.

Castroville Pipeline

The Castroville Pipeline would be installed along rural roadways in unincorporated Monterey County. Construction of this pipeline would be subject to the *Monterey County General Plan*. Monterey County General Plan Policy S-7.9 restricts construction activities within 500 feet of a sensitive land use during evening hours. There is a cluster of residences within unincorporated Monterey County that are within 500 feet of the Castroville Pipeline on the north side of the Salinas River as well as one at Nashua Road. Policy S-7.9 requires the project sponsor to complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours.

Therefore, nighttime construction work of the Castroville Pipeline would be a significant impact with regard to generation of noise in excess of regulatory noise standards. However, implementation of **Mitigation Measures 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would ensure that construction activities would be consistent with Policy S-7.9 and a less-than-significant impact with respect to consistency with local plans.

The Castroville Pipeline Optional Alignment 1 would be installed within 500 feet of two residences on Nashua Road as well as dozens of residences along either side Merritt Street (On Merritt Way and Cypress Circle) within the unincorporated town of Castroville. Similarly, implementation of **Mitigation Measures 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would ensure that construction activities would be consistent with Policy S-7.9 and a less-than-significant impact with respect to consistency with local plans.

As indicated in Table 4.12-3, all project elements in Monterey County would be consistent with Monterey County Code Section 10.60.030 which limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source. Consequently, construction activities associated with the installation of the Castroville Pipeline would be consistent with standards established in the applicable general plan and noise ordinance and construction noise from installation of these pipelines related to generation of noise in excess of regulatory noise standards would be less than significant.

Pipelines South of Reservation Road

New Transmission Main

The northernmost 0.7 mile of the new Transmission Main alignment is within the city of Marina where the noise ordinance restricts construction noise to 60 dBA for 25 percent of an hour at the property line of sensitive receptors. Without mitigation, installation of the new Transmission Main would have the same significant impact with regard to generation of noise in excess of regulatory noise standards as the new Desalinated Water Pipeline (i.e., noise levels associated with pipeline installation at nearby residences could be as high as 74.7 and 74.0 dBA L_{eq} for daytime and nighttime construction activities, respectively). Consequently, daytime and nighttime construction activities associated with the northernmost 0.7 miles of the new Transmission Main within the jurisdiction of the city of Marina would be significant. However, implementation of **Mitigation Measures 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would reduce the daytime and nighttime construction noise impact to a less-than-significant level. Additionally, Mitigation Measure 4.12-4 prohibits nighttime construction work within 500 feet of residences in the City of Marina, further reducing the potential nighttime construction noise impact.

At the junction of Highway 1/Lightfighter Drive, the new Transmission Main would be installed beneath Highway 1 via trenchless construction methods. The resultant noise level at 50 feet would be 96 dBA L_{eq} during installation of sheet piles. The City of Marina Municipal Code restricts construction noise to 60 dBA for 25 percent of an hour at any receiving property line. The Roadway Construction Noise Model identifies pile driving as having a usage percentage of 20 percent. Consequently, pile driving noise, while elevated, would be exempt from this restriction of the City's Municipal Code and therefore consistent with its requirements.

The portion of the new Transmission Main on the west side of Highway 1 is within the jurisdiction of the Fort Ord Reuse Plan as well as the Fort Ord Dunes State Park General Plan. Noise Policy B-9 of the Reuse Plan that requires construction contractors to employ noise-reducing construction practices. Consequently, **Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment)** is identified to reduce construction noise levels and avoid a significant impact with regard to Noise Policy B-9 of the Reuse Plan.

Policy NOI-3 of the Fort Ord Dunes State Park General Plan requires area-specific projects to develop noise abatement measures to minimize disturbance to park visitors, neighbors, and sensitive wildlife identified as occurring in the area during construction and requires consideration of the following measures:

- Restrict construction activities to daytime hours, where feasible;
- Use best available noise control techniques wherever feasible, including those for vehicles and construction equipment;
- Use hydraulically or electrically powered impact tools when feasible;
- Locate stationary noise sources as far from sensitive receptors as feasible; and
- To the extent feasible, avoid construction during the nesting/breeding seasons of sensitive wildlife known to occur in the project vicinity.

Implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would ensure that the construction noise abatement measures are in place during construction of the new Transmission Main. With implementation of these mitigation measures, pipeline installation activities would be consistent with Policy NOI-3 of the Fort Ord Dunes State Park General Plan.

The southern portion of the new Transmission Main is in the city of Seaside. Implementation Plan N-1.3 of the *City of Seaside General Plan* requires all construction activity to comply with the limits established in the City's noise regulations. While the City of Seaside does not have established noise level limits for construction activities, the Implementation Plan does specify Title 24 of the California Code of Regulations. The sleep interference threshold applied in Impact 4.12-1 with respect to nighttime noise (60 dBA) is predicated on a 25-dBA reduction for standard construction with the windows closed, to maintain an acceptable interior noise environment of 35 dBA at night which would achieve a 45 dBA DNL noise standard for residential dwellings established in Title 24. Impact 4.12-1 identified a potential significant impact with regard to nighttime noise exceeding the sleep interference threshold during construction of the new Transmission Main and identified mitigation to reduce this impact to a less-than-significant level. Therefore, consistency with Implementation Plan N-1.3 (compliance with Title 24 of the CCR) is addressed in Impact 4.12-1 (daytime speech interference and nighttime sleep interference) and mitigation measures are identified to reduce this potential impact to less than significant.

As indicated in Table 4.12-3, all project elements in Seaside would be consistent with Policy C-1.7 of the Seaside General Plan which directs the City to reduce impacts on residential neighborhoods from truck traffic and related noise. Therefore, no impact is expected to result with respect to the generation of noise in excess of regulatory noise standards established by the City of Seaside.

ASR-5 and ASR-6 Wells

The ASR-5 and ASR-6 Wells would be constructed on federal land and would not be subject to the regulatory noise standards of local jurisdictions. As discussed in Section 4.12.3.1, federal regulations establish noise limits for motor vehicles through regulatory controls on truck manufacturers, sets standard for highway and aircraft noise but does not promulgate noise standards for stationary or construction-related sources. Therefore, no impact related to generation of noise in excess of regulatory noise standards would result from installation of the ASR-5 and ASR-6 Wells.

ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline

The proposed ASR Conveyance Pipeline, ASR Recirculation Pipeline and ASR Pump-to-Waste Pipeline would be constructed within the jurisdictions of the city of Seaside and Fort Ord Reuse Plan. The City of Seaside General Plan requires all construction activities to comply with the limits established in the City's noise regulations. While the City of Seaside does not have established noise level limits for construction activities, the Implementation Plan does specify Title 24 of the California Code of Regulations. The sleep interference threshold that is applied in Impact 4.12-1 with respect to nighttime noise (60 dBA) is predicated on a 25-dBA reduction for standard construction with the windows closed, to maintain an acceptable interior noise environment of 35 dBA at night which would achieve a 45 dBA DNL noise standard for residential dwellings established in Title 24. Therefore, consistency with Implementation Plan N-1.3 is addressed in Impact 4.12-1 and mitigation measures are identified to reduce this potential impact to less than significant.

As indicated in Table 4.12-3, all project elements in Seaside would be consistent with Policy C-1.7 of the Seaside General Plan which directs the City to reduce impacts on residential neighborhoods from truck traffic and related noise. Therefore, no impact related to the generation of noise in excess of City of Seaside's regulatory noise standards would result from construction of the proposed ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline.

With respect to consistency with established construction noise level limits of the Fort Ord Reuse Plan, Noise Policy B-9 of the Reuse Plan requires construction contractors to employ noise-reducing construction practices. Specific information regarding noise-reduction measures that would be implemented during project construction is not available. Although CalAm's construction contractors would likely implement Best Management Practices with regard to minimizing construction-related noise, this analysis conservatively assumes no noise-reduction measures would be implemented. As a result, the impact is considered significant. However, implementation of **Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment)** would

ensure that construction contractors to employ noise-reducing construction practices. With implementation of this mitigation, the project would be consistent with the intent of Noise Policy B-9 of the Fort Ord Reuse Plan, and the impact would be reduced to a less-than-significant level.

Carmel Valley Pump Station

For County-permitted projects, Policy S-7.9 of the Monterey County General Plan requires that the project sponsor complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because construction of the Carmel Valley Pump Station would not occur during evening hours, construction activities would not conflict with Policy S-7.9.

As indicated in Table 4.12-3, all project elements in Monterey County would be consistent with Monterey County Code Section 10.60.030 which limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source. Therefore, the impact of construction noise from the Carmel Valley Pump Station related to generation of noise in excess of regulatory noise standards would be less than significant.

Interconnections with Highway 68 Satellite Systems

The Main System–Hidden Hills Interconnection Improvements are within 50 feet of a sensitive land use. For County-permitted projects, Policy S-7.9 of the Monterey County General Plan requires the project sponsor to complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because the Main System–Hidden Hills Interconnection Improvements would not be constructed during evening hours, they would not conflict with Policy S-7.9.

As indicated in Table 4.12-3, all project elements in Monterey County would be consistent with Monterey County Code Section 10.60.030 which limits the operation of machinery or equipment that produces a noise level exceeding 85 dBA at 50 feet from the source. Therefore, the impact of construction noise from the Interconnections with Highway 68 Satellite Systems related to generation of noise in excess of regulatory noise standards would be less than significant.

Land Use Plans & Policies Consistency

The above impact analysis, in conjunction with **Table 4.12-3** addresses consistency of proposed construction activities with Land Use Plans and Policies as they relate to generation of noise.

Impact Conclusion

There are no established construction noise level standards that would apply to the ASR-5 and ASR-6 Wells. Construction of the subsurface slant wells, Source Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to the CSIP Pond, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, Carmel Valley Pump Station, and MPWSP Desalination Plant would result in less-than-significant impacts with regard to the generation of construction noise levels in excess of local noise level standards.

Construction of the remaining project components (new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) would generate noise levels in excess of local noise level standards. The new Desalinated Water Pipeline and new Transmission Main would exceed the City of Marina's 60-dBA noise level standard for construction noise, a significant impact. In the absence of project-specific information regarding noise-reduction measures that would be implemented during project construction, it is conservatively assumed that noise resulting from construction of ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline would violate Noise Policy B-9 of the Fort Ord Reuse Plan, a significant impact. Implementation of **Mitigation Measures 4.12-1b** and **4.12-1c** would reduce these impacts to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.12-1b applies to the new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, ASR Conveyance Pipelines, and ASR Pump-to-Waste Pipeline.

> **Mitigation Measure 4.12-1b: General Noise Controls for Construction Equipment.**
>
> (See Impact 4.12-1, above, for description.)

Mitigation Measure 4.12-1c applies only to the new Desalinated Water Pipeline, Castroville Pipeline, and the northern portion of the new Transmission Main.

> **Mitigation Measure 4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.**
>
> (See Impact 4.12-1, above, for description.)

Impact 4.12-3: Expose people to or generate excessive groundborne vibration during construction. (*Less than Significant with Mitigation*)

Construction activities, such as pile driving, that involve impact tools can produce significant groundborne vibration. The substantive sources of vibration during project construction would be: (1) the drill rigs used for drilling and development of the subsurface slant wells in the CEMEX active mining area; (2) the drill rigs used for drilling and development of the ASR-5 and ASR-6 Wells at the Fitch Park military housing area; (3) bulldozers for construction of the MPWSP Desalination Plant; (4) jackhammers used to break up concrete during open-trench construction of pipelines; (5) Pile drivers to install sheet piles for entry and receiving pits where trenchless construction methods of pipeline installation are required; and (6) vibratory rollers, which would be used for construction of many of the project components.

As described above in Sections 4.12.1.2 and 4.12.4.2, substantial groundborne vibration can damage nearby structures or buildings. **Table 4.12-10** presents a summary of and the vibration levels that would result at the nearest structure and sensitive receptor from construction equipment operated for each of the project elements.

TABLE 4.12-10
SUMMARY OF VIBRATION LEVELS AT SENSITIVE RECEPTORS DURING CONSTRUCTION

Project Facility	Vibration-Inducing Construction Equipment	Equipment Vibration Level at 25 feet (PPV in/sec)[a]	Distance from Nearest Structure (feet)	Attenuated Construction Equipment Vibration Level at Nearest Structure (PPV in/sec)[b]	Exceeds Building Damage Thresholds?	Distance from Nearest Sensitive Receptor (feet)	Attenuated Construction Equipment Vibration Level at Nearest Sensitive Receptor (PPV in/sec)[b]	Exceeds Annoyance Thresholds?
Subsurface Slant Wells	Bore/Drill Rigs	0.089	1,100	0.0003	No	4,000	<0.0001	No
MPWSP Desalination Plant	Dozer	0.089	300	0.002	No	2,200	0.0001	No
Pipeline Installation (Open Trench Construction)	Compactor	0.21	25[c]	0.21	No	25[c]	0.21	Yes
Pipeline Installation (Trenchless Construction)	Pile Driver	0.644	40	.318	Yes	40	Yes	Yes
ASR-5 and ASR-6 Wells	Bore/Drill Rigs	0.089	50	0.031	No	50	0.031	No
Main System-Hidden Hills Interconnection Improvements	0.21	Compactor	80	0.037	No	80	0.037	No
Ryan Ranch-Bishop Interconnection Improvements	0.21	Compactor	80	0.037	No	900	0.0009	No
Carmel Valley Pump Station	0.21	Compactor	50	0.074	No	50	0.074	No

NOTES:

[a] Reference vibration levels for construction equipment are derived from FTA, 2006.
[b] Attenuated construction equipment noise levels at the nearest sensitive receptors were calculated using FTA methodology for construction equipment in its 2006 document *Transit Noise and Vibration Impact Assessment*.
[c] Distance between the proposed pipeline alignments and the nearest sensitive receptors varies by pipeline.

Subsurface Slant Wells

Structural Damage. Drill rigs can result in vibration measuring 0.089 in/sec PPV at a distance of 25 feet (FTA, 2006). The nearest structure to the proposed slant well area is the CEMEX building, a historic structure located approximately 1,000 feet east of the subsurface slant well drilling area. As can be seen from Table 4.12-10, vibration levels from slant well drilling and development activities would be attenuated to below the threshold for fragile historic buildings of 0.12 in/sec PPV, resulting in a less-than-significant impact related to damage to this building.

Human Annoyance. As can be seen from Table 4.12-10, vibration levels from slant well drilling and development activities would be attenuated to background levels and would be below the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in no impact related to human annoyance.

MPWSP Desalination Plant

Structural Damage. The nearest structure to the proposed MPWSP Desalination Plant is the Last Chance Mercantile building located approximately 300 feet to the east, which is not considered a historic structure. As can be seen from Table 4.12-10, vibration levels from slant well drilling and development activities would be attenuated to below the threshold of 0.3 in/sec PPV, resulting in a less-than-significant impact related to damage to this building.

Human Annoyance. The nearest sensitive land use to the proposed MPWSP Desalination Plant is a rural residence on Neponset Road that is located 2,200 feet to the west. Vibration levels from rollers at this distance would be attenuated to background levels, resulting in no impact related to human annoyance.

Source Water Pipeline (Open Trench Construction)

Structural Damage. The Source Water Pipeline would be constructed as close as 65 feet away from historic features of the Lapis Sand Mining Plant Historic District (see Section 4.15, Cultural and Paleontological Resources, for additional information on the Lapis Siding). Thus, the use of vibratory rollers during construction of the Source Water Pipeline could cause cosmetic or structural damage to historic resources. The estimated vibration level that would be generated by a vibratory roller (expected construction equipment with the greatest PPV) is 0.12 in/sec PPV at a distance of 45 feet. Because the construction would occur farther than 45 feet away from the historic structures, damage to historic resources is not anticipated to result in a substantial adverse change in the significance of historical resources, and the impact would be less than significant.

Human Annoyance. The nearest sensitive receptors to the proposed Source Water Pipeline are residences on Neponset Road located approximately 1,100 feet away. At this distance vibration levels from rollers would be attenuated to background levels, resulting in no impact related to human annoyance.

Source Water Pipeline (Trenchless Construction)

Structural Damage. Approximately 500 feet east of Highway 1 and roughly 1,000 feet northeast of Del Monte Boulevard and Charles Benson Road, at Lapis Road, the Source Water Pipeline would be installed beneath railroad tracks using trenchless construction methods. This location is over 2,000 feet from historic features of the Lapis Sand Mining Plant Historic District or any other structure. Construction equipment for sheet pile installation would generate vibration levels above the 0.12 in/sec PPV vibration threshold for damage to historic buildings if it were to occur within 77 feet of such a structure. Because the construction would be over 2,000 feet from the historic district, there would be no impact with regard to structural damage from jack and bore construction activities.

Human Annoyance. The proposed jack-and-bore location for the Source Water Pipeline is over 3,500 feet from residential or other sensitive land uses. At this distance vibration levels would be attenuated to background levels, resulting in no impact related to human annoyance.

New Desalinated Water Pipeline and New Transmission Main (Open Trench Construction)

Structural Damage. The nearest structure to the new Desalinated Water Pipeline and new Transmission Main would be located approximately 100 feet away but none of these structures are historic. Vibration levels from vibratory rollers would reach 0.21 in/sec PPV at a distance of 25 feet. At 100 feet, vibration levels from roller operations would be attenuated to less than 0.03 in/sec PPV, which is below the threshold for non-fragile buildings of 0.3 in/sec PPV, resulting in a less-than-significant impact.

Human Annoyance. The nearest sensitive land use to the new Desalinated Water Pipeline and new Transmission Main would be located approximately 100 feet away. Vibration levels from rollers at this distance would be attenuated to less than 0.03 in/sec PPV, resulting in a less-than-significant impact related to human annoyance.

New Desalinated Water Pipeline and New Transmission Main (Trenchless Construction)

Structural Damage. Construction equipment for sheet pile installation would generate vibration levels above the 0.3 in/sec PPV structural damage threshold at modern buildings if it were to occur within 45 feet of such a structure. Such a condition would only potentially occur at location (F) in **Figure 4.12-1**, the southern terminus of Marina Drive in the City of Marina where the entry pit would be approximately 45 feet from an existing residential structure resulting in a vibration level would be 0.27 in/sec PPV. Implementation of **Mitigation Measure 4.12-3 (Vibration Reduction Measures)**, which would require vibration monitoring and restrict location of sheet piles, if necessary, would reduce this impact to a less-than-significant level.

Human Annoyance. Sheet pile driving could occur within 45 feet from residential and other sensitive land uses along the Desalinated Water Pipeline and new Transmission Main where the vibration level is predicted to be 0.27 in/sec PPV. Vibration levels from pile drivers would meet the “strongly perceptible” threshold of 0.1 in/sec PPV, at a distance of 85 feet from sensitive land

uses, resulting in a significant impact related to human annoyance, particularly if these operations were to occur during nighttime hours. Implementation of **Mitigation Measure 4.12-3 (Vibration Reduction Measures)**, which would restrict pile driving to daytime hours, require vibration monitoring and restrict locations of access pits where piles would be inserted, if necessary, would reduce this impact to a less-than-significant level.

Castroville Pipeline (Open Trench Construction)

Structural Damage. The nearest structure to the proposed Castroville Pipeline would be located are rural residential structures at the north bank of the Salinas River, approximately 200 feet away which is not a historic structure. Vibration levels from vibratory rollers for construction of these pipelines would reach 0.21 in/sec PPV at a distance of 25 feet, which is below the threshold of 0.03 in/sec PPV. At 200 feet, vibration levels from roller operations would be attenuated to less than 0.009 in/sec PPV, which is also below the threshold for non-fragile buildings of 0.3 in/sec PPV, resulting in a less-than-significant impact related to damage to buildings.

Human Annoyance. The nearest sensitive land use to the Castroville Pipeline would be located approximately 200 feet away. Vibration levels from rollers at this distance would be attenuated to than 0.009 in/sec PPV. This level would not exceed the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in a less than significant impact related to human annoyance.

Castroville Pipeline and Castroville Pipeline Optional Alignment 1 (Trenchless Construction)

Structural Damage. The nearest structures to the entry and receiving pits for the Castroville Pipeline at the Salinas River and Tembladero Slough crossings, and for the Castroville Pipeline Optional Alignment 1 at the Tembladero Slough crossing, would be 420 feet. At this distance, the vibration impact would be attenuated to background levels, resulting in no impact related to damage to buildings.

Human Annoyance. Vibration levels from pile driving would be below the "strongly perceptible" threshold of 0.1 in/sec PPV beyond 85 feet. The nearest sensitive receptor to either of the two jack and bore pits for the Castroville Pipeline (and its Optional alignment) would be 420 feet, resulting in no impact related to human annoyance.

Brine Discharge Pipeline and Pipeline to the CSIP Pond (Open Trench Construction)

The nearest structures to the Pipeline to the CSIP Pond, Brine Discharge Pipeline, and the Brine Mixing Box are located approximately 3,600 feet away from the pipeline alignments and are not historic structures. Vibration levels from vibratory rollers for construction of the pipelines would be attenuated to background levels, resulting in no impact related to damage to buildings or human annoyance.

ASR-5 and ASR-6 Wells

Structural Damage. There are no fragile buildings located within 25 feet of the proposed ASR injection/extraction wells. The nearest structure to the proposed ASR injection/extraction well

sites is a residence located approximately 50 feet away that is not considered a historic structure. At this distance, vibration levels from well drilling would be 0.03 in/sec. This level is below the 0.3 in/sec PPV threshold, resulting in a less-than-significant vibration impact related to damage to this building.

Human Annoyance. The nearest sensitive land use to the proposed ASR injection/extraction well sites is a residence located approximately 50 feet away. At this distance, drilling vibration would be attenuated to 0.03 in/sec. This level is below the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in a less-than-significant impact related to human annoyance.

ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline (Open Trench Construction)

Structural Damage. The nearest structures to the three ASR pipelines would be located approximately 100 feet away and are not historic structures. Vibration levels from vibratory rollers for construction of these pipelines would reach 0.21 in/sec PPV at a distance of 25 feet. At 100 feet, vibration levels from roller operations would be attenuated to less than 0.03 in/sec PPV, which is below the threshold for non-fragile buildings of 0.3 in/sec PPV, resulting in a less-than-significant impact related to damage to buildings.

Human Annoyance. The nearest sensitive land use to the three proposed ASR pipelines would be located approximately 100 feet away. Vibration levels from rollers at this distance would be attenuated to less than 0.03 in/sec PPV, which is below the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in a less-than-significant impact related to human annoyance.

Highway 68 Interconnection Improvements and Carmel Valley Pump Station

Structural Damage. The nearest structures to the proposed Highway 68 Interconnection Improvements would be approximately 80 feet away and are not historic structures. The nearest structures to the proposed Carmel Valley Pump Station would be approximately 50 feet away and are not historic structures. Vibration levels from vibratory rollers for construction of these facilities would reach 0.21 in/sec PPV at a distance of 25 feet. At 80 feet, vibration levels from roller operations would be attenuated to 0.037 in/sec PPV, which is below the threshold for non-fragile buildings of 0.3 in/sec PPV, resulting in a less-than-significant impact related to damage to buildings near the proposed Highway 68 Interconnection Improvements. At 50 feet, vibration levels from roller operations would be attenuated to 0.07 in/sec PPV, which is below the threshold, resulting in a less-than-significant impact.

Human Annoyance. The nearest sensitive land uses to the proposed Highway 68 Interconnection Improvements would be approximately 80 feet away. Vibration levels from rollers at this distance would be attenuated to than 0.037 in/sec PPV. This level is below the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in a less-than-significant impact related to human annoyance.

The nearest sensitive land uses to the proposed Carmel Valley Pump Station would be approximately 50 feet away. Vibration levels from rollers at this distance would be attenuated to

than 0.07 in/sec PPV. This level is below the "strongly perceptible" threshold of 0.1 in/sec PPV, resulting in a less-than-significant impact related to human annoyance.

All Other Proposed Facilities

No impact would result from the Pipeline to the CSIP Pond, Brine Discharge Pipeline, and Brine Mixing Box because equipment used for common construction techniques for these facilities would not involve vibration inducing equipment or activities such as drill rigs, bulldozers, or pile drivers to install sheet piles.

Land Use Plans & Policies Consistency

In addition to the physical impacts described above, as noted in **Table 4.12-3**, MPWSP construction could conflict with applicable land use plans, policies, or ordinances related to vibration. Specifically, Monterey County General Plan Policy S-7.8 requires a pre-construction vibration study for all discretionary projects that propose to use heavy construction equipment with the potential to create vibrations that could cause structural damage to adjacent structures within 100 feet. Pile driving or blasting are identified as illustrative of the type of equipment that could be subject to this policy. The proposed Source Water Pipeline, MPWSP Desalination Plant, Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to the CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements are located in unincorporated Monterey County. Of these project components, none would involve blasting and only the Desalinated Water Pipeline and the Source Water Pipeline would involve (sheet) pile driving. However, there are no structures within unincorporated Monterey County that are within 100 feet of the Desalinated Water Pipeline or the Source Water Pipeline. Therefore, these construction activities would be consistent with Policy S-7.8.

Impact Conclusion

Construction of the subsurface slant wells, MPWSP Desalination Plant, and Source Water Pipeline would result in less-than-significant vibration impacts with regard to structural damage, and no impact with regard to human annoyance. Construction of the Castroville Pipeline, ASR-5 and ASR-6 Wells, ASR Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Carmel Valley Pump Station, and Main System-Hidden Hills Interconnection Improvements would result in less-than-significant vibration impacts with regard to both structural damage and human annoyance. There could be significant vibration impacts related to structural damage and human annoyance from construction of the new Desalinated Water Pipeline and new Transmission Main where trenchless construction methods are required for these pipelines. However, with implementation of the mitigation measures identified above, all significant construction vibration impacts would be reduced to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.12-3 applies to the new Desalinated Water Pipeline and new Transmission Main if trenchless construction is required.

Mitigation Measure 4.12-3: Vibration Reduction Measures.

Construction practices shall be utilized that do not generate vibration levels at the closest sensitive land uses above 0.1 in/sec PPV. The following measures, at a minimum, shall be employed to ensure this threshold is met:

a. Vibration monitoring shall be conducted for the first 500 feet of pipeline construction for each segment to confirm vibration levels do not exceed the above vibration threshold. If vibration levels exceed the limits of this mitigation measure, construction practices shall be modified to use smaller types of construction equipment or excavator-mounted compaction wheels, operate the equipment in a manner to reduce vibration, or use alternate construction methods, (such as use of manual shoring jacks), and monitoring shall continue for an additional 200 feet or until construction practices meet the required vibration levels. The monitoring in this mitigation measure shall be repeated if the construction methods change in a manner that would increase vibration levels, or when structures are closer to the limits of construction than previous vibration monitoring have confirmed is below the vibration thresholds.

b. Smaller vibratory rollers shall be used to minimize vibration levels during repaving activities where needed to meet vibration limits.

c. Sheet pile driving for trenchless pipeline installation shall be conducted during daytime hours and access pits shall be located greater than 45 feet from standard structures and 80 feet from historic resources.

Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions. (*Less than Significant with Mitigation*)

State, regional, and local plans, policies, and ordinances related to noise and vibration are presented in **Table 4.12-3**. The table presents the analysis of project consistency with each of these plans, policies, and ordinances. Consistency of all project components with respect to generation of noise levels in excess of quantitative noise standards of General Plans or noise ordinances are addressed in Impact 4.12-2, above, and 4.12-6, below. This impact addresses project consistency with construction time limits.

The following local noise ordinances establish specific construction time limits:

- Seaside Municipal Code Section 9.12.030 (D) sets time limits for construction activities, including demolition, excavation, erection, alteration, or repair. These activities may not occur before 7:00 a.m. or after 7:00 p.m. (except on Saturday, Sunday, and holidays, when the allowable construction hours are 9:00 a.m. to 7:00 p.m.) unless authorized in writing by a building official (City of Seaside, 2008).
- The Marina Municipal Code, Chapter 15.04, Section 15.04.055, Construction Hours and Noise applies to any construction activities that require a building, grading, demolition, use,

or other city permit. This section limits outdoor construction, repair work, or related activities that produce noise adjacent to residential uses, including transient lodging, to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m.

- The City of Monterey Municipal Code, Section 38-112.2, places the following time restrictions on construction activities: Monday through Friday, 7:00 a.m. to 7:00 p.m.; Saturday, 8:00 a.m. to 6:00 p.m.; and Sunday, 10:00 a.m. to 5:00 p.m. However, the City will authorize construction outside of these time limits under certain circumstances.

Project components within these communities include:

- subsurface slant wells in the city of Marina
- portions of the Source Water Pipeline in the city of Marina
- portions of the new Desalinated Water Pipeline in the city of Marina
- portions of the new Transmission Main in the city of Marina
- portions of the new Transmission Main in the city of Seaside

In addition to those project components listed above, there are other project components (i.e. MPWSP Desalination Plant, Castroville Pipeline) that would require nighttime construction but that are not located within a jurisdiction with established construction time limits. For this reason, these other components would not conflict with construction time limits and are not discussed further.

Subsurface Slant Wells and Source Water Pipeline

Due to the substantial distance from sensitive receptors (4,000 feet and 1,100 feet), installation of the subsurface slant wells and Source Water Pipeline, respectively, would not be subject to the city of Marina's construction time limits, which only apply to outdoor construction activities adjacent to residential land uses. No inconsistency with the City's Noise Ordinance time restriction would result.

New Desalinated Water Pipeline and New Transmission Main

A majority of the pipeline installation of the new Desalinated Water Pipeline would occur within the City of Marina and as close as 100 feet from residential uses. The City of Marina's noise ordinance time limits prohibits nighttime construction work if it would be "adjacent to residential uses". The ordinance does not specify a distance that defines the term adjacent. As a conservative estimate for application of the noise ordinance relative to open trench pipeline construction, the baseline noise level of 80.4 dBA, L_{eq} at 50 feet for open trench construction from Table 4.12-6 was attenuated to the 60 dBA, L_{eq} sleep interference threshold which would occur at a distance of 500 feet. Therefore open trench pipeline construction work that would occur within 500 feet of a residence or lodging facility would exceed 60 dBA and result in a significant impact and is considered to be inconsistent with the noise ordinance. Mitigation Measure 4.12-4 (Nighttime Construction Restrictions in Marina) is identified to ensure that open trench pipeline construction is conducted in accordance with the City of Marina's construction noise ordinance.

New Transmission Main (and Optional Alignments)

Pipeline installation of the northernmost portion of the new Transmission Main would be conducted within the City of Marina and as close as 100 feet from residential uses. Similar to the new Desalinated Water Pipeline, nighttime open trench pipeline construction would be inconsistent with the noise ordinance when within 500 feet of a residence or lodging facility. **Mitigation Measure 4.12-4 (Nighttime Construction Restrictions in Marina)** is identified to ensure that open trench pipeline construction is conducted in accordance with the City of Marina's construction noise ordinance.

The southern portion of the new Transmission Main along Light Fighter Drive and General Jim Moore Boulevard would be constructed within the City of Seaside. This work could occur beyond the time restrictions of the City's Municipal Code and require approval by the City of Seaside. All nighttime construction work would be conducted only with prior approval from the relevant jurisdictions. **Mitigation Measure 4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** would reduce the nighttime construction noise impact but would not change the inconsistency with the restriction of the noise ordinance. Because the City of Seaside Municipal Code could allow construction activity outside listed hours under certain circumstances, the construction activities would not violate local regulations and the impact would be less than significant.

All Other Project Facilities

As indicated in Table 4.12-2, no impact associated with conflicts with local construction time limits would occur from implementation of all other project components because these components would not require nighttime construction and/or are not located within a jurisdiction with established construction time limits.

Mitigation Measures

Mitigation Measure 4.12-1c applies only to the ASR-5 and ASR-6 Wells.

> **Mitigation Measure 4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.**
>
> (See Impact 4.12-1, above, for description.)

Mitigation Measure 4.12-4 applies only to the new Desalinated Water Pipeline and the New Transmission Main.

> **Mitigation Measure 4.12-4: Nighttime Construction Restrictions in Marina**
>
> Open trench pipeline construction work within 500 feet to residential uses or transient lodging shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m.

4.12.6.2 Operational and Facility Siting Impacts

None of the proposed facilities would expose people to, or generate, groundborne vibration during routine maintenance and project operations. Thus, the groundborne vibration is not relevant to project operations and is not discussed in the impact analysis below (see the second evaluation criterion in Section 4.12.4, above).

Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations. (*Less than Significant with Mitigation*)

As described in Section 4.12.5, above, this evaluation uses a 5-dBA increase in noise exposure—which is considered a readily perceptible increase in noise levels (Caltrans, 2009)—to assess the significance of operational noise increases in ambient noise levels in the project vicinity.

Mobile Noise Sources

MPWSP Desalination Plant

For the purposes of this noise analysis, vehicle trips are mobile sources of noise. The MPWSP Desalination Plant would be operated 24 hours per day, 365 days per year. The MPWSP Desalination Plant is estimated to require approximately 25 to 30 full-time workers (facility operators and support personnel) to operate, monitor, and maintain the desalination facilities. Approximately 66 one-way trips (33 round trips) would occur throughout each day (30 commute trips and three deliveries) during long-term operations and maintenance of the MPWSP Desalination Plant. Given the minimal increase in daily vehicle trips associated with worker commutes and deliveries, vehicle trips associated with long-term operations and maintenance of the MPWSP Desalination Plant would not substantially increase noise levels along project area roadways. This impact is less than significant.

All Other Proposed Facilities

Operation of the proposed pipelines would not require routine site visits. All other proposed facilities (i.e., the subsurface slant wells, Brine Mixing Box, improvements to the ASR system, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station) would be operated remotely using Supervisory Control and Data Acquisition systems, with periodic visits by CalAm personnel for operations review and maintenance. Maintenance activities include such tasks as landscape maintenance, visual inspections of facilities, performance monitoring, servicing of pumps, testing and servicing of valves, backflushing the ASR-5 and ASR-6 Wells, and pipeline repairs. The vehicle trips generated by these routine and periodic site visits would be similar in number to those required for existing CalAm operations in the Monterey District service area system (see Impact 4.9-8 in Section 4.9, Traffic and Transportation) and would not increase noise levels on area roadways. This impact is less than significant.

For all project components, impacts associated with traffic-related noise during project operations would be less than significant.

Stationary Noise Sources

Subsurface Slant Wells

All 10 slant wells would be designed as pumping wells, and a 2,500 gallons per minute (gpm) submersible pump would be lowered into each wellhead. Each wellhead would be enclosed in an aboveground 12-foot-long, 6-foot-wide, and 8-inch-tall precast concrete vault. Up to eight wells would operate at any given time and two wells would be maintained on standby.

Noise from pump operations would be attenuated by both soil and the subsurface concrete casing. A pump motor would typically generate a noise level on the order of 76 dBA, L_{eq} at a distance of 50 feet (FTA, 2006) without an enclosure. However, the presence of the concrete enclosure and the subsurface locations would be expected to provide a minimum of 20 dBA attenuation. Simultaneous operation of 10 well pumps would conservatively generate a noise level of approximately 66 dBA at 50 feet.

The two closest sensitive receptors to the subsurface slant wells are residences at the Marina Dunes RV Park on Dunes Drive in Marina (4,000 feet to the south) and residences on Drew Street in Marina (4,300 feet to the southeast). At these distances, slant well pump noise would be reduced to 21 dBA which is substantially below nighttime ambient levels monitored at these locations (51 dBA, L_{eq}) and would not contribute meaningfully to ambient levels. Therefore, the impact related to increases in ambient noise levels during operation of the subsurface slant wells would be less than significant.

MPWSP Desalination Plant

The RO system at the MPWSP Desalination Plant would include a series of pumps but these would be located inside the treatment building and are not expected to generate substantial noise. The 750-kilowatt (kW) (1,000 hp) emergency diesel-powered generator proposed adjacent to and outside of the administration building at the MPWSP Desalination Plant site would be used for emergency back-up power only but would be operated weekly for 20 to 30 minutes during the daytime to test and maintain the engine. Generators of this size typically generate a noise level of 81 dBA L_{max} at 50 feet (FHWA, 2006). The attenuated generator noise level at the nearest residences on Neponset Road located 2,200 feet away would be approximately 47.8 dBA L_{max}. When the attenuated generator noise level is added to the existing ambient noise level at these same receptors of 61.8 dBA, L_{eq}, the resultant exterior noise level at these receptors would be 62.0 dBA, which would be an increase of 0.2 dBA over ambient noise levels. This would be a less than the 5-dBA threshold. Therefore, the impact would be less than significant.

ASR-5 and ASR-6 Wells

The ASR-5 and ASR-6 Wells would be 50 feet west of residences on Ardennes Circle. Each well would be equipped with a permanent 500-hp multistage vertical turbine pump. Each well pump and electrical control system would be housed in a 900-square-foot concrete pump house.

Well pump motors would generate noise levels of up to 76 dBA L_{max} at 50 feet; however, placing the motors in a standard concrete pump house would attenuate noise levels by at least 20 dBA (to 56 dBA L_{max} at 50 feet), as shown in **Table 4.12-11**.

As shown in **Table 4.12-11**, the increase in ambient noise levels at the residences on Ardennes Circle would be 5.5 dBA L_{eq}, which is above the 5-dBA threshold and thus would be a significant permanent noise increase over existing conditions. However, implementation of **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)** would reduce this impact to less than significant by ensuring that sufficient noise insulation or sound-absorbing material is provided to the pump enclosure to provide additional noise attenuation.

TABLE 4.12-11
MAXIMUM OPERATIONAL NOISE LEVELS – ASR-5 AND ASR-6 WELLS

Stationary Source	Distance to Receptors (feet)	Existing Ambient Noise Level at Receptors (dBA Leq)[a]	Attenuated Operational Noise Level at Receptor (dBA Lmax)	Resultant Noise Level at Receptor (dBA Leq)	Increase over Existing Ambient Noise Level (dBA Leq)	Resultant Noise Level at Receptor (dBA CNEL)[b]
ASR-5 and ASR-6 Wells – Pump Motors	50	52.0 (S4)	56	57.5	5.5	63

NOTES:
[a] Based on daytime ambient noise level at short-term noise monitoring location S4 (see **Figure 4.12-1** and **Table 4.12-1**).
[b] CNEL Values are used in assessment of Impact 4.12-6.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be located approximately 240 feet south of Carmel Valley Road near the intersection of Rancho San Carlos Road. The closest residences are located approximately 50 feet to the north and east of the pump station site. The pump station would be enclosed in a 500-square-foot, single-story building. It was assumed, based on ESA's monitoring of municipal water pumps, that the pump at Carmel Valley Pump Station would generate noise levels of up to 76 dBA L_{max} at 50 feet and that the building enclosure would attenuate noise levels by approximately 20 dBA (to 56 dBA L_{eq} at 50 feet). As shown in **Table 4.12-12**, the increase in ambient noise levels at the closest residences to the Carmel Valley Pump Station would be 1.1 dBA L_{eq}, which is below the 5-dBA threshold and thus, the impact would be less than significant. Additionally, a portable 50 kW (68 hp) diesel powered generator would be stored onsite at the Carmel Valley Pump Station site for use in the event of a power outage. This is a relatively modest sized unit and its occasional operation during daytime hours for testing purposes would generate less noise than that of a diesel automobile and would not be expected to result in substantial increase over daytime noise levels. The impact would be less than significant.

TABLE 4.12-12
MAXIMUM OPERATIONAL NOISE LEVELS –CARMEL VALLEY PUMP STATION

Stationary Source	Distance to Closest Receptor (feet)	Existing Ambient Noise Level at Receptor (dBA Leq)[a]	Attenuated Operational Noise Level at Receptor (dBA Leq)	Resultant Noise Level at Receptor (dBA Leq)	Increase Over Existing Ambient Noise Level (dBA)
Carmel Valley Pump Station Motor	50	61.5 (S7)	56	62.6	1.1

NOTE:

[a] Based on daytime ambient noise level at short-term noise monitoring locationS7 (see **Figure 4.12-1** and **Table 4.12-1**).

Main System-Hidden Hills Interconnection Improvements

The existing interconnection between the main CalAm distribution system and the Hidden Hills satellite water system would be improved by installing approximately 1,200 feet of 6-inch-diameter pipeline along Tierra Grande Drive, with a connection to the existing Upper Tierra Grande Booster Station. The Upper Tierra Grande Booster Station has an existing capacity of 129 gpm. A new 350 gpm pump would be added to the booster station. In addition, the existing pump capacity of the Middle Tierra Grande Booster Station, located on lower Casiano Drive, would be upgraded from 161 gpm to 400 gpm by adding a new 350 gpm pump (CalAm, 2013).

These new pumps would be located in the existing buildings at each booster station. It was assumed, based on ESA's monitoring of municipal water pumps, that the pump at each booster station would generate noise levels of up to 76 dBA L_{max} at 50 feet and that the building enclosure would attenuate noise levels by at least 15 dBA, to 61 dBA L_{max} at 50 feet and 55 dBA, L_{eq} at 100 feet. As shown in **Table 4.12-13**, the increase in ambient noise levels in the project vicinity above existing levels would exceed the 5-dBA threshold and thus represents a significant permanent noise increase over existing conditions. However, implementation of **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)** would reduce this impact to a less-than-significant level by ensuring that sufficient noise insulation or sound absorbing material is provided to the existing enclosure to provide additional noise attenuation.

TABLE 4.12-13
MAXIMUM OPERATIONAL NOISE LEVELS –
BOOSTER STATIONS (MAIN SYSTEM–HIDDEN HILLS INTERCONNECTION IMPROVEMENTS)

Stationary Source	Distance to Closest Receptor (feet)	Existing Ambient Noise Level at Receptor (dBA Leq)	Attenuated Operational Noise Level at Receptor (dBA Leq)	Resultant Noise Level at Receptor (dBA Leq)	Increase Over Existing Ambient Noise Level (dBA)
Pump Motor – Upper Tierra Grande	50	44.7	61	61.1	16.3
Pump Motor – Middle Tierra Grande	100	44.7	55	55.4	10.3

NOTE:

[a] Based on daytime ambient noise level at short-term noise monitoring location S6 (see **Figure 4.12-1** and **Table 4.12-1**).

All Proposed Pipelines

The proposed pipelines would not involve the installation of stationary noise sources such as pumps and emergency generators. Therefore, operation of these facilities would result in no impact related to permanent increases in ambient noise levels.

Impact Conclusion

Operation of the subsurface slant wells, MPWSP Desalination Plant, Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station would result in less-than-significant noise impacts with regard to permanent operational noise increases. Significant noise impacts would result from operation of the ASR-5 and ASR-6 Wells and the booster stations that would be upgraded by the Main System-Hidden Hills Interconnection Improvements; however, implementation of **Mitigation Measure 4.12-5** would reduce all significant operational noise impacts to a less-than-significant level. No impact would result from operation of the proposed pipelines.

Mitigation Measure

Mitigation Measure 4.12-5 applies to the ASR-5 and ASR-6 Wells and the Main System-Hidden Hills Interconnection Improvements.

> **Mitigation Measure 4.12-5: Stationary-Source Noise Controls.**
>
> CalAm shall retain an acoustical engineer to design stationary-source noise controls and ensure the applicable noise standards are met. At a minimum, all stationary noise sources (e.g., pump station, emergency generators, variable-frequency-drive motors, well heads with motors) shall be located within enclosed structures and with adequate noise screening, as needed, to maintain noise levels to no greater than 5 dBA above the existing monitored ambient values and 60 CNEL, at the property lines of nearby residences and other noise-sensitive receptors. Once the stationary noise sources have been installed, the contractor(s) shall conduct a single long-term (24-hour) monitoring of noise levels to ensure compliance with local noise standards. CalAm shall submit a compliance monitoring report to the CPUC.

Impact 4.12-6: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operations. (*Less than Significant*)

Subsurface Slant Wells

As described in Impact 4.12-5, noise from slant well pump operations would be attenuated by both soil and the subsurface concrete casing. Simultaneous operation of 10 well pumps would conservatively generate a noise level of approximately 66 dBA at 50 feet.

Table 4.12-3 shows that slant well pump noise would be reduced to 21 dBA at the closest sensitive receptor (Marina Dunes RV Park on Dunes Drive in Marina, 4,000 feet to the south) which is below the *City of Marina General Plan* establishes a daytime noise level of 50 dBA L_{eq}

and a nighttime noise level of 45 dBA, L_{eq} as the maximum allowable noise at the property line of the nearest receptor. Therefore, operational noise from the subsurface slant well pumps would have a less than significant impact with regard to generation of noise levels in excess of standards established in the local plan or noise ordinance.

MPWSP Desalination Plant

CalAm would install a 750-kW (1,000 hp) emergency diesel-powered generator adjacent to the administration building at the MPWSP Desalination Plant site. As discussed in Impact 4.21-5, the generator would be operated weekly for 20 to 30 minutes during the daytime to test and maintain the engine which would result in a predicted noise level from generator operation of approximately 47.8 dBA L_{max} at the nearest residences (2,200 feet away). The RO system would also require a series of specialty pumps but these would be located within the treatment building and are not expected to generate substantial noise.

Policy S-7.6 of the County Plan Noise Element requires an acoustical analysis for proposed noise generators are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors. The Monterey County Code, Chapter 10.60, Noise Control, Section 10.60.030 limits the operation of any machine, mechanism, device, or contrivance that produces a noise level exceeding 85 dBA at 50 feet from the source. The proposed generator would be in compliance with the restriction of the County noise ordinance. Therefore, operational noise the MPWSP Desalination Plant would have a less than significant impact with regard to generation of noise levels in excess of standards established in the local plan or noise ordinance.

ASR-5 and ASR-6 Wells

The ASR injection/extraction wells (ASR-5 and ASR-6 Wells) are proposed on federal land and would not be subject to the noise standards of local jurisdictions. As discussed in Section 4.12.3.1, federal regulations establish noise limits for motor vehicles through regulatory controls on truck manufacturers, sets standard for highway and aircraft noise but does not promulgate noise standards for stationary or construction-related sources. Therefore, no impact related to generation of noise in excess of local regulatory noise standards would result from operation of the new ASR injection/extraction wells.

Carmel Valley Pump Station

The closest residences are located approximately 50 feet to the north and east of the Carmel Valley pump station site.

Policy S-7.4 of the Monterey County General Plan Noise Element requires an acoustical analysis for proposed noise generators that are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors. The Monterey County Code, Chapter 10.60, Noise Control, Section 10.60.030 limits the operation of any machine, mechanism, device, or contrivance that produces a noise level exceeding 85 dBA at 50 feet from the source.

As discussed in Impact 4.12-5, the proposed building enclosure would attenuate noise levels from pump operations to 56 dBA L_{eq} at 50 feet. The proposed pumps would be in compliance with the County noise ordinance.

Additionally, a portable 50 kW (68 hp) diesel powered generator would be stored onsite at the Carmel Valley Pump Station site for use in the event of a power outage. Available data indicate that generators of this size operate at 83 dBA at a distance of 7 meters under full load (Cummins, 2008) which equates to 76 dBA at 50 feet. The proposed pump station and generator would be in compliance with the County noise ordinance and operational noise associated with the Carmel Valley Pump Station would have a less than significant impact with regard to generation of noise levels in excess of standards established in the local plan or noise ordinance.

Main System-Hidden Hills Interconnection Improvements

The existing interconnection between the main CalAm distribution system and the Hidden Hills system would be improved by installing a new 350 gpm pump to the Upper Tierra Grande booster station. In addition, the existing pump capacity of the Middle Tierra Grande Booster Station, located on lower Casiano Drive, would be upgraded by adding a new 350 gpm pump (CalAm, 2013).

As discussed in Impact 4.12-5, that the pump at each booster station would generate noise levels of up to 76 dBA L_{max} at 50 feet and that the building enclosure would attenuate noise levels by at least 15 dBA, to 61 dBA L_{max} at 50 feet and 55 dBA, L_{eq} at 100 feet.

Policy S-7.6 of the Monterey County General Plan Noise Element requires an acoustical analysis for proposed noise generators that are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors. The Monterey County Code, Chapter 10.60, Noise Control, Section 10.60.030 (Monterey County, 2008) limits the operation of any machine, mechanism, device, or contrivance that produces a noise level exceeding 85 dBA at 50 feet from the source. The proposed pumps that would be installed at the Upper Tierra Grande Booster Station and Middle Tierra Grande Booster Station as part of the Main System-Hidden Hills Interconnection Improvements would be in compliance with the restriction of the County noise ordinance and operational noise the improvements to the Hidden Hills Booster Stations would have a less than significant impact with regard to generation of noise levels in excess of standards established in the local plan or noise ordinance.

All Other Proposed Facilities

Stationary noise sources such as pumps and emergency generators are not proposed at any of the proposed pipelines. The Brine Mixing Box would be operated 5,800 feet from the nearest receptor and is not expected to generate noise levels in excess of standards established in the local plan or noise ordinance. Therefore, there would be little to no increase in ambient noise levels from stationary noise sources at all other facilities and the impact is less than significant.

Impact Conclusion

Operation of the Subsurface Slant Wells, MPWSP Desalination Plant, Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, Brine Mixing Box, Desalinated Water Pipeline, Transmission Main, Ryan Ranch-Bishop Interconnection Improvements, Carmel Valley Pump Station, the booster stations that would be upgraded by the Main System-Hidden Hills Interconnection Improvements would result in less than significant noise impacts with regard to generation of noise levels in excess of local noise level standards. No impact would result from operation of the ASR-5 and ASR-6 Wells with regard to generation of noise in excess of local noise level standards because none would apply to these sources on federal lands. No impact would result from operation of the proposed pipelines because the pipelines would not involve the installation of stationary noise sources.

Mitigation Measure

None proposed.

4.12.7 Cumulative Effects of the Proposed Project

As described in Section 4.12.4, the project would have no impact with respect to exposing people to excessive noise levels in proximity to an airport or private airstrip. Furthermore, none of the MPWSP components would generate operational vibration. Therefore, the MPWSP could not contribute to cumulative impacts related to these topics.

Impact 4.12-C: Cumulative impacts related to noise and vibration. (*Significant and Unavoidable*)

Construction Noise Impacts

The geographic scope of analysis for cumulative noise impacts is defined by the presence of sensitive receptors within 500 feet of those MPWSP components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. Such MPWSP components include the proposed subsurface slant wells, the proposed pipelines, ASR-5 and ASR-6 Wells, pump station, and other project facilities. Beyond 500 feet, the MPWSP's contributions to cumulative noise impacts would be greatly attenuated and not be expected to combine with that of other cumulative projects to result in a significant cumulative effect.

This screening threshold distance was developed based on stationary source noise attenuation equations (Caltrans, 2013). **Table 4.12-14** presents the combined noise level generated by typical construction phases for a given project (assuming multiple pieces of equipment) at a distance of 50 feet. Using the attenuation equations, the maximum noise level of 89 A-weighted decibels (dBA) for both excavation and finishing phases (as shown in **Table 4.12-14**) would diminish to 69 dBA at 500 feet. A receptor experiencing noise levels of 89 dBA from two adjacent construction sites would experience a cumulative noise level of 91 dBA (the acoustical sum of

89 dBA plus 89 dBA. A receptor experiencing noise levels of 89 dBA from one adjacent construction site and another at a distance of 500 feet would experience a cumulative noise level of 89.04 dBA (the acoustical sum of 89 dBA plus 69 dBA), which would not represent a statistically significant increase and, hence, is the derivation of the 500 foot distance used as the geographic scope. A receptor at the mid-point of this distance (250 feet) would experience the equivalent of 75 dBA from each construction site with a resultant 3 dBA increase in noise which is characterized as a barely perceptible noise increase. Intervening structures would further lessen the realized contribution of another construction site at a given receptor.

TABLE 4.12-14
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level[a] (dBA, Leq)
Ground clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

NOTES:

dBA = A-weighted decibels, Leq = average noise exposure level for the given time period

[a] Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Noise impacts associated with MPWSP would result from construction-related equipment and hauling activities. The timeframe during which the MPWSP could contribute to cumulative noise and vibration effects includes the 24-month construction phase.

Table 4.1-2 includes 18 projects that would potentially occur within the geographic scope of analysis for cumulative noise and vibration impacts (i.e., 500 feet from a MPWSP project component). Eight of these cumulative projects (Nos. 3, 7, 10, 12, 18, 31, 35, and 38) would have a construction schedule that could overlap with that of the MPWSP, meaning that equipment required for cumulative project construction within 500 feet of the MPWSP could be in operation at the same time as that required for MPWSP construction. Sensitive receptors within 500 feet of active cumulative project and MPWSP construction sites could experience a cumulative impact related to construction noise and so are analyzed further to determine whether a significant cumulative impact would occur.

For these eight projects that could contribute to cumulative construction noise impacts based on the screening distance threshold or timing, the potential for cumulative construction noise impacts is assessed based on the same project-level thresholds used in Section 4.12.5, Approach to Analysis. However, this analysis considers the incremental contribution of MPWSP construction noise as well as that of the cumulative project(s). For daytime construction activities, a significant noise impact would occur if noise levels at sensitive noise receptors remained above the 70 dBA speech interference threshold for longer than two consecutive weeks. For nighttime construction activities,

a significant noise impact would occur if noise levels at sensitive noise receptors exceeded the sleep interference threshold of 60 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.).

MPWSP components that could generate construction noise in excess of the daytime standard include the ASR Wells, and the Carmel Valley Pump Station. These daytime noise impacts would be reduced to a less-than-significant level through implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)** and **4.12-1b (General Noise Controls for Construction Equipment)** and for the ASR Wells, **Mitigation Measures 4.12-1d (Additional Noise Controls for ASR-5 and ASR-6 Wells)** and **4.12-1e (Offsite Accommodations for Substantially Affected Receptors)**.

MPWSP components that could generate construction noise in excess of the nighttime standard include the Desalinated Water Pipeline, Castroville Pipeline, the new Transmission main, and the ASR Wells. Nighttime noise impacts from the Desalinated Water Pipeline and the new Transmission Main would be reduced to a less-than-significant level through implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction).** The Castroville Pipeline and ASR wells would have a residual significant and unavoidable impact, even with implementation of **Mitigation Measures 4.12-1a (Neighborhood Notice)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.12-1c (Noise Control Plan for Nighttime Pipeline Construction)** and the addition of **Mitigation Measures 4.12-1d (Additional Noise Controls for ASR-5 and ASR-6 Wells)** and **4.12-1e (Offsite Accommodations for Substantially Affected Receptors)**.

Construction-related noise from the eight above-referenced cumulative projects could combine with that of the MPWSP pipeline construction to cause a cumulative impact. MPWSP pipeline construction would progress at a rate of approximately 150 to 250 feet per day, thereby limiting the potential for a noticeable concurrent construction noise impact at any given receptor to less than a week. Given this limited duration of potential concurrent activity, and associated combined noise effects, the MPWSP would not contribute considerably to a significant cumulative daytime noise impact (*less than significan*t).

Of the eight cumulative projects identified above, five are private development projects or specific plans (Nos. 3, 7, 10, 12, and 18) whose construction would not typically require nighttime construction work. The remaining three cumulative projects (Nos. 31, 35, and 38) are water- and transit-related infrastructure projects that could conceivably involve nighttime work to avoid daytime traffic impacts on major arterial roadways. None of these cumulative projects would be within 500 feet of the ASR wells but would be within this distance of MPWSP pipelines.

In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) MPWSP pipeline construction noise to combine with that of one or more of these five cumulative projects to cause nighttime noise levels to exceed the sleep interference threshold. As a result, temporary cumulative increases in nighttime construction noise could result

in a significant cumulative nighttime noise impact. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a significant cumulative nighttime noise impact. Therefore, MPWSP nighttime construction noise could have a significant contribution to a significant cumulative effect (*significant and unavoidable*).

Construction Vibration Impacts

The geographic scope of analysis for cumulative vibration impacts is defined by the presence of sensitive structures within 120 feet of MPWSP components whose construction-related vibration could cause damage to these structures. Such components include the proposed subsurface slant wells, the proposed pipelines, the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, pump station, and other project facilities. Beyond 120 feet, the MPWSP's contributions to cumulative vibration impacts would be greatly attenuated and not be expected to combine with that of cumulative projects to result in a significant cumulative effect.

This vibration screening threshold distance was developed based on the vibration levels of a vibratory compactor, a type of construction equipment used for compacting fill over pipeline trenches, and which would generate the highest vibration of any non-impact construction equipment that would be used for MPWSP construction. At a distance of 60 feet, vibration from a vibratory roller/compactor would be 0.056 inches/second Peak Particle Velocity (PPV). Assuming operation of a compactor at the MPWSP component site and one at a cumulative project site at a distance of 120 feet, the resultant vibration level would be 0.11 inches/second PPV which could be experienced by a mid-point receptor within the 120-foot screening distance. This vibration level would be below the 0.12 inches/second PPV threshold applied in Section 4.12.5, and hence is used to justify the use of a 120-foot geographic scope, beyond which no cumulative vibration effect would result.

Impact 4.12-3 identifies significant project-level construction impacts from operation of roller/compactors and sheet pile drivers during pipeline installation. **Mitigation Measure 4.12-3 (Vibration Reduction Measures)** is identified to address construction-related vibration during pipeline installation activities and includes monitoring. With mitigation, project vibration levels would not exceed 0.12 inches/second PPV.

Ten of the cumulative projects (Nos. 3, 7, 10, 12, 18, 31, 35, 38, 55, and 63) would potentially occur within the 120-foot geographic scope of cumulative impacts analysis. Four of these cumulative projects (Nos. 31, 35, 55, and 63) would not be located within 120 feet of any sensitive receptors or structures and, therefore, would not contribute to cumulative impacts. Without knowledge of the type of construction equipment or exact construction phase timing for the remaining six cumulative projects, a quantitative assessment of vibration impact cannot be reliably estimated. However, the project-specific vibratory impact monitoring proposed under **Mitigation Measure 4.12-3** would also capture vibration contributed by the other six cumulative projects, should the timing and location of construction overlap, and allow the MPWSP construction to respond accordingly (i.e., use smaller equipment, adjust equipment operations, and/or alternate construction methods) to avoid significant vibratory effects. Consequently, the cumulative construction-related vibration impact would be less than significant with mitigation.

Operational Noise Impacts

The geographic scope of analysis for cumulative operational noise impacts is similar to that described above for construction noise (i.e., the presence of sensitive receptors within 500 feet of MPWSP components that could generate operational noise and cumulative projects). The 500-foot screening distance described for construction noise is conservative, as operational noise levels would be lower than construction-related noise levels. Such MPWSP components include the proposed MPWSP Desalination Plant, the ASR well facilities, Main System-Hidden Hills Interconnection Improvements, and the Carmel Valley Pump Station. The timeframe during which the MPWSP could contribute to cumulative operational noise effects includes the anticipated approximately 40-year operations phase.

As discussed in Impact 4.12-5, the MPWSP's project-specific operational noise impacts would be less than significant for the MPWSP Desalination Plant and the Carmel Valley Pump Station. Impacts of the ASR well facilities and the Main System-Hidden Hills Interconnection Improvements would be less than significant with mitigation. There are no cumulative projects within 500 feet of the MPWSP Desalination Plant, the ASR well facilities, Main System-Hidden Hills Interconnection Improvements, or the Carmel Valley Pump Station. Therefore, no other projects could combine with the operational noise effects of the proposed project and the cumulative impact would be less than significant.

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4.13 Public Services and Utilities

Sections	Tables
4.13.1 Setting / Affected Environment	4.13-1 Local Utility and Public Service Providers, by Jurisdiction
4.13.2 Regulatory Framework	4.13-2 Applicable Regional and Local Plans and Policies Relevant to Public Services and Utilities
4.13.3 Evaluation Criteria	4.13-3 Summary of Impacts – Public Services and Utilities
4.13.4 Approach to Analysis	4.13-4 Brine Stream and Treated Wastewater Effluent Flows through the MRWPCA Outfall and Diffuser
4.13.5 Direct and Indirect Effects of the Proposed Project	**Figures**
4.13.6 Cumulative Effects of the Proposed Project	4.13-1 Proposed Access Pit Locations

This section evaluates the potential impacts on public services and utilities resulting from implementation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). Public services in the project area include fire and police protection, emergency medical services, hospitals, and schools. Public utilities in the project area provide solid waste disposal, water, wastewater, stormwater drainage, electricity, natural gas, and telecommunications services. This section also presents mitigation measures to reduce or eliminate potential impacts, as appropriate.

Comments received on the 2015 Draft EIR requested that a copy of the 2015 E2 Consulting Engineers Technical Memorandum: Groundwater Replenishment Project Evaluation of Existing Outfall be made available for review (and direct the public to its location), and that additional information about the pipeline be included in the EIR/EIS; the comment is addressed in Impact 4.13-5. In addition, comments requested that ***Mitigation Measure 4.13-1e*** *be modified to require coordination with local fire departments when work is proposed near a gas utility line; the comment has been addressed in* ***Mitigation Measure 4.13-1e****. Comments also requested that* ***Mitigation Measures 4.13-5a*** *and* ***5b*** *address the potential need for lining the MRWPCA outfall and include a discussion of potential secondary impacts related to lining activities and outfall maintenance; the comment has been addressed in Impact 4.13-5, Section 4.13.5.3, Secondary Impacts of Mitigation Measure 4.13-5a, and Section 4.13.5.4 Secondary Impacts of Mitigation Measure 4.13-5b.*

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Inclusion of Presidio of Monterey Fire and Police Departments to the list of service providers;*
- *Reference to Impact 4.7-2 in Section 4.7, Hazards and Hazardous Materials where testing and disposal of hazardous construction wastes is addressed;*
- *Revision of Mitigation Measures 4.13-5a and 5b, to include projection measures for the MRWPCA land and ocean outfall segments; and,*
- *Revisions of secondary effects of Mitigation Measures 4.13-5a and 5b.*

4.13.1 Setting / Affected Environment

The study area for evaluation of impacts on public services and utilities includes the service areas for the public services and utilities that serve the project area. Information on public services and utilities in the project area was derived from available planning documents, public utility websites, and consultation with local agency personnel. **Table 4.13-1** shows the jurisdictions within which the project components would be located and summarizes utility and public service providers in the project area.

4.13.1.1 Fire Protection, Law Enforcement, and Emergency Services

Fire Protection

Several local agencies provide fire protection service in the project area. Most of these agencies serve more than one jurisdiction or area.

Unincorporated Monterey County

Two agencies provide fire protection service to the unincorporated area. The North County Fire Protection District serves the unincorporated area north of the city of Marina, which includes the area where the Castroville Pipeline would be installed (NCFPD, 2013). The Monterey County Regional Fire District (MCRFD) serves approximately 350 square miles east of the City of Marina, including the former Fort Ord military base and areas southeast of the City of Monterey. The MCRFD provides emergency medical and fire protection services (MCRFD, 2016).

City of Marina

The Marina Fire Department serves the city of Marina as well as the parts of the former Fort Ord military base that were deeded to Marina (City of Marina, 2016).

Cities of Seaside and Del Rey Oaks

The Seaside Fire Department provides both emergency response and fire prevention services to the City of Seaside; the Department also provides these services on a contractual basis to the city of Del Rey Oaks and parts of the former Fort Ord military base that were deeded to Seaside (Seaside Fire Department, 2014).

City of Monterey

The City of Monterey Fire Department provides fire protection to the city of Monterey and all areas within its jurisdictional boundaries, including the Army Defense Language Institute and Foreign Language Center, the Presidio of Monterey, and the Naval Postgraduate School and its housing at La Mesa Village (City of Monterey, 2016).

U.S. Army

The Presidio of Monterey Fire Department serves all Army property on the Ord Military Community and Presidio of Monterey, as well as holding mutual aid agreements with Seaside, Marina, the California State University of Monterey Bay, and the Monterey County Regional Fire District.

TABLE 4.13-1
LOCAL UTILITY AND PUBLIC SERVICE PROVIDERS, BY JURISDICTION

Jurisdiction/ Project Component	Presidio of Monterey Fire Department	Presidio of Monterey Police Department	Monterey County Regional Fire District	Monterey County Sheriff's Office	North County Fire Protection District	Monterey Regional Waste Management District	Monterey Regional Water Pollution Control Agency	Monterey County Water Resources Agency	Monterey Peninsula Water Management District	Monterey Peninsula Unified School District	Pacific Gas and Electric Company	California American Water Company	Marina Fire Department	Marina Police Department	Marina Coast Water District	Seaside Fire Department	Seaside Police Department	Seaside County Sanitation District	City of Monterey Fire Department	City of Monterey Police Department	North Monterey County Unified School District	Carmel Unified School District
Unincorporated Monterey County																						
Source Water Pipeline																						
MPWSP Desalination Plant																						
New Desalinated Water Pipeline																						
Brine Discharge Pipeline/Brine Mixing Box			✓	✓	✓	✓	✓	✓	✓		✓	✓									✓	✓
Pipeline to CSIP Pond																						
Castroville Pipeline																						
Carmel Valley Pump Station																						
Main System–Hidden Hills Interconnection Improvements																						
Ryan Ranch–Bishop Interconnection Improvements																						
City of Marina																						
Subsurface Slant Wells																						
Source Water Pipeline	✓					✓	✓	✓	✓	✓	✓		✓	✓	✓							
New Desalinated Water Pipeline																						
New Transmission Main																						
City of Seaside																						
New Transmission Main	✓					✓	✓	✓	✓	✓	✓	✓				✓	✓	✓				
ASR Pipelines																						
U.S. Army[a]																						
New Transmission Main	✓	✓					✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓				
ASR-5 and ASR-6 Wells																						
ASR Pipelines																						
City of Monterey	✓					✓	✓	✓	✓	✓	✓	✓						✓	✓	✓		
Ryan Ranch–Bishop Interconnection Improvements																						
Castroville CSD				✓	✓	✓	✓	✓			✓										✓	
Castroville Pipeline																						

NOTE:
[a] Project components are proposed for the U.S. Army-owned property at the Ord Military Community (OMC) in Seaside, CA.

Police

The Monterey County Sheriff's Office operates the county jail facilities and provides police services to nearly the entire unincorporated county area (Monterey Sheriff, 2016). The cities of Marina, Monterey, Pacific Grove, and Seaside each have an independent police force that serves the areas within their city limits. The Seaside and Marina Police Departments also serve the annexed portions of the former Ford Ord military base.

U.S. Army

The Presidio of Monterey Police Department serves all Army property on the Ord Military Community and Presidio of Monterey.

Emergency Medical Services

The Monterey County Emergency Medical Services Agency is a Monterey County Health Department agency that incorporates over 100 participating entities under one jurisdictional authority, including fire departments, ambulance companies, hospitals, and police departments (MCEMSA, 2014). Monterey County has four major hospitals: Community Hospital of the Monterey Peninsula in Monterey, Natividad Medical Center in Salinas, Salinas Valley Memorial Hospital in Salinas, and George L. Mee Memorial Hospital in King City (Monterey County, 2016).

4.13.1.2 Schools and Libraries

Schools

Three school districts -- the Monterey Peninsula Unified School District, the North Monterey County Unified School District, and the Carmel Unified School District-- serve the project area. The Monterey Peninsula Unified School District serves the cities of Marina, Seaside, Sand City, Del Rey Oaks, and Monterey, as well as the former Fort Ord military base (MPUSD, 2016). The North Monterey County Unified School District serves northern communities in unincorporated Monterey County, including Castroville and Prunedale (NMCUSD, 2016).

Libraries

The project area is served by two library systems: Monterey County Free Libraries and City of Monterey Public Library. The Monterey County Free Libraries serve all of Monterey County and have branches in the cities of Marina, Seaside, and Castroville (MCFL, 2016).

4.13.1.3 Solid Waste Services

The Monterey Regional Waste Management District manages the Monterey Peninsula's solid waste collection, disposal and recycling system. It also receives and processes most of Monterey County's sewage sludge from the adjacent MRWPCA Regional Wastewater Treatment Plant. The Waste Management District serves an 853-square-mile area and a population of approximately 170,000 people. The service area encompasses the cities of Marina, Seaside, Del Rey Oaks, Monterey, Carmel-by-the-Sea, and Pacific Grove and the unincorporated areas of Big Sur,

Carmel Highlands, Carmel Valley, Castroville, Corral De Tierra, Laguna Seca, Moss Landing, Pebble Beach, San Benancio, Sand City, and Toro Park (MRWMD, 2015).

The Waste Management District operates the Monterey Peninsula Landfill, a materials recovery facility, and a transfer station at a 475-acre site north of the city of Marina. All solid waste generated by project construction or operation would be disposed of at the landfill or diverted for recycling or reuse at the materials recovery facility. The landfill operates 6 days per week and is permitted to receive 3,500 tons of waste per day; it has a remaining capacity of approximately 48.5 million cubic yards and is expected to reach its permitted capacity in 2107 (CalRecycle, 2016). The landfill receives approximately 300,000 tons of waste per year, which averages to less than 1,000 tons of waste per day (MRWMD, 2016). In addition to the more commonly recycled and reused materials (such as paper, cardboard, bottles, and cans), materials targeted by operators at the materials recovery facility include commercial waste, wood waste, and yard waste, construction and demolition debris, and materials in self-haul loads (MRWMD, 2015).

4.13.1.4 Water

The water districts and facilities that provide drinking water to residents and businesses in the project area are described below. Some of these districts also provide sewer services and infrastructure (see Section 4.13.1.5).

Marina Coast Water District

The Marina Coast Water District (MCWD) provides water for residents in the city of Marina and to areas within the former Fort Ord military base. The MCWD's water supply comes from three groundwater wells located in the 900-foot-deep aquifer of the Salinas Valley Groundwater Basin (MCWD, 2016a). The MCWD also has a desalination plant with a capacity of 300 acre-feet per year (afy); the plant is capable of providing up to 13 percent of the annual water demand, but has not operated in recent years (MCWD, 2016b).

California American Water Company

As described in Chapter 3, Description of the Proposed Project, California American Water Company (CalAm) supplies water to most of the jurisdictions in the project area (see **Figure 3-1**). CalAm's existing water supply sources for the Monterey District service area are discussed in Chapter 2, Water Demand, Supplies, and Water Rights.

Seaside Municipal Water System

The Seaside Municipal Water System, which is operated and maintained by the City of Seaside, provides water service to a limited number of residents along General Jim Moore Boulevard on the east side of the city. The system includes one groundwater production well and two 500,000-gallon water tanks (City of Seaside, 2016).

Castroville Community Services District

The Castroville Community Services District provides water to more than 7,250 customers via three domestic water production wells with an estimated capacity of over 4.4 mgd. The water system includes two water storage tanks with a capacity of 1.1 million gallons (Castroville CSD, 2016a).

4.13.1.5 Wastewater Treatment

Two wastewater treatment providers serve the project area: the Monterey Regional Water Pollution Control Agency (MRWPCA) and the Carmel Area Wastewater District.

Monterey Regional Water Pollution Control Agency

The MRWPCA operates the Regional Wastewater Treatment Plant, which is north of the city of Marina and east of the proposed MPWSP Desalination Plant site on Charles Benson Road. The MRWPCA is Monterey County's primary provider of wastewater treatment. The MRWPCA serves the communities of Pacific Grove, Monterey, Del Rey Oaks, Seaside, Sand City, Marina, Castroville, Moss Landing, Boronda, Salinas, and Fort Ord and some unincorporated areas in northern Monterey County (MRWPCA, 2016a); sewer infrastructure is maintained and managed by the Marina Coast Water District, the City of Monterey, the Seaside County Sanitation District, the Castroville Sanitary District, and the MRWPCA. The MRWPCA maintains 25 pump stations and approximately 30 miles of pipeline (MRWPCA, 2016b). The MRWPCA also operates a water recycling facility at the treatment plant and along with the Monterey County Water Resources Agency, manages the recycled water distribution system including the Salinas Valley Reclamation Project and the Castroville Seawater Intrusion Project (CSIP). The recycled water is then distributed to Salinas Valley agricultural growers for irrigation use. Excess wastewater receives secondary treatment before being discharged to Monterey Bay via the existing MRWPCA ocean outfall and diffuser (MRWPCA, 2016c), which would also be used for the proposed project brine discharge.

Carmel Area Wastewater District

The Carmel Area Wastewater District provides wastewater collection, treatment, and disposal for a 5.5-mile service area that encompasses Carmel-by-the-Sea and outlying county areas from Carmel Bay to the west, Carmel Highlands to the south, and Del Monte Forest to the north. The district serves a population of approximately 11,000 people. The district's treatment plant, located on the south bank of the Carmel River west of Highway 1, includes a facility that recycles water for irrigation use at several golf courses, including Pebble Beach, Poppy Hills, and Spanish Bay (Carmel Area Wastewater District, 2016).

4.13.1.6 Stormwater Drainage

Monterey County

Monterey County Water Resources Agency operates and maintains drainage facilities in 14 drainage maintenance zones and districts throughout Monterey County. The stormwater drainage system is composed of approximately 57 miles of drainage ways (e.g., streams, drainage ditches, and drainage channels); eight pump stations; nine miles of river levees; two large earthen dams; and numerous culverts, tide gates, and concrete structures (MCWRA, 2016).

Cities of Monterey and Seaside

The City of Monterey and the City of Seaside maintain stormwater conveyance infrastructure and natural drainage courses for their respective jurisdictions.

Castroville Community Services District

The Castroville Community Services District maintains 16 miles of storm drain main lines, four stormwater treatment units (for removing trash, debris and hydrocarbons), and 178 catch basins within its storm drain system (Castroville CSD, 2016b).

4.13.1.7 Electricity, Natural Gas, and Telecommunications

Pacific Gas and Electric Company (PG&E) provides electricity and natural gas to all of Monterey County, and Pacific Bell provides telephone service. Section 4.18, Energy Conservation, presents more information on PG&E service in the project area.

4.13.2 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to public services and utilities. A brief summary of each is provided, along with a finding regarding the project's conformity with those regulatory requirements. The conformity findings concern the project as proposed, without mitigation. Where the project, as proposed, would be consistent with an applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with an applicable regulatory requirement, the reader is referred to a specific impact topic within Section 4.13.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

4.13.2.1 Federal Regulations

There are no federal regulations that pertain to Public Services and Utilities that are applicable to the proposed project.

4.13.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) was enacted by the State Legislature in 1976 to provide for the long-term management of lands within California's coastal zone boundary. The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone. Of primary relevance to public services and utilities is a Coastal Act policy concerning designing and limiting new or expanded public works facilities such that they (and the needs/growth they accommodate) are protective of coastal resources. This subsection provides a preliminary assessment of MPWSP consistency with these priorities. Final determinations regarding project consistency are reserved for the Coastal Commission. The MPWSP has been designed to accommodate existing and projected future demand consistent with the General Plans (and Local Coastal Programs) of the jurisdictions in CalAm's service area. As future development in the service area would need to be consistent with General Plan and Local Coastal Program requirements, the project would not conflict with Coastal Act policies related to public works facilities.

The California Coastal Act contains numerous enforceable policies that are directed at protecting and, where feasible, restoring coastal water quality. The California Coastal Commission applies the Coastal Act's water quality policies when reviewing applications for coastal development permits in California state waters. The Coastal Commission also applies the water quality policies when reviewing federally licensed and permitted activities to ensure they are consistent with the State's coastal management program in accordance with the Coastal Zone Management Act federal consistency provision.

The Coastal Commission considers an application for a coastal development permit to cover the requirement for an applicant submitting a consistency certification to the Coastal Commission if the activity is located in state waters. Typically, the Coastal Commission will provide its response (concurrence, conditional concurrence, or objection) in its staff report for the coastal development permit.

California Public Utilities Commission

The California Public Utilities Commission (CPUC)—the CEQA lead agency for this project—is responsible for ensuring that investor-owned (private) water, energy, and telecommunications utilities deliver safe, clean, and/or reliable services to customers at reasonable rates. The CPUC does not regulate publicly-owned utilities. The CPUC regulates CalAm, the project applicant.

California Integrated Waste Management Act of 1989 and Assembly Bill 341

The California Integrated Waste Management Board (CIWMB) oversees, manages, and tracks waste generated in California. The authority and responsibilities of the CIWMB were promulgated in Assembly Bill 939 and Senate Bill 1322, which were signed into law as the California Integrated Waste Management Act of 1989 (Public Resources Code [PRC], Division 30). The California Integrated Waste Management Act, as modified by subsequent legislation, mandated all California

cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by 2000 (PRC Section 41780). In January 2010, the CIWMB changed its name to the Department of Resources, Recycling, and Recovery (CalRecycle).

Assembly Bill 341, which amends the Integrated Waste Management Act of 1989 and was adopted by the California legislature in October 2011, directs CalRecycle to adopt a state policy that actively seeks to achieve a goal of diverting 75 percent of solid waste from landfills by 2020. The new legislation focuses largely on commercial waste generators, as this sector was identified as the most in need of improved waste management. Assembly Bill 341 does not alter the 50 percent diversion mandate; rather, it is a "legislative declaration of policy" to guide CalRecycle's administration of the California Integrated Waste Management Act (Theroux, 2012).

A jurisdiction's diversion rate is the percentage of total generated waste it diverts from disposal through source reduction, reuse, and recycling programs. The state determines compliance with the 50 percent diversion mandate through a complex formula. Use of the formula requires cities and counties to conduct empirical studies to establish a base-year waste generation rate against which future diversion is measured. The diversion rate in subsequent years is determined through deduction instead of direct measurement. Rather than counting the amount of material recycled and composted, the city or county tracks the amount of material disposed of at landfills and then subtracts that amount from the base-year amount; the difference is assumed to be diverted (PRC Section 41780.2).

Construction of the MPWSP project components would potentially be inconsistent with the California Integrated Waste Management Act of 1989 and Assembly Bill 341 because the total volume of construction wastes and excess spoils could be landfilled if not recycled properly. This issue is discussed in Impact 4.13-2 below.

Utility Notification Requirements

California law (Government Code Section 4216 et seq.) requires owners and operators of underground utilities to become members of, participate in, and share the costs of a regional notification center. Government Code Section 4216 requires that persons planning to conduct any excavation contact the regional notification center. Section 4216 includes several related requirements, including requirements for excavations near "high priority subsurface installation", or high risk facilities, which include high-pressure natural gas pipelines and other pipelines that are potentially hazardous to workers or the public if damaged or ruptured. Underground Service Alert North (USA North) is the notification center for the project area. USA North receives planned excavation reports and transmits the information to all participating members that may have underground facilities at the location of excavation. The USA North members will then mark or stake their facility, provide information about the location, or advise the excavator of clearance (USA North, 2016).

Construction of the MPWSP would be potentially inconsistent with California's Utility Notification Requirements (Government Code Section 4216 et seq.) because CalAm's construction contractors could conduct excavations without sufficient notification to owners and operators of utilities or

proper planning when in the vicinity of high priority subsurface installations. This issue is discussed in Impact 4.13-1.

NPDES Waste Discharge Program

The National Pollution Discharge Elimination System (NPDES) waste discharge requirements and the NPDES Permit for MRWPCA Regional Wastewater Treatment Plant are discussed in Section 4.3.2.2, State Regulations.

4.13.2.3 Local Regulations

Table 4.13-2 describes the state, regional, and local land use plans, policies, and regulations pertaining to public services and utilities that are relevant to the proposed MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. Also included in **Table 4.13-2** is an analysis of project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project may conflict with the applicable plan, policy, or regulation, the reader is referred to Section 4.13.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

Monterey County Integrated Waste Management Plan

The Monterey County Integrated Waste Management Plan incorporates relevant provisions of the California Green Building Standards Code, which Monterey County has adopted. Diversion rates related to construction are from the California Green Building Standards Code. Section 5.408.1 of the code requires non-residential projects to recycle and/or salvage for reuse a minimum of 50 percent of nonhazardous construction and demolition waste. Further, Section 5.408.3 requires that 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing be reused or recycled (unless the vegetation or soil is contaminated with disease or pest infestation.) CalRecycle reviews the Monterey County Integrated Waste Management Plan every 5 years, most recently in December 2012. The latest update to the Integrated Waste Management Plan ensures compliance with all current regulatory and reporting requirements (MCHD, 2012).

Construction of all MPWSP project components would potentially be inconsistent with the Monterey County Integrated Waste Management Plan because the total volume of nonhazardous construction wastes and excess spoils could be landfilled if not recycled properly. This issue is discussed in Impact 4.13-2 below.

TABLE 4.13-2
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO PUBLIC SERVICES AND UTILITIES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Infrastructure	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 3.3:*** The intent of the General Plan Transportation and Infrastructure Element is to ensure that the requirements for transportation, water supply, wastewater collection and treatment, storm water drainage, and solid-waste disposal generated by existing and future development are adequately provided for. It is also the intent of this section to ensure, to the maximum extent possible, that the provision of such services does not have a deleterious effect on either natural resources or the quality of life of residents of Marina or other potentially affected areas. The major concerns of this section are outlined below: 11. Minimize the consumption of water for urban purposes and make maximum possible use of recycled water. 12. Design stormwater runoff facilities so as to the recharge ground water aquifers while protecting the water quality of these aquifers. 13. Ensure long-term availability of required facilities and services prior to approval of new construction. 14. Support water resource programs, including desalinization and reclamation efforts, to provide an adequate water supply to accommodate General Plan permitted growth. 15. Promote reductions in the generation of non-recyclable solid waste.	The intent of this policy is to ensure sufficient and environmentally responsible provision of public utilities for existing and future development.	Consistent: The purpose of the MPWSP is to replace those portions of CalAm's existing supplies that have been constrained by legal decisions regarding diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The proposed project would provide a reliable water supply to meet existing demands and would accommodate the demands of some new development. The pipelines are sized to accommodate growth, with new pumping. The proposed project would be required to comply with State and local regulations regarding stormwater management, waste diversion, and recycling.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Land Use	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 2.4*****:** The intent of the community land use element is to help achieve the overall General Plan goals of providing a satisfying, safe and healthful living and working environment and promoting the economic well-being of city residents and businesses. To accomplish these ends, City planning, regulatory and development decisions shall be governed by the following policies which adhere to the goals in the "Introduction" (Chapter 1). 13. The City will provide adequate urban services, including water, only to areas within its designated Urban Growth Boundary. The costs of providing the public facilities and services needed for new development shall be borne by new development unless the City chooses to help assume such costs in order to obtain identified community-wide benefits.	The intent of this policy is to encourage growth in urban areas and minimize impacts of development in areas outside the urban growth boundary.	Consistent: The subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main are within the Marina Urban Growth Boundary and would not require the need for urban services expansion.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Water Supply, Treatment, and Distribution	New Transmission Main; ASR Conveyance Pipeline; ASR Pump-to-Waste Pipeline; and ASR Recirculation Pipeline	***Policy LU-5.2:*** Work cooperatively with local and regional water suppliers to ensure adequate water reserves.	The intent of this policy is to ensure adequate local and regional water supplies.	Consistent: The purpose of the MPWSP is to provide water supplies for those portions of CalAm's existing supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. Therefore this project would ensure an adequate local and regional water supply.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Water Supply, Treatment, and Distribution	New Transmission Main; ASR Conveyance Pipeline; ASR Pump-to-Waste Pipeline; and ASR Recirculation Pipeline	***Policy LU-5.3:*** Actively promote water conservation by City residents and businesses	This policy is intended to promote water conservation	Consistent: The purpose of the MPWSP is to provide water supplies for those portions of CalAm's existing supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The results of ongoing conservation efforts are considered in the sizing of the proposed project and nothing about the MPWSP would decrease those efforts to conserve water.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Sewer Collection and Treatment	New Transmission Main; ASR Conveyance Pipeline; ASR Pump-to-Waste Pipeline; and ASR Recirculation Pipeline	***Policy LU-6.1:*** Maintain the existing sewer system to provide a high level of service to community neighborhoods.	This policy is intended to maintain a high level of service for the sewer system.	Potentially inconsistent: Pipeline installation could temporarily impact sewer service. This issue is addressed in Impact 4.13-1 below.

TABLE 4.13-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO PUBLIC SERVICES AND UTILITIES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Carmel Valley Pump Station, and Main System-Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	***Policy PS-2.1*:** Coordination among, and consolidation with, those public water service providers drawing from a common water table to prevent overdrawing the water table is encouraged.	This policy is intended to prevent overdrawing of the aquifers.	Consistent: The proposed project is being planned in coordination with public water service providers in the region and includes measures to prevent overdrawing the water table.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, and Main System-Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	***Policy PS-5.5*:** The County shall promote waste diversion and recycling and waste energy recovery.	This policy is intended to reduce waste.	Consistent: The proposed project would be required to comply with State and local regulations that require waste diversion and recycling.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Services	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline/Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, and Main System-Hidden Hills and Ryan Ranch–Bishop Interconnection Improvements	***Policy PS-13.2*:** All new utility lines shall be placed underground, unless determined not to be feasible by the Director of the Resource Management Agency.	This policy is intended to minimize visual and other adverse effects of above-ground utility lines.	Consistent: The proposed project includes underground water conveyance pipelines. New underground and aboveground powerlines would be constructed between existing powerlines in the area and the proposed project facilities. It is anticipated that most, if not all, of the new powerlines would be constructed underground.
County of Monterey (inland areas)	North County Area Plan	Public Services	Castroville Pipeline	**NC-5.2:** Water development projects that can offer a viable water supply to water-deficient areas in North County shall be a high priority.	This policy is intended to provide a viable water supply to water deficient parts of North County	Consistent: The proposed project contributes water supplies to the Castroville Seawater Intrusion Project, therefore, it would provide a viable water supply to water deficient parts of North County.

SOURCES: City of Marina, 2006; City of Seaside, 2004; Monterey County, 1985, 2010.

4.13.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to public services and utilities if it would:

- Disrupt operations or require relocation of regional or local utilities;
- Result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire and police protection, schools, parks, or other public facilities;
- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supply available to serve the project from existing entitlements and resources or require new or expanded water supply resources or entitlements;
- Result in a determination by the wastewater treatment provider that it has inadequate capacity, including treatment and/or outfall capacity, to accommodate the project's projected demand;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Be out of compliance with federal, state, and local statutes and regulations related to solid waste; or
- Generate wastewater flows that would increase the corrosion of the existing MRWPCA outfall and diffuser.

4.13.4 Approach to Analysis

Streets and trails through the project area function as underground utility corridors. Several impacts of the MPWSP related to public services and utilities stem from the potential for project construction to directly impact utilities and utility services. Therefore, the analysis of project impacts in Sections 4.13.5.1 and 4.13.5.2, below, focus on impacts on utilities, although potential impacts related to public services are also addressed.

This analysis uses the California Department of Transportation (Caltrans) policy in the Caltrans Project Development Procedures Manual (Caltrans, 1999) to identify "high risk" utilities that would pose a greater risk to workers and the public should an accident occur during construction, and which therefore warrant special consideration. Pursuant to the policy, high risk utilities include pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases;

natural gas in pipelines greater than 6 inches nominal pipe diameter or with normal operating pressures greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts, either directly buried or in duct or conduit, and which do not have effectively grounded metal shields or sheaths (Caltrans, 1999).

4.13.5 Direct and Indirect Effects of the Proposed Project

Due to the nature of the proposed project, the following criteria are not addressed in the impact analysis sections for the reasons described below:

Result in the need for new or physically altered governmental facilities. During the 30 month construction period, up to 380 construction workers would be employed at the various construction sites, depending on the phase of construction and the construction activities taking place. It is expected that construction workers could come from any part of the region. While it is possible that some workers might temporarily relocate from other areas, the proposed project would not substantially increase the local population. During project construction, incidents requiring law enforcement, fire protection, or emergency services could occur; however, any temporary increase in incidents would not exceed the capacity of local and/or regional service providers to a degree that requires new or expanded facilities. Any temporary increase in the local population during project construction would be negligible and could be accommodated by existing service providers. Therefore, construction of the proposed project would not result in impacts related to the need for new or physically altered governmental facilities in order to maintain existing levels of public services, and no impacts on public services would occur.

The proposed project would not permanently increase the local population. Operation and maintenance activities would require approximately 25 to 30 permanent employees and would not substantially increase the demand for public services, including fire and police protection, libraries, schools, hospitals, or other services. Therefore, no impacts related to public services would occur during project operations. Because there would be no construction or operational impacts, the criterion related to the need for new or modified governmental facilities is not applicable to the project and is not discussed further. The issues of population and housing are discussed in Section 4.19 Population and Housing. The potential impact related to impaired emergency access during construction is addressed under Impact 4.9-4 in Section 4.9, Traffic and Transportation.

Require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. As described in Chapter 3, Description of the Proposed Project, the MPWSP would develop a new water supply to replace current supplies that are legally constrained. It would not increase volumes of wastewater requiring treatment, and no new or expanded wastewater treatment facilities would result. The construction of water-related facilities, including the MPWSP Desalination Plant, is the subject of this EIR/EIS. Other sections in this Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures discuss the potential impacts and identify mitigation measures associated with these proposed facilities.

Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant

environmental effects. The potential for the proposed project to change drainage patterns and increase stormwater runoff is addressed in Section 4.3, Surface Water Hydrology and Water Quality (see Impacts 4.3-7 and 4.3-8). That analysis indicates that, due to the negligible increase in impervious surfaces associated with the proposed aboveground facilities, the proposed project would have a less than significant impact associated with potential changes in drainage patterns and the rate and amount of surface runoff. As a result, the proposed project would not require or result in the need for new or expanded stormwater drainage facilities. No impact would result and this impact is not discussed further.

Have insufficient water supply available to serve the project or require new or expanded water supply resources or entitlements. Project implementation would generate approximately 25 to 30 permanent jobs in the Monterey District service area. The proposed project would not construct new housing, nor would it substantially increase the number of permanent workers in the area. No substantial changes in water demand or water distribution would result. Further, the purpose of the MPWSP is to provide a new potable water supply source to serve the CalAm Monterey District service area and the implementation of this new water supply is the subject of this EIR/EIS. Therefore, this criterion is not applicable to the project and is not discussed further in this section. Refer to Chapter 2, Water Demand, Supplies, and Water Rights for a discussion of water rights and Section 4.4, Groundwater Resources, for an analysis of the proposed project's effects on existing groundwater users in the Seaside Groundwater Basin and the Salinas Valley Groundwater Basin.

Table 4.13-3 summarizes the MPWSP's impacts and significance determinations related to public services and utilities.

TABLE 4.13-3
SUMMARY OF IMPACTS – PUBLIC SERVICES AND UTILITIES

Impacts	Significance Determinations
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.	LSM
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.	LSM
Impact 4.13-3: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.	LS
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.	LSM
Impact 4.13-5: Increased corrosion of the MRWPCA outfall as a result of brine discharge associated with project operations.	LSM
Impact 4.13-C: Cumulative impacts related to public services and utilities.	LSM

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation

4.13.5.1 Construction Impacts

Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. (*Less than Significant with Mitigation*)

All Project Facilities

Construction of the MPWSP could damage or interfere with existing water, sewer, stormwater drainage, natural gas, electric, or communication utility service lines. Construction could require the permanent relocation of these utility lines, potentially interrupting service if the relocation could not be avoided. Numerous public utilities of varying sizes are present in the project area.

Streets and roads typically serve as utility corridors, increasing the potential for project pipelines to interfere with existing utilities. As such, overhead utility lines of various sizes are likely to be located along or across several project components. Overhead utility poles and lines could be susceptible to accidental damage from the movement of large construction equipment and vehicles throughout the project area. Trenching, excavation, and pipeline installation are the activities most likely to result in planned or accidental service disruptions, as the proposed pipeline alignments would probably cross multiple underground utilities. In most cases, service disruptions would be temporary and typically would not exceed 1 day. The proposed pipeline alignments could cross stormwater pipes, culverts, natural gas lines, sewer lines, and water pipelines.

Accidental rupture of or damage to utility lines during project construction could temporarily disrupt utility services and, in the case of high-risk utilities (also referred to as high priority subsurface installations), such as high-pressure gas pipelines, could result in significant safety hazards for construction workers. For these reasons, impacts on existing utilities and utility services during project construction would be potentially significant. However, the impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a (Locate and Confirm Utility Lines)**, **4.13-1b (Coordinate Final Construction Plans with Affected Utilities)**, **4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities)**, **4.13-1d (Emergency Response Plan)**, **4.13-1e (Notify Local Fire Departments)**, and **4.13-1f (Ensure Prompt Reconnection of Utilities)**. These mitigation measures would require the construction contractor(s) to: confirm the location of existing utilities and mark the confirmed locations accurately on the final construction drawings; work with utility service providers to minimize the risk of damage to existing utility lines and ensure prompt reconnection of service in the event of a service disruption; take special precautions when working near high-risk utility lines, including tailgate meetings with contractor staff on days when work will occur near high risk (high priority) utilities; clearly outline the procedures to follow in the event of a leak or explosion; and immediately notify local fire departments of any damage to high-risk utility lines.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.13.2, Regulatory Framework, construction of certain components of the MPWSP could conflict with applicable regulatory requirements related to public services and utilities. As noted in **Table 4.13-2**, the new

Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline would potentially conflict with the Seaside General Plan Policy LU-6.1 which intends to maintain a high level of sewer system service to its community. CalAm and its construction contractors shall implement **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines)**, **4.13-1b (Coordinate Final Construction Plans with Affected Utilities)**, and **4.13-1f (Ensure Prompt Reconnection of Utilities)** which would resolve any potential conflicts with the aforementioned regulatory requirement.

In addition, construction of the MPWSP would potentially conflict with California's Utility Notification Requirements (Government Code Section 4216 et seq.) which intends to prevent excavations from damaging or rupturing underground utilities, including high priority subsurface installations. CalAm and its construction contractors shall implement **Mitigation Measures 4.13-1a (Locate and Confirm Utility Lines)**, **4.13-1b (Coordinate Final Construction Plans with Affected Utilities)**, **4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities)**, and **4.13-1d (Emergency Response Plan)** which would resolve any potential conflicts with the aforementioned regulatory requirements.

Impact Conclusion

This impact would be significant for all project components but would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a** through **4.13-1f**.

Mitigation Measures

Mitigation Measure 4.13-1a applies to all project components.

> **Mitigation Measure 4.13-1a: Locate and Confirm Utility Lines.**
>
> Before excavation begins, CalAm or its contractor(s) shall locate all overhead and underground utility lines (such as natural gas, electricity, sewage, telephone, fuel, and water lines) that are reasonably expected to be encountered during excavation. When a project excavation is within the approximate location of a subsurface utility, CalAm or its contractor shall determine the exact location of the underground utility by safe and acceptable means, including the use of hand tools and modern techniques. Information regarding the size, color, and location of existing utilities shall be confirmed before construction activities begin. These utilities shall be highlighted on all construction drawings.

Mitigation Measure 4.13-1b applies to all project components.

> **Mitigation Measure 4.13-1b: Coordinate Final Construction Plans with Affected Utilities.**
>
> CalAm or its contractor(s) shall coordinate final construction plans, schedule, and specifications with affected utilities. Arrangements shall be made with these entities regarding the appropriate protection, relocation, or temporary disconnection of services. If any interruption of service is required, CalAm or its contractor(s) shall notify residents and businesses in the project corridor of any planned utility service disruption at least 2 working days and up to 14 calendar days in advance, in conformance with county and state standards.

Mitigation Measure 4.13-1c applies to all project components.

Mitigation Measure 4.13-1c: Safeguard Employees from Potential Accidents Related to Underground Utilities.

When any excavation is open, the construction contractor(s) shall protect, support, or remove underground utilities as necessary to safeguard employees.

The contractor(s) shall be required to provide weekly updates to CalAm and construction workers regarding the planned excavations for the upcoming week, and to specify when construction will occur near a high-priority utility (i.e., pipelines carrying petroleum products, oxygen, chlorine, or toxic or flammable gases; natural gas pipelines greater than 6 inches in diameter or with normal operating pressures greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths). Construction managers shall hold regular tailgate meetings with construction staff on days when work near high-priority utilities will occur to review all safety measures regarding such excavations, including measures identified in the Mitigation Monitoring and Reporting Program and in construction specifications—. The contractor shall designate a qualified Health and Safety Officer who shall specify a safe distance to work near high-priority utilities. Excavation near such utility lines shall not be authorized until the designated Health and Safety Officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device; and (2) the location was verified by hand by the construction contractor.

Mitigation Measure 4.13-1d applies to all project components.

Mitigation Measure 4.13-1d: Emergency Response Plan.

Before commencement of construction, CalAm or its contractor(s) shall develop an emergency response plan that outlines procedures to follow in the event of a leak or explosion and submit a copy to the CPUC and MBNMS. The emergency response plan shall identify the names and phone numbers of staff at the potentially affected utilities that would be available 24 hours per day in the event that construction activities cause damage to or rupture of a high-risk utility. The plan shall also detail emergency response protocols, including notification, inspection, and evacuation procedures; any equipment and vendors necessary to respond to an emergency (such as an alarm system); and routine inspection guidelines.

Mitigation Measure 4.13-1e applies to all project components.

Mitigation Measure 4.13-1e: Notify Local Fire Departments.

CalAm or its contractor(s) shall notify local fire departments in advance of any work that is to be performed within or adjacent to a right-of-way that contains a gas utility line, or any time damage to a gas utility line results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.

Mitigation Measure 4.13-1f applies to all project components.

Mitigation Measure 4.13-1f: Ensure Prompt Reconnection of Utilities.

CalAm or its contractor(s) shall promptly contact utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.

Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction. (*Less than Significant with Mitigation*)

All Project Facilities

Construction of the proposed project would generate approximately 25,110 cubic yards (37,665 tons) of excess spoils and construction materials that would require transport out of the project area, such as sand, soil, and asphalt. Due to the economic value of clean excavated soil and the cost of landfill disposal, it is expected that much of the excavated materials would be diverted for reuse. Nevertheless, this analysis conservatively assumes that all nonhazardous excess spoils and construction debris would be disposed of at the Monterey Peninsula Landfill. Testing and disposal of hazardous construction wastes is addressed in Impact 4.7-2 in Section 4.7, Hazards and Hazardous Materials.

The Monterey Peninsula Landfill is permitted to receive 3,500 tons of waste per day. The landfill has an estimated remaining capacity of 48,560,000 cubic yards and an expected site life of approximately 100 years (CalRecycle, 2016). According to the Monterey Regional Waste Management District, the landfill receives an average of approximately 300,000 tons per year, or less than 1,000 tons per day (MRWMD, 2016).

Based on the assumption that excess spoils and construction debris would be hauled to the landfill Monday through Friday over the 30-month construction duration, project construction could generate up to 59 tons per day of materials requiring disposal. Even under this worst-case scenario, the waste generated by project construction, in combination with the landfill's average acceptance rate of less than 1,000 tons per day, would be well below the landfill's permitted daily acceptance rate of 3,500 tons. The total amount of excess spoils and construction debris generated by the project represents approximately 0.05 percent of the landfill's remaining capacity. Therefore, even under the worst-case scenario that assumes all of the proposed project's excess spoils and construction debris would be disposed of at the Monterey Peninsula Landfill, the amount of waste by project construction would not exceed or substantially deplete the landfill capacity. However, failing to divert a substantial portion of the waste generated during project construction could conflict with county and local diversion goals and policies, and could adversely affect the jurisdictions' waste diversion rates.

As discussed in Section 4.13.2, Regulatory Framework, the California Integrated Waste Management Act of 1989 requires all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of waste and the Monterey County Integrated

Waste Management Plan has incorporated provisions of the California Green Building Standards Code, calling for non-residential projects to recycle and/or salvage for reuse of at least 50 percent of nonhazardous construction and demolition waste and that 100 percent of trees, stumps, rocks, and associated vegetation and soil from land clearing be reused or recycled (unless contaminated with disease or pest infestation).

Failure of CalAm's construction contractor(s) to reuse or recycle excavation materials and other construction waste generated during MPWSP construction would thus conflict with the County's Integrated Waste Management Plan policies, and could also adversely affect the state-mandated diversion rates of the jurisdictions in which construction activities would be located; this would be a significant impact.

This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.13-2 (Construction Waste Reduction and Recycling Plan)**. This measure would require CalAm's construction contractor(s) to prepare and implement a plan to divert recoverable materials from landfills.

Impact Conclusion

Even under the worst case scenario that assumes all of the proposed project's excess spoils and construction debris would be disposed of at the Monterey Peninsula Landfill, the amount of construction waste would not exceed or substantially deplete the landfill capacity. However, disposal and management of wastes generated during project construction could be out of compliance with state and local regulations and policies calling for the diversion of construction waste from landfill disposal, a significant impact. The impact would be mitigated to a less-than-significant level for all project facilities with implementation of **Mitigation Measure 4.13-2 (Construction Waste Reduction and Recycling Plan)**.

Mitigation Measure

Mitigation Measure 4.13-2 applies to all project components.

> **Mitigation Measure 4.13-2: Construction Waste Reduction and Recycling Plan.**
>
> The construction contractor(s) shall prepare and implement a construction waste reduction and recycling plan identifying the types of debris the project will generate and the manner in which those waste streams will be handled. In accordance with the California Integrated Waste Management Act of 1989, the plan shall emphasize source reduction measures, followed by recycling and composting methods, to ensure that construction and demolition waste generated by the project is managed consistent with applicable statutes and regulations. In accordance with the California Green Building Standards Code and local regulations, the plan shall specify that all trees, stumps, rocks, and associated vegetation and soils, and 50 percent of all other nonhazardous construction and demolition waste, be diverted from landfill disposal. The plan shall be prepared in coordination with the Monterey Regional Waste Management District and be consistent with Monterey County's Integrated Waste Management Plan. Upon project completion, CalAm shall collect the receipts from the contractor(s) and submit them to the CPUC as documentation that the waste reduction, recycling, and diversion goals have been met.

4.13.5.2 Operational and Facility Siting Impacts

Impact 4.13-3: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations. (*Less than Significant*)

MPWSP Desalination Plant

Operation of the MPWSP Desalination Plant would produce approximately 20,000 pounds of residual solid waste per day through the desalination process. This waste would be dewatered onsite, resulting in approximately 5 cubic yards per day (or 7.5 tons) of solids requiring disposal at the Monterey Peninsula Landfill. The solids would contain naturally occurring organic and inorganic matter from the raw seawater, iron precipitated from coagulation during the pretreatment process, and low concentrations of other chemicals used in the treatment process. The solids would be tested prior to landfill disposal to ensure they meet nonhazardous waste disposal criteria. There are no known opportunities for reusing or recycling these solids, so diverting them from landfill disposal is not an option. Because the landfill operates 6 days per week, the 52.5 tons of resulting cake generated per week by the desalination process would result in a daily disposal rate of approximately 8.75 tons (i.e., assuming disposal 6 days per week). The administrative activities at the plant would generate nominal amounts of typical office wastes.

The Monterey Peninsula Landfill is permitted to accept up to 3,500 tons per day but, on average, receives less than 1,000 tons per day (CalRecycle, 2016; MRWMD, 2016); therefore, the landfill could accept the 8.75 tons of waste generated by the MPWSP Desalination Plant without exceeding its permitted daily tonnage or depleting substantial long-term capacity. As a result, operation of the proposed MPWSP Desalination Plant would have a less-than-significant impact related to landfill capacity and solid waste disposal.

ASR Pump-to-Waste System

Maintenance of the ASR Pump-to-Waste System is expected to generate approximately 240 pounds (less than 1 ton) per year of sediment that enters the wells when the water is injected, or from the surrounding soil. This material would be taken to the Monterey Regional Waste Management District's materials recovery facility for recycling and reuse. Therefore, no impacts related to landfill capacity and solid waste disposal are expected from operation of the proposed ASR Pump-to-Waste System.

All Other Proposed Facilities

All other proposed project components (subsurface slant wells, conveyance pipelines, storage facilities, pump station, the interconnections with Highway 68 satellite systems and other ASR-related facilities) would have limited potential to generate waste during facility operations and maintenance, and any waste generated at these facilities would be nominal. Impacts associated with disposal of solid waste produced at these facilities would be less than significant.

Impact Conclusion

MPWSP Desalination Plant operations would generate solid waste that would be routinely disposed of at the Monterey Peninsula Landfill. There are no known opportunities for reusing or recycling these solids, but the landfill could accept the waste without exceeding its permitted daily tonnage or substantially depleting long-term capacity. Maintenance of the ASR Pump-to-Waste System would generate sediment materials that would be taken to the Waste Management District's materials recovery facility for reuse or recycling. All other proposed facilities would have a very limited potential to generate waste during operations or maintenance. Impacts related to solid waste disposal and landfill capacity during operations and maintenance would be less than significant.

Mitigation Measures

None proposed.

Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project. *(Less than Significant with Mitigation)*

Exceed Wastewater Treatment Requirements

As discussed in Chapter 3, Description of the Proposed Project, brine generated during the desalination process at the MPWSP Desalination Plant would be discharged to Monterey Bay through the MRWPCA's existing ocean outfall and diffuser. During certain times of the year, particularly during the non-irrigation (wet) season, the brine stream would be blended with treated wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant prior to discharge. The availability of wastewater effluent for blending with the brine is limited during the dry season (irrigation season) and the brine could be discharged without dilution for extended periods (see **Table 4.13-4**). The *Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* [Order No. R3-2014-0013, NPDES Permit No. CA0048551], which regulate discharges from the outfall, would be amended before the MPWSP Desalination Plant starts operating to incorporate the "brine only" and combined discharges. As described in Impacts 4.3-4 and 4.3-5 in Section 4.3, Surface Water Hydrology and Water Quality, both the "brine only" discharges and the combined discharges would comply with Ocean Plan water quality objectives for all assessed constituents. With implementation of the MPWSP, certain constituent concentrations, as discussed in Section 4.3.5.2 Operational and Facility Siting Impacts and **Appendix D3** (Trussell, 2016), could become elevated under several assessed discharge scenarios to a level that is close to the Ocean Plan standard. Additionally, due to gaps in the available water quality data, a compliance determination could not be made for ten individual constituents and consequently, it must be conservatively assumed that an exceedance of Ocean Plan water quality objectives could occur as a result of operational discharges.

TABLE 4.13-4
BRINE STREAM AND TREATED WASTEWATER EFFLUENT FLOWS THROUGH THE MRWPCA OUTFALL AND DIFFUSER

	Average Monthly Flows (mgd)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Brine Stream from MPWSP Desalination Plant	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98	13.98
Treated Wastewater Effluent from MRWPCA[a]	19.78	18.41	14.68	7.02	2.40	1.89	0.90	1.03	2.79	9.89	17.98	19.27
Combined Discharge	33.76	32.39	28.66	21.00	16.38	15.87	14.88	15.01	16.77	23.87	31.96	33.25

NOTES:

[a] Based on average monthly effluent discharges for the years 1998 through 2012.

SOURCES: RBF Consulting, 2013; MRWPCA, 2013.

Mitigation Measures 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) and Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives) are prescribed to monitor, report and reduce the water quality impact associated with potential exceedances of the Ocean Plan water quality objective to a less-than-significant level. Mitigation Measure 4.3-4 requires CalAm to implement a comprehensive Monitoring and Mitigation Plan consistent with the requirements of the Ocean Plan (described in detail in Section 4.3.2.2) that would set forth appropriate response thresholds and corrective actions that would be required if the acquired data indicated deleterious effects on receiving water quality or marine biological resources from the proposed MPWSP operational discharges. Mitigation Measure 4.3-5 would require data gathering to determine baseline conditions and compliance with Ocean Plan water quality objectives and would involve employing design features and/or operational measures to achieve the required minimum dilution of the discharge at the edge of the ZID to ensure compliance with Ocean Plan water quality objectives.

Wastewater Treatment Plant and Outfall Capacity

The only wastewater generated during project operations that would require treatment at the MRWPCA Regional Wastewater Treatment Plant is wastewater from bathrooms at the MPWSP Desalination Plant. Given the small number of CalAm employees that would be staffed at the MPWSP Desalination Plant (25 to 30 employees) the volume of wastewater generated at this facility would be approximately 750 gallons per day, which would have a negligible impact on the MRWPCA treatment capacity of 29.6 mgd and discharge capacity of 81.2 mgd. None of the treatment processes at the MPWSP Desalination Plant site and none of the other proposed project facilities located elsewhere would generate wastewater during operations that would require treatment at the MRWPCA Regional Wastewater Treatment Plant. Therefore, project operations would not exceed wastewater treatment capacity.

The existing 2.1-mile-long, 60-inch-diameter MRWPCA outfall pipeline terminates at a 1,100-foot-long diffuser resting above the ocean floor at approximately 90 to 110 feet below sea level. The

diffuser is equipped with 172 ports (129 ports are currently open and 43 are closed), each 2 inches in diameter and spaced 8 feet apart. Depending on the number of closed ports, the outfall and diffuser have a physical discharge capacity of between 66.5 and 94.6 mgd (Trussell Technologies, 2012). The outfall and diffuser are permitted to discharge up to 81.2 mgd in accordance with the *Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* (Order No. R3-2014-0013, NPDES Permit No. CA0048551) (RWQCB, 2014).

MRWPCA currently utilizes the existing ocean outfall and diffuser to discharge secondary treated wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant to Monterey Bay. **Table 4.13-4** shows existing average monthly wastewater flows through the MRWPCA outfall and diffuser based on average monthly effluent discharges for the years 1998 through 2012. As shown, the volume of treated wastewater effluent varies throughout the year, with the highest flows occurring during the non-irrigation season (November through March). The lowest flows occur during the irrigation season (April through October) when a large portion of the secondary wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant is diverted to the Salinas Valley Reclamation Project's tertiary treatment facility for additional advanced treatment and subsequently used for crop irrigation as part of the CSIP.

The MPWSP Desalination Plant would generate approximately 13.98 mgd of brine (including 0.4 mgd of decanted backwash effluent) that would be discharged through the MRWPCA's existing ocean outfall and diffuser. The amount of treated wastewater effluent available for blending with the brine stream would be variable throughout the year, and the brine stream could be discharged with minimal dilution for extended periods. As shown in **Table 4.13-4**, based on average monthly flows, both the "brine only" flows and the combined discharges would remain below the MRWPCA's permitted discharge capacity of 81.2 mgd throughout the year. An outfall capacity evaluation conducted in 2012 (Trussell Technologies, 2012) indicates that even under the worst- case conditions when additional ports are closed and outfall capacity is reduced to 41.1 mgd, the outfall has sufficient capacity to accommodate the additional brine stream.

Maximum instantaneous flows measured in the outfall between 1998 and 2012 (MRWPCA, 2013) ranged from 40.4 mgd to 59.9 mgd. This data indicates that even during peak storm events there would be sufficient capacity in the outfall to accept the brine generated by the MPWSP Desalination Plant year-round, assuming the existing outfall capacity of 81.2 mgd. However, as discussed in Section 3.2.2.5, Brine Storage and Disposal of Chapter 3, Description of Proposed Project, the brine stream, when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant, could exceed the capacity of the outfall and diffuser during large storm events. Based on previous studies prepared by Trussell Technologies that assumed up to 23.7 mgd of brine would be discharged through the outfall (compared to approximately 14 mgd under the MPWSP) and outfall capacity is reduced to 41.4 mgd, 6 hours of storage capacity would provide more than adequate storage during periods of peak effluent flow (Trussell Technologies, 2012). The 3-million-gallon brine storage basin described in Section 3.2.2.5 has sufficient capacity to detain flows from approximately 6 hours of desalination plant operations. Thus, the impact related to outfall capacity would be less than significant.

Impact Conclusion

As described in Impacts 4.3-4 and 4.3-5 in Section 4.3, Surface Water Hydrology and Water Quality, both the "brine only" discharges and the combined discharges would comply with Ocean Plan water quality objectives for all assessed constituents. However, certain constituents would become elevated under several assessed discharge scenarios. **Mitigation Measures 4.3-4** and **4.3-5** would reduce the water quality impact associated with potential exceedances of the Ocean Plan water quality objectives to a less-than-significant level by requiring CalAm to conduct water quality assessments prior to MPWSP operation and to implement a comprehensive Monitoring and Reporting Plan that is consistent with the Ocean Plan requirements.

None of the treatment processes at the MPWSP Desalination Plant site and none of the other proposed project facilities would generate wastewater during operations that would require treatment at the MRWPCA Regional Wastewater Treatment Plant. Even during peak storm events, there would be sufficient capacity in the outfall to accept the brine generated by the MPWSP Desalination Plant year-round. The operations of the proposed project would not result in inadequate capacity at the existing wastewater treatment plant or the existing outfall and the impact would be less than significant.

Mitigation Measures

Mitigation Measures 4.3-4 and 4.3-5 apply to MPWSP Desalination Plant operations.

> **Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance.**
>
> **Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives.**
>
> (See Section 4.3, Surface Water Hydrology and Water Quality, for the description.)

Impact 4.13-5: Increased corrosion of the MRWPCA outfall as a result of brine discharge associated with project operations. (*Less than Significant with Mitigation*)

As discussed above under Impact 4.13-4, the MRWPCA utilizes the existing ocean outfall and diffuser to discharge secondary treated wastewater effluent into Monterey Bay from the MRWPCA Regional Wastewater Treatment Plant. The existing 60-inch-diameter MRWPCA outfall pipeline includes a 13,000-foot-long unlined segment on land (starting at the regional wastewater treatment plant at about elevation +100), and a 9,880-foot-long unlined segment offshore. An unlined reinforced concrete beach junction box connects the land segment and the offshore segment of the outfall and is marked as Station 0+00 (E2 Consulting Engineering, 2015).

With implementation of the MPWSP, the brine produced during the reverse osmosis process at the MPWSP Desalination Plant would be conveyed to a brine mixing facility at the upstream end of the land segment of the outfall, which is located at the MRWPCA Regional Wastewater Treatment Plant. The brine would flow through the land segment, through the beach junction box,

and through the offshore segment prior to discharging into Monterey Bay at the diffuser. An evaluation of the potential for increased corrosion of the offshore segment of the outfall due to the addition of brine discharge was completed by E2 Consulting Engineers (2015). Brown and Caldwell provided further analysis of the condition of the nearshore ocean outfall (Brown and Caldwell, 2017a). In addition, Brown and Caldwell and JDH Corrosion Consultants, Inc. conducted an evaluation of the 13,000-foot-long land segment of the MRWPCA outfall in November 2016. The results of these analyses are summarized below.

MRWPCA Ocean Outfall – Offshore Segment

The MPWSP Desalination Plant would generate approximately 14 mgd of brine (including 0.4 mgd of decanted waste effluent) that would be discharged through the MRWPCA's existing ocean outfall and diffuser. The salinity of the brine stream is estimated to range between approximately 57 and 58 parts per thousand (ppt), compared to the salinity of seawater in Monterey Bay, which ranges from 33.1 to 34.2 ppt (see Section 4.3, Surface Water Hydrology and Water Quality, for additional discussion regarding water quality impacts). The "brine only" discharges and combined discharges of brine and wastewater effluent would expose submerged metals and concrete in the outfall and diffuser to high salinity water.

The E2 assessment of the existing condition of the offshore segment of the outfall included field exploration, sampling, and laboratory testing of the samples. The laboratory results found the concrete strength to be excellent (over 7,500 pounds per square inch [psi] compared to designed compressive strength of 4,000 psi). The assessment concluded that, although chloride levels in the concrete samples were nine times the threshold for corrosion, the anaerobic environment present in the continuously exposed offshore segment of the outfall is the reason corrosion is not evident (i.e., there is no oxygen available for oxidation) (E2 Consulting Engineers, 2015).

The E2 assessment concluded that the existing offshore segment of the outfall pipeline could accept the brine stream from the MPWSP Desalination Plant without serious deterioration and that the reinforcing steel in the pipe would continue to be protected from corrosion by the anaerobic environment of its immersion, which precludes the introduction of oxygen into the steel/concrete interface. Even with the increased chloride concentrations from the brine, the corrosion of the offshore segment of the outfall would continue to be controlled by the availability, or lack, of oxygen. The offshore segment of the outfall pipe could be expected to live up to its original intended life expectancy provided oxygen is not introduced into the discharges and anaerobic conditions remain.

However, the E2 assessment found that some turbulence might be expected to occur in the existing beach junction box at the shoreline and the approximately first 100 feet of the offshore segment of the outfall pipeline when brine is introduced. This turbulence could introduce oxygen into the outfall and increase the potential for corrosion, which would be a significant impact of the project. The assessment recommended that the 100-foot-long segment of outfall pipe immediately downstream of the beach junction box be lined to ensure any oxygen introduced by turbulence does not cause corrosion of the concrete pipe (E2 Consulting Engineering, 2015; see Mitigation Measure 4.13-5a, below).

Due to storm events in the winter of 2015/16, the beach junction box and a portion of the existing outfall became exposed on the beach in front of CEMEX. Under an emergency Coastal Development Permit from the California Coastal Commission, MRWPCA was allowed to make temporary repairs, but is required to relocate the exposed components. As a project separate and independent from the MPWSP (but included in the cumulative scenario relevant to the MPWSP; see Table 4.1-2), MRWPCA would apply for a separate Coastal Development Permit and would relocate a pre-lined beach junction box inland by 650 to 1,000 feet, and install 650 to 1,000 feet of new 60-inch diameter pre-lined outfall pipe on the downstream side of the junction box, which would connect to the existing ocean outfall. That independent project would be completed prior to accepting MPWSP brine discharge into the outfall and would protect the beach junction structure and the portion of the offshore segment of the outfall that was of concern for increased corrosion from brine.

Although the E2 assessment concluded that the reinforcing steel in the outfall would be protected from corrosion by the anaerobic environment, Brown and Caldwell (January 9, 2017a) determined that the stainless steel clamps that were installed inside the outfall in 1990/1991 as a protective measure following the 1989 Loma Prieta earthquake, could be susceptible to chloride corrosion, which would be a significant impact. The *Beach Structure Evaluation and Protective Measures Technical Memorandum* (Brown and Caldwell, 2017a) recommends replacing all of the WEKO® seal clamps (approximately 20) in the nearshore area of the ocean outfall prior to relocation of the beach junction box, so that the existing beach junction box can be used by divers to access the outfall. Therefore, with implementation of **Mitigation Measure 4.13-5a (Replacement of WEKO Seal Clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall)**, which requires the removal of the existing WEKO seal clamps, installation of new corrosion-resistant clamps within the nearshore portion of the ocean outfall prior to relocation of the beach junction structure, and periodic inspections of the outfall thereafter, the impact on the outfall resulting from the implementation of the MPWSP would be reduced to a less-than-significant level.

MRWPCA Ocean Outfall – Land Segment

Brown and Caldwell and JDH Corrosion Consultants, Inc. (JDH) conducted an evaluation of the 13,000-foot-long land segment of the MRWPCA outfall in November 2016. Inspections occurred at the MRWPCA Regional Wastewater Treatment Plant effluent junction structure and at the access manhole adjacent to Del Monte Boulevard. JDH personnel inspected approximately 250 feet of the outfall pipe downstream of the effluent junction structure and 250 feet upstream and downstream of the Del Monte Boulevard access point. JDH documented visual observations and collected concrete samples at four locations within the inspection area. In general, the reinforced concrete outfall pipe was found to be in good condition and inspectors saw no visible signs of corrosion. Similarly, the sample results indicated that the pipe was in good condition. Brown and Caldwell's *Land Outfall Pipeline Evaluation and Protective Measures Technical Memorandum* (2017b) concluded, however, that brine effluent would likely cause the outfall to deteriorate, and this would be considered a significant impact. However, with implementation of **Mitigation Measure 4.13-5b (Install Protective Lining in Land Segment of MRWPCA Ocean Outfall)**, which requires the phased installation of a protective liner system along the

entire approximately 13,000-foot-long land segment of the outfall, the impact would be reduced to a less-than-significant level. Thereafter, periodic inspections of the land segment would be performed to ensure the continued integrity of the outfall pipe.

The 2017 Technical Memo (Brown and Caldwell, 2017b) recommended two types of liners: a Vylon slip liner and a spiral wound HDPE liner; each can be successfully installed over long distances. Both types of liners would involve the same installation methods and are therefore, discussed simultaneously in Mitigation Measure 4.13-5b.

Mitigation Measures

Mitigation Measure 4.13-5a applies to the MRWPCA outfall.

> **Mitigation Measure 4.13-5a: Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall.**
>
> Prior to operation of the MPWSP Desalination Plant, and as part of an agreement with MRWPCA to use the outfall for brine discharge, CalAm shall protect the offshore segment of the MRWPCA ocean outfall from corrosion, by replacing the existing WEKO seal clamps in the nearshore portion of the ocean outfall with new corrosion-resistant clamps.
>
> Installation of the WEKO seal clamps shall occur prior to relocation of the existing beach junction box to allow for optimal access to the outfall. Construction shall occur in late summer/early fall, during the irrigation season, when flows in the outfall would typically be de minimis; this timing would also be late in the snowy plover nesting season when eggs would have hatched. To allow access to the offshore portion of the outfall through the existing beach junction box and to isolate any flow from the ocean outfall, a fabricated accessway shall be constructed within the existing beach junction box. Bypass pumping shall be set up with a surface pump and temporary discharge piping buried in sand, and any effluent shall be discharged into the tidal zone. To protect against any emergency high effluent flows resulting from process upsets of the treatment plant, an opening shall be provided in the fabricated accessway to allow for controlled releases.
>
> Construction access shall follow along the existing outfall access road. The staging and work area shall be created on already disturbed ground at the western end of the access road and consist of no larger than a 50 square foot area for divers and diving equipment, a 20-foot container for equipment storage and a 5kw generator (in a sound enclosure) to be used if power is not available onsite. If the beach junction box and discharge pipeline are covered by sand, or if sand needs to be removed for staging, excavation would be accomplished using a backhoe or excavator. Up to one-half acre around the junction structure may be disturbed. Two working shifts per day may be required, and the installation would take approximately 6-8 weeks.
>
> During construction, beach access shall remain open, with the potential exception of extreme high tide events. The contractor shall install temporary fencing around the construction site and construction shall be prohibited outside of the defined construction, staging, and storage areas. Construction work shall not be conducted seaward of the mean high water line unless tidal waters have receded from the authorized work areas. Construction vehicles operating on the beach shall be rubber-tired, and while in operation

shall remain as high on the upper beach as possible to avoid contact with ocean waters and intertidal areas. Any construction materials and equipment placed on the beach during daylight hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs, with the exception of the storage of larger materials beyond the reach of tidal waters for which moving each day would be extremely difficult. Any larger materials intended to be left on the beach overnight must be approved by the Coastal Development Permit issuing agency and shall be subject to a contingency plan for moving materials in the event of a tidal wave/surge. All accessways impacted by construction activities shall be restored to their pre-construction condition or better within 3 days of completion of construction. Any beach sand in the area that is impacted by construction shall be filtered as necessary to remove construction debris. Construction areas shall maintain good construction site housekeeping controls and procedures (leak/spill clean-up; cover equipment in rain; cover exposed piles of soil/waste; dispose of waste properly; remove construction debris from beach). All construction activities that result in discharge of materials, polluted runoff, or wastes to the beach or the adjacent marine environment are prohibited. All exposed slopes and soil surface in and/or adjacent to the construction area shall be stabilized with erosion control best management practices.

CalAm shall enter into an agreement with MRWPCA to perform periodic inspections of the offshore portion of the MRWPCA outfall and diffuser. Annual inspections shall occur for the first three years after the MPWSP Desalination Plant is brought online. Thereafter, the offshore portion of the outfall shall be inspected every five years. During each inspection, photo documentation shall be provided for all areas of inspections, regardless of findings, to provide for photographic comparison over time. All inspections shall include documentation of the thickness of scaling, any exposure or corrosion of reinforcing steel, significant cracking or spalling of concrete, and any pitting of metals. Any necessary repairs to the outfall and/or diffuser shall be identified and performed.

Mitigation Measure 4.13-5b applies to the MRWPCA outfall.

Mitigation Measure 4.13-5b: Install Protective Lining in Land Segment of MRWPCA Ocean Outfall.

Prior to operation of the MPWSP Desalination Plant, and as part of an agreement with MRWPCA to use the outfall for brine discharge, CalAm shall line the land segment of the outfall with a protective liner system.

Installation of the liner shall occur only during the irrigation season (April through September), when flows in the outfall would be minimal. Installation of the liner in any given portion of the land segment is not expected to exceed 7 to 10 days. MRWPCA has identified 10 locations within the MRWPCA right-of-way (see **Figure 4.13-1**) from which CalAm or its contractor can access the land segment for installation of the liner; only these locations shall be used. Contractors shall install temporary fencing to denote the access limits for construction crews. The excavation pit at each access point shall be located directly above the outfall pipe and shall not exceed a size of 12 feet by 25 feet. Soils shall be stockpiled within the existing outfall right-of-way, and topsoil shall be stored in a separate pile for use in restoration following installation. Erosion and dust control measures shall comply with the applicable Stormwater Pollution Prevention Plan (SWPPP). After liner installation, the contractor shall restore soil in the pits to nearly pre-construction compaction levels and shall replace stockpiled topsoil to match pre-construction elevations.

To address the small amount of effluent flowing through the portion of the land segment to be lined between April and September, the contractor shall plug and dewater the outfall segment being lined, if needed, and use a 24-inch diameter bypass pipe to divert flows around the affected portion of the outfall.

SOURCE: MRWPCA, 2017

Figure 4.13-1
Proposed Access Pit Locations

4.13.5.3 Secondary Impacts of Mitigation Measure 4.13-5a

Potential secondary impacts associated with the implementation of **Mitigation Measure 4.13-5a (Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall)** are discussed below and would be associated with temporary impacts on aesthetic resources on the beach, conformity with land use plans and policies, limitations to beach access during high tide due to temporary fencing at the construction locations, greenhouse gas emissions and air quality impacts from the potential use of a 5 kW generator, and potential effects on biological resources from beach disturbance. Impacts would be similar to impacts identified for the proposed project construction and would be mitigated by the same measures identified for the project throughout Chapter 4.

Surface Water Quality

As discussed in Impact 4.3-1 in Section 4.3, Surface Water Hydrology and Water Quality, all project components would be subject to the NPDES Construction General Permit requirements and, pursuant to these requirements, a SWPPP would be prepared to include specific measures and conditions to reduce or eliminate stormwater flow carrying any pollutants or sediment from construction activities. The SWPPP would apply to work performed under this mitigation measure and its implementation would ensure that surface water quality impacts would be less than significant.

Aesthetic Resources

The construction area would be located in the Beaches and Coastal Dunes landscape unit near the CEMEX sand mining facility. As described in Section 4.14.2.3, Visual Setting of the Project Area, the site proposed for the staging area has a high aesthetic resource value. Activities associated with WEKO seal clamp replacement could result in temporary impacts on scenic resources and the visual character of the project area and vicinity. Activities, equipment, and staging areas would be temporarily visible from multiple public vantage points for approximately 6 to 8 weeks. Due to the site's topography and vegetation, views of the work areas from the east would be limited and the worksite would be largely screened from view by the intervening dunes and Monterey Cypress trees along the site's eastern perimeter. The work areas would be visible to people walking along the beach and from Monterey Bay. WEKO seal clamp replacement activities would contrast with the site's existing setting, and would appear dominant relative to the site's features and existing facilities and operations. While installation activities would temporarily detract from the naturalistic aesthetic of the coastal dunes as viewed by passersby, these activities would not impair permanent public views of the coast. For these reasons, project construction activities would have a moderate visual impact severity, and the impact would be temporary and less than significant.

Land Use, Lands Use Planning and Recreation

The WEKO seal clamp replacement activities would occur in an area identified in the *City of Marina General Plan* as Habitat Reserve and Other Open Spaces and zoned for Coastal Conservation and Development (CD) uses. The *City of Marina Local Coastal Program* and zoning regulations provide for conditional approval of coastal-dependent industrial land uses with a Use Permit and/or Coastal Development Permit (CDP). According to Marina Local Coastal Program Section 17.43.070.D, repair or maintenance of an outfall is subject to the requirements in a Coastal Development Permit. Since replacement of the WEKO seal clamps would maintain the resiliency of the MRWPCA outfall, CalAm will need to include the WEKO seal clamp replacement and associated activities in a CDP application. Based upon the permitted uses of the area, the City of Marina should be able to make findings in support of CDP issuance to include the replacement of the WEKO seal clamps, and with the requisite CDP, the WEKO seal replacement activities would not conflict with land use plan and zoning designations.

There is no vertical public access in the vicinity of the WEKO seal clamp replacement site, and the nearest vertical coastal accessways are located 1 mile south at Marina Dunes Preserve and 1.25 miles north at the Salinas River National Wildlife Refuge. While the beach seaward of the CEMEX site is used by the public, use levels at the site are low. Temporary fencing used to contain the project work area could impede lateral access along the beach during extreme high tides throughout the 6- to 8-week installation timeframe, a potentially significant impact. However, the impacts would be temporary and affected areas would thereafter be returned to their approximate pre-construction condition. Implementation of the following elements of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan) would reduce impacts to a less-than-significant level:

- At least two weeks prior to construction, post signage along all potentially affected recreational trails and coastal access points to warn users of construction activities. The

signs shall include information regarding the nature of construction activities, duration, and detour routes. Signage shall be composed of or encased in weatherproof material and posted in conspicuous locations, including on park message boards, and existing wayfinding signage and kiosks, for the duration of the closure period. At the end of the closure period, CalAm or its contractors shall retrieve all notice materials.

- CalAm and its contractors shall schedule construction activities to minimize impacts during heavy recreational use periods (e.g. weekends and holidays).
- All equipment and materials shall be stored in the designated contractor staging areas.

Air Quality and Greenhouse Gas Emissions

Combined with short-term emissions of the proposed project as a whole, construction could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and PM_{10} standards, which would be a significant impact. Mitigation Measures 4.10-1a, 1b, and 1c would reduce PM_{10} to a less than significant level. Construction activities associated with installation of the WEKO seal clamps would contribute to the overall impact of the proposed project, which would be less than significant with mitigation. Likewise, construction would contribute to the total greenhouse gas emissions of the proposed project, which exceeds the significance threshold, a significant impact. Mitigation Measure 4.11-1, GHG Emissions Reduction Plan, would reduce impacts to a less-than-significant level.

Terrestrial Biology

WEKO seal clamp replacement activities and the construction area described above could disturb up to 0.5 acre between the dunes and the beach. The area exhibits a similar terrestrial biological setting as the subsurface slant wells, described in Section 4.6.1.10, and in Table 4.6-2. Installation activities would be completed in late summer/early fall, which is late in the snowy plover nesting season (eggs would have hatched) to minimize any impact, but before the high wastewater flows in the late fall/early winter to minimize by-pass pumping requirements. However, construction activities would have the potential to significantly impact terrestrial biological resources in the vicinity of the project site. Therefore, implementation of the following mitigation measures identified in Section 4.6 would reduce impacts to a less-than-significant level:

- 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures;
- 4.6-1b: Construction Worker Environmental Awareness Training and Education Program;
- 4.6-1c: General Avoidance and Minimization Measures;
- 4.6-1d: Protective Measures for Western Snowy Plover;
- 4.6-1e: Avoidance and Minimization Measures for Special-status Plants;
- 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly;
- 4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard;
- 4.6-1i: Avoidance and Minimization Measures for Nesting Birds;

- 4.6-1n: Habitat Mitigation and Monitoring Plan;
- 4.6-1p: Control Measures for Spread of Invasive Plants;
- 4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas;
- 4.6-2b: Avoid, Minimize, and Compensate for Direct Construction Impacts to Sensitive Communities;
- 4.12-1b: General Noise Controls for Construction Equipment;
- 4.14-2: Site-Specific Nighttime Lighting Measures

In addition, activities associated with installation of the WEKO seal clamps could temporarily impact areas that may qualify as Primary and Secondary Habitat under the City of Marina Local Coastal Land Use Plan. Impacts on these communities would be mitigated to a less-than-significant level through implementation of the above mitigation measures.

4.13.5.4 Secondary Impacts of Mitigation Measure 4.13-5b

Potential secondary impacts associated with the implementation of **Mitigation Measure 4.13-5b (Install Protective Lining in Land Segment of MRWPCA Ocean Outfall)** are discussed below. Secondary impacts from staging of equipment, the excavation of access pits, the installation of the liner and effluent bypass pipelines, and site closure and clean-up, could result in possible disturbances to roadways, recreational trails, farmland, ranchland, and terrestrial biological resources. Potential effects on air quality and greenhouse gas emissions could also result. Impacts would be similar to impacts identified for the proposed project construction and would be mitigated by the same measures identified for the project throughout Chapter 4.

Traffic and Transportation

For installation of the temporary bypass pipe, utility crews would cut a 3-foot-wide trench across or adjacent to MRWPCA access roads, across Del Monte Boulevard, and across Lapis Road, to extend the bypass pipe between access pits. Traffic flow would be maintained on MRWPCA roads and Del Monte Boulevard through means of flaggers controlling alternate one-way traffic flow on the available one-lane width (implemented as part of Mitigation Measure 4.9-1, Traffic Control and Safety Assurance Plan). Two-way traffic flow would be restored after installation is complete through the use of steel traffic plates. Once work that is dependent upon this bypass pipe is complete, the trench would be reopened, with traffic flow again being maintained using the above-described alternate one-way traffic flow system until the trench is filled and the roadway resurfaced.

Lapis Road would be temporarily closed (one to two days) just north of the CEMEX access road, and traffic would be detoured to Del Monte Boulevard via the southern intersection of Lapis Road / Del Monte Boulevard (implemented as part of Mitigation Measure 4.9-1, Traffic Control and Safety Assurance Plan) while crews cut a trench, install the pipe, and cover with steel plates; two-way traffic flow would be restored. When work dependent upon the bypass pipe is complete, Lapis Road would again be temporarily closed and detoured in the same fashion as described above while the

trench is reopened and filled and the roadway resurfaced. This impact on traffic flow would be reduced to less than significant with the implementation of Mitigation Measure 4.9-1.

For outfall access points adjacent to the CEMEX access road, utility crews would excavate up to a 12-foot by 25-foot access pit(s). Soil would be stockpiled adjacent to the pit(s). No work would occur in the road, but construction equipment, materials, and trucks would use the CEMEX access road. Access for mining operations would continue and impacts would be less than significant. As discussed in Section 4.9, Traffic and Transportation, Mitigation Measures 4.9-1 (Traffic Control and Safety Assurance Plan) and 4.9-6 (Roadway Rehabilitation Program) would apply to all proposed project facilities and associated construction activities, and applicable measures would be implemented to ensure continued access.

For installation of the temporary bypass pipe, utility crews would cut a 3-foot-wide trench across the Monterey Peninsula Recreational Trail and backfill to original condition once the pipe has been installed. Once work is complete, the trench would be reopened, the pipe would be removed, and the surface would be returned to original condition. Construction would be of short duration (one to two days) and temporary access would be provided around the work area and the impact would be less than significant. Although this impact would be less than significant, implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan) would assist with recreational use during construction, further reducing any potential impact.

Farmland

For installation of the temporary bypass pipe, utility crews would cut a 3-foot-wide trench through the field that is currently cultivated in strawberries.

Outfall access would involve excavation of up to three 12-foot by 25-foot access pits within active farmland, and soil would be stockpiled within a larger footprint adjacent to the access pits within the MRWPCA right-of-way.

The work would be coordinated with the owners of the agricultural operations to take a portion of the field out of production, on a temporary, as-needed basis, and then restore the field to production upon construction completion. Lining would take no more than 7 to 10 days per segment and would occur during the irrigation season from April through September. Any impacts would be temporary and less than significant with implementation of Mitigation Measure 4.16-1, Minimize Disturbance to Farmland. Further, MRWPCA proposes to reimburse landowners for costs related to lost production (Brown and Caldwell, 2017b).

Terrestrial Biology

Utility crews would run the temporary bypass pipe across the ground surface of Armstrong Ranch; no trenching would be required. Up to one 12-foot by 25-foot access pit would be excavated, and soil would be stockpiled adjacent to the access pit within the MRWPCA right-of-way. Utility trucks would access Armstrong Ranch via unpaved roads that traverse the property. To install the bypass pipe, utility trucks would drive off-road along the scarred surface within the MRWPCA right-of-

way on Armstrong Ranch. Impacts on special-status or sensitive species, such as California tiger salamander that may use adjacent grassland as upland habitat, would be reduced to less than significant with implementation of the biological resources mitigation measures listed below.

The excavation pits would be located in areas with similar types of biological resources as the Source Water Pipeline, described in Section 4.6, Terrestrial Biological Resources. To avoid impacts on special-status or sensitive species at or between these access locations and in the staging area, the work required under this mitigation measure would be subject to the following mitigation measures:

- 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures;
- 4.6-1b: Construction Worker Environmental Awareness Training and Education Program;
- 4.6-1c: General Avoidance and Minimization Measures;
- 4.6-1d: Protective Measures for Western Snowy Plover;
- 4.6-1e: Avoidance and Minimization Measures for Special-status Plants;
- 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly;
- 4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard;
- 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl;
- 4.6-1i: Avoidance and Minimization Measures for Nesting Birds;
- 4.6-1j: Avoidance and Minimization Measures for American Badger;
- 4.6-1l: Avoidance and Minimization Measures for Special-status Bats;
- 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander;
- 4.6-1p: Control Measures for Spread of Invasive Plants; and if applicable,
- 4.6-1n: Habitat Mitigation and Monitoring Plan.

Implementation of these mitigation measures would ensure that site surveys would be completed by qualified biologists to identify any special-status or sensitive species, and if any special-status or sensitive species are identified, implementation of required avoidance and protection measures would ensure that impacts on special-status or sensitive species at the site are reduced to a less-than-significant level.

Air Quality and Greenhouse Gas Emissions

Construction equipment would include a backhoe, dump truck, flatbed truck, crane, and personal automobiles (pick-up trucks). Combined with short-term emissions of the proposed project as a whole, construction could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and PM_{10} standards, which would be a significant impact. Mitigation Measures 4.10-1a, 1b, and 1c would reduce PM_{10} to a less-than-significant level. Activities associated with

installation of the outfall liner would contribute to the impact of the proposed project as a whole, less than significant with mitigation. Likewise, construction would contribute to the total greenhouse gas emissions of the proposed project, which exceeds the significance threshold, a significant impact. Mitigation Measure 4.11-1, GHG Emissions Reduction Plan, would reduce impacts to a less-than-significant level.

4.13.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.13-C: Cumulative impacts related to public services and utilities (*Less than Significant with Mitigation*)

As discussed in Section 4.13.5, the MPWSP would have no impact on public services. Accordingly, the MPWSP would not cause or contribute to cumulative impacts related to public services.

The geographic scope for cumulative utilities systems impacts consists of the service areas of utility providers for wastewater treatment, water treatment, stormwater drainage, water supply, and solid waste landfill needs, as defined in Section 4.13.1. For example, the geographic scope for landfill capacity and compliance with solid waste statutes and regulations considerations encompasses Monterey County. Cumulatively significant impacts on utility systems could result if the incremental effects of the MPWSP during the construction and/or operations phases combined with effects from one or more of the cumulative projects listed in **Table 4.1-2** that would result in a cumulatively considerable impact.

4.13.6.1 Cumulative Construction Impacts

Damage to or Disruption of Existing Utilities and Relocation of Utilities

A cumulatively significant impact on utilities could result if the incremental impacts of the MPWSP combined with those of one or more of the cumulative projects would cause utility damage, extended periods of utility service disruptions, or multiple disruptions within a short timeframe. As described in Impact 4.13-1, construction of the MPWSP could damage or interfere with existing water, sewer, stormwater drainage, natural gas, electric, or communication utility service lines. MPWSP construction activities could involve accidental damage, temporary disconnection, or planned relocation of utility lines, each of which could interrupt service.

As discussed in Impact 4.13-1, the MPWSP's potential utility impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a (Confirm Utility Line Information)**, **4.13-1b (Coordinate Final Construction Plans with Affected Utilities)**, **4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities)**,

4.13-1d (Emergency Response Plan), **4.13-1e (Notify Local Fire Departments)**, and **4.13-1f (Ensure Prompt Reconnection of Utilities)**.

Cumulative projects that could cause utility impacts similar to those described for the MPWSP include those identified in **Table 4.1-2** involving future construction. Due to the localized nature of utilities, most potential impacts would likely be limited to construction areas or utility distribution subareas, rather than affecting the entire project area or utility service area. The incremental contribution of the residual (post-mitigation) effects of the MPWSP to a cumulative impact would not be substantial because most potential effects would be related to pipeline construction. Given the rate of pipeline installation (150 to 250 feet per day), MPWSP construction activities that have the potential to disrupt utility service would not occur in the vicinity of other cumulative projects for extended periods of time such that prolonged or frequent disruption of service would occur in the vicinity (or utility service subarea) of cumulative projects with potential to cause similar effects. Therefore, after implementation of mitigation measures described above, the MPWSP's residual effects would be minimal and would have a less than significant contribution to cumulative utility service impacts.

Landfill Capacity and Compliance with Solid Waste Statutes

A significant cumulative impact would occur if the incremental impacts of the MPWSP combined with those of one or more of the cumulative projects would generate waste volumes that exceed available landfill capacity, or if the handling of those materials would violate applicable solid waste statutes. As discussed in Impact 4.13-2, construction of the MPWSP would generate an estimated 25,110 cubic yards (or 37,665 tons) of excess spoils and construction debris. Conservatively assuming all MPWSP construction waste would be disposed at the Monterey Peninsula Landfill, the MPWSP would represent approximately 0.05 percent of the landfill's remaining capacity. Construction could be inconsistent with the Monterey County Integrated Waste Management Plan because the total volume of construction wastes and excess spoils could be landfilled if not recycled properly. Because the Integrated Waste Management Plan is intended to address countywide diversion goals, being inconsistent with this plan could result in a significant contribution to a potentially significant cumulative impact. Most of the cumulative projects listed in **Table 4.1-2** would also generate construction-related waste. Given the landfill's finite capacity and the potential for waste diversion, and conservatively assuming all cumulative projects would dispose of solid waste at the Monterey Peninsula Landfill, a cumulatively significant effect could occur if cumulative projects generating solid waste did not adhere to State requirements for diversion of solid waste from landfills (see Section 4.13.2, Regulatory Framework, for additional details). However, such policies were put in place to address cumulative impacts; therefore, it is unlikely that the projects in **Table 4.1-2** would result in significant adverse cumulative impacts on landfill capacity during construction. As described above, the proposed project would be required to implement **Mitigation Measure 4.13-2 (Construction Waste Reduction and Recycling Plan)**. Implementation of this measure would ensure consistency with the plan, and the residual impact therefore would be less than significant.

4.13.6.2 Cumulative Impacts during Project Operations

Landfill Capacity and Compliance with Solid Waste Statutes

As discussed in Impact 4.13-3, operation of the MPWSP Desalination Plant would generate approximately 5 cubic yards (or 7.5 tons) of sludge or "cake" per day that would be disposed of at the Monterey Peninsula Landfill. As described in Section 4.13, this would result in an average daily disposal of 8.75 tons over the six days per week the landfill operates. This volume would represent approximately 0.35 percent of the facility's available daily receiving capacity of 2,500 tons (the difference between permitted capacity and current actual daily intake) and would continue throughout the project's lifetime. Over the assumed 40-year operating lifetime of the MPWSP, disposal of cake would represent 0.02 percent of the landfill's current remaining lifetime capacity. There are no known opportunities for reusing or recycling these solids, so diverting them from landfill disposal is not an option. As discussed previously, many of the cumulative projects identified in **Table 4.1-2** would also generate wastes. Given the relatively small effect of the MPWSP waste disposal on daily and absolute landfill receiving capacity, and the comparatively large contribution anticipated by cumulative projects, the MPWSP's contribution to a cumulatively significant landfill capacity impact would be less than significant.

Generate Wastewater Flows that would Exceed Wastewater Treatment Requirements or the Capacity of the Existing Ocean Outfall

A significant cumulative impact would occur if the effects of the MPWSP combined with those of the cumulative projects would cause effluent flows to exceed the MRWPCA outfall's capacity or exceed wastewater treatment requirements. One of the projects in **Table 4.1-2** that could have the potential to contribute to cumulative wastewater flows is the Regional Urban Water Augmentation Project (RUWAP) Desalination Element. The effects of the MPWSP brine stream combined with the RUWAP Desalination Element brine stream were considered in the evaluation of the proposed project since the RUWAP flows would be included in the range of flows from the MRWPCA. Implementation of **Mitigation Measures 4.3-4** and **4.3-5** would manage the water quality impact associated with potential exceedances of the Ocean Plan water quality objectives by requiring CalAm to conduct water quality assessments prior to MPWSP implementation and to implement a comprehensive Monitoring and Reporting Plan that is consistent with the Ocean Plan requirements, to ensure this cumulative impact would be less than significant, and the project's contribution is less than significant.

The MPWSP's brine stream would add approximately 14 mgd to the MRWPCA outfall's discharge. Projects identified in **Table 4.1-2** that would increase residential, commercial, office, or institutional development would generate new wastewater streams, many of which would be routed to the MRWPCA's Regional Wastewater Treatment Plant. Much of these flows would be recycled for irrigation purposes during the dry season, but could become part of the wastewater stream during the wet season. In addition, the RUWAP Desalination Element, if it was implemented, would increase brine flows through the MRWPCA outfall and diffuser. Under normal operating conditions, additional cumulative project wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant, when combined with that of the MPWSP and

RUWAP brine streams, would not cause discharges to exceed the capacity of the existing ocean outfall except under extreme wet weather conditions (Trussell Technologies, 2012). The implementation of the RUWAP Recycled Water Element would deliver up to 1,400 afy of recycled water, and therefore, would reduce the volume of effluent that is discharged through the outfall and diffuser.

In addition, as discussed in Section 3.2.2.5, Brine Storage and Disposal of Chapter 3, Description of the Proposed Project, in the event that the brine stream combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant were to exceed the capacity of the outfall and diffuser during large storm events, CalAm would detain the MPWSP brine stream at the proposed brine storage basin until sufficient capacity is available in the outfall for discharge. The proposed 3-million-gallon brine storage basin has sufficient capacity to detain flows from approximately 6 hours of desalination plant operations, which represents the holding time necessary to avoid an exceedance during a worst-case scenario in which outfall capacity is reduced to approximately 41 mgd during instantaneous peak flows (Trussell Technologies, 2012). With detention, the MPWSP effluent would not substantially contribute to outfall capacity constraints. The effect of the MPWSP effluent on ocean outfall capacity impacts would be less than significant.

Increased Corrosion of the MRWPCA Outfall

A cumulatively significant impact would occur if the effects of the MPWSP combined with those of the cumulative projects would cause a substantial increase in corrosion of the MRWPCA outfall. As discussed in Impact 4.13-5, lack of oxygen at the offshore segment of the outfall would protect the outfall from increased corrosion and scaling due to anaerobic conditions. However, the land segment of the outfall, the existing junction box at the shoreline, and the first 100 feet of the offshore pipeline could experience aerobic conditions which would increase the potential for corrosion of these facilities, resulting in a significant impact. As discussed in Impact 4.13-5, it is assumed that the amount of treated wastewater effluent available for blending with (i.e., diluting) the brine stream would be highly variable throughout the year, and the brine stream could be discharged with little or no dilution for extended periods. **Mitigation Measure 4.13-5a (Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall)** requires the replacement of the existing WEKO seal clamps in the nearshore portion of the offshore outfall pipeline, periodic inspections of the outfall thereafter, and performance of any necessary corrosion-related repairs. Additionally, **Mitigation Measure 4.13-5b (Install Protective Lining in Land Segment of MRWPCA Ocean Outfall)** requires the application of a protective lining along the land segment.

Only two of the projects in **Table 4.1-2**, the RUWAP Recycled Water Element and the RUWAP Desalination Element, could potentially affect flows that utilize the outfall pipeline. The RUWAP Recycled Water Element could reduce the volume of wastewater discharged through the outfall during the summer months, while the RUWAP Desalination Element could increase the volume of brine effluent discharged through the outfall. Implementation of either project would result in an increase in the proportion of effluent that is composed of brine.

As noted previously, the analysis in Impact 4.13-5 assumes that the MPWSP brine stream could be discharged without dilution for extended periods since MRWPCA wastewater flows presently vary substantially across seasons. Therefore, MRWPCA wastewater flow reductions resulting from the RUWAP Recycled Water Element would not be expected to affect brine effluent-related corrosion or scaling of the MRWPCA outfall beyond that described for the MPWSP. The brine concentration in the RUWAP Desalination Element's effluent would be similar to that of the MPWSP; according to the RUWAP Draft EIR (2004) the brine from the proposed RUWAP desalination process would have an estimated total dissolved solids (TDS) level of 47,600 mg/L (or 47.6 ppt salinity) which is lower than the estimated salinity of the brine that would be generated by the proposed MPWSP (58.23 ppt, see Table 4.3-11). Although the total volume of brine would increase with the MPWSP and RUWAP Desalination Element, the combined salinity would not be expected to change substantially. Therefore, the combined salinity would be close to that described for the proposed project, and may still result in a significant cumulative impact. Implementation of Mitigation Measures 4.13-5a and 4.13-5b would substantially reduce the potential for MPWSP-related corrosion and scaling effects on the outfall. The residual potential for MPWSP operations to contribute to cumulative impacts on the MRWPCA outfall corrosion would be substantially reduced. Given that cumulative brine concentrations would not be substantially different from that of MPWSP operations alone, with mitigation, the proposed project's contribution to the cumulative impact involving corrosion of the MRWPCA outfall would be less than significant.

Cumulative Impacts of Secondary Impacts of Mitigation Measure 4.13-5a

A significant cumulative impact would occur if the effects of the MPWSP combined with those of the cumulative projects would cause substantial impacts on special-status species and habitat. Construction associated with the WEKO seal clamp installation would have the potential to cause significant adverse secondary impacts on terrestrial biological resources in the vicinity of the project site, including western snowy plover habitat, and other special status-plants and animals.

The Beach Junction Structure replacement project (No. 61) would begin directly after the WEKO seal clamps are installed, since the existing junction box would act as an accessway for divers to install the WEKO clamps, and would occur in the same area proposed for WEKO seal clamp installation activities. The Beach Junction Structure project would relocate the junction box inland by 650 to 1,000 feet and install 650 to 1,000 feet of new 60-inch diameter outfall pipe on the westward (ocean) side of the junction box, which would connect to the existing ocean outfall. This project has the potential to adversely impact special-status plants and animals and their habitats. It is expected that mitigation measures to reduce impacts on such resources would be included in the forthcoming EIR for that project; however, impacts may be significant and would contribute to cumulative effects.

As described above, mitigation measures for impacts on terrestrial biological resources would apply to the implementation of Mitigation Measure 4.13-5a. These mitigation measures would reduce impacts from installation of the WEKO seal clamps to a less-than-significant level, and residual impacts following implementation of mitigation would be negligible given the minor extent of disturbance associated with the WEKO seal clamp installation and the mitigation measures' focus

on avoiding impacts. Thus, after mitigation, impacts from Mitigation Measure 4.13-5a would result in a less than significant contribution to potentially significant cumulative effects.

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4.14.6 Direct and Indirect Effects of the Proposed Project		
4.14.7 Cumulative Effects of the Proposed Project		

This section addresses the potential aesthetic and visual quality impacts associated with implementation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project). Aesthetic resources, also referred to as visual resources, are comprised of the visible natural and built landscape features that exist in the project vicinity. The study area for aesthetic resources includes designated scenic roadways, scenic vistas, and other scenic resources, as well as the daytime and nighttime lighting environment in the project area.

Comments received on the April 2015 Draft EIR related to aesthetic resources concern the proposed project's compatibility with Fort Ord Dunes State Park, physical descriptions of the subsurface slant wells and MPWSP Desalination Plant, and recommendations for improvement measures related to facility design, screening, and nighttime lighting where not otherwise required to address a significant impact. This section has been modified to address these comments. Specifically, MPWSP's relationship to Fort Ord Dunes State Park is addressed in Section 4.14.6.1. Physical descriptions of the subsurface slant wells and MPWSP Desalination Plant are addressed in Section 4.14.6.2, Operational and Facility Siting Impacts. Recommended mitigation measures for facility design, screening, and nighttime lighting are addressed in Sections 4.14.6.1 and 4.14.6.2.

4.14.1 Introduction, Key Concepts, and Terminology

This assessment of the proposed project's impacts on aesthetic resources describes environmental baseline conditions in terms of visual character, visual quality, visual sensitivity, and landscape exposure; presents an evaluation of the potentially affected aesthetic resources as viewed from various points throughout the project area; and determines whether construction and/or operation of the proposed project components could adversely affect the identified aesthetic resources. The subsections that follow describe key terms and concepts used throughout this section.

4.14.1.1 Visual Character

Visual character is the unique set of landscape features that combines to make a view. These features include native landforms, water, and vegetation patterns as well as built features such as buildings roads, and other structures.

4.14.1.2 Aesthetic Resource Value

A site's overall aesthetic resource value is determined by considering three factors: visual quality, visual sensitivity, and landscape exposure. These three factors are described below.

Visual Quality

The intrinsic aesthetic appeal, or visual quality, of a landscape or scene is a function of both its natural elements and anthropogenic (human-induced) modifications. Landscapes composed of elements with compatible lines, shapes, forms, colors, and contrasts tend to be of high visual quality. Landscapes with high levels of disturbance that promote disharmony, reduce variety, or introduce chaotic assemblages of shapes and forms into a landscape (visual clutter) are generally considered to be of low visual quality. Occasionally, anthropogenic modifications may add to the aesthetic appeal of a landscape. For example, vineyards often add pleasing patterns and colors to a landscape. The visual quality of a particular setting is typically rated as low, moderate, or high depending on the relationships of the above-described landscape elements.

Visual Sensitivity

Visual sensitivity refers to the level of interest or concern the public has for a particular visible landscape. Areas that attract people because of their aesthetic appeal (e.g., parks, trails, and scenic highways, where expectations for aesthetically pleasing views are high) have high visual sensitivity. In contrast, developed urban areas, industrial parks, and other areas with highly modified landforms are typically considered to be of low visual sensitivity. This evaluation rates visual sensitivity as low, moderate, or high.

Landscape Exposure

Landscape exposure is a measure of the length of time (duration) and the frequency with which a particular landscape is generally observed. A rural landscape may be seen frequently and/or for long durations, but only by a few local residents, whereas an uninhabited landscape crossed by a highway may be seen by numerous travelers, but only for brief periods. In both cases, the landscape would be considered to have a high degree of exposure. The number of viewers and the duration of view are equally important in determining landscape exposure.

Consideration of the factors described above—visual quality, visual sensitivity, and landscape exposure—yields a qualitative measure of the overall aesthetic resource value of a given area. **Table 4.14-1** provides a matrix for assigning the aesthetic resource value of a site by ranking these factors as low, moderate, or high. Each factor contributes equally in determining the overall aesthetic resource value of a given landscape. The aesthetic resource value is determined by cross-referencing the visual quality ranking (column headings on top of horizontal axis), the landscape exposure (column headings on bottom of horizontal axis), and the visual sensitivity (row headings on vertical axis). For example, a site with a visual quality rating of moderate (center three columns), landscape exposure of high (center right column), and visual sensitivity of high (bottom row) would have an aesthetic resource value of high.

TABLE 4.14-1
MATRIX FOR RANKING AESTHETIC RESOURCE VALUE

		Visual Quality								
		Low			*Moderate*			*High*		
Visual Sensitivity	*Low*	L	L	M	L	M	M	M	M	M
	Moderate	L	M	M	M	M	M	M	M	H
	High	M	M	M	M	M	H	M	H	H
		Low	*Moderate*	*High*	*Low*	*Moderate*	*High*	*Low*	*Moderate*	*High*
		Landscape Exposure								

NOTES:
L = Low M = Moderate H = High

4.14.1.3 Visual Impact Severity

Visual impact severity is a measure of how profoundly the existing visual setting would be disturbed by implementation of the proposed project. The level of impact is typically evaluated from a public vantage point and takes into consideration the proposed structures, architectural details, and landscaping. Visual impact severity is given a low, moderate, or high rating depending on an evaluation of the following three factors: visual contrast with the surrounding setting; the dominance of the proposed project relative to the surrounding features; and the potential for the proposed project to impair public views of valued aesthetic features such as trees, ridgelines, water, sky, or other distinctive landforms.

4.14.2 Setting/Affected Environment

4.14.2.1 Scenic Routes

Several roads in the Monterey region have been designated as scenic roadways by the California Department of Transportation (Caltrans) and/or the local jurisdictions, or are deemed eligible for such designation. Designated scenic roadways and eligible scenic roadways in the project area include Highway 1, Highway 68, Reservation Road, and Carmel Valley Road. In addition, the Monterey Peninsula Recreational Trail is considered to be an important scenic route due to its sweeping coastal views.

Highway 1. Highway 1 is an important regional travel corridor within the project area. This highway varies from a two-lane surface state highway (with at-grade intersections) to a multi-lane freeway. Between the Santa Cruz County line and Highway 68, Highway 1 is eligible for designation as a scenic highway; the portion of Highway 1 between Highway 68 and the San Luis Obispo County line is a designated scenic highway; between the Salinas River and Highway 68, Highway 1 is eligible for designation as a scenic highway. Traffic volumes along Highway 1 are generally high, with average daily traffic ranging from 42,000 to 47,000 vehicles between Highway 156 and the city of Marina; and from 50,000 to 83,000 vehicles between Marina and the city of Monterey's southern boundary (Caltrans, 2015).

Highway 68. Highway 68, also known as the Monterey-Salinas Highway, is a state highway connecting Monterey with Salinas. The segment of Highway 68 extending from Highway 1 in the city of Monterey to the Salinas River is a state-designated scenic highway; the segment of Highway 68 extending from the Salinas River to the city of Salinas is eligible for designation as a scenic highway. Between the Highway 1 interchange in Monterey and the Reservation Road interchange in Spreckles, average daily traffic volumes on Highway 68 range from 21,800 to 29,000 vehicles (Caltrans, 2015).

Highway 156. Highway 156 is a state highway that serves as an important link between the Monterey Peninsula and destinations in the San Francisco Bay Area and Central Valley. The approximately 4-mile segment extending from Highway 1 to Highway 101 is a state-designated scenic highway. In addition, the approximately 1.5-mile segment of Highway 156 extending north from its junction with Highway 1 (north of Molera Road) through Castroville to the TAMC railroad overcrossing (west of Castroville Boulevard) is a Monterey County-designated scenic highway. Between Highway 1 and Highway 101, average daily traffic volumes on Highway 156 range from 29,000 to 31,000 vehicles (Caltrans, 2015).

Reservation Road. Reservation Road traverses the project area through both Marina and Monterey County, providing two travel lanes in each direction. The segment of Reservation Road that passes through unincorporated Monterey County is a County-proposed scenic corridor. The *City of Marina General Plan* indicates that Reservation Road provides scenic views of the inland hills in Marina (City of Marina, 2000).

Carmel Valley Road. Carmel Valley Road is a county-proposed scenic route from Highway 1 to Arroyo Seco Road. The *Monterey County General Plan* identifies the Carmel Valley as a prominent feature along this route. In the vicinity of the proposed Carmel Valley Pump Station site, Carmel Valley Road is both a four- and two-lane road. The segment between Highway 1 and Del Mesa Drive includes travel lanes in each direction. East of Del Mesa Drive, Carmel Valley Road provides one travel lane in each direction (Monterey County, 2010a).

Monterey Peninsula Recreational Trail. The Monterey Peninsula Recreational Trail is an 18-mile paved scenic path that extends from Castroville to Pacific Grove. Views from the trail include agricultural fields, open space and park lands, and the sandy beaches and dunes along the Monterey Bay coast.

4.14.2.2 Landscape Units

The coastal landscape of northern Monterey County is agriculturally rich, visually diverse, and recognized for its aesthetic character. This evaluation characterizes the visual setting in Monterey County and provides a framework for evaluating the visual effects of the proposed project by describing the region in terms of “landscape units” based on the Federal Highway Administration’s Method of Visual Resource Analysis (FHWA, 1987). The landscape units represent combinations of physical and cultural features that contribute to varying degrees of visual quality. For this analysis, landscape units are strictly aesthetic delineations based on factors such as land use, location, degree of urbanization, and boundaries of vegetation communities. The landscape units used in this evaluation to describe the regional landscape are: Urban and Built-up; Hillside

Residential; Agricultural; Beaches and Coastal Dunes; Grass and Rangeland; Riparian; Coastal Shrub; Oak Woodland; and Forested Hills. The distribution of the various landscape units in the project area and vicinity is shown in **Figure 4.14-1**; representative photographs of these landscape units are provided in **Figure 4.14-2**.

Urban and Built-up Landscape Unit

This landscape unit includes the cities of Monterey, Marina, Seaside, and Carmel Valley, as well as the surrounding unincorporated areas that are considerably built-up. This landscape unit is characterized by the predominance of anthropogenic features (i.e., urban development). Due to the high level of anthropogenic modifications, this landscape unit is generally considered to be of low visual quality. The proposed Brine Discharge Pipeline, Brine Mixing Box, the Pipeline to CSIP Pond, and the MPWSP Desalination Plant, as well as portions of the proposed Source Water Pipeline, the new Desalinated Water Pipeline, and the Castroville Pipeline would be constructed within or adjacent to the Urban and Built-up landscape unit north of Reservation Road. A portion of the Ryan Ranch–Bishop Interconnection Improvements, portions of the proposed new Transmission Main, ASR pipelines (ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline), ASR-5 Well and ASR-6 Well, and Carmel Valley Pump Station, would be constructed within or adjacent to the Urban and Built-up landscape unit south of Reservation Road. The Urban and Built-up areas in which the proposed facilities would be constructed range in visual quality from low (e.g., highly developed commercial/industrial corridors) to moderate (e.g., tree-lined neighborhood streets).

Hillside Residential Landscape Unit

This landscape unit consists of single-family residential housing on large lots in and around hillside areas. It is distinguished from the Urban and Built-up landscape unit by the substantially greater distance between dwellings. The hillsides are both wooded and open and often offer expansive views. The visual quality of this landscape unit is moderate to high because of its distinctive relief, semi-natural state, and open views of land, sky, and ocean. No project components would be constructed within the Hillside Residential landscape unit north of Reservation Road. A portion of the proposed Ryan Ranch–Bishop Interconnection Improvements as well as the Main System–Hidden Hills Interconnection Improvements would be located within or adjacent to the Hillside Residential landscape unit south of Reservation Road.

Agricultural Landscape Unit

North of Reservation Road, an Agricultural landscape unit extending along the Salinas River and north to the Salinas Valley is known for its rural and agricultural aesthetic. The quintessential rural landscape brings to mind vast agricultural fields, farmhouses, water towers, and small dusty towns. The visual quality of this landscape unit varies from moderate to high, depending on the degree to which cultural features (crops, utilities, industry, highways, etc.) either contribute to or detract from its original feel. Portions of the proposed Castroville Pipeline, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would be constructed adjacent to the Agricultural landscape unit north of Reservation Road.

There is no Agricultural landscape unit in the vicinity of the MPWSP facilities located south of Reservation Road.

Beaches and Coastal Dunes Landscape Unit

The Beaches and Coastal Dunes landscape unit is one of the most distinctive in the project area and tends to attract people because of its aesthetic appeal. The coastal dunes are up to 100 feet tall and have moderate to steep slopes stabilized to varying degrees by scattered patches of dune scrub. The dunes and adjacent Monterey Bay (within MBNMS) display soft forms, curved lines, and distinctive natural color contrasts that are visually appealing. This landscape unit contains gently sloped, broad, white-sand beaches that extend along an increasingly curved arc from Moss Landing to Monterey. The majority of this unit lies west of Highway 1, extends south from the Salinas River to a point near the Monterey/Pacific Grove city limits, and is generally of high visual quality. North of Reservation road, the proposed seawater intake system and a portion of the Source Water Pipeline would be located within the Beaches and Coastal Dunes landscape unit. South of Reservation Road, an approximately 2-mile segment of the new Transmission Main would be sited within the Beaches and Coastal Dunes landscape unit.

Grass and Rangeland Landscape Unit

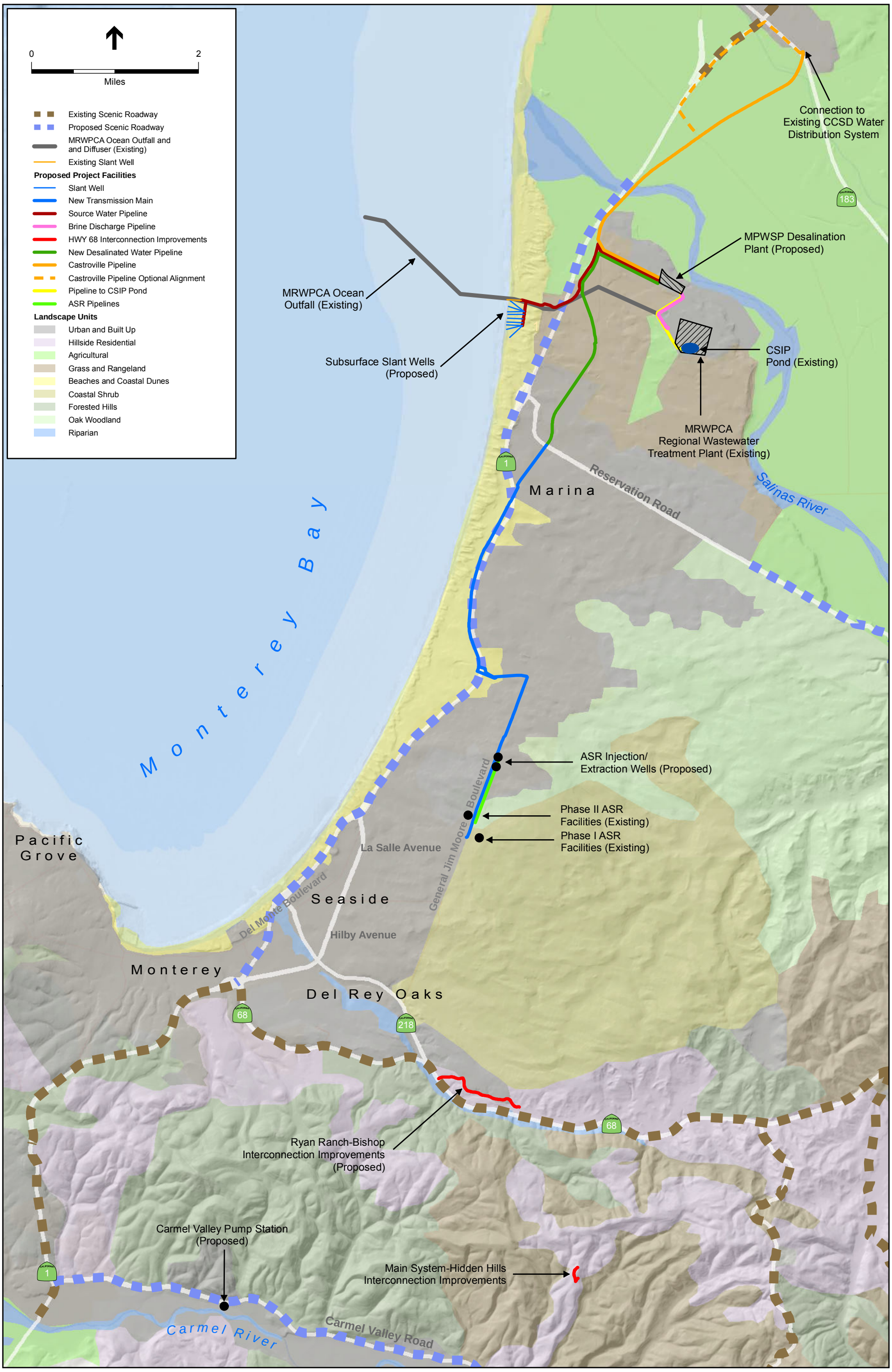
This landscape unit consists of natural grassland habitat or undulating grass-covered hills that have been previously logged or grazed. The visual quality of the Grass and Rangeland landscape unit is moderate to high depending on whether the area has been degraded by human activity. Land uses commonly found in this landscape unit include grazing land, farmland, and utility infrastructure. Portions of the proposed new Desalinated Water Pipeline, Source Water Pipeline, Pipeline to CSIP Pond, Brine Mixing Box, and Brine Discharge Pipeline would be constructed within or adjacent to the Grass and Rangeland landscape unit north of Reservation Road. No project components would be located within the Grass and Rangeland landscape unit south of Reservation Road.

Riparian Landscape Unit

This landscape unit consists of wetlands, marshes, sloughs, and stream corridors. These areas are often flat and contain wetland vegetation and riparian trees, including cottonwood, sycamores, and willows. Views of the sky and surroundings in the Riparian landscape unit are limited because of the low elevation. However, the presence of water, pleasing color contrasts, and a variety in vegetation give moderate to high visual quality to this landscape. North of Reservation Road, a segment of the proposed Castroville Pipeline would cross the Riparian Landscape Unit at the Salinas River. There are no proposed MPWSP facilities south of Reservation Road that would occur within the Riparian Landscape Unit.

Oak Woodland Landscape Unit

Patches of coast live oak woodland are in areas containing older, more stable and developed soils. The Oak Woodland landscape unit, which is present in and around the former Fort Ord military base, has a dense to moderately open canopy and sparse herbaceous understory. The topography of this landscape unit consists of hills with gentle to moderate slopes. The Oak Woodland unit has a savannah-like to more densely wooded appearance, depending on canopy cover, which ranges



SOURCE: ESA, 2016; Monterey County, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.14-1

Landscape Units and Scenic Roadways

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PL Urban Builtup Monterey

Hillside Residential

Agricultural

AG & Coastal Dunes

NM Rangeland

Riparian and Built up

Coastal Scrub

Oak Woodland

TF Forested Hills

SOURCE: ESA

MPWSP 205335.01

Figure 4.14-2

Landscape Units of Northern Monterey Coastal Area

from 20 to 60 percent of the ground surface. The visual quality of this landscape is moderate to high because this unit is primarily open space with minimal or no anthropogenic changes. There are no MPWSP facilities proposed for the Oak Woodland landscape unit.

Forested Hills Landscape Unit

This landscape unit primarily occurs in the mountains between the Pacific Ocean and the Carmel Valley, along the Highway 68 corridor, and in the Carmel Valley. The Forested Hills landscape unit consists almost entirely of large evergreen trees on moderate to steep slopes. Roads may crisscross the landscape, but these areas are typically remote and devoid of homes or other structures. The visual quality of this landscape is moderate to high depending on the steepness of topography, availability of views, and the degree of forest cover. There are no project components proposed within or adjacent to this landscape unit.

4.14.2.3 Visual Setting of the Project Area

This subsection describes the existing visual character of the areas in which MPWSP components would be constructed. In addition, photographs taken from representative public vantage points portrays the visual character of these locations. **Figure 4.14-2** presents the general setting photographs, which represent the landscape units depicted in **Figure 4.14-1**. **Figures 4.14-3a** and **4.14-3b** depict specific sites where MPWSP components are proposed.

The visual setting of each proposed facility site is described below in terms of its location within a particular landscape unit and its visual quality, visual sensitivity, and landscape exposure. The assigned rating for aesthetic resource value (low, moderate, or high) is based on a combination of these three factors, as shown in the matrix provided in **Table 4.14-1**. Existing lighting conditions at each site are also described relative to currently visible light sources.

Subsurface Slant Wells

The proposed subsurface slant wells would be located west of Highway 1 in the Beaches and Coastal Dunes landscape unit at the CEMEX sand mining facility (see **Figure 4.14-3a**, Photo 1). The CEMEX site is characterized by highly disturbed, relatively uniform sandy basins that are devoid of vegetation and surrounded by steeply sloping, sparsely vegetated, white-sand dunes. The site contains cleared and bladed roads through the dunes and vegetation; dewatering pits; material stockpiles; a graveled equipment staging area and storage yard; several one-story administrative and warehouse structures; and several pieces of heavy equipment. Views of the area from passing vehicles on Highway 1 are partially screened by the intervening dunes and Monterey cypress trees along the site's eastern (landward) perimeter. Most of the site's facilities and operations are not visible from the beach, due to the intervening dune topography. A sand road and several vertical structures are visible from the beach (e.g., processing plant and bollards protecting an existing monitoring well). However, they generally appear distant and subordinate to the existing dune landscape features. Sources of light and glare in the vicinity include nighttime lighting emanating from the CEMEX facility and low-volume automobile headlights from Highway 1. The visual quality of the Beaches and Coastal Dunes landscape unit is generally high. However, due to

Photo 1. East-facing view of the CEMEX sand mining facility from beach access road (ESA, 2013).

Photo 2. Southeast-facing view from site of proposed MPWSP Desalination Plant (right) toward the Monterey Regional Environmental Park (ESA, 2013).

Photo 3. East-facing view from Charles Benson Road entrance to Monterey Regional Water Pollution Control Agency's Wastewater Treatment Plant site (ESA, 2013).

Photo 4. Northeast-facing view along General Jim Moore Boulevard of the proposed ASR injection/extraction wells site (ESA, 2013).

SOURCE: ESA, 2014

Figure 4.14-3a
Existing Setting

Photo 5. East-facing view of Fremont Street along new Monterey Pipeline alignment (ESA, 2013).

Photo 6 removed from Final EIR/EIS; Terminal Reservoir no longer proposed.

Photo 7. South-facing view of Monterey Pump Station site (ESA, 2013).

Photo 8. South-facing view of Carmel Valley Pump Station site (ESA, 2014).

SOURCE: ESA, 2014

205335.01 Monterey Peninsula Water Supply Project

Figure 4.14-3b
Existing Setting

extensive alterations to the natural features at the CEMEX facility, the visual quality of the site is considered moderate. The site's visual sensitivity is high because of its location along the coast and proximity to Highway 1, which is an eligible state scenic highway. The visual exposure of the site is low, since the site is partially screened by dunes and trees and is mainly visible only from automobiles traveling along Highway 1 at speeds of 60 miles per hour. Based on the above-described factors, the site for the proposed subsurface slant wells has a moderate aesthetic resource value.

MPWSP Desalination Plant

The proposed MPWSP Desalination Plant site lies within the Urban and Built-up landscape unit, adjacent to Charles Benson Road, southeast of the Dole and Budweiser processing facility at the northeast corner of Monte Road and Neponset Road, and northwest of the Monterey Regional Environmental Park, also known as the Monterey County landfill. The site is bordered on the west and north by agricultural lands and the Salinas River, and on the south by Armstrong Ranch. The proposed MPWSP Desalination Plant site was previously used for agricultural production but is currently fallow; as a result, the site is mainly composed of dead, low-lying, ruderal brush. The landscape of the proposed site is highly disturbed, with old crop rows evident in the soil beneath the dead brush (see **Figure 4.14-3a**, Photo 2). To the northwest, the Dole and Budweiser processing facility consists of warehouses and a large asphalt loading, sorting, and truck staging/parking yard with outdoor lighting for nighttime activities. To the southeast, development within the adjacent Monterey Regional Environmental Park consists of office buildings and. Structures on the Monterey Regional Environmental Park site range in size from one- to two-story buildings (up to approximately 30 feet tall), ranging in size from approximately 4,500 square feet to over 100,000 square feet. South of the Monterey Regional Environmental Park lies the several-hundred-acre Monterey Regional Water Pollution Control Agency's (MRWPCA) Regional Wastewater Treatment Plant and drying beds. The treatment plant includes primary clarifiers, trickling filters, and a generation plant, each rising to heights of approximately 35 to 45 feet (see **Figure 4.14-3a**, Photo 3).

Existing sources of light and glare near the MPWSP Desalination Plant site include automobile headlights along Charles Benson Road, nighttime lighting from the Dole and Budweiser processing facility, and nighttime security lighting from adjacent agricultural operations and the Monterey Regional Environmental Park. Overall, given the site's location within the Urban and Built-up landscape unit, and considering the industrial development surrounding the site, the visual quality is considered low. The visual exposure is low because this site is only seen for short durations by travelers along Charles Benson Road and is screened by rows of trees to the south and west. The visual sensitivity of the site is also rated low, as the area is not located within a vista or view corridor and is not valued for recreational uses. Based on the above-described factors, the aesthetic resource value of the MPWSP Desalination Plant site is low.

Pipelines and Other Conveyance Facilities North of Reservation Road

All pipeline segments, including those proposed for areas north of Reservation Road, would be buried beneath the ground surface.

Source Water Pipeline

The Source Water Pipeline alignment would traverse approximately 2.2 miles of mostly undeveloped terrain in the Beaches and Coastal Dunes, Grass and Rangeland, and Urban and Built-up landscape units, characterized by mostly open and flat terrain consisting of coastal scrub, grassland, and agricultural fields. The proposed alignment would extend east along the CEMEX access road from the proposed subsurface slant wells (described above), past agricultural lands, and beneath Highway 1 to Lapis Road. Along Lapis Road, the Source Water Pipeline would be collocated with the new Desalinated Water Pipeline and extend north within or adjacent to the existing road rights-of-way. The pipeline would continue south along Del Monte Boulevard to Charles Benson Road. The approximately 0.8-mile segment of the proposed Source Water Pipeline between Del Monte Boulevard and the proposed MPWSP Desalination Plant site, and the Source Water Pipeline Optional Alignment, would be constructed along Charles Benson Road. This segment would traverse Urban and Built-up and Grass and Rangeland landscape units, characterized by increasingly intensive land uses and with views more constrained by topography and mature cypress trees along Charles Benson Road.

Sources of light and glare in the surrounding area include nighttime lighting emanating from the CEMEX sand mining facility and the Monterey Regional Environmental Park, and headlights from low-volume automobile traffic along nearby roadways. Overall, given its location along Highway 1 (an eligible state scenic highway) and the Monterey Peninsula Recreational Trail, the visual sensitivity of the proposed Source Water Pipeline alignment is considered high. Because of the alignment's proximity to the coast and Highway 1 as well as its location within visually appealing topography, there is a high likelihood that the public would notice visual changes along the proposed pipeline alignment. However, because the alignment area is only fleetingly visible, mainly by local and regional motorists traveling along Highway 1 (at speeds of 60 miles per hour) or from Del Monte Boulevard, Lapis Road, and Charles Benson Road, the visual exposure of the alignment would be low. Because the proposed alignment would traverse varied landscapes, it is given a moderate rating for visual quality. Based on the above-described factors, the aesthetic resource value of the proposed alignment for the Source Water Pipeline is moderate.

New Desalinated Water Pipeline

For purposes of the visual setting, the approximately 0.8-mile segment of the proposed new Desalinated Water Pipeline between Del Monte Boulevard and the proposed MPWSP Desalination Plant site, and the new Desalinated Water Pipeline Optional Alignment, would occur within the same setting as described above for the Source Water Pipeline Optional Alignment and corresponding segment of the proposed Source Water Pipeline. The segments of the new Desalinated Water Pipeline proposed along Lapis Road and Del Monte Boulevard north of Marina Green Drive would occur within the Grass and Rangeland landscape unit (containing mostly undeveloped terrain, low scrub vegetation, and fallow fields). The segment along Del Monte Boulevard south of Marina Green Drive would occur within the Urban and Built-up landscape unit, characterized by light industrial, commercial and residential development, and intermittent open space areas. Sources of light and glare in the surrounding area include nighttime lighting emanating

from existing development along Charles Benson Road and within the city of Marina and low-volume automobile headlights along nearby roadways.

Overall, given the new Desalinated Water Pipeline's location along a portion of the Monterey Peninsula Recreational Trail, the visual sensitivity of this alignment is considered moderate. For the same reason, there is a high likelihood that the public would notice visual changes along the pipeline alignment. However, because the alignment area is only fleetingly visible, mainly by local and regional motorists traveling along Highway 1 (at speeds of 60 miles per hour), or people traveling along Del Monte Boulevard, Lapis Road, and Charles Benson Road, the visual exposure of the alignment would be low. Given that the proposed pipeline would pass through both vast open space areas of fairly high visual quality and more densely developed areas of lower visual quality, the alignment is given a moderate rating for visual quality. Based on the above-described factors, the aesthetic resource value of the new Desalinated Water Pipeline route is moderate.

Castroville Pipeline

The approximately 0.8-mile segment of the proposed Castroville Pipeline between proposed MPWSP Desalination Plant site and Del Monte Boulevard, and the Castroville Pipeline Optional Alignment 2, would occur within the same setting as the Source Water Pipeline, Source Water Pipeline Optional Alignment, new Desalinated Water Pipeline, and new Desalinated Water Pipeline Optional Alignment. The segment extending from Del Monte Boulevard to the CCSD Well #3 on Merritt Street would follow the TAMC right-of-way. The proposed route is almost entirely within the Agricultural landscape unit, characterized by predominantly flat agricultural land in row crop production, and with expansive views of exposed earth, silhouettes of far-off hills, and big skies. There are few sources of nighttime lighting along the proposed alignment; those that do exist are generally limited to distant vehicle headlights and exterior lighting from development in the Castroville area near the alignment's northern terminus. Given the uniformity of the landscape form and pattern, the sweeping views, and its proximity to proposed and designated scenic highways, the alignment is considered to have a moderate scenic quality. Similarly, given the agricultural landscape's contribution to the scenic appeal of this region, the visual sensitivity of the alignment is also considered moderate. The landscape exposure of the alignment is considered low, owing to its lack of prominence in views from public vantage points; the alignment may be visible, but is not conspicuous to motorists traveling along Highways 1 or 156. Based on the above-described factors, the aesthetic resource value of the above-described segment of the Castroville Pipeline is moderate.

Castroville Pipeline Optional Alignment 1

Castroville Pipeline Optional Alignment 1 is within both the Agricultural and Urban and Built-up landscape units. The landscape character in the vicinity of Nashua Road and the Monterey Peninsula Recreational Trail is predominantly flat agricultural land in row crop production. The character of the segment along Merritt Way and Merritt Street is urban, dominated by commercial and light industrial type development. Sources of nighttime lighting include vehicles traveling along Highways 1 and 156, and exterior lighting from development in the Castroville area. For the reasons described for the proposed Castroville Pipeline, above, and with consideration for

Castroville's urban character, Optional Alignment is considered to have a moderate scenic quality and visual sensitivity. The landscape exposure of Optional Alignment is high; the alignment north of Nashua Road is visible to a large number of northbound motorists traveling on Highways 1 and 156 and users of the Monterey Peninsula Recreational Trail. However, as the alignment area is visible primarily to viewers in motion, views of the alignment are generally only fleetingly visible. For the above reasons, the aesthetic resource value of the Castroville Pipeline Optional Alignment is moderate.

Brine Discharge Pipeline and Pipeline to CSIP Pond

The proposed Brine Discharge Pipeline and Pipeline to CSIP Pond would extend from the MPWSP Desalination Plant site to the southern portion of the Monterey Regional Environmental Park. The Brine Mixing Box would be located at the southern terminus of the Brine Discharge Pipeline. The pipelines would be sited at the intersection of Grass and Rangeland, Urban and Built-up, and Agricultural landscape units, characterized by undeveloped grasslands and agricultural fields to the south and southwest and the Monterey Regional Environmental Park MRWPCA Treatment Plant to the north and east. Sources of light and glare in the surrounding area include nighttime lighting emanating from the Monterey Regional Environmental Park and MRWPCA Treatment Plant, and automobile headlights along Charles Benson Road.

The visual exposure of the site is low because it is only seen for short durations by motorists traveling along Charles Benson Road or by visitors to the Monterey Regional Environmental Park. Furthermore, the visual sensitivity is low, as the area is not located within a vista or view corridor and is not valued for recreational uses. Given the surrounding industrial development, the visual quality is considered low. Based on the above-described factors, the aesthetic resource value of the proposed Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond alignments is low.

Improvements to ASR System

ASR-5 and ASR-6 Wells

The proposed ASR-5 and ASR-6 Wells would be located in an area that is currently vegetated with oak and conifer trees in the Fitch Park military housing community, within the Urban and Built-up landscape unit (see **Figure 4.14-3a**, Photo 4). In the project vicinity, General Jim Moore Boulevard is a recently improved north-south thoroughfare surrounded by open space, recreational facilities, and suburban land uses. This four-lane roadway has two travel lanes in each direction, separated by a landscaped median. The densely vegetated surroundings of the ASR injection/extraction wells sites contribute to a moderate visual quality. Potential sources of light and glare include automobile headlights, streetlights along General Jim Moore Boulevard, nearby golf course facilities, and adjacent residential areas.

While numerous residences are located in the area, the ASR-5 and ASR-6 Wells would be visible only from those few homes adjacent to and west of General Jim Moore Boulevard. However, General Jim Moore Boulevard itself supports high daily traffic volumes, and the proposed ASR-5 and ASR-6 Wells sites would be slightly elevated above the road. As such, the sites are visible for

short durations by motorists along this transportation corridor, and for longer durations by pedestrians and bicyclists. Therefore, the visual exposure of the ASR-5 and ASR-6 Wells sites is considered moderate. Additionally, while these facilities would not be within view of any designated scenic vistas or corridors, they would be located in a heavily vegetated area. Therefore, the visual sensitivity of the area is considered moderate. Based on the above-described factors, the aesthetic resource value of the area is moderate.

ASR Pipelines

The ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline would extend along General Jim Moore Boulevard between the proposed ASR-5 and ASR-6 wells and existing facilities at Coe Avenue. The proposed pipelines would be sited within the road right-of-way, between the Urban and Built-up and Oak Woodland landscape units. Heading south from the ASR-5 and ASR-6 Wells, the landscape in this area is characterized by medium-density residential development and open space with dense stands of tall scrub vegetation and varying topography to the east, and golf course and public institutional development to the west. Sources of light and glare in the area include automobile headlights, streetlights along General Jim Moore Boulevard, nearby golf course facilities, and adjacent residential areas.

Despite the alignment's location within the Urban and Built-up landscape unit, the densely vegetated and open space areas on either side of the alignment contribute to the landscape's moderate visual quality. The pipeline would be sited within the road right-of-way, which is not an element important to the landscape's overall aesthetic appeal; therefore, the alignment is considered to have a low visual sensitivity. The alignment is visible primarily to motorists, but also cyclists and pedestrians traveling along General Jim Moore Boulevard. However, portions of the alignment may also be visible from residences situated along the roadway. As a result, the visual exposure is considered moderate. Based on the above-described factors, the aesthetic resource value for the proposed ASR Pipelines route is moderate.

Pipelines and Other Conveyance Facilities South of Reservation Road

New Transmission Main

The new Transmission Main would extend from its connection with the new Desalinated Water Pipeline at Reservation Road in Marina to existing facilities at the General Jim Moore Boulevard/Coe Avenue intersection in Seaside. The alignment would be sited within the Urban and Built-up and Beaches and Coastal Dunes landscape units— the former generally occurring to the east of Highway 1 and the latter generally occurring to the west. The character of the alignment area within Marina, east of Highway 1, is similar to that described previously for the adjacent segment of the new Desalinated Water Pipeline (south of Marina Green Drive), defined primarily by medium-density commercial and residential development. The visual character of the alignment area west of Highway 1, including that of the new Transmission Main optional alignment, is defined by the adjacent highway to the east and mostly undeveloped expanses of coastal dunes, low-lying dune vegetation, and intermittent glimpses of the ocean to the west. The character of the alignment area within Seaside, east of Highway 1, is similar to that described previously for the ASR pipelines, defined by low density institutional and commercial

development and residential communities, interspersed with large and mostly undeveloped patches of mature coastal scrub vegetation. Sources of light and glare along the alignment include nighttime lighting emanating from the developments in the vicinities of segments east of Highway 1, as well as automobile headlights along nearby roadways.

The visual quality of the proposed new Transmission Main alignment area overall is considered moderate, accounting for the mostly undeveloped coastal dunes landscape and associated views along the west side of Highway 1, as well as the more varied mix of urban, suburban, and open landscapes to the east. The visual sensitivity of the alignment area is considered moderate; segments to the west of Highway 1 are scenic areas, whereas segments along the more varied landscapes east of Highway 1 have less aesthetic appeal. The exposure of the site is considered high; the alignment area would be visible to users of the Monterey Peninsula Recreational Trail and motorists along Highway 1 and surface streets, as well as from adjacent residences as described for ASR Pipelines, above. Based on the above-described factors, the aesthetic resource value of the new Transmission Main route is high.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be located approximately 240 feet south of Carmel Valley Road near the intersection of Rancho San Carlos Road. The proposed pump station site falls within the Urban and Built-up landscape unit. The area is characterized by inconspicuous, large-lot, low-density single-family residential development nestled between undulating hills covered in coastal scrub and oak woodlands to the north, and the wooded Carmel River corridor to the south (see **Figure 4.14-3b**, Photo 8). Sources of nighttime lighting include exterior lighting from homes adjacent to the site and headlines from occasional traffic along Carmel Valley and Rancho San Carlos Roads. In this area, Carmel Valley Road is a proposed scenic highway. For these reasons, the visual quality of the landscape is high. However, the site's visual sensitivity and landscape exposure are considered low. Despite its proximity to Carmel Valley Road, the site contributes little to the landscape's aesthetic appeal; the site is flat, disturbed and without mature vegetation, and is not plainly visible from any nearby public vantage point. Based on the above-described factors, the aesthetic resource value of the Carmel Valley Pump Station site is moderate.

Ryan Ranch–Bishop Interconnection Improvements

The Ryan Ranch–Bishop Interconnection Improvements would extend from the intersection of Highway 68 and Ragsdale Drive, through the Ryan Ranch community, and then along Ragsdale Drive, Lower Ragsdale Drive, Wilson Drive, and Blue Larkspur Lane. This route is located between the Hillside Residential and Urban and Built-up landscape units, an area characterized by suburban commercial/business-park development amid large tracts of vegetated open space. Sources of light and glare include nighttime lighting emanating from the surrounding Urban and Built-up landscape and automobile headlights along nearby roadways. The visual sensitivity is considered high given this project component's proximity to Highway 68, which is a state scenic highway. The visual exposure is moderate, as the alignment area is visible to motorists for several blocks. Despite the nearby commercial/business-park development, the vegetated open spaces

surrounding the proposed Ryan Ranch–Bishop Interconnection Improvements contribute to a moderate visual quality. Based on the above-described factors, the aesthetic resource value of the Ryan Ranch–Bishop Interconnection Improvements is moderate.

Main System–Hidden Hills Interconnection Improvements

The Main System–Hidden Hills Interconnection Improvements alignment would extend for approximately 1,200 feet along Tierra Grande Drive within the Hillside Residential landscape unit. This area consists of single-family homes on large lots amid rolling hills and vast open spaces. Sources of light and glare include nighttime lighting emanating from nearby residences and automobile headlights along nearby roadways. The visual quality of this landscape unit is moderate due to the semi-natural state and open views of undeveloped lands. The visual exposure of the area is moderate. A small number of residents along Tierra Grande Drive would have views of construction activities associated with the Main System–Hidden Hills Interconnection Improvements. Motorists on upper Tierra Grande Drive would only have fleeting views of construction activities as they drove by the construction zone. The visual sensitivity of the site is rated moderate, because the adjacent area is mostly vegetated and undeveloped, yet not located within a vista or view corridor and not valued for recreational uses. Based on the above-described factors, the aesthetic resource value of the Main System–Hidden Hills Interconnection Improvements is moderate.

4.14.3 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines relevant to aesthetic resources. A brief summary of each is provided, along with a finding regarding the MPWSP's consistency with those regulatory requirements. The consistency findings concern the MPWSP as proposed, without mitigation. Where the MPWSP, as proposed, would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the MPWSP, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.14.6, Direct and Indirect Effects of the Proposed Project, below, where the potential inconsistency is addressed in more detail. Where applicable, the discussion in Section 4.14.6 identifies feasible mitigation that would resolve the potential inconsistency.

4.14.3.1 Federal Regulations

Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary

As discussed in previous sections, MBNMS regulations are found in Title 15, Part 922 of the Unites States Code. In addition, the Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary ("Desalination Plant Guidelines") were developed to guide siting, review, and development of desalination facilities in a manner that is protective of MBNMS resources. The Guidelines specify that desalination plants should be designed to minimize visual

impacts on coastal resources. The subsurface slant wells would be located near the coast. However, due to intervening dune topography, they would be mostly, if not entirely, screened from view from the beach and offshore areas within MBNMS. As such, the project would not be expected to conflict with the Guidelines. Furthermore, mitigation has been identified to ensure that the slant well facilities avoid or minimize contrast with the surrounding setting (see Impact 4.14-3 and Mitigation Measure 4.14-3a, Facility Design). No other MPWSP facilities are proposed for locations that would be visible from MBNMS or would inhibit views of MBNMS. The Desalination Plant Guidelines are further addressed in Section 6.4 of this EIR/EIS.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. The California Coastal Commission has jurisdiction for CZMA implementation throughout the state.[1] The California Coastal Act contains numerous enforceable policies that are directed at protecting and, where feasible, restoring coastal resources. The California Coastal Commission applies the Coastal Act's policies when reviewing applications for coastal development permits in California state waters, including coastal scenic resources. The Coastal Commission also applies land use policies when reviewing federally licensed and permitted activities to ensure they are consistent with the State's coastal management program in accordance with the CZMA federal consistency provision. The Coastal Commission considers an application for a coastal development permit to cover the requirement for an applicant submitting a consistency certification to the Coastal Commission. Typically, the Coastal Commission will provide its response (concurrence, conditional concurrence, or objection) in its staff report for the coastal development permit.

4.14.3.2 State Regulations

California Scenic Highway Program

Three roadways in the project area—Highway 1, Highway 156, and Highway 68—are officially designated as state scenic highways (see **Figure 4.14-1**; Caltrans, 2011). Their corridors (defined as the area of land roughly adjacent to and visible from the highway) are subject to protection and regulation with respect to land use, site planning, advertising, earthmoving, landscaping, and design. For Caltrans to grant the status of Officially Designated State Scenic Highway, the local jurisdiction(s) must implement a Corridor Protection Program, either by adopting ordinances, zoning, and/or planning policies to preserve the scenic quality of the corridor or by documenting that such regulations already exist in various portions of local codes. Policies to prevent the visual degradation of roadway view corridors include County of Monterey General Plan policy GMP-3.3 and North County Area Plan policy NC-3.1. MPWSP pipeline construction would involve ground disturbance and vegetation removal in proximity to designated scenic highways. However, such disturbances would be temporary, limited to the construction phase and, upon completion of construction, pipeline alignments would be returned to their approximate pre-

[1] Except within the San Francisco Bay-Delta where the Bay Conservation and Development Commission has authority for implementation of CZMA within its jurisdictional area.

construction condition. No other MPWSP components would be visible from designated scenic highways. Therefore, the MPWSP would be consistent with the California Scenic Highway Program.

California Coastal Act

Some MPWSP facilities would be located in the California Coastal Zone, as defined in the California Coastal Act (Section 30103). Land use decisions within the Coastal Zone are subject to the provisions of the Coastal Act, which is administered by the California Coastal Commission. The Coastal Act requires local governments in the Coastal Zone to prepare a Local Coastal Program (LCP) that contains a land use plan and land use regulations to implement provisions of the Coastal Act. Once the Commission "certifies" (approves) the LCP, permit-issuing authority is transferred to the local government, subject to the terms of the certified LCP. For local jurisdictions without a certified LCP, the Commission retains permit-issuing authority under the Coastal Act. As stated in Coastal Act Section 30251, a primary objective of the Coastal Commission is to protect the scenic and visual character of the California coast. The Commission applies this standard to its review of applications for coastal development permits as well as to LCP certifications. For the reasons described for the California Scenic Highway Program, MPWSP construction activities would be consistent with Coastal Act policies related to aesthetic resources. Operation of the MPWSP subsurface slant well operation would be potentially inconsistent with LCP policies for scenic resource protection that implement the Coastal Act's scenic resource protection policies (see Table 4.14-2). Potential effects on such coastal resources are discussed in Impacts 4.14-1 and 4.14-3.

4.14.3.3 Applicable Regional and Local Land Use Plans and Policies

Table 4.14-2 presents the regional and local land use plans, policies, and regulations pertaining to aesthetic resources that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect and indicates project consistency with these regulatory requirements. Where the analysis concludes the proposed project would be consistent with the applicable requirement, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project would be potentially inconsistent with the applicable requirement, the reader is referred to the specific impact discussion in Section 4.14.6, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.14-2
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO AESTHETIC RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Land Use - Primary Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 2.4.4:*** Wherever possible, lands with significant agricultural, natural habitat, or scenic value shall be retained and protected from degradation.	This policy is intended to preserve and protect significant landscape values.	Potentially Inconsistent: Pipeline construction would temporarily disrupt the scenic quality of Marina's coastal Highway 1 corridor. However, these facilities would be buried below ground surface. Following construction, work areas would be restored to their approximate pre-construction condition. Elements of the subsurface slant wells would be located aboveground and could be visible from the beach. This issue is addressed in Impact 4.14-3, which identifies mitigation measures that would minimize or avoid this potential inconsistency. *The project's implications for agricultural and biological resources are discussed in EIR/EIS Sections 4.16 and 4.6, respectively. Refer to **Tables 4.16-2** and **4.6-2** for additional discussion of project's conformity with applicable Marina General Plan policies related to these resource areas, respectively.*
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design & Development - Open Spaces and Significant Natural Features	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.17.3:*** Within built-up areas, existing topography shall be retained to make natural land forms more evident. This requirement of the General Plan may be fulfilled by minimizing grading and cutting and filling for roadways, by providing public space with outlooks at the higher elevations, and by locating taller structures on the upper slopes of hills.	This policy is intended to protect the visual integrity of natural landforms.	Consistent: Pipelines and the MPWSP seawater intake system would be sited primarily within previously disturbed areas and not involve substantial grading that would result in noticeable landform alterations in built-up areas.
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design & Development – Scenic and Cultural Resources	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.126.3:*** The visual character and scenic resources of the Marina Planning Area shall be protected for the enjoyment of current and future generations. To this end, ocean views from Highway One shall be maintained to the greatest possible extent; development on the primary ridgeline of the Marina dunes shall be avoided; new development proposed for the Armstrong Ranch should maintain an adequate setback from Highway One; landscape screening and restoration shall be provided as appropriate; new development should be sited and designed to retain scenic views of inland hills from Highway One, Reservation Road, and Blanco Road; and architectural review of projects shall continue to be required to ensure that building design and siting, materials, and landscaping are visually compatible with the surrounding areas.	This policy is intended to preserve and protect Marina's visual character and scenic resources.	Consistent: Pipeline and well construction would temporarily disrupt the scenic quality of Marina's coastal Highway 1 corridor. All pipelines would be buried below grounds surface. As discussed in Chapter 3, Description of the Proposed Project, following construction, all pipeline areas would be restored to their approximate pre-construction condition. Above-ground components of the subsurface slant wells would be low profile (8-12 inches in height) and distant (0.5 mile) from Highway 1. At this distance, these facilities would not be noticeable or obstruct coastal views from Highway 1.
City of Marina (coastal zone)	City of Marina Local Coastal Land Use Plan	Policies	Subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 33:*** To protect scenic and visual qualities of the Coastal area including protection of natural landforms, views to and along the ocean, and restoration and enhancement of visually degraded areas except in areas presently being mined.	This policy is intended to protect and enhance the scenic and visual quality of the Marina coast.	Potentially Inconsistent: Elements of the subsurface slant wells would be located aboveground; the above ground features could be visible, and the test well would be visible from the beach. This issue is addressed in Impact 4.14-3, which identifies mitigation measures that would minimize or avoid this potential inconsistency.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy COS 8.1:*** Participate in local and regional efforts to reduce light pollution of night skies.	This policy is intended to protect dark night skies from impacts of light pollution.	Consistent: None of the project components proposed within Seaside's jurisdiction would require nighttime construction or lighting. The ASR-5 and ASR-6 Wells may require temporary nighttime construction and nighttime lighting. However, these project components are proposed for lands under federal jurisdiction and, therefore, would not be subject to Seaside General Plan policies.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Urban Design	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy UD-1.1:*** Enhance the City's image and identity within the region's natural setting.	This policy is intended to ensure the aesthetic character of new development within the city is compatible with that of its natural surroundings.	Consistent: The ASR-5 and ASR-6 Wells would be constructed above ground and within Seaside, but would not be subject to this policy because they would be sited on federal lands. The remaining project components proposed within Seaside would not involve aboveground elements.

TABLE 4.14-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO AESTHETIC RESOURCES

Project Planning Region	Applicable Planning Document	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Urban Design	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy UD-3.1*:** Protect private views of significant natural features, such as the Monterey Bay, Roberts Lake, the Pacific Ocean, the surrounding mountains and other important viewsheds.	This policy is intended to protect private views from disruption caused by new development.	Consistent: The ASR-5 and ASR-6 Wells would be constructed above ground and within Seaside, but would not be subject to this policy because they would be sited on federal lands. The remaining project components proposed within Seaside would not involve aboveground elements.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Urban Design	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy UD-3.2*:** Preserve the unique public views visible from the Highway 1 Corridor between Fremont Boulevard and the northern boundary of the city as identified in the Fort Ord Reuse Authority (FORA) Plan.	This policy is intended to protect designated important public view corridors within the city.	Consistent: The proposed project would involve no aboveground components between Fremont Boulevard and the northern boundary of the city that would be visible from the Highway 1 corridor. Therefore, no unique views would be affected.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Urban Design	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Implementation Plan UD-3.2.1*:** Establish and enforce design guidelines in the Seaside Zoning Ordinance to preserve and protect the public viewsheds.	This policy is intended to protect designated important public viewsheds within the city.	Consistent: No above-ground project components are proposed within a Seaside designated public viewshed.
County of Monterey (inland areas)	Carmel Valley Master Plan	Area Development	Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements	***Policy CV-1.20:*** Design ("D") and site control ("S") overlay district designations shall be applied to the Carmel Valley area. Design review for all new development throughout the Valley, including proposals for existing lots of record, utilities, heavy commercial, and visitor accommodations, but excluding minor additions to existing development where those changes are not conspicuous from outside of the property, shall consider the following guidelines: b. Development either shall be visually compatible with the character of the valley and immediate surrounding areas or shall enhance the quality of areas that have been degraded by existing development. c. Materials and colors used in construction shall be selected for compatibility with the structural system of the building and with the appearance of the building's natural and man-made surroundings.	This policy is intended to ensure visual compatibility of development within the Carmel Valley Master Plan area.	Consistent: The Carmel Valley Pump Station would be comparable in scale to surrounding development. Further, prior to approval, the Carmel Valley Pump Station would be required to undergo design review, which would ensure policy conformity. The Main System-Hidden Hills Interconnection Improvements would be buried below ground and, therefore, would be visually compatible with the immediate surrounding areas.
County of Monterey (inland areas)	Greater Monterey Peninsula Area Plan	Conservation/Open space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements	***Policy GMP-3.3:*** The Greater Monterey Peninsula Scenic Highway Corridors and Visual Sensitivity Map (Figure 14) shall be used to designate visually "sensitive" and "highly sensitive" areas generally visible from designated Scenic Highways. The following policies shall apply to areas that have one of these designations: ***Part e:*** New development to be located in areas mapped as "sensitive" or "highly sensitive" and which would be visible from a designated scenic route shall maintain the visual character of the area. In order to adequately mitigate the visual impacts of development in such areas, the following shall be required: 1. Development shall be rendered compatible with the visual character of the area using appropriate siting, design, materials, and landscaping; 2. Development shall maintain no less than a 100-foot setback from the scenic route right-of-way; 3. The impact of any earth movement associated with the development shall be mitigated in such a manner that permanent scarring is not created; 4. Tree removal shall be minimized; 5. Landscape screening and restoration shall consist of locally native plant and tree species consistent with surrounding native vegetation; 6. Architectural review of projects shall be required to ensure visual compatibility of the development with the surrounding area; and 7. New development in open grassland areas shall minimize its impact on the uninterrupted viewshed.	This policy is intended to protect designated important views of scenic areas generally visible from designated scenic highways.	Consistent: Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and Ryan Ranch-Bishop Interconnection Improvements construction activities would occur within areas identified by the County as "sensitive" or "highly sensitive" and would be visible during construction from designated or eligible scenic highways. However, as discussed in Chapter 3, Description of the Proposed Project, construction-period disturbance would be temporary and all pipeline construction areas would be restored to their approximate pre-construction condition.

TABLE 4.14-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO AESTHETIC RESOURCES

Project Planning Region	Applicable Planning Document	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (inland areas)	Greater Monterey Peninsula Area Plan	Conservation/Open space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements	***Policy GMP-3.4*** Plant materials shall be used to integrate manmade and natural environments, to screen or soften the visual impact of new development, and to provide diversity in developed areas.	The intent of this policy is to soften and screen the visual impact of new development.	Consistent: Views of the proposed MPWSP Desalination Plant would be screened by existing trees along Charles Benson Road. The Carmel Valley Pump Station would be comparable in size and scale to surrounding development and not plainly visible from adjacent roadways. Therefore, additional vegetative screening is not expected to be necessary. Nevertheless, prior to approval, the Carmel Valley Pump Station would be required to undergo design review, which would ensure policy conformity. All pipelines would be buried below ground so would have no visual impact requiring screening.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System--Hidden Hills and Ryan Ranch--Bishop Interconnection Improvements	***Policy OS-1.1:*** Voluntary restrictions to the development potential of property located in designated visually sensitive areas shall be encouraged.	This policy in intended to protect visually sensitive areas from new development.	Consistent: The Carmel Valley Station would be the only above-ground project component constructed within a Monterey County-designated visually sensitive area. This facility would be small, relative to its surroundings, and would be located on a disturbed site that is not plainly visible from nearby roadways. As discussed in Chapter 3, Description of the Proposed Project (), construction-period disturbance would be temporary and all pipeline construction areas would be restored to their approximate pre-construction condition. All pipelines would be buried below ground.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System--Hidden Hills and Ryan Ranch--Bishop Interconnection Improvements	***Policy OS-1.2:*** Development in designated visually sensitive areas shall be subordinate to the natural features of the area.	This policy in intended to limit development in a way that will preserve natural features in visually sensitive areas.	Consistent: The Carmel Valley Pump Station would be the only above-ground project component constructed within a Monterey County-designated visually sensitive area. At 500-square-feet, this facility would be subordinate to the natural features of the area. As discussed in Chapter 3, Description of the Proposed Project, construction-period disturbance would be temporary and all pipeline construction areas would be restored to their approximate pre-construction condition. All pipelines would be buried below ground.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System--Hidden Hills and Ryan Ranch--Bishop Interconnection Improvements	***Policy OS-1.12:*** The significant disruption of views from designated scenic routes shall be mitigated through use of appropriate materials, scale, lighting and siting of development. Routine and Ongoing Agricultural Activities shall be exempt from this policy, except: 1) large-scale agricultural processing facilities, or 2) facilities governed by the Agricultural and Winery Corridor Plan.	This policy is intended to reduce the disruption of view from designated scenic routes through application of mitigation measures.	Consistent: The proposed project would not involve any components that would significantly disrupt views from designated scenic routes such as Highways 1 or 68.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Carmel Valley Pump Station, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements	***Policy OS-5.5:*** Landowners and developers shall be encouraged to preserve the integrity of existing terrain and native vegetation in visually sensitive areas such as hillsides, ridges, and watersheds. Routine and Ongoing Agricultural Activities shall be exempt from this policy.	This policy is intended to protect the natural character of visually sensitive areas.	Consistent: Construction of the MPWSP Desalination Plant and Carmel Valley Pump Station are proposed for construction on previously disturbed sites and would not require substantial alteration of natural terrain or native vegetation. All pipelines would be buried below ground. Pipeline construction period activities could require alterations to existing natural terrain and removal of native vegetation. However, as discussed in Chapter 3, Description of the Proposed Project, upon completion of construction, all pipeline construction areas would be restored to their approximate preconstruction condition.

TABLE 4.14-2 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO AESTHETIC RESOURCES

Project Planning Region	Applicable Planning Document	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.2.2.1:*** Views to and along the ocean shoreline from Highway 1, Molera Road, Struve Road, and public beaches, and to and along the shoreline of Elkhorn Slough from public vantage points shall be protected.	This policy is intended to protect important public views two and along the shoreline.	Consistent: Source Water Pipeline and new Desalinated Water Pipeline construction activities would be temporarily visible from Highway 1. However, as discussed in Chapter 3, Description of the Proposed Project, the pipelines would be buried below ground and all pipeline construction areas would be restored to their approximate pre-construction conditions. Once constructed, the Source Water Pipeline and new Desalinated Water Pipeline would not interfere with views to and along the shoreline from Highway 1.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.2.2.2*****:** The coastal dunes and beaches, estuaries, and wetlands should be designated for recreation or environmental conservation land uses that are compatible with protection of scenic resources. Facilities that are provided to accompany such uses shall be designed and sited to be unobtrusive and compatible with the visual character of the area.	This policy is intended to protect the visual character and recreational opportunities of dunes, beaches, estuaries, and wetlands from incompatible land uses.	Consistent: Within North County Land Use Plan area, the Source Water Pipeline and new Desalinated Water Pipeline would be constructed within existing disturbed roadway and railroad rights-of-way, and not be sited in dunes, beaches, wetlands, or estuaries. Therefore no such scenic resources would be affected.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.2.2.4*****:** The least visually obtrusive portion of a parcel should be considered the most desirable site for the location of new structures. Structures should be located where existing topography and vegetation provide natural screening.	This policy is intended to minimize the visual impact of a new structure.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline would be sited within or along existing disturbed roadway and railroad rights-of-way. Once constructed, these facilities would be buried below ground and not be visible.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.2.2.5*****:** Structures should be located to minimize tree removal and grading for the building site and access road. Disturbed slopes should be returned to their previous visual quality. Landscape screening and restoration should consist of plant and tree species complementing the native growth of the area.	This policy is intended to minimize the disruption to the landscape's visual quality tree removal and grading,	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline would require trenching along existing disturbed roadway and railroad rights-of-way. However, as discussed in Chapter 3, Description of the Proposed Project, disturbed pipeline construction areas would be restored to their approximate pre-construction condition.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.2.3.3*****:** Structures shall generally be sited so as not to block public views of the shoreline; development proposals shall be revised if necessary to accomplish this goal. Necessary structures in public view between the road and the shoreline (such as agricultural buildings) shall be functionally designed and sited as to protect the maximum possible open views. Other development in public view between the road and the shoreline (such as residential or commercial structures) shall be designed with materials, colors, landscaping, and fencing appropriate to the rural setting.	This policy is intended to protect important public views two and along the shoreline.	Consistent: The Source Water Pipeline and new Desalinated Water Pipeline would be buried below ground and would not block public views of the shoreline. Disturbed pipeline construction areas would be restored to their approximate pre-construction condition.
County of Monterey (inland areas)	North County Area Plan	Conservation/Open Space	Castroville Pipeline	**NC-3.1.** Within areas designated as "sensitive" or "highly sensitive" on the Scenic Highway Corridors and Visual Sensitivity Map (Figure 15), landscaping or new development may be permitted if the development is located and designed in such a manner that public views are not disrupted.	This policy is intended to protect important public views to and along scenic highway corridors and visually sensitive areas.	Consistent: The Castroville Pipeline would be buried below ground and would not permanently disrupt public views. Disturbed pipeline construction areas would be restored to their approximate pre-construction condition.

SOURCES: City of Marina, 2000, 1982; City of Seaside, 2004, 2013; Monterey County, 1982, 1985, 1996, 2010a, 2010b.

4.14.4 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to aesthetic resources if it would:

- Have a substantial adverse effect on a scenic vista or visual impact on coastal resources;
- Substantially damage a scenic resource, including but not limited to trees, rock outcroppings, and historic buildings, within a state scenic highway corridor;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a substantial new source of light or glare that would adversely affect day or nighttime views in the area.

4.14.5 Approach to Analysis

This analysis of impacts on aesthetic resources examines the temporary (i.e., construction) and permanent (i.e., operational) effects of the proposed project based on application of the significance criteria outlined above. The analysis is divided into two main categories: (1) temporary and permanent scenic resource and visual character impacts, and (2) temporary and permanent lighting and glare impacts. Each criterion is discussed in the context of project components that share similar characteristics and/or geography. This structure parallels that of the environmental context, or setting, as presented in Section 4.14.2.3, Visual Setting of the Project Area. The impact conclusions consider the potential for changes in environmental conditions as well as consistency with applicable regulatory requirements enacted to protect the environment. Unless otherwise specified, the impact analysis and determinations for pipelines with optional alignments consider and apply to both the proposed pipeline alignment and optional alignment(s). The cumulative effects of the proposed project, when considered together with the effects of other past, present, and reasonably foreseeable future projects, are discussed in Section 4.14.7, Cumulative Effects of the Proposed Project.

The impact analysis is based on field observations conducted by ESA in September 2013 and April 2016; review of project maps and drawings; analysis of aerial and ground-level photographs; and review of a variety of data available in public records, including local planning documents. The determination that a project component would or would not result in a "substantial" adverse effect on scenic resources or visual character considers the aesthetic resource value of the site and the MPWSP component's visual impact severity (e.g., the nature and duration of the impact). The approach to determining aesthetic resource value and visual impact severity is described above in Section 4.14.1, Introduction, Key Concepts, and Terminology. For example, a project component with a high impact severity that would be located on a site with a low aesthetic resource value would result in a less-than-significant impact with respect to scenic or visual character. In other words, new conspicuous structures or visual changes in areas with a low aesthetic resource value may not necessarily result in substantial adverse effects on visual resources.

The determination that a project component would result in a substantial adverse effect related to light and glare considers the ambient lighting conditions of the project area and the types and locations of receptors that could be adversely affected by project components emitting or reflecting light. Spill-over of light beyond project sites has the potential to create a visual nuisance or hazard, interfering with vision, sleep, privacy and general enjoyment of the natural nighttime condition. Similarly, glare is caused by sunlit or artificial light reflecting from finished surfaces, such as glass windows and other reflective materials, which can result in similar nuisance or hazard conditions. Reflective light, such as that reflected from dark or mirrored glass building materials, is more common in urbanized portions of the project area. Light sensitive receptors include motorists; people within residential areas; and, in some situations, natural areas. Substantial adverse effects related to lighting and glare would result if the project were to cause nighttime or reflective light to extend beyond the project limits and result in a visual nuisance or hazard for light-sensitive receptors. Effects related to lighting impacts on natural areas are discussed in Section 4.6, Terrestrial Biological Resources.

For this analysis, the proposed facility sites and representative portions of the proposed pipeline alignments were photographed and observed from public vantage points (see photos in **Figures 4.14-3a** and **4.14-3b**). These observation points are representative examples of publicly accessible viewpoints from which the MPWSP components would normally be seen, either temporarily (during construction) or permanently (as aboveground structures). Section 4.14.1, Introduction, Key Concepts, and Terminology, describes these locations in more detail. The potential physical changes resulting from the MPWSP components are described below.

4.14.6 Direct and Indirect Effects of the Proposed Project

Table 4.14-3 presents the potential impacts on aesthetic resources as well as significance determinations for each impact.

TABLE 4.14-3
SUMMARY OF IMPACTS – AESTHETIC RESOURCES

Impacts	Significance Determinations
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	LS
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	LSM
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings**.**	LSM
Impact 4.14-4: Permanent new sources of light or glare.	LSM
Impact 4.14-C: Cumulative impacts related to aesthetic resources.	LSM

NOTES:
LS = Less than Significant, no mitigation proposed
LSM = Less than Significant impact with Mitigation

4.14.6.1 Construction Impacts

Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings. (*Less than Significant*)

Project construction activities could result in temporary impacts on scenic resources and the visual character of the project area and vicinity. Construction sites, vehicles, equipment and materials, stockpiles, and exposed soils would be temporarily visible from multiple public vantage points. Staging areas would include vehicle and equipment storage in the vicinity of MPWSP sites, generally within existing paved areas, and would not involve ground disturbing, vegetation removal, or other types of activities that would substantially impact scenic resources or the visual character of the area. Potential impacts on scenic resources and visual character as a result of construction activities are described below.

Subsurface Slant Wells

Construction activities for the subsurface seawater intake system would take place on the coast of Monterey Bay, in the CEMEX active mining area in northern Marina. As noted previously, the site of the proposed slant wells has been visually disturbed due to sand mining activities. Portions of the site are devoid of vegetation, have modified topography, and have been developed with temporary and permanent facilities. Mining equipment regularly moves throughout the mining area on the site. However, because of its proximity to Highway 1 and the coast, the site is considered to have a moderate aesthetic resource value (see Section 4.14.2, Setting/Affected Environment, for additional discussion).

Construction of the remaining subsurface slant wells in the CEMEX active mining area would take approximately 15 months to complete, and could take place anytime throughout the overall 24-month construction duration for the proposed project (subject to limitations described in mitigation measures for terrestrial biological resources impacts, such as **Mitigation Measure 4.6-1d**). Due to the site's topography and vegetation, views of the work areas would be limited from locations outside the CEMEX property. Viewed from the east, the worksite would largely be screened from view by the intervening dunes and Monterey cypress trees along the site's eastern (landward) perimeter. Motorists traveling along Highway 1 at speeds of 60 miles per hour would have distant and fleeting views of the work. Views from the beach would be similarly obscured by the large sand dunes that exist between the beach and the proposed well sites; however, such views would be nearer and longer in duration.

Given the industrial nature of the site, with its varied topography, denuded areas, and existing mining operations, construction activities would not contrast with the site's existing setting. Nor would these activities appear dominant, relative to the site's features and existing equipment, facilities, and operations. While increased construction activity would temporarily detract from the naturalistic aesthetic of the coast as viewed by passersby, these activities would not impair public views of the coast. For these reasons, project construction would have a moderate visual impact severity.

Construction of the subsurface slant wells would not have a substantial adverse effect on scenic resources or visual character and the impact would be less than significant.

MPWSP Desalination Plant

The MPWSP Desalination Plant site is located amidst agricultural fields and industrial land uses. The site lies within the Urban and Built-up landscape unit and, as discussed in Section 4.14.2, Setting / Affected Environment, the site has a low aesthetic resource value. Project construction would not contrast with the surrounding setting or appear dominant relative to surrounding features or land uses. This is because similar land disturbing activities and large equipment usage are commonplace in the operations on adjacent agricultural lands and the industrial Monterey Regional Environmental Park, also known as the Monterey County Landfill. Project construction would not impair public views of valued aesthetic resources. There are no designated scenic roadways or scenic viewpoints from which the MPWSP Desalination Plant site or construction activities would be visible. Rows of eucalyptus and Monterey Cypress trees to the south and west of the site would largely screen construction activities from passersby on Charles Benson Road. Motorists on Highways 1 and 183 would not likely notice project construction, given the distance of more than a mile between these highways and the MPWSP Desalination Plant site, and considering its proximity to the adjacent industrial park. For these reasons, project construction would have low visual impact severity.

Construction of the MPWSP Desalination Plant would not have a substantial adverse effect on scenic resources or visual character and the impact would be less than significant.

Pipelines and Other Conveyance Facilities North of Reservation Road

Pipeline construction would involve use of heavy equipment, trenching, and other earthwork that could be visible to public viewing areas. Pipeline installation would occur primarily within roadways. Outside of these areas, pipeline construction would involve limited removal of mature vegetation, including landscaping and trees. These impacts would not occur in the vicinity of a designated scenic highway, nor would they be to a degree that resulted in substantial damage to or degradation of scenic resources or visual quality of the alignment area. The duration of construction would be brief, as pipeline installation would typically progress at a rate of 150 to 250 feet per day, for a total of approximately 4 to 6 months, depending on the pipeline segment. Upon completion of construction, the disturbed area would be returned to its approximate pre-construction condition. Therefore, impacts would be temporary.

Pipeline construction would not substantially degrade the aesthetic character or scenic vistas in the vicinity of the proposed pipeline alignments. For these reasons, the visual impact of pipeline installation would be less than significant. The following subsections describe the locations where temporary impacts would occur for each pipeline component.

Source Water Pipeline

Source Water Pipeline construction could be visible to motorists along Highway 1, an eligible state scenic highway. These activities could temporarily contrast with the surrounding

environment, but would not dominate the landscape or have a permanent effect on coastal views. Views of construction activities by motorists along Highway 1 would primarily be distant and fleeting due to high vehicle speeds. As construction of the pipeline approaches and crosses beneath Highway 1, the potential would be greater for motorists to notice the construction activities. Construction activities would also be briefly visible to passing motorists and bicyclists on Del Monte Boulevard, Lapis Road and the Monterey Peninsula Recreational Trail. For these reasons, the impact severity of construction activities associated with the proposed Source Water Pipeline would be low.

New Desalinated Water Pipeline

Pipeline construction could be visible to motorists, cyclists, pedestrians, traveling along area roads, as well as from some residential areas in Marina. Views of construction activities by motorists and cyclists and pedestrians traveling along the Monterey Peninsula Recreational Trail would mostly be fleeting, as they would view the work while passing by or through the construction zone. Views of construction activity from residential areas in Marina and from Vince Dimaggio and Locke-Paddon Parks would be longer in duration. Construction activities would also be briefly visible to passing motorists and bicyclists on Del Monte Boulevard, Lapis Road, and the Monterey Peninsula Recreational Trail. These activities could temporarily contrast with the surrounding environment, but would not dominate the landscape or have a permanent effect on scenic views. For these reasons, the impact severity of construction activities associated with the new Desalinated Water Pipeline would be low.

Castroville Pipeline and Optional Alignment 2

Pipeline construction could be visible to motorists traveling along Monte Road, and possibly to motorists traveling along Highway 1. Views of construction activities by motorists would mostly be fleeting, as they would be in motion, traveling at speeds of 35 to 60 miles-per-hour. Given the degree of intensive agricultural activity along this alignment, the proposed pipeline construction activities would not contrast with the surrounding environment, nor would they dominate the landscape or have a permanent effect on scenic views. For these reasons, the visual impact severity of construction activities associated with the Castroville Pipeline would be low.

Castroville Pipeline Optional Alignment 1

The effects of the Castroville Pipeline Optional Alignment construction would be similar to those described for the proposed Castroville Pipeline alignment. Construction activities north of Nashua Road would be more prominently visible to motorists traveling along Highway 1. Similarly, within Castroville, the work would be visible to motorists, cyclists, and pedestrians traveling along Merritt Way and Merritt Street for longer durations. The overall effect would not be substantially different and the visual impact severity of construction activities would remain low.

Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond

The Brine Discharge Pipeline, Brine Mixing Box, and Pipeline to CSIP Pond would be constructed within or adjacent to the Grass and Rangeland, Urban and Built-up, and Agricultural landscape units, characterized by undeveloped grasslands and agricultural fields to the south and southwest

and the Monterey Regional Environmental Park MRWPCA Treatment Plant to the north and east. Construction activities would be visible for short durations to motorists traveling along Charles Benson Road as well as from areas within the Monterey Regional Environmental Park and MRWPCA Regional Wastewater Treatment Plant. Because the aesthetic resource value is low and construction activities would be in keeping with the types of activities already occurring in this area, there would be no appreciable contrast with the surrounding setting, and the work would not appear dominant relative to other activities on adjacent properties. Consequently, the impact severity of construction activities for the Brine Discharge Pipeline, Brine Mixing Box, and the Pipeline to CSIP Pond would also be low.

Pipelines and Other Facilities South of Reservation Road

Improvements to ASR System

The ASR-5 and ASR-6 Wells and ASR Conveyance Pipelines would be constructed in an area of moderate aesthetic resource value. ASR-5 and ASR-6 Wells and ASR Conveyance Pipeline construction activities would be visible from General Jim Moore Boulevard and from nearby residences. Pipeline construction would proceed at a rate of approximately 150 to 250 feet per day and last 5 months; well construction would last 12 months. During this time, area residents, motorists, cyclists, and pedestrians traveling along General Jim Moore Boulevard would be exposed to views of construction activities of the type described for pipelines above, which would be conspicuous and would contrast with the aesthetic character of the surrounding landscape. Such views would be fleeting, as the viewers would be in motion. Given the width of the travel corridor, the expansive views it offers, and the height and mass of area structures and vegetation, the proposed work would not dominate the landscape, nor would it impair public views. For these reasons, the visual impact severity would be low. The visual impact of the ASR-5 and ASR-6 Wells and ASR Conveyance Pipeline installation would be less than significant.

Pipelines South of Reservation Road

Pipeline construction south of Reservation Road would involve the same types of activities and effects, and progress at the same general rate, as that described for pipelines north of Reservation Road. The effects would be temporary. Pipeline construction would not substantially degrade the aesthetic character or scenic vistas in the vicinity of the proposed pipeline alignment. For these reasons, the visual impact of pipeline installation would be less than significant. The following subsections describe the locations where temporary impacts would occur for each pipeline component.

The aesthetic resource value of pipeline alignment areas south of Reservation Road, which include lands within the Highway 1 and 68 scenic corridors, generally ranges from low to moderate, and most segments would be constructed within paved or disturbed roadway rights-of-way or utility easements. The aesthetic resources effects of the new Transmission Main (except the segment west of Highway 1, discussed below) and Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements construction activities, and those associated with their respective optional alignments, would be substantially similar to those described for the new Desalinated Water Pipeline.

A segment of the proposed new Transmission Main would be constructed within the TAMC right-of-way, west of Highway 1 and east of Fort Ord Dunes State Park. Construction activities along portions of this segment would be visible to motorists traveling along Highway 1 and cyclists and pedestrians traveling along the Monterey Peninsula Recreational Trail. Construction activities would contrast with the naturalistic setting of the Fort Ord Dunes State Park and coast to the west. The work would not appear dominant among the prominent dunes and state highway on either side of the alignment. Given the alignment's proximity to a proposed scenic corridor and established public viewpoints, the visual impact severity would be moderate.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be located in an area of moderate aesthetic resource value, characterized by large-lot, low-density single-family residential development nestled between undulating hills covered in coastal scrub and oak woodlands to the north, and the wooded Carmel River corridor to the south. The pump station site, which is set back from Carmel Valley Road by about 250 feet, has been previously disturbed and is not plainly visible from any nearby public vantage points. For these reasons, the work would not contrast with the setting, dominate the landscape, or otherwise impair scenic views. The visual impact severity is considered low.

Proposed construction would not degrade the aesthetic character or scenic vistas in the vicinity of the Carmel Valley Pump Station site. For these reasons, Carmel Valley Pump Station installation would be expected to have a less than significant impact with respect to aesthetic resources.

Impact Conclusion

Construction equipment and machinery, spoils stockpiles, vegetation removal, and exposed earth associated with the implementation of many project components would be temporarily visible to motorists, bicyclists, pedestrians, and other observers such as nearby residents and park visitors. Some of these construction activities would be visible from Highways 1, 68, and 156, which are eligible for designation or officially designated as State Scenic Highways. These construction activities could disrupt the visual character of the surrounding areas. However, due to the temporary nature of these construction effects, and because work areas would be restored to their approximate pre-construction condition upon completion of construction, such impacts would be less than significant. Although mitigation is not required to reduce a significant impact under CEQA, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-1 (Maintain Clean and Orderly Construction Sites)**.

Recommended Mitigation Measure

Although not required to reduce the above-described aesthetic resources impacts to a less-than-significant level, implementation of **Mitigation Measure 4.14-1 (Maintain Clean and Orderly Construction Sites)** is recommended for all construction sites to address temporary aesthetic resources impacts. The mitigation measure would require basic daily site maintenance (such as storing construction materials and equipment away from public view and removing construction debris promptly at regular intervals) and construction area screening where appropriate.

Mitigation Measure 4.14-1: Maintain Clean and Orderly Construction Sites.

As part of contract specifications, CalAm shall include a requirement that the construction contractor(s) keep staging and construction areas as clean and inconspicuous as practicable by storing construction materials and equipment at the proposed construction staging areas or in areas that are generally away from public view when not in use, and by removing construction debris promptly at regular intervals. If necessary, additional appropriate screening (e.g., temporary opaque fencing) shall be used at construction sites to buffer views of construction equipment and material, where the use of such screening materials would not further degrade the visual character or further obstruct views of scenic resources or vistas in the area. Screening is not required for pipeline construction areas.

Impact 4.14-2: Temporary sources of substantial light or glare during construction. (*Less than Significant with Mitigation*)

Nighttime construction activities would require temporary construction lighting, which could introduce substantial light into the project area. As discussed in Chapter 3, Description of the Proposed Project, Section 3.3, Construction, the majority of construction activities would occur during the daytime and would not cause light effects. However, extended work hours into the night could be necessary during construction of certain project components, including the subsurface slant wells along the coast, the proposed ASR injection/extraction wells (ASR-5 and ASR-6 Wells), and the MPWSP Desalination Plant. There would be no nighttime lighting at staging areas. Unless otherwise exempted, nighttime construction may be subject to local ordinances governing work hours. See Section 4.12, Noise and Vibration, for additional discussion.

Project construction would not require large amounts of reflective materials that would result in substantial adverse effects related to glare. Any reflective materials required for project construction would be incidental to the construction process, limited to work areas, and be temporary. Therefore, MPWSP construction would have a less-than-significant effect related to glare. The topic of glare is not addressed further in this section.

Subsurface Slant Wells

As discussed in Section 4.14.2.2, Landscape Units, the subsurface slant wells would be located in an area that is generally dark, with sources of nighttime lighting originating primarily from within the CEMEX sand mining facility and from vehicle headlights along Highway 1. Construction activities associated with the subsurface slant wells would be required to occur 24 hours a day and 7 days a week, for a total of 15 months (but could occur anytime over the 24-month overall construction period). Nighttime construction activities would involve the use of high output lamps, such as halogen, mercury vapor, or high-pressure sodium lamps, which would introduce a new substantial source of light into the area. The drilling sites would be approximately 1,900 feet seaward of Highway 1 and approximately 0.5 mile north of the nearest residences. Despite the distance and intervening vegetation and dune topography, increased lighting could adversely affect nighttime views of this mostly undeveloped stretch of coastline from the viewpoint of Highway 1 motorists and coastal Marina residents.

The impact from nighttime lighting associated with subsurface slant well construction would be potentially significant. **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** requires CalAm to implement site-specific nighttime construction lighting measures, including the use of light shields, directing lights downward, and using the minimum wattage necessary. With implementation of these measures, the temporary light impacts associated with nighttime construction of subsurface slant wells would be reduced to less-than-significant levels.

MPWSP Desalination Plant

The MPWSP Desalination Plant would be constructed on a vacant parcel that currently does not contain substantial sources of light. Nearby sources of light include headlights from vehicles traveling along Charles Benson Road and nighttime security lighting in adjacent agricultural areas and at the adjacent industrial park. Construction activities and lighting requirements would be similar to those described above for the subsurface slant wells. The MPWSP Desalination Plant construction activities could occur for up to 24 hours a day, 7 days a week, for approximately 24 months, creating a new substantial source of temporary lighting. The only potentially affected receptors would be motorists traveling along Charles Benson Road at night. However, the site is screened from view along Charles Benson Road by a row of mature eucalyptus and Monterey Cypress trees. Beyond Charles Benson Road, the road nearest the site is Del Monte Boulevard, located more than 0.5 mile to the west. Two homes located 0.5 and 1 mile northwest of the plant site are located within view of the Dole and Budweiser processing facility, Highway 1, and Monte Road. The nighttime light from these sources would be more than that from nighttime construction of the MPWSP Desalination Plant. As a result, any nighttime lighting impacts on area motorists and area residents would be negligible.

The temporary lighting impacts associated with nighttime construction at the MPWSP Desalination Plant would be less than significant.

Pipelines North of Reservation Road with Nighttime Lighting

The pipelines and other conveyance facilities proposed for areas north of Reservation Road would be constructed in settings similar to those described above for the subsurface slant wells and the MPWSP Desalination Plant. These pipelines are the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, and all related optional alignments. However, segments of the Castroville Pipeline and Castroville Pipeline Optional Alignment 1 would pass through a more densely developed area of Castroville, which has more diverse and intensive nighttime lighting than other portions of the project area north of Reservation Road. Pipeline construction may involve nighttime construction, which might be necessary to meet the MPWSP construction schedule. Pipelines and conveyance facilities north of Reservation Road that could require nighttime construction include the Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, and Castroville Pipeline, as well as any corresponding optional alignments. The Brine Mixing Box would not require nighttime construction. Nighttime construction activities would require the use of lighting similar to or the same as that required for the subsurface slant wells and MPWSP Desalination Plant. Such construction lighting would introduce substantial sources of

light into areas that presently have little nighttime lighting. This light would affect nighttime views from and could temporarily affect nighttime motorists' vision along Highway 1, Highway 156 (for Castroville Pipeline Optional Alignment 1), Merritt Way (for Castroville Pipeline Optional Alignment 1), Merritt Street, Monte Road, Lapis Road, Charles Benson Road, and Del Monte Boulevard.

The impact from nighttime lighting associated with pipeline construction activities would be potentially significant. **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** requires CalAm to implement site-specific nighttime construction lighting measures, including the use of light shields, directing lights downward, and using the minimum wattage necessary. With implementation of these measures, the temporary light impacts associated with nighttime construction of pipelines north of Reservation Road would be reduced to less-than-significant levels.

ASR-5 and ASR-6 Wells

The primary source of lighting in the vicinity of the proposed ASR-5 and ASR-6 Wells is street lighting along General Jim Moore Boulevard; however, other sources of light in the area include headlights from automobiles traveling along General Jim Moore Boulevard, golf course and institutional facilities, and residential development. Construction of the ASR-5 and ASR-6 Wells would normally occur during the daytime; however, continuous 24-hour construction would be necessary for up to 8 weeks during well completion and testing. Construction lighting would introduce a new substantial source of light to the area, which could adversely affect nighttime views in the area, including by impairing motorists' ability to see the road or oncoming traffic, or disrupting residents of the nearby Fitch Park Military Housing area (e.g., prevented them from sleeping).

The potential impacts from nighttime lighting associated with ASR injection/extraction wells construction activities would be potentially significant. **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** requires implementation of site-specific construction lighting control measures, as described above. With these measures implemented, temporary nighttime construction lighting impacts would be reduced to a less-than-significant level.

ASR Conveyance Pipelines, Ryan Ranch- Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements

As noted previously, pipeline construction would typically take place during daytime hours although nighttime construction might be necessary along certain segments to meet the MPWSP construction schedule. This EIR/EIS assumes that construction of the ASR Conveyance Pipelines, Ryan Ranch- Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements would occur only during daytime hours. As a result, few, if any construction-related light impacts would result during installation of these facilities.

New Transmission Main

Nighttime construction may be necessary for certain segments of the new Transmission Main and its optional alignment. Ambient nighttime lighting varies throughout the project area south of Reservation Road. There is some existing nighttime lighting from overhead street lights, shopping centers, and other commercial uses along Marina's Del Monte Boulevard. Sources of nighttime lighting are more diverse, fewer, and more dispersed west of Highway 1 in Marina and Seaside, along General Jim Moore Boulevard; these areas tend to be the darkest within the planning area.

Nighttime construction lighting would introduce substantial sources of new light into areas that presently have little nighttime lighting and increase ambient nighttime lighting within other areas. This light would affect nighttime views and could temporarily affect nighttime motorists' vision along Highway 1 and other roadways along which nighttime pipeline construction would occur.

The impact related to temporary sources of light during construction of the new Transmission Main and its optional alignment is considered potentially significant. However, implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, which requires that CalAm implement site-specific nighttime construction lighting measures, including using light shields and directing lights downward, would reduce the impact to a less-than-significant level.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be constructed during daylight hours. No impact related to lighting during construction would result.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.14.3, Regulatory Framework, MPWSP nighttime construction could conflict with applicable regulatory requirements related to aesthetic resources. Elements of the proposed MPWSP may be potentially inconsistent with provisions of the California Coastal Act and Seaside General Plan that were established for the purpose of avoiding or minimizing impacts on aesthetic resources. As discussed in the preceding paragraphs, **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, requires that CalAm implement site-specific nighttime construction lighting measures. With these measures implemented, the MPWSP would be consistent with the above-noted regulatory requirements.

Impact Conclusion

Project construction activities have the potential to introduce temporary sources of substantial light into the project area. This impact would be significant but mitigable for the subsurface slant wells and the ASR-5 and ASR-6 Wells, as well as for the Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments. Implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, which requires site-specific construction lighting controls, would reduce the potential impacts of nighttime construction

lighting to a less-than-significant level. No impacts related to nighttime lighting would result from construction of the ASR pipelines, Carmel Valley Pump Station, Ryan Ranch- Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Mitigation Measures

Mitigation Measure 4.14-2 applies to all project components where nighttime construction is required, including the subsurface slant wells and the ASR-5 and ASR-6 Wells, as well as the Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments.

Mitigation Measure 4.14-2: Site-Specific Nighttime Lighting Measures.

To prevent exterior lighting from affecting nighttime views, the design, construction, and operation of lighting at MPWSP facilities, shall adhere to the following requirements:

- Use of low-intensity street lighting and low-intensity exterior lighting shall be required.
- Lighting fixtures shall be cast downward and shielded to prevent light from spilling onto adjacent offsite uses.
- Lighting fixtures shall be designed and placed to minimize glare that could affect users of adjacent properties, buildings, and roadways.
- Fixtures and standards shall conform to state and local safety and illumination requirements.

CalAm shall ensure these measures are implemented at all times during nighttime construction and for the duration of all required nighttime construction activity.

4.14.6.2 Operational and Facility Siting Impacts

Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings. (*Less than Significant with Mitigation*)

Permanent new aboveground facilities, if visible from public vantage points, could affect scenic resources or substantially degrade the existing character of the project area and its surroundings. This discussion of permanent new facilities is limited to aboveground project components. Once constructed, the proposed pipelines would be underground and thus would have no permanent impacts on scenic resources or the visual character of the area.

Subsurface Slant Wells

The new subsurface slant well sites would be located within a large depression in the interior of the CEMEX property, surrounded by dunes that rise in elevation from 10 to 50 feet above the

base of the depression. The existing well site (WS-1) is also located in the interior of the property and surrounded by similar topography. As discussed in Section 4.14.2, Setting / Affected Environment, the proposed location of the subsurface slant wells has a moderate aesthetic resource value. Above-ground components associated with each of the six subsurface slant well sites include one 8-inch-tall concrete wellhead vault per slant well, 12-inch-tall concrete pump-to-waste vault, and an approximately 11-foot-tall fiberglass electrical control cabinet. At five of the subsurface slant well sites, the above-ground facilities would be constructed atop a concrete pad, ranging in size from 5,250 to 6,025 square feet.

The site's dune topography and vegetation would substantially limit views of the subsurface slant well sites from locations outside of the CEMEX property. From a distance of approximately 2,000 feet, the above-ground subsurface slant well facilities may be visible to motorists traveling along an approximately 0.5-mile segment of Highway 1. As motorists would be traveling at speeds of 60 miles per hour and focused on the road, rather than distant views to the west, potential views from this vantage point would be fleeting. Views from the beach would be similarly obscured by the intervening dune topography; although, such views would be nearer and longer in duration. Given their size relative to the surrounding dune topography and other structures on the site, the above-ground facilities would not appear dominant relative to surrounding features and would not obstruct coastal views. At the same time, the design, color, and texture of the surface of these facilities could make them more conspicuous or incompatible with the coastal setting. Incompatible surfacing could detract from the visual character of the area. For these reasons, the visual impact severity is considered moderate.

The impact of the subsurface slant wells on scenic coastal resources and visual character would be significant. **Mitigation Measure 4.14-3a (Facility Design)** requires that CalAm design the facilities to avoid or minimize contrast with the surrounding setting. With implementation of this measure, the aesthetic resources impacts would be reduced to a less-than-significant level.

MPWSP Desalination Plant

The MPWSP Desalination Plant would be constructed on the upper terrace (approximately 25 acres) of a 46-acre parcel, adjacent to the industrial Monterey Regional Environmental Park. As discussed in Section 4.14.2, Setting / Affected Environmental, the site is located in the Urban and Built-up landscape unit and has a low aesthetic resource value. As described more fully in Section 3.2.2, MPWSP Desalination Plant, structures proposed for the site would generally range in size from 6,000 to 30,000 square feet in area and rise to heights of up to 35 feet.

A row of mature eucalyptus and Monterey cypress trees along Charles Benson Road would screen or block views to the MPWSP Desalination Plant from the south and west (including from Highway 1), and the river terrace in this area would partially obstruct views of the MPWSP Desalination Plant from areas farther east. **Figure 4.14-4** shows the site of the proposed MPWSP Desalination Plant as viewed from Highway 1. As shown in the photograph, considering the distance to the Monterey Regional Environmental Park and its existing industrial character, the facilities proposed at the MPWSP Desalination Plant site would not be particularly discernible from Highway 1. As such, the MPWSP Desalination Plant facilities would not contrast with the

SOURCE: ESA, 2013

205335.01 Monterey Peninsula Water Supply Project

Figure 4.14-4

Existing Views of MPWSP Desalination Plant Site from Highway 1

surrounding setting. Similarly, the proposed facilities would not dominate the setting relative to surrounding features; developments in the adjacent Monterey Regional Environmental Park and MRWPCA Regional Wastewater Treatment Plant are of a similar size and scale. Given the site's low aesthetic resource value, absence of scenic resources, and limited visual accessibility, operation of the MPWSP Desalination Plant would not impair public views of aesthetic resources. For these reasons, the visual impact severity is considered low.

Operation of the MPWSP Desalination Plant would not have a substantial adverse effect on scenic resources or visual character and the impact would be less than significant.

ASR-5 and ASR-6 Wells

The proposed ASR-5 and ASR-6 Wells would be located immediately east of General Jim Moore Boulevard and south of Ardennes Circle in the Fitch Park military housing area. Along the tree-lined General Jim Moore Boulevard are single-family residences, a golf course, and a school. There are no scenic highways in the immediate vicinity. As discussed in Section 4.14.2, Setting / Affected Environmental, these facilities would be located in an area with moderate aesthetic resource value.

Permanent aboveground structures associated with the ASR-5 and ASR-6 Wells include pump houses and fencing. The pump and electrical control system for each well would be housed in an 11-foot-tall, 900-square-foot concrete pump house. A 9.5-foot-tall security fence would enclose the approximately 0.4- and 0.5-acre area around the ASR-5 and ASR-6 Wells, respectively.

These facilities would be noticeable from General Jim Moore Boulevard and nearby residences. The aboveground facilities would be small relative to existing structures and buildings in the area and would not block any views of scenic resources. As other ASR facilities and other utility infrastructure exists along General Jim Moore Boulevard, including the ASR Phase I project located 1 mile to the south, the proposed ASR wells would not be out of character with the surrounding area. However, depending upon the design and finish of the pump houses and fences, the ASR-5 and ASR-6 facilities could contrast with the surrounding residential setting. The visual impact severity of these ASR system improvements would, therefore, be moderate.

The presence of the MPWSP ASR-5 and ASR-6 Wells could have a substantial adverse effect on scenic resources or visual character, which would be significant. **Mitigation Measures 4.14-3a (Facility Design)** and **4.14-3b (Facility Screening)** require that CalAm design the facilities to avoid or minimize contrast with the surrounding setting and screen them from public view to the extent feasible. With implementation of this measure, the impact would be less than significant.

Carmel Valley Pump Station

The Carmel Valley Pump Station would be located in an area characterized by residential development, scrub-covered hills, and the wooded Carmel River corridor. The aesthetic resource value of the Carmel Valley Pump Station site is considered moderate. Above-ground facilities associated with the Carmel Valley Pump Station include a 500-square-foot, 11-foot-tall pump station enclosure. A separate 100-square-foot electrical control building would be constructed outside of the pump station building. The structures would be subordinate in size to structures on

adjacent properties, most of which are more than 1,000 square feet in area. The pump station site, which is set back from Carmel Valley Road by about 250 feet, is not plainly visible from any nearby public vantage points due to intervening topography and vegetation. For these reasons, the Carmel Valley Pump Station would not contrast with the setting, dominate the landscape, or otherwise impair scenic views. The visual impact severity is considered low.

Operation of the Carmel Valley Pump Station would not have a substantial adverse effect on scenic resources or visual character and the impact would be less than significant.

All Pipelines

All proposed pipelines would be installed below ground and would not involve substantial removal of vegetation and or trees that would substantially damage scenic resources or degrade the visual quality of the alignment areas. Therefore, no permanent impact on visual resources would result.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.14.3, Regulatory Framework, MPWSP operations could conflict with applicable regulatory requirements related to aesthetic resources. Elements of the proposed MPWSP may be potentially inconsistent with provisions of the California Coastal Act, Marina General Plan and Local Coastal Program, and Seaside General Plan that were established for the purpose of avoiding or minimizing impacts on aesthetic resources. As discussed in the preceding paragraphs, **Mitigation Measures 4.14-3a (Facility Design)** and **4.14-3b (Facility Screening)** require that CalAm design the facilities to avoid or minimize contrast with the surrounding natural setting and screen these facilities from public view. With these measures implemented, the MPWSP would be brought into conformance with the above-noted regulatory requirements.

Impact Conclusion

Permanent aboveground facilities proposed for the MPWSP could have an adverse impact on scenic resources or the existing visual character of facility sites within the project area. This impact would be significant but mitigable for the subsurface slant wells, and ASR-5 and ASR-6 wells. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.14-3a (Facility Design)** and **4.14-3b (Facility Screening)**, which require that CalAm design the facilities to avoid or minimize contrast with the surrounding setting and ensure the facilities are screened from public views to the extent feasible. Although mitigation is not required for the MPWSP Desalination Plant, or the Carmel Valley Pump Station, this EIR/EIS recommends implementation of **Mitigation Measures 4.14-3a (Facility Design)** and **4.14-3b (Facility Screening)** for all above-ground project components to further reduce potential aesthetic resources effects and facilitate compatibility of project design with the natural and built environment. No operational impacts related to scenic resources and visual character would result from below-ground facilities, including proposed pipelines and optional alignments.

Mitigation Measures

Mitigation Measure 4.14-3a applies to the subsurface slant wells, and ASR-5 and ASR-6 wells; could also apply to other facilities, but not required to avoid a significant impact.

Mitigation Measure 4.14-3a: Facility Design.

CalAm shall avoid reflective exterior finishes and treat visible structures with earth-tone finishes to reduce contrast with the ground surface and increase compatibility with the visual setting. Primary structures shall be treated with complementary colors in the brown, tan, gray, or green color spectrum, or with other natural colors. Choose paint and exterior finishes to ensure that structures blend into the surrounding landscape.

Mitigation Measure 4.14-3b applies to the ASR-5 and ASR-6 wells; could also apply to other facilities, but not required to avoid a significant impact.

Mitigation Measure 4.14-3b: Facility Screening.

CalAm shall ensure that fencing is designed to be minimally intrusive and to complement the architectural character of the proposed facility and the community. Fencing design shall be coordinated with nearby landscaping and MPWSP facility design to ensure all project components blend with the surrounding community and/or natural setting. Native plants, trees, or shrubs shall be used whenever practicable to screen views of the proposed aboveground facilities. Facility screening shall be in keeping with the character of the site and setting, and walled perimeters shall be avoided in natural settings to minimize the dominance of structures.

Impact 4.14-4: Permanent new sources of light or glare. (*Less than Significant with Mitigation*)

New sources of light and glare emanating from or reflecting off of the proposed facilities could disrupt the lighting environment of the project area as viewed from public vantage points and adjacent lands. An area's existing level of ambient light is a factor in determining project impacts, as the incremental effects of new lighting tends to be less pronounced in well-lit areas. This impact pertains to those project components that propose permanent exterior nighttime lighting. Project components that do not propose exterior lighting, including all pipelines, would not result in impacts with respect to introducing permanent sources of light or glare. None of the proposed facilities would have reflective finishes and so MPWSP operations would have no impact related to glare.

Subsurface Slant Wells

The subsurface slant wells and the electrical control building and electrical control panel for the wells would not require additional exterior lighting. Therefore, this project component would not cause impacts related to new sources of light.

MPWSP Desalination Plant

Lighting proposed at the MPWSP Desalination Plant site would be only that which is necessary for safety and security; it would be similar to existing light sources in the vicinity and would not be out of character with lighting at the adjacent industrial Monterey Regional Environmental Park and MRWPCA Regional Wastewater Treatment Plant. Existing trees would screen site security lighting from direct view along Charles Benson Road, and there are no residential properties in the area that would be affected by nighttime lighting at the site. As a result, increased nighttime lighting at the MPWSP Desalination Plant would have a less-than-significant impact with respect to adverse effects on nighttime views.

All Pipelines

Pipelines and other conveyance facilities would be located below ground and therefore would not cause or contribute to light impacts.

Improvements to ASR System

Nighttime lighting at the proposed ASR injection/extraction wells could be required for site safety and security purposes. If not properly contained, light spillover from these proposed fixtures could adversely affect motorists' ability to see the road at night or disturb nearby residents. These effects would be most apparent to motorists and residents along General Jim Moore Boulevard and Ardennes Circle.

The potential impacts from unconfined nighttime lighting associated with ASR injection/ extraction wells operation would be significant. However, with implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, the impact would be reduced to a less-than-significant level. The measure would reduce nighttime light impacts by requiring use of low-intensity lighting, and that lights be shielded or directed downward to prevent light spillage into adjoining areas.

Carmel Valley Pump Station

The Carmel Valley Pump Station would require minimal nighttime security lighting. The proposed site is located approximately 240 feet south of Carmel Valley Road. The area is dark at night and has few sources of nighttime lighting. While unlikely to affect area motorists due to intervening topography and vegetation, new sources of lighting at the Carmel Valley Pump Station site could disturb residents as near as 250 feet from the source.

The potential impacts from unconfined nighttime lighting associated with the Carmel Valley Pump Station would be significant. However, with implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, the impact would be reduced to a less-than-significant level.

Consistency with Regulatory Requirements

In addition to the physical impacts described above, as noted in Section 4.14.2, Regulatory Framework, MPWSP nighttime construction could conflict with applicable regulatory requirements related to aesthetic resources that were adopted for the purpose of avoiding or mitigating an environmental effect. Elements of the proposed MPWSP may be potentially inconsistent with provisions of the California Coastal Act and Seaside General Plan that were established for the purpose of avoiding or minimizing impacts on aesthetic resources. As discussed in the preceding paragraphs, **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, requires that CalAm implement site-specific nighttime lighting measures in facility design, construction, and operations. With these measures implemented, the MPWSP would be consistent with the above-noted regulatory requirements.

Impact Conclusion

Project operations would introduce permanent sources of substantial light into the project area. This impact would be significant but mitigable for the ASR injection/extraction wells, and the Carmel Valley Pump Station. Implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, which requires site-specific lighting controls, would reduce the potential impacts of nighttime operations lighting to a less-than-significant level. Although such mitigation is not required for the MPWSP Desalination Plant, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** for all above-ground project components with permanent sources of nighttime lighting to further reduce potential light spillover and dark night skies impacts. No operational impacts related to nighttime lighting would result from below-ground facilities, including proposed pipelines and optional alignments.

Mitigation Measures

Mitigation Measure 4.14-2 applies to the ASR-5 and ASR-6 Wells and Carmel Valley Pump Station.

> **Mitigation Measure 4.14-2: Site-Specific Nighttime Lighting Measures.**
>
> (See Impact 4.14.2, above, for a description)

Recommended Mitigation Measures

Although not required, except to the extent discussed above, to reduce the above-described aesthetic resources impacts to a less-than-significant level; to the extent feasible, implementation **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)** is recommended for all above-ground project components with permanent sources of nighttime lighting, including the MPWSP Desalination Plant.

Mitigation Measure 4.14-2 applies to the MPWSP Desalination Plant

> (See Impact 4.14.2, above, for a description)

4.14.7 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.14-C: Cumulative impacts related to aesthetic resources. (*Less than significant with mitigation*)

The geographic scope of potential cumulative impacts on aesthetic resources encompasses the locations from which a viewer could see the MPWSP construction or operations elements along with views of other projects in the cumulative scenario. The timeframe during which the MPWSP could contribute to cumulative aesthetic resources effects includes the 24-month construction phase, as well as the anticipated approximately 40-year operations phase. A significant cumulative effect on aesthetic resources would result if the effects of the MPWSP combined in space and time with those of cumulative projects to cause substantial degradation of the same scenic resources. A significant cumulative effect related to light and glare would result if the effects of the MPWSP combined in space and time with those of other cumulative projects to cause substantial nuisance or hazard conditions on the same light-sensitive receptor.

Cumulative Construction Impacts

As discussed in Impact 4.14-1, the MPWSP construction activities would have temporary adverse visual impacts (e.g., presence of construction vehicles, staging of materials, and exposure of soils). However, given their temporary nature and that these areas would be restored to their approximate pre-construction condition following construction, such impacts would not be expected to have a significant impact with respect to aesthetic resources. Projects described in Table 4.1-2 whose effects could combine with those of proposed project construction to have an adverse effect on scenic resources include Fort Ord Dunes State Park Campground (No. 46), the Castroville Bicycle and Pedestrian Overcrossing (No. 36), the Beach Junction Structure Project (No. 61), and the CEMEX Removal Plan and Reclamation Plan (No. 63). The remaining cumulative projects in proximity to the MPWSP and with construction schedules that could result in the types of effects described above either are not proposed for scenic areas or would not be visible from the MPWSP (or scenic resources affected by the MPWSP) due to topography or other visual obstruction.

Each project is situated along a scenic corridor, but also within near-highway areas and proximate to existing development. Construction of these projects would involve aesthetic resource impacts similar to those described for MPWSP construction in Impact 4.14-1. Such impacts would be visible mainly to motorists traveling along Highway 1 in Seaside, Highway 156 and Merritt Way in Castroville, and Highway 1 in Marina. Implementation of these projects concurrent with or sequential to the new Transmission Main, Castroville Pipeline Optional Alignment 1, or subsurface slant wells, would extend the duration of time passersby are exposed to these impacts. However, as motorists would be traveling at high rates of speed, and likely focused on the road, such views would be fleeting. The overall duration of the visual disturbance would be temporary, limited to the construction phases of these projects. For these reasons, the impact severity would not be substantially different from that described previously for individual pipeline construction. For these

reasons, the effects of MPWSP construction would not combine with those of cumulative projects to cause a significant cumulative effect with respect to aesthetic resources (*less than significant*).

As analyzed in Impact 4.14-2, proposed project construction would have a less-than-significant impact related to glare, and potential glare would be minimal and site-specific and thus would not contribute to a cumulative aesthetic impact. However, construction could result in a significant nighttime lighting impact associated with nighttime construction of the subsurface slant wells, Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, Castroville Pipeline, and ASR-5 and ASR-6 wells. The Beach Junction Structure Project identified in **Table 4.1-2** (No. 61) may require temporary nighttime construction lighting on the beach seaward of the slant well construction area, and may result in nighttime lighting impacts that would overlap with or occur in sequence with the proposed project's nighttime lighting at the slant well construction area. If overlap did occur, the combined effects could exceed the established thresholds of significance, resulting in a significant cumulative impact. However, following implementation of **Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures)**, the proposed project would have a less-than-significant impact related to nighttime construction lighting, and its contribution to any cumulative impacts would be reduced to a level that is less than significant because this measure would ensure that nighttime lighting has minimal spillover from active construction sites.

Cumulative Operations Impacts

As analyzed relative to Impact 4.14-3, the MPWSP Desalination Plant, ASR-5 and ASR-6 wells, and the Carmel Valley Pump Station would have a less-than-significant effect related to scenic resources and visual character. The subsurface slant wells, as viewed from Highway 1, could result in significant impacts on scenic resources and visual character. However, these components would not cause or contribute to a significant cumulative impact on scenic resources or visual character, because none of the projects identified in **Table 4.1-2** is proposed for a location that would be visible from an above-ground MWPSP component and have an adverse effect on the same scenic resource. Consequently, the combined operations-related effects of the MPWSP and cumulative projects identified in **Table 4.1-2** would result in a less than significant cumulative effect with respect to scenic resources and visual character.

As analyzed in Impact 4.14-4, proposed project operation would have no impact related to glare. The effects of the MPWSP Desalination Plant's operational nighttime lighting would be less than significant. The proposed ASR-5 and ASR-6 Wells and the Carmel Valley Pump Station would each require nighttime security lighting that could have substantial adverse effects on nearby receptors. However, no projects identified in **Table 4.1-2** are proposed for areas that would be affected by MPWSP nighttime security lighting. Consequently, the combined operations-related effects of the MPWSP and cumulative projects identified in **Table 4.1-2** would result in a less than significant cumulative effect with respect to permanent sources of light and glare.

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4.15 Cultural and Paleontological Resources

Sections	Tables	Figures
4.15.1 Introduction	4.15-1 Criteria for Determining Paleontological Potential	4.15-1 Culturally Sensitive Areas
4.15.2 Setting/Affected Environment	4.15-2 Applicable Regional and Local Land Use Plans and Policies Relevant to Cultural and Paleontological Resources	4.15-2 Historic Resources in the Source Water Pipeline APE
4.15.3 Regulatory Framework	4.15-3 Damage Threshold to Historic Buildings from Construction Equipment	
4.15.4 Evaluation Criteria	4.15-4 Summary of Impacts – Cultural and Paleontological Resources	
4.15.5 Approach to Analysis		
4.15.6 Direct and Indirect Effects of the Proposed Project		
4.15.7 Cumulative Effects of the Proposed Project		

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Revisions to Mitigation Measure 4.15-2b to reference compliance actions in accordance with the National Historic Preservation Act and 36 CFR Section 800, and;*
- *Revisions to Mitigation Measure 4.15-4 to reference compliance actions in accordance with the Native American Graves Protection and Repatriation Act, Section 3.*

4.15.1 Introduction

This section discusses the potential for the various components of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to affect previously identified and/or inadvertently discovered cultural and paleontological resources. Cultural resources include architectural resources, archaeological resources, traditional cultural properties, and human remains. Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils.

Based on CEQA Guidelines Section 15064.5(a), historical resources include, but are not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or that is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a lead agency considers a resource to be "historically significant" if the resource meets the criteria for listing in the California Register of Historical Resources (California Register) (Public Resources Code [PRC] 5024.1).

Under the National Historic Preservation Act (54 U.S.C. § 300301 et seq.) implementing regulations, historic properties are defined as any prehistoric or historic-era district, site, building, structure, or object included on, or eligible for inclusion on, the National Register of Historic Places (National Register), including artifacts, records, and material remains relating to the district, site, building, structure, or object. (54 U.S.C. § 300308). Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing

(NPS, 1990). Historic properties that meet federal criteria are also considered historical resources under CEQA, in accordance with PRC Section 5024.1(d)(1). Historical resources and historic properties refer to significant architectural/structural resources, significant archaeological resources (including maritime resources such as shipwrecks), and traditional cultural properties.

4.15.1.1 Definitions

Cultural Resources

Architectural/Structural Resources

Architectural/structural resources are typically elements of the built environment, including but not limited to buildings, structures, objects, sites, and districts; these resources range from single-family residences, stores, schools, and factories to downtown commercial districts, ranches, military bases, roads, railroads, bridges, tunnels, gardens, and statues. The term "structure" is used to create distinction between infrastructure and facilities, such as roads, railroads, trails, bridges, dams, canals, ditches, and retaining walls, and buildings made for purposes other than human shelter such as barns, sheds, or workshops. A structure that has lost its historical configuration or pattern of organization through deterioration or demolition (e.g., bridge footings, foundations) is usually considered a ruin and categorized as an archaeological site.

Archaeological Resources and Traditional Cultural Properties

An archaeological site is defined as "the location of a significant event, a prehistoric or historic-era occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure" (NPS, 1990). Prehistoric archaeological materials might include obsidian and chert flaked stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, adobe, or wooden footings, foundations, and walls; artifact-filled wells or privies, and sheet refuse; or deposits of metal, glass, and/or ceramic refuse. Shipwrecks and other maritime related resources such as remnant wharfs and piers can be considered archaeological resources. Faunal and floral remnants can be associated with both prehistoric and historic-era sites. Human remains can be associated with archaeological sites or found in an isolated context.

A Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the National Register based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. The cultural significance of a TCP is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, snails, and marine coral), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend

on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries not only provide a historical record of past plant and animal life but can assist geologists in dating rock formations. In addition, fossil discoveries can expand our understanding of the time periods and geographic ranges of existing and extinct flora or fauna.

4.15.1.2 Area of Potential Effects

The Area of Potential Effects (APE) is the study area for architectural/structural, archaeological, and paleontological resources and is the area that could be affected by the proposed project. This analysis relies on the federal definition of APE, which is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(b)). The proposed project is equivalent to the federal undertaking (36 CFR 800.16(y), defining "undertaking" as a "project, activity program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . "those requiring a Federal permit, license or approval.").

Direct APE (Archaeological/Paleontological APE)

The *direct* APE (also the archaeological and paleontological APE) is identical to the lateral extent of the project area boundary (see **Figures 3-2** through **3-14** in Chapter 3, Description of the Proposed Project). Like the project area boundary, the direct APE represents all areas where construction-related ground disturbance could occur, including open excavations, construction work areas, and staging areas. Not all portions of the direct APE (project area boundary) would necessarily be disturbed. The horizontal direct APE for nonlinear facilities (i.e., the MPWSP Desalination Plant, subsurface slant wells, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station) is based on the anticipated footprint and construction-related disturbance associated with each facility.

The standard width of the direct APE for pipelines proposed in undeveloped areas is approximately 100 feet; for pipelines proposed within existing roadways, the width of the direct APE is equal to the width of the road right-of-way (typically 30 to 100 feet from curb to curb). Pipeline trenches would generally be no more than 6 feet wide, except in areas with sandy soils and where there are no constraints to excavating a wider trench (i.e., known resources, geography, existing utilities, or other facilities that restrict the construction area). In these areas, a trench width of up to 10 or 15 feet could potentially be used to reduce costs related to shoring the trench. For all pipelines, the length of the direct APE is equal to the length of the proposed pipeline.

The depth of the direct APE varies for each of the project components. Pipeline depths would average 8 feet below the ground surface, with deeper excavations required where pipelines would be installed via trenchless technologies (i.e. jack and bore, horizontal directional drilling, etc.). The maximum construction area for the Desalination Plant would be the 25-acre development area. Depth of ground disturbance for the facilities would not exceed 12 feet below ground surface. The slant wells would be approximately 900 to 1,000 feet long and drilled at approximately 14 degrees below horizontal to extend up to 356 feet seaward of the MHW line

(except #8, which would not extend past the MHW line) and to a depth of 190 to 210 feet beneath the sea floor. The direct APE for the subsurface slant wells includes an area within MBNMS.

Indirect APE (Architectural/Structural APE)

The *indirect* APE (also the architectural and structural APE) encompasses the direct APE as well as the area of indirect impact, which for historic architectural resources includes the viewshed or setting visible from a project component as well as the area subject to construction-related vibration.

The horizontal extent of the indirect APE is inclusive of any areas that could be subject to significant vibration effects from construction equipment. For project pipelines that are proposed in roadways, the indirect APE encompasses the width of the road right-of-way (typically 50 to 75 feet from curb to curb) as well as buildings and structures within 45 feet of the outside curb. The indirect APE for the subsurface slant wells and the ASR-5 and ASR-6 Wells encompass a 25-foot radius from the point of insertion (i.e., from the locations where the drill rigs would be operated). For project components in unpaved areas, the indirect APE is 45 feet from the centerline of the pipeline or a 45-foot buffer from a project component. For pipeline installations that would require trenchless construction techniques employing installation of sheet piles, the indirect APE is 85 feet from the jacking or receiving pit.

With respect to project effects on the viewshed or setting visible from a project component, the majority of the project components would be constructed below ground (i.e., pipelines) and would not affect the viewshed or setting associated with potential historical resources. For aboveground components, the viewshed and/or setting visible from a project component is included in the indirect APE. Section 4.14, Aesthetic Resources, further addresses the potential aesthetic and visual quality impacts associated with implementation of the proposed project.

4.15.2 Setting / Affected Environment

The study area for evaluation of cultural and paleontological resources impacts is the area of direct and indirect impact for the proposed project as described above in Section 4.15.1.2 Area of Potential Effects.

4.15.2.1 Cultural Setting

This section presents a brief overview of the environmental, geological, ethnographic, and historical background of the project vicinity. The project area extends across portions of unincorporated Monterey County and the cities of Marina, Seaside, Sand City, and Monterey. This section has been partially adapted from Jones and Holson (2009).

Natural Environment

The Monterey Bay area is bounded on the north by the Santa Cruz Mountains and on the south by the Gabilan and Santa Lucia Mountains. There are extensive alluvial plains in the southern half of the area between the coast and the mountains. A great submarine canyon extends from Moss Landing into the Pacific Ocean (Gordon, 1996).

The Monterey Bay area has two seasons—a cooler, wetter winter season and a warmer, drier summer season. Average annual rainfall in this area ranges from 15 to 27 inches, increasing with elevation. This area is temperate, with weather conditions varying from cloudy and rainy to clear and fair.

The Monterey Bay area is home to a vast array of floral and faunal species that would have been utilized by both prehistoric and early historic-period populations. Mayer and Laudenslayer (1988) describe the two dominant habitats in the Monterey Bay area as coastal oak woodland and coniferous montane hardwood. Native to coastal oak woodland is the coast live oak tree. During the Mission Period (1769–1834), early settlers in the area affected the integrity of this habitat through the introduction of agriculture and animal husbandry; in addition, the importation of aggressive annual species hindered the development of young oaks. As a result, portions of the woodland have become open woodlands or savannas. Over 60 species of mammals and over 110 species of birds—including California quail, deer, and squirrel—live in the coastal oak woodland habitat. A variety of tree species are found in coniferous montane hardwood habitat, including coast live oak, big-leaf maple, Pacific madrone, tan oak, canyon live oak, Coulter pine, and coastal redwood. Animals found in the coniferous montane hardwood habitat include California quail, plain titmouse, scrub jay, rufous-sided towhee, Bewicks wren, bush tit, and acorn woodpecker, among others.

Geological Context

The California coast has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among the changes (Helley et al., 1979). In many places, the interface between older land surfaces and Holocene-age landforms are marked by a well-developed buried soil profile (or "paleosol"). Paleosols preserve the composition and character of the earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archaeological resources if the area was occupied or settled by humans (Meyer and Rosenthal, 2007). Because human populations have grown since the arrival of the area's first inhabitants, younger paleosols (late Holocene) are more likely to yield archaeological resources than older paleosols (early Holocene or Pleistocene).

The direct APE intersects several geologic deposits, including artificial fill, Holocene-age dune sand, Holocene-age alluvial deposits, older Pleistocene-age marine terrace deposits, and bedrock (**Figure 4.15-1**). A geoarchaeological assessment completed for the Transportation Agency for Monterey County's (TAMC) Light Rail Transit Project indicated that portions of the direct APE have a high sensitivity for buried archaeological resources (Meyer in Ruby, 2010). According to Meyer's assessment (Meyer in Ruby, 2010:29), the potential for buried archaeological resources can be determined based on three assumptions:

- Archaeological sites tend to be located near perennial water sources;
- Archaeological deposits from successive time periods are more common because the density of human populations increased over time; and
- The longer a landform remained at the surface, the greater the probability that any one spot on that landform was occupied.

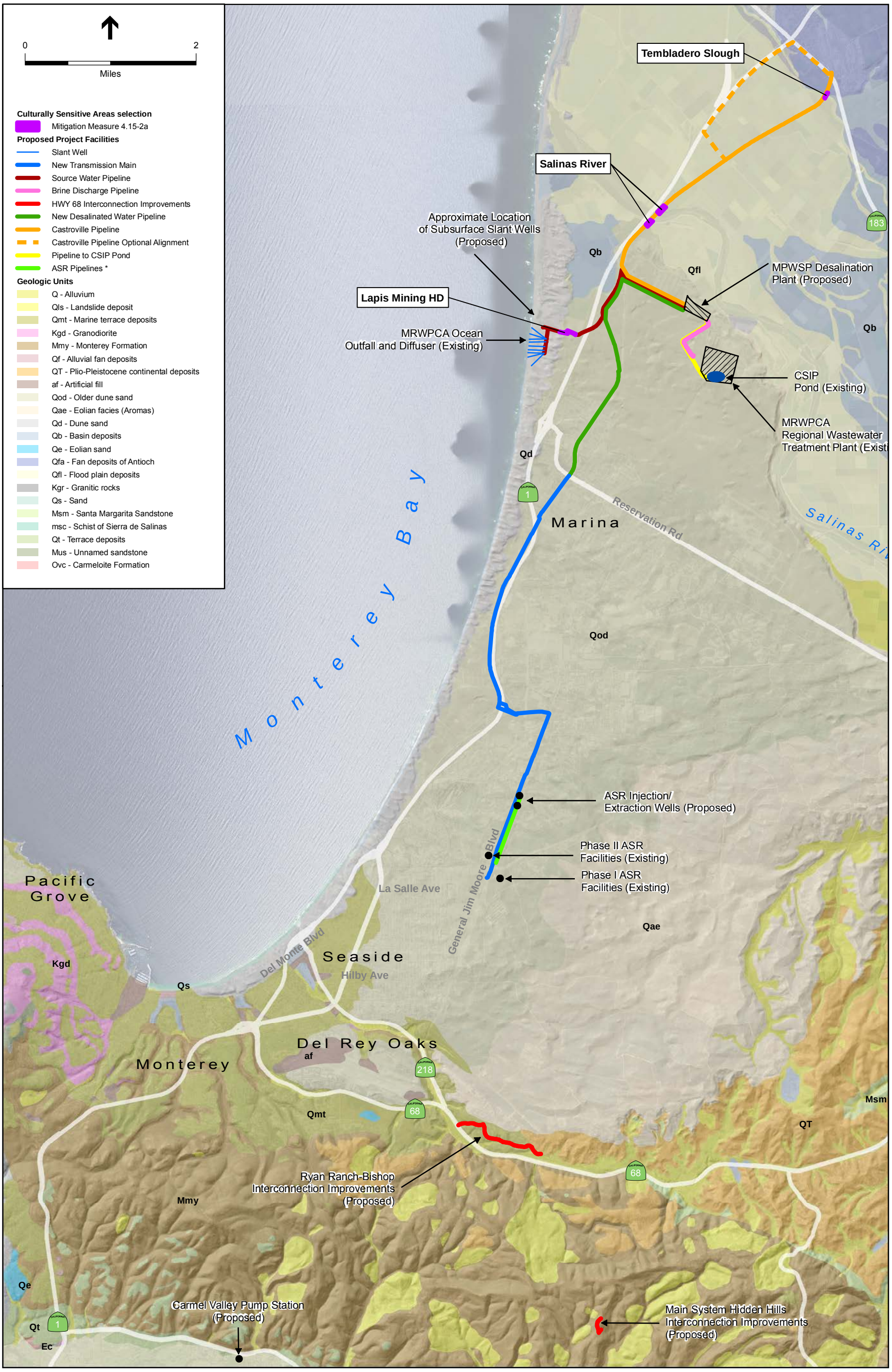
The Monterey Bay area locations determined to have the highest potential for buried archaeological sites are associated with channels or estuaries (Meyer in Ruby, 2010) that traverse the direct APE. This includes Tembladero Slough and Salinas River.

Based on the above-described geoarchaeological assessment, there is potential for deeply buried, well-developed soil horizons to be present in portions of the direct APE, and thus potential for archaeological resources associated with those buried soils to be encountered during project work. Those locations include Tembladero Slough near Castroville and the Salinas River (see **Figure 4.15-1**). It is not recommended that additional subsurface investigations for deeply buried sites be conducted for the proposed project for the following reasons: few deeply buried sites have been previously discovered in the Monterey Bay vicinity, ground disturbance in the direct APE at locations with a high archaeological sensitivity would be relatively narrow (generally 6 feet wide) and linear (rather than areal); and the active coastal dune environment may have destroyed, disturbed, and/or removed archaeological materials.

Prehistoric Context

Archaeologists have developed individual cultural chronological sequences tailored to the archaeology and material culture of each subregion of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. Jones et al. (2007) provide a framework for the interpretation of the Central Coast and the Monterey Bay Area. The authors divide human history on the Central Coast into six broad periods: the *Paleo-Indian Period* (pre-8000 B.C.), the *Early Archaic Period* (8000 to 3500 B.C.), the *Early Period* (3500 to 600 B.C.), the *Middle Period* (600 B.C. to A.D. 1000), the *Middle/Late Transition Period* (1000 to 1250 A.D.), and the *Late Period* (A.D. 1250–1769). The periods have been largely defined on the basis of distinctive bead types; typological analysis and radiocarbon dating of *Olivella* beads show the bead sequence in the Monterey Bay Area as generally similar to those of the California Central Valley and the Santa Barbara coast. Economic patterns, stylistic aspects, and regional phases further subdivide cultural periods into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

Evidence of human habitation during the *Paleo-Indian Period*, characterized by big-game hunters occupying broad geographic areas, has not yet been discovered in the Monterey Bay Area. The oldest known occupation of the Monterey Bay area dates from ca. 5000 B.C., however data representing this earliest occupation is limited. The *Early Archaic Period* is represented by the *Millingstone Culture* (800 to 3500 B.C.) and is marked by large numbers of handstones and/or millingslabs, crude core and cobble-core tools, and less abundant flake tools and large side-notched projectile points. Millingstone components have been identified at locations in Monterey County near Elkhorn Slough and Monterey Peninsula. Faunal remains indicate that Millingstone people exploited shellfish, fish, birds, and mammals, and with a majority of Millingstone sites less than 25 kilometers from the shoreline there appears to have been a focus on shellfish consumption.



NOTE:
*Refer to figure 4.2-2 for "A" geologic cross-section information and 4.2-3 for "B" geologic cross-section information.

SOURCE: CGS, 2002

205335.01 Monterey Peninsula Water Supply Project

Figure 4.15-1

Culturally Sensitive Areas

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The *Early* and *Middle Periods* are represented by the *Hunting Culture* (3500 B.C. to A.D. 1250), which was marked by large quantities of stemmed and notched projectile points. During the *Early Period* (3500 to 600 B.C.), the first cut shell beads and the mortar and pestle are documented in burials, indicating the beginning of a shift from mobility to sedentism. During the *Middle Period*, (600 B.C. to A.D. 1000), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse and required logistical hunting techniques. Coastal habitation was still preferred but large Hunting Culture middens have also been identified in inland valleys.

The *Late Period* (A.D. 1250–1769) is distinguished from the Hunting Culture by large amounts of Desert side-notched and Cottonwood arrow points, small bifacial bead drills, bedrock mortars, hopper mortars, distinct *Olivella* bead types, and steatite disk beads. These assemblages represent social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. This differs dramatically from the Hunting Culture materials and may represent developments associated with population increase, environmental changes, and ethnic migrations.

Ethnographic Setting

Based on a compilation of ethnographic, historic, and archaeological data, Milliken et al. (2009) describes a group known as the Ohlone, who once occupied the general vicinity of the project area. While traditional anthropological literature portrayed the Ohlone peoples as having a static culture, today it is better understood that many variations of culture and ideology existed within and between villages. While these "static" descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors, this masks Native adaptability and self-identity. California's Native Americans never saw themselves as members of larger "cultural groups," as described by anthropologists. Instead, they saw themselves as members of specific villages, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins.

Levy (1978) describes the language group spoken by the Ohlone, known as "Costanoan." This term is originally derived from a Spanish word designating the coastal peoples of Central California. Today Costanoan is used as a linguistic term that references to a larger language family spoken by distinct sociopolitical groups that spoke at least eight languages (as different as Spanish is from French) of the same Penutian language group. The Ohlone once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The proposed project is in the greater Rumsen-speaking tribal area; their territory extended from Point Sur northward to the lower Pajaro River, and included the present-day cities of Monterey, Seaside, Marina, and Carmel. Dialects of the Rumsen language were spoken by four independent local tribes, including *Rumsen* in Monterey, *Ensen* of the Salinas vicinity, *Calenda Ruc* of the central shoreline of Monterey Bay, and *Sargentaruc* of the Big Sur Coast. Five villages were

present in their territory at the time of Spanish contact: *Achasta*, *Tucutnut*, *Soccorronda*, *Echilat* and *Ichxenta* (Milliken et al., 2009).

Economically, Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals. The Ohlone acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone, while not federally recognized, still have a strong presence in the Monterey Bay Area, and are highly interested in their historic and prehistoric past.

Historic-Era Background

This brief history of Monterey County was adapted from *Historic Spots in California* (Hoover et al., 2002) and supplemented by Breschini et al. (1983). The following discussion summarizes the major events of the post-contact period in the project vicinity.

Spanish Period

Although the first Spanish incursions into the Monterey area began in the early 17th century (with the 1602 Vizcaino expedition), it was not until over a century later that the Spanish government took an active interest in colonizing the territory then known as Alta California. Captain Gaspar de Portola led a land expedition to Monterey by way of the coast in 1769 (Hoover et al., 2002). The first Spanish exploration of the Salinas Valley followed in 1774, when Don Juan Bautista de Anza's expedition established a route through the valley to Monterey. This route was known as El Camino Real, the Royal Road.

The mission system was an important institution in the colonization process of Alta California, the purpose of which was to Christianize the native people and turn them into tax-paying, Spanish-speaking colonists. The methods practiced by the Franciscan friars emphasized Hispanic modes at the expense of the traditional culture. The Spanish established 21 missions along El Camino Real, from San Diego to Sonoma, as well as presidios and pueblos. In the Monterey Bay area, Spanish authorities founded a presidio and mission in 1790 (further discussion below, in regional history). Other nearby Missions and pueblos also affected the native population of Monterey County, and established a new immigrant population.

Life for the new converts was (at best) difficult under the mission system. Converts were given European names and pressured to take up a sedentary way of life. Instead of relying on traditional skills such as fishing and gathering, converts were taught agricultural and pastoral techniques to produce supplies for the mission. Although the native population never completely abandoned their traditional lifeways, the social structure was severely disrupted. Many Native Americans died from European diseases to which they had no resistance, as well through abuse, violence,

neglect, and military incursions. In contrast, the new colonial population prospered and grew, as did the animal populations and agricultural products that they brought with them.

Mexican Period

Spanish control of California ended with Mexican independence in 1821. In 1834, the Mexican government secularized the missions, freeing the Native Americans from the control of the missionaries. Returning to their traditional way of life was difficult, however, since land holdings were given to Mexican settlers ("Californios") rather than reverting to original ownership. A few Native Americans were granted land, but records show that, for the most part, the indigenous people quickly lost ownership through land claims disputes and sales. Native people became increasingly marginalized as a result of decreasing population, the stresses of mission life, and the erosion of traditional knowledge. Some Native Americans returned to their villages and resumed their traditional economy, replacing bows and arrows with guns. Others found jobs as vaqueros, or cowboys, on the ranchos operated by Mexican settlers. Census records show the number of Native Americans declined steadily into the 20th century.

In Monterey County, 76 land grants were made to Mexican settlers, more than in any other county (Beck and Haase, 1980). The lands adjacent to the Salinas River were highly valued and accounted for approximately one-half of the total land grants made in Monterey County. Some grantees used their land to establish ranches with enormous, free-ranging herds of horses and Spanish cattle. Cattle powered the Californio economy; cattle hides and tallow were the medium of exchange in business transactions among the Californios and with many trading ships that came from the American east coast.

By 1846, the population of Alta California was comprised of an estimated 8,000 settlers and 10,000 indigenous people (Breschini and Haversat, 1983). This figure represents a drastic decline in the Native American population from the estimated 133,500 in 1770. During Mexican control of Alta California, several hundred Americans settled; some of the Americans became citizens of Alta California by marrying into Mexican families and received land grants.

American Period

The 1848 Treaty of Guadalupe Hidalgo brought Alta California under the control of the United States. News of the Gold Rush that same year sparked a huge migration into California. With the rapid influx of settlers came legal disputes over the ownership of lands awarded by Spanish or Mexican authorities. The new American government passed the Land Act of 1851, which placed the burden of proof-of-ownership on the grantees; as a result, the few Native Americans who had received grants lost their titles, as did many of the Hispanic owners. By congressional action, grant claims were heard by a board of land commissioners and then appealed in federal courts. The outcome of the litigation was that federal officials ultimately recognized approximately 75 percent of the Mexican land grants; however, the majority of the petitioners had already sold off most of their holdings (Hoover et al., 2002:xvi).

Farming during the American period was characterized by three types of pursuits: cattle and sheep ranching, grain farming, and irrigated agriculture. Cattle and sheep ranching dominated

until the 1880s. During this time, free-ranging, comparatively wild Spanish cattle were replaced by American breeds of livestock and dairy cows. Fencing with wooden posts and barbed wire became a prominent feature across the landscape. During the 1880s, Monterey County was California's third-ranking producer of livestock (Hoover et al., 2002). The development of railroads, including the Southern Pacific and regional lines such as the Monterey and Salinas Valley Railroad and the Pajaro Valley Consolidated Railroad, allowed for distribution and improved marketing for the central coast region. By 1901, the coast route was open and running between San Francisco and Los Angeles. Agriculture became more intensive as farming shifted to wheat and barley cultivation. Early crops included sugar beets and alfalfa. The present-day Armstrong Ranch typifies commercial and agricultural development in Monterey County and along the central coast.

Regional History

Monterey. Captain Gaspar de Portolá was sent to Monterey with the objective of establishing Spain's first military base in Alta California (Hoover et al., 2002). After failing to find Monterey Bay on his first land expedition along the coast in 1769, he again set out with his party early the following year. He reached Monterey on May 24, 1770 and was followed by a support vessel carrying Father Junipero Serra and Captain Juan Pérez.

Father Junipero Serra founded a mission at the Presidio, which he moved to the Carmel Valley in 1771. Named Mission San Carlos Borroméo, the mission is located at the mouth of the Carmel River in present-day Carmel. Dedicated in 1797, it became the home of Father Serra in his later years. In Monterey, the Presidio and surrounding area became the focal point for military and commercial life in the Monterey Bay area. By 1796, a battery had been constructed consisting of fortifications known as "El Castillo" (Jackson et al., 1985). This site was equipped with several cannons and provided a defense for the bay, town of Monterey, and the Presidio. Both resources are listed in the National Register. El Castillo is individually listed in the National Register, and the Presidio is part of a National Register District.

Monterey was retained as the capital of Alta California following Mexican Independence in 1821, at which time the Port of Monterey was opened for trade. Settlement before Mexican Independence had been concentrated inside the walls of the Presidio. Following Independence and the opening of the port, settlement began to expand into what is now Old Monterey. Several Mexican-era adobes are still present and part of the Monterey Old Town Historic District, which is a designated National Historic Landmark District and listed in the California Inventory of Historical Resources and the National Register. The Monterey Old Town Historic District is a two-part, noncontiguous area in the City of Monterey that contains many of the historic buildings and adobes of Spanish and Mexican California. It was designated a Landmark District in 1970 due to its ability to convey the Spanish Colonial character of Monterey and California.

During the American Period, Monterey retained its regional importance. It was incorporated as a city in 1850 and remained a vital port. The first American Federal Courthouse in Monterey was located in the Gabriel de la Torre Adobe at 599 Polk Street. At the turn of the century, many Sicilian fishermen settled in Monterey and Cannery Row as the fishing industry, which focused

primarily on sardines, became established in Monterey. The Italian character of Monterey endured until the 1950s when the sardine fisheries that supported Cannery Row collapsed. Cannery Row is currently maintained as a Monterey tourist attraction and community, and its family ties to Sicily remain strong.

Armstrong Ranch (previously Bardin Ranch). Armstrong Ranch in Monterey County is a 2,260-acre tract purchased by John G. Armstrong from James Bardin and the Bardin family in 1885. Armstrong Ranch is located north of Reservation Road. The original boundaries of the Armstrong Ranch included the proposed MPWSP Desalination Plant site, the subsurface slant wells site, and a portion of the Source Water Pipeline; however, the current ranch boundaries are significantly reduced.

Armstrong came to San Francisco in 1868 and later settled in Monterey County. In 1885, Armstrong purchased 1,372.5 acres of land west of the Monterey and Salinas Railroad grade from James Bardin of the Bardin Ranch. Armstrong purchased three additional parcels from the Bardin family, totaling 2,800 acres. Armstrong sold approximately 400 acres of land to the San Francisco Sand Company in 1906. In 1973, the California Department of Transportation (Caltrans) condemned a linear tract of land passing through the Armstrong Ranch for use as a state highway. Construction of Highway 1 across the Armstrong Ranch began in 1974 (Clark, 1991:19).

Regional Railroads

Southern Pacific Railroad and the Del Monte Express. The existing TAMC railroad tracks are adjacent to the Castroville Pipeline and the new Transmission Main, and consist of the original Southern Pacific Railroad to Monterey. In 1865, a group of San Francisco businessmen formed Southern Pacific Railroad to construct a railroad from San Francisco to San Diego.

During the early 1870s, the Southern Pacific Railroad Company expanded its line down the Salinas Valley, stopping in Soledad. The line was used both as a freight line for farmers to ship produce north to the San Francisco region and as a passenger line for travelers heading to southern Monterey County destinations. From Soledad, southbound travelers could transfer to the Coast Line Stage Company stage routes (Ryan and Breschini, 2000). After buying up the narrow-gauge Monterey and Salinas Valley Railroad (see below) in 1879, Southern Pacific regraded the railroad route to Monterey as a standard-gauge line in 1880 and gained control of rail traffic in the Monterey area.

In coordination with the acquisition of the rail line to Monterey, the Pacific Improvement Company (PIC), the holding company for the owners of the Southern Pacific Railroad—Charles Crocker, Collis P. Huntington, Mark Hopkins, and Leland Stanford—built the Del Monte Hotel in Monterey. The palatial resort hotel was an attempt to attract a passenger trade for the railroad. When the Del Monte Hotel was opened in 1880, Southern Pacific began daily railroad service from San Francisco to the Monterey called the “Monterey Express.” After the reopening of the second Del Monte Hotel, the rail service was renamed the “Del Monte Express” in 1889 (Hoffmann, 2001a:4). Early Del Monte Express trains included a club car and a parlor-lounge-observation car, and catered to the tourist trade (Hoffmann, 2001a:5).

In 1888, Southern Pacific made plans to extend the rail service through Monterey to Pacific Grove and then on to the Carmel River (Oehlert, 1978:41). The railroad construction began in 1889, passed the Monterey Customs House and ended in Pacific Grove near Lake Mejela (Oehlert, 1978:42–43). The route to the Carmel River was never completed.

The Del Monte Express service was powered by steam engines until 1955, when diesel engines replaced them (Hoffmann, 2001b:4). Other changes occurred in the mid-twentieth century that had an effect on the railroad. From World War II on, after the Del Monte Hotel became a Naval school, the number of tourist passengers using the Del Monte Express dropped (Hoffmann, 2001b:5). The advent of the automobile also had its effect on rail service. By 1957, rail service to Pacific Grove was cut back and the route ended at Monterey. In 1959, the U. S. Postal Service cancelled its San Francisco to Pacific Grove route, which used the train, and Southern Pacific started petitioning the California Public Utilities Commission to discontinue the Del Monte Express (Hoffmann, 2001b:6). In 1971, 82 years after it was started, the Del Monte Express service was terminated (Hoffmann, 2001b:6).

Monterey and Salinas Valley Railroad. The Monterey and Salinas Valley Railroad extended across the proposed MPWSP Desalination Plant site. In response to skyrocketing freight rates charged by the Southern Pacific Railroad, a group of Salinas Valley citizens began calling for an independently owned and operated railroad. Several prominent Monterey County businessmen formed the Monterey and Salinas Valley Railroad and filed articles of incorporation in February 1874 in the Monterey County Court House. Construction of the 18.5-mile narrow-gauge railroad began in April 1874 (Clark, 1991:322). The railroad began in Monterey near Adam Street and extended north beyond Marina, turning northeast across the valley to the Salinas River and finally heading southeast toward Salinas. The Monterey and Salinas Valley Railroad was the first narrow-gauge railroad in California and was designed to carry freight and passengers. As noted by Fabing and Hamman (1985), the Monterey and Salinas Valley Railroad completed its first round-trip in October 1874, bringing "...beans and barley from the J. Bardin Ranch."

As a result of financial losses, the Monterey and Salinas Valley Railroad was forced into bankruptcy not long after it began operation. The Southern Pacific Railroad purchased the Monterey and Salinas Valley Railroad in August 1879 at a foreclosure sale. The Southern Pacific Railroad replaced the narrow-gauge tracks from Castroville to Monterey with a new standard gauge line. The narrow-gauge line from Salinas to Marina (crossing the Bardin Ranch) was abandoned. Southern Pacific sold the Monterey and Salinas Valley Railroad locomotives, track, and equipment to the Nevada Central Railway.

Sand Mining

This discussion is relevant to the project facilities located in the CEMEX sand mining facility (subsurface slant wells and the segment of the Source Water Pipeline located east of Lapis Road). Beginning almost immediately after construction of the railroad and expanding following the 1906 earthquake in San Francisco, a sand mining industry developed along Monterey Peninsula's shore. Companies used sand from the coastal dunes that line Monterey Bay to produce both glass and building materials. Sand from Monterey's coastline was hauled by railroad and used in the

rebuilding of San Francisco, as well as in the growing cities and towns across the state. The San Francisco Sand Company opened the CEMEX sand mining facility (also referred to herein as the Lapis Sand Mining Plant) north of Marina in 1906 and constructed a small spur from the main line that extended west to the dunes. At the industry's height, between 300,000 and 400,000 cubic yards of sand were removed annually from the region (Herbert et al., 2010:18). The CEMEX sand mining facility is the only remaining sand mining facility in operation in Monterey Bay and represents one of the earliest and largest sand mining operations in southern Monterey Bay. (SWCA, 2014).

4.15.2.2 Paleontological Setting

Existing conditions in the project area were evaluated based on a review of site-specific geotechnical reports. Paleontological literature from the University of California Museum of Paleontology database was also reviewed. No field surveys for paleontological resources were conducted for the proposed project.

Paleontological Assessment Standards

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 1996, 2010). Most practicing paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists and reflect the currently accepted standard practices. Many federal, state, county, and city agencies have either formally or informally adopted the SVP's standard guidelines for the mitigation of adverse construction-related impacts on paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates the following:

- Vertebrate fossils and fossiliferous (fossil-containing) deposits are considered significant nonrenewable paleontological resources and are afforded protection by federal, state, and local environmental laws and guidelines.
- A paleontological resource is considered to be older than recorded history, or 5,000 years before present, and is not to be confused with an archaeological resource.
- Invertebrate fossils are not significant paleontological resources unless they are present within an assemblage of vertebrate fossils or they provide undiscovered information on the origin and character of the plant species, past climatic conditions, or the age of the rock unit itself.
- A project paleontologist, special interest group, lead agency, or local government can designate certain plant or invertebrate fossils as significant.
- In accordance with these principles, the SVP outlined criteria for screening the paleontological potential of rock units and established assessment and mitigation procedures tailored to such potential. **Table 4.15-1** lists the criteria for high-potential, undetermined, and low-potential rock units.

TABLE 4.15-1
CRITERIA FOR DETERMINING PALEONTOLOGICAL POTENTIAL

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered in the past, or rock formations that would be lithologically and temporally suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant. Common examples are: ● Most tertiary-age sedimentary rocks, especially fine-grained, low-energy deposits such as shale and mudstone ● Pleistocene-age alluvial fans, lake/playa deposits, shallow marine deposits, and marine terraces
Undetermined	Geologic units for which little or no information is available.
Low	Geologic units that are not known to have produced a substantial body of significant paleontological material, as demonstrated by paleontological literature and prior field surveys, and which are poorly represented in institutional collections. Common examples are: ● All intrusive igneous rocks (e.g., granites) ● Most metamorphic rocks and volcanic rocks (e.g., marble, slate, schist, basalt, etc.) ● Sediment deposited within the last 10,000 years (e.g., Holocene alluvium, bay muds/estuarine areas, slope wash, or recent landslide deposits)

SOURCE: SVP, 1996, 2010.

Although not discussed in the SVP standards, certain earth materials and rock units are highly unlikely to contain paleontological resources, such as artificial fills, surface soils, and high-grade metamorphic rocks. While such materials were originally derived from rocks, they have been altered, weathered, or reworked such that the discovery of intact fossils would be rare.

Geologic Setting and Paleontological Potential

Section 4.2, Geology, Soils, and Seismicity, describes the geologic units that the project components would be constructed on or within. Using the paleontological potential criteria described above in **Table 4.15-1**, the following geologic units may have the potential for paleontological resources:

- Older Dune Sands (Quaternary)
- Terrace Deposits (Pleistocene)
- Monterey Formation (Tertiary)

The marine Monterey Formation consists of siliceous and diatomaceous beds, with diatoms and some benthic foramanifera noted in the unit (Clark, 1997). Diatoms are a major group of algae and are among the most common types of phytoplankton. Most diatoms are unicellular, although they can exist as colonies in the shape of filaments or ribbons, fans, zigzags, or stars. Foraminifera are a phylum or class of amoeboid protozoa, characterized by a thin external net for catching food and usually an external shell. Most foraminifera are marine and typically live on or within the sea floor sediment (benthos), although a few species are floaters. The shells are commonly calcium carbonate or agglutinated sediment particles. They are usually less than 1 millimeter in size, but some are much larger, with the largest species reaching up to 20 centimeters. Diatoms and foraminifera are

typically microfossils and are not readily apparent to the unaided eye. The Monterey Formation is an extensive unit and the noted microfossils are common. As shown on **Figure 4.15-1**, the Main System-Hidden Hills Interconnection Improvements is located in the Monterey Formation. However, this alignment is also within existing road right-of ways where most shallow soils would have been reworked or replaced with imported fill.

The University of California Museum of Paleontology (UCMP) website notes that the Monterey Formation covers an extensive area of the state and in places consists of marine deposits rich in fossils (UCMP, 2013). Fossil finds in the unit include whales and dolphins, as well as the large numbers of finely preserved crabs, along with kelps and other large soft-bodied seaweeds, which are seldom found as fossils elsewhere. A database search of the UCMP website indicated a large number of fossils have been collected from the Monterey Formation in Monterey County, with the majority of the finds consisting of the microfossils discussed above. In addition, the UCMP collection includes near-coastal invertebrate and vertebrate species, primarily fan worms, bivalves (i.e., mollusks, clams, oysters, mussels, and scallops), and one whale specimen from an unidentified Monterey County location. None of the specimens with identified locations are in or near the locations of the project components.

The UCMP database search indicated a few microfossils from the younger geologic units (Older Dune Sands and Terrace Deposits) but none near the locations of the project components.

4.15.2.3 Existing Site Conditions

Background Research

Environmental Science Associates conducted a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on June 18, 2010 (File No. 09-1597) and updated on February 28, 2013 (File No. 12-0934) and May 31, 2016 (File No. 15-1766). The purpose of the records search was to: (1) determine whether known cultural resources have been recorded within the direct and indirect APE; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby resources; and (3) develop a context for the identification and preliminary evaluation of cultural resources. The records search consisted of an examination of the following documents:

- **NWIC base maps** (U.S. Geological Survey [USGS] Castroville, Monterey, Seaside, and Marina, California 7.5-minute topographic maps) to identify recorded archaeological sites and studies within a 1/2-mile radius of the proposed project and recorded architectural/ structural resources and studies conducted within or adjacent to the proposed project.
- **Resource Inventories:** California Department of Parks and Recreation (1976), *California Inventory of Historical Resources.* California Department of Parks and Recreation, Sacramento; California Office of Historic Preservation (2012), *Historic Properties Directory Listing for Monterey County* (through April 2012); California Department of Transportation (Caltrans), *Historic Bridge Inventory, District 4, Monterey County*, Updated 2010; California State Lands Commission Shipwreck Database.

- **Prehistoric Archaeology:** Jones, Terry, L., Nathan E. Stevens, Deborah A. Jones, Richard T. Fitzgerald, and Mark G. Hylkema, (2007), The Central Coast: A Midlatitude Milieu. In *California Prehistory: Colonization, Culture, and Complexity*. Jones, Terry L., Klar, Kathryn A., eds., Altamira Press, MD.
- **Ethnographic Sources:** Levy, Richard (1978), Costanoan. In *California, Handbook of North American Indians, Vol. 8*, edited by Robert F. Heizer, pp. 485–495; William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.; L. Kroeber (1925) *Handbook of the Indians of California.* Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, D.C.
- **Historical Background Sources:** Gudde, Erwin G. (1988), *California Place Names: The Origin and Etymology of Current Geographical Names.* Berkeley: University of California Press; Hoover, M.B., H.E. Rensch, E.G. Rensch, W.N. Abeloe (2002), *Historic Spots in California*. Revised by Douglas E. Kyle. Palo Alto, CA: Stanford University Press.
- **Historical Maps:** An extensive online historical map collection with approximately 50 maps and views of the Monterey Bay area is available online at http://davidrumsey.com.

Native American Consultation

The Native American Heritage Commission was contacted on October 19, 2010 to request a database search for sacred lands or other cultural properties of significance within or adjacent to the proposed project. An updated request was sent on June 13, 2016. A response was received on June 14, 2016. The sacred lands file did not contain any information on the presence of cultural resources in the vicinity of the proposed project. The Commission provided a list of Native American contacts that might have further knowledge of cultural resources in the vicinity of the proposed project. MBNMS conducted consultations according to the requirements of the National Historic Preservation Act (NHPA) of 1966, as amended. Native American consultation with the Ohlone tribes will be ongoing throughout the project.

Records Search Results

Records on file at the NWIC indicate that both architectural/structural and archaeological resources have been previously recorded within the records search radius, as defined in Study Methods above. The southwestern portion of the records search radius is located within an area rich in both prehistoric and historic-era resources, including the Monterey Old Town Historic District, the historic Presidio of Monterey, and the National Register-listed El Castillo (a large prehistoric habilitation site). The recently evaluated Lapis Sand Mining Plant Historic District in the vicinity of the proposed Source Water Pipeline has been determined eligible for listing in the National Register and the California Register (SCWA, 2014) (see the discussion under the heading, MPWSP Test Slant Well, below, for additional discussion).

Previous Studies

Dozens of cultural resources investigations have been completed in the project vicinity, primarily in the city of Monterey. Numerous shell middens as well as the Spanish- and Mexican-period occupations have been the focus of several studies and investigations. Several studies completed for linear projects (including the installation of fiber-optic cable, water lines, and the railroad) have evaluated cultural resources in the northern part of the proposed project. The closure of Fort

Ord resulted in several studies that included cultural resources surface surveys, archaeological and architectural evaluations, and an archaeological sensitivity study.

Portions of the project area were surveyed within the past decade for other projects using current standards and reporting methods. These previous studies are described below. Those areas previously surveyed within the past 5 years were not resurveyed for the proposed project.

CalAm Coastal Water Project EIR Cultural Resources Investigation

In 2009, Jones and Holson from Pacific Legacy, Inc. completed a cultural resources investigation for the Coastal Water Project (CWP) Environmental Impact Report (SCH No. 2006101004) (CPUC, 2009). There is some overlap between the proposed project and the facilities that were evaluated in the CWP EIR (Jones and Holson, 2009). Busby (2005) also completed a cultural resources assessment to support the CWP EIR.

Busby (2005) and Jones and Holson (2009) reviewed the archival records and previous studies completed within the CWP area and summarized those inventory efforts. They also completed a surface survey in select locations of the CWP area that had not been recently surveyed by a qualified archaeologist.

Monterey Peninsula Light Rail Transit Project Studies

Far Western Anthropological Group, Inc. (Far Western) and JRP Historical Consulting LLC (JRP) surveyed the Monterey Branch Line of the Southern Pacific Railroad in 2010 for the TAMC's proposed Light Rail Transit Project (Herbert et al., 2010; Ruby, 2010). Their study included an in-depth geoarchaeological assessment of the Monterey coastal area from Moss Landing to Pacific Grove, discussed above in Section 4.15.2.2, as well as a surface survey of the TAMC corridor including the Castroville Pipeline and the new Transmission Main.

Far Western and JRP surveyed the TAMC's proposed Light Rail Transit Project corridor, which included the railroad right-of-way from Castroville to Monterey. The majority of the survey was completed using narrow (less than 7-meter) transects; however, in some locations the survey area was wider, and transects were spaced approximately 20 meters apart. Visibility varied along the railroad tracks as the ground surface was covered in railroad ballast. Dense ice plant and pavement also obscured portions of the survey area.

Far Western recorded one prehistoric site adjacent to the Castroville Pipeline (see Study Findings below). As described in Section 4.15.2.2, above, the geoarchaeological assessment for the TAMC's proposed Light Rail Transit Project concluded that the corridor traverses areas with stream or river crossings, estuaries, and lagoons that are highly sensitive for buried prehistoric archaeological sites (Meyer in Ruby, 2010).

JRP recorded and evaluated the Monterey Branch Line of the Southern Pacific Railroad. With the exception of the Monterey Southern Pacific Passenger Depot (which was determined eligible for listing in the National Register in 2005 but is located outside of the direct APE), JRP recommended that the railroad and associated features were ineligible for listing in the National Register (or the

California Register) due to a lack of integrity (Herbert et al., 2010). As of this writing, the State Historic Preservation Officer (SHPO) has not yet concurred with this recommendation.

Fort Ord Studies

The ASR-5 and ASR-6 Wells would be located in the Fitch Park military housing community. Several cultural resources studies have been conducted within the boundaries of former Fort Ord, including: *Historical and Architectural Documentation Reports for Fort Ord* (Office of Directorate of Environmental Programs, 1993); *Historic-period Archaeological Survey at Henneken's Ranch and the Windmill Site, Fort Ord, Monterey County, California* (Bowman et al., 1994); *Management Summary of the Historic Period Archaeological Survey at Fort Ord, Monterey County, California* (Bowman, 1994); *A Cultural Resources Survey of 783 Hectares, For Ord, Monterey County, California* (Waite, 1994); *An Inventory of Historic-period Archaeological Sites at Fort Ord, Monterey County, California* (Babson, 1993); and *Historical and Architectural Documental Reports for Fort Ord, California* (Lapp et al., 1993). While Stilwell Hall and 35 other buildings were determined eligible for listing in the National Register, none of these architectural or structural resources are located at the ASR-5 and ASR-6 Well sites.

Archaeological sensitivity studies of the former Fort Ord military base were performed to determine the nature and extent of archaeological resources on the base (Swernoff, 1981; U.S. Army Corps, 1992; Waite, 1994). During the 1981 study a total 1,047.5 acres were surveyed. While only one prehistoric archaeological resource has been recorded within the former Fort Ord military base, the paucity of sites within the large (+20,000-acre) military base can be attributed to the long period of U.S. Army occupation at the base and the resulting major disturbances; the shifting nature of the western half of the base's soils in dune areas; the steep nature of the eastern portion of the base; the marginal nature of much of the soils and landforms within the base; and the small percentage of archaeologically surveyed areas or subsurface archaeological testing (Swernoff, 1981).

The Advisory Council of Historic Preservation (ACHP), the SHPO, and the U.S. Army entered into a Programmatic Agreement to address issues related to cultural resources during base closure. The Programmatic Agreement incorporated the results of the archaeological survey completed by the U.S. Army and includes provisions for handling any previously unidentified cultural resources or human remains discovered during environmental testing and cleanup.

MPWSP Test Slant Well Studies

This discussion is relevant to the subsurface slant wells at the CEMEX active mining area. As discussed in Chapter 3, Description of the Proposed Project, CalAm has constructed a test slant well at the CEMEX active mining area in north Marina. Environmental review covering the construction of the test slant well and operation of the pilot program was completed by the Monterey Bay National Marine Sanctuary in accordance with NEPA requirements in October 2014 and by the California Coastal Commission (CCC) in accordance with CEQA requirements in November 2014. The test slant well was also evaluated by the city of Marina in the *California American Water Slant Test Well Project Draft Initial Study/Mitigated Negative Declaration* (State Clearinghouse No. 2014051060) (City of Marina, 2014).

Under contract to the city of Marina and as part of that earlier CEQA effort, SWCA Environmental Consultants (SWCA) prepared a cultural resources investigation and evaluation for the test slant well (SWCA, 2014). SWCA evaluated the CEMEX sand mining facility (referred to therein as the Lapis Sand Mining Plant and CEMEX Plant) and determined it to be a Historic District eligible for listing in the National Register and the California Register under Criteria A/1 (association with an important event) and Criteria C/3 (architectural merit). The Lapis Sand Mining Plant Historic District includes several contributing resources: the Sorting Plant, Washing Plant, Canal Flume, Lapis Siding, Superintendent's Residence, Bunkhouse, Garage/Office, Maintenance Shop, Scale House and Office, and a number of small ancillary buildings spread throughout the property. The settling ponds and dredging pond located in the active mining area, just north of the Source Water Pipeline, were initially developed as part of the modernization of the facility in 1959–1960 (SWCA, 2014).

SWCA determined that development of the test slant well would result in direct damage or removal of the Lapis Siding, causing a significant impact on a Historic District contributor. SWCA recommended that the project be redesigned to avoid direct impacts on the Lapis Siding in adjacent areas that do not contain structures associated with the Lapis Sand Mining Plant. Several other contributing resources are located in close proximity of proposed trenching and earthmoving activities; however, given the industrial nature of the site, these activities would be consistent with the ongoing operations of the CEMEX sand mining facility. Construction and operation of the test slant well was not anticipated to have any visual effects on the Historic District because the test slant well and related components would be below ground (SWCA, 2014).

SWCA did not identify any archaeological resources at the CEMEX sand mining facility. However, SWCA recommended that all construction workers and supervisory personnel be required to attend a cultural resources awareness training session and that an archaeological monitor be present during any ground-disturbing activities occurring within 100 feet of historic buildings (SWCA, 2014).

Survey Methods and Conditions

Environmental Science Associates surveyed portions of the direct APE that had not been recently surveyed according to current standards on October 26 and 27, 2010; November 29 and 30, 2010; September 20, 2012; March 8, 2013; June 7, 2013; April 24, 2014, and June 28, 2016 (Koenig and Brewster, 2014). Aerial photographs of the project vicinity and copies of USGS 7.5-minute topographic maps showing previously recorded cultural resources were used in the field to guide the survey effort. The survey corridor varied depending on location and project component. In narrow survey areas, transects were spaced approximately 5 to 10 meters apart. In wider survey areas, such as the desalination plant direct APE and the subsurface slant wells direct APE, survey transects were spaced approximately 10 to 20 meters apart.

Paved or built-up portions of the proposed project study area, such as streets in Monterey, Seaside Sand City, Marina, and unincorporated areas, were subject to a cursory survey that included driving the project route to identify historic-era buildings or other structures located within the indirect APE. Photographs were taken to document the typical styles of each neighborhood or block. Areas

of exposed ground surface, including adjacent landscaping, were periodically checked, especially in the direct APE nearest to areas containing previously recorded cultural resources.

For the 2010 survey effort, permission was obtained to access the CEMEX active mining area (location of the proposed subsurface slant wells).

Two previously developed Programmatic Agreements identified procedures for managing cultural resources in the project vicinity in accordance with the NHPA: a March 1993 Programmatic Agreement between the U.S. Army, the ACHP, and the SHPO addresses historic properties and accidental discovery procedures for the Presidio of Monterey Historic District. An April 1994 Programmatic Agreement between the U.S. Army, the ACHP, and the SHPO established that the Phase I Archaeological Survey for prehistoric sites identified no historic properties within the contiguous boundaries of the former Fort Ord military base. The Fort Ord Programmatic Agreement also summarized accidental discovery and monitoring requirements for continued environmental cleanup activities within the former Fort Ord military base property (cited in Reese, 2004).

During the surface surveys, all exposed ground surface was checked for evidence of cultural materials or other evidence of past human use and occupation. Surface visibility was highly variable throughout the APE. Rodent burrow back dirt piles, cut banks, and exposed sand dune areas were closely inspected for indicators of archaeological deposits. Encountered cultural resources were formally recorded on the appropriate Department of Parks and Recreation 523 forms. All resources were photographed and plotted on a USGS 7.5-minute topographic quadrangle.

The proposed project is located in several diverse settings, including active and stable dune formations, paved city streets, and the Carmel Valley. Direct APE locations nearest to previously recorded resources, including landscaped areas or other areas of exposed soils, were thoroughly inspected, as described below:

- The direct APE for the subsurface slant wells is located on the west side of active coastal dunes. Visibility was good (approximately 90 percent). This area has been highly disturbed from the activities at the CEMEX sand mining facility. The contributing resources to the Lapis Sand Mining Plant Historic District were noted during the survey.
- The MPWSP Desalination Plant direct APE was covered in low-lying grasses. The soil was a light brown sandy loam, and visibility was moderate (approximately 50 percent).
- City streets in Marina, Seaside, Sand City, Monterey, and unincorporated areas as well as along the Highway 68 satellite systems were paved, offering limited visibility. Unpaved areas adjacent to roadways were inspected, but natural vegetation and landscaping obscured the ground surface.

Study Findings

Architectural/Structural Resources

Subsurface Slant Wells, MPWSP Desalination Plant, and Improvements to ASR System

No historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are located in the direct or

indirect APE of the subsurface slant wells, the MPWSP Desalination Plant, or the two additional ASR injection/extraction wells (the ASR-5 and ASR-6 Wells), the ASR Pump-to-Waste Pipeline, the ASR Conveyance Pipeline, and the ASR Recirculation Pipeline.

Pipelines and Other Conveyance Facilities

No historical resources eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are located in the direct or indirect APE for the proposed Brine Discharge Pipeline, Brine Mixing Box, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Previously identified cultural resources are in the vicinity of the direct and indirect APE of the Source Water Pipeline (Lapis Sand Mining Plant Historic District); the Castroville Pipeline, the new Desalinated Water Pipeline, and the new Transmission Main (Monterey Branch Line of the Southern Pacific Railroad).

The ***Lapis Sand Mining Plant Historic District*** is in the direct and indirect APE of the Source Water Pipeline. SWCA recorded and evaluated the historic district in 2014 as eligible for listing in the National Register and the California Register (**Figure 4.15-2**). The historic district comprises several contributing elements including the Sorting Plant, Washing Plant, Canal Flume, Lapis Siding, Superintendent's Residence, Bunkhouse, Garage/Office, Maintenance Shop, Scale House and Office, a number of small ancillary buildings spread throughout the property, several settling ponds, and a dredging pond. The section of the proposed Source Water Pipeline located within the CEMEX sand mining facility would be aligned approximately 65 feet from the north side of contributing buildings to the District. As the buildings and structures contributing to the District are outside of the direct and indirect APE, no further consideration of the architectural components of this resource is necessary for the proposed project. On May 3, 2017, the SHPO concurred with a finding of No Historic Properties Affected for the proposed project (Polanco, 2017).

- The ***Monterey Branch Line of the Southern Pacific Railroad (P-27-002923)*** is adjacent to the Castroville Pipeline, the new Desalinated Water Pipeline, and the new Transmission Main. Fourteen contributing resources, including the railroad line and associated buildings, have been evaluated for their eligibility to the National Register (Herbert et al., 2010). One building (located outside the direct and indirect APE)—the Monterey Southern Pacific Passenger Depot—was recommended eligible for individual listing in the National Register. Previous evaluations of the railroad found that the surveyed portions and related structures, including the trestle at Tembladero Slough and the steel Warren Truss Bridge at the Salinas River, are not eligible for listing in the National Register.

  The most recent recording and evaluation effort included all portions of the Monterey Branch Line from Moss Landing to Monterey. The evaluation concluded that while the Monterey Branch Line appears to meet the significance criteria for listing in the National Register, it lacks integrity to convey its significance. Therefore, it was recommended to be ineligible for listing in the National Register (Herbert et al., 2010). As a result, no further consideration of this resource is necessary for the proposed project.

Archaeological Resources

Subsurface Slant Wells

No prehistoric or historic-era archaeological resources have been previously identified in the direct APE for the subsurface slant wells. No archaeological resources were identified in this direct APE during the 2010–2016 survey effort. There are no known TCPs in the vicinity of the subsurface slant wells.

While not comprehensive, the California State Lands Commission Shipwreck Database does not list known maritime resources in the vicinity of the Subsurface Slant Wells.

MPWSP Desalination Plant

No prehistoric archaeological resources have been previously identified in the direct APE for the MPWSP Desalination Plant. No prehistoric archaeological resources were identified in this direct APE during the 2010–2016 survey effort. There are no known TCPs in the vicinity of the MPWSP Desalination Plant. One historic-era resource, a railroad grade, has been previously identified in the MPWSP Desalination Plant direct APE.

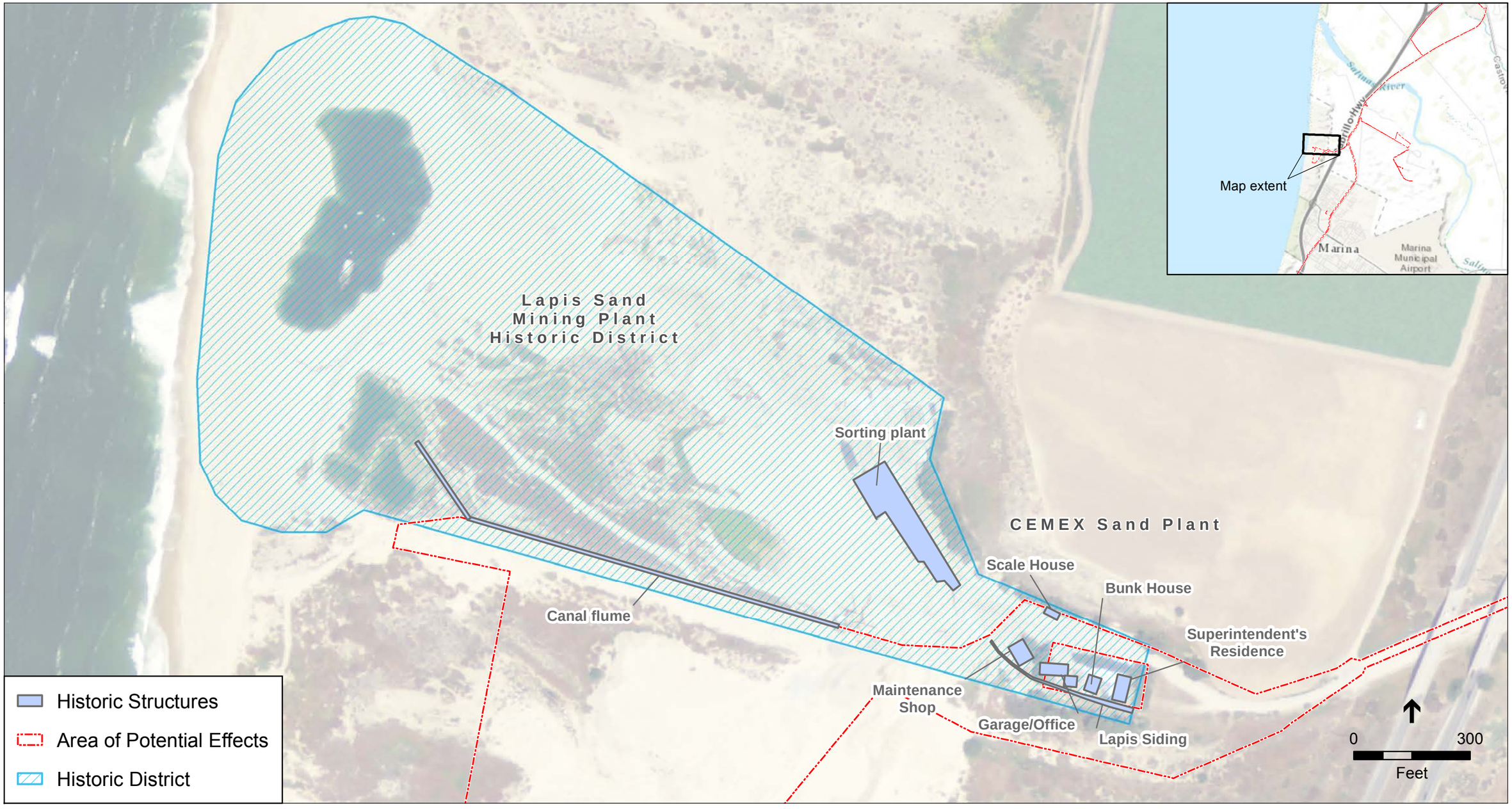
- ***P-27-002417*** *(CA-MNT-2080H)*, a historic-era, narrow-gauge railroad grade, was recorded by Morgan et al. in 1998. The railroad grade consisted of cuts through low hills and sand dunes with raised berms across low-lying areas. No ties, spikes, or other artifacts related to the railroad were observed. The railroad grade represents the remains of California's first narrow-gauge railroad—the Monterey and Salinas Valley Railroad. This railroad was constructed by local farmers to facilitate the shipping of produce to Salinas and was incorporated in 1874 (Morgan et al., 1998b). Jones and Holson revisited the grade in 2008 and recorded three discontinuous segments (Jones and Holson, 2009). The railroad grade is mapped within the proposed MPWSP Desalination Plant direct APE.

  The railroad grade was not identified in the MPWSP Desalination Plant direct APE during the 2010 survey effort; this site is presumed to have been graded or otherwise leveled in the recent past. Because there are no remaining features associated with the railroad grade in the APE, no further consideration of this resource is necessary for the proposed project.

Pipelines and Other Conveyance Facilities North of Reservation Road

Proposed pipelines and other conveyance facilities north of Reservation Road include the Pipeline to CSIP Pond, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline, and the Brine Mixing Box. There are no known TCPs in the vicinity of these project components. One prehistoric resource has been previously recorded adjacent to the Castroville Pipeline direct APE. A historic-era fence line has been previously recorded adjacent to the direct APE of the Pipeline to CSIP Pond. Additionally, the Lapis Sand Mining Plant Historic District is within the direct APE of the Source Water Pipeline.

- Resource ***P-27-001207*** *(CA-MNT-1154)* is recorded as an area of midden, shell fragments, chert flakes, and a few historic-era glass fragments on the north side of Tembladero Slough east of the Castroville Pipeline. According to an article from *The Monterey Peninsula Herald* in 1979, a human burial was reportedly uncovered along Tembladero Slough in 1879 during construction of the Southern Pacific Railroad tracks.



SOURCE: National Map, ESRI

205335.01 Monterey Peninsula Water Supply Project

Figure 4.15-2

Historic Resources in the Source Water Pipeline APE

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Prior documentation consists of a 1978 site record (Melander, 1978), a 1984 topographic plot (Basin, 1984), and a more recent site recording in 2010 (Ruby, 2010). According to the 1978 site record, the site is directly west of Salinas Road (Castroville Road / Highway 183) and is most visible on the south side of the knoll along Tembladero Slough, where flakes, shell, and glass were eroding. Melander did not have direct access to the main site area and was not able to fully delineate boundaries. He noted that Locus B of CA-MNT-727, a prehistoric habitation site, was directly across the road on the east side of Castroville Road / Highway 183 and that CA-MNT-1154 may represent a component of CA-MNT-727. The site boundaries plotted by Basin in 1984 place the site to the east of the direct APE of the Castroville Pipeline, downslope from the Southern Pacific Railroad tracks in the vicinity of the existing ranch complex.

In 2010, Far Western archaeologists revisited the area for the TAMC Light Rail Transit Project and recorded weathered clamshell, a couple of chert flakes, and some broken glass and ceramics adjacent to the railroad tracks from the slough bank for approximately 150 meters (45 feet) to the north. The site boundaries were expanded to include the railroad tracks and an unknown boundary to the west (Ruby, 2010).

Environmental Science Associates conducted a subsurface study in the vicinity of CA-MNT-1154 on June 28, 2016. Two archaeologists walked the direct APE of the Castroville Pipeline on the east side of the Southern Pacific Railroad tracks as well as adjacent to a cultivated field on the west side of the tracks. Within the cultivated field, clamshell fragments were noted however these appear to be associated with agricultural activities (i.e. soil augmentation) and not with a prehistoric use area as no midden soil or other evidence of human use or occupation such as lithic fragments were identified. On the east side of the tracks, in the direct APE, no shell was noted. A few fragments of modern window and bottle glass were identified, but no historic-era glass or ceramics were observed. The soil adjacent to the tracks in the direct APE consisted of artificial fill; at a distance of approximately 10 feet from the tracks the native soil was a medium brown silty sand with gravel inclusions. The area adjacent to Tembladero Slough in both the direct APE and on the west side of the tracks had been highly disturbed from both construction of the existing trestle as well as from erosion. No cultural materials or midden soil was identified in the slough banks.

Based on the previous site documentation and the current survey effort, it does not appear that a significant prehistoric archaeological site (CA-MNT-1154) is within the direct APE of the Castroville Pipeline, however this is not conclusive. While no midden soil or artifacts were observed in the direct APE, there was reportedly a human burial uncovered in the vicinity. Section 4.15.6, Direct and Indirect Effects of the Proposed Project, below, provides recommendations regarding potential archaeological resources and/or human remains in the vicinity of Tembladero Slough.

- Resource ***P-27-002416*** *(CA-MNT-2079H),* a historic-era fence line, was first recorded by Morgan et al. in 1998. The resource consists of two segments of fence and is adjacent to the Pipeline to CSIP Pond direct APE. The fence was constructed from 4- by 6inch vertical posts, 1- by 6-inch horizontal rails at the top and bottom, and vertical pickets of various sizes between the posts. Barbed wire was stapled to the fence. A chain-link fence had replaced a large section of the historic fence at the Monterey Regional Wastewater Treatment Plant. Pacific Legacy revisited the fence in 2008. At that time, the fence appeared to be in the same general condition as described by Morgan et al. (Jones and Holson, 2009).

The fence was originally recorded in association with the Armstrong Ranch (Morgan et al., 1998a). The Armstrong Ranch (P-27-002415) also consisted of a former historic-era building cluster, a windmill (Feature 1), and a 120-foot-long fence line (Feature 2). A row of Cypress trees (Linear Feature 1), access roads, and a sparse artifact concentration were also noted. At the time of the 1998 recording, the buildings (including a residence, barn, and outbuildings) had been demolished and the vicinity graded and leveled for use as an equipment yard and agricultural field. The site was described as lacking integrity with limited data potential (Morgan et al., 1998a).

In 2005, the area was resurveyed and functioned as an equipment storage yard and a staging area (Busby, 2005). The windmill had been removed by that time. Based on the surface components of the site, the Armstrong Ranch was recommended as ineligible for listing in the National Register and the California Register under any of the criteria (Busby, 2005).

The fenceline was revisited during the 2010 survey effort. Section A of the fenceline is located in the direct APE, south of a row of Cypress trees along the access road leading to the Monterey Regional Water Treatment Plant. Section A consists of 4- by 6-inch vertical posts with barbed wire. Most of the posts have collapsed, and the barbed wire has been removed. Cross boards are scattered in the Cypress trees. Much of the segment has been replaced with a modern chain-link fence beginning at the water treatment plant's entrance gate. Section B of the fenceline is outside of the direct APE.

Section A of the fence does not appear to meet any criteria for listing in the National Register, either individually or as a district contributor. The fenceline is associated with the Armstrong Ranch, which is an early American-period ranch in the Monterey Bay area; however; the fence itself does not represent an important event in the history of California (Criterion A) and is not specifically associated with a significant person (Criterion B). The fence does not represent the craftsmanship of a master builder or style of construction (Criterion C) and does not have the potential to yield information important to history (Criterion D). Furthermore, the fence does not retain integrity of design, materials, workmanship, or feeling because a substantial portion of the original fence has been replaced by a chain-link fence. The fenceline has been previously recommended as ineligible for listing in the California Register (Busby, 2005:29), and the assessment of the fenceline performed for this study concurs with this recommendation. In addition, the fenceline does not appear eligible for the National Register, and no further consideration of this resource is necessary for the proposed project.

- ***Lapis Sand Mining Plant Historic District.*** Previous survey efforts did not identify any archaeological resources in the portion of the Source Water Pipeline direct APE located within the CEMEX sand mining facility (SWCA, 2014). However, the area surrounding this section of the pipeline alignment is generally considered to have a high potential for buried cultural resources associated with prehistoric populations and Native Americans. Additionally, the historic-era use of the CEMEX sand mining facility may have generated archaeological deposits, including refuse pits and buried foundations. As a result, the direct APE for this pipeline section should be treated as potentially sensitive for the presence of both prehistoric and historic-era archaeological resources. The area of greatest sensitivity is the eastern portion of the facility because this area contains buildings that are contributing elements of the Lapis Sand Mining Plant Historic District. This area has been subject to less ground disturbance from sand mining than the western portion of the Source Water Pipeline direct APE, and is more likely to contain intact prehistoric sites or buried historic-

era archaeological features associated with the sand mining facility. Section 4.15.6, Direct and Indirect Effects of the Proposed Project, below, provides recommendations regarding potential archaeological resources in the Lapis Sand Mining Plant Historic District.

Improvements to ASR System

The proposed improvements to the Seaside Groundwater Basin ASR System include installation of two additional ASR injection/extraction wells (the ASR-5 and ASR-6 Wells), the ASR Pump-to-Waste Pipeline, the ASR Conveyance Pipeline, and the ASR Recirculation Pipeline. No prehistoric or historic-era archaeological resources have been previously identified in the direct APE for these improvements. No archaeological resources were identified in the direct APE for these improvements during the 2010–2016 survey efforts. There are no known TCPs in the vicinity of these project components.

Pipelines and Other Conveyance Facilities South of Reservation Road

Pipelines and other conveyance facilities south of Reservation Road include the new Transmission Main, Carmel Valley Pump Station, and interconnection improvements for Highway 68 satellite systems (i.e., Ryan Ranch-Bishop and Main System-Hidden Hills). There are no known prehistoric or historic-era archaeological resources or TCPs in the vicinity of these project components.

Summary of Cultural Resources Identified

This section summarizes significant cultural resources within the direct and indirect APE of the project components.

- **Subsurface Prehistoric Archaeological Resources.** Based on the geoarchaeological assessment described under Geological Context and the Study Results, there is the potential for buried prehistoric archaeological resources to exist at the locations shown on **Figure 4.15-1** as well as in the vicinity of the Castroville Pipeline at Tembladero Slough. Impact 4.15-2, below, analyzes the potential for project implementation to adversely affect previously unidentified prehistoric archaeological resources.
- **Subsurface Historic-era Archaeological Resources.** There is potential for unknown historic-era subsurface archaeological resources to be uncovered during installation of the Source Water Pipeline through the Lapis Sand Mining Plant Historic District. Artifacts or features related to the early establishment of the mining facility could be identified. Impact 4.15-2, below, analyzes the potential for project implementation to adversely affect previously unidentified historic-era archaeological resources.

4.15.3 Regulatory Framework

This section provides an overview of applicable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as “regulatory requirements”) relevant to cultural and paleontological resources. A brief summary of each is provided, along with a finding regarding the project’s conformity with those regulatory requirements. The conformity findings concern the project as proposed, without mitigation. Where the project, as proposed, would be consistent with the applicable regulatory requirement,

no further discussion of project consistency with that regulatory requirement is provided. Where the project, as proposed, would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact in Section 4.15.6, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

4.15.3.1 Federal Regulations

National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300301 et seq.), as amended, requires that a federal agency with direct or indirect jurisdiction over a proposed federal or federally assisted undertaking, or issuing licenses or permits, consider the effect of the proposed undertaking on historic properties. A historic property may include a prehistoric or historic-era building, structure, object, site or district included in, or eligible for inclusion in, the National Register maintained by the U.S. Secretary of the Interior. Federal agencies must also allow the ACHP to comment on the proposed undertaking and its potential effects on historic properties.

The implementing regulations for Section 106 of the NHPA (36 CFR 800) require consultation with the SHPO, the ACHP, federally recognized Indian tribes and other Native Americans, and interested members of the public throughout the compliance process. The four principal steps are:

- Initiate the Section 106 process, including determination whether the proposed Federal action is an undertaking, and if so, whether it is a type of activity that has the potential to cause effects on historic properties, and consultation with interested parties (36 CFR 800.3);
- Identify historic properties, i.e., resources included in or eligible for inclusion in the National Register (36 CFR 800.4);
- Assess the effects of the undertaking on historic properties within the area of potential effect (36 CFR 800.5); and
- Resolve adverse effects (36 CFR 800.6).

Adverse effects on historic properties are often resolved through preparation of a Memorandum of Agreement or Programmatic Agreement developed in consultation between the federal agency, the SHPO, Indian tribes, and interested members of the public. The ACHP is also invited to participate. The agreement describes stipulations to mitigate adverse effects on historic properties listed in or eligible for the National Register (36 CFR 60).

National Register of Historic Places

The National Historic Preservation Act established the National Register as “an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation’s historic resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR Section 60.2). The National Register recognizes both

historic-era and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Buildings, structures, objects, sites or districts of potential significance must meet one or more of the following four established criteria (NPS, 1990):

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (NPS, 1990).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (NPS, 1990). The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

Although the National Register standards for historic integrity are high, the National Register accepts that a property "must also be judged with reference to the particular criteria under which a resource is proposed for eligibility." Most archaeological properties are evaluated under Criterion D; the most applicable qualities of integrity under this criterion are those of location, materials, and association.

Integrity also defines the research potential of a resource. To possess research potential, archaeological data must have integrity in the form of what has been called "focus" (Deetz, 1977). Focus in this context means the accuracy with which the archaeological remains represent a situation or condition. When focus is absent or inadequate because of disturbance, a resource does not retain integrity. Remains that represent several activities or have materials that cannot be separated from one another into discrete contexts may also lack focus and therefore integrity.

The MPWSP would be consistent with the NHPA requirements because MBNMS will initiate the Section 106 process, including consultation with interested parties; identify historic properties; assess the effects of the undertaking on historic properties within the Area of Potential Effect; and resolve adverse effects to historic properties.

Coastal Zone Management Act

Several sections of the Coastal Zone Management Act (CZMA) address the protection of cultural resources. This includes 16 U.S.C. Section 1452, which states that it is a national policy to encourage the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values, as well as the requirement for federal actions that affect any land or water use or natural resource of a state's coastal zone to be consistent with the enforceable policies of the state coastal management program.

4.15.3.2 State Regulations

Office of Historic Preservation

The State of California implements the National Historic Preservation Act through its statewide comprehensive cultural resources surveys and preservation programs. The Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the National Historic Preservation Act on a statewide level. The OHP also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Register of Historical Resources

The California Register is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for California Register eligibility are based on National Register criteria (PRC Section 5024.1[b]; California Code of Regulations [CCR], Title 14, Section 4850 et seq.). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historic-era property must be significant at the local, state, and/or federal level under one or more of the following four criteria, which are similar to federal criteria. The resource:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history [PRC 5024.1(c)].

An eligible resource for the California Register must meet one of the criteria of significance described above and retain enough of its historical character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register and those formally determined eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and
- California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Resources Commission for inclusion on the California Register in accordance with adopted criteria.

Resources that may be nominated to the California Register include:

- Individual historical resources;
- Historical resources contributing to the significance of an historic district under criteria adopted by the State Historical Resources Commission;
- Historical resources identified as significant in historical resources surveys, provided the survey meets the criteria listed in subdivision (g);
- Historical resources and historic districts designated or listed as city or county landmarks;
- Historic properties or districts that were designated or listed under a city or county ordinance, provided the criteria for designation or listing are consistent with the California Register; and
- Local landmarks or historic properties designated under any municipal or county ordinance.

California Environmental Quality Act

Historical Resources

CEQA requires lead agencies to determine, prior to approval, if a project would have a significant adverse effect on historical or unique archaeological resources.

The CEQA Guidelines generally recognize that a historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register (PRC Section 5024.1); (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record (14 CCR Section 15064.5[a]).

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 of CEQA and CEQA Guidelines Section 15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated as a "unique" archaeological resource in accordance with the provisions of PRC Section 21083. As defined in Section 21083.2, a unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource is an archaeological artifact, object, or site that does not meet the criteria in PRC Section 21083.2(g) and need not be given further consideration, other than the simple recording of its existence by the lead agency if it so elects (PRC Section 21083.2[h]). The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (14 CCR Section 15064.5[c][4]).

PRC Section 15064.5(f) requires a lead agency to make provisions for handling the accidental discovery of historical or unique archaeological resources during construction. Provisions include an immediate evaluation of the find by a qualified archaeologist. Work may continue on other parts of the project site while historical or unique archaeological resource mitigation takes place.

In the event that human remains are discovered in any location other than a dedicated cemetery, PRC Section 15064.5(e) requires all work to stop until the county coroner in which the remains are discovered is contacted. If the coroner determines the remains to be Native American, the coroner must contact the Native American Heritage Commission within 24 hours. The Commission would then identify any person or persons it believes to be the most likely descended from the deceased individual.

Paleontological Resources

Paleontological resources also are afforded protection by environmental legislation set forth under CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that a project will normally result in a significant impact on the environment if it will "…disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study."

The SVP has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and

fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most California State regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

California Public Resources and Administrative Codes

Several sections of the California Public Resources Code protect paleontological resources. Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 5097.5 of the Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, the California Penal Code Section 622.5 specifies that any person who willfully injures, disfigures, defaces, or destroys any object or thing of archaeological or historical interest or value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor. PRC Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

The MPWSP would be consistent with the State requirements because CalAm has determined whether the project would have a significant adverse effect on historical resources, unique archaeological resources, paleontological resources, and human remains.

The California Coastal Act, as outlined in PRC Section 30344, provides for an inventory of manmade resources of cultural, historic, economic, and educational importance to the public.

4.15.3.3 Applicable Land Use Plans, Policies, and Regulations

Table 4.15-2 describes the regional and local land use plans, policies, and regulations pertaining to cultural resources that are relevant to the proposed project and that were adopted for the purpose of avoiding or mitigating an environmental effect. Also included in Table 4.15-2 is an analysis of project consistency with such plans, policies, and regulations. Where the analysis concludes the proposed project would not conflict with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project may conflict with the applicable plan, policy, or regulation, the reader is referred to Section 4.15.6, Direct and Indirect Effects of the Project, for additional discussion. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.15-2
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO CULTURAL AND PALEONTOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone and inland areas)	City of Marina General Plan	Community Design and Development	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.126:*** The following scenic and cultural resources are deemed to be particularly valuable, and the following policies should be pursued. 1. All archaeological resources which may be present in the Marina Planning Area shall be protected and preserved. To this end, development proposed in areas of high archaeological sensitivity, i.e., the terraces and benches along the Salinas River, the peripheries of vernal ponds, and coastal beaches, shall be required to undertake a reconnaissance by a qualified archaeologist, and, where artifacts are identified, to protect and preserve such resources.	This policy is intended to protect and preserve archaeological resources.	Potentially Inconsistent: No known archaeological resources are present in the areas of Marina where MPWSP components are proposed. However, areas of high archaeological sensitivity exist in the Source Water Pipeline vicinity. Additionally, ground-disturbing activities associated with construction of the Subsurface Slant Wells, Source Water Pipeline, Desalinated Water Pipeline, and Transmission Main could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impact 4.15-2.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Policy COS-5.1:*** Identify and conserve archaeological, architectural, and historic resources within Seaside.	This policy is intended to conserve archaeological, architectural, and historic resources.	Potentially Inconsistent: No known archaeological, architectural, and historical resources are present in the areas of Seaside where MPWSP components are proposed. Construction of project components within Seaside's coastal zone and inland areas would not impact any architectural or historical resources. However, construction would involve ground disturbing activities that could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impact 4.15-2.
City of Seaside (coastal zone and inland areas)	Seaside General Plan	Conservation/ Open Space	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Implementation Plan COS-5.1.1:*** Assess and Mitigate Impacts on Cultural Resources. Continue to assess development proposals for potential impacts on sensitive historic, archaeological, and paleontological resources pursuant to the California Environmental Quality Act (CEQA). a) For structures that potentially have historic significance, require that a study be conducted by a professional archaeologist or historian to determine the actual significance of the structure and potential impacts of the proposed development in accordance with CEQA Guidelines Section 15064.5. The City may require modification of the project and/or mitigation measures to avoid any impact on a historic structure, when feasible. Assess development proposals for potential impacts on significant paleontological resources pursuant to of the California Environmental Quality Act Guidelines. If the project involves earthworks, the City may require a study conducted by a professional paleontologist to determine if paleontological assets are present, and if the project will significantly impact the resources. If significant impacts are identified, the City may require the project to be modified to avoid impacting the paleontological materials, or require mitigation measures to mitigate the impacts.	This policy is intended to assess and mitigate impacts on cultural resources, including historic, archaeological, and paleontological resources.	Potentially Inconsistent: No known cultural resources are present in the areas of Marina where MPWSP components are proposed. Construction of project components within Seaside's coastal zone and inland areas would not impact any architectural or historical resources. However, construction would involve ground disturbing activities that could result in the inadvertent discovery of and damage to unknown archaeological resources. The proposed project would not affect any geologic units that are known or suspected to contain paleontological resources.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Service	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond Castroville Pipeline, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station	***Policy PS-12.5:*** The Monterey County Historic Resources Review Board shall: a. Review and make recommendations on restoration, rehabilitation, alteration, and demolition proposals affecting identified historical and cultural resources. b. Work for the continuing education of county residents concerning historic resources; c. Seek financial support from local, state, and federal governments as well as the private sector to protect, preserve, and enhance the County's historic resources; d. Coordinate its activities with all groups concerned with the preservation of historic resources; and Review projects that involve historic resources on the National Register of Historic Places, California Register of Historical Resources, or the County's Local Register of Historic Resources to assure projects are consistent with good preservation practices.	This policy is intended to ensure the continued protection of Monterey County's historical and cultural resources on the National Register of Historic Places, California Register of Historical Resources, or the County's Local Register of Historic Resources.	Consistent: The proposed project would not involve development that would affect previously identified historical and cultural resources within unincorporated areas of Monterey County.

TABLE 4.15-2 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO CULTURAL AND PALEONTOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Service	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station	***Policy PS-12.10:*** Historic landscape, consisting of resource features important to the setting of a designated historic site, such as mature trees and vegetation, walls and fences, within historic neighborhoods, districts, and heritage corridors for which there is an adopted plan shall be protected.	This policy is intended to protect historic landscapes contributing to the designation of those sites as historic.	Consistent: None of the project components are proposed for locations that would affect a historic landscape contributing to the designation of any historic site within unincorporated Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Service	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station	***Policy PS-12.11:*** An active involvement in historic and cultural resource management programs and support for the efforts of the Monterey County's historical organizations to preserve the County's historical resources shall be continued.	This policy is intended to ensure continued preservation of the County's historical resources.	Consistent: The proposed project would not involve development that would affect previously identified historical resources within unincorporated areas of Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Service	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipelines, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station	***Policy PS-12.12:*** Historical and cultural resources and sites shall be protected through zoning and other regulatory means. New development shall be compatible with existing historical resources to maintain the special values and unique character of the historic properties.	This policy is intended to protect historical and cultural resources (including historical character) from impacts of new development.	Consistent: The proposed project would not involve development that would affect previously identified historical resources within unincorporated areas of Monterey County.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Public Service	Source Water Pipeline, MPWSP Desalination Plant, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Main System-Hidden Hills and Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station	***Policy PS-12.15:*** The special character of designated historic districts and neighborhoods shall be retained.	This policy is intended to ensure continued protection of designated historic districts and neighborhoods.	Consistent: None of the project components are proposed for locations that would affect a designated historic district within unincorporated Monterey County.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***Specific Policies 2.9.3*** 1. No development proposals in archaeologically sensitive areas or in areas described in policy 2.9.2(2) above shall be categorically exempt from environmental review. 2. When sufficient planning flexibility does not permit avoiding construction on archaeological or other types of cultural sites, adequate preservation measures shall be required. Mitigation shall be designed in accordance with guidelines of the State Office of Historic Preservation and the State of California Native American Heritage Commission. Any adverse impacts of development on archaeological or paleontological resources will be mitigated to the maximum extent feasible. 3. Off-road vehicle use, unauthorized collecting of artifacts, and other activities which could destroy or damage archaeological or cultural sites shall be prohibited. 4. Public access to or over known archaeological or paleontological sites should be limited, and concentrated in areas where supervision and interpretive facilities are available.	This policy is intended to minimize disturbance to archaeologically sensitive areas and limit public access to known archaeological and paleontological sites.	Potentially Inconsistent: No known archaeological or paleontological resources are present in the North County Land Use Plan areas where MPWSP components are proposed. However, project components would involve ground disturbing activities that could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impacts 4.15-2. The proposed project would not affect any geologic units that are known or suspected to contain paleontological resources.
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***General Policy 2.9.1:*** North County's archaeological resources, including those areas considered to be archaeologically sensitive but not yet surveyed and mapped, shall be maintained and protected for their scientific and cultural heritage values. New land uses, both public and private, should be considered compatible with this objective only where they incorporate all site planning and design features necessary to minimize or avoid impacts on archaeological resources.	This policy is intended to minimize and avoid impacts of development on archaeological resources.	Potentially Inconsistent: No known archaeological resources are present in the North County Land Use Plan areas where MPWSP components are proposed. However, project components would involve ground disturbing activities that could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impacts 4.15-2.

TABLE 4.15-2 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO CULTURAL AND PALEONTOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone)	North County Land Use Plan	Resource Management	Source Water Pipeline and new Desalinated Water Pipeline	***General Policies 2.9.2*** 1. Monterey County shall encourage the timely identification and evaluation of archaeological, historical, and paleontological resources, in order that these resources be given consideration during the conceptual design phase of land use planning or project development. 2. Whenever development is to occur in the coastal zone, including any proposed grading or excavation activity or removal of vegetation for agricultural use, the Archaeological Site Survey Office or other appropriate authority shall be contacted to determine whether the property has received an archaeological survey. If not, the parcel(s) on which the proposed development will take place shall be required to have an archaeological survey made if located: a. within 100 yards of the floodways of the Pajaro or Salinas Rivers, McCluskey, Bennett, Elkhorn, Moro Cojo, or Tembladero Sloughs, the Old Salinas River Channel or Moss Landing Harbor; b. within 100 yards of any known archaeological site (unless the area has been previously surveyed and recorded). The archaeological survey should describe the sensitivity of the site and appropriate levels of development, and development mitigation consistent with the site's need for protection. 3. All available measures, including purchase of archaeological easements, dedication to the County, tax relief, purchase of development rights, etc., shall be explored to avoid development on sensitive prehistoric or archaeological sites. 4. When developments are proposed for parcels where archaeological or other cultural sites are located, project design shall be required which avoids or substantially minimizes impacts on such cultural sites. To this end, emphasis should be placed on preserving the entire site rather than on excavation of the resource, particularly where the site has potential religious significance.	This policy is intended to avoid and minimize impacts of new development on archaeological, historical, and paleontological resources.	Potentially Inconsistent: No known archaeological, historical, or paleontological resources are present in the North County Land Use Plan areas where MPWSP components are proposed. However, areas of high archaeological sensitivity exist in the vicinity of proposed project components. Project construction would involve ground disturbing activities that could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impacts 4.15-2. The proposed project would not affect any geologic units that are known or suspected to contain paleontological resources. None of the project components are proposed for locations that would affect a designated historic district within unincorporated Monterey County.
County of Monterey (inland areas)	North County Area Plan	Conservation/Open Space	Castroville Pipelines	***Policy NC-3.6:*** North County Historic Sites and other sites recommended by the Monterey County Historic Resources Review Board (HRRB) shall be considered for inclusion in a historical resources (HR) zoning district.	This program is intended to protect historic sites.	Consistent: The proposed project would not involve development that would affect previously identified North County Historic Sites and other sites recommended by the Monterey County Historic Resources Review Board (HRRB).
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Cultural Resources Policy A-1:*** The City of Seaside shall ensure the protection and preservation of archaeological resources at the former Fort Ord. ***Program A-1.1:*** The City of Seaside shall conduct a records search and a preliminary archaeological surface reconnaissance as a part of environmental review for any development project(s) proposed in a high archaeological resource sensitivity zone. ***Program A-1.2:*** The City of Seaside shall require that all known and discovered sites on the former Fort Ord with resources likely to be disturbed by a proposed project be analyzed by a qualified archaeologist with local expertise; recommendations made to protect and preserve resources and, as necessary, restrictive covenants imposed as a condition of project action or land sale. ***Program A-1.3:*** As a contractor work specification for all new construction projects, the City of Seaside shall include that during construction, upon the first discovery of any archaeological resource or potential find, development activity shall be halted within 50 meters of the find until ***the*** potential resources can be evaluated by a qualified professional archaeologist and recommendations made.	This program is intended to protect and preserve archaeological resources.	Potentially Inconsistent: No known archaeological resources are present within the areas of the former Fort Ord military base where the ASR Wells and Pipelines and Transfer Pipeline are proposed. However, ground-disturbing activities associated with the construction of these project components could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impact 4.15-2.
U.S. Army Garrison, Presidio of Monterey	Integrated Cultural Resources Management Plan	Monterey County Installations and Facilities	ASR-5 and ASR-6 Wells and portions of the following pipelines occurring on Army land: ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline	Department of Defense Instruction 4715.16 and Army Regulation 200-1 require installations to develop an Integrated Cultural Resources Management Plan as an internal compliance document that integrates management and stewardship of cultural resources with ongoing mission activities and identifies compliance actions necessary to meet cultural resources regulatory requirements. General management actions that help prevent future impacts include consideration of cultural resources as early as possible in the project planning process, identification and avoidance of archaeologically and culturally sensitive areas, and ensuring that personnel responsible for the management of cultural resources receive adequate training.	This plan is intended to identify compliance actions necessary to meet federally mandated historic and cultural resources regulatory requirements.	Consistent: The proposed project would not involve development that would affect previously identified historical and cultural resources within Monterey County.

TABLE 4.15-2 (Continued)
APPLICABLE REGIONAL AND LOCAL LAND USE PLANS AND POLICIES RELEVANT TO CULTURAL AND PALEONTOLOGICAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Cultural Resources Policy A-1:*** The County of Monterey shall ensure the protection and preservation of archaeological resources at the former Fort Ord. ***Program A-1.1:*** The County of Monterey shall conduct a records search and a preliminary archaeological surface reconnaissance as a part of environmental review for any development project(s) proposed in a high archaeological resource sensitivity zone. ***Program A-1.2:*** The County of Monterey shall require that all known and discovered sites on the former Fort Ord with resources likely to be disturbed by a proposed project be analyzed by a qualified archaeologist with local expertise, recommendations made to protect and preserve resources and, as necessary, restrictive covenants imposed as a condition of project action or land sale. ***Program A-1.3:*** As a contractor work specification for all new construction projects, the County of Monterey shall include that during construction, upon the first discovery of any archaeological resource or potential find, development activity shall be halted within 50 meters of the find until the potential resources can be evaluated by a qualified professional archaeologist and recommendations made.	This policy is intended to minimize and avoid impacts of development on archaeological resources.	Potentially Inconsistent: No known archaeological resources are present within the areas of the former Fort Ord military base where the ASR Wells and Pipelines and Transfer Pipeline are proposed. However, ground-disturbing activities associated with the construction of these project components could result in the inadvertent discovery of and damage to unknown archaeological resources. This issue is discussed further in Impact 4.15-2.

SOURCE: City of Marina, 2000; City of Seaside, 2004, 2013; City of Monterey, 2015; FORA, 1997; Monterey County 1982, 1985, 2010.

4.15.4 Evaluation Criteria

In accordance with Appendix G of the CEQA Guidelines, implementation of the proposed project would have a significant impact related to cultural and paleontological resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

In accordance with Section 106 of the NHPA, this analysis also considers the potential for the proposed project to result in adverse effects on historic properties. In accordance with the specific Criteria of Effect and Adverse Effect defined in 36 CFR 800.5 for the evaluation of an undertaking's effects on historic properties, implementation of the proposed project would have a adverse effect related to cultural resources if it would:

> Cause an adverse effect on a historic property when it may alter the characteristics of the property that qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of the property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.
>
> Cause an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
>
> (1) Physical destruction, damage, or alteration of all or part of the property;
>
> (2) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
>
> (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
>
> (4) Neglect of a property resulting in its deterioration or destruction; and
>
> (5) Transfer, lease, or sale of the property.

For the impact analysis, the State and federal evaluation criteria have been mutually considered. In addition, the NHPA adverse effect standard is equivalent to the NEPA significance standard. Under NEPA, significance is determined based on context and intensity. Impacts are analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. Intensity refers to the severity of effect, which includes factors such as the magnitude, geographic extent, duration, and frequency of the effect.

4.15.5 Approach to Analysis

Ground disturbance and excavation during project construction could disturb or destroy known and previously unrecorded cultural resources, including historical, archaeological, and paleontological resources and human remains. Proposed project operations would have no impact on cultural and paleontological resources because operations would not cause additional ground disturbance or generate strong vibrations. Thus, the analysis below focuses only on construction-related impacts on cultural and paleontological resources.

4.15.5.1 Architectural/Structural Historical Resources

Potential impacts on architectural resources are assessed by identifying whether implementation of the proposed project could affect resources that have been identified as historic properties for the purposes of the NHPA or as historical resources for the purposes of CEQA. Individual properties and districts include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (National Register and California Register Criteria A/1, B/2, C/3, and D/4) and that retain sufficient historic integrity to convey their significance. Criterion D/4 is typically applied to the evaluation of archaeological resources and not to architectural resources, as described below. Once a resource has been identified as significant, it must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CEQA Guidelines Section 15064.5[b]). A substantial adverse change in the significance of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CEQA Guidelines Section 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]).

Construction activities that involve impact tools can produce significant groundborne vibration. Substantive sources of vibration during project construction would be: (1) the drill rigs used for drilling and development of the subsurface slant wells in the CEMEX active mining area; (2) the drill rigs used for drilling and development of the ASR-5 and ASR-6 Wells at the Fitch Park military housing area; (3) bulldozers used during general construction of facilities such as the MPWSP Desalination Plant; (4) jackhammers used to break up concrete during open-trench construction of pipelines; and (5) vibratory rollers used to repave streets and other previously paved areas after open-trench construction and for newly paved areas at the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station. Additionally, where it is not feasible to install the proposed pipelines via open-cut trenching (i.e., creek and river crossings, highway crossings, and railroad crossings), trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, and/or microtunneling would be employed. Trenchless construction methods typically require the use of impact or vibratory sheet pile drivers, which are a source of vibration.

Construction-related vibration—such as that generated by jackhammers, drill rigs, and vibratory rollers—can cause structural damage to historic-era buildings and structures (Wilson, Ihrig & Associates, 2009:40). Historic buildings in the project vicinity include primarily older masonry structures in the city of Monterey as well as wood frame buildings and corrugated metal industrial buildings at the CEMEX sand mining facility. This EIR/EIS uses a vibration threshold for historic buildings of 0.12 inches per second (in/sec) peak particle velocity (PPV) at a distance of 25 feet (Wilson, Ihrig, & Associates et al., 2012:12). **Table 4.15-3** presents the distances at which vibratory construction equipment that would be used during project construction would generate vibration levels at the 0.12-in/sec PPV damage threshold. The vibratory roller is the construction equipment that would have the greatest PPV, typically a PPV of 0.210 in/sec at 25 feet (New Hampshire, 2012). The Federal Transit Administration (FTA) provides an equation for estimating vibration at different distances based on a reference PPV of 25 feet for varying construction equipment. Using the FTA equation, at distances greater than 45 feet the vibration generated by a vibratory roller is lower than the 0.12 in/sec PPV damage threshold. At distances greater than 25 feet, the vibration level generated by a typical drill rig is lower than the 0.12 in/sec PPV damage threshold. At distances greater than 80 feet, the vibration level generated by vibratory pile driving of sheet piles is lower than the 0.12 in/sec PPV damage threshold. Beyond the distance of the damage threshold, no damage to historic buildings or structures is expected.

TABLE 4.15-3
DAMAGE THRESHOLD TO HISTORIC BUILDINGS FROM CONSTRUCTION EQUIPMENT

Equipment Type	Typical PPV at 25 feet	Approx. Distance of Damage Threshold (0.12 PPV in/sec)
Vibratory roller	0.210 in/sec	45 feet
Drill rig	0.12 in/sec	25 feet
Bulldozer	0.089 in/sec	20 feet
Jackhammer	0.035 in/sec	15 feet
Vibratory pile driver	0.73 in/sec	80 feet

SOURCE: Wilson, Ihrig, & Associates et al., 2012

4.15.5.2 Archaeological Resources

The significance of most prehistoric and historic-era archaeological sites is usually assessed under National Register and California Register Criterion D/4. This criterion stresses the importance of the information potential contained within the site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in CEQA Guidelines Section 15064.5(a), or they may also be assessed under CEQA as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2). A substantial adverse change in the significance of an archaeological resource is assessed similarly to other historical resources, i.e., it means the destruction or material alteration in an adverse manner of those physical characteristics of the resource that convey its significance under the relevant criteria (CEQA Guidelines Section 15064.5[b][2]).

4.15.5.3 Paleontological Resources

The paleontological analysis evaluates the potential to encounter paleontological resources (i.e., plant, animal, or invertebrate fossils or microfossils) during excavations associated with the proposed project. The paleontological potential of the geologic units that would be disturbed is used to evaluate the potential to encounter paleontological resources at the location of each project component. A potentially significant impact on paleontological resources would occur if: (1) construction of the project components would move or excavate previously undisturbed bedrock (native rock) and/or (2) the bedrock to be disturbed has a high paleontological potential. The potential impacts related to paleontological resources were analyzed qualitatively, based on review of published geologic and paleontological data for the project area and professional judgment. No paleontological field surveys were conducted for the proposed project.

4.15.5.4 Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and Health and Safety Code Section 7050.5. These laws are identified above in Section 4.15.3.2, State Regulations. This analysis considers impacts including intentional disturbance, mutilation, or removal of interred human remains.

4.15.6 Direct and Indirect Effects of the Proposed Project

Table 4.15-4 summarizes the proposed project's impacts and significance determinations for cultural and paleontological resources.

TABLE 4.15-4
SUMMARY OF IMPACTS – CULTURAL AND PALEONTOLOGICAL RESOURCES

Impacts	Significance Determinations
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	NI
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	LSM
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	LS
Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction.	LSM
Impact 4.15-C: Cumulative impacts related to cultural and paleontological resources.	LS

NOTES:
LS = Less than Significant
LSM = Less than Significant impact with Mitigation
NI = No Impact

4.15.6.1 Construction Impacts

Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction. (*No Impact)*

All Project Components

No historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are within the direct or indirect APE of all project components. Therefore, no impact on historical resources or historic properties would result from construction of any project facilities.

Mitigation Measures

None proposed.

Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5. (*Less than Significant with Mitigation*)

Castroville Pipeline

There is potential for buried prehistoric archaeological resources to exist in the vicinity of Tembladero Slough. Based on the previous site documentation and survey effort, it does not appear that a significant prehistoric archaeological site is within the direct APE of the Castroville Pipeline, however this is not conclusive. While no midden soil or artifacts were observed in the direct APE, there was reportedly a human burial uncovered in the vicinity. If previously unidentified archaeological resources are discovered and inadvertently damaged and/or destroyed during installation of the Castroville Pipeline, this would be a significant impact or an adverse effect. Impacts on previously unidentified archaeological resources could be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.15-2a (Establish Archaeologically Sensitive Area)**. This measure requires cultural resources monitoring during project construction in an Archaeologically Sensitive Area (ASA) so that if archaeological resources are encountered, a qualified archaeological consultant can order cessation of work in the vicinity of the discovery and immediately assess the find to provide additional recommendations as necessary. Implementation of this mitigation measure would reduce potentially significant impacts on unknown prehistoric archaeological resources in the ASA to a less-than-significant level.

Based on the geoarchaeological assessment, there is potential for deeply buried well-developed soil horizons to be located in the direct APE at Tembladero Slough near Castroville and the Salinas River. Therefore, there is the potential for archaeological resources associated with those buried soils to be encountered during project work at the above locations. Project construction activities could result in damage or disturbance to such resources if they exist, a potentially significant impact

or adverse effect. As discussed in the Geological Context, given the relatively narrow (maximum width of 7 feet) and linear nature of the ground disturbance for the pipelines, the active coastal dune environment (which may have destroyed, disturbed, and/or removed archaeological materials), as well as the paucity of previously discovered deeply buried sites in the Monterey Bay vicinity, no additional subsurface investigations are recommended. To mitigate potential impacts or adverse effects on previously unidentified buried archaeological resources in these ASAs, this EIR/EIS recommends **Mitigation Measure 4.15-2a (Establish Archaeologically Sensitive Area)**.

In addition there is the potential to uncover as yet undiscovered resources during project construction. To mitigate potential impacts on previously undiscovered buried archaeological resources, CalAm shall implement **Mitigation Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)** for all project components. This measure would ensure that work would halt in the vicinity of an archaeological find and that the resources were treated appropriately.

Source Water Pipeline

There is potential for previously undocumented historic-era subsurface archaeological resources to be uncovered and inadvertently damaged and/or destroyed during installation of the Source Water Pipeline through the Lapis Sand Mining Plant Historic District. This would be a significant impact. However, impacts on previously unidentified subsurface historic-era resources in the Lapis Sand Mining Plant Historic District could be reduced to a less-than-significant impact with implementation of **Mitigation Measure 4.15-2a (Establish Archaeologically Sensitive Area)**.

In addition there is the potential to uncover as yet undiscovered resources during project construction. To mitigate potential impacts on previously undiscovered buried archaeological resources, CalAm shall implement **Mitigation Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)** for all project components.

All Other Project Components

No archaeological resources eligible for listing in the California Register or the National Register are located within the direct APE for all other project components. Therefore, no impact on known archaeological resources would result from construction of these facilities. There is however the potential to uncover as yet undiscovered resources during project construction. To mitigate potential impacts on previously undiscovered buried archaeological resources, CalAm shall implement **Mitigation Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)** for all project components.

There are no known TCPs in the vicinity of all project components. In the event that an archaeological resource that qualifies as a TCP is identified during project construction, CalAm shall implement **Mitigation Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)**.

There are no known maritime resources, such as shipwrecks or other submerged resources, in the vicinity of all project components. Additionally, there will be no ground disturbing work in submerged areas that would have the potential to impact previously undocumented or unknown shipwrecks. The proposed project would not cause an impact on maritime resources within

MBNMS. To mitigate potential impacts on previously undiscovered maritime resources, CalAm shall implement **Mitigation Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)** for all project components.

Land Use Plan & Policy Consistency

In addition to the physical impacts described above, as noted in **Table 4.15-2**, the proposed project could conflict with applicable land use plans, policies, or ordinances related to cultural resources that were adopted for the purpose of avoiding or mitigating an environmental effect. As described above, construction would involve ground-disturbing activities that could inadvertently disrupt or damage unknown archaeological sites. As a result, construction of project components could conflict with one or more of the following: California Coastal Act Section 30244, the City of Marina General Plan Policy 4.126, the City of Seaside Local Coastal Program Land Use Plan Policy LUD-CZ 2.11, Seaside General Plan Policy COS-5.1, the North County Land Use Plan Specific Policy 2.9.3 and General Policies 2.9.1 and 2.9.2, and the Fort Ord Reuse Plan Policy A-1 for Inland Areas and Monterey County. Each of these policies was adopted for the purpose of avoiding or minimizing impacts on archaeological resources. As discussed in the preceding paragraphs, **Mitigation Measures 4.15-2a (Establish Archaeologically Sensitive Area)** and **4.15-2b (Inadvertent Discovery of Cultural Resources)** would require archaeological monitoring and established protocols for accidental discovery of archaeological resources. With these measures implemented, the proposed project would be consistent with the above-noted policies.

Impact Conclusion

A significant impact on archaeological resources could occur during construction of the proposed Castroville Pipeline at Tembladero Slough and the Source Water Pipeline in the Lapis Sand Mining Plant Historic District; as well as those areas designated as archaeologically sensitive in the geoarchaeological analysis (Tembladero Slough near Castroville and the Salinas River). The impact or adverse effects would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.15-2a (Establish Archaeologically Sensitive Area)**.

While no additional impacts or adverse effects on archaeological resources are expected, the possibility of uncovering unknown archaeological resources in the remaining direct APE cannot be entirely discounted. The potential inadvertent discovery of archaeological resources could be a significant impact or adverse effect. Implementation of **Measure 4.15-2b (Inadvertent Discovery of Cultural Resources)** would ensure that potential impacts are less than significant.

Mitigation Measures

Mitigation Measure 4.15-2a applies to the Castroville Pipeline at Tembladero Slough and the Salinas River; and the Source Water Pipeline in the Lapis Sand Mining Plant Historic District.

> **Mitigation Measure 4.15-2a: Establish Archaeologically Sensitive Areas.**
>
> CalAm shall contract with a qualified archaeologist meeting the Secretary of the Interior's Qualification Standard (Lead Archaeologist) to prepare and implement an Archaeological Monitoring Plan, and oversee and direct all archaeological monitoring activities during

project construction. Archaeological monitoring shall be conducted for all subsurface excavation work within 100 feet of the Castroville Pipeline at Tembladero Slough and the Salinas River; and the Source Water Pipeline in the Lapis Sand Mining Plant Historic District. At a minimum, the Archaeological Monitoring Plan shall:

- Detail the cultural resources training program that shall be completed by all construction and field workers involved in ground disturbance;
- Designate the person(s) responsible for conducting monitoring activities, including Native American monitor(s), if deemed necessary;
- Establish monitoring protocols to ensure monitoring is conducted in accordance with current professional standards provided by the California Office of Historic Preservation;
- Establish the template and content requirements for monitoring reports;
- Establish a schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports;
- Establish protocols for notifications in case of encountering cultural resources, as well as methods for evaluating significance, developing and implementing plan to avoid or mitigate significant resource impacts, Native American participation and consultation, collection and curation plan, and consistency with applicable laws including Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code;
- Establish methods to ensure security of cultural resources sites;
- Describe the appropriate protocols for notifying the County, Native Americans, and local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction with reference to Public Resources Code 5097.99.

During the course of the monitoring, the Lead Archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to encounter resources.

If archaeological materials are encountered, all soil disturbing activities within 100 feet of the find shall cease until the resource is evaluated. The Lead Archaeologist shall immediately notify the CPUC and MBNMS of the encountered archaeological resource. The Lead Archaeologist shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological resource, present the findings of this assessment to the Lead Agencies. In the event archaeological resources qualifying as either historical resources pursuant to CEQA Section 15064.5 or as unique archaeological resources as defined by Public Resources Code 21083.2 are encountered, preservation in place shall be the preferred manner of mitigation.

If preservation in place is not feasible, the applicant shall implement an Archaeological Research Design and Treatment Plan (ARDTP). The Lead Archaeologist, Native American representatives, MBNMS and the CPUC shall meet to determine the scope of the ARDTP. The ARDTP will identify a program for the treatment and recovery of important scientific data contained within the portions of the archaeological resources located within the project Area of Potential Effects (APE); would preserve any significant historical information

obtained and will identify the scientific/historic research questions applicable to the resources, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The results of the investigation shall be documented in a technical report that provides a full artifact catalog, analysis of items collected, results of any special studies conducted, and interpretations of the resource within a regional and local context. All technical documents shall be placed on file at the Northwest Information Center of the California Historical Resources Information System.

Mitigation Measure 4.15-2b applies to all project components.

Mitigation Measure 4.15-2b: Inadvertent Discovery of Cultural Resources.

Following implementation of Mitigation Measure 4.15-2a, if prehistoric or historic-era cultural materials are encountered, all construction activities within 100 feet shall halt and the Lead Agencies shall be notified. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

For discoveries on lands other than Army-owned lands, a Secretary of the Interior-qualified archaeologist shall inspect the find within 24 hours of discovery. If the find is determined to be potentially significant, the archaeologist, in consultation with MBNMS, the CPUC and the appropriate Native American representative shall determine whether preservation in place is feasible. Consistent with CEQA Guidelines Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified archaeologist, in consultation with the Lead Agency and the appropriate Native American representative, shall prepare and implement a detailed Archaeological Research Design and Treatment Plan (ARDTP). Treatment of unique archaeological resources shall follow the applicable requirements of Public Resources Code Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The ARDTP shall include provisions for analysis of data in a regional context, reporting of results within a timely manner and subject to review and comments by the appropriate Native American representative before being finalized, curation of artifacts and data at a local facility acceptable to the appropriate Native American representative, and dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System, the CPUC, MBNMS and interested professionals.

If cultural resources are inadvertently discovered during construction on Army-owned property, work shall immediately cease within a 100-foot radius of the find and the Army, Presidio of Monterey, Cultural Resources Manager (CRM) will be contacted to assess the discovery. For discoveries on Army lands, the CRM will implement procedures set forth in the Presidio's Integrated Cultural Resources Management Plant (ICRMP) and Army Regulation (AR 200-1), which may include completion of consultation under Section 106

of the National Historic Preservation Act (NHPA) prior to resuming construction in the vicinity of the find. CalAm shall be responsible for completing any additional archaeological work required to comply with federal regulations.

Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature during construction. (*Less than Significant*)

All Project Components

The construction of the project components would require the excavation through several geologic units that have the potential to contain paleontological resources, particularly vertebrate fossils. These geologic units include the Older Dune Sands, Marine Terrace Deposits, and the Monterey Formation. Vertebrate fossils have been collected from the Monterey Formation, but not from the other listed geologic units. Encountering fossils, particularly, vertebrate fossils, would be considered a significant impact.

As discussed above in Section 4.15.2.2, Paleontological Setting, and Section 4.15.3, Regulatory Framework, the SVP has established professional standards for evaluating the potential for paleontological resources based on the type of geologic unit, the previous discovery of fossils within the geologic unit and within or in close proximity to the proposed project, and whether the fossils are uncommon. Of the geologic units through which the project components would require excavation, only the Monterey Formation is known to have vertebrate fossils that would qualify as a significant paleontological resource. However, the project components would be constructed within a limited extent of the Monterey Formation within the previously-disturbed rights-of way. In addition, the diatoms and benthic foraminifera that comprise much of the formation are not considered a significant paleontological resource. Therefore, the potential impact on paleontological resources would be considered less than significant and no mitigation is necessary.

Mitigation Measures

None proposed.

Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction. (*Less than Significant with Mitigation*)

All Project Components

While no known human remains have been documented within the proposed project direct APE, the possibility of inadvertently uncovering human remains cannot be entirely discounted. The potential inadvertent discovery of human remains is considered a significant impact. The impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.15-4**

(Inadvertent Discovery of Human Remains). Mitigation Measure 4.15-4 would ensure that if human remains are uncovered during project construction the Most Likely Descendant of the deceased Native American is contacted and the remains are treated per the recommendations of the Coroner.

Mitigation Measures

Mitigation Measure 4.15-4 applies to all project components.

> **Mitigation Measure 4.15-4: Inadvertent Discovery of Human Remains.**
>
> In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease. For discoveries on lands other than Army-owned lands, the Monterey County Coroner shall be contacted immediately. The Coroner then has two working days to determine if the remains are Native American. If the remains are determined to be Native American, and no investigation of the cause of death is required, the Native American Heritage Commission (NAHC) shall be contacted within 24 hours. The NAHC shall then identify and contact the person or persons it believes to be the Most Likely Descendant (MLD)" of the deceased Native American(s), who in turn would make recommendations to the project applicant, MBNMS and the CPUC for the appropriate means of treating the human remains and any grave goods.
>
> If human remains are encountered during construction on Army-owned property, work shall cease within a 100-foot radius of the discovery and the CRM shall be notified immediately. The CRM shall initially evaluate the site to determine if the remains are either Native American in origin or associated with a recent crime scene (i.e. 50 years old or less). If the remains appear recent, the CRM shall notify the Army's Criminal Investigation Command who shall assume control of the crime scene and custody of the remains. If the remains appear to be Native American in origin, the CRM shall notify the Presidio Garrison Commander and implement procedures set forth in Section 3 of the Native American Graves Protection and Repatriation Act.

4.15.7 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.15-C: Cumulative impacts related to cultural and paleontological resources (*Less than Significant*)

The geographic scope of analysis for cumulative impacts on cultural resources includes the direct and indirect APE for the proposed project. The geographic scope of analysis for paleontological resources includes the portion of the aforementioned underlain by the Monterey Formation geologic unit.

The timeframe during which the proposed project could contribute to cumulative cultural resources effects is limited to the construction phase because operation of the proposed project would have no impact on cultural and paleontological resources.

A cumulatively significant cultural resources impact could result during construction if the incremental effects of the proposed project combined with those of one or more of the cumulative projects listed in **Table 4.1-2** to damage the same type of cultural resource within the APE.

Architectural Resources. No historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are within the direct or indirect APE of all project components. Therefore, the project could not contribute to cumulative impacts on historical resources or properties (no impact). Although the CEMEX Removal Plan (No. 63) would destroy buildings and structures at the Lapis Sand Mining Plant Historic District, which would be a substantial adverse change to a historical resource, the MPWSP would not have an impact on cultural resources in this area, and would therefore have no cumulative impact on resources.

Archaeological Resources and Human Remains. As analyzed in the context of Impacts 4.15-2 and 4.15-4, excavation associated with the proposed project could result in a less-than-significant impact on known and previously unidentified archaeological resources and/or human remains following the implementation of recommended mitigation measures. This analysis conservatively assumes that all of the cumulative projects have a similar potential impact on known and previously unrecorded archaeological resources and/or human remains. Because each project's potential impacts would be site-specific, they could not overlap to combine with those of the proposed project and no significant cumulative effect would result (*less than significant*).

Paleontological Resources. The geographic scope of analysis for cumulative impacts on paleontological resources includes the Monterey Formation, which is known to contain significant paleontological resources including vertebrate fossils. While discovery within other geologic units affected by the project (i.e., Quaternary or Pleistocene) is possible, the likelihood is considered low because vertebrate fossils have only been collected from the Monterey Formation. The proposed project could result in a direct or indirect effect to paleontological resources located within these geologic units during excavation or other ground disturbing activities. The incremental impacts of the project could combine with those of one or more of the projects listed in **Table 4.1-2** to cause or contribute to a significant cumulative impact on paleontological resources if they directly or indirectly destroyed a unique paleontological resource or site or unique geologic feature.

As analyzed in the context of Impact 4.15-3, project components proposed within the Monterey Formation include two segments of the Monterey Pipeline and the Main System-Hidden Hills Interconnection Improvements. The proposed project's incremental contribution to potential cumulative effects was determined to be less than significant. Cumulative projects that also could affect the Monterey Formation include Laguna Seca Villas (No. 3), 459 Alvarado Street (No. 20), and Rancho Canada Village and Golf Club (Nos. 27 and 28). Ground disturbance associated with the cumulative projects could result in a cumulatively significant impact due to damage or

destruction of a unique paleontological resource. The proposed project would not be expected to contribute considerably to such an effect because the components proposed for the Monterey Formation would occur within previously disturbed rights-of-way. Therefore, the proposed project's incremental contribution to potentially significant cumulative paleontological resources impacts would be less than significant.

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4.16 Agricultural Resources

Sections	Figures	Tables
4.16.1 Setting / Affected Environment	4.16-1 Farmland Mapping Designations and Williamson Act Contracts	4.16-1 Monterey County Agricultural Land Summary and Conversion by FMMP Land Use Category (2012–2014)
4.16.2 Regulatory Framework	4.16-2 Farmland Mapping Designations and Williamson Act Contracts for the Castroville Pipeline	4.16-2 Applicable Regional and Local Plans and Policies Relevant to Agricultural Resources
4.16.3 Evaluation Criteria		4.16-3 Summary of Impacts – Agricultural Resources
4.16.4. Approach to Analysis		4.16-4 Project Facilities Proposed on Land Zoned for Agriculture
4.16.5 Direct and Indirect Effects of the Proposed Project		
4.16.6 Cumulative Effects of the Proposed Project		

As a result of comments received on the January 2017 Draft EIR/EIS, revisions have been made to this EIR/EIS section. Those changes include:

- *Updates to Table 4.16-1 to include the most recent Land Use Conversion data;*
- *Clarification about the historical use of the proposed MPWSP Desalination Plant site;*
- *Revision to Mitigation Measure 4.16-1 to include consultation with property owners during the construction season; and*
- *Additional language in the impact conclusion to Impact 4.16-2 to clarify that operation of the proposed project would not adversely affect farmland because the proposed project would result in less-than-significant impacts on groundwater quality and levels.*

This section evaluates the potential for implementation of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) to adversely affect existing agricultural operations or agricultural resources in the vicinity.

4.16.1 Setting/Affected Environment

The study area for agricultural resources is the project area boundary and contiguous properties. The project area boundary is defined as the area within which all construction-related disturbances would occur. This section provides an overview of agricultural resources in the Monterey region and identifies the resources within and adjacent to the project area, including designated farmland, grazing land, and land protected by Williamson Act contracts. There are no Monterey Bay National Marine Sanctuary (MBNMS) resources that would be affected by impacts identified in this section; all impacts related to agricultural resources would occur outside of MBNMS boundaries. Therefore, MBNMS resources are not described in the environmental setting/affected environment.

Monterey County is California's third largest agricultural producer. Agricultural crop production and livestock grazing is the largest industry in the county, with approximately 56 percent of the land (or approximately 1.3 million acres) used for agricultural purposes. Of the total land in the

county dedicated to agriculture, approximately 80 percent is used for grazing. The county's predominant crops are cool-season vegetables, strawberries, wine grapes, and nursery plants. Most of the agricultural lands are in the northern portion of the county and in the Salinas Valley (Monterey County, 2010).

Agricultural lands in the project area are concentrated north of Reservation Road in unincorporated Monterey County. This area contains a mosaic of predominantly row crop agricultural fields bordered by coastal dunes and beaches to the west. Project components proposed in this area include the Source Water Pipeline, MPWSP Desalination Plant, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, new Desalinated Water Pipeline, and Castroville Pipeline.

4.16.1.1 Farmland Classifications

Farmland Mapping and Monitoring Program

The California Department of Conservation, Division of Land Resource Protection (CDC) maps important farmlands throughout California through the Farmland Mapping and Monitoring Program (FMMP). Important farmland and agricultural land is classified into the following categories based on soil conditions (i.e., their suitability for agriculture) and current land use.

- ***Prime Farmland*** is land that has the best combination of physical and chemical characteristics for long-term crop production. It has the soil quality, growing season, and moisture supply needed to sustain high crop yields when appropriately treated and managed. In addition, the land must have been used for irrigated agricultural production four years prior to the mapping date to qualify under this category.
- ***Farmland of Statewide Importance*** is similar to Prime Farmland in that it has a good combination of physical and chemical characteristics for crop production, but with minor shortcomings such as greater slopes and less ability to store moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- ***Unique Farmland*** is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include the types of non-irrigated orchards or vineyards that are found in some climatic zones of California. Unique Farmland must have been in agricultural production at some time during the four years prior to the mapping date.
- ***Farmland of Local Importance*** applies to land of importance to the local agricultural economy as determined by the county. This land is either currently producing crops or has the capability of production, but does not meet the criteria of the preceding categories. According to the CDC (2015a), there is no Farmland of Local Importance in Monterey County. Therefore, this category is not discussed further.
- ***Grazing Land*** is land on which the existing vegetation is suited to the grazing of livestock.

The FMMP updates its Important Farmland Series Maps every two years and produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The most recent land use conversion data summarize land use conversion by FMMP category between 2012 and 2014. **Table 4.16-1** shows the total acreage and recent conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Grazing Land in Monterey County. In summary, there was a net decrease in acreage of Prime Farmland, a net increase in acreage in Farmland of Statewide Importance, and Unique Farmland, but a net decrease in grazing land between 2012 and 2014.

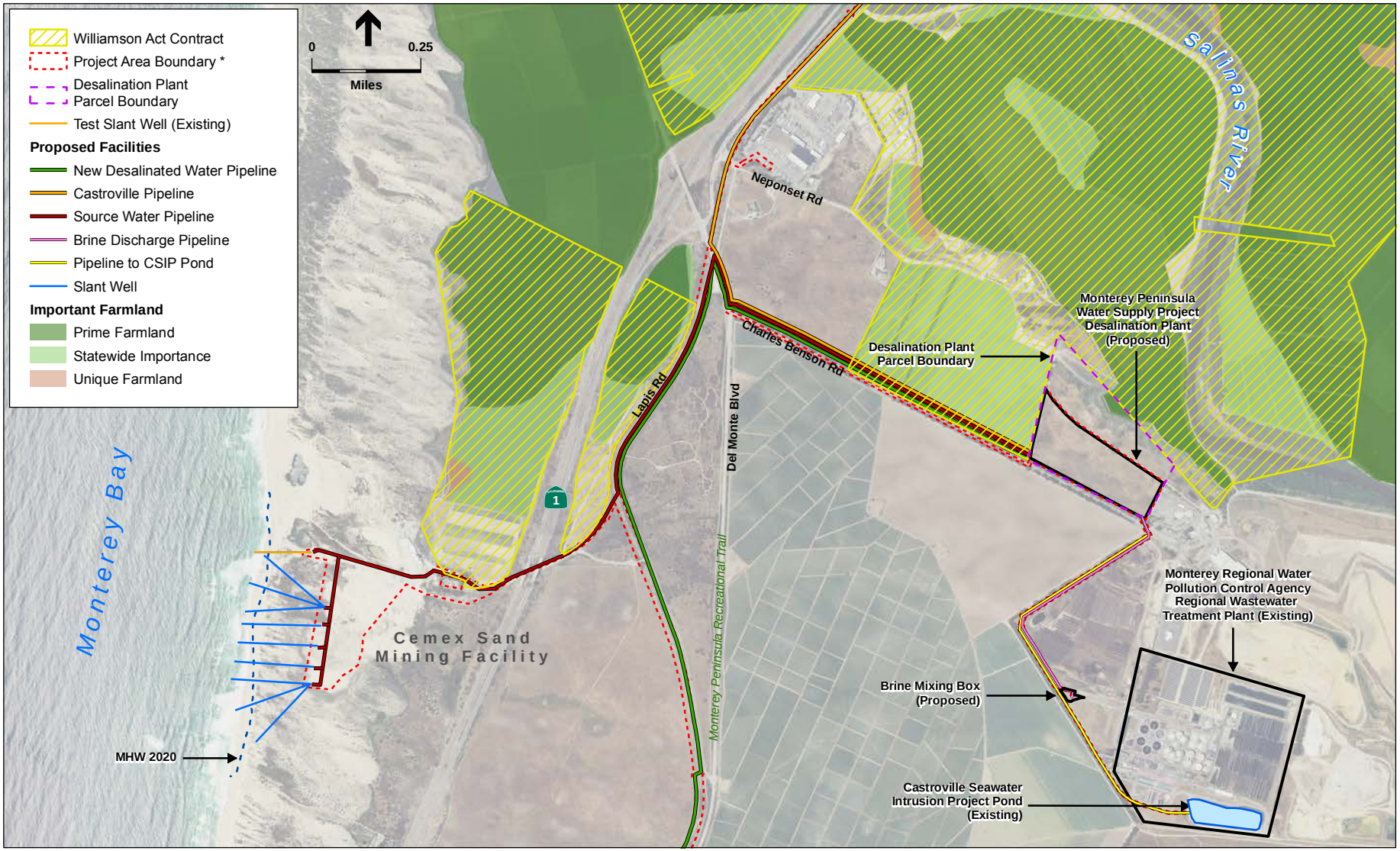
TABLE 4.16-1
MONTEREY COUNTY AGRICULTURAL LAND SUMMARY AND CONVERSION BY FMMP LAND USE CATEGORY (2012-2014)

	Total Acreage Inventoried		2012–2014 Acreage Changes			
Land Use Category	**2012**	**2014**	**Acres Lost (-)**	**Acres Gained (+)**	**Total Acreage Changed**	**Net Acreage Changed**
Prime Farmland	166,334	166,188	673	527	1,200	-146
Farmland of Statewide Importance	43,824	43,994	399	569	968	170
Unique Farmland	25,708	26,101	227	620	847	393
Important Farmland Subtotal	**235,866**	**236,283**	**1,299**	**1,716**	**3,015**	**417**
Grazing Land	1,063,438	1,062,699	1,816	1,077	2,893	-739
Agricultural Land Subtotal	**1,299,304**	**1,298,982**	**3,115**	**2,793**	**5,908**	**-322**
Urban and Built-up Land	57,927	58,147	11	231	242	220
Other Land	757,745	757,847	383	485	868	102
Water Area	6,246	6,246	0	0	0	0
Total Area Inventoried	**2,121,222**	**2,121,222**	**3,509**	**3,509**	**7,018**	**0**

SOURCE: CDC, 2016a.

Important Farmland Designations in the Project Area

As shown in the FMMP land use conversion data in Table 4.16-1, important farmland is classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. As shown in **Figures 4.16-1** and **4.16-2**, portions of the project area north of Reservation Road are within or adjacent to important farmland. The farmland in this area is categorized as Prime Farmland and Farmland of Statewide Importance. Important farmland borders the west side of the Source Water Pipeline and the new Desalinated Water Pipeline along Lapis Road between the CEMEX access road and Del Monte Boulevard. The proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be installed outside of the Charles Benson Road paved roadway, and within important farmland that borders the north side of Charles Benson Road and west side of the MPWSP Desalination Plant site. If the Source Water Pipeline Optional Alignment, new Desalinated Water Pipeline Optional Alignment, and



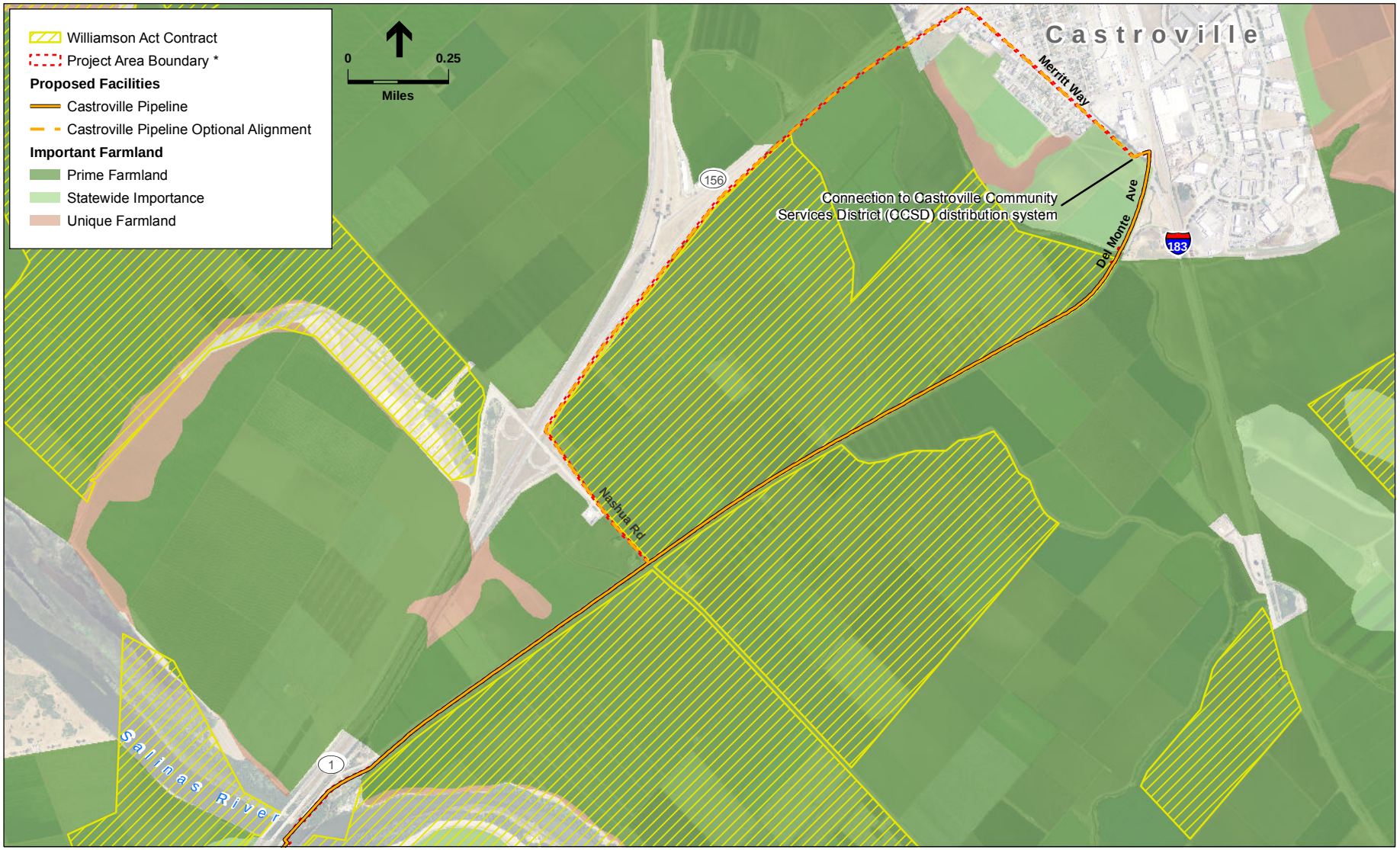
NOTE:
*Project area boundary refers to the area within which all construction-related disturbance would occur.

SOURCE: ESA, 2016; CDC, 2015b, 2016b; Monterey County, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.16-1

Farmland Mapping Designations and Williamson Act Contracts



NOTE:
*Project area boundary refers to the area within which all construction-related disturbance would occur.

SOURCE: ESA, 2016; CDC, 2015b, 2016b; Monterey County, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 4.16-2

Farmland Mapping Designations and Williamson Act Contracts for the Castroville Pipeline

Castroville Pipeline Optional Alignment 2 were implemented, pipeline installation in the important farmland would be avoided because these optional alignments would be installed within the paved roadway of Charles Benson Road.

The 25-acre MPWSP Desalination Plant site is located on the upper terrace of a 46-acre parcel. Approximately 1.7 acre in the lower terrace of the parcel is designated as Prime Farmland, but is outside of the project area. As indicated above, important farmland also exists west of, but outside of, the MPWSP Desalination Plant site (see **Figure 4.16-1**). The proposed desalination plant site layout therefore, provides for a 200 foot buffer from the adjacent farmland west of the site as shown in Figure 3-5b in Chapter 3, Description of the Proposed Project.

North of Neponset Road and south of the Salinas River crossing, important farmland borders the east side of the Castroville Pipeline and TAMC right-of-way for approximately 0.25 mile (1,200 feet). The remaining 2.75 miles of the Castroville Pipeline, between the Salinas River and Highway 183, would be installed in Monte Road and a dirt agricultural road (see **Figures 4.16-1** and **4.16-2**). Although most of Monte Road and the dirt agricultural road are mapped as important farmland, no crops are planted within these roads; they are used for the movement of vehicles, semi-trucks, and farm equipment.

Approximately 950 feet of the Castroville Optional Alignment 1 would be installed along Nashua Road, and 1,900 feet of the Castroville Optional Alignment 1 would be installed along the Monterey Peninsula Recreational Trail and east of Highway 1. These areas are mapped as important farmland but no crops are planted in Nashua Road or the recreational trail. Approximately 1.2 miles (6,350 feet) of the Castroville Pipeline Optional Alignment 1 that is located east-to-west along Nashua Road and north-south along the Monterey Peninsula Recreational Trail is bordered to the north and east by important farmland, respectively (see **Figure 4.16-2**).

South of Reservation Road, land uses within and adjacent to the project area are predominantly urban and do not include agriculture, and the proposed facilities south of Reservation Road would not be within or adjacent to any important farmland (CDC, 2015b).

4.16.1.2 Williamson Act Program

The California Land Conservation Act of 1965, also known as the Williamson Act, is the State's primary program aimed at conserving private land for agricultural and open space uses. The Williamson Act provides a mechanism through which private landowners can contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. In return, Williamson Act contracts offer tax incentives by ensuring that land is assessed for its agricultural productivity rather than its highest and best use. Contracts typically restrict land use for a period of 10 years; however, some jurisdictions exercise the option to extend the term for up to 20 years. Contracts are automatically renewed annually unless the landowner files for non-renewal or petitions for cancellation. The CDC is responsible for administering the Williamson Act and prepares countywide maps of lands enrolled in Williamson Act contracts.

In 2013, Monterey County had a total of 732,954 acres of agricultural land protected under Williamson Act contracts and was ranked third in an assessment of California counties with the greatest number of new Williamson Act enrollments (CDC, 2015c).

Williamson Act Contracts in the Project Area

Lands under Williamson Act contract are present at several locations in the project area north of Reservation Road (see **Figures 4.16-1** and **4.16-2**). Lands under Williamson Act contract extend across a portion of the CEMEX access road west of Highway 1, and border the north side of the CEMEX access road between Highway 1 and Lapis Road. The Source Water Pipeline would be buried underneath the CEMEX access road. In addition, Williamson Act contracts border the west side of the Source Water Pipeline and the new Desalinated Water Pipeline alignments along Lapis Road between the CEMEX access road and Del Monte Boulevard. The proposed alignments for the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be installed within the southern edge of Williamson Act land located on the north side of Charles Benson Road and west of the MPWSP Desalination Plant site. Since the Source Water Pipeline Optional Alignment, new Desalinated Water Pipeline Optional Alignment, and Castroville Pipeline Optional Alignment 2 would be installed within the paved roadway of Charles Benson Road, implementation of these optional alignments would avoid construction in Williamson Act lands.

Williamson Act contracts border the south side of the Castroville Pipeline and TAMC right-of-way for approximately 1.4 miles between Neponset Road and the Monte Road/Nashua Road intersection. Roughly 0.5 mile of the section of Castroville Pipeline that would be installed in the dirt agricultural road located north of Monte Road/Nashua Road is mapped as land under Williamson Act contracts. However, as stated above, no crops are planted within the agricultural road as it has historically been and is currently used for the movement of vehicles, semi-trucks, and farm equipment. The eastern 0.8-mile of pipeline in the dirt agricultural road is bordered to the north by Williamson Act lands. The Castroville Pipeline Optional Alignment 1 is bordered to the north by Williamson Act contracts between the intersection of Monte Road/Nashua Road and the Monterey Peninsula Recreational Trail and for approximately 1 mile to the east of the Monterey Recreational Trail as the alignment heads northward from Nashua Road. No crops are planted in Nashua Road or the recreational trail.

South of Reservation Road there are no Williamson Act contracts within or adjacent to the project area (CDC, 2016b).

4.16.2 Regulatory Framework

This section provides an overview of notable federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as “regulatory requirements”) relevant to agricultural resources. A brief summary of each is provided, along with a finding regarding the proposed project’s conformity with those regulatory requirements. The conformity findings concern the proposed project, without mitigation. Where the proposed project would be consistent with the applicable regulatory requirement, no further discussion of project consistency with that regulatory requirement is provided. Where the proposed project would be potentially

inconsistent with the applicable regulatory requirement, the reader is referred to a specific, detailed impact discussion within Section 4.16.5, Direct and Indirect Effects of the Proposed Project. Where applicable, the discussion in Section 4.16.5 identifies feasible mitigation that would resolve or minimize the potential inconsistency.

4.16.2.1 Federal Regulations

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA; 7 USC §4201 et seq.) is intended to minimize the impact of Federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The FPPA seeks to protect Prime Farmland, Unique Farmland, Farmland of Local Importance, and Farmland of Statewide Importance from irreversible conversion to non-agricultural use (7 USC §4201(c)(1)). Projects are subject to FPPA requirements if they would irreversibly convert farmland to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. Projects subject to FPPA should consider alternative actions that could lessen any adverse effects and assure that such projects are compatible with State and local programs and policies created to protect farmland. The U.S. Department of Agriculture (USDA) is responsible for administering the FPPA (USDA, 2016).

Consistency with FPPA is relevant to the proposed project because portions of the project require various Federal permits, approvals, or authorizations, as described in Section 3.5, Permits, Approvals, and Regulatory Requirements. Furthermore, it would be funded, in part, by the State Revolving Fund program, a federal-state partnership that provides low-interest loans for investments in water and sanitation infrastructure. The proposed project would not be subject to FPPA requirements because the project would not irreversibly convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance to nonagricultural use. See Impacts 4.16-1 and 4.16-2 for additional discussion.

4.16.2.2 State Regulations

California Land Conservation Act of 1965 (Williamson Act)

As described above, the California Land Conservation Act, or Williamson Act, is the State's primary program for conserving private land for agricultural and open space use. It is a voluntary, locally administered program that offers reduced property taxes on lands whose owners place enforceable restrictions on land use through contracts between the individual landowners and local governments.

The proposed alignments for the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be potentially inconsistent with the Williamson Act because they would be located on lands protected by Williamson Act contracts. This issue is further discussed below in Impact 4.16-2.

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal zone boundary. Of primary relevance to agricultural resources are Coastal Act policies concerning maintenance of agricultural lands in production and limitations on conversions of agricultural lands to non-agricultural uses. None of the MPWSP components subject to the Coastal Act is proposed on agricultural lands. Therefore, the MPWSP would not conflict with Coastal Act policies governing the productivity or conversion of agricultural.

4.16.2.3 Applicable Regional and Local Land Use Plans and Policies

Table 4.16-2 summarizes the regional and local land use plans, policies, and regulations pertaining to agriculture and indicates whether the proposed project is consistent with such plans, policies, and regulations. Where the analysis concludes the proposed project would be consistent with the applicable plan, policy, or regulation, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project is potentially inconsistent with the applicable plan, policy, or regulation, the reader is referred to the specific impact discussion in Section 4.16.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict.

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TABLE 4.16-2
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO AGRICULTURAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Agriculture	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, and Castroville Pipeline	***Policy AG-1.1:*** Land uses that would interfere with routine and ongoing agricultural operations on viable farmlands designated as Prime, of Statewide Importance, Unique, or of Local Importance shall be prohibited.	This policy is intended to protect agricultural operations on designated important farmlands from the loss of productivity as a result of incompatible land uses nearby.	Consistent: The proposed project would not introduce land uses that would interfere with routine and ongoing agricultural operations on viable farmlands. Although the proposed alignments for the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be installed within Farmland of Statewide Importance located on the north side of Charles Benson Road, impacts would be temporary and existing agricultural land uses could resume after pipeline installation is completed.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Agriculture	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, and Castroville Pipeline	***Policy AG-1.2:*** The County shall require that well-defined buffer areas be provided as partial mitigation for new non-agricultural development proposals that are located adjacent to agricultural land uses on farmlands designated as Prime, of Statewide Importance, Unique, or Local Importance.	This policy is intended to ensure that non-agricultural uses do not encroach on the agricultural lands.	Consistent: The proposed development on the MPWSP Desalination Plant site incorporates a 200-foot-wide buffer from the adjacent designated farmland located west of the site. Pipelines used for distribution of water are allowed in all zoning districts without a use permit and do not require a buffer provided they are buried at a sufficient depth to prevent conflicts with agricultural activities.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Agriculture	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, and Castroville Pipeline	***Policy AG-1.4:*** Viable agricultural land uses, including ancillary and support uses and facilities on farmland designated as Prime, of Statewide Importance, Unique, or of Local Importance shall be conserved, enhanced, and expanded through agricultural land use designations and encouragement of large lot agricultural zoning, except as provided in a Community Plan. Agriculture shall be established as the top land use priority for guiding further economic development on agricultural lands.	This policy is intended to preserve agricultural resources, protect prime agricultural soil, and deter conversion of farmland.	Consistent: The proposed project would not impede the viability, conservation, enhancement, or expansion of agricultural land uses. Although the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be installed in important farmland, impacts would be temporary and existing agricultural land uses could resume after pipeline installation is completed.
County of Monterey (coastal zone)	North County Land Use Plan	Agriculture	Source Water Pipeline and new Desalinated Water Pipeline	***Key Policy 2.6.1:*** The County shall support the permanent preservation of prime agricultural soils exclusively for agricultural use. The County shall also protect productive farmland not on prime soils if it meets State productivity criteria and does not contribute to degradation of water quality. Development adjacent to prime and productive farmland shall be planned to be compatible with agriculture.	This policy is intended to preserve agricultural resources, protect prime agricultural soils, and deter conversion of farmland.	Consistent: Pipeline installation would occur within roads or trails adjacent to, but outside of, agricultural lands. Therefore, the proposed project would not result in the permanent conversion of farmland to non-agricultural uses in areas within the North County Land Use Plan.
County of Monterey (coastal zone)	North County Land Use Plan	Agriculture	Source Water Pipeline and new Desalinated Water Pipeline	***Policy 2.6.2.1:*** Prime and productive farmland designated for Agricultural Preservation and Agricultural Conservation land use shall be preserved for agricultural use to the fullest extent possible as consistent with the protection of environmentally sensitive habitats and the concentration of development.	This policy is intended to preserve farmland designated for Agricultural Preservation and Agricultural Conservation land use.	Consistent: Pipeline installation would occur within roads or trails adjacent to, but outside of, agricultural lands. Therefore, the proposed project would not result in the permanent conversion of farmland to non-agricultural uses in areas within the North County Land Use Plan.

SOURCE: Monterey County, 1999, 2010.

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4.16.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to agricultural resources if it would:

- Involve changes in the existing environment that, due to their location or nature, could result in the conversion of farmland to non-agricultural use;
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use; or
- Conflict with existing zoning for agricultural use or with a Williamson Act contract.

4.16.4 Approach to Analysis

The analysis focuses on the potential for implementation of the proposed project to adversely affect agricultural resources through temporary disruption or disturbance of agricultural land uses and activities during construction, conversion of agricultural land to non-agricultural land uses during construction and operation, introduction of incompatible land uses or land use activities during operation, or through other changes to the physical environment that could result in loss or conversion of agricultural lands during construction and operation. Unless the land is zoned for agricultural uses, areas designated in the FMMP maps as Grazing Land are not considered in this analysis.

The approach is based largely on a comparison of the proposed project area, which is defined as the area within which all construction-related disturbance would occur, against important farmland as mapped in FMMP Important Farmland Series Maps, maps of Williamson Act contracts, and zoning maps. Existing use of land designated or zoned for agriculture was also considered. Since the project area encompasses all areas that would be disturbed, this analysis assumes that agricultural land that is adjacent to, but outside of, the project area boundary would not be subject to disturbance.

4.16.5 Direct and Indirect Effects of the Proposed Project

TABLE 4.16-3
SUMMARY OF IMPACTS – AGRICULTURAL RESOURCES

Impacts	Significance Determinations
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	LSM
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	LS
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	LS
Impact 4.16-C: Cumulative impacts related to agricultural resources.	LSM

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation

4.16.5.1 Construction Impacts

Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use. (*Less than Significant with Mitigation*)

This impact addresses the potential for construction of the proposed project to result in physical changes to the environment that could temporarily disrupt agricultural activities or result in the conversion of farmland and land zoned for agricultural uses to non-agricultural uses.

Project construction activities, if not properly managed, could temporarily displace or disrupt agricultural land uses, or cause long-term changes in the existing environment that could ultimately result in the conversion of farmland and land zoned for agricultural uses to non-agricultural uses. For example, project construction activities could temporarily interfere with existing agricultural operations, or cause soil compaction from the movement of heavy construction vehicles and equipment, thereby adversely affecting the suitability of soil for agricultural production. Excavation and earthmoving activities during project construction could also result in the loss of fertile topsoil and effectively render previously productive agricultural land unusable. Project components constructed within agricultural lands could convert farmland to non –agricultural uses.

As discussed above in Section 4.16.1, Setting/Affected Environment, portions of the project area are located within, or adjacent to, important farmland and land zoned for agricultural uses. As stated above in Section 4.16.4, given that the project area encompasses all areas that would be disturbed during construction, this analysis assumes that agricultural land that is adjacent to, but outside of, the project area boundary would not be subject to construction disturbance. As a result, this impact focuses on the project facilities within project area boundaries that would require construction on agricultural land or parcels that are zoned for agricultural land uses — MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and Castroville Pipeline Optional Alignment 1.

MPWSP Desalination Plant

The MPWSP Desalination Plant would be located on 25 acres of land zoned for Permanent Grazing and designated as Grazing Land by the FMMP. The land has not been used for grazing or any other agricultural purpose since at least 1956 (RBF Consulting, 2012). Therefore, construction of the MPWSP Desalination Plant would not temporarily disrupt agricultural activities, as none currently are conducted on the site, and would have a less-than-significant impact with respect to conversion of land zoned for agricultural use to non-agricultural uses because no agricultural uses currently are present in this location.

Source Water Pipeline, New Desalinated Water Pipeline, and Castroville Pipeline

Construction activities associated with the installation of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would require surface disturbance and earthmoving activities within or near farmland in the following locations:

- The 4,000-foot segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline located north of, and outside of, the Charles Benson Road paved roadway would be installed within designated farmland that is also zoned as Permanent Grazing; however, 2,500 feet (0.5 mile) of this stretch is private agricultural land currently under flower production.
- 2.4 miles of the Castroville Pipeline, between the Salinas River and the Tembladero Slough, would be installed in Monte Road and an unpaved agricultural road. This area is mapped as important farmland but crops are not grown in the roadway. Construction disturbance associated with the Castroville Pipeline would be confined to the road and road shoulder.
- Approximately 950 feet of the Castroville Optional Alignment 1 along Nashua Road is mapped as being within farmland but construction disturbance would be limited to the road and road shoulder and would not affect cultivated row crops.
- 1,900 feet of the Castroville Optional Alignment 1 along the Monterey Peninsula Recreational Trail and east of Highway 1 is also mapped as farmland but crops are not grown in the trail. Pipeline installation activities would be installed within and adjacent to the recreational trail and would not affect cultivated row crops.

Pipeline installation and earthmoving activities associated with the segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road that would be installed in land zoned for Permanent Grazing would involve temporary construction impacts that would not persist after construction is completed and the construction site is restored. The pipeline installation and earthmoving activities associated with the 0.5-mile-long segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road that are within cultivated farmland could result in the loss of topsoil and/or soil compaction and ultimately reduce agricultural productivity, a potentially significant impact. However, the impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)**. No impact would occur with any other segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline or with the Castroville Optional Alignments 1 and 2.

All Other Proposed Facilities

Although other pipeline alignments north of Reservation Road border farmland, construction of these pipelines would not result in the disturbance of farmland because the disturbance would be contained within the project area boundary, which is outside of farmland. None of the proposed facilities located south of Reservation Road are located in close proximity to farmland. Therefore, construction of these facilities would not affect soil conditions in farmland areas and would not result in the conversion of farmland to non-agricultural uses. No impact would result.

Consistency with Regulatory Requirements

Due to the potential for installation of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road to result in the conversion of farmland to non-agricultural uses, these pipelines are considered to be potentially inconsistent with applicable regulatory requirements related to agricultural resources that were adopted for the purposes of avoiding or mitigating an environmental effect, namely, the FPPA (described in Section 4.16.2.1, above). The 0.5-mile-long segments of the Source Water Pipeline, new

Desalinated Water Pipeline, and Castroville Pipeline that would be installed in the farmland north of Charles Benson Road would potentially conflict with the FPPA, which intends to protect farmland from being irreversibly converted to nonagricultural uses. However, CalAm and its construction contractors would be required to implement **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)**, which would resolve any potential conflicts with the FPPA.

Impact Conclusion

Construction of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road would cause physical changes to the environment that could result in the conversion of farmland to non-agricultural uses, a significant impact. Implementation of **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)** would reduce this impact to a less-than-significant level. None of the other proposed facilities or pipeline alignments would result in conversion of farmland.

Mitigation Measures

Mitigation Measure 4.16-1 applies to the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road.

Mitigation Measure 4.16-1: Minimize Disturbance to Farmland.

CalAm and its construction contractor(s) shall incorporate the following measures into construction plans and specifications for all construction activities located in farmland areas to minimize adverse impacts on farmland:

- CalAm shall notify affected property owners at least 90 days prior to initiating construction activities that have the potential to interfere with agricultural operations.
- Construction contractor(s) shall minimize the extent of the construction disturbance, including construction access, in agricultural areas to the maximum extent feasible. Minimization efforts shall include, but not be limited to, consulting with affected property owners to schedule construction activities to minimize impacts during planting, growing, and/or harvest seasons.
- During excavation and other earthmoving activities in designated farmland areas, the surface and subsurface soil layers shall be stockpiled separately when trenches are excavated. Segregated topsoil and subsoil shall be maintained and kept separated throughout all construction activities, and these soils shall subsequently be used to backfill excavations and shall be returned to its appropriate location in the soil profile.
- To avoid over-compaction of the top layers of soil, soil densities shall be measured prior to the start of construction activities, and surface soil (roughly the upper 3 feet of soil) shall be backfilled to within 5 percent of the original density.
- If necessary, following construction activities, the uppermost 3 feet of soil shall be ripped to achieve the appropriate soil density (within 5 percent of the original). Ripping may also be used in areas where vehicle and equipment traffic has compacted the topsoil layers.
- Existing agricultural drainage systems shall be inspected before and after construction to ensure they function as needed.

- Disturbed areas shall be restored to pre-construction conditions following construction.

4.16.5.2 Operational and Facility Siting Impacts

Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. (*Less than Significant*)

This impact is related to the long-term conversion or loss of important farmlands. As discussed above in Section 4.16.1, Setting/Affected Environment, the FMMP Important Farmland Maps for Monterey County indicate that portions of the project area are located within, or adjacent to, lands designated as Prime Farmland and Farmland of Statewide Importance. Since the project area was designed to encompass all construction-related disturbances, no disturbance to land located outside of the project area is anticipated.

MPWSP Desalination Plant

As indicated in Section 4.16.1.1, above, approximately 1.7 acres of the northern portion of the larger 46-acre MPWSP Desalination Plant parcel are designated as Prime Farmland. However, the proposed desalination facilities would be constructed on the 25-acre MPWSP Desalination Plant site on the upper terrace of the parcel and outside of the area designated as Prime Farmland. Farmland of Statewide Importance exists west of the MPWSP Desalination Plant site. However, because the plant footprint would neither extend into the approximately 1.7 acre area nor outside of the project area boundary and into this adjacent parcel, no impact would result.

Source Water Pipeline, New Desalinated Water Pipeline, Castroville Pipeline

As described above in Section 4.16.1 and Impact 4.16-1, portions of the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline north of Charles Benson road would be installed in designated important farmland. Portions of the Castroville Pipeline Optional Alignment 1 would be installed along right-of-ways or trails that are mapped as farmland but have no crops grown within them.

- The 2,500-foot-long (0.5-mile) segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline would be installed in Farmland of Statewide Importance along the north side of Charles Benson Road. CalAm plans to negotiate an easement along the north side of the existing row of eucalyptus and cypress trees that line Charles Benson Road for this purpose. This easement could encompass up to 3 acres of Farmland of Statewide Importance. The affected farmland is currently used for flower cultivation.
- Approximately 2.4 miles of the Castroville Pipeline alignment between the Salinas River and the Tembladero Slough is mapped Prime Farmland and Farmland of Statewide Importance. This section of pipeline would be installed in Monte Road and the private dirt agricultural road along the edge of the cultivated rows and would not convert designated farmland to non-agricultural use.
- Approximately 950 feet of the Castroville Pipeline Optional Alignment 1 along Nashua Road, and 1,900 feet of the Castroville Pipeline Optional Alignment 1 along Highway 156

and the Monterey Peninsula Recreational Trail, south of Tembladero Slough, is mapped as Prime Farmland. These pipeline sections would be installed in Nashua Road and the recreational trail along the edge of the cultivated rows and would not convert designated farmland to non-agricultural use.

In summary, only the 2,500-foot segments of the pipelines along the north side of Charles Benson Road would be installed within farmland. Pipelines would be buried at a minimum depth of 4 feet below the ground surface, which would avoid conflicts with typical tillage activities. As a result, agricultural production on land currently used for the cultivation of flowers could resume after pipeline construction has been completed. While the presence of these pipelines would prevent the future cultivation of large woody plants and trees along the pipeline corridors (woody plant types can damage pipelines and interfere with pipeline repairs and maintenance), such plant types are not currently or typically grown in the potentially affected agricultural areas; therefore, this limitation would result in a less-than-significant impact within the 3 or fewer acres of farmland affected, and would not result in the conversion of this farmland to non-agricultural uses.

If selected, the optional alignments for the Source Water Pipeline and new Desalinated Water Pipeline, and the Castroville Pipeline Optional Alignment 2, would be installed within the Charles Benson Road paved roadway and would avoid the Farmland of Statewide Importance located along the north side of Charles Benson Road. Implementation of these optional alignments would have no impact, and would eliminate the impact of the proposed alignments on the 3 acres of farmland described above.

All Other Facilities

None of the other facilities north of Reservation Road would be installed in areas mapped as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. South of Reservation Road, land uses in the project area are predominantly urban and do not include important farmland. Thus, no impact related to the conversion of important farmland to non-agricultural uses would result from implementation of all other proposed facilities. Impacts on agricultural production wells resulting from operation of the slant wells at CEMEX, are discussed in Groundwater, Section 4.4.5.2, Operations Impacts and Mitigation Measures.

Impact Conclusion

Implementation of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline installed in the farmland north of Charles Benson Road would result in a less-than-significant impact related to the permanent conversion of important farmland to non-agricultural uses; farming practices would not be displaced. Alternately, implementation of the optional alignments for the Source Water Pipeline and new Desalinated Water Pipeline, and the Castroville Pipeline Optional Alignment 2 would eliminate the less-than-significant impact (no impact). For all other facilities, no impact would result.

Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources, describe the potential impacts on groundwater quality and quantity due to operation of the proposed project. As described therein, the proposed project would result in less-than-significant impacts on groundwater quality and levels. That analysis identifies less-than-significant impacts on existing users of wells that may be

affected by the proposed project, including agricultural users. Because the proposed project would not affect groundwater quality or levels in a way that would adversely affect existing agricultural users, it would not result in a change in the existing environment that would indirectly result in the permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Mitigation Measures

None proposed.

Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts. (*Less than Significant*)

Some of the proposed facilities and pipelines located north of Reservation Road would be constructed on lands under Williamson Act contract and lands zoned for agricultural uses. The proposed project could result in zoning conflicts if it were to introduce incompatible land uses into these areas or cancel or displace Williamson Act land. Land protected by Williamson Act contracts is shown in **Figures 4.16-1** and **4.16-2**. The facilities that would be installed within land zoned for agriculture are shown in **Table 4.16-4**, below. In general, zoning designations do not extend into the road right-of-ways.

TABLE 4.16-4
PROJECT FACILITIES PROPOSED ON LAND ZONED FOR AGRICULTURE

Facility Name	Current Land Use	Location Where Facility Would Be Sited in Agricultural Zoning	Zoning
MPWSP Desalination Plant	Vacant/undeveloped	25-acre upper terrace (proposed development area)	Permanent Grazing – Permanent Grazing
Source Water Pipeline, New Desalinated Water Pipeline, Castroville Pipeline	Vacant/undeveloped and flower cultivation	4,000-foot segment located along the north side of Charles Benson Road between MPWSP Desalination Plant site and Del Monte Boulevard	Permanent Grazing – Permanent Grazing

MPWSP Desalination Plant

Current and recent uses of a property can provide a practical measure of its suitability for agriculture. The 46-acre MPWSP Desalination Plant parcel is zoned for Permanent Grazing, but with the exception of the unconnected 1.7 acres of this parcel that form a portion of a neighboring farm and which would not be affected by the proposed project, the property has not been used for grazing or any other agricultural use since at least 1956 (RBF Consulting, 2012). Section 21.34.050 of the Monterey County Zoning Ordinance allows for public and quasi-public land uses including public utilities on land zoned for Permanent Grazing (Monterey County, 2011). Therefore, the proposed development of the 25-acre upper terrace of the parcel for the MPWSP Desalination Plant site would be allowed with a use permit from Monterey County. The 200-foot buffer between farmland and new development that is required by the Monterey County Municipal Code has been accounted for in the preliminary site plan for the MPWSP Desalination Plant (see

Figure 3-5b in Chapter 3, Description of the Proposed Project. Therefore, the proposed desalination facilities on the upper terrace would not conflict with the existing zoning for agricultural uses.

The MPWSP Desalination Plant site is not under a Williamson Act contract. The Williamson Act lands located west of the site would not be affected by the proposed desalination facilities.

Source Water Pipeline, New Desalinated Water Pipeline, and Castroville Pipeline

The 4,000-foot-long (0.75-mile) segments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline that would be installed along the north side of Charles Benson Road, outside of the paved roadway, would be installed in land zoned for Permanent Grazing. However, Section 21.64.160 of the Monterey County Zoning Ordinance allows underground public utilities in all zoning districts, without the necessity of obtaining a use permit. Therefore, no conflict with agricultural zoning would occur.

The following segments of the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, and Castroville Pipeline Optional Alignment 1 would be installed in land protected by Williamson Act contracts:

- Approximately 0.10 mile within the CEMEX access road west of Highway 1 (Source Water Pipeline).
- Approximately 0.5 mile along the north side of Charles Benson Road (Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline).
- Approximately 0.5 mile of the section of Castroville Pipeline that would be installed in the dirt agricultural road located north of Monte Road/Nashua Road.

Pipeline installation in Williamson Act lands would not result in the cancellation of Williamson Act contracts nor permanently interfere with the ongoing use of the land for agricultural purposes because the existing uses, none of which include the cultivation of woody plants or trees, could resume once construction of the pertinent pipeline segments has been completed. Therefore, impacts would be less than significant.

As discussed in Section 4.16.4, agricultural land that is adjacent to, but outside of the project area boundary would not be subject to disturbance, therefore the Castroville Pipeline and Castroville Pipeline Optional Alignment 1 routes that run adjacent to land protected by Williamson Act contracts would have no conflict.

Since the Source Water Pipeline Optional Alignment, new Desalinated Water Pipeline Optional Alignment, and Castroville Pipeline Optional Alignment 2 would be installed within the paved roadway of Charles Benson Road, implementation of these optional alignments would have no impact on Williamson Act lands.

All Other Proposed Facilities

None of the other proposed facilities would be located within, or adjacent to, land zoned for agriculture or land protected by Williamson Act contracts. Therefore, no conflict would result.

Impact Conclusion

None of the proposed facilities would conflict with agricultural zoning. The Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline installed in farmland north of Charles Benson Road would result in a less than significant impact related to conflicts with Williamson Act contracts because existing uses could resume during operations. All other proposed facilities, including all optional pipeline alignments, would have no impact on Williamson Act land.

Mitigation Measures

None proposed.

4.16.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.16-C: Cumulative impacts related to agricultural resources *(Less than significant with Mitigation)*

The scope for cumulative impacts on agricultural resources encompasses the geographic extent of the California Department of Conservation's FMMP maps for Monterey County and local zoning maps for Monterey County. The timeframe during which the MPWSP could contribute to cumulative agricultural resources effects includes the 24-month construction phase. Cumulatively significant impacts on agricultural resources could result if incremental effects of the MPWSP combined with those of one or more additional projects to cause substantial permanent conversion of designated important farmland (e.g., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) to non-agricultural use, conflict with existing zoning for agricultural uses or with Williamson Act contracts, or otherwise change the existing environment such that farmland is converted to non-agricultural use (see **Table 4.16-3, Summary of Impacts – Agricultural Resources**).

Projects identified in **Table 4.1-2** in Section 4.1 that could affect agricultural lands include the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (No. 35) and the Monterey Peninsula Light Rail Project (MPLRP) (No. 38).

Cumulative Construction Impacts

As described in Impact 4.16-1, the proposed project would temporarily disrupt agricultural uses along the north side of Charles Benson Road, and construction activities could result in the loss of

topsoil and soil compaction that could reduce agricultural productivity. The RUWAP Recycled Water Project and the MPLRP also would have short-term construction-related effects that could result in the conversion of agricultural land to non-agricultural uses. The RUWAP Recycled Water Project would temporarily affect a 0.75-mile-long (4-acre) band of Farmland of Statewide Importance and Grazing as a result of construction staging and use of heavy equipment during pipeline installation from the pump station. Following construction, this project would return the ground surface to its original condition (Denise Duffy & Associates, 2007) Phase 2 of the MPLRP would result in short-term disturbance of agricultural activities during construction. These projects' impacts could combine to result in a significant cumulative impact.

Each project enlists specific design features (i.e., avoidance) and/or mitigation measures that would reduce construction impacts on agricultural uses. The RUWAP Recycled Water Project proposes to avoid existing row crop production. The short-term construction impacts on agricultural land associated with Phase 2 of the MPLRP would be mitigated through consultation with government agencies and TAMC leaseholders, development of a construction schedule that avoids conflict with the growing season, and construction equipment staging in areas that avoid active agricultural production (TAMC, 2011). As discussed in Section 4.16.5, above, after implementation of **Mitigation Measure 4.16-1 (Minimize Disturbance to Farmland)**, installation of the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road would result in a less-than-significant impact related to the loss of topsoil and/or soil compaction potentially resulting in reduced agricultural productivity and conversion of agricultural land. This mitigation measure would minimize the extent of construction disturbance in agricultural areas, require stockpiling and restoration of topsoil and subsoil layers, backfill and restoration of excavated soils to appropriate densities, and maintenance of functioning agricultural drainage systems (Impact 4.16-1). These effects would be temporary and limited to the MPWSP construction period, and residual impacts on agricultural land following implementation of this mitigation measure would be minimal. No conversion of agricultural land is anticipated as a result of this impact after mitigation. Because the residual construction-related impacts on agricultural land would not cause conversion of these lands to non-agricultural use, with mitigation, the proposed project would have a less than significant contribution to a significant cumulative impact related to temporary disturbance or other changes in the environment that could result in the conversion of farmland to non-agricultural uses.

Cumulative Impacts During Project Operations

As described in Section 4.16.5.2, above, project operations would not result in the conversion of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to non-agricultural use (Impact 4.16-2). Therefore, regardless of the impacts of other projects in the cumulative scenario, project operation would have a less than significant contribution to a cumulative impact related to farmland conversion.

The operation of the MPWSP Desalination Plant would permanently occupy 25 acres of land zoned for Permanent Grazing, and a 4,000-foot segment of the Source Water Pipeline, New Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road would be located within land zoned Permanent Grazing (Impact 4.16-3). As previously noted, public

utilities and water system facilities are allowed in the Permanent Grazing district with a use permit, and underground utility uses are allowed in all zones. Therefore, the project would not conflict with zoning for agricultural uses, and would not contribute to a cumulative impact related to agricultural zoning. Additionally, several pipeline segments would be installed within lands protected by Williamson Act contracts as described in Impact 4.16-3. However, these uses would not permanently affect the existing agricultural uses in these locations and thus would not conflict with a Williamson Act contract. Therefore, regardless of the impacts of other projects in the cumulative scenario, project operation would have a less than significant contribution to a cumulative impact on Williamson Act lands.

Mitigation Measures

None proposed.

References – Agriculture Resources

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4.17 Mineral Resources

Sections	Tables
4.17.1 Setting/Affected Environment	4.17-1 Applicable Regional and Local Plans and Policies Relevant to Mineral Resources
4.17.2 Regulatory Framework	4.17-2 Summary of Impacts – Mineral Resources
4.17.3 Evaluation Criteria	
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4.17.6 Cumulative Effects of the Proposed Project	

This section describes existing mineral resources in the vicinity of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) and analyzes the potential effects of construction and operation of the proposed project on these resources. Sand is the largest known and valuable mineral resource in the region, and is the focus of this section. Other minerals such as oil and gas are present in the region, but are not present within the project area.

Comments received on the 2015 Draft EIR requested that construction of the subsurface slant wells and source water pipeline on CEMEX property be accounted for and addressed in a reclamation plan amendment pursuant to the Surface and Mining Reclamation Act; the comment is addressed in Section 4.17.1.2. In addition, comments requested clarity about the impact of maintenance activities associated with the slant wells, which the commenter assumed would be in the active mining area. Since the slant wells would be in the retired portion of the CEMEX property, this comment is moot. A comment also requested information about the suitability and likelihood of future mining in the area of the ASR Wells, and why the ASR Wells would not preclude mining activities in this area; the comment is addressed in Section 4.17.5.1.

4.17.1 Setting/Affected Environment

The study area for evaluation of impacts on mineral resources includes the project area boundary (see Figures 3-3 through 3-16) and the general vicinity of the proposed project, within coastal northern Monterey County. MBNMS resources that would be affected by impacts identified in this section are limited to the seafloor and subsurface materials (e.g., sand, sediments) within MBNMS above the ends of the slant wells; all other impacts related to mineral resources would occur outside of MBNMS boundaries.

4.17.1.1 Mineral Resources

In accordance with California's Surface Mining and Reclamation Act of 1975 (SMARA) (discussed in Section 4.17.2.2, below), the state geologist, through the California Department of Conservation, California Geological Survey (CGS; formerly known as the California Division of Mines and Geology [CDMG]), is responsible for identifying and mapping the non-fuel mineral resources of the state. Economically significant mineral deposits are classified based on the known and inferred mineral resource potential of the land using the California Mineral Land Classification System, which includes the following four mineral resource zones (MRZs).

- ***MRZ-1*:** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- ***MRZ-2:*** Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- ***MRZ-3:*** Areas containing mineral deposits, the significance of which cannot be evaluated.
- ***MRZ-4:*** Areas where available information is inadequate for assignment to any other zone.

The CGS's classification of lands in the Monterey Bay Production–Consumption Region,[1] within which the proposed project is located, focuses on significant sand, gravel, or stone deposits that are suitable as sources of aggregate (CDMG, 1987). Construction-grade aggregate is used in construction to provide bulk and strength to concrete, plasters, and stucco, and is used in road construction and other building applications. The CGS estimates that the Monterey Bay Production–Consumption Region has 323 million tons of permitted aggregate reserves.[2] The estimated 50-year demand for aggregate in the region is 346 million tons (CGS, 2012).

A large portion of the study area is classified as MRZ-2 due to the presence of significant sand and gravel deposits (CDMG, 1987). The MRZ-2 within the study area extends from the Salinas River in the north to Highway 68 in the south, and from the Pacific coast to inland areas east of General Jim Moore Boulevard. Project components that would be located in MRZ-2 include the slant wells, the Source Water Pipeline, the MPWSP Desalination Plant, the Brine Discharge Pipeline, the Brine Mixing Box, the Pipeline to CSIP Pond, the new Desalinated Water Pipeline, the southern portion of the Castroville Pipeline, the new Transmission Main, the ASR conveyance pipelines, the ASR-5 and ASR-6 Wells, and the Ryan Ranch-Bishop Interconnection Improvements. North of the Salinas River, portions of the proposed and alternate Castroville Pipeline routes are located within MRZ-1 and MRZ-4. The Main System–Hidden Hills Interconnection Improvements, and the Carmel Valley Pump Station would not be located within an MRZ (CDMG, 1987).

4.17.1.2 Mining Operations

The only remaining active mining operation in the project area is the CEMEX sand mining facility located on the coast in north Marina, within the Marina Dune Complex (City of Marina, 1982). The Marina General Plan recognizes this facility being located within a designated mineral resource, but does not contain policies protecting or promoting mineral resource extraction at this site (City of Marina, 2006). The northern portion of the Marina Dune Complex is undisturbed but the southern portion has been affected by ongoing sand mining activities at the CEMEX facility, which has been in operation since 1906. Sand deposits at the CEMEX sand mining facility, also known as the Lapis #110 Pit, the Lapis Sand Pit, and the Lapis Plant, include beach sands and eolian dunes (USGS, 2016; RMC Lonestar, 1989).

1 A production-consumption region consists of one or more aggregate-producing districts and the market area they serve.
2 Permitted aggregate reserves are aggregate deposits that have been determined to be acceptable for commercial use, and that exist within properties owned or leased by aggregate-producing companies that have permits authorizing the mining of these aggregate materials.

CEMEX operators use a floating suction dredge to extract beach sand from a dredging pond located on the western portion of the CEMEX facility (see Figure 3-3a). Although a beach berm provides some separation between the dredging pond and Monterey Bay, the pond receives surface flow from the Monterey Bay during incoming tides and storm events and is replenished by sand that washes over the berm (PWA, 2008). The dredging pond is continuously being filled with sand and this sand is dredged by CEMEX facility operators. Mining operators pump the dredged sand through a feedpipe to processing facilities located in the eastern portion of the CEMEX facility. CEMEX also operates several settling ponds located south of the dredging pond and north of the CEMEX access road. As described in Section 3.2.1 of Chapter 3, Description of the Proposed Project, and depicted in **Figure 3-3**, the proposed subsurface slant wells would be located south of the CEMEX access road in the southern portion of the CEMEX property. Active sand mining operations no longer occur in the southern portion of the CEMEX property, and this area is retired and under reclamation (Ron Wilson, CEMEX Land Manager, personal communication, August 3, 2016). If the proposed project is implemented, CEMEX, as the land owner, would need to amend the Reclamation Plan to include the construction and operation of the slant wells in the retired portion of CEMEX property and the source water pipeline underneath the CEMEX access road.

According to the Lapis Plant Reclamation Plan approved in 1991 and mine inspection reports conducted by the California State Mining and Geology Board, Phase I revegetation and recontouring measures have been carried out along the slopes of the southern portion of the CEMEX property, while Phase II reclamation plans call for revegetation of the northeastern slope once mining operations have ceased (RMC Lonestar, 1989; CSGMB, 2016). At the conclusion of mining operations, the Reclamation Plan proposes that the land would be available for coastal uses allowed by the Marina Coastal Zone Land Use Plan once regrading, recontouring, revegetation, and slope stabilization efforts are complete or underway (RMC Lonestar, 1989).

CEMEX personnel continue to conduct vegetative reclamation activities in the southern portion of the CEMEX property, and CEMEX would continue to be responsible for reclamation activities as long as the property is still owned by CEMEX (Tony Lombardo, Attorney at Law, personal communication, August 3, 2016; Ron Wilson, CEMEX Land Manager, personal communication, August 3, 2016). However, under SMARA, CEMEX is required to provide financial assurance that guarantees a funding mechanism for reclamation in case the mine site is abandoned or the operator becomes financially insolvent (CSMGB, 2004). The latest financial assurance was approved by the California State Mining and Geology Board in 2016 (CSMGB, 2016).

Although the Reclamation Plan states that the CEMEX mining site could operate for 50 years or more, from the time the plan was written in 1989 (RMC Lonestar, 1989), the legality of sand mining activities at the CEMEX site has been under review by state and federal agencies. On March 17, 2016, the California Coastal Commission (CCC) issued a Notice of Intent to Commence a Cease and Desist Order (NOI) to CEMEX property owners. The NOI instructed them to shut down mining operations due to the lack of proper coastal development permits and several other violations of the Coastal Act regarding sensitive dune habitat in the vicinity of the active mining operations and coastal access (Monterey County Weekly, 2016). In addition, on April 21, 2016, the MBNMS Sanctuary Advisory Council sent a letter to the Acting Director of

the National Oceanic and Atmospheric Administration Office of National Marine Sanctuaries (MBNMS SAC, 2016) seeking a resolution that would decrease or cease active mining at the CEMEX property, due to the possible taking of a sanctuary resource and/or possible violation of MBNMS regulations. Subsequently, CalAm, the CCC, the California State Lands Commission, and the City of Marina signed the Consent Settlement Agreement and Cease and Desist Order No. CCC-17-CD-02 in July 2017 that requires the complete removal of all sand mining structures and operational machinery, and the restoration of all areas affected by the Lapis sand mining operations by December 31, 2020. Before that end date, CEMEX may not extract more than 720,000 tons of sand in total from the site and may not extract more than 240,000 tons of sand from the site in any calendar year (CCC, 2017). The Removal Plan and the aforementioned Reclamation Plan are identified in Table 4.1-2 as a potential project considered in the cumulative analysis (see project No. 63, CEMEX Removal Plan and Reclamation Plan) (CCC, 2017).

4.17.1.3 Oil, Gas, and Geothermal Wells

According to the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), there are three plugged oil or gas wells in the project vicinity. DOGGR shows the status of the three wells, which are located in the cities of Seaside, Sand City, and Del Rey Oak, as "plugged," and the status of the well operators as "inactive" (DOGGR, 2016). These wells are not located within the project area.

4.17.2 Regulatory Framework

This section provides an overview of federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") relevant to mineral resources, and analyses of the proposed project's conformity with such regulatory requirements, without mitigation.

4.17.2.1 Federal Regulations

There are no federal regulations that pertain to mineral resources that are applicable to the proposed project.

4.17.2.2 State Regulations

Surface Mining and Reclamation Act of 1975

SMARA (CCR, Title 14, Division 2, Chapter 8, Subchapter 1) requires the State Mining and Geology Board (SMGB) to adopt state policies that regulate the operation of surface mines, the reclamation of mined lands, and the conservation of mineral resources. In accordance with SMARA, the State of California established the Mineral Land Classification System to help identify and protect mineral resources in areas that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and non-fluid mineral fuels.

The MPWSP would be consistent with SMARA as the proposed project would not preclude reclamation of mined lands, would not limit mining potential in the Monterey Bay Production – Consumption Region, and would not interfere with existing mining operations.

4.17.2.3 Applicable Regional and Local Land Use Plans, Policies, and Regulations

To evaluate project consistency with applicable regulatory requirements related to land use, **Table 4.17-1** identifies the regional and local land use plans, policies, and regulations pertaining to mineral resources that are relevant to the MPWSP that were adopted for the purpose of avoiding or mitigating an environmental effect, and indicates project consistency with such plans, policies, and regulations. As shown in the table, the proposed project would not conflict with any applicable plan, policy, or regulation.

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TABLE 4.17-1
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO MINERAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
City of Marina (coastal zone)	City of Marina General Plan	Community Design and Development	Subsurface Slant Wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main	***Policy 4.124:*** To conserve soil and mineral resources within the Marina Planning Area, the following policies and conditions shall be established: 4. The City recognizes the presence of designated mineral resources west of Highway 1, and shall continue to allow the existing sand-mining operation on RMC Lonestar property [now known as the CEMEX sand mining facility] west of Highway 1 in accordance with the provisions of Marina's local coastal plan (LCP) and the approved Reclamation Plan for that site. In accordance with the Marina LCP, new or expanded sand-mining operations shall be limited to the surf zone and already-disturbed areas, and shall be subject to completion and approval of the prerequisite environmental review, Reclamation Plan, and coastal permit process.	This policy is intended to ensure that new or expanded mining operations are protective of coastal sediments and biological resources.	Consistent: The proposed project does not propose any new or expanded mining operations.
County of Monterey (coastal zone & inland area)	Monterey County Code	Chapter 16.04 - Surface Mining and Reclamation	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Chapter 16.04 - Surface Mining and Reclamation*** recognizes that mineral extraction is essential to the economic well-being of the county and that reclamation of the mined lands is necessary to prevent or minimize adverse effect on the environment and to protect public health and safety. The purpose of Chapter 16.04 is to ensure the continued availability of important mineral resources while regulating surface mining operations as required by SMARA.	This section is intended to provide for continued mining and mined lands reclamation, consistent with public health and safety needs.	Consistent: The proposed project would not substantially limit opportunities to extract mineral resources or preclude reclamation of mined lands within unincorporated areas of Monterey County.
County of Monterey (coastal zone & inland area)	Monterey County Code	Chapter 16.04 - Surface Mining and Reclamation	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Section 16.04.140 - Mineral Resource Protection*** protects mineral resource areas that have been classified by the CDMG or designated by the SMGB, as well as existing surface mining operations that remain in compliance with the provisions of Chapter 16.04, from intrusion by incompatible land uses that may impede or preclude mineral extraction or processing, to the extent possible while remaining consistent with the Monterey County General Plan.	This section is intended to protect lands identified as having high mineral resource potential, as well as existing mining operations from encroachment by incompatible land uses that may preclude mining activities.	Consistent: The proposed project does not propose any land uses that would preclude present or future mining of lands designated as having high mineral resource potential or existing mining operations within unincorporated Monterey County.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-2.1:*** Potentially significant mineral deposits and existing mining operations identified through the State Division of Mines and Geology, including idle and reserve properties, shall be protected from on-site and off-site land uses that would be incompatible with mineral extraction activities.	This section is intended to protect lands identified as having high mineral resource potential, as well as existing mining operations from encroachment by incompatible land uses that may preclude mining activities.	Consistent: The proposed project does not propose any land uses that would preclude present or future mining of lands designated as having high mineral resource potential or existing mining operations within unincorporated Monterey County.
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-2.3:*** Efforts to conserve raw mineral resources through recycling shall be supported.	This policy is intended conserve raw mineral resources.	Consistent: As discussed in Section 4.13, Public Services and Utilities, Monterey County requires that 50 percent of inert solids and 100 percent of non-inert materials be diverted from landfills. The proposed project would also be required to comply with State regulations requiring waste diversion and recycling. Therefore the proposed project would be consistent with this policy.

TABLE 4.17-1 (Continued)
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO MINERAL RESOURCES

Project Planning Region	Applicable Plan	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey (coastal zone & inland area)	Monterey County General Plan	Conservation and Open Space	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Policy OS-2.5:*** The County shall inventory, assess, and characterize the location and condition of identified pre-SMARA abandoned gold, mercury and coal mines and implement such measures as may be necessary to ensure that such mines do not contribute to a significant risk to public health or safety or non-compliance with water quality standards and criteria.	This policy is intended to ensure that abandoned mines do not create a significant health risk to people or water quality.	Consistent: The proposed project would not be located with an abandoned mine or otherwise contribute to an abandoned mine's public health or safety risk, or violation of water quality standards.
Fort Ord Reuse Authority (Seaside)	Fort Ord Reuse Plan	Conservation	New Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline	***Soils and Geology Policy B-2:*** The City shall protect designated mineral resource protection areas from incompatible land uses.	This section is intended to protect lands identified as having high mineral resource potential from encroachment by incompatible land uses that may preclude mining activities.	Consistent: The project does not propose any land uses that would preclude present or future mining of designated mineral resource protection areas within former Fort Ord lands.
Fort Ord Reuse Authority (Monterey County)	Fort Ord Reuse Plan	Conservation	Ryan Ranch–Bishop Interconnection Improvements	***Soils and Geology Policy B-2:*** The County shall protect designated mineral resource protection areas from incompatible land uses.	This section is intended to protect lands identified as having high mineral resource potential from encroachment by incompatible land uses that may preclude mining activities.	Consistent: The project does not propose any land uses that would preclude present or future mining of designated mineral resource protection areas within former Fort Ord lands.

SOURCE: City of Marina, 2006; FORA, 1997; Monterey County, 2010.

4.17.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to mineral resources if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

4.17.4 Approach to Analysis

This impact analysis evaluates the potential for the proposed project to result in the loss of availability of locally or regionally important mineral resources based on mineral resource maps prepared by the CGS using the California Mineral Land Classification System, and mineral resource maps produced by Monterey County and the City of Marina. Impacts related to the loss of mineral resources would be considered significant if construction activities were to disrupt active mining activities and make known mineral resources unavailable, or if siting of new facilities were to preclude the future recovery of known mineral resources or adversely affect the availability of these resources for future recovery.

All potential impacts related to mineral resources are associated with project construction and/or facility siting; no impacts would result from project operations. Therefore, the evaluation presented below only considers impacts related to construction and facility siting.

4.17.5 Direct and Indirect Effects of the Proposed Project

Table 4.17-2 summarizes the proposed project's impacts and significance determinations related to mineral resources.

TABLE 4.17-2
SUMMARY OF IMPACTS – MINERAL RESOURCES

Impacts	Significance Determinations
Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state, or result in the loss of a locally-recognized important mineral resource recovery site.	LS
Impact 4.17-C: Cumulative impacts related to mineral resources.	LS

NOTES:
LS = Less than Significant impact, no mitigation proposed

4.17.5.1 Construction and Facility Siting Impacts

Impact 4.17-1: Loss of availability of known mineral resources or locally important mineral resource recovery sites. *(Less than Significant)*

All proposed project components north of Highway 68 and south of the Salinas River would be located in areas designated as MRZ-2 – that is, areas where adequate information indicates that significant mineral deposits (in this case, sand for use as aggregate) are either present or are likely to be present. The CEMEX sand mining facility is within the MRZ-2 designation. There are no locally important mineral resource sites delineated on a local general plan, specific plan, or other land use plan in the study area.

Subsurface Slant Wells and Source Water Pipeline

The subsurface slant wells for the Seawater Intake System are proposed within the southern portion of the CEMEX property, in an area that is no longer mined and has been restored by CEMEX consistent with the Reclamation Plan; the proposed Source Water Pipeline would be aligned beneath the existing CEMEX access road. Construction equipment, materials, and trucks would access the existing CEMEX access road via Lapis Road. Increased truck traffic on the CEMEX access road from project-related construction vehicles and the temporary reduction in the width of the access road during installation of the Source Water Pipeline could delay the movement of vehicles through the CEMEX facility. Although mining operations could experience minor disruptions during project construction, mining operations would continue throughout project construction. Therefore, project implementation would not result in the temporary loss of known mineral resources and construction-related impacts would be less than significant.

This analysis assumes the current methods of sand extraction could continue during project construction and possibly during the first several months of future operations, subject to the schedule requirements of the Settlement Agreement signed by CalAm, the CCC, the California State Lands Commission, and the City of Marina, as discussed in Section 4.17.1.2, Mining Operations. Upon completion of project construction, the CEMEX access road would be restored to its existing condition and purpose. The Source Water Pipeline would be buried beneath the access road and would not interfere with the movement of mining vehicles or other sand mining activities. Since CEMEX is currently only mining sand from the dredging pond in the northern portion of the property, the siting of the subsurface slant wells in the southern portion of the CEMEX property would not interfere with sand mining activities or adversely affect the availability of mineral resources for future recovery. As noted in **Table 3-1** in Section 3.2 Project Components, slant well sites 2 through 6 would include a concrete pad ranging in size from 5,250 and 6,025 square feet. These structures could preclude mineral resource extraction but since sand mining is being discouraged by regulatory entities, this particular area is no longer being mined and is now under a reclamation plan. Therefore, it is unlikely that future sand mining would be permitted in the southern portion of the CEMEX property, and this impact would be less than significant.

The seafloor and subsurface mineral materials (e.g., sand, sediments) that overlie the ends of the subsurface slant wells within MBNMS would provide filtration for the ocean water taken in by the subsurface slant wells. The proposed project's use of this environmental service provided by the seafloor and subsurface mineral materials would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No mineral resource consumption or extraction would occur related to the operation of the subsurface slant wells, and therefore, no impact would occur.

MPWSP Desalination Plant

There is no active mining in the proposed MPWSP Desalination Plant project area. However, the 46-acre Desalination Plant site is located in an area designated as MRZ-2. Constructing the MPWSP Desalination Plant on 25 acres of this site could limit the future recovery of mineral resources beneath the plant footprint. The MPWSP Desalination Plant site was previously used for agriculture but is currently fallow. Parcels designated as important farmland by the California Department of Conservation surround the proposed site (CDC, 2015) and mineral extraction would be an incompatible land use, thereby limiting the mining potential of the adjacent and subject parcel. Further, even if implementation of the proposed project were to preclude future recovery of mineral resources at the MPWSP Desalination Plant site, this impact would not be significant due to the small size of the site relative to the overall size of the mineral resource zone. The MRZ-2 area within the study area is roughly 7,000 acres, therefore the MPWSP Desalination Plant footprint would preclude approximately 0.36 percent of future mineral recovery potential. Implementation of the MPWSP Desalination Plant would have a less-than-significant impact on mineral resources.

All Other Pipelines and Conveyance Facilities North of Reservation Road

Construction of portions of the Source Water Pipeline, the new Desalinated Water Pipeline, and the Castroville Pipeline would occur either within or adjacent to the Charles Benson Road rights-of-way and within the Monterey Peninsula Recreational Trail and/or the Transportation Agency for Monterey County (TAMC) rights-of-way. Construction of the Brine Discharge Pipeline and Pipeline to the CSIP Pond would generally occur within existing road rights-of-way but certain pipeline segments could be installed adjacent to the road shoulder in undeveloped portions of the MRZ-2 area. The Brine Mixing Box would be installed adjacent to a road shoulder in an undeveloped portion of the MRZ-2 area. Installing these components within or adjacent to existing road rights-of-way would minimize disturbance to nearby MRZ-2 land and future mining operations. Because the proposed pipelines would have a limited footprint and would not be constructed across any active mining areas, they would not result in a significant reduction in the availability of mineral resources (primarily sand dunes). Therefore, the construction and operation of the proposed conveyance facilities would have a less-than-significant impact on mineral resources.

Pipelines and Other Conveyance Facilities South of Reservation Road

The impacts on mineral resources associated with project components located south of Reservation Road would be similar to those of the conveyance facilities located north of Reservation Road. Because these facilities would generally be constructed within road rights-of-way and would have limited footprints, the potential impact on mineral resources would be less than significant.

ASR-5 and ASR-6 Wells

The proposed ASR-5 and ASR-6 Wells would be constructed along the east side of General Jim Moore Boulevard in Seaside, entirely on federally-owned land within the former Fort Ord military base. No active mining sites are known to exist within the former Fort Ord. The wells would not include a concrete pad so the impact on mineral resources would be less than significant. The wells would be built in the Fitch Park Military Housing area within 50-feet of existing homes, and the land uses in the vicinity of these facilities are predominantly residential, recreational (e.g., Bayonet and Black Horse Golf Courses), and public/quasi-public (e.g., Seaside Middle School); mineral extraction would be incompatible.

Impact Conclusion

The proposed project would not significantly affect the availability of known mineral resources for future recovery or substantially interfere with active mining operations at the CEMEX sand mining facility. The impact would be less than significant.

For a discussion of mitigation measures that would apply to all project components related to traffic control and safety, as well as roadway rehabilitation, see Section 4.9, Traffic and Transportation, Impacts 4.9-1 and 4.9-6.

Mitigation Measures

None proposed.

4.17.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.17-C: Cumulative impacts related to mineral resources. (*Less than Significant*)

As described in Section 4.17.5, above, the MPWSP would have a less-than-significant impact on mineral resources. The geographic extent of potential cumulative mineral resources impacts includes the sites of proposed MPWSP components and areas in coastal Northern Monterey County that are mapped by the California Department of Conservation as MRZ-2, meaning the area contains or is thought to contain significant mineral deposits, particularly sand and gravel. The MPWSP and most of the cumulative projects identified in **Table 4.1-2** are located in an area

mapped as MRZ-2. The timeframe during which the MPWSP could contribute to mineral resources effects includes the 24-month construction phase.

The MPWSP seawater intake facilities that are proposed at CEMEX would be set back from active mining areas and would not preclude sand mining activities. None of the cumulative projects identified in **Table 4.1-2** would be constructed within, or would otherwise disrupt, the CEMEX active mining area, with the exception of the CEMEX Removal Plan (No. 63) which requires that sand mining operations cease, all structures associated with mining operations be removed, and the affected area be restored by December 31, 2020. Therefore, operation of the cumulative projects would not affect CEMEX mining operations.

However, development of the MPWSP and many of the projects in **Table 4.1-2** would preclude the use of other lands within the MRZ-2 designation for sand, gravel, and stone mining for the duration of these cumulative projects' lifetimes. A large portion of the MRZ-2 area in the project vicinity is already developed, and development of certain components of the MPWSP and cumulative projects within that zone would further limit the amount of land available for potential future mining operations within the MRZ-2. The only project planned in an undeveloped portion of the MRZ-2 area is the Collection at Monterey Bay Resort (No. 56). This approved 340-room coastal resort is planned on a 26.46-acre site located west of Highway 1 and north of Tioga Avenue in Sand City. The construction and operation of the resort would contribute to the loss of availability of a known mineral resource, but not a locally important mineral resource recovery site since CEMEX is the only active mining operation in coastal Northern Monterey County. However, Sand City's General Plan specifically states that "Sand City has adopted a policy of not allowing the reestablishment of any mining within the city limits" (City of Sand City, 2002). Therefore, the General Plan precludes the mineral resource extraction from the area where the Collection at Monterey Bay Resort will be constructed and operated. As a result, the resort would not change the availability of this site for mining compared to existing conditions.

Since all cumulative projects in MRZ-2, including MPWSP, are on developed lands, on areas adjacent to important farmland which limits mining potential (the Desalination Plant component of the MPWSP), or on lands where mining is prohibited (the Collection at Monterey Bay Resort), the combined effects of cumulative projects in MRZ-2 would not have a significant cumulative impact on the availability of mineral resources relative to the total amount of known mineral resources available. As a result, MPWSP implementation would have a less than significant contribution to the cumulative impact on mineral resources.

Mitigation Measures

None proposed.

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4.18 Energy Conservation

Sections	Tables
4.18.1 Setting/Affected Environment	4.18-1 PG&E's 2015 Electric Power Mix Delivered to Customers
4.18.2 Regulatory Framework	4.18-2 Applicable Regional and Local Plans and Policies Relevant to Energy Conservation
4.18.3 Evaluation Criteria	4.18-3 Summary of Impacts – Energy Conservation
4.18.4 Approach to Analysis	
4.18.5 Direct and Indirect Effects of the Proposed Project	
4.18.6 Cumulative Effects of the Proposed Project	

This section presents the impacts of the proposed project related to energy use and conservation. Existing energy supply sources and energy use in Monterey County and California as a whole are discussed. Regulatory requirements pertaining to energy use and conservation are described. Mitigation measures are prescribed to avoid or reduce the inefficient, wasteful, and unnecessary energy consumption associated with project implementation.

CEQA § 21100(b) requires evaluation of the potential energy impacts of a proposed project, and consideration of mitigation measures that would avoid or reduce the wasteful, inefficient, and unnecessary consumption of energy associated with the project. Appendix F of the CEQA Guidelines provides three goals for energy conservation:

- Decrease overall per capita energy consumption;
- Decrease reliance on natural gas and oil; and
- Increase reliance on renewable energy sources.

In addition, Appendix F of the CEQA Guidelines indicates that EIRs may include consideration of the following six energy conservation-related environmental impact types:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
2. The effects of the project on local and regional energy supplies and on requirements for additional capacity.
3. The effects of the project on peak and base period demands for electricity and other forms of energy.
4. The degree to which the project complies with existing energy standards.
5. The effects of the project on energy resources.
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

With regard to NEPA, the Council on Environmental Quality (CEQ) regulations 40 CFR 1502.16(e) require analysis of "energy requirements and conservation potential of various alternatives and mitigation measures."

This section does not address the potential air pollutant or greenhouse gas emissions associated with various forms of energy consumption. See Sections 4.10, Air Quality, and 4.11, Greenhouse Gas Emissions, for such discussions.

4.18.1 Setting/Affected Environment

The study area for the analysis of energy conservation impacts is state-wide in terms of energy supplies, and site specific in terms of the energy consumption associated with the project's various components. There are no MBNMS resources that would be affected by impacts identified in this section; all impacts related to energy conservation would occur outside of MBNMS boundaries. Therefore MBNMS resources are not described in the environmental setting/affected environment.

4.18.1.1 California's Energy Supplies

With a relatively mild Mediterranean climate and strict energy efficiency and conservation requirements, California's per capita energy consumption ranked 48th in the nation, indicating a low per capita use of energy; the state's low use of energy was due in part to this mild climate and its energy efficiency programs (USEIA, 2016a). Nevertheless, with a population of 38.7 million people, California is the second largest energy-consuming state in the U.S. (USEIA, 2016b).

Electricity

The production of electricity requires the consumption or conversion of energy resources such as water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in California in 2015, 44.0 percent was generated by natural gas-fired power plants, 6.0 percent by coal-fired power plants, 5.4 percent from large hydroelectric dams, 9.2 percent from nuclear power plants, and 21.9 percent from renewable sources including solar and wind power (CEC, 2016a). The remaining balance (13.5 percent) came from unspecified sources (CEC, 2016a).

Natural Gas

Most of the natural gas consumed in California is extracted from on- and off-shore sites from the producing regions of the southwest (42 percent), the Rocky Mountains (23 percent), and Canada (22 percent), while the remainder is produced in California (12 percent) (CEC, 2016c). Although contractually California can receive natural gas from any producing region in North America, due to the current natural gas pipeline configurations, California can only import physical supplies from the three producing regions referenced above.

In 2012, California consumed 2,313 billion cubic feet of natural gas per day (CEC, 2016c). Of this, the majority (45 percent) was used for California's electricity market. The other end users of natural gas were the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors. Transportation, storage, and transmission losses accounted for the remaining natural gas consumption (CEC, 2016c).

Gasoline

Gasoline is by far the largest transportation fuel by volume used in California. Nearly all of the gasoline used in California is obtained through the retail market. In 2012, approximately 14.5 billion gallons of gasoline were sold in California's retail market (CEC, 2016f).

Diesel

Diesel fuel is the second largest transportation fuel by volume used in California behind gasoline. It is estimated that approximately 44 percent of total diesel sales in California are associated with retail sales. In 2012, more than three billion gallons of diesel were sold in California's retail market (CEC, 2016e). According to the U.S. Department of Energy's Energy Information Administration, nearly all semi-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and military vehicles and equipment have diesel engines.

4.18.1.2 Local Energy Systems

Electricity

Electricity is generated and distributed via a network of high voltage transmission lines commonly referred to as the power grid. Pacific Gas and Electric Company (PG&E) provides electrical power to approximately 16 million people throughout a 70,000 square mile service area in Northern and Central California, including Monterey County (PG&E, 2016b). PG&E's service area extends from Eureka to Bakersfield (north to south), and from the Sierra Nevada to the Pacific Ocean (east to west). PG&E produces and purchases energy from a mix of conventional and renewable generating sources. **Table 4.18-1** shows the electric power mix that PG&E delivered to its customers in California in 2015.

TABLE 4.18-1
PG&E'S 2015 ELECTRIC POWER MIX DELIVERED TO CUSTOMERS

Power Source	Percentage of Total
Nuclear	23%
Natural Gas	25%
Large Hydroelectric	6%
Coal	<1%
Other[a]	<1%
Unspecified Sources[b]	17%
Eligible Renewables	30%

NOTES:
[a] "Other" includes diesel oil and petroleum coke (a waste byproduct of oil refining).
[b] "Unspecified Sources" refers to electricity purchased from the grid that is not traceable to specific generation sources by any auditable contract trail.

SOURCE: PG&E, 2016a.

Of the electricity delivered by PG&E to its customers in 2015, 25 percent was generated by natural gas-fired power plants, 6 percent came from large hydroelectric dams, and 23 percent came from nuclear power plants. The remaining in-state electrical power generation (47 percent)

was supplied by renewable sources (30 percent) and other unspecified sources (17 percent) (PG&E, 2016a).

The most recent year for electrical energy consumption data (2015) by county shows that the amount of electrical energy consumed within Monterey County totaled 2,666 million kilowatt-hours, which represents about 2.6 percent of PG&E's total electricity consumed in 2015 (CEC, 2016b).

Natural Gas

Natural gas service is provided in the project area by PG&E, which serves approximately 16 million customers through 6,750 miles of gas transmission lines. PG&E's natural gas is delivered via high-pressure pipelines to its load centers with compressors used to maintain transmission pressure. The gas is then received at either an underground storage facility or redistributed through another series of smaller distribution pipelines. The most recent year of natural gas consumption data (2015) by county shows that the amount of natural gas consumed within Monterey County totaled 102.46 million therms of natural gas, which represents about 2.3 percent of PG&E's total natural gas consumed in 2015 (CEC, 2016b).

Gasoline and Diesel Fuel

In 2012, all retail sales of diesel fuel in Monterey County were 30 million gallons (CEC, 2016e), suggesting that the total diesel sales in the county were approximately 68 million gallons given that approximately 44 percent of total diesel sales in California are associated with retail sales. The total 2012 sales of gasoline in the county were 147 million gallons (CEC, 2016f).

4.18.2 Regulatory Framework

This section summarizes federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") pertaining to energy efficiency and conservation and indicates the project's consistency with those regulatory requirements. The consistency findings are for the project as proposed, without mitigation. In cases where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.18.5, Direct and Indirect Effects of the Proposed Project, where the potential inconsistency is addressed further.

4.18.2.1 Federal Regulations

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to

fuel economy standards. The project would be consistent with the Act because all passenger cars and light trucks that would be used directly or indirectly associated with the project would be required to comply with the applicable fuel economy standards.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can obtain federal tax credits for fuel-efficient appliances and products, including buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment. It is unknown whether or not CalAm will attempt to obtain any federal tax credits associated with the project under the Energy Policy Act of 2005.

4.18.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of the State's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act provides for the long-term management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act (Section 30103). The width of the coastal zone varies across the State, extending inland a couple hundred feet in some locations to 5 miles in others, and offshore out to 3 miles. A map of the coastal zone in the project vicinity is shown in **Figure 4.8-1**.

The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone (see Division 20 of the Public Resources Code). Of primary relevance to energy conservation is a Coastal Act policy concerning minimizing adverse impacts by requiring new development to minimize energy consumption and vehicle miles traveled. A preliminary assessment of project consistency with these priorities is provided below. Final determinations regarding project consistency are reserved for the Coastal Commission.

With respect to minimizing energy consumption and vehicle miles traveled, MPWSP construction will be consistent with Coastal Act policies. The proposed project would be required to comply with State and local regulations regarding energy efficiency and would be designed to maximize energy efficiency and minimize energy consumption. With respect to vehicle miles travelled, the proposed project would result in both short-term and long-term increases in traffic on regional and local roadways. However these increases would be reduced with the implementation of mitigation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every 2 years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in

the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the 2016 Integrated Energy Policy Report in February, 2017. The 2016 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, and covers a broad range of topics including: initiatives to reduce greenhouse gas emissions; transformation of the electricity system towards renewable energy sources; the management of aging energy infrastructure; the environmental performance of the electricity generation system; landscape-scale planning the response to the leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues; updates on Southern California electricity reliability; methane leakage; climate adaptation activities for the energy sector; climate and sea level rise scenarios; and the California Energy Demand Forecast (CEC, 2016i). Although the integrated energy plan is not directly applicable to the project given that the project would not include utility-scale energy generation or transmission infrastructure, it is applicable to the operations of PG&E, which is the public utility that would provide the required electricity for the project. Given that PG&E is required to comply with the applicable provisions of the integrated energy plan, electricity obtained for the project would be generated in a manner consistent with the spirit of the integrated energy plan.

Title 24 Building Energy Efficiency Standards (California Energy Code)

The California Building Standards Commission first established Energy Efficiency Standards for California in 1978, in response to a legislative mandate to reduce California's energy consumption. The standards, which are contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) are updated periodically by the CEC to allow consideration and possible incorporation of new energy efficiency technologies and methods. The standards regulate energy consumed in nonresidential buildings for heating, cooling, ventilation, water heating, and lighting (CEC, 2013b). Title 24 is implemented through the local planning and permit process and therefore project components requiring building permits would be required to comply with Title 24. Title 24 is updated approximately every 3 years. The newest version was adopted in January 2016, and continues to improve upon the standards for new construction of, and additions and alterations to, residential and nonresidential buildings (CEC, 2016f and 2016g). All heating, cooling, ventilation, water heating, and lighting systems in buildings developed as part of the project would be required to incorporate the applicable standards of Title 24. The project would be required to be consistent with Title 24 Building Energy Efficiency Standards.

California Green Building Standards Code (Cal Green)

On January 1, 2014, the California Building Standards Commission adopted the California Green Building Standards Code (Part 11 of the Title 24 Building Standards Code) for all new construction statewide (CBSC, 2014). The code sets targets for energy efficiency, water

consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels. The code identifies non-residential mandatory measures regarding site selection, building design, building siting and development to protect, restore, and enhance the environmental quality of the site and respect the integrity of adjacent properties. The proposed project would be required to incorporate the applicable provisions of the California Green Building Standards Code and would therefore be consistent with this set of regulations.

4.18.2.3 Applicable Regional and Local Land Use Plans, Policies, and Regulations

Table 4.18-2 presents the state, regional, and local land use plans, policies, and regulations pertaining to energy conservation that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. **Table 4.18-2** also indicates project consistency with such plans, policies, and regulations. The analysis concludes that the proposed project would not conflict with the applicable plans, policies, or regulations, and no further discussion is provided.

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TABLE 4.18-2
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO ENERGY CONSERVATION

Project Planning Region	Applicable Planning Document	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey and Cities of Marina and Seaside	California Code of Regulations, Title 24, Part 6	Building Energy Efficiency Standards	Subsurface slant wells, MPWSP Desalination Plant, and Carmel Valley Pump Station	Monterey County and the cities of Marina and Seaside have incorporated the California Building Energy Efficiency Standards Code by reference into their municipal codes.	This section of the California Building Code requires compliance with Title 24 through the building permit process.	Consistent: Energy efficiency elements would be incorporated into building support systems, electrical and treatment equipment, and process design associated with the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. The proposed action would be required to comply with State and local regulations regarding energy efficiency and would be designed to maximize energy efficiency and minimize energy consumption. The proposed subsurface slant wells reduce energy demand when compared to open water intakes by providing an initial level of treatment through the beach sand. In addition, the proposed project would incorporate various energy efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 18.12 – Green Building Standards Code	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Section 18.12*** adopts the 2010 California Green Building Standards Code by reference and includes incentives for new construction to incorporate green building practices.	The 2010 California Green Building Standards are designed to reduce energy consumption.	Consistent: The proposed action would be required to comply with State and local regulations regarding energy efficiency.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space		***Policy OS-9.1:*** The use of solar, wind and other renewable resources for agriculture, residential, commercial, industrial, and public building applications shall be encouraged.	The intent of this policy is to promote efficient energy use.	Consistent: Although the proposed project does not include the use of renewable energy resources, it does include numerous technological design features to reduce operational energy demand and maximize energy efficiency, including the incorporation of various energy efficient design elements into building support systems, electrical and treatment equipment, and process design.

SOURCE: County of Monterey, 2010.

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4.18.3 Evaluation Criteria

Based on Appendix F of the CEQA Guidelines, implementation of the proposed project would have a significant impact related to energy conservation if it would:

- Use large amounts of fuel or energy in an unnecessary, wasteful, or inefficient manner;
- Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand;
- Require or result in the construction of new electrical generation and/or transmission facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Conflict with existing energy standards, including standards for energy conservation.

Based on the nature of the proposed project, the following significance criteria are not addressed further in the EIR/EIS:

> ***Conflict with energy standards, including standards for energy conservation.*** The local government jurisdictions that encompass the project area, including Monterey County and the Cities of Marina, Seaside, Sand City, and Pacific Grove, have incorporated the California Building Standards Code by reference into their municipal codes. As described in Section 4.18.2.2, above, Part 6 of the California Building Standards Code contains the California Energy Code (CCR Title 24, Part 6). The local government building permit application review process would ensure that the proposed project is compliant with all applicable state and local energy conservation standards. In addition, as reflected in Section 4.18.2.3, the plan, policy, and regulation consistency analysis conducted for the project concluded that the proposed project would not conflict with the applicable plans, policies, or regulations. Therefore, no impact related to compliance with applicable energy and energy conservation standards would result, and this criterion is not discussed further in this section.
>
> ***Require or result in the construction of new electrical generation and/or transmission facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects.*** The proposed project would not require or result in the construction of new or expanded electrical generation and/or transmission facilities. As discussed in Chapter 3, Description of the Proposed Project, new underground and aboveground powerlines would be constructed only to connect the proposed facilities to the existing local PG&E power grid.

4.18.4 Approach to Analysis

This analysis is based, in part, on basic assumptions regarding construction-related diesel and gasoline consumption for the proposed project, CalAm's proposed energy efficiency design elements for the MPWSP Desalination Plant (CDM Smith, 2014), and estimates of the operational electricity requirements of the proposed project (CalAm, 2016). The analysis focuses on the anticipated energy demand and energy efficiency of the proposed project as a whole, including during construction, operation, maintenance, and decommissioning of the proposed facilities. This analysis assumes all electrical power needed for project operations would be

provided by the local PG&E electrical power grid. The energy efficiency measures that would be incorporated into MPWSP Desalination Plant design, as well as an alternative energy source that is being pursued by CalAm to support project operations, are summarized below.

4.18.4.1 Fuel Consumption

Off-road equipment inventories and construction and maintenance activity assumptions were used by the CPUC's consultant (Environmental Science Associates [ESA]) to estimate fuel amounts that would consumed by off-road equipment during construction and maintenance of the project. Fuel consumption factors for off-road equipment were derived from equipment inventory data using the California Air Resources Board's off-road emissions inventory database. Fuel use that would be associated with commuting workers and truck hauling during construction and operation of the project were also estimated using trip data projected for the project (see **Appendix G1** for all fuel consumption factors and assumptions).

4.18.4.2 Energy Efficient Design Elements for Desalination Plant

As discussed in Chapter 3, Description of the Proposed Project, the proposed project would use reverse osmosis (RO) technology to remove salts and other minerals from seawater. During the RO process pretreated source water is forced at very high pressures through RO membranes. Generating the necessary high pressure can require a large amount of energy. However, the MPWSP Desalination Plant would incorporate various technological advancements to reduce the operational energy demand as much as possible. These advances include the use of the latest generation of RO membranes that utilize the lowest operating pressure requirements (Pacific Institute, 2013). In addition, the RO system would incorporate an energy recovery system that utilizes pressure exchange technologies to recover energy from the high-pressure waste stream and reduce overall pumping power requirements (and energy consumption) for the RO modules (CDM Smith, 2014).

Energy efficiency elements would also be incorporated into building support systems, electrical and treatment equipment, and process design associated with the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. These standards include the use of motion detectors for lighting, energy-efficient fluorescent lamps for interior lighting, and high pressure sodium vapor lamps for exterior lighting. Heating, ventilation, and insulation systems would be designed to use waste heat from motors and electric equipment to heat certain areas of the treatment and process buildings and reduce the overall energy use of the plant. Piping system materials and sizing would be designed to limit pressure losses and reduce pumping and energy requirements. Electrical and treatment equipment would include variable frequency drives to reduce the operating speed of pumps to match the pump discharge pressure requirements and reduce energy usage (CDM Smith, 2014).

4.18.4.3 Landfill-Gas-to-Energy Option

This EIR/EIS conservatively assumes that all proposed operational power requirements would be met via the existing PG&E power grid.

However, CalAm is actively pursuing a renewable energy source option with Monterey Regional Waste Management District (MRWMD) that would allow CalAm to meet a portion of the MPWSP Desalination Plant operational energy requirements with methane gas from the existing MRWMD landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site. The MRWMD LFGTE facility produces 5.07 Megawatts (MW) of continuous electricity that is sold to PG&E. MRWMD plans to increase the electric generation capacity of the LFGTE facility by 3.2 MW in two stages; the first phase of improvements would increase the capacity by 1.6 MW, followed by an additional 1.6-MW increase in six to eight years. Once the expansion is complete, the total generation capacity of the LFGTE facility would be 8.27 MW (ESI, 2014).

If this renewable energy source option is implemented, about half of the MPWSP Desalination Plant operational energy requirements could be met with methane gas from the LFGTE facility. Overhead powerlines, electrical transformers, metering devices, and switchgear would be needed to connect the MRWMD LFGTE facility with the MPWSP Desalination Plant. Implementation of this option and the construction of the associated interconnection improvements would require separate environmental review.

4.18.5 Direct and Indirect Effects of the Proposed Project

Table 4.18-3 provides a summary of the proposed project's impacts associated with energy conservation.

TABLE 4.18-3
SUMMARY OF IMPACTS – ENERGY CONSERVATION

Impacts	Significance Determinations
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning.	LSM
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance.	LS
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.	LS
Impact 4.18-C: Cumulative impacts related to energy conservation.	LSM

NOTES:
LSM = Less than Significant impact with Mitigation
LS = Less than Significant

4.18.5.1 Construction Impacts

Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning. *(Less than Significant with Mitigation*)

All Project Components

Construction of the proposed project would require the use of fuels (primarily gasoline and diesel) for operation of construction equipment (e.g., dozers, excavators, and trenchers), construction vehicles (e.g., dump and delivery trucks), and construction worker vehicles. Direct energy use would also include the use of electricity required to power construction equipment (e.g., welding machines and electric power tools). In addition, project construction would result in indirect energy use associated with the extraction, manufacturing, and transportation of raw materials to make construction materials. Indirect energy use typically represents about three-quarters of the total construction energy consumed, while direct energy use represents about one-quarter (Hannon et al., 1978).

Although the precise amount of construction-related direct energy consumption that would occur under the proposed project is unknown, it is estimated that off-road construction equipment would operate for a total of approximately 138,126 hours and would consume a total of approximately 387,846 gallons of diesel fuel at an average rate of 2.8 gallons per hour. With regard to vehicle use during construction, workers' personal vehicles would make 154,241 trips and consume approximately 74,512 gallons of gasoline (assuming an average fuel economy of 20.7 miles per gallon) and heavy haul trucks would make 79,884 trips and consume approximately 718,956 gallons of diesel fuel (assuming an average consumption rate of 7.0 miles per gallon) (see **Appendix G1** for all assumptions and fuel use factors). When averaged over the two-year construction period, annual fuel use for off-road construction equipment would be approximately 193,923 gallons of diesel fuel per year, construction workers' personal vehicles would consume approximately 37,256 gallons of gasoline per year, and heavy haul trucks would consume approximately 359,478 gallons of diesel fuel per year. The total average annual fuel use during the two-year construction period would be approximately 37,256 gallons per year of gasoline and approximately 553,401 gallons per year of diesel fuel.

These annual average fuel use amounts are equivalent to less than one percent of the total amounts of gasoline and diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). With regard to decommissioning of the project, amounts of direct energy consumption that would occur at the end of the useful life of the project (in approximately 40 years) related to decommissioning is unknown; however, it is anticipated that the amounts would be similar to those required for construction, discussed above.

The amount of electricity consumption that would be associated with construction of the project is unknown and cannot be estimated as it would be too speculative given existing data; however, the amount would not be expected to be substantial.

While the overall transportation energy use requirements would not be significant relative to the overall sales of transportation fuels in the county, construction and decommissioning activities

could result in wasteful or inefficient use of energy if construction and decommissioning equipment is not well maintained, if equipment is left to idle when not in use, or if haul trips are not planned efficiently. For all project components, the potential for construction and decommissioning to use large amounts of fuel or energy in a wasteful or inefficient manner is considered a significant impact. However, with implementation of **Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** and **4.10-1b (Idling Restrictions)**, which identify several performance standards, would ensure construction activities are conducted in a fuel-efficient manner and minimize idling times for construction equipment and vehicles, the impact would be reduced to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.18-1 applies to all project components.

> **Mitigation Measure 4.18-1: Construction Equipment and Vehicle Efficiency Plan.**
>
> CalAm shall contract a qualified professional (i.e., construction planner/energy efficiency expert) to prepare a Construction Equipment Efficiency Plan that identifies the specific measures and performance standards that CalAm (and its construction contractors) will implement as part of project construction and decommissioning to increase the efficient use of construction equipment and vehicles to the maximum extent feasible. Such measures shall include, but not necessarily be limited to: procedures to ensure that all construction equipment is properly tuned and maintained at all times; requirement to provide options for worker carpooling; a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; and identification of procedures (including the routing of haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner. The plan shall be submitted to CPUC and the Sanctuary for review and approval at least 30 days prior to the beginning of construction activities and at least 30 days prior to the beginning of decommissioning activities.

Mitigation Measure 4.10-1b applies to all project components.

> **Mitigation Measure 4.10-1b: Idling Restrictions.**
>
> (See Impact 4.10-1 in Section 4.10, Air Quality, for description.)

4.18.5.2 Operational and Facility Siting Impacts

Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance. (*Less than Significant*)

All Project Components

Operation of the proposed project would result in the consumption of electricity to operate the subsurface slant wells, MPWSP Desalination Plant (e.g., reverse osmosis [RO] modules, pumps, lighting, process controls, heating, ventilation, and air conditioning [HVAC] systems), and other proposed facilities (e.g., Carmel Valley Pump Station).

In general, desalination plants require large amounts of electricity to operate and, as a result, operation of the MPWSP would result in the long-term consumption of substantial amounts of electricity, including electricity produced from non-renewable resources. CalAm's current electrical power demand associated with its existing water production facilities (primarily Carmel River and Seaside Groundwater Basin production wells) is approximately 11,466,000 kilowatt hours (kWh) per year, which represents the baseline electrical demand for the proposed project. CalAm's operational electrical power demand for water production under the proposed project (including water produced from the MPWSP Desalination Plant, Seaside Groundwater Basin production wells, ASR system, and the Carmel River, as well as conveyance of that water) is estimated to be approximately 63,364,310 kWh per year (CalAm, 2016). Therefore, the net increase in annual electrical power demand for water production would be approximately 51,898,310 kWh per year, which would equal approximately 1.95 percent of the total electrical demand in Monterey County and approximately 0.05 percent of total electricity distributed by PG&E.

In addition to electricity use, consumption of fuel would be required for CalAm staff commute trips to and from the MPWSP Desalination Plant and vehicle trips associated with routine maintenance and operations. The MPWSP Desalination Plant would be operated by approximately 30 CalAm employees, resulting in approximately 60 commuter vehicle trips per day. Approximately six truck trips would occur five days a week for the delivery of materials to the MPWSP Desalination Plant. These vehicle trips would consume an estimated 10,580 gallons of gasoline and 14,040 gallons of diesel fuel annually and would contribute to the energy demand required to support operation of the proposed project. In addition to vehicle use, maintenance of the slant wells would require the use of off-road equipment every five years. When averaged over the five-year period, the equipment required for this maintenance would consume approximately 1,469 gallons of diesel fuel annually (see **Appendix G1** for fuel use assumptions). Overall, the amount of gasoline and diesel required to fuel the vehicles and equipment during operation and maintenance of the project would be relatively small (approximately 10,580 gallons annually and 15,509 gallons annually, respectively). These vehicle trips and equipment use would be necessary to support operation and maintenance of the proposed project and would be equivalent to approximately 0.01 percent of the total amounts of gasoline and 0.02 percent total diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). The overall transportation energy use requirements during operation and maintenance would not be significant relative to the overall sales of transportation fuels in the county.

Operation of the proposed project would not result in unnecessary consumption of energy. Operation would use fossil fuels and electricity to develop potable water supplies and convey the water to CalAm's Monterey District service area. The MPWSP is needed to replace CalAm's existing supplies that have been constrained by legal decisions affecting diversions from the Carmel River and pumping from the Seaside Groundwater Basin (see Chapter 2, Water Demand, Supplies, Water Rights, and the Existing Water System, for additional information regarding the legal decisions). While the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. As summarized above, and described in Chapter 3, Description of the Proposed Project,

Section 3.4.5, Power Demand, the design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand.

Although the proposed MPWSP Desalination Plant would be designed to use energy as efficiently as possible using the most recent technological advancements available, implementation of the proposed project would result in a substantial increase in electrical power demand. However, the use of energy for operation of the MPWSP Desalination Plant is necessary because it would provide a reliable supply of water to meet existing demand for the Monterey District. Therefore, electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the impact related to the use of fuel and energy during project operations would be less than significant.

Mitigation Measures

None proposed.

Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations. (*Less than Significant*)

As discussed above, implementation of the proposed project would increase CalAm's total electrical demand by approximately 51,898,310 kWh per year, which would represent approximately 1.95 percent of the County's electricity usage in 2015 (2,666 million kWh) and approximately 0.05 percent of electricity distributed by PG&E in 2015 (102,538 million kWh) (CalAm, 2016; CEC, 2016b).

The proposed project's impact on local and regional energy supplies depends on several factors; however, the primary energy source of concern associated with project operation is electrical power provided by PG&E. Based on PG&E's preliminary review of the proposed project's maximum electrical demand, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). Therefore, implementation of the proposed project could be accommodated by the existing local and regional energy supplies and transmission facilities and the impact would be less than significant. Further, implementation of Mitigation Measure 4.11-1 described in Section 4.11, Greenhouse Gas Emissions, would improve the energy efficiency of the proposed project if feasible.

Mitigation Measures

Mitigation Measure 4.11-1 is relevant to energy conservation because it would reduce energy consumption; however, it is not required in order to reduce Impact 4.18-3 to a less-than-significant level. As described above, Impact 4.18-3 is less than significant even without implementation of this measure.

Mitigation Measure 4.11-1 applies to the project as a whole.

> **Mitigation Measure 4.11-1: GHG Emissions Reduction Plan.**
>
> (See Impact 4.11-1 in Section 4.11, Greenhouse Gas Emissions, for description.)

4.18.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.18-C: Cumulative impacts related to energy conservation. (*Less than Significant with Mitigation*)

As described in Section 4.18.3, the proposed project would have no impact related to conflicting with energy standards or the construction or expansion of new electrical generation and/or transmission facilities. Therefore, it would not contribute to cumulative impacts related to these topics.

Cumulative impacts associated with energy and energy conservation are considered in the context of both local and regional energy supply and demand. As described in Section 4.18.5.1, above, project construction could use large amounts of fuel or energy in a wasteful or inefficient manner, which in the context of local and regional energy supplies, in combination with the energy demands of the projects described in Table 4.1-2 in Section 4.1, could result in a significant cumulative impact. **Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** and **4.10-1b (Idling Restrictions)** would be implemented to ensure construction activities would be conducted in a fuel-efficient manner. Idling times would be limited for construction equipment and vehicles to ensure that energy waste and inefficiency would be minimized. Energy used during construction would primarily be in the form of gasoline and diesel fuel. Even if project construction was to occur simultaneously with other cumulative projects, the cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies intended to address cumulative energy consumption statewide. Therefore, after mitigation, project construction would have a less than significant contribution to a significant cumulative impact on the supply and/or availability of these fuel sources during construction.

During project operation, various energy conservation measures would be implemented (see Section 4.18.4) as part of the proposed project to reduce energy waste, ensuring that operational

impacts associated with energy use would not be unnecessary, wasteful, or inefficient. In addition, Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, (see Impact 4.11-1 in Section 4.11.5) ensures that the project's operational electricity use results in net zero GHG emissions via the following loading order: on-site and/or locally secured renewable energy; off-site purchases of renewable energy; Renewable Energy Certificates (RECs); and Carbon Offsets. Although project operation would result in long-term consumption of substantial amounts of electricity, PG&E, who would be the electrical supplier, has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). As discussed above under Impact 4.18-3, the anticipated increase in electricity consumption for the proposed project would represent approximately 2 percent of Monterey County's annual usage, and an even smaller percentage of PG&E's overall service area usage (0.05 percent). It should be noted that PG&E purchases wholesale electric energy and capacity from generators and suppliers and periodically conducts solicitations / requests for offers (RFO) for additional supplies of conventional and renewable electricity. Therefore, in the event that many other cumulative projects listed in **Table 4.1-2** that would be high demand electricity users, such as the Monterey Bay Regional Water Project (DeepWater Desal, No. 34), request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E. In addition, some reinforcement or upgrades of the existing distribution system may also be required, but this would not substantially constrain local or regional energy supplies. Therefore, the proposed project would have a less than significant contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation.

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4.19 Population and Housing

Sections	Figures	Tables
4.19.1 Setting/Affected Environment	4.19-1 County to County Commuting Estimates: Monterey County	4.19-1 Population, Housing, and Labor Force in Potentially-Affected Jurisdictions
4.19.2 Regulatory Framework	4.19-2 County to County Commuting Estimates: San Benito County	4.19-2 Summary of Impacts – Population and Housing
4.19.3 Evaluation Criteria	4.19-3 County to County Commuting Estimates: Santa Cruz County	
4.19.4 Approach to Analysis		
4.19.5 Direct and Indirect Effects of the Proposed Project		
4.19.6 Cumulative Effects of the Proposed Project		

This section describes the existing population and housing characteristics and trends in the vicinity of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) and analyzes the potential for implementation of the proposed project to result in direct and/or indirect impacts on population and housing, including the potential for the project to result in the need for additional workforce to support project construction and operations. The potential for the provision of water supply from the MPWSP to indirectly induce growth is addressed in Section 6.3, Growth Inducement.

4.19.1 Setting/Affected Environment

The study area for the evaluation of effects related to population and housing displacement is Monterey County and in particular CalAm's Monterey District service area, which would be the area affected directly by potential population and housing effects of the proposed project. There are no MBNMS resources that would be affected by impacts identified in this section; all impacts related to population and housing would occur outside of MBNMS boundaries. Therefore, MBNMS resources are not described in the environmental setting/affected environment.

The proposed project lies within the cities of Marina, Seaside, and Monterey, and in unincorporated Monterey County, including the unincorporated community of Castroville. Except for the incorporated cities, however, population and housing data are not readily available for subcounty areas. Therefore, the analysis includes data for Monterey County as a whole. The study area for the evaluation of the direct growth inducing effects of the proposed project is the three-county Monterey Bay region consisting of Monterey, San Benito, and Santa Cruz counties. This is the region within which workers could be expected to commute between jobs and residences, and in particular, is the area within which construction workers would be expected to commute from their residences to temporary job sites elsewhere in the region.

4.19.1.1 Population, Housing and Labor Force

In January 2015, Monterey County was home to approximately 432,637 residents and had approximately 139,177 housing units. Between 1990 and 2015, the total population of Monterey County increased by about 22 percent, and the total number of housing units increased by about

15 percent (California Department of Finance, 2007; 2016). **Table 4.19-1** shows 2010 census data for population and housing, estimates of population and housing in 2015, and estimates of the 2010 and 2015 labor force[1] in the Monterey County jurisdictions that could be affected by implementation of the proposed project.

TABLE 4.19-1
POPULATION, HOUSING, AND LABOR FORCE IN POTENTIALLY AFFECTED JURISDICTIONS

	Population		Housing Units		Labor Force[c]	
Jurisdiction	**2010[a]**	**2015[b]**	**2010[a]**	**2015[b]**	**2010[c]**	**2015[c] EDD[b]**
Carmel-by-the-Sea	3,722	3,824	3,417	3,417	1,700	1,800
Del Rey Oaks	1,624	1,655	741	741	900	1,000
Monterey (city)	27,810	28,576	13,584	13,637	15,200	15,700
Pacific Grove	15,041	15,251	8,169	8,184	8,700	9,000
Sand City	334	376	145	176	200	200
Seaside	33,025	34,025	10,872	10,913	18,100	18,400
Unincorporated Area[d]	17,847	18,603	5,930	5,985	9,280	9,520
Total for Monterey District Service Area	***99,403***	***102,310***	***42,858***	***43,053***	***54,080***	***55,620***
Marina	19,718	20,496	7,200	7,334	11,300	12,000
Castroville[e]	6,481	See note e	1,539	See note e	3,200	3,200
Monterey County (Total)	415,057	432,637	137,910	139,177	215,800	221,400
San Benito County (Total)	55,269	56,445	17,870	18,262	27,900	29,800
Santa Cruz County (Total)	262,382	273,594	104,476	105,221	141,700	144,200

NOTES:

a Population and housing data for 2010 are from the U.S. Census Bureau's decennial census.

b Population and housing data for 2015 are estimates prepared by the California Department of Finance.

c Labor force data for 2010 and 2015 are estimates prepared by the California Employment Development Department; labor force refers to people who live in the area who are employed or looking for work, regardless of where they actually work.

d An estimated 4.3 percent of the countywide population inhabits the unincorporated portions of CalAm's Monterey District (ESA, 2014). As a result, the housing units and labor force for the unincorporated portion of the Monterey District were estimated as 4.3 percent of the county total.

e Since Castroville is unincorporated, data shown are for Castroville Census Designated Place (CDP). The California Department of Finance does not provide estimates for disaggregated unincorporated areas and to date estimates for 2015 are not available from the U.S. Census Bureau's Community Survey (ACS). The ACS estimates that in 2014 Castroville CDP had a population of 6,226 and had 1,550 housing units.

SOURCE: California Department of Finance, 2016; California Employment Development Department, 2013, 2016a, 2016b, 2016c, 2016d, 206e; U.S. Census Bureau, 2016a, 2016b.

4.19.1.2 Employment

The California Employment Development Department estimates that approximately 187,400 people worked in Monterey County in 2015, an increase of 5,400 jobs since 2014 and the county's peak annual average employment level to date (California Economic Development Department 2016c). This estimate measures workers by place of work and includes full-time and part-time wage and salary employment; it does not include self-employed people, unpaid family

[1] Labor force refers to people living in the jurisdiction who are employed or looking for work, regardless of where they actually work.

workers, or private household employees[2] (California Economic Development Department 2016f). Total employment in Monterey County grew steadily from 1995 to 2000, leveled off between 2001 and 2008, when there were minor fluctuations of job gains and losses, and dropped substantially in 2009, reflecting the effects of the recession that began in late 2007-early 2008.[3] From 2008 to 2009 Monterey County lost more than 6,000 jobs, a 4 percent decline – from 174,100 jobs in 2008 to 168,000 in 2009. Employment as a whole in the county began to recover in 2010 and by 2013 the number of countywide jobs had slightly exceeded the previous peak in 2008. About 19,400 jobs were added in Monterey County from 2010 through 2015 (California Economic Development Department, 2016c). Approximately 16,000 people worked in San Benito County in 2015. This was slightly fewer than the 16,100 people working in the county in 2014 but 500 more than the number working in the county in 2013. While 1,700 jobs have been added in the county since 2010, the number of people working in the county in 2015 is still 1,900 fewer than at the county's employment peak, in 2007, when 17,900 people worked in the county (California Employment Development Department, 2016d). Approximately 106,500 people worked in Santa Cruz County in 2015, 2,800 more than in 2014. Since 2010, almost 9,000 jobs have been added in Santa Cruz County, although 2015 employment is still slightly less than the county's peak employment to date, in 2001, when 106,700 people worked in the county (California Economic Development Department 2016e).

Construction employment generally followed the same trend but the construction industry experienced more pronounced changes over this period compared to overall employment. Construction jobs grew at a faster rate between 1995 and 2001 compared to jobs overall and there was a much sharper decline in construction jobs from 2008 to 2009. Monterey County lost about 1,500 construction jobs in 2009, a 25 percent decrease from 2008; in addition, the construction industry began experiencing declines in employment earlier, in 2007, and the effects of the recession in this sector lasted longer compared to overall county employment. From 2006 through 2011 the county lost 3,400 construction jobs, a decrease of almost 50 percent over this six-year period. Construction employment began to increase slowly starting in 2012, and 1,300 jobs were added between 2012 and 2015. Nevertheless, there were 2,100 fewer construction jobs in the county in 2015 than in 2006 (5,100 people working in construction jobs in Monterey County in 2015 compared to 7,200 in 2006). In the three-county region that includes neighboring Santa Cruz and San Benito Counties as well as Monterey County, 7,600 construction jobs were lost between 2006 and 2011. As in Monterey County, construction employment in the three-county region began to recover in 2012, and 2,400 construction jobs were added between 2012 and 2015. In 2015 there were 9,800 people working in construction jobs in the three-county region, 5,200 fewer than in 2006 (California Employment Development Department, 2016c; 2016d; 2016e).

[2] The estimates of employment by place of work count part-time and full-time jobs equally. People who hold more than one job may be counted more than once.

[3] In Monterey County the effects of the recession on jobs overall were not reflected in job numbers (i.e., by fewer annual average jobs compared to the year before) until 2009.

4.19.2 Regulatory Framework

There are no federal, state, or local regulations governing population and housing that apply to the proposed project.

4.19.3 Evaluation Criteria

Implementation of the proposed project would have a significant direct or indirect impact related to population and housing if it would:

- Induce substantial population growth in an area, directly (for example, by proposing new homes and businesses);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Based on the location and nature of the proposed project, the following criteria are not considered in the impact analyses in Sections 4.19.5.1 and 4.19.5.2 for the reasons described below:

> ***Displace substantial numbers of housing units, necessitating construction of replacement housing.*** The proposed project would augment the existing water supply and construct new water supply infrastructure. Most facilities would be underground and the proposed desalination plant would be located on a currently vacant parcel. The proposed project would not displace any housing and would not necessitate construction of replacement housing. Therefore, the criterion related to housing displacement does not apply and is not addressed further in this section.
>
> ***Displace substantial numbers of people, necessitating construction of replacement housing.*** The proposed project would augment the existing water supply and construct new water supply infrastructure; it would not displace any people, including any workers, and would not necessitate construction of replacement housing elsewhere. Therefore, this impact criterion does not apply and is not addressed further in this section.

The impacts of growth that could be indirectly induced by the MPWSP are addressed in Section 6.3, Growth Inducement.

4.19.4 Approach to Analysis

In addition to CEQA requirements for addressing population and housing effects, CEQ Regulations contain a key provision that should be noted: “economic or social effects are not intended by themselves to require preparation of an environmental impact statement" (40 CFR 1508.14). However, when an EIS is prepared "and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment" (40 CFR 1508.14).

The evaluation of potential population and housing effects must consider employment associated with the concurrent construction of multiple project components; therefore, the analysis considers MPWSP construction as a whole, and similarly considers MPWSP operations as a whole rather than by component. The analysis compares the number of project-related jobs to current and recent employment levels in the three-county Monterey Bay region, which includes Monterey County, San Benito County, and Santa Cruz County, as a means to assess whether demand for project employment would likely be met primarily by the local and regional labor pool, or attract substantial numbers of workers from outside the region.

The evaluation of cumulative impacts considers the effects of cumulative projects in Monterey, San Benito, and Santa Cruz Counties. The analysis of cumulative population and housing impacts is based on growth projections contained in the general plans or related background documents of the three counties.

4.19.5 Direct and Indirect Effects of the Proposed Project

TABLE 4.19-2
SUMMARY OF IMPACTS – POPULATION AND HOUSING

Impacts	Significance Determinations
Impact 4.19-1: Induce substantial population growth directly during project construction.	LS
Impact 4.19-2: Induce substantial population growth directly during project operations.	LS
Impact 4.19-C: Cumulative impacts related to population and housing.	LS

NOTE:
LS = Less than Significant impact, no mitigation proposed

4.19.5.1 Construction Impacts

Impact 4.19-1: Induce substantial population growth directly during project construction. (*Less than Significant*)

During the approximately 24-month construction period up to 345 construction workers would be employed concurrently, according to planned construction phasing. The duration of construction for individual project components would vary substantially, however – from 2 months for the Pipeline to CSIP Pond to 24 months for the MPWSP Desalination Plant. Consequently, the number of construction workers needed would vary, from 90 to 345, over the 24-month construction period. Concurrent construction of project components is expected to require from 300 to 345 workers during the peak four months of construction (i.e., when the most components would be under construction concurrently). For another 11 months, 230 to 280 workers would be needed, and 90 to 100 workers would be needed during the final nine months of construction, primarily for completion of the desalination plant. Construction employment during the peak period (i.e., 345 jobs) represents 7 percent of the construction jobs in Monterey County in 2015 and 4 percent of the construction jobs in the three-county region comprising Monterey, Santa Cruz, and San Benito

Counties in 2015. The 90 to 280 jobs provided during the rest of the construction period represent 2 percent to 6 percent, respectively, of Monterey County construction jobs in 2015 and 1 percent to 3 percent, respectively, of construction employment in the three-county region.

Given that MPWSP construction jobs would represent a minor percentage of the current local and regional construction employment levels, MPWSP construction is not expected to create employment opportunities substantially greater than would normally be available to construction workers in the area. In addition, the substantial number of construction jobs lost in the county and region during the recession suggests the availability of workers not reflected in current job data. Therefore, construction workers needed for MPWSP construction are expected to be drawn from the local and regional labor pool. It is expected that construction workers who do not live in the vicinity of the MPWSP would commute from elsewhere in county or three-county region rather than relocate from more distant cities and towns. Consequently, construction of the MPWSP would not induce population growth by attracting a substantial number of workers from outside the region to relocate to the area, and therefore would not create demand for additional housing or other facilities and services associated with growth.

The proposed project does not involve any housing construction and would not induce growth directly by constructing housing that would attract people to the area. Therefore, construction of the proposed project would not directly induce a substantial increase in the local population and the direct growth-inducing impact of the proposed project would be less than significant.

Mitigation Measures

None proposed.

4.19.5.2 Operational and Facility Siting Impacts

Impact 4.19-2: Induce substantial population growth directly during project operations. (*Less than Significant*)

The geographic scope for the analysis of impacts during project operations is the three-county region consisting of Monterey, San Benito, and Santa Cruz Counties. The analysis assumes that workers needed to staff project operations could be drawn from within this region. Although it is more likely that workers would be drawn from areas of northern Monterey County, western San Benito County, and southern Santa Cruz County than from the more distant areas of the counties, data are not readily available for sub-county regions; therefore, the geographic scope incudes the entire three counties.

During MPWSP operations, approximately 25 to 30 facility operators and support personnel would operate the MPWSP Desalination Plant. All other proposed facilities (i.e., the seawater intake system, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station) would be operated remotely using Supervisory Control and Data Acquisition systems, with periodic visits by existing CalAm

personnel for operations review and maintenance. It is likely that existing plant operators would be retrained to operate the desalination facility, or operators would be drawn from the existing labor pool in Monterey County and potentially Santa Cruz and San Benito Counties, and would not attract workers from outside the region. However, conservatively assuming that the regional labor force could not meet the operational workforce requirements, up to 30 new employees relocating to the area would represent a 0.01 percent increase in workers residing in Monterey County (i.e., 0.01 percent of the labor force) in 2015. This incremental increase would not constitute substantial population growth in the region. Similarly, compared to the projected rate of growth of the county's labor force, an increase of 30 new employees would be minor. The county's labor force is projected to increase by 5,600 workers between 2010 and 2015; 30 new employees would represent 0.5 percent of this projected increase. The proposed project would not involve construction of new homes that would directly induce population growth, or, with the exception of the MPWSP Desalination Plant (addressed above), new places of employment in the area.

Therefore, operation of the proposed project would not directly induce a substantial increase in the local population as it would not require a substantial increase in the local workforce to support project operations, and the direct growth-inducing impact of the proposed project would be less than significant.

Mitigation Measures

None proposed.

4.19.6 Cumulative Effects of the Proposed Project

Impact 4.19-C: Cumulative impacts related to population and housing. (*Less than Significant*)

As discussed above in Section 4.19.5, the proposed project would have no impact related to the displacement of substantial numbers of housing units or people. Therefore, the project would not cause or contribute to a cumulative impact associated with the displacement of housing units or people that would necessitate the construction of replacement housing. The cumulative analysis focuses on the project's contribution to direct cumulative growth effects resulting from construction and operational labor force needs.

Cumulative Impacts During Project Construction

The geographic scope for the analysis of direct cumulative growth inducement impacts during project construction is the three-county region consisting of Monterey, San Benito, and Santa Cruz Counties. This analysis takes a projections based approach, utilizing projections contained in the counties' general plans and related background and environmental review documents. Because Santa Cruz County's general plan was adopted in 1994 and includes projections to 2005, this analysis includes projections contained in its 2015 Housing Element and in the Sustainable Santa Cruz County Plan, which the county adopted in 2014.

- The Monterey County General Plan EIR utilizes Association of Monterey Bay Area Governments' (AMBAG's) 2004 regional forecast, which projects that Monterey County's population will grow from 432,600 in 2005 to 602,700 in 2030, and projects that the number of housing units in the county will increase from about 140,175 units in 2006 to 187,000 units by 2030. Jobs in the county are projected to increase from 238,972 in 2005 to 335,381 by 2030 (Monterey County Resource Management Agency, 2010).

- The San Benito County General Plan Background Report cites AMBAG's 2008 regional forecast, which projects that San Benito County's population will grow from 62,400 in 2010 to nearly 95,000 by 2035. Jobs in the county are projected to increase from 17,400 in 2010 to 21,700 by 2035, and about 13,500 housing units are projected to be added over the same period (San Benito County, 2010).

- The 1994 Santa Cruz County General Plan EIR states that the county had a population of 229,734 in 1990 and 93,700 jobs (not counting self-employed workers), which was projected to increase to 130,700 jobs in 2005. Including self-employed workers, the number of jobs was projected to increase from 104,900 jobs in 1990 to 146,400 in 2005 (Santa Cruz County, 1993). The County's 2015 General Plan Housing Element cites AMBAG's 2014 forecasts, which projects the county population will grow by about 11 percent between 2010 and 2035. The Housing Element indicates that according to AMBAG's Regional Housing Need Allocation, a total of 3,044 new housing units need to be added in the county between 2014 and 2023 (Santa Cruz County, 2016). The County's Sustainable Santa Cruz County Plan, adopted in 2014, also cites AMBAG projections, which indicate that county's population is projected to increase from 262,382 in 2010 to 308,582 in 2035. The number of housing units in the County is projected to increase from 104,476 in 2010 to 120,196 in 2035, and over this same period, 6,150 jobs were expected to be added (Santa Cruz County, 2014).

- The analyses of the cumulative population and housing impacts in the Monterey County and San Benito County General Plan EIRs conclude that because general plans are intended to accommodate future growth, they would have a significant unavoidable growth inducing impact. The 1993 EIR for the Santa Cruz County General Plan concludes that the growth inducing impact of the alternatives evaluated would be less than significant. The 2015 initial study and negative declaration prepared for the 2015 Santa Cruz County Housing Element states that the housing element update is a policy document with an objective of accommodating projected population growth within existing development areas; that the growth inducing impact of the housing element would be less than significant; and that the housing element would have no potentially significant cumulative effects.

The cumulative analysis is based on projected buildout identified in the general plans of the three counties. Although we do not know the timing of the many individual projects that would be constructed under buildout of the counties' general plans, it would be over many years – over the period explicitly covered by the general plans or, frequently, longer. As discussed under Impact 4.19-1, MPWSP construction could generate up to 345 concurrent construction jobs during the four-month peak construction period and from 90 to 280 jobs during the other 20 months of construction.

Construction jobs are temporary, and construction workers in a region typically commute from their residences to temporary construction jobs elsewhere in the region, rather than relocating to the vicinity of the job site. To illustrate out-of-county commuting that occurs for all jobs in the

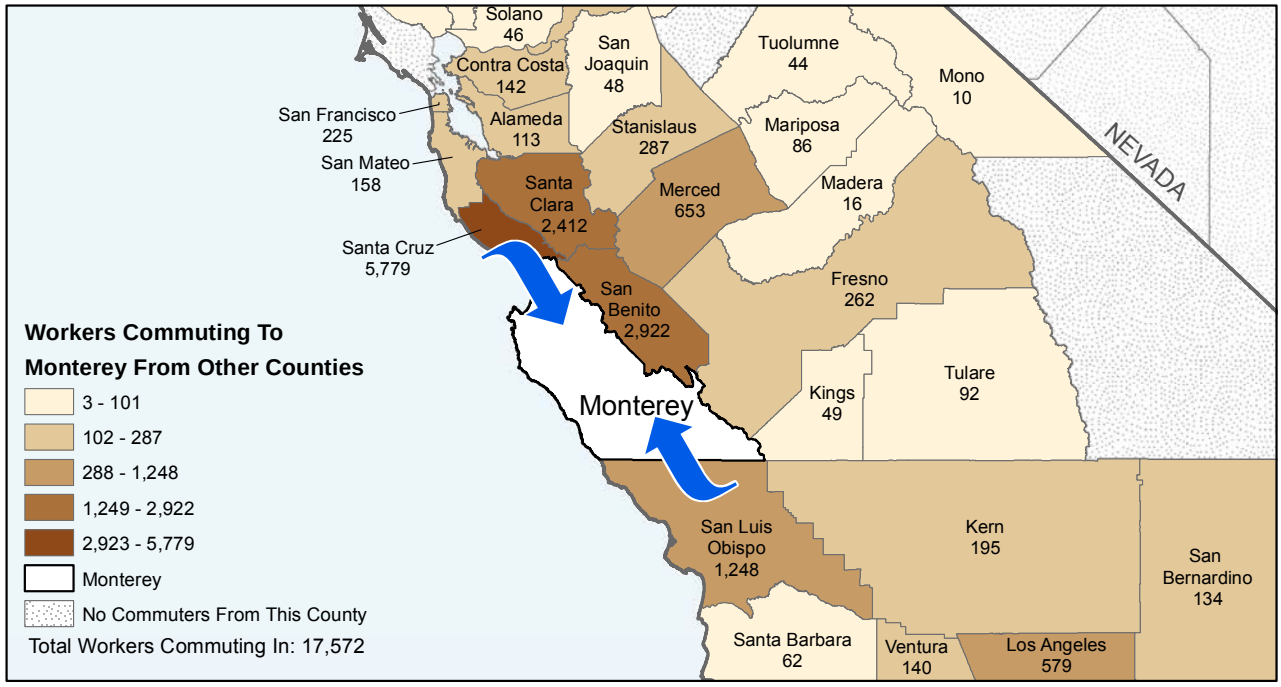
region, **Figures 4.19-1**, **4.19-2**, and **4.19-3** show estimates of county-to-county commuting flows for Monterey, San Benito, and Santa Cruz Counties. Based on the U.S. Census Bureau's American Community Survey estimates for years 2006 to 2010, the figures show that a substantial number of residents in the region commute to jobs in other counties. As discussed above in Section 4.19.1.2, about 3,400 construction jobs were lost in Monterey County between 2006 and 2011 and construction employment has not returned to pre-recession levels. In 2015, there were still 2,100 fewer construction jobs in the county than in 2006. Nor has construction employment in neighboring San Benito and Santa Cruz Counties recovered to pre-recession levels. These employment numbers reflect the availability of construction workers that are not reflected in current construction job numbers. Since the recession, some of these workers may be working in less desirable jobs and are assumed to return to construction work if jobs were available.

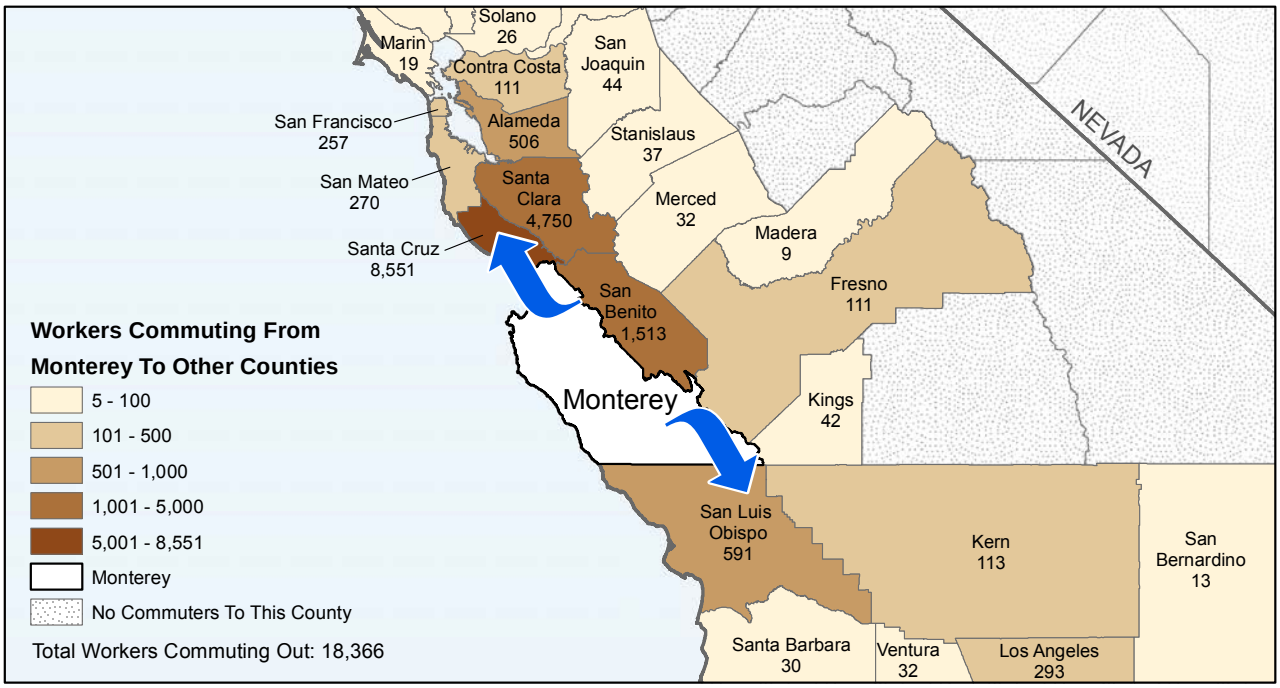
Because of the limited duration of construction jobs and the size of the regional construction workforce, the construction workforce in Monterey, San Benito, and Santa Cruz Counties is expected to accommodate demand of the cumulative projects for construction labor. It thus appears that there would be no significant cumulative impact on population and housing from construction of cumulative projects. Even if cumulative construction projects were to lead to population and housing effects by attracting some workers to move to the area from outside the region, such moves, and associated effects, would likely be temporary. In any event, the contribution of the MPWSP would be less than significant because of the relatively small number of construction workers required and the short duration of the construction period. Therefore, the cumulative impact of MPWSP construction would be less than significant.

Cumulative Impacts during Project Operations

The geographic scope for the analysis of direct cumulative growth inducement impacts during project operations is the three-county region consisting of Monterey, San Benito, and Santa Cruz Counties. The analysis assumes that workers needed to staff project operations could be drawn from within this region. Although it is more likely that workers would be drawn from areas of northern Monterey County, western San Benito County, and southern Santa Cruz County than from the more distant areas of the counties, data are not readily available for sub-county regions; therefore, the geographic scope includes the entire three counties.

This analysis takes a projections based approach using projections contained in the counties' general plans and related background and environmental review documents, and, for Santa Cruz County, the Sustainable Santa Cruz County Plan, which the county adopted in 2014. Refer to the summary of projections included in the plans under the discussion of construction impacts, above. The cumulative analysis is based on projected buildout identified in the general plans of the three counties. Although we do not know the timing of the many individual non-residential projects that would commence operations under buildout of the counties' general plans, it would occur over many years. The timeframe during which MPWSP operations could contribute to a cumulative population and housing impact would be the approximately 40-year operations phase.





Total Workers That Live And Work in Monterey: 158,479

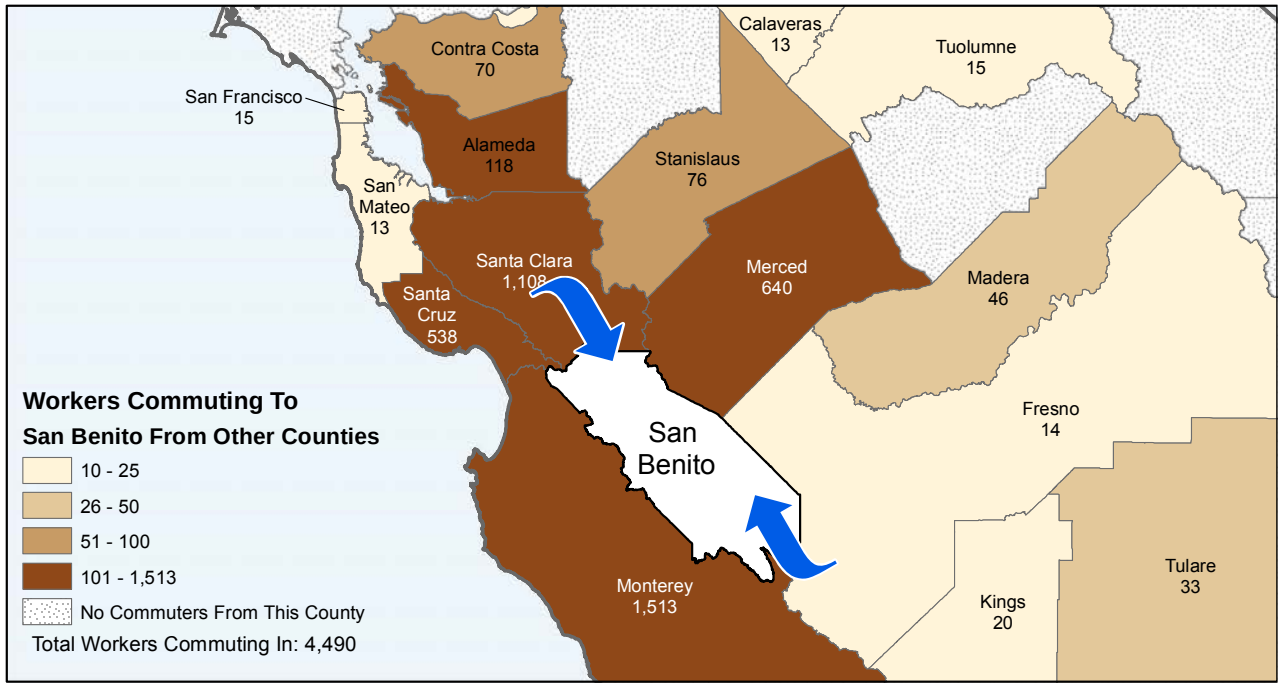
Data Source:
Special Report of 2006 to 2010 County-to-County Commuting Flows,
American Community Survey, U.S. Census Bureau,
report released January 2013

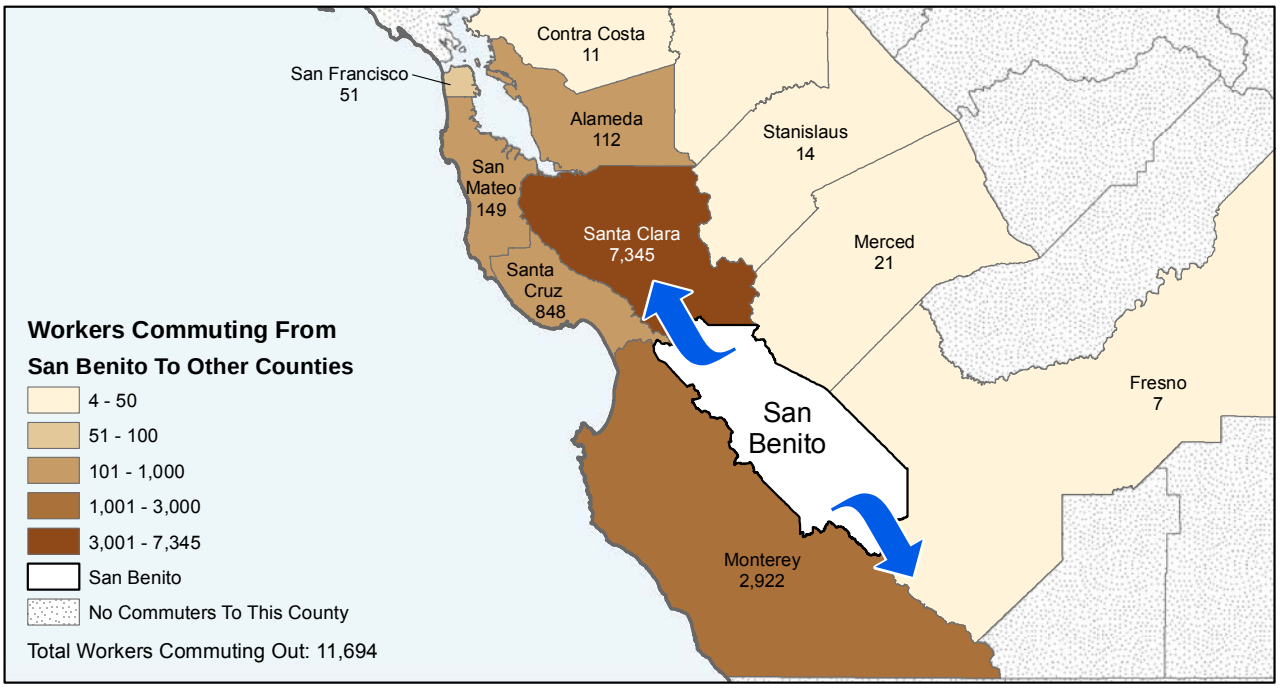
Cartography by:
Labor Market Information Division
California Employment Development Department
March 2015

SOURCE: California Employment Development Department, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 4.19-1
County to County Commuting Estimates:
Monterey County





Total Workers That Live And Work in San Benito: 12,213

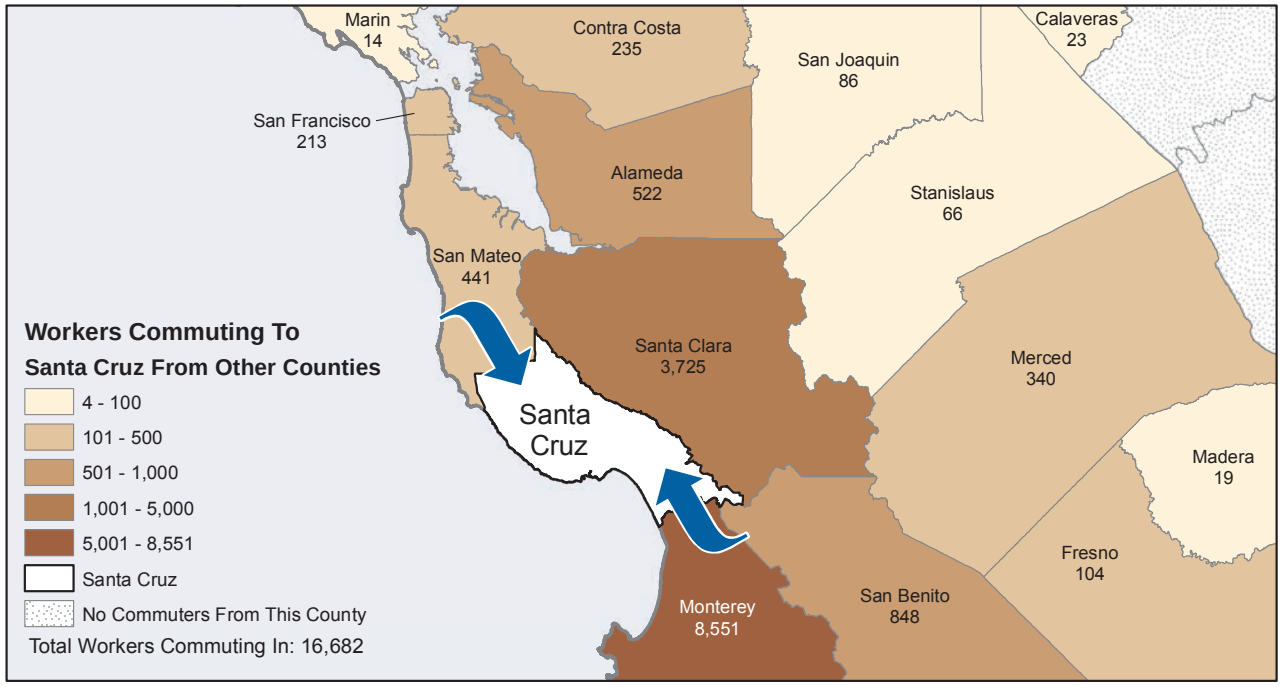
Data Source:
Special Report of 2006 to 2010 County-to-County Commuting Flows,
American Community Survey, U.S. Census Bureau,
report released January 2013

Cartography by:
Labor Market Information Division
California Employment Development Department
February 2015

SOURCE: California Employment Development Department, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 4.19-2
County to County Commuting Estimates:
San Benito County



Total Workers That Live And Work in Santa Cruz: 93,245

Data Source:
Special Report of 2006 to 2010 County-to-County Commuting Flows,
American Community Survey, U.S. Census Bureau,
report released January 2013

Cartography by:
Labor Market Information Division
California Employment Development Department
February 2015

SOURCE: California Employment Development Department, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 4.19-3
County to County Commuting Estimates:
Santa Cruz County

According to the California Economic Development Department, in 2015, Monterey County had a labor force of 221,400 workers and an unemployment rate of 8.1 percent (i.e., there were 203,500 employed and 17,900 unemployed workers in the county). San Benito County had a labor force of 29,800 and an unemployment rate of 7.6 percent in 2015 (27,500 employed and 2,300 unemployed workers in the county), and Santa Cruz County had a labor force of 144,200 and an unemployment rate of 7.5 percent (133,400 employed and 10,800 unemployed workers in the county). The unemployment rates in Monterey, Santa Cruz and San Benito Counties are higher than the 2015 statewide average for California (5.3 percent) and higher than recent estimates by the Federal Reserve Board of a long-term normal rate of unemployment (which ranged from 4.6 to 5 percent) (Federal Reserve Board, 2016).[4] The three counties' relatively high unemployment rates suggest that a substantial number of jobs could be accommodated by the regional labor pool.

In addition, the three counties' general plans and related planning documents project employment and population growth over the period that the MPWSP would be in operation, as summarized above under Cumulative Impacts during Project Construction. The general plans are designed to accommodate anticipated job growth and housing for new workers. AMBAG's current growth forecast, adopted in 2014, projects that more than 40,000 jobs will be added in Monterey County alone between 2010 and 2035 (AMBAG, 2014).

Given the size of the regional work force, current unemployment rates in Monterey, San Benito, and Santa Cruz counties, and the size of the currently unemployed workforce, labor demand associated with the cumulative projects is expected to be accommodated by workers in the region. To the extent that new workers would move to the area from outside the region in response to employment opportunities provided by non-residential development in the three counties, there is no evidence to suggest that any such in-migration would be inconsistent with job growth projected and planned to occur under the three counties' general plans, and housing is also planned to accommodate such new workers. The California Regional Housing Need Allocation program specifically requires jurisdictions to accommodate their fair share of anticipated housing needs. A key purpose of General Plan housing elements is to demonstrate that jurisdictions have the capacity to accommodate anticipated housing needs.

Because the population and housing that could be induced by operation of cumulative projects is expected to be consistent with growth anticipated in the counties' general plan documents, the cumulative impact during project operations would be less than significant. As discussed above in Impact 4.19-2, the MPWSP's operational workforce demands would be nominal: 25 to 30 people relative to the total estimated workforce and unemployment rate in the region. Even in the unlikely event that the population and housing induced by operation of cumulative projects was significant, in no event would the proposed project make a cumulatively considerable contribution to any such effect and the project's impact would be less than significant.

[4] The estimates were provided by participants of the Federal Open Market Committee in the committee's June 2016 Summary of Economic Projections. Some level of unemployment is expected even with a healthy, dynamic economy, as workers switch jobs, new workers enter the labor market, and other workers leave it (Federal Reserve Board, 2016).

The potential for the MPWSP to indirectly support growth by providing additional water supply is addressed in Section 6.3, Growth Inducement.

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4.20 Socioeconomics and Environmental Justice

Sections		Tables	
4.20.1	Setting/Affected Environment	4.20-1	Labor Force and Unemployment for Potentially Affected Jurisdictions (2015 Annual Average)
4.20.2	Regulatory Framework	4.20-2	Projected Employment Growth for Potentially Affected Jurisdictions (2010 – 2035)
4.20.3	Evaluation Criteria	4.20-3	Minority Populations of Potentially Affected Geographies (2010-2014)
4.20.4	Approach to Analysis	4.20-4	Income Characteristics for Potentially Affected Geographies (2010-2014)
4.20.5	Direct and Indirect Effects of the Proposed Project	4.20-5	Summary of Impacts – Socioeconomics and Environmental Justice
4.20.6	Cumulative Effects of the Proposed Project	4.20-6	Maximum Daily Construction Emissions Scenarios in Study Area Communities

This section evaluates the potential socioeconomic effects of the proposed project, including direct and indirect effects on economic activities, employment, tourism, research, and education. Environmental justice topics addressed include disproportionately high and adverse impacts on minority and low-income populations. This section analyzes the distributional patterns of minority and low-income populations on a regional basis and characterizes the distribution of such populations as they relate to the proposed project. Please note that other related topics, including population and housing, are addressed in Section 4.19, and growth inducement is addressed in Section 6.3.

Under NEPA (42 United States Code [USC] § 4321 et seq.), a federal lead agency must consider social and economic effects if they are related to a proposed project's natural or physical effects. The *CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] Parts 1500-1508) defines "effects" to include economic and social factors, whether direct, indirect, or cumulative in nature (40 CFR 1508.8). Consequently, federal agencies must analyze a proposed project's economic and social impacts resulting from any natural or physical effects on the environment. Furthermore, Executive Order (EO) 12898 (59 FR 7629; Feb. 16, 1994), *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations.

As described in Section 4.20.2.2, below, a CEQA Lead Agency may use information about the economic or social impacts of a project to determine the significance of physical changes caused by the project, but the economic or social effects of a project are not treated as significant effects on the environment. Additionally, CEQA does not use the term "environmental justice" or require the evaluation of impacts on minority or low-income communities in the way required by EO 12898. The Office of the California Attorney General (OAG) has clarified that environmental justice concerns are relevant to the analysis of a project under CEQA, but has recommended that lead agencies address environmental justice by evaluating whether a project's impacts would affect a community whose residents are particularly sensitive to the impact (i.e., sensitive receptors) and whether a project would have significant effects on communities when considered

together with any environmental burdens those communities already are bearing, or may bear from probable future projects (i.e., cumulative impacts) (OAG, 2012).

The impacts of this proposed project on sensitive receptors are analyzed where appropriate (e.g., in Section 4.10, Air Quality, and in Section 4.7, Hazards and Hazardous Materials). The proposed project's impacts considered together with existing or foreseeable environmental burdens experienced by nearby communities are analyzed throughout Chapter 4 in the Cumulative Effects subsection of each resource section. Further, the OAG indicates that a lead agency must be clear and transparent in its Statement of Overriding Considerations about the balances it has struck in approving a project, such as whether the benefits of the project will be enjoyed widely, but the environmental burdens of a project will be felt particularly by the neighboring communities (OAG, 2012). The information presented in this section will inform such a statement if and when the proposed project is approved in the event that a significant unavoidable impact is identified under CEQA. Significance determinations in this section, however, do not apply to the CEQA analysis. Rather, the conclusions in this section are relevant only to the NEPA analysis of the proposed project.

4.20.1 Setting/Affected Environment

The proposed project would be located along the northern coast of Monterey County (see **Figure 3-2** in Chapter 3) and would provide water supplies for CalAm's Monterey District service area (Monterey District), which includes the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside. The Monterey District also extends into unincorporated areas of northern Monterey County (the Carmel Highlands, Pebble Beach, Carmel Valley, and the Del Monte Forest) and the Monterey Regional Airport. Although the cities of Castroville and Marina are outside of the Monterey District, these cities could be affected by construction activities. Therefore, the study area includes these cities as well as the county and the analysis below presents demographics for all of the aforementioned cities.

4.20.1.1 Socioeconomics

Employment

Key employment data include the number of employable residents (i.e., the available labor force) and the number of job opportunities (i.e., employment) within a community. Indicators of economic health of the study area include both jobs and the unemployment rate. **Table 4.20-1** shows labor force and unemployment data for the potentially affected jurisdictions and **Table 4.20-2** shows projected employment growth for these areas in terms of number of jobs into the future.

As shown in **Table 4.20-1**, Monterey County's current unemployment rate is 2.7 percentage points higher than the statewide unemployment rate. The overall unemployment rate within the Monterey District is about one percentage point lower than the countywide rate, though unemployment rates within individual jurisdictions vary widely. The jurisdiction with the highest unemployment rate is Sand City, which has an unemployment rate more than double that of Monterey County.

TABLE 4.20-1
LABOR FORCE AND UNEMPLOYMENT FOR POTENTIALLY AFFECTED JURISDICTIONS (2015 ANNUAL AVERAGE)

Jurisdiction	Labor Force[a]	Unemployment Rate[b]
Carmel-by-the-Sea	1,800	3.6%
Del Rey Oaks	1,000	6.0%
Monterey	15,700	5.8%
Pacific Grove	9,000	5.1%
Sand City	200	16.1%
Seaside	18,400	8.3%
Unincorporated Area[c]	9,520	8.1%[c]
Total for Monterey District[d]	***55,620***	***6.9%***
Marina	12,000	6.1%
Castroville CDP	3,200	13.4%
Monterey County	221,400	8.1%
State of California	19,100,900	5.4%

NOTES:

[a] EDD provides rounded labor force numbers, but calculates the unemployment rate before rounding.
[b] Not seasonally adjusted.
[c] An estimated 4.3 percent of the countywide population resides in the unincorporated portions of the Monterey District service area. Because EDD reports local data only at the City or Census Designated Place (CDP) level, the labor force for the unincorporated portion of the Monterey District was estimated as 4.3 percent of the county total. The unemployment rate in the unincorporated portions of the Monterey District is assumed to be equivalent to the Monterey County rate.
[d] Monterey District numbers are estimated based on the aggregate of EDD data for incorporated cities and estimates of unincorporated area data (see note c).

SOURCE: EDD, 2016

As shown in **Table 4.20-2**, 2010 employment data indicate that approximately 182,000 jobs were located in Monterey County. The largest proportion of these jobs was in the city of Monterey (approximately 15 percent). Seaside and Pacific Grove are also major employment centers in the Monterey District.

Between 2010 and 2035, AMBAG projects a countywide increase in employment of 22 percent. Substantial job growth is projected in all cities within the Monterey District service area. The long-term employment forecasts show more robust future growth. Note that the economic fluctuations experienced during the recession are typical of any economy, and the economic forecasting approaches employed by AMBAG account for such cyclical conditions.

Regionally Important Economic Sectors

The Monterey County Board of Supervisors has adopted four economic "pillars" as potential opportunities for the County Economic Opportunity Committee to facilitate economic and employment growth: agriculture, tourism, education, and research (Monterey County, 2016a).

TABLE 4.20-2
PROJECTED EMPLOYMENT GROWTH FOR POTENTIALLY AFFECTED JURISDICTIONS
(2010 – 2035)

Jurisdiction	Number of Jobs					% Growth (2010 – 2035)
	2010	2020	2025	2030	2035	
Carmel-by-the-Sea	2,282	2,645	2,716	2,793	2,875	26.0%
Del Rey Oaks	414	640	602	592	573	38.4%
Monterey	26,934	31,249	32,512	33,597	34,828	29.3%
Pacific Grove	8,792	10,161	10,499	10,827	11,194	27.3%
Sand City	1,561	1,839	1,873	1,908	2,500	60.2%
Seaside	7,790	8,828	9,092	9,344	9,628	23.6%
Unincorporated Area[b]	7,826	8,857	9,082	9,309	9,552	22.1%[c]
Total for Monterey District	***55,599***	***64,219***	***66,376***	***68,370***	***71,150***	***28.0%***
Marina	4,951	5,727	6,191	7,242	8,305	67.7%
Monterey County	182,000	205,977	211,218	216,486	222,137	22.1%

NOTES:

[a] AMBAG does not provide data or estimates for unincorporated Castroville, and no other recent source of the estimated number of jobs in Castroville was identified. The 2007 Castroville Community Plan estimated that Castroville had 1,550 industrial jobs and anticipated that this number would double by 2027, a 3.3 percent annual growth rate. This document did not identify numbers of jobs or anticipated growth rates for other industries (Monterey County Housing and Redevelopment Office, 2007).

[b] An estimated 4.3 percent of the countywide population inhabits the unincorporated portions of the Monterey District service area. As a result, projected employment growth for the unincorporated portion of the Monterey District was estimated as 4.3 percent of the county total.

[c] The rate of current and future employment in the unincorporated portions of the Monterey District service area is assumed to be comparable to the Monterey County rate.

SOURCE: AMBAG, 2014

Agriculture

The agriculture industry as a whole includes crop and animal production, forestry, fishing, and hunting. In 2015, the Monterey County Agricultural Commissioner reported that crop and animal production provided 23.7 percent of all jobs in the County and contributed 18.5 percent of the County's direct economic output and $8.1 billion in total economic output (Monterey County Agricultural Commissioner, 2015). Crop and animal production, the largest portion of the agriculture industry is discussed in Section 4.16, Agricultural Resources, and forestry is discussed and dismissed as a topic of relevance to the proposed project in Section 4.1.2.1.

Commercial fishing represents a substantially smaller portion of the agriculture industry, in 2012 providing about 450 full- and part-time jobs in Monterey County (0.2 percent of total County employment) and contributing $55.9 million in total economic output (0.7 percent of the agricultural sector as a whole) (Office of National Marine Sanctuaries, 2014). No specific information on hunting as part of the agriculture sector is provided by Monterey County; however, like forestry, hunting is not expected to be a topic of concern for the proposed project, and is not discussed further in this section.

Tourism and Hospitality

Tourism and hospitality is one of the major industries in Monterey County, contributing over $2 billion per year in economic output and employing about 13 percent of workers in the County (Dean Runyan Associates, 2015; Monterey County, 2010). Recreational opportunities in Monterey County attract visitors. There are a variety of recreational resources throughout Monterey County—from federal preserves to state beaches and small neighborhood parks. These resources include Monterey Bay National Marine Sanctuary (MBNMS), along with designated parks, trails, and open spaces that provide for a diversity of active and passive recreational opportunities. Public access to the area's unique natural resources is an important component of recreation in Monterey County. The Monterey Bay shoreline hosts one of the most significant and rare dune landforms on the west coast. Public access to beaches, dunes, and hiking trails is available from numerous locations along the coast. There are also several designated bikeways throughout the project area that serve as both recreational facilities and alternative transportation routes. Recreational resources are addressed in Section 4.8, Land Use, Land Use Planning, and Recreation.

Education

Fourteen percent of the overall labor force in Monterey County works in education (Monterey County, 2010). Monterey Bay marine science institutions represent a large portion of the overall economy, supporting 2,343 jobs as of 2016 (Monterey County, 2016b). Examples of educational institutions that are located within or have programs in Monterey County include California State University Monterey Bay, Monterey Peninsula College, Hartnell College, Hopkins Marine Station (Stanford University), Marine Advanced Technology Education Center, Moss Landing Marine Laboratories, and the University of California Santa Cruz.

Research

The Monterey Bay is home to numerous marine and environmental science experts and institutions concentrated in this region due in part to the unique ecosystem of the Bay (Monterey County, 2016c). Most of the educational institutions and programs listed above are focused on or provide research opportunities specific to the region's ecology. MBNMS, in particular, collaborates with over 30 research institutions and is a leader in marine science. MBNMS addresses resource management needs for information, and oversees SIMoN, the Sanctuary Integrated Monitoring Network. In addition to MBNMS' research program, there are numerous research activities conducted by a variety of agencies and organizations such as Monterey Bay Aquarium Research Institute and Hopkins Marine Station. As of 2016, Monterey Bay marine science institutions employ over 2,000 scientists and staff and have a combined annual budget of $337 million (note that some of this employment and economic impact overlaps with the education sector described above) (Monterey County, 2016d).

4.20.1.2 Environmental Justice

The U.S. Environmental Protection Agency (USEPA) defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, sex, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies." The purpose of the environmental justice analysis is to determine

whether the environmental and human health-related impacts of the proposed project and alternatives would disproportionately affect minority and low-income populations. To determine whether there would be any proposed project environmental impacts that could disproportionately affect communities of concern, all of the individual resource issue area analyses in EIR/EIS Sections 4.2 through 4.19 were evaluated. Both individual physical effects, cumulative effects, and potential aggregate or additive effects among different issue areas were reviewed. Only Section 4.10, Air Quality, described impacts that could result in a disproportionately high and adverse impact on minority and/or low-income populations.

This environmental justice section provides a discussion of environmental justice in accordance with EO 12898 and related CEQ guidance.

Minority Populations

According to the federal CEQ guidance for environmental justice analyses, "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent; or (b) the minority population percentage of the affected area is meaningfully greater than the majority population percentage in the general population or other appropriate unit of geographic analysis. … A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ, 1997). As explained in the following paragraphs, only the first threshold (greater than 50 percent) is relevant in determining whether the affected communities have minority populations because Monterey County has a minority population greater than 50 percent, and any minority population "meaningfully greater" than (in this case considered to be 1.5 times that of) the Monterey District's 38.6 percent also would be greater than 50 percent.

Table 4.20-3 presents the minority population for potentially affected areas of Monterey County. Consistent with the CEQ guidance cited in the previous paragraph, the minority population for a community consists of the aggregate of all non-white individuals as well as all Hispanic or Latino individuals (i.e., of both white and non-white racial origin).

Seaside, Marina, and Castroville have minority populations of more than 50 percent. Additionally, an analysis of minority population by census tract identified one census tract in Sand City (Census Tract 140) that has a minority population of 64.7 percent. These communities are therefore considered communities of concern for the environmental justice analysis.

Low-Income Populations

This analysis uses two methods for identifying communities of concern related to income levels, based on two sets of guidelines: CEQ guidance and California Regional Water Management Guidelines. Both of these methods are addressed below.

The CEQ environmental justice guidance states that "…low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty" (CEQ, 1997, p. 25). USEPA guidance (1998) recommends the use of Census data on poverty income as one indicator,

TABLE 4.20-3
MINORITY POPULATIONS OF POTENTIALLY AFFECTED GEOGRAPHIES (2010-2014)

Geography	Total Population	Minority Population[a]	Minority Population Percentage
Monterey District[b]			
Carmel-by-the-Sea	3,807	735	19.3%
Del Rey Oaks	1,727	478	27.7%
Monterey (city)	28,053	8,936	31.9%
Pacific Grove	15,365	3,572	23.3%
Sand City	355	156	43.9%
Seaside	33,729	23,197	68.8%
Del Monte Forest CDP	6,439	1,542	23.9%
Balance of District[c]	16,862	2,474	14.7%
Total for Monterey District	***106,337***	***41,090***	***38.6%***
Other Geographies			
Castroville CDP	6,226	5,984	96.1%
Marina	20,198	12,602	62.4%
Monterey County	424,927	289,164	68.1%
State of California	38,066,920	23,161,319	60.8%

NOTES
[a] Includes all individuals other than non-Hispanic white. These values were calculated by subtracting the non-Hispanic white-only population from the total population for each jurisdiction/geography.
[b] Not all cities in this list are located entirely within the Monterey District.
[c] In the absence of more precise information, the balance of the Monterey District population is approximated by the populations of Census Tracts 107.02, 116.02, 116.04, 117, and 134. It is noted that these tracts include areas outside of the Monterey District.

SOURCE: U.S. Census Bureau, 2014c.

as well as other available data. Unlike the CEQ guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of what proportion of low-income individuals defines a low-income population. The annual statistical poverty thresholds are based on family income. A threshold of 50 percent of individuals in families with incomes below the poverty threshold (similar to the 50 percent threshold used to identify a minority population) would be an overly restrictive threshold for identifying a low-income population due to the nature of the poverty thresholds, which are not adjusted for regional costs of living, and are below levels commonly considered low-income in many areas of California.[1] For the purposes of this environmental justice analysis, the method of identifying low-income populations within the study area must account for regional costs of living. Therefore, this analysis uses a comparative approach and identifies a low-income population if the proportion of people with family incomes below the poverty threshold is meaningfully greater than that within the general population; in other words, if the percentage of such people in any of the communities

[1] Poverty thresholds vary according to a household's size and composition. The census poverty threshold for a two-parent household with two children was $24,008 in 2014 (U.S. Census Bureau, 2014e). By comparison, CalAm's Low-Income Ratepayer Assistance program defines the low-income threshold for a four-person household as $48,500 (CalAm, 2015a). Only 110 of about 8,000 census tracts (just over 1 percent) in California had 50 percent or more individuals in families with incomes below the poverty threshold (U.S. Census Bureau, 2014f).

considered is 1.5 times (or more than) that of the general population. Both Monterey County and the Monterey District are considered in the context of the general population.

Table 4.20-4 indicates that approximately 17.2 percent of people in Monterey County and 11.5 percent of people in the Monterey District had incomes below the federal poverty threshold. Therefore, based on the definition described above, a community with 17.3 percent (1.5 times 11.5 percent) or greater of people in families with incomes below the federal poverty threshold are identified as low-income populations for the purposes of this analysis. The Monterey District is used for this purpose because it provides a lower, and therefore more inclusive, threshold for defining a community as low-income. Using the county's percentage for this purpose would exclude all of the communities from consideration as low-income communities of concern, and therefore would not provide a meaningful basis for comparing impacts on low-income communities and non-low-income communities. As shown in **Table 4.20-4**, Sand City, Seaside, and the Castroville CDP had greater than 17.3 percent of families with incomes below the poverty threshold.

TABLE 4.20-4
INCOME CHARACTERISTICS FOR POTENTIALLY AFFECTED GEOGRAPHIES (2010-2014)

Geography	Median Household Income[a]	Individuals with Family Income Below Poverty Threshold
Monterey District[a]		
Carmel-by-the-Sea	$62,460	7.9%
Del Rey Oaks	$101,250	6.2%
Monterey (city)	$64,772	9.9%
Pacific Grove	$70,230	7.8%
Sand City	$34,659	25.6%
Seaside	$52,538	18.8%
Del Monte Forest CDP	$102,396	8.1%
Balance of District[b]	$106,826	5.5%
Average for Monterey District [c]	***$74,391***	***11.5%***
Other Geographies		
Castroville CDP	$50,000	21.5%
Marina	$53,828	16.7%
Monterey County	$58,582	17.2%
State of California	$61,489	16.4%

NOTES:
a Not all cities in this list are located entirely within the Monterey District.
b In the absence of more precise information, the balance of the Monterey District population is approximated by the populations of Census Tracts 107.02, 116.02, 116.04, 117, and 134. It is noted that these tracts include areas outside of the Monterey District.
c Income characteristics of Monterey District service area are assumed to be the average of communities found within this area (weighted average of individuals with incomes below poverty).

SOURCE: U.S. Census Bureau, 2014d.

Additionally, California's Integrated Regional Water Management[2] guidelines provide criteria for identifying "disadvantaged communities" during water resources planning efforts. Under the California Water Code, a disadvantaged community is defined as one with an annual median household income that is less than 80 percent of the statewide median household income (California Water Code, Section 79505.5[a]).

As shown in **Table 4.20-4**, the State of California's median household income as reported by the 2010-2014 American Community Survey was $61,489. Therefore, communities with a median income of less than $49,191 would be considered disadvantaged communities.

Among the geographies in Table 4.20-4 only Sand City had a median income of less than $49,191, making it a disadvantaged community in accordance with the California Water Code definition. Additionally, an analysis of income level by census tract identified one census tract in the city of Monterey (downtown; Census Tract 127) that meets the state income criteria for disadvantaged communities.

For this environmental justice analysis, Sand City, Seaside, Castroville CDP, and the downtown Monterey census tract are considered to represent low-income communities of concern.

4.20.2 Regulatory Framework

4.20.2.1 Federal Regulations

Executive Order 12898: Environmental Justice

As mentioned in the introduction to this section, EO 12898 (59 FR 7629; Feb. 16, 1994), *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations.

Specifically, EO 12898 requires that:

> Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities, because of their race, color, or national origin.

[2] Integrated Regional Water Management is a collaborative effort to manage all aspects of water resources in a region. Integrated Regional Water Management crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions.

Council for Environmental Quality Environmental Justice Guidance

The CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives. The Presidential Memorandum accompanying EO 12898 stipulates that "each Federal Agency shall analyze the environmental effects, including health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA." Accordingly, the CEQ has developed guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. The CEQ's *Environmental Justice Guidance under the National Environmental Policy Act* advises agencies to consider the composition of the affected area; determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed project; and, if such populations exist, determine whether there may be disproportionately high and adverse environmental effects on these populations (CEQ, 1997).

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

EO 13045 (62 FR 19885; Apr. 23, 1997), *Protection of Children from Environmental Health Risks and Safety Risks*, stipulates that to the extent permitted by law and consistent with the agency's mission, each federal agency shall prioritize the identification and assessment of environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. As EO 13045 notes:

> A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves (§1-101).

This EIR/EIS assesses environmental health and safety risks that may disproportionately affect children in Sections 4.7, Hazards and Hazardous Materials, and 4.10, Air Quality. Regarding whether the proposed project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school, see Impact 4.7-4 in Section 4.7. Schools are considered sensitive receptors for hazardous materials because children are more susceptible than adults to the effects of hazardous materials. See Table 4.7-2 in Section 4.7.1.5 for a list of schools within 0.25 mile of project components.

Regarding the proposed project's potential to have adverse health risks that may disproportionately affect children, see Impacts 4.10-1 and 4.10-4 addressing criteria pollutant emissions during construction and operation, respectively, and Impacts 4.10-2 and 4.10-5 addressing exposure of sensitive receptors to substantial pollutant concentrations during construction and operation, respectively. For the purposes of air quality and public health assessments, sensitive receptors are generally defined as land uses with population concentrations

that would be particularly susceptible to disturbance from air pollutants associated with MPWSP's construction and/or operation and include children. Sensitive receptor land uses generally include schools, day care centers, hospitals, and residential areas. The analysis of the impact on sensitive receptors relied on the definition of cancer risk, which assumes a six-month exposure for sensitive receptors near the pump station site, with three months of exposure in the third trimester of pregnancy and three months in the 0- to 2-year category. For the ASR-5 and ASR-6 Wells, a 1-year DPM exposure period was used, with three months of exposure in the third trimester of pregnancy and nine months in the 0- to 2-year age category. Therefore, the evaluation of cancer risk takes the health of children into account.

Because Sections 4.7 and 4.10 provide assessments of environmental health and safety risks that may disproportionately affect children, this topic is not addressed further in this section.

4.20.2.2 State Regulations

California Government Code

While there is no legal requirement to address environmental justice issues under CEQA, the State of California—following the adoption of EO 12898—passed a series of environmental justice regulations. California Government Code Section 65040.12 defines environmental justice as the "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

Legislative and executive actions related to environmental justice in California have been largely procedural, including but not limited to the formation of environmental justice advisory committees and the assignment of coordinating roles and responsibilities to the Governor's Office of Planning and Research and the California Environmental Protection Agency.

California Environmental Quality Act

Per CEQA guidelines Section 15131, "Economic or social information may be included in an EIR or may be presented in whatever form the agency desires." The section continues:

a) Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

b) Economic or social effects of a project may be used to determine the significance of physical changes caused by the project. […] Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant.

c) Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. […]

Senate Bill No. 936, Chapter 482

Under existing law, the CPUC has regulatory authority over public utilities, including water corporations. Existing law authorizes the CPUC to fix just and reasonable rates and charges. The existing Monterey Peninsula Water Management District Law establishes the MPWMD and provides for its powers and purposes.

SB 936 authorizes the CPUC to issue financing orders to facilitate the recovery, financing, or refinancing of water supply costs, defined to mean reasonable and necessary costs incurred or expected to be incurred by a qualifying water utility. This bill authorizes the MPWMD to issue water rate relief bonds if the CPUC finds that the bonds will provide savings to water customers on the Monterey Peninsula. Savings from these bonds would result from the lower interest rates that would apply to this financing compared to market-rate financing.

4.20.2.3 Local Regulations

Settlement Agreement on MPWSP Desalination Plant Return Water

On June 14, 2016, a settlement agreement was reached between Cal Am and several parties to the proceeding before the CPUC (CalAm et al., 2016). Under this agreement, the Castroville Community Services District (CCSD) will purchase water at a discounted cost pursuant to Item 4, Payment Provisions:

> (a) CCSD shall pay a rate intended to represent its avoided cost to produce groundwater to meet customer demand, currently estimated to be $110 per acre-foot, which will be the rate as of the beginning of the Delivery Term, for Return Water made available for delivery to meet the Annual Return Water Obligation. CCSD plans to continue operation of its existing wells so they may be available in emergency circumstances. This continuing operation will enable CCSD to provide future updates to the avoided cost of pumping to CalAm upon CalAm's reasonable request, but not more than once per year.

4.20.3 Evaluation Criteria

Implementation of the proposed project would have a significant impact related to socioeconomics and environmental justice if it would:

- Substantially reduce the rate of employment or the total income or business activity in Monterey County; or
- Change any social, economic, physical, environmental, or health conditions so as to result in a disproportionately high and adverse effect on minority or low-income populations.

Significance determinations in this section apply to the NEPA analysis only.

As described above, OAG indicates that a CEQA lead agency must be clear and transparent in its Statement of Overriding Considerations about the balances it has struck in approving a project, such as whether the benefits of the project will be enjoyed widely, but the environmental burdens of a project will be felt particularly by the neighboring communities (OAG, 2012). The

information presented in this section will inform such a statement if and when the proposed project is approved.

4.20.4 Approach to Analysis

4.20.4.1 Socioeconomics

The CEQ's regulations for implementing the procedural provisions of the NEPA (40 CFR Parts 1500-1508; reprinted in CEQ, 2005) provide standards for addressing social and economic impacts in preparing an environmental impact statement. Consistent with these regulations, this analysis examines potential impacts with respect to employment and local economic conditions. Generally, effects that result in greater employment or income, or that otherwise improve the quality of life for the local population, are considered beneficial socioeconomic impacts. This analysis considers the short-term socioeconomic effects that could occur in the project area during the MPWSP's construction period, and the long-term effects that could occur in the Monterey District service area associated with the MPWSP's future operations and debt repayment.

4.20.4.2 Environmental Justice

The USEPA guidance states that the analysis of environmental justice should determine if the affected area of minority population and/or low-income population is subject to "disproportionately high and adverse human health or environmental effects" from the proposed project. The guidance suggests that a comparative analysis be performed of potential impacts on the affected population and a reference population to determine the type of high and adverse impacts and the extent of disproportionality (USEPA, 1988).

For purposes of this analysis, the potential for disproportionately high and adverse impacts on minority and low-income populations was assessed applying USEPA's Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analysis.

Whether an adverse effect is "disproportionately high" on minority and low-income populations depends on whether that effect is (1) predominantly borne by an environmental justice population, or (2) will be suffered by the environmental justice population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-environmental justice population. It is important to note that determinations of disproportionately high and adverse effects take into consideration the mitigation measures that are identified for the proposed project.

4.20.5 Direct and Indirect Effects of the Proposed Project

TABLE 4.20-5
SUMMARY OF IMPACTS – SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Impacts	Significance Determinations
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.	LSM
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.	LS
Impact 4.20-C: Cumulative impacts related to socioeconomics and environmental justice.	LSM

NOTES:
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant with implementation of mitigation

4.20.5.1 Socioeconomics

Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County. (*Less than significant with mitigation*)

Project Construction

MPWSP construction activities and spending would result in temporary new local employment opportunities and increased spending on construction materials, equipment, and services. The extent to which the construction spending would benefit Monterey County's economy would depend on the proportion of employment, goods, and services procured from local residents and businesses. The greater the proportion of construction labor, materials, and equipment sourced from the project area, the greater the local benefits of the increased economic activity. Conversely, if most of the labor and materials were imported from outside of Monterey County, then project-related construction spending would have a relatively minor benefit on the regional economy.

CalAm's construction spending would represent a net gain to the Monterey County economy. In addition, State Revolving Fund debt and public financing would represent a net gain to the economy in the short term. Therefore, the proposed project would result in a direct, minor, beneficial economic impact on the Monterey County economy.

In addition to the direct effects identified above, secondary economic effects could also result from subsequent "re-spending" by construction companies and materials suppliers that occurs when these companies spend their earnings from the projects at other businesses (i.e., a multiplier effect), and re-spending by employees of those companies. This re-spending would also affect local businesses. The magnitude of the MPWSP construction's indirect economic benefits would depend on the proportion of the labor, materials, and services sourced from the local economy. If a large proportion of the materials and equipment is highly specialized (and must be obtained from suppliers outside of Monterey County), then the construction spending would primarily benefit other economies. The magnitude of the induced economic benefits from construction would depend on the extent to which the workers and businesses in Monterey County that perform the

construction activities in turn spend their earnings at other local businesses. As acknowledged in Section 4.19, Population and Housing, some construction workers are expected to commute to the project area from outside of Monterey County. Accordingly, the employment and re-spending benefits related to those workers primarily would be experienced in their home counties.

A formal input-output analysis to estimate the indirect and induced economic impacts was not performed. However, given the relatively specialized nature of the desalination technology and other related water conveyance facilities, it is expected that a relatively small proportion of the highly technical project components would be sourced from within Monterey County. Common materials, such as pipes, grading materials, and excavation equipment, would primarily be sourced from the regional area of Monterey County. As described in Section 4.19, Population and Housing, furthermore, the majority of construction labor would be drawn from the local and regional labor pool. During the construction period up to 370 construction workers would be employed. The indirect and induced economic benefits for Monterey County would be relatively minor, but would represent an indirect beneficial economic impact on the Monterey County economy.

Construction of the proposed project would not have adverse effects on the tourism, research, and education industries in Monterey County. While shifts in spending would potentially affect the retail and hospitality industries, visitors to Monterey County would not be deterred from visiting because construction would be temporary in nature, and impacts would be less than significant. Access for tourists to businesses like retail and dining as well as recreational opportunities may be temporarily impacted by pipeline construction, which would temporarily affect access to streets, parking spaces, and trails. Although pipeline construction would proceed at a rate of 150 to 250 feet per day, the total duration of disturbance at any one location would generally be 1 to 2 weeks. This could result in a significant impact on some individual businesses in the affected locations. However, implementation of **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**, would reduce this potential impact by requiring implementation of circulation and detour plans to minimize impacts on local streets, implementing a public information program to provide advance notice to businesses, residents, and visitors, and restoring roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress. This measure would reduce this impact to less than significant.

No offshore construction is proposed and construction of the project components would not interfere with any research activities being conducted along the coast. MBNMS oversees the operation of numerous monitoring activities with the sanctuary, but no monitoring was identified as occurring close enough to project construction for these activities to be affected (SIMoN, 2016). As described in Section 4.13, Public Services and Utilities, no impact on educational facilities would occur.

Operational and Facility Siting Impacts

The total capital cost to build proposed project components is estimated to be $337.9 million. These costs would be covered by CalAm equity, State Revolving Fund debt, surcharge on water users, and financing through water rate relief bonds as described under Senate Bill 936 in Section 4.20.2.2. Implementation of the MPWSP would double the current water rates for ratepayers within CalAm's Monterey District (Truong, 2016). This increase would be phased in over a period of several years.

While the savings achieved by the water rate relief bonds in-lieu of market-rate financing would reduce the overall costs to ratepayers compared to other financing mechanisms, such a utility cost increase could represent an adverse economic impact on the spending power of some ratepayers in Monterey District. Although these consumers could spend less at Monterey County businesses as a result of the increased water rates, such an incremental reduction in spending would not be large enough to constitute a significant adverse effect on overall employment or business activity in Monterey County. The potential impact of this proposed rate increase on low-income individuals and communities is analyzed under Impact 4.20-2 (environmental justice).

Operation of the proposed project would not affect access to tourism, education and research industries. Tourism relies on the recreation, retail and travel sectors, and would not be impacted by the proposed project. Access to research environments would not change as a result of the project. Instead, the project would support the long-term economic stability of these industries in Monterey County. It would improve water conveyance infrastructure and water supply in the CalAm Monterey District. This would increase reliability of water supply for all economic sectors in Monterey County. Overall, impacts of operation would be less than significant.

4.20.5.2 Environmental Justice

Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations. (*Less than significant*)

Project Construction

Low-income and minority populations are defined in Section 4.20.1.4 and include all or portions of Sand City, Seaside, Castroville, Monterey (downtown), and Marina. To determine whether there were any proposed project environmental impacts that could disproportionately affect these communities of concern, all of the individual resource issue area analyses in Sections 4.2 through 4.19 of this EIR/EIS were evaluated. In reviewing each of these sections, this environmental justice analysis considers potential impacts and mitigation measures and whether a "disproportionately high and adverse" (CEQ, 1997) impact would result for the minority or low-income populations identified. Only Section 4.10, Air Quality, described impacts that could result in a disproportionately high and adverse impact on minority and/or low-income populations. The review of the impact analysis in Chapter 4 also considered the potential for resource impacts to aggregate or combine to create disproportionately high effects on communities of concern. The analysis determined that the temporary, localized, and low-level (less than significant) characteristics of impacts related to environmental health or environmental burdens other than air quality would not result in a substantial aggregation of effects or a disproportionately high and adverse effect disproportionately affect minority or low-income populations.

Health effects resulting from decreased air quality, specifically on minority or low-income populations, are location-based and dependent on the varying components of the proposed project. **Table 4.20-6** provides the estimated maximum daily construction emissions of ROG, NOx, CO, PM_{10}, and $PM_{2.5}$ that would potentially result from MPWSP components that would be located closest to the communities of concern. These components are displayed on **Figure 3-2** and listed in **Table 4.10-5**, Estimated Maximum Daily Construction Emissions.

TABLE 4.20-6
MAXIMUM DAILY CONSTRUCTION EMISSIONS SCENARIOS IN STUDY AREA COMMUNITIES
(pounds/day)

Location	Nearby Project Components in Maximum Daily Emissions Scenario	Estimated Maximum Daily Emissions				
		ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Minority and Low-Income Communities						
Monterey, Sand City	None	--	--	--	--	--
Seaside	ASR Pipelines ASR Injection/Extraction Wells	3.92	51.1	29.83	2	1.65
Castroville	Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Marina	Subsurface Slant Wells Source Water Pipeline New Desalinated Water Pipeline	8.80	113.20	61.84	4.59	3.93
Other Communities in Study Area						
Carmel-by-the-Sea, Pacific Grove	None	--	--	--	--	--
Del Rey Oaks/ Unincorporated County	Ryan Ranch-Bishop Interconnection Improvements	2.34	26.99	17.21	1.18	1.04
MBUAPCD Significance Thresholds		**137**	**137**	**550**	**82**	**55**

SOURCE: See Appendix G; MBUAPCD, 2016.

As shown in Table 4.20-6, none of the maximum daily emissions scenarios near each of these communities would exceed the Monterey Bay Unified Air Pollution Control District (MBUAPCD) significance thresholds (described in detail in Section 4.10). However, of the communities with identified low-income and minority populations, Seaside and Marina would experience emissions more than twice as high as those that would occur in Del Rey Oaks and the unincorporated Ryan Ranch area. If these emissions near minority and low-income populations resulted in an adverse effect, this would have the potential to be a disproportionately high and adverse impact compared to the impact on non-minority or low-income populations.

Table 4.10-1, Ambient Air Quality Monitoring Summary (2011–2015), shows that existing pollutant concentrations have been relatively low compared to existing standards. Although **Table 4.10-5** shows that total project construction emissions would exceed applicable regulatory thresholds, those total emissions would be distributed across the various project components located in different parts of the project area, as illustrated by Table 4.20-6, and would not be concentrated in one location at any time. The site-specific emissions that would result from construction in any given location would be well below project-specific thresholds and would not substantially contribute to localized concentrations of criteria pollutants such that localized exceedances of standards would occur. Construction emissions would be temporary in nature and would not raise ambient air pollutant concentrations over time. Although several of the identified minority and low-income communities would experience higher emissions than would other communities (due to the amount of construction contributing to the estimate of maximum daily emissions near each community), emissions from construction would not result in substantial adverse health effects because they would be temporary and would not exceed applicable thresholds. Therefore, because construction of project components would not result in substantial adverse effects, the project would

not result in a disproportionately high and adverse impact on minority and/or low-income communities, and the impact would be less than significant. Additionally, implementation of **Mitigation Measures 4.10-1a** through **4.10-1e** would reduce project construction emissions further.

Operational and Facility Siting Impacts

As is the case with construction, air quality is the only issue area that could result in a disproportionately high and adverse impact on minority and/or low-income communities. However, as described in Impact 4.10-4, combined operational emissions of the MPWSP Desalination Plant, Carmel Valley Pump Station, and the slant wells would not exceed any of the thresholds derived from applicable air quality plans; therefore, operational emissions would not be expected to adversely affect the communities' health.

As discussed above, development and operation of the proposed project would result in higher water rates for most ratepayers within CalAm's Monterey District, which includes the identified low-income populations in Sand City, Seaside, and downtown Monterey. Such increases could have an adverse impact on low-income populations, and because low-income ratepayers may be less able to absorb price increases compared to non-low-income ratepayers, this adverse impact could be disproportionately high, and thus significant. However, under CalAm's Help to Others (H_2O) program, low-income water customers within the CalAm service area can apply to receive water rates that are discounted by approximately 20 percent for the meter rate and for the first two tiers of residential quantity rates (CalAm, 2015a, b, 2016a). This program is expected to continue and would help offset impacts on low-income ratepayers from future water rate increases resulting from implementation of the proposed project. Further, CalAm provides assistance through payment arrangements to customers who cannot pay bills by the due date, as well as water conservation assistance including: "water wise" house calls for homeowners and renters to identify water conservation opportunities, free water-saving devices (e.g., showerheads, faucet aerators), landscape water audits and budgets, and rebates for purchasing and installing water-saving devices (CalAm 2016a, b, c). These customer assistance programs are consistent with USEPA's recommendation to water and wastewater utilities to provide such programs to address the economic needs of low-income customers (USEPA, 2016). These programs would reduce the burden of increased prices on low-income households in the Monterey District to the extent practicable. CPUC jurisdiction over CalAm's water rates includes oversight by the Office of Ratepayer Advocates, whose statutory mission pursuant to California Public Utilities Code Section 309.5 is to obtain the lowest possible rate for service consistent with reliable and safe service levels, and to consider primarily the interests of residential and small commercial customers. For these reasons, this impact is would be less than significant.

The Castroville Community Services District (CCSD), which serves nearly 2,000 water connections (including government, industrial, commercial, and residential customers) in Castroville, a disadvantaged community and identified low-income community outside of CalAm's Monterey District, currently relies on about 780 acre-feet per year of SVGB groundwater to meet Castroville's water demands, with all of its three domestic water production wells in the 400-Foot aquifer (CCSD, 2017). CCSD increasingly has experienced water supply challenges due to water quality degradation primarily from increased salinity, as illustrated in Figure 4.10-11 (CalAm et al., 2016).

As described in Section 4.20.2.3, above, the settlement agreement would allow CalAm to deliver desalinated water to CCSD at a rate equal to the avoided cost of pumping the same amount of water. Therefore, CCSD would benefit from the proposed project because it would receive higher-quality water for the same price that pumping degraded water otherwise would cost. This would be a minor beneficial effect for a disadvantaged community.

4.20.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.20-C: Cumulative impacts related to socioeconomics and/or environmental justice. (*Less than significant with mitigation)*

Socioeconomics

The geographic scope for the cumulative impact analysis of socioeconomics encompasses Monterey County.

As described in Impact 4.20-1, project construction would economically benefit the communities in the project area. No communities in the vicinity of the project area would experience negative socioeconomic impacts resulting from construction. Access for consumers to some businesses may be temporarily affected. Potential disruptions would last a maximum of 2 weeks at any given location, and none of the linear projects in Table 4.1-2 that could have similarly disruptive construction effects would overlap in time and location with proposed project construction. Therefore, no cumulative impact is anticipated, and the impact of the proposed project alone would be as described above, less than significant with mitigation.

Construction projects listed in Table 4.1-2 and MPWSP construction activities and spending would result in temporary new local employment opportunities and increased spending on construction materials, equipment, and services. Consequently, the proposed project and other projects in the cumulative scenario would have a net positive economic and employment effect on the communities benefitting from proposed project construction. As acknowledged in Section 4.19, Population and Housing, some construction workers are expected to commute to the project area from outside of Monterey County. Accordingly, the employment and re-spending benefits related to those workers primarily would be experienced in their home counties, and would combine with cumulative impacts affecting those counties. The proposed project would have a beneficial contribution to such cumulative impacts outside the geographic scope for this analysis.

Environmental Justice

The geographic scope for the cumulative impact analysis of environmental justice includes the minority and low-income communities identified in Section 4.20.1.2: Seaside, Marina, Castroville, and Sand City, and one census tract in downtown Monterey.

Project construction would occur in Seaside, Marina, and Castroville. Ambient air quality in this area, as described in Section 4.10.1.5, reflects the past and ongoing contributions of criteria air pollutant emissions from numerous sources, including the CEMEX sand mining facility, existing Monterey Regional Water Pollution Control Agency (MRWPCA) facilities, existing Monterey Peninsula Regional Waste Management District (MPWMD) facilities, and livestock ranching and other agricultural activities. Section 4.10.1.5 describes baseline criteria air pollutant concentrations based on data from the nearest ambient air quality monitoring station, which has not recorded any violations of the state or federal criteria air pollutant standards from 2011 through 2015. Although localized project emissions in these communities would not exceed significance thresholds, four other projects have the potential to be under construction near proposed project components in these communities at the same time. As described in Table 4.1-2, these are the remaining retail and housing components of The Dunes on Monterey Bay in Marina (No. 7), the Marina Downtown Vitalization Specific Plan (No. 10), Marina Station (No. 12), and the Main Gate Specific Plan in Seaside (No. 18). The construction schedules for these projects are unknown, but if construction of these projects were to overlap with the construction of the proposed project, the cumulative localized emissions could be increased compared to the proposed project alone. Although cumulative impacts could be significant if other projects resulted in emissions that exceeded significance thresholds, the proposed project's localized emissions as shown in Table 4.20-6 would not be significant. Therefore, for the same reasons described in the air quality analysis in Section 4.10.6, the proposed project's contribution to cumulative impacts at these locations would be less than significant. With regard to operational effects, as discussed in Impact 4.10-6, such emissions would be negligible. (*Less than significant*)

Implementation of the MPWSP would result in a long-term increase in water rates for ratepayers within CalAm's Monterey District that would be phased in over a period of several years. However, CalAm is proposing in their current General Rate Case (A.16-07-002) to increase rates by 15 percent for its Monterey District. The implementation of the MPWSP would double the current water rates for ratepayers within CalAm's Monterey District (Truong, 2016). Although the Monterey Pipeline and Pump Station are identified as a separate project in the cumulative scenario (No. 60 in Table 4.1-2), this estimate of doubling the rates is based on CalAm's Amended Application, which assumed the cost of these facilities to be included (ESA, 2016). Therefore, no additional increase would occur as a result of implementation of the Monterey Pipeline and Pump Station project. Additionally, it is assumed that the GWR Project (No. 59) will not move forward in the full project buildout, and therefore is not included in the cumulative scenario for the proposed project. No other projects in Table 4.1-2 would result in additional rate increases because they would be carried out and funded by organizations other than CalAm. The cumulative impact in the Monterey District from the MPWSP and general rate case proceeding is an increase in rates of approximately 115 percent. This could have a disproportionate impact on low-income ratepayers, but for the same reasons described for the proposed project in Section 4.20.5.2, this impact is considered to be less than significant. Additionally, no other projects are expected to affect water supply to or prices paid by the CCSD, so a cumulative analysis is not relevant to the project's benefits on CCSD.

As discussed above, individual physical effects, cumulative effects, and potential aggregate or additive effects among different issue areas were reviewed. The analysis throughout the issue areas determined that the temporary, localized, and low-level (less than significant) characteristics of impacts related to environmental health or environmental burdens other than air quality would not result in a substantial aggregation of effects or a disproportionately high and adverse effect on minority or low-income populations. As described in this section, the proposed project's contribution to cumulative environmental justice impacts within the geographic scope of analysis would be less than significant.

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CHAPTER 5
Alternatives Screening and Analysis

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5.1 Introduction and Overview

This chapter describes the methodology used to identify and screen alternatives to the proposed project, compares the environmental impacts of the alternatives against the proposed project, and identifies the CEQA environmentally superior alternative and the NEPA environmentally preferable alternative and agency preferred alternative.

- ***Sections 5.1.1*** and ***5.1.2*** describe the guidelines for alternatives analysis under CEQA and NEPA, and the process by which the alternatives presented in this EIR/EIS will be carried forward and presented in the EIR/EIS for analysis. ***Section 5.1.2*** restates the proposed project objectives and significant impacts, and discusses their relevance in the alternatives review process.
- ***Section 5.2*** presents and discusses other water supply alternatives that were considered and may have informed the formulation of the alternatives analyzed in this EIR/EIS, but were not carried forward for detailed evaluation in this EIR/EIS.
- ***Section 5.3*** describes the process employed to develop, screen and evaluate potential alternative components in order to develop whole alternatives to the MPWSP for analysis.

Section 5.3.1 describes the regulatory considerations applicable to the successful implementation of a desalination project and **Section 5.3.2** describes the two-step screening and evaluation process for components of whole alternatives. After the individual components are described and screened to determine feasibility in step 1 (**Sections 5.3.3** through **5.3.5**), the components that are carried forward are evaluated against each other (step 2) in **Section 5.3.6.** Components that are considered to be the least environmentally damaging are then combined into "whole" alternatives in **Section 5.4**. Components that are not carried forward are described, with the reason for their dismissal, in Appendix I.

- ***Section 5.4*** describes a No Project/No Action Alternative and five action alternatives -- which include alternatives to the CalAm proposed project, reduced capacity alternatives, and desalination projects proposed by other entities -- and discusses their ability to meet project objectives.
- ***Section 5.5*** presents the impact analyses of the six whole alternatives (the No Project/No Action Alternative and the five action alternatives) that are described in Section 5.4 and compares those alternatives against the proposed project.
- ***Section 5.6*** identifies the environmentally superior/preferred alternative(s) and the NEPA agency preferred alternative.

5.1.1 Alternatives Analysis – CEQA/NEPA Requirements

One of the most important aspects of the environmental review process is the identification and assessment of the environmental impacts of reasonable alternatives. In addition to mandating consideration of the No Project/No Action Alternative, both the CEQA Guidelines (14 Cal. Code Regs. § 15126.6(d)) and the NEPA Regulations (40 CFR § 1502.14) emphasize the selection of a reasonable range of alternatives that meet the purpose and need of the proposed action, and the comparative assessment of the impacts of the alternatives to allow for public disclosure and informed decision-making.

5.1.1.1 CEQA Requirements

Section 15126.6 of the CEQA Guidelines sets forth the following criteria for selecting and evaluating alternatives:

- ***Identifying Alternatives*.** An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the proposed project but would avoid or substantially lessen any of the significant effects of the project. Factors that may be considered when addressing the feasibility of an alternative include site suitability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, economic viability, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative site. An EIR need not consider an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. The specific alternative of "no project" must also be evaluated. Of those alternatives presented, an EIR needs to examine in detail only ones that are determined at a preliminary level to feasibly attain most of the basic objectives of the proposed project.
- ***Range of Alternatives*.** An EIR need not consider every conceivable alternative, but must consider and discuss a reasonable range of feasible alternatives in a manner that will foster

informed decision-making and public participation. The "rule of reason" governs the selection and consideration of EIR alternatives, requiring that an EIR set forth only those alternatives necessary to permit a reasoned choice. The CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly." However, alternatives must also be feasible, and feasible is defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

- ***Evaluation of Alternatives.*** The EIR must evaluate the comparative merits of the alternatives and include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. Matrices may be used to display the major characteristics and the environmental effects of each alternative. If an alternative would cause one or more significant effects not caused by the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project.

5.1.1.2 NEPA Requirements

NEPA emphasizes that the identification and assessment of alternatives is the heart of the environmental impact statement (40 CFR § 1502.14). NEPA requires the agency to consider the no action alternative, other reasonable courses of action, and mitigation measures that are not already incorporated in the proposed action. Except for the no action alternative, alternatives should meet the purpose and need (40 CFR § 1502.13), and be reasonable, i.e., practical or feasible from the technical and economic standpoint and using common sense. NEPA also requires agencies to consider reasonable alternatives not within the jurisdiction of the lead agency (40 CFR § 1502.14 (c)). Agencies must rigorously explore and evaluate all reasonable alternatives, and briefly discuss the reasons for eliminating alternatives from detailed study. Agencies must provide substantial and detailed treatment to each alternative in the analysis, and impacts of the alternatives should be presented in comparative form in order to sharply define the issues and provide a clear basis for choice to the public and the decision-makers.

5.1.2 Project Objectives and Significant Impacts

As noted in Section 5.1.1.1, the CEQA Guidelines call for evaluating alternatives that would attain most of the basic objectives of the project, but would avoid or substantially lessen any identified significant effects of the project. Under the CEQ regulations for NEPA (40 CFR § 1502.13, Purpose and Need; and 40 CFR §1502.14, Alternatives), an EIS must identify "the underlying purpose and need to which the lead agency is responding in proposing the alternatives including the proposed action" (40 CFR § 1502.13), and present the environmental impacts for the proposed action and each alternative in comparative form, thus defining the issues and providing a clear choice among alternatives for decision-makers and the public (40 CFR §1502.14). Therefore, under the CEQA Guidelines and CEQ regulations, appropriate alternatives for the EIR/EIS analysis are those that would meet most of the basic project objectives (or underlying purpose and need for the project) and are reasonable/feasible. Furthermore, the analysis includes alternatives that would avoid or substantially lessen any of the significant

environmental effects of the proposed project. In addition, NEPA does not require a cost-benefit analysis, but allows cost-benefit analysis if it is relevant to the choice among environmentally different alternatives. In this EIR/EIS, economic factors were not used as criteria for selection of the alternatives carried through for detailed analysis. Nevertheless, Section 5.5.20 considers the economic and social impacts of the alternatives resulting from any natural or physical effects on the environment. Other cost factors will be considered by decision-makers as described in Section 1.5.4.

5.1.2.1 MPWSP Objectives, Purpose and Need

The MPWSP is needed to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources. In 1995, the California State Water Resources Control Board (SWRCB) directed CalAm to reduce and eventually terminate surface water diversions from the Carmel River in excess of its legal entitlement of 3,376 acre-feet per year (afy). SWRCB Order 95-10 directed CalAm either to obtain appropriative rights to the water that was being unlawfully diverted, or to obtain water from other sources. In the meantime, to reduce diversions from the Carmel River to the greatest practicable extent, the order directed CalAm to implement conservation measures to offset demand and to maximize its use of the Seaside Groundwater Basin to serve existing customers. (See Chapter 2 for more information on Order 95-10 and the subsequent Cease and Desist Order, SWRCB Order 2009-0060).

In 2006, the Monterey County Superior Court adjudicated the rights of various entities to use groundwater resources from the Seaside Groundwater Basin. In its decision, the Court established the adjudicated water rights of all the users of the Seaside Groundwater Basin, for the purpose of avoiding long-term damage to the basin. The adjudication substantially reduced the amount of groundwater available to CalAm (from approximately 4,000 afy to 1,474 afy). (See Section 2.2.4 in Chapter 2, Water Demand, Supplies, and Water Rights for more information on the Seaside Groundwater Basin adjudication.)

The need for the proposed MPWSP is predicated on the following:

- SWRCB Order 95-10, which requires CalAm to reduce and terminate surface water diversions from the Carmel River in excess of its legal entitlement of 3,376 afy, and SWRCB Order 2009-0060, which requires CalAm to terminate the diversions in excess of its legal entitlement by December 2021; and
- The Monterey County Superior Court's adjudication of the Seaside Groundwater Basin, which effectively reduced CalAm's pumping from the Seaside Groundwater Basin from approximately 4,000 afy at the time of the adjudication to CalAm's adjudicated right of 1,474 afy.

The purpose and need is thus to comply with these legal requirements while supplying sufficient water to CalAm customers. Project alternatives were evaluated for their ability to fulfill the project purpose and need and meet the basic objectives of the proposed project. The MPWSP objectives (presented in Chapter 1, Introduction) are repeated here for ease of reference:

The primary, or fundamental, objectives of the proposed MPWSP are to:

1. Develop water supplies for the CalAm Monterey District service area to replace existing Carmel River diversions in excess of CalAm's legal entitlement of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2009-0060;
2. Develop water supplies to enable CalAm to reduce pumping from the Seaside Groundwater Basin from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality;
3. Provide water supplies to allow CalAm to meet its obligation to pay back the Seaside Groundwater Basin by approximately 700 afy over 25 years as established by the Seaside Groundwater Basin Watermaster;
4. Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers;
5. Develop a reliable water supply that meets fire flow requirements for public safety;
6. Provide sufficient water supplies to serve existing vacant legal lots of record;
7. Accommodate tourism demand under recovered economic conditions;
8. Minimize energy requirements and greenhouse gas emissions per unit of water delivered; and
9. Minimize project costs and associated water rate increases.

The secondary objectives of the MPWSP are to:

1. Locate key project facilities in areas that are protected against predicted future sea-level rise in a manner that maximizes efficiency for construction and operation and minimizes environmental impacts;
2. Provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build out demand in accordance with adopted General Plans; and
3. Improve the ability to convey water to the Monterey Peninsula cities by improving the existing interconnections at satellite water systems and by providing additional pressure to move water over the Segunda Grade.

The purpose of the federal proposed action is to authorize otherwise prohibited activities to occur within MBNMS under the National Marine Sanctuaries Act (NMSA), to ensure that the State and Federal permits and the proposed project comply with NMSA regulations, and to ensure that sanctuary resources are protected by identifying terms and conditions that may be necessary. The MBNMS proposed action was prompted by CalAm's request for NMSA authorization and permits to construct, operate, maintain and decommission subsurface seawater intake facilities in the sanctuary and to allow brine discharges through an existing ocean outfall facility within the sanctuary; both activities would be associated with CalAm's proposed desalination plant. Therefore, the need for MBNMS action is to respond to CalAm's request, in accordance with NMSA regulations, and to protect sanctuary resources. This EIR/EIS assesses the environmental

impacts of other project alternatives which also involve intakes from and/or discharges into MBNMS which would require authorization from MBNMS.

5.1.2.2 Significant Environmental Impacts

The alternatives to be considered under CEQA and NEPA include those that avoid or substantially lessen one or more of the significant environmental effects identified for the proposed project. Many of the adverse environmental impacts described in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, were determined to be less than significant. Other adverse impacts were determined to be significant, but could be reduced to a less-than-significant level through the implementation of mitigation measures. Still other impacts were found to be significant and unavoidable even with mitigation measures. The consideration of these mitigation measures also satisfies the requirements under NEPA to consider mitigation alternatives, and for MBNMS to consider imposition of additional terms and conditions to the authorizations to minimize impacts on sanctuary resources.

Based on the analysis presented in Chapter 4, mitigation measures would reduce potentially significant impacts to less-than-significant levels for most topical areas, except for: conflict with the City of Marina's Local Coastal Land Use Plan (a terrestrial biology impact), construction noise, air quality during construction, and indirect impacts from growth. Further, the proposed project may result in significant and unavoidable cumulative impacts on transportation and traffic, noise, and air quality during construction.

While the primary focus of the alternatives analysis in this chapter is to develop a reasonable range of alternatives and analyze their impacts on the environment, this chapter also analyzes two other separately proposed water supply projects in the region (DeepWater Desal and the People's Project) for full consideration and comparison among projects currently under NEPA and CEQA review that could satisfy the project objectives and the agencies' purpose and need for action.

5.2 Alternatives Not Evaluated in Detail

This section provides a brief project history, and presents alternative projects that were considered in the past and may have informed the alternatives analyzed in this EIR/EIS, but were not carried forward for detailed evaluation. Many of the alternatives presented below were considered and rejected in earlier environmental review documents because the projects were determined to be politically, legally, economically, or technically infeasible; others are concepts that were speculative or technically or economically infeasible. These projects were revisited for this EIS/EIR and were eliminated from further review because they are incapable of meeting most of the basic project objectives or purpose and need as currently defined. The earlier environmental review documents are incorporated by reference pursuant to NEPA (40 CFR §1502.21) and CEQA Guidelines (Section 15150), and discussed in **Appendix I**. Additionally, Section 5.3 and Appendix I describe individual components, such as particular intake and outfall options, that are eliminated from further detailed analysis.

5.2.1 Overview

The MPWSP is the result of a multi-year planning effort. Since 1989, various entities have proposed several options intended to meet the water supply needs of the Monterey Peninsula and address the impacts on the Carmel River underlying SWRCB Order 95-10. Several of those options generated their own environmental review documents, which in turn contained many alternatives, some of which are still relevant here. As part of the 2009 Coastal Water Project EIR (CPUC, 2009), the CPUC reviewed these previously-prepared documents, including the Monterey Peninsula Long-Term Water Supply Contingency Plan (Plan B) Component Screening Report (CPUC, 2000) and the CPUC Carmel River Dam Alternative Plan B Project Report (CPUC, 2002), to determine what projects and alternatives had already been considered and eliminated since SWRCB Order 95-10 was issued.

The following section summarizes the previous proposals and projects, and the environmental documentation prepared for them (as relevant), and discusses why each of these alternatives is not addressed in detail in this EIR/EIS. No viable alternatives have been identified that would supply water without a desalination plant being included. Therefore, each of the whole action alternatives described in Section 5.4 includes a desalination plant of one size or another at some location within Monterey County.

5.2.2 New Los Padres Dam and Reservoir/Carmel River Dam and Reservoir Project

The New Los Padres Dam and Reservoir project was originally proposed by the Monterey Peninsula Water Management District (MPWMD) in 1989. It included a 24,000-acre-foot (af) dam and reservoir on the Carmel River, located about 0.5 mile downstream of the existing Los Padres Dam. The project would have had a production limit of 21,000 afy, of which 3,381 af would have been available to accommodate growth, in the form of new connections and remodels. The MPWMD prepared the required CEQA documentation in 1994-1995, obtained a

Section 404 permit under the federal Clean Water Act in 1995, and obtained a water right permit from the SWRCB in June and July 1995. However, in November 1995 voters rejected a measure authorizing funding for the project (CPUC, 2009).

In 1996, CalAm proposed to build a "no growth" dam and reservoir to comply with Order 95-10. That proposal was called the Carmel River Dam and Reservoir Project. Physically, it would have been the same as the New Los Padres Dam and Reservoir project. It would only have served existing community needs, which were estimated at 17,641 afy rather than the 21,000 afy envisioned in the New Los Padres Dam and Reservoir project. CalAm applied to the CPUC for permission to build and operate the project (A.97-03-052) in 1997. In 1998, the MPWMD, acting as lead agency, prepared a draft supplemental environmental impact report based on the New Los Padres Dam and Reservoir EIR. MPWMD never certified the final environmental document because, in 1998, the state legislature passed Assembly Bill 1182, which ordered the CPUC to identify alternatives to the dam (CPUC, 2009). In 1999, in response to Assembly Bill 1182, the CPUC began evaluating alternatives to the Carmel River dam project to meet the requirements of SWRCB Order 95-10 (also known as Plan B) for the Monterey Peninsula.

Subsequently, CalAm concluded that the Carmel River dam project was not feasible for a number of factors, including general public opposition, concerns over impacts to endangered and threatened species, and the findings of the evaluation of alternatives in Plan B (see Section 5.2.3). These factors still make both the New Los Padres Dam and Reservoir Project and the Carmel River dam project infeasible.

5.2.3 CPUC Water Supply Contingency Plan ("Plan B")

In 1999, in response to Assembly Bill 1182 and to meet the requirements of SWRCB Order 95-10, the CPUC began evaluating alternatives to the Carmel River dam project. In 2002, the CPUC, working with CalAm and others, completed a water supply contingency plan (also known as Plan B) for the Monterey Peninsula. Plan B ultimately concluded that a combination of desalination and aquifer storage and recovery (ASR) could produce 10,730 afy.[1] The desalination component of the project would be located next to the Moss Landing Power Plant and would produce 9,430 afy. Treated water would flow to the CalAm service area through a new pipeline. The ASR element would provide 1,300 afy by diverting surplus water from the Carmel River and storing this water in the Seaside Groundwater Basin for later use.

As part of the Plan B process, a Component Screening Report was prepared to provide the background, framework, and evaluation of potential Plan B water supply components (CPUC, 2000). Fifteen project components were evaluated in detail to assess their ability to meet 11 Plan B

[1] The Draft Plan B Project Report included a desalination plant at Sand City, Seaside Groundwater Basin ASR, a water reclamation component, and a water rights component. Further analysis, however, determined the following: that the water rights component was not currently feasible due to agency policies; that the water reclamation component was not practical due to institutional complexities and project costs; and that a desalination plant at Sand City would be more difficult to implement and less appropriate for the desired scale of production than a desalination plant at Moss Landing. The Final Plan B Report, therefore, consisted of a Seaside Groundwater Basin ASR and a desalination plant at Moss Landing.

objectives and 16 Plan B criteria. The 15 project components considered in the Plan B screening analysis, and their disposition at the time, sorted by category, are presented in **Table 5.2-1**.

TABLE 5.2-1
RESULTS OF PLAN B COMPONENT SCREENING

Component Category/Component	Carry Forward	Hold	Exclude
Groundwater Development			
1. Carmel Valley Deep Fractured Bedrock Wells		X	
2. Seaside Basin ASR	X		
3. Tularcitos Basin ASR		X	
Desalination			
4. Desalination Plant at Marina		X	
5. Desalination Plant at Moss Landing	X		
6. Desalination Plant at Sand City	X		
Importation			
7. Water Purchase from CVP		X	
8. Water Purchase from Humboldt Bay		X	
9. Water Purchase from the Salinas Valley			X
Legal Strategies			
10. Pueblo Water Rights (Carmel River)			X
11. Pueblo Water Rights (Salinas River)			X
12. Table 13 Rights (Carmel River)		X	
Reclamation			
13. CAWD/PBCSD Reclamation Expansion		X	
14. SVRP Expansion		X	
15. Local Stormwater Reclamation Projects		X	

Of the 15 components, three (water purchase from the Salinas Valley, Pueblo Water Rights for the Carmel River, and Pueblo Water Rights for the Salinas River) were excluded with fatal flaws, and they continue to be infeasible alternatives.

Three of the Plan B components were carried forward for additional evaluation; two of them, Seaside Basin ASR and Sand City Desalination, have been implemented. The Desalination at Moss Landing component was evaluated in the 2009 Coastal Water Project EIR and is re-evaluated in this EIR/EIS.

The other Plan B components were placed in a "hold" category. Components that were put on hold were not as promising as the ones carried forward, due to any number of factors that indicated that implementation of a particular component was technically challenging, did not fulfill planning goals, or conflicted with environmental resources. Water Purchase from the Central Valley is now considered to be infeasible since it relied on the construction of the Import Pipeline by the Pajaro Valley Water Management Agency, which decided not to pursue the

project. Table 13 Water Rights and Local Stormwater Reclamation Projects[2] have been or are being implemented; an expansion of the Seaside Basin ASR, Desalination at Marina, and Reclamation components[3] are discussed in this EIR/EIS.

A Final Plan B Project Report was prepared to document the refinement of the most viable components selected during the screening project. Additional engineering design and environmental analysis refined, modified, and focused the results presented in the Plan B Project Report, which provided the technical foundation and point of departure for the analysis of the Coastal Water Project. It included all of the essential features of the project: (a) a desalination project at Moss Landing using the Moss Landing Power Plant cooling water system for feedwater; (b) a water conveyance pipeline from Moss Landing to the CalAm's Monterey District; (c) ASR near Seaside; and (d) storage of Carmel River winter flows at the ASR site for recovery in the summer. At 10,730 afy capacity, Plan B did not include a provision to replace some of the water pumped from the Seaside Basin because the over pumping problem was not recognized at that time.

In 2003, the CPUC dismissed CalAm's Carmel River dam application without prejudice, ordered CalAm to file a new application for the Coastal Water Project, and determined that the CPUC should be the lead agency for the Coastal Water Project EIR. CalAm responded to the CPUC's decision by filing an application for a Certificate of Public Convenience and Necessity (CPCN) (A.04-09-019) and proposing the Coastal Water Project.

5.2.4 Coastal Water Project

In 2004, CalAm filed Application A.04-09-019 seeking a CPCN from the CPUC for the Coastal Water Project. The Coastal Water Project (also referred to as the Moss Landing Project) was sized, like the "no growth" New Los Padres Dam and Reservoir Project, to meet existing water demand, and did not include supplemental supplies to accommodate growth. On January 30, 2009, the CPUC published a Draft EIR analyzing the environmental impacts of the Coastal Water Project, as well as the environmental impacts of two project alternatives: the North Marina Project[4] and the Regional Project.[5] The CPUC published the Coastal Water Project Final EIR (SCH No.

[2] This Plan B component included several small scale stormwater reclamation projects that could be implemented within small drainage basins in Carmel, Pebble Beach and Pacific Grove, Monterey and Seaside.

[3] This Plan B component included an incremental of the CAWD/PBCSD Recycled Water Project and the incremental expansion of the Salinas Valley Reclamation Project.

[4] The North Marina Project alternative included most of the same facilities as the previously proposed Coastal Water Project and, like the previously proposed Coastal Water Project, would only provide replacement supplies to meet existing demand. The key differences between this alternative and the previously proposed Coastal Water Project were that the slant wells and desalination plant would be constructed at different locations (Marina State Beach and North Marina, respectively), and the desalination plant would have a slightly greater production capacity (11 mgd versus 10 mgd).

[5] The Regional Project would have been implemented jointly by CalAm, Marina Coast Water District (MCWD) and Monterey County Water Resources Agency (MCWRA).The Regional Project was to be implemented in phases and included vertical seawater intake wells on coastal dunes located south of the Salinas River and north of Reservation Road; a 10-mgd desalination plant in North Marina (Armstrong Ranch); product water storage and conveyance facilities; and expansions to the existing Seaside Groundwater Basin ASR system.

2006101004) in October 2009 and certified the EIR in December 2009 (Decision D.09-12-017). A year later, in Decision D.10-12-016, the CPUC approved the Regional Project alternative.

In January 2012, after the CPUC approved the Regional Project, CalAm withdrew its support for that project because of potential conflicts among the regional partners, and in April 2012, CalAm submitted Application A.12-04-019 (CalAm, 2012) seeking a CPCN from the CPUC for the MPWSP to build, own, and operate a desalination facility for water supply. The CPUC closed the Coastal Water Project proceeding A.04-09-019 in July 12, 2012, with Decision D.12-07-008. However, certain elements of the three projects evaluated in the Coastal Water Project EIR (e.g., intake, plant location and brine discharge components) have been carried into the alternatives analysis presented in this EIR/EIS.

5.2.5 MCWRA Interlake Tunnel and Spillway Modification Project

The Interlake Tunnel has been under consideration since the late 1970s and was included in the Monterey County Water Resources Agency (MCWRA) July 1991 Water Facilities Capital Plan as an approach to better manage flood and conservation flows in the Salinas River watershed. Since the early 1990s, the MCWRA has focused its groundwater management efforts on completing the Salinas Valley Water Project, which entails the Salinas River Diversion Facility and a modification to the Nacimiento Dam Spillway. More recently, the Interlake Tunnel project was included in the 2013 Greater Monterey County Integrated Regional Water Management Plan. With the current drought, MCWRA has a renewed interest in the Interlake Tunnel and Spillway Modification Project (Interlake Tunnel Project).

The Interlake Tunnel Project is being considered by the MCWRA, and would involve the construction of an 11,000-foot-long tunnel to divert approximately 50,000 afy of water from Nacimiento Reservoir to San Antonio Reservoir that would have otherwise been spilled at Nacimiento Dam. The Nacimiento River basin produces nearly three times the average annual flow of the San Antonio River basin, so capturing high Nacimiento River flows and diverting those flows to San Antonio Reservoir would increase the overall storage capacity of the system (MCWRA, 2014). The spillway of the San Antonio Reservoir would be raised an additional 10 feet to provide a total storage capacity of 59,000 af.

In July 2014, the Monterey County Board of Supervisors approved funding that allowed the MCWRA to prepare for and commence environmental review of the project. Starting in August, 2014, the MCWRA's Board of Directors has held several public workshops to provide background information about the Interlake Tunnel and to provide updates on project activities and accomplishments. On April 28, 2016, MCWRA published a Notice of Preparation to prepare an EIR on the Interlake Tunnel Project and held scoping meetings in May 2016. MWCRA anticipates construction of the Interlake Tunnel Project could begin in 2019.

The Interlake Tunnel project is intended to provide additional flood control and water supply benefits to the existing users and beneficiaries of the MCWRA's benefit assessment Zone 2C.

The project will be funded in part by property owners in Zone 2C through a Proposition 218 assessment. CalAm's Monterey District is not included in Zone 2C. Even if CalAm could overcome the legal and economic challenges of the assessments, the water created by the Interlake Tunnel Project would need to be conveyed to a new Surface Water Treatment Facility (e.g., it could flow down the Salinas River for extraction at the Salinas Valley Water Project's Rubber Dam, and be conveyed to CalAm's Charles Benson Road site) in order to comply with the Surface Water Treatment Rule, before being delivered to CalAm customers.

Demands for water from the Salinas River watershed come from numerous sources, including the Salinas Valley growers, Nacimiento Lake property owners, saltwater intrusion prevention efforts, and environmental protection measures. Given the uncertainty of this resource, the tremendous demand for water to serve a number of different purposes and the Monterey County Agency Act prohibition on out- of-basin transfers of groundwater, it is extremely unlikely CalAm could secure the appropriative surface water rights for this supply (CPUC, 2000). Therefore, this alternative was not further evaluated in this EIR/EIS.

5.2.6 Pure Water Monterey Groundwater Replenishment Project

The Pure Water Monterey Groundwater Replenishment (GWR) Project is jointly sponsored by the Monterey Regional Water Pollution Control Agency (MRWPCA) and the Monterey Peninsula Water Management District (MPWMD); the City of Salinas, the Marina Coast Water District (MCWD), and the Monterey County Water Resources Agency (MCWRA) are also participating. The GWR Project would serve northern Monterey County by providing purified water to recharge the Seaside Groundwater Basin (CalAm may later extract and distribute up to 3,500 afy) and 4,750 afy of additional recycled water to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. On September 15, 2016, in Decision 16-09-021, the CPUC authorized CalAm to enter into a Water Purchase Agreement, which provides that the MRWPCA will sell purified water from its advanced treated Pure Water Monterey GWR Project to the MPWMD, which in turn will sell it to CalAm for extraction and distribution to ratepayers in the Monterey District service area.

The GWR Project is not considered in this EIR/EIS as a stand-alone alternative to the MPWSP because it would not provide enough water to meet the basic project objectives of the MPWSP. Instead, it is considered in the cumulative impacts analysis for the reduced capacity alternative (Alternative 5a and 5b), Alternative 3 (Deepwater Desal) and the No Action Alternative. However, the GWR Project would not be relevant in the context of the proposed project or any alternative that includes a 9.6 mgd desalination plant built and operated by CalAm (i.e., Alternatives 1 and 2) because, if the GWR project is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would construct the 6.4 mgd plant as described in Alternatives 5a and 5b.

CPUC Decision 16-09-021 also authorized CalAm to construct the new Monterey Pipeline and Pump Station. For all alternatives (including the proposed project), the approved new Monterey

Pipeline and Pump Station are included in the cumulative impact analysis since those facilities will be built with or without the remainder of the GWR Project elements.

5.2.7 Siting Alternatives for ASR-5 and ASR-6 Wells

Section 2.4.3, Aquifer Storage and Recovery, describes the existing Phase I and Phase II of the Seaside Groundwater Basin Aquifer Storage and Recovery (ASR) project, which entails diverting and conveying Carmel River water during periods of high flow that occur between December and May of each year to the Seaside Groundwater Basin, where it is injected into the aquifer for storage and subsequently recovered for delivery to customers. The Phase I project, which was completed in 2007, includes two ASR injection/extraction wells (ASR-1 and ASR-2) located at the former Fort Ord military base, on the east side of General Jim Moore Boulevard near Eucalyptus Road. The Phase II ASR project includes two additional injection/extraction wells (ASR-3 and ASR-4) at Seaside Middle School, located on the west side of General Jim Moore Boulevard. The Phase I and Phase II ASR well locations are shown on Figure 3-2. In addition to the injection/extraction wells, the Phase I and Phase II ASR facilities include treatment facilities, two pump stations, a backflush percolation basin, and conveyance pipelines.

As part of the MPWSP, CalAm proposes two additional injection/extraction wells, ASR-5 and ASR-6 wells, to be located on the east side of General Jim Moore Boulevard between Arloncourt Road and Ardennes Circle, as shown on Figure 3-9. As discussed in Impact 4.12-1 in Section 4.12, Noise and Vibration, construction of the ASR wells would require a total of 8 weeks of 24-hour construction; and while temporary sound walls would be installed (Mitigation Measures 4.12-1b and 4.12-1d), a nighttime noise control plan would be implemented (Mitigation Measures 4.12-1c), and offsite accommodations would be provided for substantially affected receptors (Mitigation Measures 4.12-1e), the nighttime noise impact on adjacent residents could remain significant and unavoidable.

The locations of the proposed ASR-5 and ASR-6 wells are constrained by the presence of existing infrastructure and geologic characteristics of the Seaside Groundwater Basin. Several potential well sites were considered in environmental analyses completed for the Phase I and Phase II projects, including the "Bayonet Site," located west of General Jim Moore Boulevard adjacent to the Bayonet and Black Horse Golf Course, and parcels located in Fitch Park near the intersection of General Jim Moore Boulevard and Normandy Road. According to a 2010 Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) prepared by the U.S. Army, placement of an ASR well at the Bayonet Site was not pursued because the City of Seaside intended to acquire the site, and the Normandy Road site was not considered a viable site because of its proximity to a school path to Marshall School (U.S. Army, 2010).

Approval of the GWR Project, as described in Section 5.2.6, has further constrained the possible locations for additional ASR wells. New potable supply wells cannot be installed in GWR's area of influence within the basin because they would draw water from a part of the basin without meeting residence times in the aquifer that are required for GWR's injected recycled water.

The Lead Agencies reviewed constraint information provided by CalAm and in prior environmental analyses for the Phase I and Phase II projects and concur with their conclusions. Because few locations are technically feasible for alternative siting of the ASR-5 and ASR-6 wells, and due to the temporary nature of the significant and unavoidable nighttime noise impact associated with this project component, these technically infeasible alternatives were not carried forward into the EIR/EIS analysis.

5.3 Component Alternatives Development, Screening and Evaluation Process

The following section describes the alternatives development, screening and evaluation process, and focuses on the basic components of any desalination project: intakes, desalination plants, and outfalls. Section 5.3.1 describes the regulatory considerations applicable to the successful implementation of a desalination project and section 5.3.2 describes the two-step screening and evaluation process for alternative components. After the individual components are described and screened to determine feasibility in step 1 (Sections 5.3.3 through 5.3.5), the components that are carried forward are evaluated against each other in step 2 (Section 5.3.6). Components that are considered to be the least environmentally damaging[6] are then combined into "whole" alternatives in Section 5.4. Components that are not carried forward are described, with the reason for their dismissal, in Appendix I.

5.3.1 Regulatory Considerations

In order to be viable, alternatives must be capable of complying with regulations governing desalination plants in order to receive the required regulatory approvals. A complete list of applicable regulations was provided in Chapter 3, Table 3-8.

In addition, regulators require the design and operation of intakes and outfalls to avoid or minimize adverse environmental impacts. Key guidance that relates to evaluation of alternatives is outlined in SWRCB's policies and the *California Ocean Plan*, California Coastal Commission policies, and NOAA policy guidelines for desalination facilities in MBNMS, described below.

5.3.1.1 State Water Resources Control Board and the California Ocean Plan

The SWRCB is responsible for regulating water resources under the California Water Code and is the state agency authorized to implement the federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) program in California. The SWRCB and its nine Regional Water Quality Control Boards regulate the discharge of pollutants to State waters through the issuance and administration of NPDES permits, which may be combined with state-level permits, called waste discharge requirements that regulate discharges to state waters under the California Water Code.

6 As discussed above, under NEPA, alternatives selection criteria do not require identification of only those alternatives considered to be the less environmentally damaging than the preferred alternative, but rather a reasonable range of alternatives that fit the purpose and need for action. Analysis should include alternatives (including mitigation alternatives) that are designed to minimize impacts. NEPA requires alternatives to be reasonable, or feasible, which could include consideration of whether the alternative is capable of complying with regulations governing desalination plants in order to receive the required regulatory approval. Furthermore, the purpose and need for the Federal proposed action includes a requirement to ensure that NMSA regulatory requirements are met and that MBNMS resources are protected. Therefore, this criterion for eliminating alternatives from further study that are least environmentally damaging also eliminates alternatives that are infeasible because they are likely to be incapable of complying with the regulatory requirements and do not meet the Federal purpose and need to protect sanctuary resources.

Section 13142.5(b) of the California Water Code requires new or expanded coastal industrial facilities, including desalination plants, to use the "best available site, design, technology, and mitigation measures feasible" to minimize the intake and mortality of marine life. The SWRCB prefers subsurface intakes, but allows surface water intakes where subsurface intakes are not feasible or economically viable. For the purposes of Water Code Section 13142.5(b) and implementation of the Ocean Plan, "feasible" means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" as defined in Appendix I of the Ocean Plan. (SWRCB, 2016)

Effective January 2016, the *Water Quality Control Plan for Ocean Waters of California* (or Ocean Plan; SWRCB, 2016) establishes water quality objectives and beneficial uses for waters of the Pacific Ocean adjacent to the California Coast outside of estuaries, coastal lagoons, and enclosed bays. The Ocean Plan establishes effluent quality requirements and management principles for specific waste discharges such as brine discharge from desalination plants. This is discussed in detail in Chapter 4, Section 4.3, Surface Water Hydrology and Water Quality. Concerning brine discharge from a desalination plant, the Ocean Plan requires an owner or operator to first evaluate the availability and feasibility of diluting brine by commingling with wastewater. If wastewater is unavailable, then multiport diffusers are the next preferred method of brine disposal (SWRCB, 2016). These requirements protect beneficial uses by establishing a consistent statewide analytic framework for new desalination facilities for the best available site, design, technology, mixing requirements, and feasible mitigation measures, to minimize intake and mortality of marine life.

As described in the Ocean Plan:

> *The [Ocean Plan] contains four primary components intended to control potential adverse impacts on marine life associated with the construction and operation of desalination facilities as described below. (SWRCB, 2016):*
>
> - *Clarify SWRCB's authority over desalination facility intakes and discharges;*
> - *Provide guidance to the regional water boards regarding the determination required by Water Code section 13142.5, subdivision (b) for the evaluations of the best available site, design, technology, and mitigation measures to minimize the intake and mortality of marine life at new or expanded desalination facilities;*
> - *[Provide] A narrative receiving water limitation for salinity applicable to all desalination facilities to ensure that brine discharges to marine waters meet the biological characteristics' narrative water quality objective[7] and do not cause adverse effects on aquatic life beneficial uses.*
> - *Monitoring and reporting requirements that include effluent monitoring, as well as monitoring of water column bottom sediments and benthic community health to ensure that the effluent plume is not harming aquatic life beyond the brine mixing zone.*

7 The 2016 Ocean Plan Section II. E (biological characteristics water quality objective) requires that, "marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded."

5.3.1.2 California Coastal Commission Guidance and Policies

The California Coastal Commission (CCC) is involved in nearly all coastal desalination proposals through planning, permitting, permit appeals, or other reviews. The CCC report entitled *Seawater Desalination and the California Coastal Act* (CCC, 2004) addresses issues related to desalination along the California coast and potential effects on coastal resources and uses; identifies and discusses California Coastal Act policies that are applicable to desalination facilities; and provides information likely to be required during the coastal development permit review process.

Chapter 5 of the *Seawater Desalination and the California Coastal Act* report (CCC, 2004) outlines Coastal Act environmental policies related to desalination facilities and processes, focusing on marine biology and water quality policies.[8] Applicable coastal policies include the need to protect and enhance marine resources and to protect the biological productivity of coastal waters.

The report identifies a desalination plant's seawater intake and discharge as the two components with the most potential to cause direct adverse impacts on marine life and water quality: desalination facilities that draw water directly from the open ocean can kill many small marine organisms. Subsurface intakes have the advantage of eliminating or minimizing impingement and entrainment, and the CCC encourages applicants to use subsurface intakes whenever feasible if they would not cause significant adverse impacts on beach topography or potable groundwater supplies. Where subsurface intakes would not be feasible, the use of an open-water intake would require mitigation measures to reduce adverse effects or compensatory measures to offset impacts. The CCC recommends that the feasibility of subsurface intakes be considered during the conceptual design stage of a proposal and during environmental review of desalination projects (CCC, 2004). Before the CCC will consider permitting an open-water intake, the proponent must show that a subsurface intake is infeasible. For those projects proposing open-water intakes, up-to-date studies of entrainment and impingement impacts are necessary (Lester, 2006). To address marine biological impacts, the CCC requires design measures, such as a low intake velocity rate of 0.5 feet per second in accordance with the Clean Water Act, velocity limits, and screens. The CCC requires feasibility studies to evaluate the economic, social, and environmental impacts expected from open-water intake operations (CCC, 2004).

5.3.1.3 MBNMS Guidelines for Desalination Plants

MBNMS and NOAA Fisheries, in collaboration with the California Coastal Commission and the Central Coast RWQCB, developed guidelines for discretionary approvals of new desalination facilities in the document entitled *Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary* (NOAA, 2010). This document provides non-regulatory guidelines to ensure that future desalination plants in the sanctuary are properly sited and designed, and are operated in a manner that results in minimal impacts on the marine environment. The guidelines address several issues associated with desalination, including site selection, impacts from

[8] The report cautions that this focus should not be construed as treating other coastal resources as less important; rather it assumes that effects on other resources, and conformity review of a desalination facility with other Coastal Act policies, would likely be similar to many other coastal development projects.

construction and operations, plant discharges, and intake systems. Failure to meet these guidelines makes it very difficult for the project to meet the purpose and need for the federal action. Proposed project and alternatives' consistency with the Guidelines are summarized in Table 6.4-1 in Chapter 6, Other Considerations. Key relevant guidelines include:

- Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project. This should include an evaluation of other potential desalination locations and alternatives, as well as other forms of water supply.
- All desalination plants in MBNMS should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. The feasibility of using subsurface intakes as an alternative to open-water intake methods should be investigated. Other options for consideration should include: vertical wells and Ranney wells, horizontal directionally drilled and slant-drilled wells, seabed filtration systems, and other sub-seafloor structures. Where feasible and beneficial, subsurface intakes should be used. The implementation of subsurface intakes should not cause saltwater intrusion to aquifers or adversely affect coastal wetlands that may be connected to the same aquifer being used by the intake, and the intake proposal must address the likelihood of increased coastal erosion in the future. Subsurface intakes have the potential to minimize or eliminate impingement and entrainment impacts and improve the performance and efficiency of a desalination project by providing a certain level of pretreatment.
- Where subsurface intakes are not feasible, open-ocean intakes should be sited with existing pipelines of acceptable structural integrity. If new pipelines are necessary, sub-seafloor placement should be evaluated to minimize disturbances to biological resources and to recreational and commercial activities.
- Methods of minimizing impingement and entrainment impacts should be evaluated for open-ocean intakes. These should include design alternatives such as placing the intake structure to avoid sensitive habitat or highly productive areas, screening the intake ports, increasing the number of intake ports, or decreasing the intake velocity. Use of open-ocean intakes should be evaluated to determine expected entrainment and impingement impacts associated with various intake velocities and screen mesh sizes based on long-term monitoring data from the area, including diurnal and seasonal variations in planktonic abundance and location.
- Desalination plant intakes should be sited to avoid sensitive habitats. For open-water intakes, areas of high biological productivity (such as upwelling centers or kelp forests or other dense beds of submerged aquatic vegetation) should be avoided.
- The feasibility of diluting brine effluent by blending it with other existing discharges should be investigated. The proponent should evaluate the use of measures to minimize the impacts from desalination plant discharges, including discharging to an area with greater circulation or at a greater depth, increasing in the number of diffusers, increasing the velocity while minimizing the volume at each outlet, diluting the brine with seawater or another discharge, or use of a subsurface discharge structure.

5.3.2 Component Development and Screening Process

In order to develop alternatives to CalAm's proposed MPWSP, this alternatives analysis begins by describing and screening the key components of the desalination project. To maximize the range of components considered, this EIR/EIS separately considered seawater intake options, desalination plant locations and brine discharge options. The various options include different facility locations and technologies, and in some cases, also consider opportunities for co-locating project facilities with existing infrastructure.

Land-based brine discharge options were not considered or evaluated in this analysis for several reasons, including: the lack of any nearby facility for processing the large volume of liquid brine; the impacts associated with the abundance of truck trips required to move between 12 and 14 mgd of liquid brine to a processing facility (see Section 5.3.4)[9] or other onshore disposal or treatment area; the infeasibility of developing a substantially large area that would be needed for the use of evaporation ponds; the lack of a market for the salt product in California (e.g. as a de-icing agent); the infeasibility of using the very saline brine as irrigation water; the infeasibility of spreading the brine on the farming lands of the Salinas Valley; and the infeasibility of deep well injection due to the seawater intrusion issues currently being faced in the Salinas Valley. Furthermore, recent studies on new brine constituent extraction technologies have raised economic feasibility issues. One such study that summarized recent literature concluded that: "While a significant amount of research has been performed on constituent extraction, there is little consensus on its feasibility at a desalination facility" (Bureau of Reclamation, 2015).

All options in the screening process are sized for a 9.6 mgd desalination plant, but could be adjusted for a 6.4 mgd plant; in either event, the comparison addresses like elements. Each component option is defined and screened; those with fatal flaws were eliminated (see Appendix I) and options carried forward were evaluated.

In eliminating component options, this EIR/EIS considered whether the intake options could provide a sufficient and reliable source of seawater, or whether the outfall options could provide a reliable method of discharge. This EIR/EIS also considered site conditions, the availability of the site, the existing infrastructure, subsurface conditions derived from borehole data (for subsurface intakes), and input from resource agencies. Finally, component options must meet regulatory requirements – for example, if a component would cause a permanent and significant decline in marine species, it would not likely receive regulatory approval. The component options presented below came primarily from the following sources:

- *Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates*, A.12-04-019, Before the Public Utilities Commission of the State of California, April 23, 2012, as revised by subsequent CalAm testimony concerning A.12-04-019.
- *Memorandum: Contingency Planning for the MPWSP (Update of November 1, 2012 TM)*, Prepared by RBF Consulting, January 9, 2013.

[9] To move 12 to 14 mgd of brine per day would require between 1,440 and 1,725 tanker truck trips daily.

- *Proposal Submitted by the Moss Landing Commercial Business Park, LLC, to Design and Build the People's Moss Landing Desal Project* (MLBP 2013a), February 15, 2013, provided in response to CPUC Information Request, and Project Details, Project Title: The People's Moss Landing Water Desal, Project Sponsor: Moss Landing Business Park, LLC (MLBP, 2013b), provided in response to CalAm request for information, April 25, 2013.
- *Monterey Bay Regional Water Project, Project Narrative: Supplement to California State Lands Lease Application*, Prepared by DeepWater Desal LLC, Revised February 3, 2016, downloaded from the DeepWater Desal website, www.deepwaterdesal.com/reports-and-publications.htm.
- *Horizontal Well Technology Application In Alluvial Marine Aquifers For Ocean Feedwater Supply And Pretreatment, Section 2, Research And Development For Horizontal/Angle Well Technology*, Prepared by Geoscience Support Services, Inc., September 30, 2008, submitted to California Department of Water Resources.
- Input from regulatory agencies provided during an interagency meeting in Pacific Grove on June 10, 2013.
- Project Descriptions of DeepWater Desal and People's Project, provided by MBNMS, June 2016.

The component screening results for intake options (Section 5.3.3), outfall options (Section 5.3.4) and desalination plant sites (Section 5.3.5) are presented below.

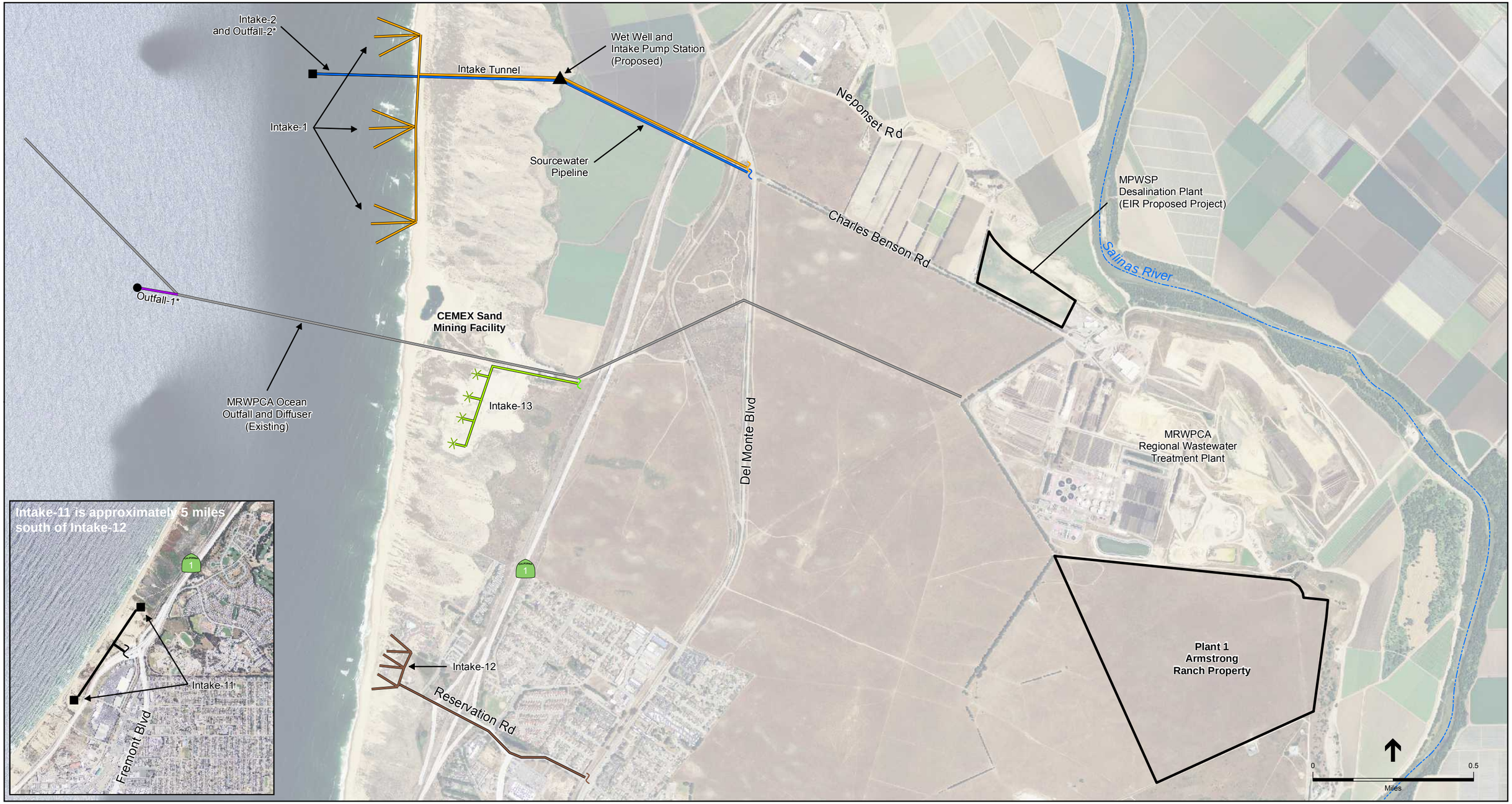
5.3.3 Intake Options Screening Results

There are two general types of desalination intake systems: open-water and subsurface. Open-water intakes collect seawater directly from the ocean using a screened inlet structure. An intake pipeline then conveys the water from the offshore inlet structure to an inland location. Subsurface intakes – like the one described for the proposed project – would draw water from beneath the ocean floor. These two intake technologies have different site requirements, design features, and construction techniques, and are described in **Appendix I1**.

Thirteen intake options were identified and screened for fatal flaws and are shown on **Figures 5.3-1** and **5.3-2**. Six of the thirteen were not carried forward for further analysis, and they are described in **Appendix I2**, along with an explanation for their elimination. Options that were retained are described in this section, and they are evaluated against the proposed project's slant wells at the CEMEX active mining area in Section 5.3.6. **Table 5.3-1** presents the intake options, and summarizes the results of the screening process.

5.3.3.1 Intake Option 1 – Subsurface Slant Wells at North CEMEX

This intake option, which includes 10 slant wells penetrating the submerged lands of MBNMS in an area north of the CEMEX active mining area, was not carried forward into the alternatives evaluation. Construction activities would temporarily disturb approximately 10 acres of critical habitat for sensitive biological resources (California western snowy plover and Smith's blue butterfly, coast buckwheat, Yadon's wallflower, Monterey spineflower, and sand gilia) 2 in the



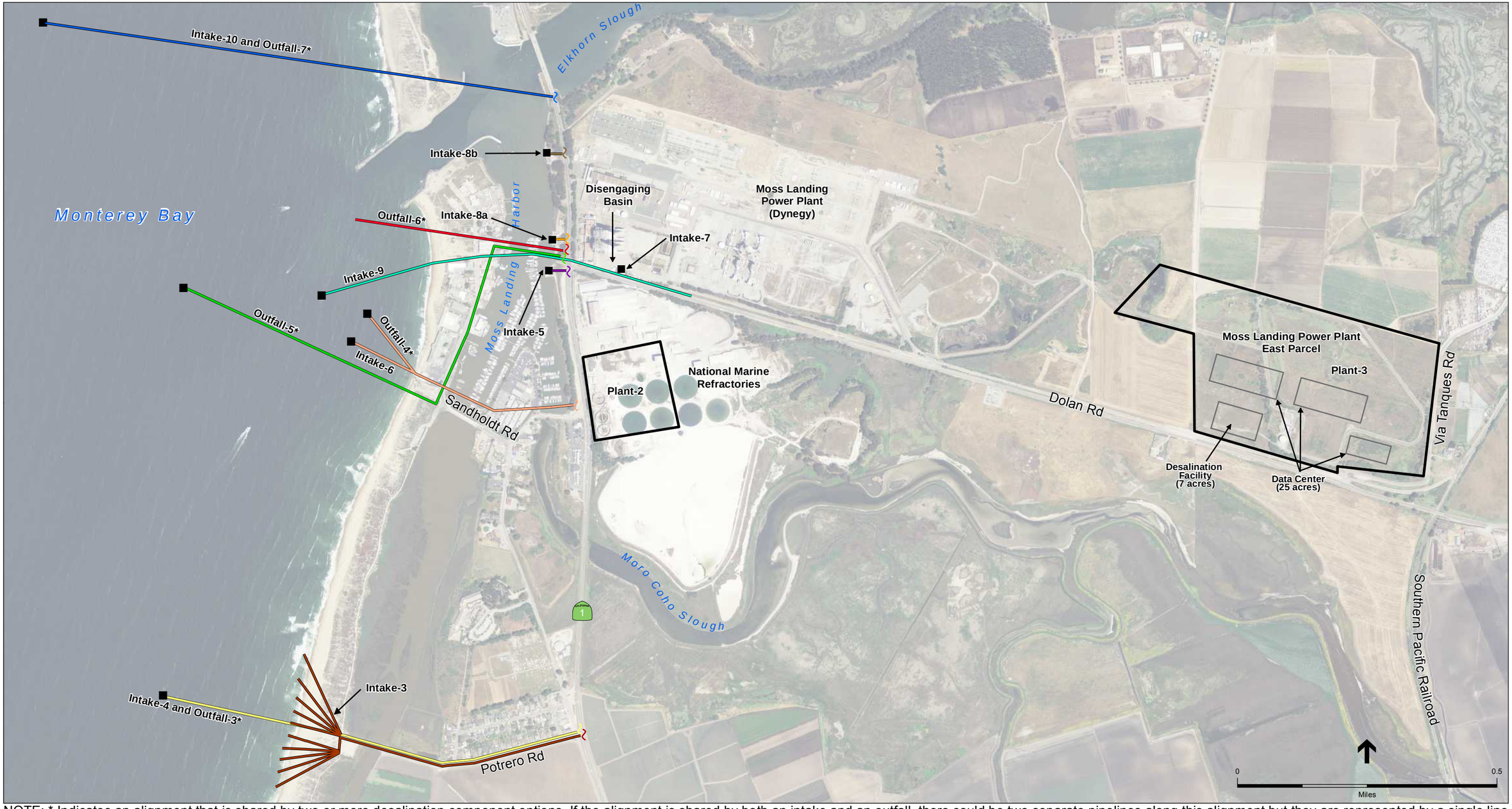
NOTE: * Indicates an alignment that is shared by two or more desalination component options. If the alignment is shared by both an intake and an outfall, there could be two separate pipelines along this alignment but they are represented by a single line. Similarly, if the same existing pipeline could either be converted into an intake or an outfall, the same line represents both options.

SOURCE: ESA, 2013

205335.01 Monterey Peninsula Water Supply Project

Figure 5.3-1

Alternative Component Options - Marina and Seaside



NOTE: * Indicates an alignment that is shared by two or more desalination component options. If the alignment is shared by both an intake and an outfall, there could be two separate pipelines along this alignment but they are represented by a single line. Similarly, if the same existing pipeline could either be converted into an intake or an outfall, the same line represents both options.

SOURCE: ESA, 2014

205335.01 Monterey Peninsula Water Supply Project

Figure 5.3-2

Alternative Component Options - Moss Landing

TABLE 5.3-1
INTAKE OPTIONS SCREENING RESULTS

Figure ID	Name	Feedwater Source	Description	Screening Results
Intake-1	Subsurface Slant Wells at North CEMEX[a] (new construction)	Predominantly seawater, with some portion coming from the Salinas Valley Groundwater Basin[b]	• This option would be located approximately 0.8 mile north of the CEMEX active mining area. • Up to ten slant wells would be buried in the beach "swash" zone. • Gravity-fed intake system would drain to a new pump station located on the inland side of the dunes.	*Not carried forward based on input from resource agencies regarding impacts on sensitive biological resources*[c]
Intake-2	Open-Water Intake at North CEMEX (new construction)	Open ocean	• This option would be located about 0.8 mile north of the CEMEX dredging pond. • A 5,000-foot-long, 36-inch-diameter intake pipeline would extend 2,400 feet offshore. • The intake pipeline would be installed using trenchless construction technology beneath the dunes, beach, and ocean floor. • A passive wedge-wire intake screen would be mounted on a 3-foot vertical riser at the western end of the intake pipeline, approximately 40 feet below the water surface. • Gravity-fed intake system would drain to a new pump station located on the inland side of the dunes.	*Retained for further analysis*
Intake-3	Subsurface Slant Wells at Potrero Road (new construction)	Predominantly seawater, with some portion coming from the Salinas Valley Groundwater Basin[b]	• This option would be located at the west end of Potrero Road. • A total of 10 subsurface slant wells would be constructed in the beach parking lot at the end of Potrero Road. • Wellheads would be buried in the parking lot. • Each well would be equipped with an electric submersible pump. • An enclosed electrical control building would be located at the edge of the parking lot.	*Retained for further analysis*
Intake-4	Open-Water Intake at Potrero Road (new construction)	Open ocean	• This option is located at the west end of Potrero Road. • A 3,100-foot-long, 36-inch-diameter intake pipeline would extend 2,400 feet offshore. • The intake pipeline would be installed using trenchless construction technology beneath the beach and ocean floor. • A passive wedge-wire intake screen would be mounted on a 3-foot vertical riser at the western end of the intake pipeline approximately 40 feet below the water surface. • A new pump station would be located at the eastern end of the intake pipeline in the beach parking lot.	*Retained for further analysis.*

NOTES:

[a] Presented in CalAm's January 2013 Supplemental Testimony as the proposed project
[b] Subsurface intakes will extract mostly seawater for feedwater, but a portion of the feedwater may originate from inland sources.
[c] March 26, 2013 meeting called by Congressman Sam Farr at California State Park's office in Monterey, CA. Attendees included the CPUC, CalAm, National Marine Fisheries Service, Monterey Bay National Marine Sanctuary, United States Fish and Wildlife Service, and U.S. Army Corps of Engineers.
[d] Based on the results of six exploratory boreholes in the Moss Landing area (Geoscience, 2014).

TABLE 5.3-1 (Continued)
INTAKE OPTION SCREENING RESULTS

Figure ID	Name	Feedwater Source	Description	Screening Results
Intake-5	Ranney Wells at Moss Landing Harbor (modify an existing intake system)	Moss Landing Harbor	• This option is located in Moss Landing Harbor, immediately west of the National Refractories site. • This option would convert the existing intake system into a Ranney well intake system located in Moss Landing Harbor. • The existing intake for the National Refractories site consists of a screened open-water intake (currently sitting in the mud), an intake pump station in Moss Landing Harbor, and two 36-inch-diameter source water conveyance pipelines extending from the harbor to the former National Refractories site.	*Not carried forward because of the unsuitable hydrogeologic conditions.*[d]
Intake-6	Open-Water Intake near Moss Landing Harbor (modify & extend existing intake)	Open ocean	• This option is located in Monterey Bay near Moss Landing Harbor. (Peoples' Moss Landing Desalination Project proposed intake) • Open ocean/bay intake system that would rehabilitate the existing caisson intake structure to include a new 40-inch intake pipe that would extend out from the existing caisson approximately 1,400 feet in the open ocean/bay. Two wedge wire passive screens (one active and one standby) would be attached at the end of this new pipeline extension and would be located approximately 120 feet below mean sea level. Each passive screen structure would be 96 inches in diameter and would be used to draw seawater into the existing caisson. The screens would be designed for a maximum through-screen velocity of 0.5 feet per second and with 1.0 mm wedge wire slots to minimize impingement and entrainment.	*Retained for further analysis.*
Intake-7	Disengaging Basin at Moss Landing Power Plant (new diversion from spent cooling system)	Spent once-through cooling water	• This option is located at the Moss Landing Power Plant. • This option would divert seawater from the power plant's cooling system for use as source water for the MPWSP Desalination Plant. • Currently, the seawater used for this option is drawn through the power plant's existing northern intake in Moss Landing Harbor, routed through power-generating Units 1 and 2 for cooling and discharged to a disengaging basin from which it is conveyed to the power plant's outfall and discharged into Monterey Bay. • Under this option, the spent cooling water would be diverted at the disengaging basin and conveyed to the MPWSP Desalination Plant.	*Not carried forward because of the potential future changes in the power plant's operation to meet settlement agreement with SWRCB resulting in additional construction in the future, substantial reduction in intake water volume, and disruption of the intake.*
Intake-8a and 8b	Open-Water Intakes at Moss Landing Power Plant (new connections to two existing intakes)	Moss Landing Harbor	• This option is located in Moss Landing Harbor. • MLPP has two existing cooling system intakes in Moss Landing Harbor just west of the power plant site. The northern intake serves Units 1 and 2; the southern intake serves Units 6 and 7. The existing intakes use pumps to draw water and bar racks and traveling screens to reduce entrainment. • Under this option, a new pump station would be installed behind or near the southern intake screen to divert an additional 24 mgd of feedwater to the MPWSP Desalination Plant. • While the southern intake would be the primary connection point, a pipeline connection to the northern intake would allow CalAm to receive flow from either intake.	*Retained for further analysis.*

TABLE 5.3-1 (Continued)
INTAKE OPTION SCREENING RESULTS

Figure ID	Name	Feedwater Source	Description	Screening Results
Intake-8a and 8b (cont.)			• The pump station would deliver seawater through a new, 36-inch diameter underground pipeline under Highway 1 to Dolan Road, where it would meet a new source water pipeline to the MPWSP Desalination Plant. • Apart from use of the intake screen, the diversion of feedwater from the harbor for the desalination plant would be independent of the power plant's cooling system operations.	
Intake-9	Open-Water Intake at Moss Landing (new construction)	Screened deep-water ocean intake system	• One subsurface intake pipeline would be installed below the seafloor using HDD from the pipeline's eastern end, on Dolan Road near the Moss Landing Power Plant, to the western end, where it "daylights" on the upper slope of the Monterey submarine canyon. • Passive, low velocity, wedge-wire screens on 6-foot risers would be attached to the western end of the intake pipeline close to where it emerges from the subsurface and anchored to the seafloor. • The screened intake would be located about 1,300 feet offshore, on the seafloor, 156 feet below the water surface, and below the euphotic zone (the upper zone of the water column where photosynthesis can occur). • From the screened intakes, raw seawater would be pumped to an onshore pump station. • The pump station would be located at the end of the railspur (near the corner of Dolan Road and SR 1). • DeepWater Desal proposed intake location.	*Retained for further analysis.*
Intake-10	Open-Water Intake in former fuel oil gas pipeline at Moss Landing (modify existing pipeline)	Open ocean	• This option would retrofit a pipeline formerly used to offload fuel oil for the Moss Landing Power Plant from an offshore terminal. The pipeline consists of a 24-inch diameter segment under Moss Landing Harbor to Moss Landing Beach and an 18-inch diameter section that extends from the beach approximately 3,000 feet into Monterey Bay.	*Not carried forward because the size of the pipeline would be too small to provide the quantity of source water needed.*
Intake-11	Ranney Wells in Seaside/Sand City (new construction)	Upper dune sands aquifers (Salinas and Seaside Groundwater Basins	• This option proposes 3 Ranney wells at two sites in the former Fort Ord coastal area in Seaside/Sand City: − Fort Ord Bunker Site – 2 Ranney wells − Fort Ord MW-1 site (west of the Highway 1/California Avenue intersection) – 1 Ranney well	*Not carried forward because its location offers no advantages to the CEMEX location, it would not avoid or eliminate any potential impacts of the proposed project and would add substantial length of pipeline to feed any plant location being considered.*
Intake-12	Subsurface Slant Wells at Reservation Road (new construction)	Predominantly seawater, with some portion coming from the Salinas Valley Groundwater Basin[a]	• This option is located at the west end of Reservation Road near the Marina Coast Water District desalination facility. • 9 slant wells would be constructed in the parking lot. • Wellheads would be buried in the parking lots. • Each well would be equipped with an electric submersible pump.	*Not carried forward because this location would be in direct conflict with MCWD's existing (non-operating) desalination plant or any plans MCWD may have in the future for building a desalination project in its service area.*

TABLE 5.3-1 (Continued)
INTAKE OPTION SCREENING RESULTS

Figure ID	Name	Feedwater Source	Description	Screening Results
Intake-13	Ranney Wells at CEMEX Active Mining Area (new construction)	Predominantly seawater, with some portion coming from the Salinas Valley Groundwater Basin[a]	• This design option would be located in the CEMEX active mining area (same location as the subsurface slant wells described under the proposed project). • 4 Ranney wells (approximately 5.75 mgd each) would be constructed on the south side of the CEMEX settling ponds and access road • Each Ranney well would consist of a 12-foot-diameter buried caisson extending to a depth of 50 feet below the ground surface, with five 500-foot-long screened laterals extending radially from the caisson. • A 1,475-foot-long collector pipeline would convey seawater from the Ranney wells to the Source Water Pipeline. • The construction disturbance area would be the same as the proposed project.	*Retained for further analysis. This design option could be used at any location where slant wells are being considered.*

active beach area and 0.25 acre of prime farmland on the inland side of the dunes. In addition, the footprint of the intake pump station would permanently disturb approximately 3,000 square feet of prime farmland. As described in **Appendix I2**, Intake Option 1 was determined to be fatally flawed due to permitting issues regarding impacts on biological resources.

5.3.3.2 Intake Option 2 – New Open-Water Intake at North CEMEX Site

This option would locate a new open-water intake on the seafloor within MBNMS at the northern end of the CEMEX mining facility, about 0.8 mile north of the CEMEX active mining area. A 5,000-foot-long, 36-inch-diameter intake pipeline would extend from the inland side of the dunes to approximately 2,400 feet offshore. The intake pipeline would be installed using trenchless construction techniques under the beach and dune areas and would daylight on the ocean floor at a depth of approximately 40 feet below the water surface. A passive wedge-wire intake screen would be mounted on a vertical shaft connected to the western terminus of the intake pipeline. This open-water intake would be gravity-driven and would deliver seawater to a 3,000 square-foot intake pump station and wet well located on the inland side of the dunes. The intake pump station would pump the seawater to the Desalination Plant. As with other open-water intake options, this option would require a membrane or media pretreatment filtration system to remove algae and suspended and colloidal solids as well as pathogens from the source water prior to conveying it through the reverse-osmosis system.

The site is within unincorporated Monterey County. Construction of this intake option would temporarily disturb approximately 0.25 acre of prime farmland on the inland side of the dunes and 2,000 square feet on the ocean floor. The intake pump station would be housed in a 3,000 square-foot building on the inland side of the dunes and would permanently disturb approximately 3,000 square feet of prime farmland; the intake pipeline would have a permanent footprint of about 200 square feet on the ocean floor. However, because the intake pipeline would be installed via tunneling technologies from the inland side of the dunes, construction of Intake Option 2 would not disturb sensitive habitat in the active beach area. **Appendix I1** provides additional information regarding general construction methods and maintenance of open-water intakes. No entrainment/impingement studies or pilot testing have been completed to determine the volume of organic marine material that would be affected by the intake, but an analysis by the CCC suggests that the effects of an open-water intake for the MPWSP, expressed as area of production foregone (APF, see Section 5.5.5, Marine Biological Resources for further explanation), would be something less than 20 acres (Luster, 2016).

5.3.3.3 Intake Option 3 – Subsurface Slant Wells at Potrero Road

This option would involve the installation of a total of 10 subsurface slant wells penetrating the submerged lands of MBNMS in the beach parking lot at the west end of Potrero Road in northern Monterey County, near the southern border of the unincorporated community of Moss Landing.

The slant wells would be drilled from the parking lot, and the wellheads would be buried in the parking area, below the hardened sand surface of the lot. The slant wells would be designed as

pumping wells -- that is, each well would be equipped with an electric submersible pump. The slant wells would be grouped into two clusters, with five wells in each cluster. A short, 36-inch-diameter collector pipeline would convey the seawater from the slant well clusters to a Source Water Pipeline that would be built within Potrero Road. The Source Water Pipeline would be located within existing rights-of-way, and would convey seawater to the desalination plant. All other aspects of construction and maintenance of the slant wells under Intake Option 3 would generally be consistent with those of the slant wells under the proposed project (see Chapter 3, Description of the Proposed Project).

The electrical controls for the slant wells would be located at the edge of the parking lot. The electrical control building, the only above-ground structure following construction, would be approximately 4 feet wide, 12 feet long, and 6 feet high. Overhead electrical lines would extend from the electrical control building to Potrero Road and east along the north side of Potrero Road to connect with the existing Pacific Gas and Electric (PG&E) power line on Potrero Road. The California Department of Parks and Recreation (California State Parks) owns and operates the beach parking lot at Potrero Road. Implementation of subsurface slant wells at this location would require easements from California State Parks. Slant well construction would require temporary closure of the beach parking lot.

The Potrero Road beach parking lot lies within the coastal zone; the *North County Land Use Plan* of the *Monterey County General Plan* designates this land for public/quasi-public and scenic and natural resources and recreational uses (Monterey County, 1982).

5.3.3.4 Intake Option 4 – Open-Water Intake at Potrero Road

This option would locate a new open-water intake pipeline at the beach parking lot at the west end of Potrero Road. A 0.6-mile-long (3,100-feet), 36-inch-diameter open-water intake pipeline would extend from the beach parking lot to approximately 2,400 feet offshore into MBNMS. The intake pipeline would be installed using trenchless construction technology under the beach and ocean floor, and would emerge on the ocean floor at a depth of about 40 feet below the water surface. A passive wedge-wire screen would be mounted on the seafloor on a vertical shaft connected to the western end of the intake pipeline. The intake pipeline would convey raw seawater to a new intake pump station. This above-ground pump station would be housed in a 3,000 square foot building located in the northeast corner of the beach parking lot. As with other open-water intake options, this option would require a membrane or media pretreatment filtration system to remove algae, suspended and colloidal solids, and pathogens from the source water before conveying it through the reverse-osmosis system.

Construction of this intake option would temporarily disturb approximately 2,000 square feet of the seafloor in MBNMS, and the footprint of the screened riser would permanently disturb about 200 square feet of ocean floor. It is assumed that land-based construction activities for an open-water intake at the Potrero Road site would occur entirely in the beach parking lot. General construction methods and considerations for open-water intakes, as well as operation and maintenance assumptions, are described in **Appendix I1**. Refer to the description of this site

under Intake Option 3, above, for information regarding existing land uses and the General Plan land use designations at this site.

5.3.3.5 Intake Option 5 – Ranney Wells at Moss Landing Harbor (Modify Existing Intake System at National Refractories site)

This intake option was originally proposed for the People's Moss Landing Water Desal Project by the Moss Landing Business Park, LLC and would involve the conversion of an existing open-water intake system of the former National Refractories and Minerals Corporation (National Refractories) in Moss Landing Harbor into a Ranney well subsurface intake system, and was not carried forward into the alternatives evaluation. As described in **Appendix I2**, Intake Option 5 was determined to be fatally flawed because borehole data indicated that individual sand and sand and gravel lenses in the Moss Landing area are not vertically or laterally extensive and that the permeable deposits were not thick enough for a subsurface intake system in this area to be capable of providing a reliable source of seawater for the MPWSP Desalination Plant.

5.3.3.6 Intake Option 6 – Open-Water Intake at Moss Landing

This option would consist of an open-water intake system that would draw seawater from Monterey Bay, as proposed by the People's Project. The intake would use an existing 20-foot diameter intake pump caisson structure that is located on the beach, next to the Monterey Bay Aquarium Research Institute on Sandholdt Road in Moss Landing. The existing open-water intake structure would include a new 40-inch diameter intake pipe that would extend out from the existing caisson approximately 1,400 feet into the open bay and ocean. Two wedge wire passive screens, one active and one stand by, would be attached at the end of this new pipeline extension and would be located approximately 120 feet below mean sea level. Each passive screen structure would be 96-inches in diameter and would be used to draw seawater into the existing caisson. The screens would be designed for a maximum through-screen velocity of 0.5 feet per second, and would contain 1.0 mm wedge wire slots to minimize impingement and entrainment.

A new 10-foot high pump and pump house structure would be built on top of the existing caisson with a first-floor elevation height of approximately 17 feet above mean sea level so that the pumps would be outside of the tsunami zone of inundation. Vertical turbine pumps would be used, with the pumps submerged in the intake structure and the motors in the pump house above. From the pump house, a new 40-inch diameter pipeline would convey the seawater beneath the Moss Landing Harbor and State Route 1 to the desalination plant following existing rights-of-way.

5.3.3.7 Intake Option 7 – Disengaging Basin at Moss Landing Power Plant (Water from Spent Cooling System)

This intake option would divert spent cooling water from the disengaging basin at the Moss Landing Power Plant (MLPP) for use as source water at the MPWSP Desalination Plant and was not carried forward into the alternatives evaluation. As described in **Appendix I2**, Intake Option 7 was eliminated from further consideration due to uncertainties regarding the reliability, quality, and quantity of the potential source water supply.

5.3.3.8 Intake Option 8 – Open-Water Intake at Moss Landing Harbor (Either of Two Existing Intakes for Moss Landing Power Plant Cooling System)

This option would use the power plant's existing cooling system intake screens to screen source water for the MPWSP Desalination Plant, and would be independent of the power plant's cooling system operations (RBF Consulting, 2013).

The power plant has two cooling water intakes, both located along the eastern edge of Moss Landing Harbor. The northern intake ("Intake 8b") is used to draw cooling water for power generating Units 1 and 2, and the southern intake ("Intake 8a") is used to draw cooling water for power generating Units 6 and 7. The intakes use vertical traveling screens fitted with woven wire mesh panels mounted on a continuous belt; the northern intake has a total of six traveling screens (three for each power generating unit) and the southern intake has a total of eight traveling screens (four for each generating unit). The screens include a drive mechanism and spray cleaning system. As the screens rotate vertically through the water, debris on the screens is lifted out of the water to the top of the screen belt, where it is sprayed off the screen by the screen wash system. The screens at the northern intake are normally rotated every four hours, or they may activate automatically based on the pressure differential on the upstream and downstream faces of the screen. They can also run continuously. Because power generating Units 6 and 7 operate less frequently, the traveling screens at the southern intake are currently rotated and cleaned on an as-needed basis (Tenera, 2007). The northern intake structure was modified in conjunction with the approval of new Units 1 and 2 in 2000;[10] the traveling screens at the northern intake are inclined about 35 degrees from vertical and have 5/16-inch woven wire mesh panels. The traveling screens at the southern intake structure are vertical in the water column and have traveling screens with 3/8-inch wire mesh panels. Both intakes also include initial bar racks; the traveling screens are located 20 and 25 feet behind the bar racks at the northern and southern intakes, respectively. The bar racks at the northern intake have 3 1/2-inch openings between the bars and the bar racks at the southern intake have 3 5/8-inch openings (Tenera, 2007; Dynegy, 2011). Nine pumps operate the northern intake. The six pumps that draw cooling water for Units 1 and 2 are located about 300 feet behind the intake; the remaining three pumps are used for the screen wash system. Seven pumps operate the southern intake. The four pumps that draw water for Units 6 and 7 are located about 30 feet behind the intake. Like the northern intake, another three pumps are used for the screen wash system (Tenera, 2007).

Under this option, new diversion pumps and a pipeline to connect to a new source water pipeline would be installed behind the power plant's existing intake screens to pump seawater to the desalination plant. While the southern intake would be the primary connection point, a secondary pipeline connection to the power plant's northern intake would enable CalAm to draw water from either intake. A new source water pump station would be installed near the southern intake to deliver the seawater via a new connecting pipeline to a new 36-inch-diameter source water pipeline. Trenchless construction would be used to install the pipeline under Highway 1. As with other open-water intake options, this option would require a membrane or media pretreatment

[10] The new Units 1 and 2 replaced the plant's original Units 1 through 5 which were retired in 1995.

filtration system to remove algae, suspended and colloidal solids, and pathogens from the source water before conveying it through the reverse-osmosis system.

This intake option would modify an existing MLPP facility (in this case, the existing intakes in Moss Landing Harbor). Physical space is available at the existing intakes for these modifications; access to the intakes would be via Highway 1.

5.3.3.9 Intake Option 9 – Screened Deep-water Ocean Intake at Moss Landing

This intake option has been proposed by DeepWater Desal, LLC, as part of the Monterey Bay Regional Water Project. This analysis assumes a version that has been scaled down to meet the needs of the 9.6 mgd project proposed by CalAm. The intake option would consist of an intake structure in the Monterey Submarine Canyon that would draw in raw seawater, intake piping that would deliver the seawater to the shore, and an onshore pump station that would pump the seawater to the desalination facility. The offshore intake structure location is very close to the intake location described in Option 6. The difference between these two options is the method of installing pipelines to connect onshore facilities to the offshore intake structure.

The intake structure would be located on the seafloor, within a ravine near the head of the Monterey Submarine Canyon, southwest of the Moss Landing Harbor entrance. It would be installed at the end of the subsurface intake pipeline at the point where it emerges from below the seafloor, approximately 1,300 feet offshore from the mean high water line at a depth of approximately 156 feet below mean low water.

Seawater would be conveyed from the intake structure to an onshore pump station via a 36-inch-diameter subsurface intake pipeline. The pipeline would be constructed subsurface using horizontal directional drilling (HDD) from the pump station site located near the end of the railspur at the corner of Dolan Road and SR-1. The pipeline would extend approximately 3,600 feet to the offshore seawater intake structure location. The HDD pit would be within the pump station footprint.

As with other open-water intake options, this option would require a membrane or media pretreatment filtration system to remove algae, suspended and colloidal solids, and pathogens from the source water before conveying it through the reverse-osmosis system.

5.3.3.10 Intake Option 10 – Open Deepwater Intake in PG&E Fuel Oil Pipeline at Moss Landing

This intake option would use the existing carbon-steel pipeline previously used by PG&E for offloading fuel oil for the Moss Landing Power Plant and was not carried forward into the alternatives evaluation. As described in **Appendix I2**, Intake Option 10 is fatally flawed because the existing fuel line likely contains a substantial amount of fuel residue which could present a public health issue, and the 18-inch-diameter of the offshore section of the pipeline would be too small to support a 9.6 mgd facility.

5.3.3.11 Intake Option 11 – Ranney Wells in Seaside/Sand City

This intake option emerged from earlier investigations conducted by the MPWMD and would involve the installation of three Ranney wells at two sites in the former Fort Ord coastal area in Seaside and Sand City and was not carried forward into the alternatives evaluation. As described in **Appendix I2**, Intake Option 11 would involve the installation of three Ranney wells at two sites in the former Fort Ord coastal area in Seaside and Sand City. However, the former Fort Ord Wastewater Treatment Plant site and former Stillwell Hall sites faced political challenges, and the Bunker site faced siting constraints and relatively low-permeability sands that would limit the potential amount of feedwater that could be developed from a subsurface intake.

5.3.3.12 Intake Option 12 – Subsurface Slant Wells at Reservation Road

This intake option would locate at least nine subsurface slant wells at the western terminus of Reservation Road on the inland side of the Marina State Beach parking lot and was not carried forward into the alternatives evaluation. As described in **Appendix I2**, a potential constraint to Intake Option 12 is Marina Coast Water District's existing 300 afy desalination plant and associated intake well, as well as their plans for developing a future desalination facility that could include development of a subsurface seawater intake system, which would result in well interference. Additionally, the location of Intake Option 12 is not favorable for slant well installation due to the shallow depth of the aquifers.

5.3.3.13 Intake Option 13 – Ranney Wells at CEMEX Active Mining Area

Intake Option 13 would substitute the proposed subsurface slant wells at the CEMEX active mining area with four Ranney wells, each spaced approximately 350 feet apart (CalAm, 2014). A Ranney well is comprised of a vertical caisson (a large diameter shaft where the water is collected from each well and then pumped) extending below the water table, from which horizontally placed perforated screens (laterals) are extended. Like the slant wells under the proposed project, the Ranney wells would be set back approximately 900 feet inland from the shoreline. Each caisson would be 12 feet in diameter, and would be buried approximately 50 feet into the sand, with the top of the caisson flush with the beach surface. Each of the four Ranney wells would be equipped with five screened laterals that would draw groundwater from the shallow Dune Sands Aquifer. A pipeline that is about 1,475 feet long and 42-inches in diameter would collect seawater from the Ranney wells and convey it to the Source Water Pipeline located beneath the CEMEX access road. The electrical controls for the Ranney wells would be housed in an aboveground electrical control panel located just south of the CEMEX settling ponds and existing access road, and an electrical control building would be located at the eastern entrance of the CEMEX property. The footprint required for the Ranney wells, the source water pipeline, electrical control panel, and electrical control building would be identical to the proposed project (CalAm, 2014). See **Appendix I1** for a general discussion of construction and maintenance assumptions associated with Ranney Wells.

5.3.3.14 Intake Screening Summary

Seven intake options were determined to be feasible and were carried forward for evaluation. The next step compares the impacts of each intake option against the proposed slant wells at CEMEX to determine if adverse impacts would be reduced. This step is described in Section 5.3.6.

5.3.4 Outfall Options Screening Results

For a 9.6 mgd desalination plant, a brine stream ranging between approximately 12 and 14 mgd would be discharged via an ocean outfall in accordance with Ocean Plan requirements. See Section 3.4.1 in Chapter 3, Description of the Proposed Project, for a description of brine discharges under the proposed project.

This analysis considers several potential outfall options for brine discharge, all retained for evaluation in the second step of the process. They are summarized in **Table 5.3-2**, shown in **Figures 5.3-1** and **5.3-2** and described in sections 5.3.4.1 through 5.3.4.7. All outfall options, except for Outfall Option 1, would discharge into the waters of MBNMS.

5.3.4.1 Outfall Option 1 – Modified MRWPCA Outfall and New Diffuser

This option would involve inserting a smaller-diameter pipeline inside the existing Monterey Regional Water Pollution Control Agency's (MRWPCA) outfall pipeline, installing a new diffuser to the end of the smaller pipe, which would exit the existing outfall pipe where the existing outfall turns to the northwest, and building a new pump station at the MRWPCA Regional Wastewater Treatment Plant site. This outfall option was originally intended to address what were thought to be potential water quality and outfall capacity impacts associated with using the existing outfall for brine discharge. However, it is possible to meet the Ocean Plan limits for the proposed project with mitigation, as presented in Section 4.3.5 (Surface Water Hydrology and Water Quality). At the MRWPCA outfall headworks under Outfall Option 1, approximately 2.6 miles of 20-inch diameter pipe would be pushed inside the existing MRWPCA outfall pipe. The 20-inch diameter pipe would extend to the first offshore bend in the outfall pipe. A new connection would be built as an exit structure at the bend of the existing pipe, and a barge would be used to transport, sink, attach, and secure a new 500-foot-long diffuser to the existing pipe and to the ocean floor for discharging and dispersing the brine (see **Figure 5-1**). It is estimated that construction activities associated with this outfall option would result in approximately 0.5 acre of disturbance on the ocean floor.

The modified outfall would be configured with a new pump station to be built on or near the MRWPCA property, in the vicinity of the existing MRWPCA outfall headworks. During wet-weather periods, when effluent flows are high, the brine stream would be pumped through the inserted pipe and the new diffuser, and MRWPCA's wastewater effluent would be pumped through the annular space between the outer wall of the inserted pipeline and the inner wall of the outfall and the existing diffuser. Pumping would provide MRWPCA the same effective capacity as the existing outfall.

TABLE 5.3-2
OUTFALL OPTIONS SCREENING RESULTS

ID	Name	Description	Screening Results
Outfall-1	Modified MRWPCA Outfall and New Diffuser (modifications to existing outfall facility)	• This option would use the existing MRWPCA outfall pipeline in MBNMS, which ends at a 1,100-foot-long diffuser. This gravity-driven facility discharges treated wastewater from the MRWPCA Regional Wastewater Treatment Plant. • A 2.6-mile-long, 20-inch-diameter brine discharge pipeline would be suspended inside the existing MRWPCA outfall pipeline. • A new 500-foot-long brine diffuser would connect to the existing outfall pipeline. • A new pump station would be built near the headworks of the existing MRWPCA outfall, on the MRWPCA parcel. • The annular space between the outer wall of the inserted pipeline and the inner wall of the outfall would continue to be gravity-driven and would be used for wastewater effluent flow during all flow conditions. • The new brine discharge pipeline and diffuser would be used for pressurized brine discharges during wet-weather flows only; under all other flow conditions, the existing outfall and diffuser would be used.	*Retained for Further Analysis*
Outfall-2	New Outfall at North CEMEX Site (new construction)	• A 24-inch diameter outfall pipeline would be built approximately 0.8 mile north of the CEMEX active mining area in MBNMS. • An outfall pipeline would extend approximately 2,500 feet offshore and end at a new diffuser designed to meet Ocean Plan requirements. • An outfall pipeline would tunnel under the dunes, beach, and ocean floor. • A pump station would be built at the desalination plant site to pump brine through the new outfall and diffusers.	*Retained for Further Analysis*
Outfall-3	New Outfall at Potrero Road (new construction)	• A 24-inch-diameter outfall pipeline would be built east to west along Potrero Road into MBNMS. • From the western end of Potrero Road, the outfall pipeline would extend approximately 3,000 feet offshore and end at a new diffuser designed to meet Ocean Plan requirements. • The outfall pipeline would be constructed under the beach and ocean floor using tunneling technologies.	*Retained for Further Analysis*
Outfall-4	Modified National Refractories Outfall (modifications to existing outfall facility)	• The existing 2,750-foot-long, 51-inch-diameter outfall extends underground from the western boundary of the former National Refractories site in Moss Landing, under the marina, the commercial harbor, and the harbor "island," and daylights near its end, approximately 620 feet offshore in the Monterey Bay in MBNMS at a depth of approximately 43 feet beneath the water surface. (Same outfall as proposed by the Peoples' Project) • The existing outfall would be repaired to address joint decoupling and minor cracks, and new diffusers would be attached. The pipe is buried with approximately 25 feet of cover over the entire length • Operation of this outfall would require repair of the outfall pipeline and diffuser, and would require modifications to meet the State Ocean Plan requirements. Due to the age and condition of the existing 51-inch pipeline, a new 36-inch-diameter pipeline would be slip-lined within the existing 51-inch outfall facility and then extended approximately 700 feet further to a depth of approximately 120 feet in the Monterey Bay on the edge of the submarine canyon. The 700-foot-long pipeline extension would be laid and anchored on the ocean floor and covered in riprap. This segment of pipeline would contain a diffuser system with 32 nozzles.	*Retained for Further Analysis*

TABLE 5.3-2 (Continued)
OUTFALL OPTIONS SCREENING RESULTS

ID	Name	Description	Screening Results
Outfall-5	New Outfall at Sandholdt Road (new construction)	• A new 24-inch-diameter outfall pipeline would be aligned east to west from Sandholdt Road. The outfall pipeline would extend approximately 1,000 feet offshore into MBNMS and end at a new diffuser designed to meet Ocean Plan requirements.	*Retained for Further Analysis*
Outfall-6	Existing Outfall for Moss Landing Power Plant Spent Cooling System (new connections to existing facilities)	• The Moss Landing Power Plant has two existing 144-inch-diameter outfall pipelines that end approximately 1,000 feet offshore from the Moss Landing Harbor inlet approximately 20 feet above the ocean floor and 20 feet below the water surface. This outfall is used during power plant cooling system operations. • Under this option, brine concentrate would be conveyed to the disengaging basin at the power plant via a new pipeline connection. Brine would discharge to Monterey Bay via the two existing outfall pipelines.	*Retained for Further Analysis*
Outfall-7	New Outfall at Moss Landing	• Brine would discharge from the desalination facility to the offshore discharge diffuser structure via one proposed subsurface 24-inch-diameter discharge pipeline. The discharge diffuser structure would be located in Monterey Bay approximately 3,400 feet offshore in MBNMS. (Same outfall location as proposed by Deepwater Desal Project) • Operation of the outfall would include a multi-jet linear diffuser that would be located on the seafloor, and that would consist of three separate standing pipe risers emerging from a single 24-inch pipe manifold. Each riser would be fitted with a duckbill diffuser nozzle. The diffuser structure would be buried in riprap protective cover and ballast stone that would be placed up to the level of the diffuser, extend out a few feet in either direction, then descend down to the seafloor at a 4:1 horizontal to vertical slope. Only the duckbill diffuser nozzles would extend above the protective cover.	*Retained for Further Analysis*

It is assumed that the MRWPCA would continue to maintain and operate the modified outfall. Maintenance activities would involve, as they do now: annual integrity test, air tests to identify leaks, video surveillance, and periodic flushing of the outfall line to unclog the diffuser ports. The MRWPCA conducts these maintenance activities at regular intervals. Other maintenance activities could include hand scraping of the diffuser section of the outfall line.

5.3.4.2 Outfall Option 2 – New Outfall at North CEMEX Site

This option would involve building a new ocean outfall pipeline and diffuser at the north CEMEX site (i.e., the same location as Intake Options 1 and 2), and building a brine discharge pump station at the desalination plant site.

As with the other outfall options, the length of the outfall pipeline would vary depending on whether the desalination plant was built at the proposed Charles Benson Road site or at one of the two site options presented in Section 5.3.5. For the purposes of this screening step, only the 5,500-foot-long segment of the outfall pipeline that would extend between the inland side of the dunes to the east and the diffuser in the open ocean at the western end is considered. This segment would be identical regardless of the location of the desalination plant. The outfall pipeline would be 24 inches in diameter. The eastern 2,500-foot-long segment would extend from the inland side of the dunes to the shoreline. The outfall pipe would tunnel under the dunes and beach and would daylight on the ocean floor approximately 2,500 feet offshore (see **Figure 5-1**). A 500-foot-long diffuser, designed to meet the 2012 Ocean Plan requirements, would be built on the ocean floor at the western end of the pipe.

The diffuser would be delivered via barge, lowered, attached to the pipeline, and anchored to the ocean floor. A 50-foot-wide construction corridor would be needed to anchor the diffuser to the ocean floor. Segments of the outfall pipeline located east of the dunes would be installed using open-trench construction methods except that, as with the proposed project pipelines, jack and bore methods would be used for the segment crossing under Highway 1 and any drainages along the alignment. The brine discharge pump station at the desalination plant site would be used to pump the brine stream through the outfall and diffuser and disperse the discharge.

The City of Marina has jurisdiction over much of this land, which is subject to the *City of Marina General Plan* and *Local Coastal Land Use Plan*. This land is designated for Habitat Preserve and Other Open Space land uses and zoned Coastal Conservation and Development (City of Marina, 2000; City of Marina, 1982). The north CEMEX intake pump station site would be located in unincorporated Monterey County and, therefore, would be subject to provisions of the *North County Land Use Plan* of the *Monterey County General Plan*. The site is designated as prime farmland. There appears to be sufficient physical space to accommodate an outfall pipe, pending approval of the appropriate easements. Maintenance activities would involve annual integrity tests, air tests to identify leaks, video surveillance, and periodic flushing of the outfall line to unclog the diffuser ports. Other maintenance activities could include hand scraping of the diffuser section of the outfall line. Implementation of this outfall option would require coordination and access agreements with CEMEX.

5.3.4.3 Outfall Option 3 – New Outfall at Potrero Road

This outfall option is similar to Outfall Option 2, except that it would be located approximately 4.5 miles to the north. This option proposes construction of a new outfall pipeline and diffuser extending offshore from the beach parking lot at the west end of Potrero Road, and building a new brine discharge pump station.

From the beach parking lot, approximately 3,000 linear feet of 24-inch diameter pipe would be installed using trenchless technologies beneath the beach and ocean floor. The outfall pipeline would daylight on the ocean floor, and a 500-foot-long diffuser, designed to meet proposed 2014 Ocean Plan requirements, would be attached to the western end of the pipe (RBF Consulting, 2013) and anchored to the ocean floor. Construction activities on and disturbance of the ocean floor are assumed to be similar to those described above for Outfall Option 2. It is assumed that the portion of the outfall pipeline located east of the Potrero Road beach parking lot would be built using open-trench construction methods except when crossing major roads, such as Highway 1, or when crossing drainages, when jack and bore methods would be used. The brine discharge pump station would be located in the existing parking lot, would pump the brine stream through the outfall and diffuser, and would disperse the discharge.

The description of Intake Option 3 in Section 5.3.3.2, above, provides information regarding land use and zoning at the Potrero Road site. There appears to be sufficient physical space to accommodate the outfall pipe, pending approval of the appropriate easements. Maintenance activities would involve annual integrity tests, air tests to identify leaks, video surveillance, and periodic flushing of the outfall line to unclog the diffuser ports. Other maintenance activities could include hand scraping of the diffuser section of the outfall line. This outfall option would require CalAm to obtain an easement from California State Parks for any portions of the outfall pipeline that traverse parkland at the end of Potrero Road.

5.3.4.4 Outfall Option 4 – Modified National Refractories Outfall

Outfall Option 4 would involve modifications to the existing outfall at the former National Refractories site, now called the Moss Landing Business Park or Moss Landing Commercial Park and is also the proposed outfall for the People's Project (described as Alternative 4, in Section 5.4).

The existing outfall is a 2,750-foot-long, 51-inch-diameter[11] concrete pipe that terminates approximately 800 feet offshore in Monterey Bay, at a depth of 43 feet below the water surface (SPI and Helm, 2013; Mickley, 2012; MLBP LLC, 2013b). From a point near the western boundary of the former National Refractories site, the outfall pipeline is routed beneath the marina, the commercial harbor, and "Moss Landing Island,"[12] to the point at which it emerges from the surface near its terminus in the bay (Landmark Realty, 2011). The pipe is buried with

[11] Mickley (2012) reports the outfall has an inside diameter of 51 inches and an outside diameter of 56 inches. The *Final Report of Evaluation of Seawater Desalination Projects* prepared for the Monterey Peninsula Regional Water Authority (SPI and Helm, 2013) describes the existing outfall pipeline as 51 inches, as does the People's Moss Landing Water Desal Project (PML Desal, 2014) and a RWQCB permit (Order No. R3-2009-0002). Other sources describe the outfall as 52 inches (Miller, 2012) or 54 inches (Landmark Realty, 2011).

[12] Moss Landing Island refers to the area between the harbor and the bay north of Sandholdt Bridge.

approximately 25 feet of cover over the entire length. A structural evaluation identified cracks that could be repaired with epoxy resin and indicated that, after the repair, the concrete pipe would be structurally adequate to function as an outfall. Operation of this outfall would require repair of the outfall pipeline and diffuser, and would require modifications to meet the State Ocean Plan requirements. Due to the age and condition of the existing 51-inch pipeline, a new 36-inch-diameter pipeline would be slip-lined within the existing 51-inch outfall pipeline and then extended approximately 700 feet further to a depth of approximately 120 feet in the Monterey Bay on the edge of the submarine canyon. The discharge would include one new 16-inch diffuser port.

The outfall is not currently used for discharges from the former National Refractories site; however, the outfall pipeline currently has within it two 8-inch polypropylene intake pipelines. These intake lines access open water through ports in the existing outfall diffuser; intake screens are attached to the lines about 100 feet from the end of the diffuser and serve the MLML, Phil's Fish Market, sea lion facilities, and the Monterey Bay Aquarium Research Institute (MLBP LLC, 2013c, RWQCB, 2009). The People's Project sponsors have indicated their interest in continuing to accommodate this use of the outfall pipeline along with modifications to use the pipeline as an outfall to serve a new desalination plant (MLBP LLC, 2013c).

The construction activities associated with the necessary repairs to the existing outfall are not known. However, it is assumed the offshore portion of the outfall would be accessed by barge and that a new diffuser would replace the existing one.

5.3.4.5 Outfall Option 5 – New Outfall at Sandholdt Road

This outfall option is similar to Outfall Option 2 (New Outfall at North CEMEX Site) and Option 3 (New Outfall at Potrero Road), but would be located at Moss Landing. This outfall option would involve construction of a new ocean outfall and diffuser extending offshore from a point on Sandholdt Road, and a new brine discharge pump station at the desalination plant site that is ultimately selected.

Although the MPWSP Contingency Plan did not identify a specific site on Sandholdt Road for this option, this analysis assumes that the site for this outfall option is on the west side of Sandholdt Road directly west of Sandholdt Bridge, where the road turns north. The July 2014 Revised Draft Moss Landing Community Plan identified several sites in this area as having "development potential," and the location appears suitable for accommodating the construction of a subsurface outfall. The Community Plan identifies one of the three development potential sites in this immediate location as "pier" (where the Sandholdt Pier formerly existed), another as "aquaculture slab," and the third as "MLML" (one of several sites on Sandholdt Road identified as being associated with MLML). Construction of a subsurface desalination outfall from this area would not preclude future construction of a new pier development of an aquaculture facility in the vicinity, or many other potential future land uses. From the site on Sandholdt Road, the outfall pipeline would tunnel beneath the seafloor and emerge from the surface about 1,000 feet offshore; a 500-foot long diffuser would be attached to the outfall pipeline. Construction activities at this site and disturbance on the ocean floor are assumed to be similar to those described above for Outfall Option 2.

The site and areas to the north along Sandholdt Road are designated Industrial-Coastal Dependent – Light in the current Monterey County Land Use Plan: Moss Landing (1982) and Waterfront Industry in the July 2014 Revised Draft Moss Landing Community Plan; the site is zoned LI (CZ) (Light Industrial-Coastal Zone). The Salinas River State Beach borders the site to the south. There appears to be sufficient physical space to accommodate the outfall pipe, subject to obtaining the appropriate easements. Maintenance activities would involve annual integrity tests, air tests to identify leaks, video surveillance, and periodic flushing of the outfall line to unclog the diffuser ports. Other maintenance activities could include hand scraping of the diffuser section of the outfall line. Implementation of this outfall option would require that CalAm coordinate with and obtain appropriate access agreements and easements from landowners, including California State Parks if any portion of the outfall pipeline traverses parkland.

5.3.4.6 Outfall Option 6 – Modify Existing Outfall for Moss Landing Power Plant Cooling Water

This outfall option would involve the construction of a new pipeline connection to the existing disengaging basin at the Moss Landing Power Plant to discharge brine via the power plant's existing cooling water system outfall, and a new brine discharge pump station located at the desalination plant site.

The Moss Landing Power Plant and existing outfall pipelines are owned by Dynegy Moss Landing, LLC. The outfall facility consists of two 144-inch diameter outfall pipelines that end approximately 1,000 feet offshore in Monterey Bay at approximately 20 feet above the seabed and 20 feet beneath the water surface (CPUC, 2009). Spent cooling water from the power plant's power generating Units 1 and 2 discharges to the disengaging basin, from which the water flows to the power plant's outfall pipelines; cooling water from power generating Units 6 and 7 discharges to the outfall pipelines downstream from the disengaging basin. The brine stream from the desalination plant would thus mix with spent cooling water from Units 1 and 2 in the disengaging basin and would mix with the spent cooling water from all four generating units in the outfall pipelines before being discharged to Monterey Bay, assuming current power plant operations.

In response to the requirements of section 316(b) of the federal Clean Water Act, in 2010 the SWRCB adopted a policy regulating coastal power plants that use once-through cooling systems[13] (SWRCB, 2014). Under the SWRCB's once-through cooling policy, starting in 2016, the power plant must reduce its intake of cooling water by 83.7 percent to reduce entrainment and impingement. Alternatively, if the power plant cannot or chooses not to reduce its intake, it must achieve a greater reduction in mortality from entrainment and impingement in some other way, and must fully comply with the reduction by December 31, 2020. Dynegy has indicated its intention to retrofit the power plant's four generating units to reduce entrainment and impingement impacts under the once-through cooling policy. Complying with the policy would dramatically reduce the amount of cooling water discharged through the power plant's outfall, and the cooling water that is discharged is expected to have much higher concentrations of

[13] Once-through cooling systems circulate water through pipes to absorb heat from power plants or data centers for example, and discharge the now warmer water to the ocean.

minerals compared to current discharges from the power plant. This is because, once the generating units are retrofitted, evaporation during the cooling process will concentrate the minerals in the original seawater. Therefore, once the power plant complies with the once-through cooling policy, the plant's cooling water system would provide little, if any, dilution of the desalination plant's brine discharge. Through a 2014 settlement agreement between the SWRCB and Dynegy, these reductions would be met by new technology, screening, and other methods. When the power plant meets its required reductions, CalAm would need to insert a smaller pipeline within one of the existing outfall pipelines and the existing riser, and to attach an appropriate diffuser to achieve the pressure required for brine discharge rates at the outfall diffuser.

Under existing conditions, all construction activities would occur in previously disturbed areas, and no construction would be required in the open waters of the Monterey Bay or Moss Landing Harbor. When the power plant complies with the once-through cooling policy after 2020, or when the power plant shuts down, construction associated with slip-lining one of the MLPP outfall pipelines would occur primarily at the power plant site. Underwater work in Monterey Bay would consist of attaching a new brine diffuser to the end of the slip-lined pipe and anchoring the diffuser to the ocean floor. Building this outfall would require CalAm to coordinate and enter into appropriate agreements with Dynegy.

5.3.4.7 Outfall Option 7 – New Outfall at Moss Landing

This outfall option uses the same outfall location as the proposed DeepWater Desal, LLC Monterey Bay Regional Water Project. However, compared to the DeepWater Desal Project this analysis assumes that the size of the outfall and the associated pipeline has been scaled down to meet the needs of the 9.6 mgd project proposed by CalAm. The option would include the following three components:

- A discharge diffuser structure;
- A brine pump station; and
- Discharge pipelines.

The discharge diffuser structure would be located in Monterey Bay, approximately 3,400 feet offshore from the Mean High Water Level in the waters of MBNMS and would be secured to the seafloor. The planned elevation of the discharge diffuser structure is approximately 76 feet below Mean Lower Low Water.

The multi-jet diffuser structure would be located on the seafloor and would consist of standing pipe risers emerging from a single 24-inch pipe manifold that would be connected to the end of the discharge pipeline. Each riser would be fitted with a duckbill diffuser nozzle. The diffuser structure would be buried in riprap protective cover and ballast stone. Only the duckbill diffuser nozzles would extend above the protective cover.

5.3.4.8 Outfall Screening Summary

All seven outfall options considered were determined to be feasible and were carried forward for evaluation. The evaluation step compares the impacts of each outfall option against the proposed use by the MPWSP of the existing MRWPCA outfall to determine if adverse impacts would be reduced. This step is described in Section 5.3.6.

5.3.5 Desalination Plant Site Options Screening Results

This analysis considers three alternative locations for the MPWSP Desalination Plant. The desalination plant site options are summarized in **Table 5.3-3** below, and shown on **Figures 5.3-1** and **5.3-2**. The option that was not carried forward into this analysis is described in **Appendix I2**, while the options that were retained for further evaluation are described below (Sections 5.3.5.1 and 5.3.5.2). The primary considerations for the desalination plant site options are the suitability, availability, and proximity of the sites to the possible locations of intake and outfall facilities. For this analysis, it is assumed that the desalination facilities described in Chapter 3, Description of the Proposed Project, for the Charles Benson Road site would be required at all of the desalination plant site options, and that a minimum of 10 acres is needed to accommodate these facilities. As such, this section focuses on the physical footprint of the desalination facilities and does not evaluate different treatment processes. Although the pre-treatment requirements could vary depending on the quality of the source water (open-water vs. subsurface intake), it is assumed that any modifications to the desalination processes could be accommodated within the same footprint.[14]

TABLE 5.3-3
DESALINATION PLANT SITE OPTIONS SCREENING RESULTS

Figure ID	Site	Description	Screening Results
Plant-1	North Marina Armstrong Ranch Property	This 320-acre site, a portion of which is owned by the Marina Coast Water District, is located south of the MRWPCA Regional Wastewater Treatment Plant and the Monterey Regional Environmental Park. The site is used for agriculture and grazing. The desalination plant would be built on 10 acres of land.	*Not Carried Forward because this site, while previously-approved by the CPUC as part of the Regional Project, is owned by MCWD and is no longer available to CalAm.*
Plant-2	Moss Landing National Marine Refractories Site	This site, owned by Moss Landing - Business Park, LLC, is located on Highway 1, southeast of the Dolan Road/ Highway 1 intersection, across Dolan Road from the Moss Landing Power Plant. This is the former Kaiser Refractories Moss Landing Magnesia Plant site. The desalination plant would be built on 25 acres of the 183-acre site.	*Retained for Further Analysis*
Plant-3	Moss Landing Power Plant East Tank Farm Parcel	This 110-acre site, owned by Dynegy, is located on Dolan Road, approximately 1,500 feet east of the Moss Landing Power Plant.	*Retained for Further Analysis*

[14] For example, the pretreatment requirements are determined by the quality of the source water. The conceptual design for the MPWSP Desalination Plant at the Charles Benson Road site is based on the pretreatment requirements for a subsurface intake system. If an open-water intake were used, adjustments to the pretreatment system could be required.

5.3.5.1 Desalination Plant Site Option 1 – Armstrong Ranch at North Marina

This desalination plant option would be located on approximately 10 acres of the 320-acre Armstrong Ranch parcel, which is situated south of and adjacent to the MRWPCA Regional Wastewater Treatment Plant and the Monterey Regional Environmental Park. The Marina Coast Water District currently owns this site, which was evaluated in the Coastal Water Project EIR as the location for the desalination plant for the North Marina and Regional Project alternatives, and it was not carried forward into the alternatives evaluation. See **Appendix I2**. Given that Marina Coast Water District currently owns the property, and that CalAm already owns the 46-acre Charles Benson Road site, which is located approximately 0.75 mile to the north, and since Site Option 1 does not provide any advantage over the Charles Benson Road site, it was not carried forward.

5.3.5.2 Desalination Plant Site Option 2 – Moss Landing National Refractories Site

Site Option 2 is the National Refractories site owned by Moss Landing Business Park, LLC. It is located at 7697 Highway 1 in Moss Landing, southeast of the intersection of Dolan Road and Highway 1, across from the Moss Landing Power Plant. The desalination plant would be built on approximately 25 acres of the 183-acre parcel.[15] This site option is also proposed by Moss Landing Business Park, LLC as the location of a desalination plant for the Peoples' Moss Landing Desalination Project.

This is the site of the former Kaiser Refractories Moss Landing Magnesia Plant, which used to extract magnesium from seawater, but which closed in February 1999 (Landmark Realty, 2011). The site is located in unincorporated Monterey County. The *Moss Landing Community Plan* zones this site as HI (CZ) – Heavy Industrial (Coastal Zone) (Monterey County, 1982).

Approximately 25 acres of the parcel are available for purchase or lease. Some existing structures at the site could be incorporated into the desalination plant design, including buildings, access roads, and parking lots.

5.3.5.3 Desalination Plant Site Option 3 – Moss Landing Power Plant East Tank Farm Parcel

This parcel, which is also called the East Tank Farm Parcel, is located on the north side of Dolan Road, approximately 1.5 miles east of State Route 1 (SR-1), just east of the unincorporated community of Moss Landing, in the unincorporated area of Monterey County. The 110-acre site is bordered by Dolan Road on the south, by the Moss Landing Power Plant on the west, and by predominantly agricultural lands and the Elkhorn Slough to the north and east. Only 25 acres of the site would be required for the desalination plant. The site contains some remnants of

[15] The gross acreage of APN No. 133-172-013, National Refractories is 183 acres; however, a portion of the land consists of wetlands and Moro-Cojo Slough as well as areas affected by flooding. Therefore, the net usable area of the parcel is estimated to be 165 acres.

equipment used at the tank farm, such as pipelines and empty electrical cabinets. Many of the earthen berms that surrounded the fuel oil tanks remain in place.

The *Monterey County General Plan* designates the East Tank Farm Parcel for Heavy Industrial Coast Dependent use. Building a desalination plant at this site would require that CalAm purchase or lease the land from Dynegy.

5.3.5.4 Desalination Plant Site Screening Summary

Two desalination site options were determined to be feasible and were carried forward for evaluation. The next step compares each desalination plant site against the proposed project plant site to determine if adverse impacts would be reduced. This evaluation step is described in Section 5.3.6.

5.3.6 Evaluation of Intake, Outfall, and Desalination Plant Options

This section evaluates the relative environmental effects of the intakes, outfalls and desalination plant sites that were carried forward from the prior screening step, compared against the components of the proposed MPWSP. For each environmental topic presented in Chapter 4, a comparison of impacts is presented in **Tables 5.3-4**, **5.3-5**, and **5.3-6** for intakes, outfalls and desalination plant sites respectively. The components that are determined through the evaluation to avoid or reduce potential environmental impacts are used to compile whole alternatives in Section 5.4 that are evaluated against the proposed project in Section 5.5.

Tables 5.3-4 through 5.3-6 present summary descriptions of the potential environmental impacts associated with the implementation of a particular component of the proposed project, as described in Chapter 4. The impacts of the component options are described comparatively using the following descriptors:

- **Similar** – impacts would be identical or would be of the same general magnitude as the MPWSP proposed component
- **Increased** – impacts would be notably greater than the proposed MPWSP component
- **Decreased** – impacts would be notably less than the proposed MPWSP component

5.3.6.1 Evaluation Results for Intake, Outfall and Desalination Plant Options

Intake Options

Three types of intake options were compared against the proposed slant wells in **Table 5.3-4**:

- Alternative subsurface slant well location (Intake Option 3) – comparison showed a mix of increased, similar, and decreased environmental effects.

- Alternative subsurface well technology (Intake Option 13) – comparison showed similar environmental effects as the proposed slant wells for all environmental topic areas.
- Open water intake facilities and locations (Intake Options 2, 4, 6, 8, and 9) – comparison showed a mix of increased, similar, and decreased environmental effects.

Alternative Subsurface Well Location

Intake Option 3, Slant Wells at Potrero Road, would provide an optional location for slant wells behind (east of) the dunes, in the parking lot at the end of Potrero Road. This location would avoid impacts associated with coastal erosion and would reduce potential impacts on sensitive biological resources at the proposed CEMEX site, but would be located in a 100-year flood plain. During construction, this option would require the temporary closure of the parking lot for the state park and would have increased noise and access impacts on nearby residences. Because Intake Option 3 would decrease some environmental effects (while increasing others) compared with the proposed project, it is carried forward for development into "whole" alternatives (Alternative 1 in Section 5.4).

Alternative Subsurface Well Technology

Ranney wells (Intake Option 13) were shown to result in similar environmental effects compared to the proposed slant wells, resulting in neither increased or decreased impacts. Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary. However, because no difference in environmental effects was demonstrated, it is unnecessary to carry it forward for analysis.

Open-water Intake Facilities and Locations

As discussed previously in Section 5.3.1, the CCC, MBNMS, SWRCB, and other resource agencies will not consider permitting an open-water intake unless a subsurface intake is proven to be infeasible or would result in greater environmental impacts. Although not anticipated, a subsurface intake could be deemed infeasible. If it were not possible to implement a subsurface intake for the proposed MPWSP, CalAm would need to consider an open-water intake (presented as Intake Options 2, 4, 6, 8, and 9). However, it is unnecessary to analyze every possible open water intake facility and location. Therefore, the comparison presented in Table 5.3-4 was used to identify the open water intake option capable of reducing environmental effects to the greatest degree possible, as described below.

Open-water options at Moss Landing (Options 6, 8 and 9) would avoid the noise and construction impacts at North of CEMEX (Option 2) and Potrero Road (Option 4) because of the existing industrial land uses in the Moss Landing area; however, no entrainment or impingement studies have been performed at either of these locations. Of the Moss Landing open-water options evaluated, Intake Option 8 (MLPP) would have fewer construction-related impacts because it would involve a modification to an existing facility. Intake Option 6 would have the greatest potential for construction-related impacts of the open-water options evaluated, due to the need to remove the existing diffuser and replace it with a new riser and wedgewire screens; due to structural modifications that would be required on the land side; and due to the impacts associated with installing and securing a length of new pipeline and riprap armoring on the seafloor.

TABLE 5.3-4
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (new construction)
4.2 GEOLOGY, SOILS, AND SEISMICITY							
Construction Activities: Construction would have an LSM impact related to potential increased soil and sand erosion.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
Operations and Facility Siting: LS impact related to exposure of people or structures to seismically-induced ground-shaking, or liquefaction and lateral spreading. LSM impact related to exposure of structures to coastal erosion and bluff retreat caused by sea level rise.	**Decreased.** No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.	**Decreased.** No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.	**Decreased.** No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.	**Increased.** Coastal erosion and scour from the caisson would be exacerbated by sea level rise. All other impacts would be similar to those of the proposed project.	**Decreased.** No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.	**Decreased.** No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.	**Similar.**
4.3 SURFACE WATER HYDROLOGY AND WATER QUALITY							
Construction Activities LS impact related to degradation of water quality due to soil erosion or toxic chemical releases and discharge of water produced during well drilling and development. No water quality impact from discharges of treated water and disinfectant from well drilling and development, however, LSM water quality impacts from discharges of treated water and disinfectant during Source Water Pipeline construction.	**Increased.** Greater impacts on water quality in Monterey Bay due to in-water construction activities.	**Similar.**	**Increased.** Greater impacts on water quality in Monterey Bay due to in-water construction activities.	**Increased.** Greater impacts on water quality in Monterey Bay due to in-water construction activities.	**Similar.**	**Increased.** Greater impacts on water quality in Monterey Bay due to in-water construction activities.	**Similar.**
Operations and Facility Siting: No alteration in drainage patterns such that on or offsite flooding would increase or the capacity of the stormwater drainage system would be exceeded. LS water quality impact due to slant well maintenance; increased erosion, siltation, and surface runoff due to alteration of drainage patterns; impedance or redirection of flood flows due to siting facilities in a 100-year flood hazard area; and exposure of people or structures to risk of loss, injury or death from flooding due to tsunamis or sea level rise.	**Similar.**	**Increased.** The parking lot at Potrero Road is within the 100-year flood zone. All other impacts would be similar to that of the proposed slant wells.	**Similar.**	**Similar.**	**Similar.**	**Decreased.** No impacts associated with siting facilities in a 100-year flood hazard area. Less impact related to tsunamis and sea level rise flooding because above ground facilities are outside the respective flood area.	**Similar.**
4.4 GROUNDWATER RESOURCES							
Construction Activities: LS impact related to interference with groundwater recharge, violation of any water quality standard, or degradation of groundwater quality.	**Decreased.** No impact.	**Similar.**	**Decreased.** No impact.	**Decreased.** No impact.	**Decreased.** No impact.	**Decreased.** Construction would have no impact related to interference of groundwater recharge, depletion of supplies, or water quality.	**Similar.** Construction would be similar to those of the proposed project. The same APMM identified for the proposed project would be implemented for this option.
Operations and Facility Siting: LSM impact related to depletion of groundwater supplies or interference with groundwater recharge and LSM impact related to violating water quality standards.	**Decreased**. Open-water intakes would not affect groundwater.	**Increased.** Operation and siting would be greater than the proposed project due to a greater percentage of feedwater coming from the groundwater basin. The APMM identified under the proposed project would also be applied for this option.	**Decreased**. Operational impacts would be decreased because the open-water intakes would not affect groundwater.	**Decreased**. Operational impacts would be decreased because the open-water intakes would not affect groundwater.	**Decreased**. Operational impacts would be decreased because the open-water intakes would not affect groundwater.	**Decreased**. Operational impacts would be decreased because the open-water intakes would not affect groundwater.	**Similar.** Operational impacts would be similar to those of the proposed project. The same APMM identified for the proposed project would be implemented for this option.

TABLE 5.3-4 (Continued)
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (*new construction*)
4.5 MARINE BIOLOGICAL RESOURCES							
Construction Activities: LS impact on candidate, sensitive, or special status species; and no impact related to interference with the movement of native resident or migratory fish or wildlife species. *Operations and Facility Siting:* LS impacts on candidate, sensitive, or special status species; potential conflict with provisions of an adopted habitat conservation plan (or similar plan); and interference with the movement of any native resident or migratory fish or wildlife species.	**Increased.** Impacts would be increased, except for the impact on the movement of fish or wildlife species during. New mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant. Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation is not available.	**Similar.** Impacts would be similar to and potentially less than those of the proposed project because the slant wells would be located farther back from the high tide line.	**Increased.** Impacts would be increased, except for the impact on the movement of fish or wildlife species during construction. New mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant. Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation were not available.	**Increased.** Impacts would be increased, except for the impact on the movement of fish or wildlife species during construction. New mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant. Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation were not available.	**Increased.** Construction impacts would be decreased because connection with existing screen would be inland. Impacts from operation would be increased and new mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant. Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation were not available.	**Increased.** Impacts would be increased, except for the impact on the movement of fish or wildlife species during construction. New mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant. Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation were not available.	**Similar.**
4.6 TERRESTRIAL BIOLOGICAL RESOURCES							
Construction Activities: LSM impact on candidate, sensitive, or special-status species; riparian habitat, critical habitat or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. Construction would not conflict with local tree ordinances.	**Decreased.** The impact of intake construction would be reduced since the construction area would be located within agricultural land behind the sand dunes. The construction area does not support federal wetlands, federal other waters, and /or waters of the State riparian areas, critical habitat, or sensitive natural communities so would not impact these resources. The intake would have similar impacts on candidate, sensitive, or special-status species. The intake would not conflict with local tree ordinances as there are no trees within the impact area.	**Decreased.** The intake construction would be located in a parking lot behind the sand dunes and would not directly impact sensitive natural communities or wetlands. However, wetlands, central dune scrub and other sensitive natural communities are located adjacent to the work area and could be impacted during construction. This intake would have a similar level of impacts on candidate, sensitive, or special-status species; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. The intake would not conflict with local tree ordinances as there are no trees within the impact area.	**Decreased.** The intake construction would be located in a parking lot behind the sand dunes and would not directly impact sensitive natural communities or wetlands. However, wetlands, central dune scrub and other sensitive natural communities are located adjacent to the work area and could be impacted during construction. This intake would have a similar level of impacts on candidate, sensitive, or special-status species; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. The intake would not conflict with local tree ordinances as there are no trees within the impact area.	**Decreased.** Construction of this intake includes construction of a new pump station onshore in ruderal or non-native grassland areas. No riparian habitat, critical habitat, or sensitive natural communities occur at the pump station site, so there would be a decreased level of impact on these resources This area could support special-status species and would have a similar level of impact on candidate, sensitive, or special-status species. The pump station would be located adjacent to Moss Landing Harbor, a potential federal and State other water and construction of the pump station could impact this feature. This intake would have a similar level of impact on federal wetlands, federal other waters, and/or waters of the State. No riparian habitat, critical habitat, or sensitive natural communities occur at the pump station site. There are trees located at the pump station site. Impacts on these trees could conflict with local tree ordinances and the impact would be similar.	**Decreased.** Construction/modification of this intake includes construction of a new pump station onshore in currently developed or ruderal areas with non-native trees. No riparian habitat, critical habitat, or sensitive natural communities occur at the pump station site, so there would be a decreased level of impacts on these resources. This area could support special-status species and therefore, similar to the proposed project, this impact would have a similar level of impact on candidate, sensitive, or special-status species. The pump station would be located adjacent to Moss Landing Harbor, and construction of the pump station could impact a similar level of federal wetlands, federal other waters, and/or waters of the State. There are trees located at the pump station site. Impacts on these trees could conflict with local tree ordinances and the impact would be similar.	**Increased.** Construction of the intake would occur within ruderal and agricultural areas dominated by non-native grassland and non-native trees and would not directly impact sensitive natural communities or wetlands. However, the construction area would be located adjacent to wetlands, riparian areas, and sensitive natural communities associated with Elkhorn Slough and these areas could be impacted by construction. This intake would have a similar level of impacts on candidate, sensitive, or special-status species; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. There are trees located at the pump station site. Impacts on these trees could conflict with local tree ordinances and the impact would be similar.	**Similar.** The impact of the intake construction would be similar to the MPWSP project intake as construction would occur at the same location and have the same construction disturbance area as the proposed project.

TABLE 5.3-4 (Continued)
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (*new construction*)
4.6 TERRESTRIAL BIOLOGICAL RESOURCES (cont.)							
Operations and Facility Siting: LSM impact on candidate, sensitive, or special-status species; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. No conflict with adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas, therefore NI.	**Decreased.** Operational activities would not impact federal wetlands, other federal waters, or waters of the State, riparian areas, critical habitat, or sensitive natural communities. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Similar.** Operational impacts would be similar since periodic maintenance cleaning would occur in the parking lot adjacent to sensitive biological resources and would have a similar level of impact related to the adverse effects on species identified as candidate, sensitive, or special-status; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, federal other waters, and/or waters of the State. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Decreased.** Operational activities would not impact federal wetlands, other federal waters, or waters of the State, riparian areas, critical habitat, or sensitive natural communities. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Decreased.** Operational activities would not impact federal wetlands, other federal waters, or waters of the State, riparian areas, critical habitat, or sensitive natural communities. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Decreased.** Operational activities would not impact federal wetlands, other federal waters, or waters of the State, riparian areas, critical habitat, or sensitive natural communities. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Decreased.** Operational activities would not impact federal wetlands, other federal waters, or waters of the State, riparian areas, critical habitat, or sensitive natural communities. Similar to the proposed project, the intake would not conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan since it is not located within any of these plan areas.	**Similar.**
4.7 HAZARDS AND HAZARDOUS MATERIALS							
Construction Activities: LS impacts related to transport, use and disposal of hazardous materials and the risk of fire during construction; LSM impact related to potential release of hazardous materials; and NI associated with siting the slant wells on a known hazardous materials site or with hazardous materials handling or emissions within 0.25 mile of a school.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
Operations and Facility Siting: Operation would have LS impacts related to the transport, use, and disposal of hazardous materials; and NI related to hazardous materials handling or emissions within 0.25 mile of a school or airport hazards.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.8. LAND USE, LAND USE PLANNING, AND RECREATION							
Construction, Operations, and/or Facility Siting Operation would have LS impacts related to consistency with applicable land use plans, policies, and regulations.	**Similar.**	**Increased.** Construction would have an increased but mitigable impact associated with disruption of established recreational land uses or closure of a recreational facility because it would require the temporary closure of the state beach parking. Operations would have an increased but	**Increased.** Construction would have an increased but mitigable impact associated with disruption of established recreational land uses because it would require the temporary closure of the state beach parking lot. Operational impacts would also be increased but mitigable	**Similar.**	**Increased.** Impacts would be increased because in-water work at the intakes screens result in an increased impact on recreational and commercial uses at the harbor. This temporary impact could be mitigated.	**Increased.** The impact associated with construction of this intake would be similar to that of the proposed project. The impacts associated with operation of the above-ground intake facilities would be increased compared to those of the proposed slant wells because the impacts	**Similar.**

TABLE 5.3-4 (Continued)
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (*new construction*)
4.8. LAND USE, LAND USE PLANNING, AND RECREATION (cont.)							
		mitigable impact related to land use compatibility because, it is assumed, the parking lot would have to be closed about every 5 years for slant well maintenance.	because of the permanent displacement of a portion of the parking lot for the intake pump station and because operation of the pump station would increase ambient noise levels.			associated with consistency with land use plans, policies, and regulations and with land use compatibility would be increased compared to the proposed project, due to the location of the preferred wet well and pump station in an area designated for agricultural use. New mitigation would need to be developed to reduce the impact.	
4.9 TRAFFIC AND TRANSPORTATION							
Construction Activities: LSM impacts from Source Water Pipeline construction-related increase in traffic safety hazards due to potential conflicts between large construction vehicles and other vehicles, bicyclists, and pedestrians; wear and tear on smaller haul-route roadways caused by heavy trucks transporting equipment and material to and from construction work areas; reduction in roadway capacity; emergency access impairment and the potential to impede vehicular, bicycle, or pedestrian traffic flow or disrupt public transportation.	**Similar.**	**Increased.** Impacts would be increased compared to those of the proposed project slant wells because the impact related to parking conditions would require partial or complete closure of the parking lot during construction. This impact could be reduced through mitigation.	**Increased.** Impacts would be increased compared to those of the proposed project slant wells because the impact related to parking conditions would require partial or complete closure of the parking lot during construction. This impact could be reduced through mitigation.	**Decreased.** Impacts associated with increased traffic safety hazards; and wear and tear on smaller haul routes would be somewhat less than those of the proposed project because this intake would involve less overall construction, and therefore fewer construction	**Decreased.** Impacts associated with, increased traffic safety hazards; and wear and tear on smaller haul routes would be somewhat less than those of the proposed project because this intake would involve less overall construction, and therefore fewer construction	**Decreased.** Impacts associated with increased traffic safety hazards; and wear and tear on smaller haul routes would be somewhat less than those of the proposed project because this intake would involve less overall construction, and therefore fewer construction	**Similar.**
The proposed project would have LS impacts related to temporary increase in traffic and parking conditions in public areas.		All other impacts would be similar to those of the proposed project.	All other impacts would be similar to those of the proposed project.	related trips and a shorter construction period; however the impact determination would remain the same as the proposed project.	related trips and a shorter construction period; however the impact determination would remain the same as the proposed project.	related trips and a shorter construction period; however the impact determination would remain the same as the proposed project.	
4.10 AIR QUALITY							
Construction Activities: In conjunction with other project components, LSM impact related to the generation of criteria air pollutants that could exceed ambient air quality standards. LS impact related to the exposure of sensitive receptors to pollutant concentrations and objectionable odors.	**Decreased.** Emissions over the duration of the construction period would be somewhat less because of less construction activity.	**Similar.** Emissions over the duration of the construction period would be somewhat less because of less construction activity. Somewhat greater exposure of sensitive receptors to construction-related pollutants due to closer proximity of slant well drill sites (within 1,000 feet) and Source Water Pipeline (within 50 feet) to a residential area. Net impacts would be similar.	**Similar.** Emissions over the duration of the construction period would be somewhat less because of less construction activity. Somewhat greater exposure of sensitive receptors to construction-related pollutants due to closer proximity of slant well drill sites (within 1,000 feet) and Source Water Pipeline (within 50 feet) to a residential area. Net impacts would be similar.	**Similar.** Emissions over the duration of the construction period would be somewhat less because of less construction activity. Somewhat greater exposure of sensitive receptors to construction-related pollutant concentrations would be similar; although a residence and RV park on Moss Landing Road would be within 500 feet the construction activities associated with the pump station, the amount of emissions and overall construction period would be expected to be less. Net impacts would be similar.	**Similar.** Although daily construction-related emissions would be similar, emissions over the duration of the construction period would be somewhat less because of less construction activity. The applicable MMs identified for the proposed project would apply and impacts would be LSM. Although an RV park on Moss Landing Road would be within 1,350 feet the construction activities associated with the pump station; exposure of sensitive receptors to construction-related pollutant concentrations would be less due to the reduced amount of emissions that would be emitted. The impact classification would be the same, LS.	**Decreased.** Emissions over the duration of the construction period would be somewhat less because of less construction activity.	**Similar.**

TABLE 5.3-4 (Continued)
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (*new construction*)
4.10 AIR QUALITY (cont.)							
Operations and Facility Siting: Operation of the proposed slant wells and associated intake facilities would have no impact related to the generation of emissions of criteria pollutants that could contribute to an exceedance of an ambient air quality standard; and would have NI related to the exposure of sensitive receptors to substantial pollutant concentrations.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.11 GREENHOUSE GASES							
Construction, Operations, and/or Facility Siting: Construction and operation amortized over 40 years would have LSM impacts related to GHG emissions and potential conflicts with Executive Order S-3-05 and AB 32.[16]	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.12 NOISE AND VIBRATION							
Construction Activities: LS impact from increase in ambient noise levels; exposure of people to, or generation of, noise levels in excess of established standards; and exposure of people to, or generation of, excessive groundborne vibration. However, Source Water Pipeline construction would have an LSM impact related to excessive groundborne vibration. Construction would conflict with construction time limits of the City of Marina. *Operations and Facility Siting:* LS impact related to permanent increase in ambient noise levels and exposure of people to, or generation of, operational noise levels in excess of established standards.	**Similar.**	**Increased.** Nighttime construction would result in sleep interference due to increased proximity of sensitive receptors compared with the proposed project and require mitigation. Vibration impacts would be decreased because construction would not occur adjacent to historic structures. All other noise impacts associated with construction and operation would be similar to the proposed project.	**Increased.** Nighttime construction would result in sleep interference due to increased proximity of sensitive receptors, and because operation of the intake pump station, could increase the ambient noise level by 5 or more dBA and require mitigation. Vibration impacts would be decreased because construction would not occur adjacent to historic structures. All other noise impacts associated with construction and operation would be similar to the proposed project.	**Decreased.** Construction activity would be further from sensitive land uses. Vibration impacts would be decreased because construction would not occur adjacent to historic structures. All other noise impacts associated with construction and operation would be similar to the proposed project.	**Decreased.** Use of the existing intakes would require substantially less construction activity and would occur further from sensitive land uses. Vibration impacts would be decreased because construction would not occur adjacent to historic structures. All other noise impacts associated with construction and operation would be similar to the proposed project.	**Decreased.** Construction activity would be further from sensitive land uses. Vibration impacts would be decreased because construction would not occur adjacent to historic structures. All other noise impacts associated with construction and operation would be similar to the proposed project.	**Similar.**
4.13 PUBLIC SERVICES AND UTILITIES							
Construction, Operations, and/or Facility Siting: LSM impact related to subsurface utilities disruption or relocation. No impact on landfill capacity but LSM impact on State or local recycling goals and waste diversion rates. LS impact on landfill capacity and state or local recycling goals; no impact related to the need for additional wastewater treatment or conveyance capacity.	**Similar.**	**Similar.**	**Similar.**	**Decreased.** Would result in less impact related to disruption or relocation of existing subsurface utilities. Other impacts would be similar.	**Similar.**	**Similar.**	**Similar.**

[16] Mitigation Measure 4.11-1, GHG Reductions Plan, requires net zero indirect emissions from electricity use during operation, which would reduce the significance impacts related to greenhouse gas emissions from significant and unavoidable to less than significant with mitigation.

TABLE 5.3-4 (Continued)
INTAKE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Subsurface Slant Wells in CEMEX Active Mining Area [includes associated facilities as far as Highway 1] *(new construction)*	**Intake Option 2: Open-Water Intake at North CEMEX** *(new construction)*	**Intake Option 3: Subsurface Slant Wells at Potrero Road** *(new construction)*	**Intake Option 4: Open-Water Intake at Potrero Road** *(new construction)*	***Intake Option 6: Open-Water Intake at Moss Landing*** *(new construction; use of existing caisson)*	***Intake Option 8: Open-Water Intakes at Moss Landing Power Plant*** *(new connections to existing intake screens)*	***Intake Option 9: Open-Water Intake at Moss Landing*** *(new construction)*	**Intake Option 13: Ranney Wells at CEMEX Active Mining Area** (*new construction*)
4.14 AESTHETICS							
Construction, Operations and/or Facility Siting: LS construction impact on scenic resources and visual character of the area; LSM impact due to light and glare during nighttime construction. LS operation impact on scenic resources and visual character; no impact related to permanent new sources of light and glare.	**Increased.** Adverse effects on scenic resources and visual character during construction and operations would be somewhat greater at this more primitive, pristine shoreline location. Impacts associated with operation would be similar to those of the proposed project.	**Similar.**	**Similar.**	**Increased.** This option would result in impacts related to effects on scenic resources or the visual character of the area during construction and operation at the pump station on the beach. All other impacts would be similar to the proposed project.	**Similar.**	**Similar.**	**Similar.**
4.15 CULTURAL RESOURCES							
Construction Activities: LSM impact related to a historical resource or historic properties; LSM impacts related to the potential to cause a substantial adverse change in the significance of an archaeological resource and related to the potential inadvertent discovery of human remains; and LS impact related to the destruction of a unique paleontological resource.	**Decreased.** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Decreased** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Decreased.** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Decreased.** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Decreased.** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Decreased.** No impact on historical resources or historic properties would occur. Similar impacts for archaeological resources, paleontological resources, and human remains.	**Similar.**
4.16 AGRICULTURE AND FOREST RESOURCES							
Construction, Operations, and/or Facility Siting: NI related to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; conflict with agricultural zoning or Williamson Act contracts; or otherwise resulting in the conversion of farmland to non-agricultural use. However, those impacts for the Source Water Pipeline would be LSM.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**[17]	**Similar.**
4.17 MINERAL RESOURCES							
Construction, Operations, and/or Facility Siting: LS impact on future recovery of mineral resources and temporary interference with active mining operations at the CEMEX facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Decreased.** This option would not temporarily interfere with active mining operations at the CEMEX sand mining facility.	**Similar.**
4.18 ENERGY RESOURCES							
Construction, Operations, and/or Facility Siting: LSM construction impact associated with the potential wasteful or inefficient use of energy. LS operation impacts due to use of electricity or fuel in an unnecessary, wasteful or inefficient manner and potential to impact, in conjunction with other project components, local or regional energy supplies.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.19 POPULATION AND HOUSING							
Construction, Operations, and/or Facility Siting: Construction and operation would have an LS impact related to direct growth inducement.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**

[17] Pursuant to the Monterey County Land Use Plan North County (1982), the property that would be disturbed for the intake is designated as Industrial – Coast Dependent –Heavy. This has changed from an increased impact to a similar impact from the Draft EIR/EIS to the Final EIR/EIS, because analysis in the Draft EIR/EIS incorrectly stated that the intake location would conflict with agricultural zoning and had the potential to result in conversion of farmland to non-agricultural use.

TABLE 5.3-5
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(modification of existing outfall pipe plus a new diffuser)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.2 GEOLOGY, SOILS, AND SEISMICITY							
Construction, Operations, and Facility Siting: The proposed project outfall would have no construction or operational impacts on geology, soils, or seismicity.	**Similar.** Impacts would be similar to those of the proposed project because this option would modify an existing facility.	**Increased.** There would be an increased potential for soil erosion or loss of topsoil during construction. Impacts from operations and facility siting would be increased because there would be a greater potential for liquefaction.	**Increased**. There would be an increased potential for soil erosion or loss of topsoil during construction. Impacts from operations and facility siting would be increased because there would be a greater potential for liquefaction.	**Increased.** Construction impacts would be similar to those of the proposed project because this is option would modify an existing facility. Impacts from operations and facility siting would be increased because there would be a greater potential for liquefaction. Assuming the outfall facilities would be located in an area of the former National Refractories site that would not be subject to flooding related to sea level rise, all other impacts also would be similar to those of the proposed project outfall.	**Increased**. There would be an increased potential for soil erosion or loss of topsoil during construction. Impacts of operation and siting would be increased due to the potential for the site to be subject to coastal retreat due to sea level rise, and potential for the new pipeline to encounter corrosive soils,. There would also be a greater potential for liquefaction.	**Increased.** Impacts would be similar to those of the proposed project because this is option would modify an existing facility. Impacts from operations and facility siting would be increased because there would be a greater potential for liquefaction.	**Increased.** There would be an increased potential for soil erosion or loss of topsoil during construction. There would be an increased potential for the new pipeline to encounter corrosive soils (proposed project had no impact related to corrosive soils). There would also be a greater potential for liquefaction.
4.3 SURFACE WATER HYDROLOGY AND WATER QUALITY							
Construction Activities: No construction- related impacts on surface water hydrology or water quality.	**Increased.** Water quality impacts would increase due to dewatering effluent discharges; as well as from increased soil erosion, inadvertent toxic chemical releases, and treated water and disinfectant discharges from existing and new pipelines.	**Increased**. Water quality impacts would increase due to discharges of dewatering effluent, as well as from increased soil erosion, inadvertent toxic chemical releases and treated water and disinfectant discharges from existing and new pipelines.	**Increased.** Water quality impacts would increase due to discharges of dewatering effluent, as well as from increased soil erosion, inadvertent toxic chemical releases and treated water and disinfectant discharges from existing and new pipelines	**Increased.** Water quality impacts would increase due to discharges of dewatering effluent, as well as from increased soil erosion, inadvertent toxic chemical releases and treated water and disinfectant discharges from existing and new pipelines.	**Increased.** Water quality impacts would increase due to discharges of dewatering effluent, as well as from increased soil erosion, inadvertent toxic chemical releases and treated water and disinfectant discharges from existing and new pipelines.	**Similar.** Impacts would be similar to those of the proposed project because this is an existing facility.	**Increased.** Water quality impacts would increase due to discharges of dewatering effluent, as well as from increased soil erosion, inadvertent toxic chemical releases and treated water and disinfectant discharges from existing and new pipelines
Operations and Facility Siting: LS impact related to violation of water quality standards or waste discharge requirements: no plume modeling was conducted and impacts from the brine were not considered for this, or any option. No other impacts related to surface water hydrology or water quality.	**Similar.**	**Increased.** Flooding risk would increase because the eastern end of the outfall (on the east side of the dunes) is in an identified tsunami inundation area, an area at risk of flooding due to sea level rise, and a dam inundation area; the outfall and connecting discharge pipeline would be underground in this area. Other impacts similar to those of the proposed project.	**Increased.** Flooding risk would increase because the eastern end of the outfall (on the east side of the dunes) is in an identified tsunami inundation area, an area at risk of flooding due to sea level rise, and a dam inundation area; the outfall and connecting discharge pipeline would be underground in this area. Other impacts similar to those of the proposed project.	**Increased.** Flooding risk would increase because the eastern end of the outfall (on the east side of the dunes) is in an identified tsunami inundation area, an area at risk of flooding due to sea level rise. The impact would be greater than for Options 2, 3, and 5), because the above-ground facilities associated with this outfall (such as a pump station) are assumed to also be located here. Mitigation would be required. Other impacts would be similar to those of the proposed project.	**Increased**. Flooding risk would increase because the eastern terminus of the outfall (on Sandholdt Road) is in an identified tsunami inundation area, an area at risk of flooding due to sea level rise, and a dam inundation area; the outfall would be underground although the connecting discharge pipeline may be above-ground a short distance away, and therefore vulnerable, if attached to the underside of the Sandholdt Bridge. Other impacts would be similar to those of the proposed project.	**Increased.** Impacts would be increased to an LS impact because the MLPP disengaging basin is in an area at risk of flooding due to sea level rise. All other impacts are similar to the proposed project.	**Increased**. Impacts would be increased to an LS due to risk of flooding due to sea level rise, because the above-ground facilities associated with the outfall (such as the pump station) were located at the former tank farm on Dolan Road (which is where the DeepWater Desal Project proposes to locate a desalination plant and other facilities and is in an area at risk of flooding due to sea level rise). Other impacts would be similar to the proposed project.
4.4 GROUNDWATER RESOURCES							
Construction Activities: There would be no construction-related impacts on groundwater resources.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
Operations and Facility Siting: There would be no impacts related to operations on groundwater resources.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**

TABLE 5.3-5 (Continued)
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(new construction to MRWPCA plus modification of existing outfall)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.5 MARINE BIOLOGICAL RESOURCES							
Construction Activities: There would be no construction-related impacts on marine resources.	**Increased.** Marine biological impacts would be greater because attaching and anchoring the diffuser would involve in-water work and disturbance of the seafloor within MBNMS. Impacts include: physical disruption of sediments and mortality of resident epifauna and infauna; increased turbidity from sediment resuspension; and disruption of foraging by bottom-feeding fishes. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.	**Increased.** Marine biological impacts would be greater because the new outfall pipeline would be located in MBNMS and entail disturbance of the seafloor and in-water work where the outfall pipeline emerges from subsurface and the diffuser was attached and anchored. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, increased turbidity from sediment resuspension and disruption of foraging by bottom-feeding fishes. The construction zone runs through sensitive habitat within approximately 0.5 mile of shore used by numerous surf perches, grunion, seabass, smelt and squid for spawning, mostly in the spring and summer months. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.	**Increased.** Marine biological impacts would be greater because the new outfall pipeline would be located in MBNMS and entail disturbance of the seafloor and in-water work where the outfall pipeline emerges from subsurface and the diffuser was attached and anchored. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, increased turbidity from sediment resuspension and disruption of foraging by bottom-feeding fishes. The construction zone runs through sensitive habitat within approximately 0.5 mile of shore used by numerous surf perches, grunion, seabass, smelt and squid for spawning, mostly in the spring and summer months. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.	**Increased.** Marine biological impacts would be greater because of in-water work and disturbance of the seafloor needed to repair the existing outfall pipeline and to attach and anchor a new diffuser within MBNMS. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, increased turbidity associated with sediment resuspension, and disruption of foraging by bottom-feeding fishes. The construction zone runs through sensitive habitat within approximately 0.5 mile of shore used by numerous surf perches, grunion, seabass, smelt and squid for spawning, mostly in the spring and summer months. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.	**Increased.** Marine biological impacts would be greater because the new outfall pipeline would be located in MBNMS and entail disturbance of the seafloor and in-water work where the outfall pipeline emerges from subsurface and the diffuser was attached and anchored. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, increased turbidity associated with sediment resuspension, and disruption of foraging by bottom-feeding fishes. The construction zone runs through sensitive habitat within approximately 0.5 mile of shore used by numerous surf perches, grunion, seabass, smelt and squid for spawning, mostly in the spring and summer months. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.	**Increased.** Marine biological impacts would be greater because of in-water work and disturbance of the ocean floor associated with attaching and anchoring a new diffuser within MBNMS. It is assumed a new diffuser would be required for brine discharge under this option due to anticipated reductions in the MLPP cooling water discharges. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, although turbidity would not be increased as much as for the other options because the outfall's nearshore location is very sandy without much fine material. Foraging by bottom-feeding fishes and sea otters could be disrupted in the disturbed area until biological communities recovered. The construction zone is within sensitive habitat within approximately 0.5 mile of shore used by numerous surf perches, grunion, seabass, smelt and squid for spawning, mostly in the spring and summer months. Being very near the mouth of Elkhorn Slough, construction activity at this site also has the potential of affecting the large group of sea otters that frequent the area west of the Highway 1 bridge. Controls on construction activities would be needed to avoid injuries to otters.	**Increased.** Marine biological impacts would be greater because the new outfall pipeline would be located in MBNMS and entail disturbance of the seafloor and in-water work where the outfall pipeline emerges from subsurface and the diffuser was attached and anchored. Impacts on marine resources would be due to the physical disruption of the sediments and mortality of resident epifauna and infauna, increased turbidity associated with sediment resuspension, and disruption of foraging by bottom-feeding fishes. New mitigation would be required to ensure appropriate procedures and/or timing to reduce potential impacts.
Operations and Facility Siting: Operation would have LSM impacts related to potential effects of candidate, sensitive, or special-status species; interference with the movement of any native resident or migratory fish or wildlife species; and conflict with adopted plans.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.	**Similar.** Impacts would be similar to the impacts of the proposed project, assuming a diffuser and operational controls are adequate to meet Ocean Plan Water Quality Objectives.

TABLE 5.3-5 (Continued)
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(new construction to MRWPCA plus modification of existing outfall)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.6 TERRESTRIAL BIOLOGICAL RESOURCES							
Construction Activities: There would be NI on terrestrial biological resources.	**Similar.** Modification of the existing outfall would occur in the marine environment and would not be expected to impact terrestrial biological resources, which is similar to the proposed project.	**Increased.** Construction of a new outfall would occur within agricultural land behind the sand dunes. The construction area does not support federal wetlands, federal other waters, and /or waters of the State, riparian areas, critical habitat, or sensitive natural communities, so would have no impacts to these resources, which is similar to the proposed project. The outfall would have increased impacts on special-status species such as birds protected by the federal Migratory Bird Treaty Act. Similar to the proposed project, the intake would not conflict with local tree ordinances as there are no trees within the impact area, therefore NI.	**Increased.** Construction activities would avoid sensitive natural resources (by using jack and bore techniques under the slough), but construction would still occur adjacent to wetlands and sensitive natural communities associated with the slough and sand dunes and would have impacts on these biological resources as well as special-status species, such as western snowy plover, that could occur in this area. Similar to the proposed project, the outfall would not conflict with local tree ordinances as there are no trees within the impact area,	**Similar.** Modification of the existing outfall would occur in the marine environment and would not be expected to impact terrestrial biological resources, which is similar to the proposed project.	**Increased.** Impacts from all construction activities would occur in previously disturbed areas. Therefore, it is anticipated that there would not be direct impacts on wetlands or natural communities. However, construction would occur adjacent to central dune scrub and wetlands associated with the slough could be impacted by construction. Construction of the outfall would have impacts on candidate, sensitive, or special-status species; riparian habitat, critical habitat, or other sensitive natural communities; and federal wetlands, other federal waters, or waters of the State. Similar to the proposed project, the outfall would not conflict with local tree ordinances as there are no trees within the impact area,.	**Increased.** Impacts from all construction activities would occur in previously disturbed areas away from wetlands and sensitive natural communities. Therefore, it would not impact sensitive natural communities or wetlands. Few special-status species have potential to be impacted by this alternative, but there is potential for construction activities to impact special-status species such as birds protected by the federal Migratory Bird Treaty Act. Similar to the proposed project, the outfall would not conflict with local tree ordinances as there are no trees within the impact area,.	**Increased.** Impacts from all construction activities would occur in previously disturbed areas away from wetlands and sensitive natural communities. Therefore, it would not impact sensitive natural communities or wetlands. Few special-status species have potential to be impacted by this alternative, but there is potential for construction activities to impact special-status species such as birds protected by the federal Migratory Bird Treaty Act. Similar to the proposed project, the outfall would not conflict with local tree ordinances as there are no trees within the impact area.
Operations and Facility Siting: Use of the existing outfall structure would have NI on terrestrial biological resources.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.7 HAZARDS AND HAZARDOUS MATERIALS							
Construction Activities: There would be NI related to hazards or hazardous materials during construction.	**Increased.** Impacts would be increased because the construction could include the transport, use, and disposal of hazardous materials. All other impacts would be similar to those of the proposed project outfall.	**Increased.** Impacts would be increased because construction could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would increase. All other impacts would be similar to those of the proposed project.	**Increased.** Impacts would be increased because construction could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would be increase. All other impacts would be similar to those of the proposed project.	**Increased.** Impacts would be increased because repairs could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would be increase. All other impacts would be similar to those of the proposed project.	**Increased.** Impacts would be increased because construction could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would increase. All other impacts would be similar to those of the proposed project.	**Increased.** Impacts would be increased because construction could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would increase. All other impacts would be similar to those of the proposed project.	**Increase.** Impacts would be increased because construction could include the transport, use, and disposal of hazardous materials. The potential for the release of hazardous materials into the environment would be greater. The risk of wildland fires would increase. All other impacts would be similar to those of the proposed project.
Operations and Facility Siting: There would be an LS impact associated with locating project facilities within an airport land use plan area and no other operational or siting impacts related to hazards or hazardous materials during construction.	**Similar.**	**Decreased.** This option would not be located in an airport land use plan area, therefore no impact would occur.	**Decreased**. This option would not be located in an airport land use plan area, therefore no impact would occur.	**Decreased**. This option would not be located in an airport land use plan area, therefore no impact would occur.	**Decreased** This option would not be located in an airport land use plan area, therefore no impact would occur.	**Decreased.** This option would not be located in an airport land use plan area, therefore no impact would occur.	**Decreased**. This option would not be located in an airport land use plan area, therefore no impact would occur.

TABLE 5.3-5 (Continued)
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(new construction to MRWPCA plus modification of existing outfall)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.8 LAND USE, LAND USE PLANNING, AND RECREATION							
Construction Activities: There would be NI on land use, land use planning, and recreation.	**Similar.**	**Similar.**	**Increased.** Impacts would be increased because construction would require temporary closure of the beach parking lot, requiring mitigation measures.	**Similar.**	**Increased.** Impacts would be increased due to potential disruption at the State Beach which borders or is close to the southern border of the site.	**Similar.**	**Similar.**
Operations and Facility Siting: Operation would have NI related to consistency with applicable land use plans, policies, and regulations and compatibility with adjacent land uses.	**Similar.**	**Similar.**	**Increased**. Impacts would be increased because periodic maintenance could require access to the outfall from the construction area, which would temporarily displace some beach parking.	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.9 TRAFFIC AND TRANSPORTATION							
Construction Activities: Construction activities would have NI on traffic and transportation.	**Increased**. Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation mitigation measures would be required.	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation mitigation measures would be required	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation of the mitigation measures would be required.	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation of mitigation measures would be required.	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation of mitigation measures would be required.	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation of mitigation measures would be required.	**Increased.** Impacts would be increased because this option would involve construction; therefore, there would be an increase in construction related vehicles and traffic. The increase of construction related vehicles could increase traffic delays; cause hazards or disruptions to vehicles, bicyclists or pedestrians; increase wear-and-tear on roadways; and, impaired emergency access. Implementation of mitigation measures would be required.
Operations and Facility Siting: Operation and maintenance would have an LS impact related to long-term traffic increases on regional and local roadways.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.10 AIR QUALITY							
Construction Activities: There would be no construction and NI on air quality.	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.	**Increased**. Impacts would be increased to there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.	**Increased**. Impacts would be increased because there would be construction associated emissions of criteria air pollutants greater than the proposed project. The impact related to the exposure of sensitive receptors to substantial pollutant concentrations or create objectionable odors would also be greater.
Operations and Facility Siting: Operation would have NI related to increased emissions of criteria air pollutants and exposure of sensitive receptors to substantial pollutant concentrations.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**

TABLE 5.3-5 (Continued)
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(new construction to MRWPCA plus modification of existing outfall)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.11 GREENHOUSE GASES							
Construction and Operations: There would be no construction- or operational-related impacts on GHG emissions; NI.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.12 NOISE AND VIBRATION							
Construction Activities: There would be NI related to noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.	**Increased.** Impacts would be greater due to the potential for construction to generate noise and groundborne vibration.
Operations and Facility Siting: Operation would have LS impacts related to a permanent increase in ambient noise levels and exposure of people to or generation of excessive operational noise levels.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.13 PUBLIC SERVICES AND UTILITIES							
Construction Activities: There would be NI related to disruption of or need to relocate local utilities during construction.	**Increased.** Impacts would be greater because inserting the interior pipeline could disrupt use of the outfall and would require mitigation measures.	**Increased.** Impacts would be greater because construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.	**Increased.** Impacts would be increased to greater construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.	**Increased.** Impacts would be greater because construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.	**Increased.** Impacts would be greater because construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.	**Increased.** Impacts would be greater because construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.	**Increased.** Impacts would be greater because construction could result in the disruption or relocation existing subsurface utilities. This option could also adversely impact landfill capacity.
Operations and Facility Siting: There would be NI related to the need for new or physically altered government facilities, LS impacts related to effects on landfill capacity or the need for new wastewater facilities, and an LSM impact related to increased corrosion of the outfall and diffuser.	**Increased.** This option could have greater impacts related to the capacity of the MRWPCA outfall because the interior pipeline might restrict wastewater flows. All other operational impacts would be similar to those of the proposed project outfall.	**Decreased.** This option would not impact the MRWPCA outfall and diffuser. All other operational impacts would be similar to those of the proposed project outfall.	**Decreased.** This option would not impact the MRWPCA outfall and diffuser. All other operational impacts would be similar to those of the proposed project outfall.	**Decreased.** This option would not impact the MRWPCA outfall and diffuser. All other operational impacts would be similar to those of the proposed project outfall.	**Decreased.** This option would not impact the MRWPCA outfall and diffuser. All other operational impacts would be similar to those of the proposed project outfall.	**Similar**. There would not impact the MRWPCA outfall and diffuser, but the brine would have similar impact related to increase corrosion in the existing outfall pipeline. All other operational impacts would be similar to those of the proposed project outfall.	**Decreased**. This option would not impact the MRWPCA outfall and diffuser. All other operational impacts would be similar to those of the proposed project outfall.
4.14 AESTHETICS							
Construction Activities: There would be NI from construction on aesthetics resources.	**Similar.**	**Increased.** Construction of the outfall would result in greater impacts on scenic resources and temporary sources of light and glare.	**Increased.** Construction of the outfall would result in greater impacts on scenic resources and temporary sources of light and glare.	**Similar.**	**Increased.** Construction of the outfall would result in greater impacts on scenic resources and temporary sources of light and glare.	**Increased.** Construction of the outfall would result in greater impacts on scenic resources and temporary sources of light and glare.	**Increased.** Construction of the outfall would result in greater impacts on scenic resources and temporary sources of light and glare.
Operations and Facility Siting: Operation would have NI on scenic resources.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**

TABLE 5.3-5 (Continued)
OUTFALL OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: Existing MRWPCA Outfall Pipeline *(existing outfall)*	**Outfall Option 1: Modified MRWPCA Outfall and New Diffuser** *(new construction to MRWPCA plus modification of existing outfall)*	**Outfall Option 2: New Outfall at North CEMEX** *(new construction)*	**Outfall Option 3: New Outfall at Potrero Road** *(new construction)*	***Outfall Option 4: Modified National Refractories Outfall*** *(modifications to existing outfall, including repairs and new diffuser)*	**Outfall Option 5: New Outfall at Sandholdt Road** *(new construction)*	***Outfall Option 6: New Connection to Existing MLPP Cooling System Outfall CalAm #3***	***Outfall Option 7: New Outfall at Moss Landing [DeepWater Desal Outfall]*** *(new construction)*
4.15 CULTURAL RESOURCES							
Construction, Operations and/or Facility Siting There would be NI on cultural resources.	**Similar.**	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.	**Increased.** The potential to adversely effects archaeological resources, and human remains would be increased requiring mitigation. The impacts related to paleontological resources would also be greater.
4.16 AGRICULTURE AND FOREST RESOURCES							
Construction, Operations, and/or Facility Siting: There would be NI on agricultural and forest resources.	**Similar.**	**Increased**. Impacts would be increased because construction could temporarily disrupt and displace Farmland of Statewide Importance, and could conflict with existing zoning for agricultural uses or Williamson Act contracts.	**Increased.** Impacts would be increased because construction could temporarily disrupt and displace Farmland of Statewide Importance, and could conflict with existing zoning for agricultural uses or Williamson Act contracts.	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.17 MINERAL RESOURCES							
Construction, Operations, and/or Facility Siting: There would be NI on mineral resources.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.18 ENERGY RESOURCES							
Construction Activities: There would be NI on energy resources.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.	**Increased.** Impacts would be increased because construction would require the use of fuel and/or energy.
Operations and Facility Siting: Operation would have LS impacts related to the use of large amounts of fuel and energy and constrains on the local or regional energy supplies.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**
4.19 POPULATION AND HOUSING							
Construction, Operations, and/or Facility Siting: Construction and operation would have an LS impact related to direct growth inducement.	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**	**Similar.**

TABLE 5.3-6
DESALINATION PLANT SITE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: MPWSP Desalination Plant **Site on Charles Benson Road** *(new construction)*	**Desalination Plant Site Option 2: Moss Landing** **National Marine Refractories Site** *(new construction)*	**Desalination Plant Site Option 3: Moss Landing Power Plant** **East Tank Farm Parcel** *(new construction)*
4.2 GEOLOGY, SOILS, AND SEISMICITY		
Construction Activities: Construction would have LSM impact associated with the potential to increase soil erosion or loss of topsoil. *Operations, and Maintenance:* Operation and maintenance would have a LS impact as a result of the potential to expose people or structures to seismically-induced groundshaking, liquefaction, lateral spreading, and corrosive soils. There would be NI from the potential to expose people or structures to landslides, coastal retreat due to sea level rise, subsidence, expensive soil and soil disposal.	**Similar**	**Similar**
4.3 SURFACE WATER HYDROLOGY AND WATER QUALITY		
Construction Activities: Construction would have a LS impact related to the degradation of water quality associated with increased soil erosion, inadvertent releases of toxic chemicals, and a LSM impact from construction-related discharges of dewatering effluent from open excavations, and water produced during well drilling and development. *Operations and Maintenance:* The potential to violate water quality standards or waste discharge requirements or result in an adverse water quality effect as a result of brine discharges during project operation would be a LS impact. Operation and maintenance would have a LS impact from the alteration of drainage patterns in a way that would increase erosion, siltation, the amount of surface runoff, increase flooding on- or offsite, or exceed the capacity of the stormwater drainage systems. Furthermore, the potential to expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise would be LS. No impacts would result from the impeding or redirecting flood flows, or exposing people or structure to risk of loss, injury, or death from flooding due to a tsunami.	**Increased** – In addition to the impacts identified for the proposed project, this option could expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise and coastal flooding. Other impacts would be similar to the proposed project.	**Similar.**[18]
4.4 GROUNDWATER RESOURCES		
Construction Activities: Construction would not substantially deplete groundwater supplies, interfere substantially with groundwater recharge, nor would construction violate water quality standards or otherwise degrade water quality and there would be NI. *Operations and Maintenance:* For the reasons stated above, operation and maintenance would have NI on groundwater resources.	**Similar**	**Similar**
4.5 MARINE RESOURCES		
Construction, Operations and Maintenance: There would be no impact on Marine Resources as a result of construction or operations at desalination plant location at Charles Benson Road.	**Similar**	**Similar**
4.6 TERRESTRIAL BIOLOGICAL RESOURCES		
Construction Activities: Project-related construction activities would have LSM impacts related to the adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification; and conflict with local tree ordinances. *Operations and Maintenance:* Operations and maintenance would result in LSM impacts on species identified as candidate, sensitive, or special-status, either directly or through habitat modification and NI to riparian habitat, critical habitat, or other sensitive natural communities; federal wetlands, federal other waters, and/or waters of the State; or conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	**Increased** - This desalination site option would likely have similar impacts on biological resources. However, two drainages may be considered jurisdictional features by the USACE, RWQCB and/or CCC. Therefore, this site option has an increased potential to adversely affect federally protected wetlands, federal "other waters", and Waters of the State and would require mitigation for impacts on wetlands or other waters. Operations would have similar impacts on special-status species and NI to wetlands or other waters; riparian habitat, critical habitat, or other sensitive natural communities; or conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	**Increased** – This desalination option is located within non-native grassland and scrub habitat, which may be considered a sensitive natural community. Additionally, a potential wetland is located on the site. This desalination plant would have adverse environmental effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification; riparian habitat, critical habitat, or sensitive natural communities; federal wetlands, federal other waters, and/or waters of the State; and conflict with local tree ordinances. Operations of this desalination plant would have similar impacts on special-status species and no impacts on wetlands or other waters; riparian habitat, critical habitat, or other sensitive natural communities; or conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

[18] The MBRWP plant site would be outside of both the tsunami inundation area and the 100-year flood zone. This has changed from an increased impact to a similar impact from the Draft EIR/EIS to the Final EIR/EIS, because analysis in the Draft EIR/EIS incorrectly stated that the MBRWP plant site would be within a tsunami inundation area and a 100-year flood zone.

TABLE 5.3-6 (Continued)
DESALINATION PLANT SITE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: MPWSP Desalination Plant Site on Charles Benson Road *(new construction)*	**Desalination Plant Site Option 2: Moss Landing National Marine Refractories Site** *(new construction)*	**Desalination Plant Site Option 3: Moss Landing Power Plant East Tank Farm Parcel** *(new construction)*
4.7 HAZARDS AND HAZARDOUS MATERIALS		
Construction Activities: Construction would have an LS impact associated with the potential to create a hazard to the public through the routine transport, use and disposal of hazardous materials and an LSM impact associated with the potential to release hazardous materials to the environment. The increased risk of fire during construction would be an LS impact. There would be NI from siting the MPWSP Desalination Plant on a known hazardous materials site and no impact from hazardous materials handling or hazardous emissions within 0.25 mile of a school during construction. *Operations and Maintenance:* Compliance with applicable laws and regulations would ensure that periodic maintenance activities would have an LS impact associated with the transport, use, and disposal of hazardous materials. There would be NI from hazardous materials handling or hazardous emissions within 0.25 mile of a school during operation. The MPWSP Desalination Plant would be located within an airport land use plan area; therefore the impact would be LS.	**Similar**	**Similar**
4.8 LAND USE, LAND USE PLANNING, AND RECREATION		
Construction Activities: There are no parks or recreational facilities near the MPWSP Desalination Plant site; NI related to disruption or closure of recreational facilities. *Operations and Maintenance:* LS impact with respect to land use compatibility because the proposed project would not preclude continued use of other adjacent lands for grazing and other agricultural activities.	**Similar**	**Similar**
4.9 TRAFFIC AND TRANSPORTATION		
Construction Activities: Construction activities would have LSM impacts due to a temporary increase in traffic from construction workers and trucks traveling to and from the construction work areas and increases in traffic safety hazards due to potential conflicts between large construction vehicles and other vehicles, bicyclists, and pedestrians. Wear and tear on smaller haul route roadways caused by heavy trucks transporting equipment and material to and from construction work areas would be an LSM impact. Construction would have an LS impact on the capacity of roadways, emergency access and disruptions to public transportation, bicycle, and pedestrian facilities during construction. *Operations and Maintenance:* The impact of long-term traffic increases from the operation and maintenance activities would be LS.	**Similar**	**Similar**
4.10 AIR QUALITY		
Construction Activities: Emissions of criteria air pollutants and contribution to the violation of an ambient air quality standard during construction of the MPWSP Desalination Plant (and all other project components) would be LSM. The MPWSP Desalination Plant (and all other project components) potential to expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during construction would be LS. *Operations and Maintenance:* Operation and maintenance would have LS impacts related to the increase of criteria pollutant emissions that could affect regional air quality and the potential to expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	**Similar**	**Similar**

TABLE 5.3-6 (Continued)
DESALINATION PLANT SITE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: MPWSP Desalination Plant **Site on Charles Benson Road** *(new construction)*	**Desalination Plant Site Option 2: Moss Landing** **National Marine Refractories Site** *(new construction)*	**Desalination Plant Site Option 3: Moss Landing Power Plant** **East Tank Farm Parcel** *(new construction)*
4.11 GREENHOUSE GASES		
Construction Activities: The contribution to climate change of GHG emissions from construction, in conjunction with other project construction, amortized over the 30 month construction period would have a LSM impact. *Operations and Maintenance:* The contribution to climate change of GHG emissions from operation and maintenance, in conjunction with other project operations would be LSM.	**Similar**	**Similar**
4.12 NOISE AND VIBRATION		
Construction Activities: Construction would have LS impacts due to a temporary increase in ambient noise level, exposure to construction noise levels in excess of standards established, and exposure to excessive groundborne vibration during construction. These impacts would be LS because construction noise and vibration levels would be below established thresholds and standards. *Operations and Maintenance:* For the reasons stated above operation and maintenance would have a LS impact as a result of noise and vibration.	**Similar**	**Increased** – Due to the site proximity to nearby residences to this desalination site option, construction at this location has an increased potential to violate established standards and expose sensitive receptors to increase vibrations. Furthermore, operation of a desalination plant on this site would likely violate established standards set by Monterey County and could require mitigation.
4.13 PUBLIC SERVICES AND UTILITIES		
Construction Activities: Project-related construction activities would have LSM impacts due to the disruption or relocation of regional or local utilities and the potential to exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste. Construction would not result in the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any public services, therefore NI would occur. *Operations and Maintenance:* Operation and maintenance would have an LS impact related to the potential to exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste. Impacts would be LSM as the MPWSP Desalination Plant could result exceed wastewater treatment requirements of the Central Coast RWQCB. There would be no need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any public services, therefore no impact would occur.	**Similar**	**Similar**
4.14 AESTHETICS		
Construction Activities: Construction would have an LS impact on scenic resources, visual character or light and glare, as there are no designated scenic roadways or scenic viewpoints from which the construction activities would be visible from and the MPWSP Desalination Plant would be constructed near similar types of industrial development. Furthermore, there are no nearby residences that could be affected by lighting. *Operations and Maintenance:* For the reasons stated above, operation and maintenance would have an LS impact on aesthetics resources.	**Similar**	**Increased** – This desalination site option would be located within 500 feet of nearby residences, which could be affected by night time lighting and would require mitigation to reduce impacts. Other impacts would be similar to the proposed project.
4.15 CULTURAL RESOURCES		
Construction Activities: No historical resources eligible for listing in the CRHR or historic properties eligible for listing in the NRHP are located within the indirect APE for the MPWSP Desalination Plant. Therefore, there would be NI on historical resources from construction. The potential inadvertent discovery of human remains is considered an LSM impact. Construction would result in an LS impact related to the direct or indirect destruction of a unique paleontological resource or site, or unique geologic feature during construction.	**Similar**	**Similar**

TABLE 5.3-6 (Continued)
DESALINATION PLANT SITE OPTIONS EVALUATION – PRELIMINARY COMPARISON OF DIRECT ENVIRONMENTAL IMPACTS

Proposed Project: MPWSP Desalination Plant **Site on Charles Benson Road** *(new construction)*	**Desalination Plant Site Option 2: Moss Landing** **National Marine Refractories Site** *(new construction)*	**Desalination Plant Site Option 3: Moss Landing Power Plant** **East Tank Farm Parcel** *(new construction)*
4.16 AGRICULTURE AND FOREST RESOURCES		
Construction Activities: Construction would have NI related to conversion of important farmland, conflicts with agricultural zoning or land with Williamson Act contracts, or otherwise change the existing environment in a way that would result in the conversion of farmland to non-agricultural use because the MPWSP Desalination Plant would not be located in an area mapped as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; on land under Williamson Act contract. *Operations and Maintenance:* For the reasons stated above operation and maintenance would have NI on agricultural resources.	**Similar**	**Similar**
4.17 MINERAL RESOURCES		
Construction Activities: There is no active mining in the immediate vicinity of the MPWSP Desalination Plant. The MPWSP Desalination Plant would be constructed in an area designated as MRZ-2. Development on the site could limit the future recovery of mineral resources beneath the plant footprint. Therefore, impacts would be LS. *Operations and Maintenance:* For the reasons stated above operation and maintenance would have a LS impact.	**Similar**	**Similar**
4.18 ENERGY CONSERVATION		
Construction Activities: Construction of the MPWSP Desalination Plant (and all other project components) would require the use of fuels and electricity, as well as indirect energy use associated with the production of construction materials. The potential for project construction to use large amounts of fuel or energy in a wasteful manner would be a LSM. *Operations and Maintenance:* While operation and maintenance would use fossil fuels and electricity, the use of such energy would not be unnecessary, wasteful or inefficient; therefore, the impact of fuel and energy use would be LS. Impacts of operation, in conjunction with other components, on local or regional energy supplies or the need for expanded generation or transmission facilities would also be LS.	**Similar**	**Similar**
4.19 POPULATION AND HOUSING		
Construction Activities: Construction of the MPWSP Desalination Plant (and all other project components) would require up to 400 construction workers. The potential for project construction to induce substantial population growth as a result of construction would be LS as proposed project would not create employment opportunities substantially greater than would normally be available to construction workers in the area. *Operations and Maintenance:* During operation and maintenance, it is assumed that approximately 25 to 30 facility operators and support personnel would operate the MPWSP Desalination Plant. This incremental increase would not induce population growth in the region; therefore the direct growth-inducing impact of the project would be LS.	**Similar**	**Similar**

Intake Option 9 (DeepWater Desal) would have fewer operational impacts than the other open water intakes because of its proposed location and design: studies conducted by DeepWater Desal suggest the abundance of marine species is reduced at this deep water location. When compared to the other open-water intakes evaluated, Intake Option 9 could have fewer impacts from impingement and entrainment than the other open water intakes considered but increased construction impacts when compared to Option 8. Construction impacts are more easily mitigated than the operational impacts from impingement and entrainment; therefore, Intake Option 9 was carried forward into the development of whole alternatives (Alternative 2 in Section 5.4).

A summary of the intake options comparison table is presented below in **Table 5.3-7**.

TABLE 5.3-7
SUMMARY OF INTAKE OPTIONS COMPARISON TABLE

	Intake Option 2	Intake Option 3	Intake Option 4	Intake Option 6	Intake Option 8	Intake Option 9	Intake Option 13
4.2 Geology, Soils, and Seismicity							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	↓	↓	↓	↑	↓	↓	=
4.3 Surface Water Hydrology and Water Quality							
Construction Activities	↑	=	↑	↑	=	↑	=
Operations and Facility Siting	=	↑	=	=	=	↓	=
4.4 Groundwater Resources							
Construction Activities	↓	=	↓	↓	↓	↓	=
Operations and Facility Siting	↓	↑	↓	↓	↓	↓	=
4.5 Marine Biological Resources							
Construction Activities	↑	=	↑	↑	↑	↑	=
Operations and Facility Siting	↑	=	↑	↑	↑	↑	=
4.6 Terrestrial Biological Resources							
Construction Activities	↓	↓	↓	↓	↓	↑	=
Operations and Facility Siting	↓	=	↓	↓	↓	↓	=
4.7 Hazards and Hazardous Materials							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.8 Land Use, Land Use Planning, and Recreation							
Construction Activities	=	↑	↑	=	↑	↑	=
Operations and Facility Siting	=	↑	↑	=	↑	↑	=
4.9 Traffic and Transportation							
Construction Activities	=	↑	↑	↓	↓	↓	=

TABLE 5.3-7 (Continued)
SUMMARY OF INTAKE OPTIONS COMPARISON TABLE

	Intake Option 2	Intake Option 3	Intake Option 4	Intake Option 6	Intake Option 8	Intake Option 9	Intake Option 13
4.10 Air Quality							
Construction Activities	↓	=	=	=	=	↓	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.11 Greenhouse Gases							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.12 Noise and Vibration							
Construction Activities	=	↑	↑	↓	↓	↓	=
Operations and Facility Siting	=	↑	↑	↓	↓	↓	=
4.13 Public Services and Utilities							
Construction Activities	=	=	=	↓	=	=	=
Operations and Facility Siting	=	=	=	↓	=	=	=
4.14 Aesthetics							
Construction Activities	↑	=	=	↑	=	=	=
Operations and Facility Siting	↑	=	=	↑	=	=	=
4.15 Cultural Resources							
Construction Activities	↓	↓	↓	↓	↓	↓	=
4.16 Agriculture and Forest Resources							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.17 Mineral Resources							
Construction Activities	↓	↓	↓	↓	↓	↓	=
Operations and Facility Siting	↓	↓	↓	↓	↓	↓	=
4.18 Energy Resources							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.19 Population and Housing							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=

↑ Increased impact ↓ Decreased impact = Similar impact

Outfall Options

The only outfall option not requiring new construction in MBNMS or any physical modification is the proposed project's use of the existing MRWPCA outfall. All other outfall options would require additional pipelines, modification of an existing outfall, new construction on the ocean floor in MBNMS, or both. As a result, outfall options 1 through 7 would result in increased adverse environmental effects during construction compared with the proposed use of the existing outfall. However, some outfall options demonstrated reduced impacts for certain environmental topic areas during operation or as a result of facility siting, including:

- **Hazards and Hazardous Materials** – Outfall options 2 through 7, unlike the proposed use of the existing outfall, would result in greater impacts, although the facilities would not be located within an airport land use plan area.
- **Public Services and Utilities** – Outfall options 2, 3, 4, 5, and 7 would result in reduced impacts related to increased corrosion of the existing wastewater outfall and diffuser compared with the proposed use of the existing outfall.

All seven of the outfall options would result in increased construction impacts, including new impacts in the marine environment, compared to the proposed project, and would not avoid or minimize potential environmental impacts, other than those noted above. Therefore, only the proposed use of the existing outfall was carried forward in the development of the "whole" alternatives because other options would not meet the Federal purpose and need to minimize impacts and are not likely to meet regulatory requirements.

A summary of the outfall options comparison table is presented below in **Table 5.3-8**.

Desalination Plant Site Options

Two alternative desalination plant sites were compared to the proposed desalination plant site at Charles Benson Road. These included Option 2: Moss Landing National Marine Refractories site (which is the site proposed as part of the People's Moss Landing Project), and Option 3: Moss Landing Power Plant East Tank Farm Parcel (which is the site proposed as part of the DeepWater Desal Project). The comparative analysis presented in Table 5.3-6 determined the following for each of the desalination site options:

- **Option 2**: The National Marine Refractories Site would have a similar level of environmental effects for most of the environmental topic areas compared to the proposed site at Charles Benson Road, but would result in increased impacts on surface water hydrology (it is located in the 100-year flood zone) and terrestrial biology.
- **Option 3**: The East Tank Farm Parcel would have a similar level of environmental effects for most of the environmental topic areas compared to the proposed site at Charles Benson Road, but would result in increased impacts on terrestrial biology, noise and vibration, and aesthetics.

TABLE 5.3-8
SUMMARY OF OUTFALL OPTIONS COMPARISON TABLE

	Outfall Option 1	Outfall Option 2	Outfall Option 3	Outfall Option 4	Outfall Option 5	Outfall Option 6	Outfall Option 7
4.2 Geology, Soils, and Seismicity							
Construction Activities	=	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	↑	↑	↑	↑	↑	↑
4.3 Surface Water Hydrology and Water Quality							
Construction Activities	↑	↑	↑	↑	↑	=	↑
Operations and Facility Siting	=	↑	↑	↑	↑	↑	↑
4.4 Groundwater Resources							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.5 Marine Biological Resources							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.6 Terrestrial Biological Resources							
Construction Activities	=	↑	↑	=	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.7 Hazards and Hazardous Materials							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	↓	↓	↓	↓	↓	↓
4.8 Land Use, Land Use Planning, and Recreation							
Construction Activities	=	=	↑	=	↑	=	=
Operations and Facility Siting	=	=	↑	=	↑	=	=
4.9 Traffic and Transportation							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.10 Air Quality							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=

TABLE 5.3-8 (Continued)
SUMMARY OF OUTFALL OPTIONS COMPARISON TABLE

	Outfall Option 1	Outfall Option 2	Outfall Option 3	Outfall Option 4	Outfall Option 5	Outfall Option 6	Outfall Option 7
4.11 Greenhouse Gases							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.12 Noise and Vibration							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.13 Public Services and Utilities							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	↑	↓	↓	↓	↓	=	↓
4.14 Aesthetics							
Construction Activities	=	↑	↑	=	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.15 Cultural Resources							
Construction Activities	=	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	↑	↑	=	=	=	=
4.16 Agriculture and Forest Resources							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	↑	↑	=	=	=	=
4.17 Mineral Resources							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=
4.18 Energy Resources							
Construction Activities	↑	↑	↑	↑	↑	↑	↑
Operations and Facility Siting	=	=	=	=	=	=	=
4.19 Population and Housing							
Construction Activities	=	=	=	=	=	=	=
Operations and Facility Siting	=	=	=	=	=	=	=

↑ Increased impact ↓ Decreased impact = Similar impact

Overall, there are no potential impacts associated with developing the Charles Benson Road desalination plant site that would be avoided or minimized by using either of the other options. For this reason, and because CalAm already owns the property, only the Charles Benson Road site was carried forward into the development of whole alternatives.

A summary of the desalination plant site options comparison table is presented below in **Table 5.3-9**.

TABLE 5.3-9
SUMMARY OF DESALINATION PLANT SITE OPTIONS COMPARISON TABLE

	Desalination Plant Site Option 2	Desalination Plant Site Option 3
4.2 Geology, Soils, and Seismicity		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.3 Surface Water Hydrology and Water Quality		
Construction Activities	↑	=
Operations and Facility Siting	↑	=
4.4 Groundwater Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.5 Marine Biological Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.6 Terrestrial Biological Resources		
Construction Activities	↑	↑
Operations and Facility Siting	↑	↑
4.7 Hazards and Hazardous Materials		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.8 Land Use, Land Use Planning, and Recreation		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.9 Traffic and Transportation		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.10 Air Quality		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.11 Greenhouse Gases		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.12 Noise and Vibration		
Construction Activities	=	↑
Operations and Facility Siting	=	↑

TABLE 5.3-9 (Continued)
SUMMARY OF DESALINATION PLANT SITE OPTIONS COMPARISON TABLE

	Desalination Plant Site Option 2	Desalination Plant Site Option 3
4.13 Public Services and Utilities		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.14 Aesthetics		
Construction Activities	=	↑
Operations and Facility Siting	=	↑
4.15 Cultural Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.16 Agriculture and Forest Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.17 Mineral Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.18 Energy Resources		
Construction Activities	=	=
Operations and Facility Siting	=	=
4.19 Population and Housing		
Construction Activities	=	=
Operations and Facility Siting	=	=

↑ Increased impact ↓ Decreased impact = Similar impact

Summary of Component Option Evaluation Conclusions

Of the seven intake options evaluated, for reasons described previously and in Table 5.3-4, two intake options were carried forward into the development of whole alternatives for full EIR/EIS analysis-- Option 3, Slant Wells at Potrero Road, and Option 9, Open-water Intake at Moss Landing. Because all of the outfall options evaluated would have greater construction-related impacts (Table 5.3-5) in MBNMS than the proposed project, which would use the existing MRWPCA outfall without modification, only the existing MRWPCA outfall was carried forward into the development of whole alternatives. The proposed Charles Benson Road desalination plant site was also carried forward since neither of the other options offers any advantage to, and would not reduce any significant impacts of, the proposed project.

Based on the conclusions of the component evaluations, the intake, desalination plant site, and outfall options were combined into whole alternatives for detailed consideration. They are fully described in Section 5.4 and evaluated in Section 5.5. Alternative 1 would utilize slant wells at Potrero Road (Intake Option 3) and Alternative 2 would utilize an open-water intake at Moss Landing (Intake Option 9). Both alternatives would use the Charles Benson Road desalination

plant site and the existing MRWPCA outfall. The components of the DeepWater Desal alternative and the People's Project alternative were included and evaluated in the components screening process; the DeepWater Desal and the People's Project, as well as two reduced sized alternatives are also described in Section 5.4 and are evaluated in Section 5.5.

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5.4 Description of Alternatives Evaluated in Detail

Sections		Tables	
5.4.1	Overview	5.4-1	Overview of Alternatives Evaluated in Detail
5.4.2	No Project Alternative	5.4-2	Comparison of the No Project Alternative to Existing Conditions and the Proposed Project
5.4.3	Alternative 1 - Slant Wells at Potrero Road	5.4-3	Anticipated Carmel River System Water Supply Under the No Project/ No Action Alternative Based on Order WR 2016-0016
5.4.4	Alternative 2 - Open-Water Intake at Moss Landing	5.4-4	Summary of Alternative 3 Components Considered for Analysis
5.4.5	Alternative 3 - Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)	5.4-5	Outfall Water Quality and Quantity
5.4.6	Alternative 4 - People's Moss Landing Water Desalination Project (People's Project)	5.4-6	Other Residuals Disposal
5.4.7	Alternative 5a - Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at CEMEX)	5.4-7	Estimated Sludge Production
5.4.8	Alternative 5b - Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at Potrero Road)	5.4-8	Assumptions for Construction Activities
		5.4-9	Alternative 5a Facilities
Figures			
5.4-1	Alternative 1 – Slant Wells at Potrero Road	5.4-4	Alternative 4 – People's Moss Landing Water Desalination Project
5.4-2	Alternative 2 – Open-Water Intake at Moss Landing	5.4-5	Alternative 5a – Intake Slant Wells at CEMEX
5.4-3	Alternative 3 – Monterey Bay Regional Water Project	5.4-6	Alternative 5b – Intake Slant Wells at Potrero Road

5.4.1 Overview

This section describes the alternatives to the proposed project that are evaluated in detail in Section 5.5 and 5.6 of this EIR/EIS, including the "no project/no action" alternative. A description of the CEQA and NEPA guidelines related to alternatives evaluations is included in Section 5.1.1.

Consistent with the CEQA Guidelines, the analysis considers the ability of the alternatives to meet all or most of the basic project objectives. Consistent with NEPA guidance, the analysis considers the ability of alternatives to meet the project purpose and need. **Table 5.4-1** below provides an overview of the alternatives evaluated in detail.

The following sections describe each of the alternatives evaluated in detail organized in the following primary categories:

- Overview
- Construction Phase
- Operation and Maintenance Phase
- Ability to Meet Project Objectives / Purpose and Need

Each alternative is described by its primary components including: water intake, brine discharge, desalination plant, and product water conveyance facilities.

TABLE 5.4-1
OVERVIEW OF ALTERNATIVES EVALUATED IN DETAIL

Alternative	Components				
	Intake Facilities	**Brine Discharge/ Outfall Discharge Facilities**	**Desalination Plant**	**Conveyance Pipelines**	**Groundwater Replenishment Project Water Purchase Agreement**
Proposed Project *Described in Chapter 3*	9 new subsurface slant wells at CEMEX and conversion of test slant well to production well (10 total wells) Intake capacity of 24.1 mgd	• Brine Disposal Pipeline and Brine Mixing Box • Existing MRWPCA ocean outfall pipeline and diffuser • Ocean Outfall End Gate Modification	New 9.6 mgd desalination plant on 25 acres at Charles Benson Rd. site	Source Water pipeline, Brine Discharge pipeline, Castroville pipeline, Pipeline to Castroville Seawater Intrusion Project (CSIP) Pond, new Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements. Approximately 21 total miles of pipelines.	Not part of proposed project
No Project Alternative *Described in Section 5.4.2*	No new facilities would be constructed; payback to the Seaside Groundwater Basin would not occur; reliance on existing and planned water conservation and recycling programs; likely implementation of mandatory rationing and conservation measures.				CalAm would purchase and extract 3,500 afy of GWR water from the Seaside Groundwater Basin
Alternative 1 – *Slant Wells at Potrero Road* *Described in Section 5.4.3*	10 new subsurface slant wells at Potrero Rd. Existing test slant well at CEMEX removed Same intake capacity (24.1 mgd) as proposed project.	Same as proposed project		Same as proposed project, plus a new source water pipeline between intake and desal plant that adds additional 5.5 miles of source water pipeline. Approximately 26 total miles of pipelines.	Not part of alternative
Alternative 2 – *Open-Water Intake at Moss Landing* *Described in Section 5.4.4*	New Screened Open-Water Intake at Moss Landing – one 36" diameter intake pipeline (HDD[1] installation) Existing test slant well at CEMEX removed Same intake capacity (24.1 mgd) as proposed project.			Source Water pipeline, Brine Discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an additional 6.5 miles of source water pipeline. Approximately 27 total miles of pipelines.	
Alternative 3 – *Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)* *Described in Section 5.4.5*	New Screened Open-Water Intake at Moss Landing – same location as Alt. 2; • two 42" diameter intake pipelines (HDD installation) and • a 110' L x 30' W x 12' tall intake structure Existing test slant well at CEMEX removed Larger intake capacity (49 mgd) than proposed project	New Outfall at Moss Landing; • two 36" diameter discharge pipelines (HDD installation) and • a 140'L x 10' W x 15' tall discharge structure	New 22 mgd desalination plant and co-located data center at 110-acre "East Tank Farm Parcel" off Dolan Road, Moss Landing	New Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an 8 mi source water pipeline, transfer and brine discharge pipelines, and two new pipelines to serve other areas (Salinas and Santa Cruz Co; approximately 25 miles). Approximately 48 total miles of pipelines.	Not part of alternative

TABLE 5.4-1 (Continued)
OVERVIEW OF ALTERNATIVES EVALUATED IN DETAIL

Alternative	Components				
	Intake Facilities	**Brine Discharge/ Outfall Discharge Facilities**	**Desalination Plant**	**Conveyance Pipelines**	**Groundwater Replenishment Project Water Purchase Agreement**
Alternative 4 – *People's Moss Landing Water Desalination Project (People's Project)* *Described in Section 5.4.6*	New Screened Open-Water Intake at Moss Landing – same general location as Alt. 2, but different installation ● 40" diameter pipeline, combination HDD and laid on seafloor (for 1,100') ● two 96" diameter screened intakes Existing test slant well at CEMEX removed Larger intake capacity (approx. 30 mgd) than proposed project	New Outfall at Moss Landing; extension of existing outfall ● 36" diameter pipeline, combination HDD and laid on seafloor (for 700') ● two 16" diameter diffuser ports	New 12 mgd desalination plant at former National Refractories facility in Moss Landing	New Desalinated Water Pipeline, new Transmission Main, ASR facilities, and Highway 68 interconnection improvements, plus an alternative 8-mile-long source water pipeline. Approximately 20 total miles of pipelines.	Not part of alternative
Alternative 5a[2] – *Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at CEMEX)* *Described in Section 5.4.7*	Same as proposed project, but fewer slant wells (7) at CEMEX Smaller intake capacity (15.5 mgd) than proposed project	Same as proposed project except there would be less brine discharged.	New 6.4 mgd desalination plant at Charles Benson Rd site.	Same as proposed project, approximately 21 total miles of pipelines.	CalAm's purchase and extraction 3,500 afy of GWR water from the Seaside Groundwater Basin is considered in the cumulative analysis
Alternative 5b – *Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at Potrero Road)* *Described in Section 5.4.8*	Same as Alternative 1, but fewer slant wells (7) at Potrero Road Existing test slant well at CEMEX removed Smaller intake capacity (15.5 mgd) than proposed project			Same as proposed project, plus an additional 5.5 miles of source water pipeline, approximately 26 miles of pipelines.	

NOTES:

1 Horizontal Directional Drilling (HDD) is described in Section 3.3.4.3 in Chapter 3, Description of the Proposed Project

2 Alternative 5 includes a reduced size desalination plant. The CPUC authorized CalAm to enter into a water purchase agreement for 3,500 afy from the GWR Project, and to build the new Monterey Pipeline and associated pump station needed for the GWR project, in September 2016. As a result, the GWR project is a reasonably foreseeable future project, and the cumulative impact scenario evaluated for Alternatives 5a and 5b includes implementation of the GWR project. The GWR project is not considered for cumulative impacts in conjunction with the proposed project or Alternatives 1, 2, or 4 because if a desalination option is selected that is of a size sufficient to fully satisfy the project objectives in terms of water supply, such choice would presumably mean that the GWR project was not successful in securing funding, completing construction and undertaking operations. The GWR project is conservatively considered for cumulative impacts with Alternative 3 because under that option, CalAm could meet its full project water supply objectives via the DeepWater Desal project, or could obtain water from a combination of the DeepWater Desal project and the GWR Project. See Table 4.1-2 in Section 4.1.

5.4.1.1 Alternatives Development

This EIR/EIS examines three types of action alternatives: alternatives to the CalAm proposed project; reduced capacity alternatives, and desalination projects proposed by other entities.

First, the EIR/EIS analyzes alternatives to CalAm's proposed MPWSP. In Section 5.3, the action Alternative 1 (Slant Wells at Potrero Road) and Alternative 2 (Open-Water Intake at Moss Landing) were identified by screening alternative desalination plant components – water intake, brine discharge outfalls, and desalination sites. Components that are considered to be the least environmentally damaging are then combined into "whole" alternatives in Section 5.4.

Second, the action alternatives include two reduced capacity alternative scenarios. As explained in Chapter 1, CalAm's application includes two capacity options or build-out scenarios. The first option, the "Proposed Project," is designed to meet the full project objectives for water supply. The second option (Alternative 5) would meet the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. Two variations of the reduced capacity alternatives (5a and 5b) are provided based on alternative locations for the slant well intakes (CEMEX or Potrero Road).

Third, the EIR/EIS identifies two other desalination projects proposed by project proponents other than CalAm, that would provide water service to the CalAm Monterey District Service Area. The first project is the Monterey Bay Regional Water Project, also known as Deepwater Desal (Alternative 3); and the second is the People's Moss Landing Desalination Project (Alternative 4). Both projects at are different stages in development, and the project descriptions contained in this EIR/EIS are based on available information about the projects. These projects will be the subject of their own, separate, CEQA and NEPA processes.

5.4.2 No Project Alternative

Both CEQA and NEPA require that an EIR/EIS consider and analyze a "no project" or "no action" alternative. CEQA Guidelines Section 15126.6(e) provides the following guidance on the "no project" alternative:

- An EIR shall consider the specific alternative of "no project" and evaluate its impacts to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.
- The no project analysis shall discuss the existing conditions at the time the Notice of Preparation was published as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure.
- If the proposed project is a development project on identifiable property, the no project alternative is the circumstance under which the project does not proceed.

As described in the subsections below, the No Project Alternative reflects the scenario in which neither the proposed project nor Alternatives 1 through 5, described in Sections 5.4.3 through 5.4.8, would proceed.

Additionally, CEQ NEPA regulations at 40 CFR 1502.14 state that the alternatives analysis shall include an alternative of taking no action. In the case of the federal agency action, "no action" would mean that MBNMS would not authorize those portions of the proposed project or alternatives that would occur in the sanctuary. Where a choice of "no action" by the agency would result in predictable actions by others, this consequence of the "no action" alternative should be included in the analysis. Without MBNMS authorization, the proposed project and alternatives could not take place. Therefore, for purposes of this EIR/EIS, the CEQA No Project Alternative and the NEPA No Action Alternative are the same.

5.4.2.1 Overview

Under the No Project Alternative, the CPUC would not issue a CPCN for the MPWSP or another alternative; MBNMS would not issue authorizations or a special use permit for the components of the project within MBNMS, and no facilities would be constructed. CalAm would continue to operate its Monterey District facilities in compliance with the 2009 SWRCB Cease and Desist Order (CDO) as amended by SWRCB Order WR 2016-0016 (together referred to herein as the Revised CDO, described in more detail below) and the Seaside Groundwater Basin Adjudication.[1] Under the No Project Alternative, at the end of the Revised CDO extension period, CalAm would have an estimated 6,380 afy of potable water available for delivery within its service area from existing sources. The components of the No Project Alternative (i.e., changes compared to baseline conditions) that are the basis for analysis of its impacts in this EIR/EIS are as follows:

- Reduction in total water supply available to serve CalAm's Monterey District. CalAm's current supply is approximately 11,840 afy, and total long-term supply under the No Project Alternative would be 6,380 afy.[2]
- Between 2018 and 2021, curtailed diversion limits from the Carmel River system of 7,310 to 4,310 afy compared to current rate of pumping (8,310 afy);
- Reduction in pumping from Seaside Groundwater Basin from current operating yield of 2,200 afy to a safe yield of 1,474 afy; and
- Implementation of Revised CDO Stage 3 Conservation Measures and Stage 4 Rationing.

[1] The April 2015 MPWSP DEIR included two No Project Alternatives: No Project A was consistent with the CDO at the time; No Action B included an extension of the CDO timeframe. The No Project alternative in this EIR/EIS is consistent with the Revised CDO.

[2] This estimate assumes a long term average supply of 1,300 afy from aquifer storage and recovery and that 230 afy would be available from the Sand City desalination plant, in addition to 3,376 afy from the Carmel River and 1,474 afy from the Seaside Groundwater Basin. Less water will be available from Sand City in the longer term; CalAm's supply from the Sand City desalination plant will eventually be reduced to 94 afy, although more is available until Sand City needs it for its own development. As under the MPWSP, the amount that would be available from aquifer storage and recovery could vary year to year depending on rainfall and river levels; less supply could be available at the end of 2021 if there are dry years between now and then.

Additionally, the analysis of the No Project Alternative considers the following differences compared to the proposed project; however, these are not considered direct or indirect impacts of the No Project Alternative because they do not represent a change from baseline conditions; rather, they represent avoided impacts or benefits not realized, and are discussed for purposes of comparison:

- No construction;
- No increase in total water supply to the estimated 16,430 afy with the proposed project;
- Between 2018 and 2022, 10,000 total fewer acre-feet of water diverted from Carmel River to customers;
- No increase in the Aquifer Storage and Recovery Project (ASR) reliable yield from 1,300;
- Continuation of moratorium on new water permit applications; and
- No "payback" to the Seaside Groundwater Basin.

A comparison of the components of the No Project Alternative to existing conditions and to the proposed project is provided in **Table 5.4-2**. These components are described in more detail in Sections 5.4.2.2 and 5.4.2.3.

TABLE 5.4-2
COMPARISON OF THE NO PROJECT ALTERNATIVE
TO EXISTING CONDITIONS AND THE PROPOSED PROJECT

Existing Conditions	Proposed Project	No Project Alternative
Construction		
n/a	Construction of MPWSP components as described in Chapter 3	No new construction; decommissioning of the test slant well
Operations		
8,310 afy diverted from Carmel River system	8,310 afy diverted until January 2022; 3,376 afy thereafter	8,310 afy reducing by 1,000 afy per year from 2018 to 2022; 3,376 afy thereafter Total of 10,000 af less water diverted from river between 2018 and 2021 compared to proposed project
Pumping of 2,200 afy from Seaside Basin	Pumping of 774 afy from Seaside Basin for 25 years; 1,474 afy thereafter 17,500 af payback to basin over 25 years	Pumping from Seaside Basin reducing to 1,474 afy by 2021 No payback
ASR reliable yield of 1,300 afy	Increased ASR injection capacity and long-term reliability	No increase in ASR injection capacity or long-term reliability *
Moratorium on new water service connections	Moratorium lifted	Moratorium continued
Stage 1 and 2 Conservation Measures in place	Stage 1 Conservation Measures continued Stage 2 Conservation Measures may sunset when conditions met	Stage 1 and 2 Conservation Measures continued Stage 3 Conservation Measures and Stage 4 Rationing implemented

NOTES:

* The separate Monterey Pipeline and Pump Station project, described as project No. 60 in Table 4.1-2 in Section 4.1, would increase the ability to convey ASR water to approximately 1,600 afy when completed. This is not a component of the No Project Alternative, but is considered a project in the cumulative scenario relevant to this alternative.

5.4.2.2 Construction

Under the No Project Alternative CalAm would not build any MPWSP facilities. Therefore, none of the construction described for the proposed project in Section 3.3 of Chapter 3, Description of the Proposed Project, would occur. However, the test slant well, currently permitted to operate intermittently until February 2019, would be decommissioned as described in Section 4.2.5 (Secondary Impacts of Mitigation Measure 4.2-10).

5.4.2.3 Operation and Maintenance

Under the No Project Alternative, the concept of "operation and maintenance" refers to CalAm's ongoing operation of its Monterey District water supply and distribution system with the water supplies and demands that are predictable based on applicable restrictions and regulations and other factors affecting both supply and demand. This section describes the estimated deficit in water supply compared to demand, the actions and circumstances that could affect that estimate, and the actions that would be triggered by that deficit in order to maintain essential water supply and comply with regulations (i.e., the conservation and rationing requirements described below).

Supply Shortages

Baseline water demand in the service area is approximately 12,595 afy based on 2010 annual demand of 12,270 afy and 325 afy for existing Pebble Beach water entitlements, shown in Table 2-3 in Chapter 2. Under the No Project Alternative, no increase from baseline water demand would be reasonably predictable. Because the MPWSP or an alternative new water supply would not be implemented, this scenario assumes that potential demands associated with hospitality industry rebound[3] and legal lots of record could not be served, and thus are not counted among demands under the No Project Alternative. This scenario also assumes that there would be no "payback" to the Seaside Groundwater Basin of the amount of water CalAm has pumped in excess of its adjudicated right. That is, given that the commencement of the basin replenishment (or payback) is contingent upon having a new water supply to augment existing sources,[4] it is assumed that under this alternative, CalAm's basin replenishment obligation would be delayed indefinitely due to the lack of sufficient supply.

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3 Increased demand that resulted from economic recovery at existing businesses would not require new water connections or permits to be served. However, given the constrained supply that would result under the No Project Alternative, economic rebound resulting in increased demand at existing water customers is not considered reasonably foreseeable under this alternative. Therefore, additional demand at existing businesses resulting from economic recovery is not considered part of the baseline service area demand for this analysis. (See also Section 5.5.20 regarding anticipated socioeconomic impacts of the No Project Alternative, and the discussion of this demand component in Section 6.3, which assumes that a degree of economic rebound identified by CalAm in its application as future demand has already occurred and is therefore reflected in existing annual demand.)

4 As discussed in Chapter 2, Section 2.2.4, CalAm is required to replenish the quantity of groundwater it has produced in excess of its adjudicated right in the period since the groundwater basin was adjudicated. CalAm's commitment to replenish the groundwater basin is based on a 2008 Memorandum of Understanding between CalAm and the Seaside Groundwater Basin Watermaster that calls for CalAm to commence replenishment on a feasible schedule upon completion and implementation of a water supply augmentation project. In 2014, CalAm and the Watermaster agreed to a replenishment schedule of 25 years at a replenishment rate of 700 afy upon completion and implementation of the MPWSP. CalAm's production from the basin during the replenishment period under the MPWSP would therefore be limited to 774 afy for 25 years. This replenishment would not occur under the No Project Alternative.

During the Revised CDO extension period under the No Project Alternative, CalAm's available supply of potable water to serve the Monterey District would decrease from 11,314 afy to 6,380 afy between 2017 and 2021. Supply would consist of the following existing sources:

- Continued use of Carmel River system water in compliance with SWRCB Order 95-10 and the Revised CDO; water supply of 8,310 afy, reduced by 1,000 af each October from 2018 through 2021, and 3,376 afy thereafter (*i.e., the Effective Diversion Limit; see Table 5.4-2 for difference between proposed project and No Project Alternative by water year*);
- Continued pumping of 1,474 afy from the Seaside Groundwater Basin (*in accordance with the Seaside Groundwater Basin adjudication; compared to 774 afy under the proposed project during 25-year replenishment period, and 1,474 afy thereafter*);
- Continued use at the end of the Revised CDO extension period of approximately 230 afy provided by Sand City's existing desalination plant (*eventually decreasing to CalAm's long-term supply from Sand City desalination plant of 94 afy, same as proposed project*); and
- Continued use of 1,300 afy from the existing Phase I and II projects of the ASR system.

SWRCB Order WR 2016-0016 extends the date by which CalAm must terminate all unlawful diversions from the Carmel River from December 31, 2016, to December 31, 2021. The Revised CDO set an initial diversion limit of 8,310 afy for Water Year 2015-2016 (October 1, 2015 to September 30, 2016) and established annual milestones that CalAm must meet in order to maintain the 8,310 afy diversion limit through 2021. Meeting the milestones would demonstrate tangible progress in developing an alternative water supply that will enable CalAm to reduce and terminate its unlawful diversions. If CalAm fails to meet a milestone in any given water year, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy for each of the following water years. The 1,000 afy reduction is only further reduced if another milestone is not met. Because five of the seven milestones require (or consist of) MPWSP approval, they would not be achievable under the No Project Alternative (which by definition assumes that the MPWSP would not be approved). Therefore, between 2016 and 2021, CalAm's diversions from the Carmel River would be reduced as shown below in **Table 5.4-3**. The analysis assumes that CalAm would achieve the milestones related to the Pure Water Monterey Groundwater Replenishment Project (GWR Project), which do not depend on MPWSP approval. Thus, based on the assumptions regarding Revised CDO milestones shown in the **Table 5.4-3**, prior to December 31, 2021 CalAm's supply from the Carmel River would range from 8,310 afy in 2016 to 4,310 afy at the end of 2021, and consist of its legal limit, 3,376 afy, thereafter.

In addition to the above-listed existing sources of water, the approved GWR Project, if fully implemented, could provide additional supply to the Monterey District. The GWR Project is separate from MPWSP and is considered a reasonably foreseeable project in the cumulative context for the No Project Alternative, but is not a component or consequence of this alternative, and therefore is not considered further in this subsection as a potential source of supply. See Section 5.4.2.4, Ability to Meet Project Objectives.

TABLE 5.4-3
ANTICIPATED CARMEL RIVER SYSTEM WATER SUPPLY UNDER THE NO PROJECT/ NO ACTION ALTERNATIVE BASED ON ORDER WR 2016-0016

Water Year	Milestone	Milestone Feasible / Assumed to Be Met under No Project / No Action?	Assumed Diversion Limit under No Project / No Action (afy)	Assumed Diversion Limit under Proposed Project (all milestones met; afy)	Date Reduction Assessed
2015-2016	CPUC approval of (1) Water Purchase Agreement for GWR Project water and (2) construction of CalAm components of the GWR Project conveyance facilities (the Monterey Pipeline and Pump Station)	Yes[a]	8,310	8,310	12/31/2016
2016-2017	Construction of the Monterey Pipeline and Pump Station commences	Yes[a]	8,310	8,310	Oct 1, 2017
2017-2018	CPUC Issuance of CPCN for MPWSP	No[b]	8,310	8,310	Oct 1, 2018
2018-2019	Construction of MPWSP desalination plant commences	No	7,310[c]	8,310	Oct 1, 2019
2019-2020	Completion of at least one source water production well; partial completion of other MPWSP components	No	6,310[c]	8,310	Oct 1, 2020
2020-2021	Additional progress on MPWSP production wells and other components	No	5,310[c]	8,310	Oct 1, 2021
2021-2022 and beyond	Substantial completion of MPWSP, allow delivery of MPWSP water	No	4,310 – 3,376[d]	8,310 to 3,376[d]	NA

NOTES: NA = Not applicable

[a] The milestones related to the GWR Project, which do not depend on MPWSP approval, have already been achieved.

[b] Issuance of a Certificate of Public Convenience and Necessity (CPCN) would constitute project approval, which is not assumed under this alternative.

[c] The City of Pacific Grove Local Water Project (No. 22 in Table 4.1-2 in Section 4.1) and the Monterey-Pacific Grove Area of Special Biological Significance (ASBS) Stormwater Management Project (No. 45 in Table 4.1-2 in Section 4.1) are recognized in the CDO as an available water supplies that if developed by Pacific Grove, would offset the required reductions resulting from a missed milestone, one acre foot for every acre foot offset by the use of recycled water. These projects could provide up to 192 afy in offset demand

[d] This analysis assumes a diversion limit of 4,310 afy through December 31, 2021 and diversions of only 3,376 afy, CalAm's legal entitlement, thereafter.

SOURCE: SWRCB, 2016.

The No Project Alternative water supplies of 11,314 afy through September 2018, which would be reduced to 6,380 afy by January 2022, could not serve the baseline demand of 12,595 afy. It is assumed that CalAm and MPWMD would continue their implementation of existing conservation programs and measures, described in Appendix K, with the same intensity as under existing conditions. Because these programs and measures, such as limiting losses from aging pipes, are existing and ongoing efforts, they are not considered a component of the No Action Alternative, but do provide context for potential further reductions in demand compared to baseline. Estimates of the effect of these ongoing programs on baseline demand are provided in Appendix K to the extent that they can be quantified. As described in Appendix K, the expected reduction in demand by 2021 from these ongoing conservation and demand management measures is approximately

1,260 afy, resulting in a total estimated baseline demand in 2021 of approximately 11,335 afy (i.e., 12,595 afy less 1,260 afy).

Monterey Peninsula Water Conservation and Rationing Plan Actions

Even with the potential reductions in demand between 2016 and 2021 described above, CalAm's available supply would not be able to meet estimated demand during any water year under the No Project Alternative. The long-term available water supply totaling approximately 6,380 afy at the end of the Revised CDO extension period (2021) is roughly 6,215 afy less than or approximately 51 percent of the existing baseline demand of 12,595 afy. Even assuming continued conservation efforts, this amount is roughly 4,955 afy less than or 56 percent of the total estimated demand of 11,335 afy anticipated by 2021 (reductions described above).[5] It is assumed that this deficit between available supplies and total demand under the No Project Alternative would trigger actions under MPWMD's 2016 Monterey Peninsula Water Conservation and Rationing Plan (Conservation and Rationing Plan) (MPWMD, 2016).

The Conservation and Rationing Plan, which comprises MPWMD Rules 160 to 167, requires (pursuant to MPWMD Rule 160) that MPWMD approve a physical storage target, as of May 1 each year, for the sources within the Monterey Peninsula Water Resources System (MPWRS)[6] and approve the distribution of monthly production from the water sources within the MPWRS on a quarterly basis. The production targets are based on production limits specified in SWRCB CDO Order WR 2009-006 and the Seaside Groundwater Basin Adjudication Decision. Triggers for Stages 2 and 3 Conservation and Stage 4 Rationing are determined, in part, by comparison of the annual available storage with storage that had been needed in the previous 12 months and comparison of the monthly production targets with actual monthly production. As with MPWMD's previous water conservation and rationing plan, Stage 1, Water Conservation: Prohibition of Water Waste (MPWMD Rule 162), remains in effect at all times and applies to all water users.

As noted, production targets are based on production limits specified in the CDO and the Seaside Groundwater Basin Adjudication. Therefore, under the No Project Alternative, production targets would be based on available supplies discussed above (i.e., no more than 3,376 afy from the Carmel River and 1,474 afy from the Seaside Groundwater Basin). Currently, actual production is more than 4,500 afy greater than the final Carmel River production limit of 3,376 afy. This analysis therefore assumes that actual production in the 12 months before the final CDO production limit takes effect would exceed the production target by more than 5 percent and

5 A comparison of available supplies under the No Project Alternative at the end of the Revised CDO extension period with the most recent demand year, 2015, reveals a smaller but still substantial shortfall – 3,165 afy. Since 2015 was the fourth year of a major drought, during which drought regulations were in effect and there was heightened awareness of drought conditions, and does not include demand associated with existing Pebble Beach water entitlements, this analysis considers the comparison with 2010 demand and Pebble Beach entitlements, reduced by additional ongoing conservation programs, to more accurately reflect the difference between available supplies under the No Project Alternative and existing service area demand. These comparisons of available supplies and demand do not include demand associated with vacant legal lots of record or economic recovery that CalAm proposes to meet with the MPWSP (discussed in Section 2.3.3 of Chapter 2, Water Demand, Supplies, and Water Rights).

6 System storage includes storage in the Carmel Valley Alluvial Aquifer, the Seaside Groundwater Basin, and the Los Padres Reservoir.

trigger Stage 3 Water Conservation: Conservation Rates (MPWMD Rule 164), which could lead to Stage 4 Water Rationing (MPWMD Rule 165).

Stage 3 Water Conservation involves implementation of two succeeding conservation rate levels. Level 1 consists of a 25 percent surcharge on then-existing rates and Level 2 (to be implemented after the imposition of Level 1 for three months, if the monthly production target continues to be exceeded) consists of a 40 percent surcharge. (Neither surcharge would apply to residential customers in the first tier of water usage.) Stage 4 Water Rationing could be triggered if Stage 3 is deemed unsuccessful or Stage 3 fails to sunset after a period of eight months. Stage 4 could also take effect if directed by a governmental or regulatory agency to enact Stage 4 (which is also the case for Stages 2 and 3). The Conservation and Rationing Plan specifies that Stage 4 shall not be triggered "if the General Manager determines upon credible evidence that production targets associated with the final Cease and Desist Order are likely to be met by adhering to the requirements of a lesser Stage."

Mandatory reductions established under Stage 4 would be equal to the shortfall (e.g., the amount by which the last 12 months' actual production exceeded the then-current production target) or another amount reflected in a governmental or regulatory order. Stage 4 rationing measures could include:

- prohibitions on all or specified non-essential water uses;
- a moratorium on accepting water permit applications;
- a prohibition against new water service;
- suspension of annexations to CalAm's service area;
- restrictions on watering and irrigating; and
- requirements for specific reductions in residential water use.

Summary

Impacts related to a No Project Alternative could result in severely supply-constrained conditions in CalAm's Monterey District. Existing conservation programs would continue to be implemented and new conservation and rationing measures would be required in an attempt to balance out the severe supply shortfall following Carmel River diversion curtailments under the Revised CDO in 2018 through 2021. Given the limited water supplies, it is assumed this alternative would trigger Stage 3, Conservation Rates, and very possibly Stage 4, Rationing Measures, of the Monterey Peninsula Water Conservation and Rationing Plan.

5.4.2.4 Ability to Meet Project Objectives

Ability to Meet Project Objectives under Baseline Conditions

The No Project Alternative would fail to meet almost all of the key objectives of the MPWSP. This alternative would achieve compliance with the Revised CDO and Seaside Basin Adjudication, but would not provide a replacement water supply in order to do so. The available potable water supply under the No Project Alternative at the end of the Revised CDO extension period would be approximately 6,380 afy. This represents approximately 51 percent of baseline

demand and approximately 56 percent of estimated demand after implementation of foreseeable demand management efforts described in Section 5.4.2.3 and Appendix K. This alternative would not provide supply to allow for replenishment of water that CalAm previously pumped from the Seaside Basin in excess of CalAm's adjudicated right; would not provide water supply reliability; and would not provide supply for the development of vacant legal lots of record or supply to meet demand resulting from economic rebound of the hospitality industry (see Section 2.3.3, Other Service Area Demand Assumptions, for a discussion of these demands). The limited available water supply would trigger rationing measures and could lead to water shortages throughout the CalAm Monterey District service area.

Ability to Meet Project Objectives Assuming Implementation of the GWR Project

As noted above in Section 5.4.2.1 and shown in **Table 5.4-2**, the Carmel River supply that is assumed to be available during the Revised CDO extension period under the No Project Alternative is based on the assumption that the Revised CDO milestones pertaining to the GWR Project (which do not depend on MPWSP approval) would be met, and as of publication of the Draft EIR/EIS, these milestones have been met. The GWR Project, when constructed, would provide 3,500 afy of potable supply for the CalAm service area. With the GWR Project supply, total supplies available to CalAm at the end of the Revised CDO extension period would total about 9,880 afy, which is about 78 percent of baseline demand and approximately 87 percent of estimated demand after implementation of foreseeable demand management and offset programs and other planned projects described in Section 5.4.2.3. Although this volume of supply would be much closer to the existing demand, the No Project Alternative in combination with the GWR Project would fail to meet most project objectives. While this scenario would achieve compliance with the Revised CDO and the Seaside Groundwater Basin Adjudication, even in combination with the GWR Project, the No Project Alternative would not provide supply to allow for replenishment of water that CalAm previously pumped from the Seaside Basin in excess of CalAm's adjudicated right; would not provide water supply reliability; and would not provide supply for the development of vacant legal lots of record or supply to meet demand resulting from economic recovery and rebound of the hospitality industry. In addition to failing to provide sufficient supply to meet the average demands assumed in MPWSP planning, the No Project Alternative combined with a GWR Project water purchase agreement would not provide sufficient supply flexibility to meet most peak demands.

5.4.3 Alternative 1 – Slant Wells at Potrero Road

5.4.3.1 Overview

This alternative is based on the screening of individual project components conducted in Section 5.3, Alternatives Development and Screening Process. Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.3.3.2, Intake Option 3 – Subsurface Slant Wells at Potrero Road). The desalination plant, brine discharge, product water conveyance pipelines and ASR components would be identical to the proposed project described in Chapter 3. Therefore, the description of

Alternative 1 focuses on the locations for the intake system and source water pipelines that are different from the proposed project.

This alternative would include the decommissioning of the test slant well at CEMEX, and construction of 10 subsurface slant wells in the beach parking lot at the west end of Potrero Road in northern Monterey County, near the southern border of the unincorporated community of Moss Landing (see **Figure 5.4-1**). The Potrero Road beach parking lot, which is owned and operated by the California Department of Parks and Recreation (California State Parks), lies within the coastal zone. The LCP land use plan designation for lands adjacent to the Potrero Road parking lot is Scenic and Natural Resource Recreation. The zoning designation of lands adjacent to the parking lot is Open Space Recreation (OR). This alternative would require CalAm to obtain an easement, right-of-entry, and/or lease agreement from the California State Parks for any facility that would encroach upon State Parks Property.

The slant wells would be grouped in two clusters, with five wells in each cluster and buried in the parking area, below the hardened sand parking surface. The wellheads would be located above the maximum high tide elevation and encased in a concrete vault that could be up to 20 feet wide, 30 feet long and 10 feet deep, and buried 5 feet below grade. The concrete vault would provide maintenance access to the well heads and pumps. The slant wells would be designed as pumping wells (i.e., each well would be equipped with an electric submersible pump) and would extend 220 to 535 feet seaward of the mean high water line (MHWL), terminating approximately 120 to 150 feet under the seafloor in Monterey Bay, within the submerged lands of MBNMS.

The electrical controls for the slant wells would be located at the edge of the parking lot. The electrical control building, the only above-ground structure, would be approximately 4 feet wide, 12 feet long, and 6 feet high. Overhead electrical lines would extend from the electrical control building to Potrero Road and east along the north side of Potrero Road to connect with the existing Pacific Gas and Electric (PG&E) power line on Potrero Road.

A short, 36-inch-diameter collector pipeline would convey the water from the slant well clusters to a source water pipeline that would be constructed within Potrero Road. The source water pipeline would be located within existing rights-of-way to convey water to the desalination plant at Charles Benson Road.

The source water pipeline would extend directly east from the parking lot -- south of and parallel to Potrero Road -- continue south along Highway 1, south/southeast along Molera Road, and southwest along Monte Road to the desalination plant site on Charles Benson Road (**Figure 5.4-1**). Other than the source water pipeline, which would result in approximately 5.5 miles of additional pipeline, all other pipelines would be the same as the proposed project.

5.4.3.2 Construction

All onshore construction activities and disturbance would occur in the parking lot at the western terminus of Potrero Road, and would not disturb the dunes or active beach area. Slant well construction would occur year-round and the entire parking lot, measuring less than one acre, would be closed during construction of the slant wells and associated infrastructure. The slant wells would

be designed using similar materials, size and construction methodology as the proposed slant wells for the MPWSP. The boreholes would be approximately 900-1,000 feet long and drilled at an angle of 10 degrees below horizontal across the shallow Dune Sand Aquifer and the deeper Perched "A" Aquifers; the Perched "A" Aquifer is underlain by the relatively impermeable Salinas Valley Aquitard. The length of the wells and screen section intervals would depend on the aquifer materials encountered, and would extend under MBNMS submerged lands. The slant wells would be completed using up to 22-inch-diameter casings and up to 12-inch-diameter stainless steel screens. Effluent generated during construction and development of the slant wells would be placed in Baker tanks to allow sediment to settle out, and then discharged into a buried diffuser system in the parking lot for percolation into the underlying beach sands. Cuttings generated during the drilling process and the well head construction would be drained in a separation unit, with the drainage discharged to the buried diffuser. The dewatered cuttings (estimated at less than 200 cubic yards) would be hauled offsite for final disposal at an approved site.

Electrical power for pumping operations would be provided by connecting to PG&E's existing service at the Potrero Road site, located at the northeast corner of the parking lot. New power poles are anticipated to be installed by PG&E to reach the well site. A buried electrical conduit would be installed to convey power from the northwestern most power pole to an above ground 4 feet long, 2 feet wide, and 6 feet tall electrical control panel.

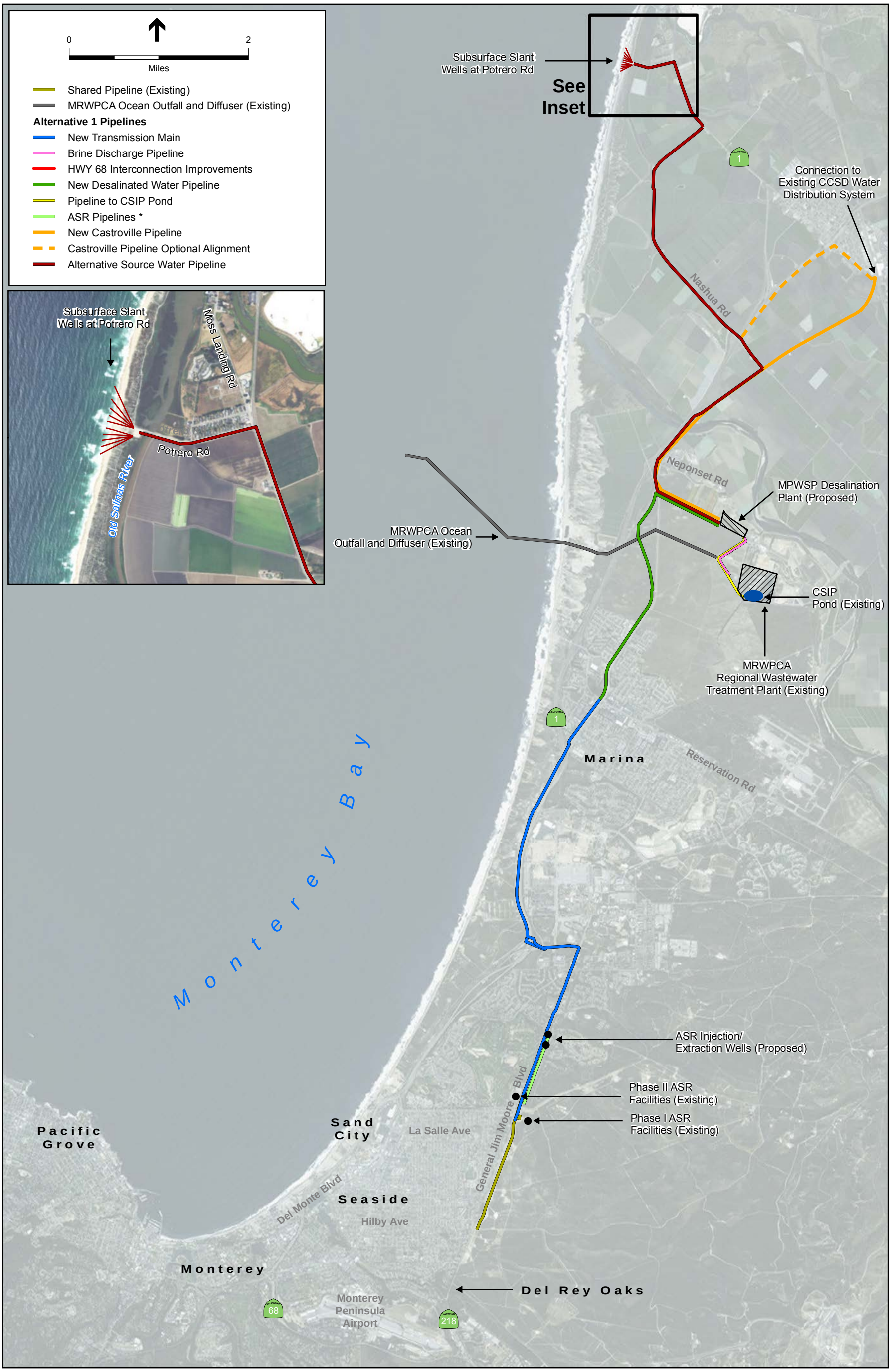
Alternative 1 would require the use of horizontal directional drilling (HDD) techniques to install pipeline underneath the Old Salinas River, Tembladero Slough, and the Salinas River. HDD is described in Section 3.3.4.3 of Chapter 3, Description of the Proposed Project. Other than the extended source water pipeline, all other pipelines would be constructed in the same manner and at the same locations as the proposed project.

5.4.3.3 Operation and Maintenance

Operation and maintenance requirements would be similar to that of the proposed project intake wells, except that they would occur at the Potrero Road location. All other aspects of operations and maintenance of the slant wells under Alternative 1 would be the same as the proposed project (see Sections 3.3 and 3.4 of Chapter 3, Description of the Proposed Project).

5.4.3.4 Ability to Meet Project Objectives

Alternative 1 would contain the same elements as the proposed project and would produce the same volume of product water. However, because of the hydrogeology of the Potrero Road area, Alternative 1 would draw a greater volume of water from the Salinas Valley Groundwater Basin than the proposed project. In the event the Salinas Valley Return Water obligation is determined to be 12 percent (the highest return value simulated), Alternative 1 would meet the need for replacement supplies and meeting peak month demand, but limited supply would be available for other uses, including accommodating tourism demand under recovered economic conditions. Alternative 1 would not provide sufficient supplies to serve existing vacant legal lots of record and would therefore, not meet the project objective/need for water, some of which was to support limited growth (e.g., Objective 6).



NOTES:
* See Subsection 7.10 for a description and analysis of this Alternative Salinas Valley Return option.

SOURCE: ESA, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-1

Alternative 1- Slant Wells at Potrero Road

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5.4.4 Alternative 2 – Open-Water Intake at Moss Landing

5.4.4.1 Overview

This alternative is based on the screening of individual project components conducted in Section 5.3, Alternatives Development and Screening Process. Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system located offshore and southwest of the Moss Landing Harbor entrance (described in Section 5.3.3.6, Intake Option 9 – Screened Deep-water Ocean Intake at Moss Landing). The existing test slant well would be decommissioned, and except for an additional 6.5 miles of source water pipeline, the desalination plant, brine discharge, new Desalinated Water Pipeline, new Transmission Main, and ASR components would be identical to the proposed project described in Chapter 3, Description of the Project. The Castroville Pipeline, Pipeline to Castroville Seawater Intrusion Project (CSIP) Pond, and operational components related to delivering water to Castroville Community Services District (CCSD) would not be implemented. Therefore, the description of Alternative 2 focuses on the intake system and source water pipelines that are different from the proposed project.

Open Ocean Intake System

The intake system would consist of a new intake structure in the Monterey Submarine Canyon to draw in raw seawater from the waters of MBNMS, intake piping to deliver the seawater to the shore, and an onshore intake pump station to pump the seawater to the desalination facility.

The proposed intake structure would be located on the seafloor within a ravine near the head of the Monterey Submarine Canyon, southwest of the Moss Landing Harbor entrance (see **Figure 5.4-2**) in MBNMS. The intake structure would be installed at the end of a new subsurface intake pipeline at the point where it emerges from below the seafloor approximately 1,300 feet offshore from the mean high water line (MHWL) at a depth of approximately 156 feet below mean lower low water (MLLW), in the waters of MBNMS.

The intake structure would consist of a 36-inch diameter pipeline mounted with concrete pipe supports on a reinforced concrete pad fixed to the seafloor with screw-type anchors. The intake structure would be connected to the intake pipeline with flexible couplings and would have three wedgewire screen assemblies; each assembly would have two screens. The passive narrow-slot wedgewire screens would have a 1-millimeter (mm) slot size, and the screened intake water velocity would be at or below 0.5 feet per second.

Intake Pump Station and Source Water Pipeline

Seawater would be conveyed approximately 3,600 feet from the intake structure to an onshore pump station via a 36-inch-diameter subsurface intake pipeline. A partially buried intake pump station located near the end of the railspur (on Dolan Road near SR-1) would pump the seawater to the proposed desalination plant on Charles Benson Road through a 36-inch-diameter source water pipeline. The approximate 8-mile-long pipeline alignment from the intake pump station at Moss

Landing would extend west along Dolan Road to Highway 1, continue south along Highway 1, then south/southeast along Molera Road, then southwest along Monte Road to the desalination site on Charles Benson Road.

5.4.4.2 Construction

Under Alternative 2, construction of the intake system would be different than the proposed project, but the construction of the desalination plant, brine discharge facilities, product water conveyance pipelines and ASR would be the same. The open-water intake pipeline would be installed subsurface using HDD from the intake pump station. The existing railspur and underlying embankment would be removed, and the site would be graded to the final elevation of the intake pump station. The HDD entry pit would be within the footprint of the intake pump station. A surface-launched drill rig would drill a pilot bore to the intake structure location. The pilot bore would be enlarged to the size required for the intake pipe by using a back reamer(s). The pipe would likely be assembled on barges, lowered to the seafloor and pulled back through the borehole during the final reaming process.

At the breakout face where the pipeline emerges from the seafloor, a reinforced concrete pad would be secured to the ocean floor. The seafloor may need to be prepared below the concrete pad, using suction and/or mechanical techniques. The amount of seafloor material to be removed would depend on the local changes in bathymetric grade; excavated materials would be transferred to a barge and disposed of in a suitable area onshore or offshore.

Embedment type anchors are currently anticipated to be set into the seafloor to secure the concrete pad. Once the anchors have been installed, the intake structure would be placed on the seafloor. The entire assembly would be built offsite and transported to the intake structure location, then lowered to the seafloor by crane and set into place by divers. Alternatively, the intake structure could be assembled in place by divers as needed using modular components that are fabricated offsite then barged to the site. Once the intake structure has been installed, a prefabricated section of pipe would be used to connect the intake structure to the sub-seafloor pipeline.

5.4.4.3 Operation and Maintenance

Under Alternative 2, operation and maintenance of the desalination plant and product water pipelines would be similar to the proposed project. However, the intake system, including the pretreatment filters, would require increased maintenance due to the increased particulates in the open ocean intake water compared to water drawn through a subsurface intake. The intake screens would require manual cleaning approximately once per year, over a two-day period, using divers. The seawater intake pipeline maintenance would involve pigging; the pig has an abrasive coating that scrubs the pipeline walls, removing any buildup of ocean sediments, mineral deposits, and bio-growth. The pigging process would take approximately three days, it would be confined to the interior of the pipeline, the intake would be out of service during maintenance and material removed during maintenance would be released into the ocean.

SOURCE: ESA, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-2

Alternative 2 - Open Water Intake at Moss Landing

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5.4.4.4 Ability to Meet Project Objectives

Alternative 2 would meet most of the project objectives because it contains most of the same elements as the proposed project and would produce the same volume of product water. However, the intake would be located farther north at a location that CalAm does not currently control, resulting in the construction of additional length of source water pipeline. It would also result in additional permitting complexity associated with the construction and operation of an open-water intake due to entrainment and impingement of marine organisms. The increased permitting complexity may delay the availability of the supply relative to the State Board's CDO, delaying the ability to serve water to meet project objectives 1 through 7.

5.4.5 Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 is the Monterey Bay Regional Water Project (MBRWP or DeepWater Desal), which is being proposed by DeepWater Desal, LLC. The DeepWater Desal project will be evaluated in a separate EIR/EIS being prepared by the California State Lands Commission (as the CEQA Lead Agency) and MBNMS (as the NEPA Lead Agency). The California State Lands Commission and MBNMS issued a joint Notice of Preparation/Notice of Intent to prepare a Draft EIR/EIS for the MBRWP project[7] on June 1, 2015 (CSLC, 2015). For the purposes of this EIR/EIS, it is considered as an alternative to the proposed project and the description herein is based on information received from MBNMS. The evaluation of this alternative in this EIR/EIS is based on information available publically, information provided by MBNMS, and the independent judgement of the analysts using the best available information. More detailed analyses of the DeepWater Desal project will be forthcoming in the separate EIR/EIS and will be based on technical studies that were not available at the time this EIR/EIS was being prepared. The approach to analysis of the impacts of the DeepWater Desal project in this EIR/EIS is intended to be reasonable so as not to over- or under-state impacts, but also draws conservative conclusions where information is currently unavailable.

5.4.5.1 Overview

Alternative 3 includes the construction and operation of a screened open ocean intake system, a seawater desalination facility, a co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. Alternative 3 would be developed to meet a regional need for water, and CalAm would be one of several customers, or off-takers, of the supply. CalAm would decommission the test slant well at CEMEX, and purchase water from DeepWater Desal to serve the needs of their customers in the Monterey District. In addition to the facilities proposed by DeepWater Desal and an additional 6.5 miles of source water pipeline, the new Desalinated Water Pipeline, new Transmission Main, Highway 68 interconnection improvements, and ASR components would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The Castroville Pipeline, Pipeline to

[7] State Clearinghouse No.: 2015061001

CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. Alternative 3 includes the following new components:

- Open ocean intake system;
- Brine discharge system;
- Seawater desalination facility;
- Product water distribution systems (e.g., pipelines);
- Data center and back-up power generation; and
- Substation

As shown in **Figure 5.4-3**, the new components of Alternative 3 would be located in the Moss Landing area of unincorporated Monterey County and offshore in the Monterey Bay. Each component is described below.

Open Ocean Intake System

Alternative 3 would include a new, screened, open-water intake system located offshore and southwest of the Moss Landing Harbor entrance. To produce 25,000 afy (22 mgd) of potable water, the desalination facility would need approximately 55,000 afy (49 mgd) of raw seawater (source water). The intake system would consist of a new seawater intake structure, intake piping to deliver the seawater to the shore, and an onshore intake pump station to pump the seawater to the desalination facility via transfer piping. The location of the seawater intake facilities would be the same as identified in Alternative 2. Also, the intake design would be similar to the intake facility design in Alternative 2, but the Alternative 3 structure would be larger (two intake pipes for Alternative 3 versus one intake pipe for Alternative 2) to accommodate a larger project and to provide redundant intake and discharge ability. Additionally, the desalination plant for Alternative 3 is in a different location than Alternative 2, resulting in different source water and desalinated water pipeline alignments.

Intake Structure

As described for Alternative 2, the intake structure would be placed on the seafloor within a ravine near the head of the Monterey Submarine Canyon southwest of the Moss Landing Harbor entrance; its location would be approximately 1,300 feet offshore from the mean high water line (MHWL) at a depth of approximately 156 feet below mean lower low water (MLLW) in the waters of MBNMS.

The intake structure would be approximately 110 feet long, 30 feet wide, and 12 feet tall and would consist of two 42-inch diameter pipe manifolds; each would be mounted with concrete pipe supports on reinforced concrete pads that would be fixed to the seafloor with screw-type anchors. The intake structure pipes would be connected to the intake pipelines with flexible couplings to allow for some movement. Each intake structure pipe would have 6 screen assemblies for a total of 12 screen assemblies; each assembly would have 2 screens. The screen assemblies would draw seawater from the open ocean through fine-mesh passive narrow-slot

SOURCE: ESA, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-3

Alternative 3 - Monterey Bay Regional Water Project

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wedgewire screens with a 1 mm slot size, and an intake water velocity at or below 0.5 feet per second. The intake structures would be installed at the end of the subsurface intake pipelines at the point where they emerge from below the seafloor.

Intake Pipelines, Pump Station and Transfer Pipelines

The primary difference between the intake pipelines of this alternative and Alternative 2 is that this alternative includes two intake pipelines rather than one. Seawater would be conveyed approximately 3,600 feet from the intake structure to an onshore pump station via two 42-inch-diameter subsurface intake pipelines. The pump station would be located near the end of the rail spur on Dolan Road near SR-1.

The onshore 3,600-square-foot pump station would be constructed of concrete and would be mostly below-grade with an exposed stairway access hatch, equipment access hatch, and roof heating, ventilating, and air conditioning (HVAC) unit. The intake pump station would contain approximately four centrifugal intake pumps (three operating and one standby), each with a rated capacity of approximately 12,000 gallons per minute and with a discharge pressure of 150 pounds per square inch. Additional features of the intake pump station include a system for pipeline maintenance ("pigging"), cathodic protection, and a water quality sampling station. The only equipment above-grade would be transformers and an emergency backup power supply system that would be housed in a small building. A gravel access entrance to the intake pump station from Dolan Road would be provided, along with a small parking area. Security fencing would be built around the facility and a security gate would provide for controlled access to the pump station.

A chemical biofouling control system would be included in the design of the pump station, and would prevent biological growth on the walls of the seawater conveyance pipelines. If required, biofouling control would be accomplished by periodic addition of liquid sodium hypochlorite.

The onshore intake pump station would pump the seawater to the main facility site through two 36-inch-diameter transfer pipelines installed via conventional trenching under Dolan Road. The transfer pipelines would be approximately 5,800 linear feet or 1.1 miles in length extending from the intake pump station to the main facility site.

The intake piping system would include multiple manifold access points at the main facility site, from which cold seawater would be directed to individual data center buildings (described below) for use in cooling. From the data center buildings, the warmed seawater would be pumped back to the intake pipeline. Following the data center interconnections, the warmed seawater would flow into an interim warm water holding tank, with a capacity of approximately 350,000 gallons. From the holding tank, the warmed seawater would be pumped to the desalination facility by a booster pump station located within the data center boundary. The booster pump station would be designed at the same capacity and redundancy as the intake pump station.

Brine Discharge Facilities

The desalination facility would generate approximately 30,000 AFY of brine as a result of the reverse osmosis treatment process and the discharge system would include the following three components:

- Brine pump station;
- Discharge pipelines; and
- Discharge diffuser structure.

Brine Pump Station and Discharge Pipelines

Brine would be discharged from the desalination facility to the offshore diffuser structure via two proposed subsurface 36-inch-diameter discharge pipelines. The discharge pipelines would be approximately 12,000 linear feet (2.3 miles) in length, extending from the desalination facility underground and would emerge from the seafloor northwest of the Moss Landing Harbor entrance. A brine pump system would be built at the desalination facility site to provide the required pressure and velocity at the discharge diffuser structure. The same HDD pit for the intake pipelines would be used for the discharge pipelines, which would be within the intake pump station footprint.

Discharge Diffuser Structure

The discharge diffuser structure would be located on the seafloor of Monterey Bay approximately 3,400 feet offshore from the mean high water line (MHWL at a depth of approximately 76 feet below mean lower low water (MLLW) (see Figure 5.4-3), where the two discharge pipes emerge from the seafloor. The ends of the two discharge pipes would create a confluence with a single 36-inch-diameter pipe manifold structure consisting of five separate standing pipe risers. Each riser would be fitted with a duckbill diffuser nozzle, capable of discharging a maximum of 5.45 mgd, for a combined discharge total of 27.26 mgd. The completed diffuser assembly would be about 140 feet long, 10 feet wide and 15 feet tall. The diffuser structure would be buried in riprap protective cover and ballast stone that would be placed up to the level of the diffuser, extend out a few feet in either direction, then descend down to the seafloor at a 4:1 horizontal to vertical slope. The ballast and armor stone may need to be keyed a few feet below the seafloor over a horizontal width of five feet. Approximately 8,000 cubic yards of armor ballast stone would be needed. Only the duckbill diffuser nozzles would extend above the protective cover.

Desalination Facility, Data Center, and Substation (Main Facility Site)

The Alternative 3 desalination facility, data center, and electrical substation components would be located in the Moss Landing area of unincorporated Monterey County. These facilities would be located on the south side of a 110-acre parcel off Dolan Road (main facility site). This parcel, also referred to as the East Tank Farm Parcel, is located on the north side of Dolan Road, approximately 1.5 miles east of Highway 1. The site is bordered by Dolan Road on the south, the Moss Landing Power Plant (MLPP) on the west, and predominantly agricultural lands and the Elkhorn Slough to the north and east.

Desalination Plant

Alternative 3 would include the construction and operation of a desalination facility on the main facility site off Dolan Road. The facility would produce 25,000 afy of potable water from raw seawater and would generate 30,000 afy of brine concentrate (brine) as a by-product.

The desalination plant would house all of the equipment used for the desalination process, except for the seawater intake system, brine discharge system, and product (potable) water distribution systems. The desalination plant would provide the following primary systems:

- Heat-transfer process (housed at data center);
- Pre-treatment system;
- Desalination and energy recovery system;
- Solids/residuals handling systems;
- Post-treatment system; and
- Finished product water storage and pump station.

The details of these facilities and associated operations are explained below. Major buildings that would house these systems are identified in **Table 5.4-4**. Additional details on the RO process are provided in Section 3.2.2.2 of Chapter 3, Description of the Proposed Project.

Heat-Transfer Process

The intent of co-locating the desalination facility and the data center would be to cool the data center with seawater rather than conventional cooling methods, and to warm the seawater with data center waste heat prior to the RO treatment process.[8] Therefore, the initial step in the RO treatment process would include capturing heat from the data center through a closed-loop cooling system. The seawater routed through a heat exchanger prior to entering the desalination facility would be used to cool the data center buildings and as a result, the seawater would be heated for the RO treatment process.

Pre-Treatment System

After the heat transfer process and prior to desalination, the seawater would require filtration to remove suspended solids and organic matter that could foul the RO membranes. The pre-treatment system could consist of dissolved air flotation, flocculation/sedimentation system, or a dual-media primary filtration system followed by a single-stage, deep-bed, dual-media filtration system with sufficient redundancy. The pre-treatment requirements would be determined after additional source water sampling is conducted as part of obtaining the drinking water permit for this alternative. The pre-treatment media filters would be designed to utilize filtered seawater or RO brine as a source of backwash water. Most of the backwash wastewater would be recycled through the backwash reclaim system. Following pre-treatment, filtered water would pass through micron cartridge filters that would capture any residual material not removed by the pre-treatment media filters. The product of the pre-treatment process is called feed water.

[8] Seawater warmed by heat from the data center would increase the efficiency of the desalination process (by making the membranes more malleable) and would therefore, reduce the energy required to operate the desalination facility.

TABLE 5.4-4
SUMMARY OF ALTERNATIVE 3 COMPONENTS CONSIDERED FOR ANALYSIS

Project Component	Component Characteristics	Quantity	Approximate Size	Maximum Height (in feet above grade)
Seawater Desalination Facility				
Pre-treatment systems	Dissolved air flotation, flocculation/sedimentation system, or a dual-media primary filtration system followed by dual-media filtration system.	1–2 buildings	TBD	35 feet
Backwash treatment system	Periodic backwashing of filters to remove accumulated solids.	1 building/enclosure	TBD	20 feet
Cartridge filtration system	Following pre-treatment, filtered water would pass through micron cartridge filters to capture residual matter. Systems include wetwell and pumps.	1 building	TBD	30 feet
Seawater reverse osmosis desalination and energy recovery system	Semi-permeable membranes to separate and concentrate salts from seawater, resulting in permeate (water that will become potable water) and a concentrated solution called brine. System includes pumps, treatment units, and energy recovery devices.	1 building	TBD	35 feet
Solids handling system	A lamella clarifier/solids settling system with integrated surge basin and either a belt filter press or centrifuges to achieve greater than 20% dry solids.	1 building/ enclosure	TBD	35 feet
Post-treatment system	Calcite or lime and carbon dioxide conditioning of SWRO permeate to adjust and stabilize pH. Includes a drawback tank and calcite contactors.	Multiple tanks	TBD	35 feet
Product water storage and delivery	Product water storage tanks, product water pump stations, and surge tank. Product water pump station discharges potable water into the distribution system.	1–2 finished water tanks 1–2 pump stations 1 surge tank	TBD	40 feet (finished water tank) 20 feet (pump station) 25 feet (surge tank)
Chemical storage and delivery	Fully contained bulk storage tanks.	1 building	TBD	30 feet
Transformer pad and MCC area	--	—	—	—
Control building	Control room, offices, bathrooms, storage, and maintenance shop.	1 building	TBD	35 feet
Parking	Desalination facility paved parking.	20 spaces	NA	NA

TABLE 5.4-4 (Continued)
SUMMARY OF ALTERNATIVE 3 COMPONENTS CONSIDERED FOR ANALYSIS

Project Component	Component Characteristics	Quantity	Approximate Size	Maximum Height (in feet above grade)
Seawater Intake System				
Intake structure	Located on the seafloor at a depth of approximately 156 feet, below mean lower low water (MLLW), would draw seawater from the open ocean in the MBNMS through fine-mesh screens (passive narrow-slot wedgewire screens with 1-millimeter slot size).	each structure consists of 2 pipes with 12 screen assemblies with 2 screens each that is screw-anchored to the seafloor and connected to an intake pipeline	110 feet long 30 feet wide	12 feet tall (above seafloor)
Intake pipelines	Convey seawater from the intake structure to onshore pump station.	2 pipelines	42-inch-diameter 3,600 linear feet	Below seafloor
Intake pump station	Draw seawater from the intake structure and pump it to the desalination facility.	1 building	3,600 square feet	Mostly below grade
Transfer pipelines	Transfer pipelines would carry the seawater from pump station to the desalination facility.	2 pipelines	36-inch-diameter 5,800 linear feet	Below grade
Brine Discharge System				
Brine discharge diffuser structure	Located on the seafloor at a depth of approximately 76 feet and would discharge brine into the MBNMS via a multi-jet linear diffuser designed to rapidly mix the brine with ocean water.	1 discharge structure consisting of 1 pipe with 5 separate pipe risers, each having a duckbill diffuser nozzle. Each structure is buried in riprap protective cover and ballast stone that would be placed up to the level of the diffuser	140 feet long 10 feet wide	15 feet tall (above seafloor)
Brine pump station	Located at the desalination facility, would provide required pressure and velocity at the discharge structure.	1 pump station	TBD	TBD
Discharge pipelines	Underground pipelines would convey brine from the desalination facility to the discharge diffuser structure in the ocean.	2 pipelines	36-inch-diameter 12,000 linear feet	Below grade
Product Water Distribution System				
Monterey Peninsula Distribution System	Pipeline that could transport 9 million gallons per day (MGD) of product water.	1 pipeline	36-inch-diameter	Below grade

TABLE 5.4-4 (Continued)
SUMMARY OF ALTERNATIVE 3 COMPONENTS CONSIDERED FOR ANALYSIS

Project Component	Component Characteristics	Quantity	Approximate Size	Maximum Height (in feet above grade)
Data Center				
Data center	Provides data transmission and data storage capabilities.	4 buildings	Approximately 1 million square feet	35 feet
Closed-loop cooling system	Each data center would include a closed-loop cooling system to provide air conditioning to offices and computer server areas.	4 (1 for each building)	NA	NA
Backup power supply	Back-up power generators to provide required redundant electrical power to data center and desalination facility in case of a full or partial loss of PG&E electrical services. Generators to be located in a generation plant building.	1 building 3 natural gas-fueled generators	10 megawatts (MW) each	35 feet (building)
Parking	Data center parking	138 spaces	NA	NA
Substation				
Substation	Provide a redundant supply of electric power.	1 substation	230 kV 137,000 square feet	40–50 feet
Switchgear building	House the switchgear assembly circuit breakers and associated substation auxiliary equipment.	1 building	960 square feet	12 feet
Control building	House other control and metering equipment.	1 building	800 square feet	12 feet
Electrical transmission facilities	Provide for interconnection to PG&E's transmission system located on the main facility site. Includes transmission lines, transmission towers, and underground circuits.	5 towers	NA	85–140 feet

NOTES:
TBD = To Be Determined at a later design stage
NA = Not Applicable

Desalination and Energy Recovery System

Approximately six to 10 RO pumps (plus one standby) would be used to pump the feed water through the reverse osmosis membranes. Each pump would have a rated capacity of approximately 1,600 to 2,500 gallons per minute. When the feed water is pressurized against the RO membrane surface, two resulting streams emerge: high-quality permeate (the water that would eventually become product or potable water) and concentrated brine. An integrated isobaric energy recovery system would recapture hydraulic energy. One complete standby RO unit and energy recovery system would be available to ensure reliable water treatment production.

Solids/Residuals Handling Systems

The pre-treatment filtration system would require periodic backwashing to remove accumulated solids retained by the filters. Filter backwash would be collected and treated in a backwash solids handling system consisting of a lamella clarifier/solids settling system with integrated surge basin, and either a belt filter press or centrifuges to achieve greater than 20 percent dry solids. The basin would be glass-lined bolted steel or concrete designed to contain sufficient backwash volume to stabilize feed flow to the solids settling system. A mixture of duplex stainless steel and thermoplastic valves, pipe, and fittings would be used throughout the system.

The RO membranes would require periodic cleaning in order to maintain efficiency. The cleaning process typically includes the use of a detergent in either an acid or base solution, depending on the nature of material being removed. Spent (used) membrane cleaning solution would be collected and neutralized prior to discharge into the brine discharge line or alternatively to the sanitary sewer, as determined by applicable regulation. The neutralization tank would have a capacity equal to one complete membrane-cleaning event and would be constructed of glass-lined bolted steel, fiberglass, or concrete. Approximately four membrane-cleaning events are anticipated annually.

Post-Treatment System

A portion of the reverse osmosis permeate would require post-treatment conditioning with calcite or lime and carbon dioxide for pH adjustment and stabilization, followed by disinfection. Sulfuric acid could be used to assist with calcite dissolution, and sodium hydroxide could also be used for pH control downstream of the calcite contactors. Calcite contactors are used to neutralize the pH and to add calcium and bicarbonates to the permeate. The post-treatment system would forward desalted permeate to the calcite contactors and then to the finished water storage tank for blending.

Final Product Water Storage and Pump Station

To provide sufficient retention time for complete disinfection, product water would be temporarily stored on site prior to being forwarded to the distribution pipelines. A distribution pipeline corrosion control inhibitor would also be added, if needed, to ensure that the final product water would be fully compatible with distribution pipeline materials.

The storage facilities would consist of one aboveground tank with provision for a second tank, if required; each with a maximum capacity of 5.5 million gallons. The tanks would be constructed of pre-stressed concrete.

The product water pump station would discharge potable drinking water for distribution. Approximately eight operating pumps and one standby pump would each have a rated capacity of approximately 1,900 gallons per minute and be capable of discharge pressures reaching 100 pounds per square inch to the distribution system.

Data Center

The data center (approximately 1 million square feet of total building space) would be located on the 110-acre main facility site off Dolan Road next to the desalination plant and would consist of the following three major components, which are described below:

- Data center buildings and a landing area;
- Closed-loop cooling system; and
- Back-up power supply.

Data Center Buildings and Landing Area

Four buildings and a landing area (a concrete pad and connection points for electrical and mechanical support) would make up the data center. A data center is made up of computer servers that provide the physical infrastructure to receive and store electronic data for people, businesses, and government entities that can be retrieved by those using the internet. The data center would include approximately 1 million square feet of total building space. Three data center buildings and a concrete landing pad for modular data center equipment are planned.

Closed-Loop Cooling System

Each data center building would include a closed-loop cooling system designed to provide air-conditioning to both office and computer server areas of the buildings. In lieu of the chiller units and evaporative cooling systems typically employed for air conditioning, the data center buildings would use cold seawater to cool the buildings and systems.

A closed-loop heating and cooling system works through heat transfer. Hydronic piping would be routed throughout the data center to each air handling device. This piping would be a closed loop, meaning the same freshwater continues to recirculate through the system. The hydronic system would require an initial "charge" where the entire loop would be filled with water. This water would likely be purchased from Pajaro Sunny Mesa Community Services District and imported to the data center. As water circulates through the closed loop, it would flow through heat exchangers where it would pick up heat from the facility. It would then circulate through a large heat exchanger through which the cold seawater would also be passing. Cold seawater would pass through a non-contact, tube-and-shell, or plate-style heat exchanger where it would collect heat from the data center cooling system. There would be no mixing of seawater with fresh cooling water, and no seawater piping would enter the data center facilities. After leaving the heat

exchanger, the warmed seawater would be recombined with the desalination intake pipeline. No seawater would be lost to the heat transfer process.

The data center closed-loop cooling system within each of the four buildings would hold approximately 400,000 to 850,000 gallons of fresh water, for a total of approximately 2.5 million gallons for all four buildings. Prior to the initial charging, the fresh water may require treatment, such as softening and deionization, to remove hardness minerals that could result in scaling.

The closed-loop system would not be expected to consume water during normal operation. There would be incidental losses from system leaks and make-up water would be added during operation to keep the system fully charged. Annual maintenance would include replacing up to 20 percent of the closed-loop system capacity with fresh water. Water from the closed-loop system, whether captured from incidental losses or maintenance procedures, would be discharged to the sanitary sewer system, in compliance with any applicable pre-treatment requirements.

Back-Up Power Supply

Electrical service from the PG&E system would provide the main source of power for the data center and a new substation would be constructed on the main facility site (see below). Additionally, the proposed data center would include up to three natural gas-fueled back-up power generators, either gas turbines or reciprocating engines (each retrofitted with carbon/greenhouse gas [GHG] capture technology), to provide the required redundant electrical power in the case of a full or partial loss of electrical service from the grid. The generators would each be rated at up to 10 megawatts (MW) and would be located within a generator plant building. Natural gas fuel for the generators would be supplied by an existing PG&E-owned natural gas pipeline that is located in the main facility site. New service connection to this natural gas pipeline would be installed as part of the project. It is expected that each generator would be operated for no more than 1,500 hours per year.

Substation

The data center would require up to 150 MW of electrical power and the desalination facility and other site infrastructure would require an additional 25 MW of electrical power. A redundant supply of electric power would require constructing a new 230-kilovolt (kV) substation with a footprint of approximately 137,000 square feet.

The substation and five transmission towers (ranging from 85 to 105 feet above grade) would be built on the main facility site and would be designed to interconnect with PG&E's transmission system through the 230 kV high-voltage power lines that run through a corridor located on the main facility site. The interconnection and substation facilities would be designed to provide the redundant electrical power supply required to ensure power quality and reliability for operations. The preliminary design proposes an air-insulated substation enclosed in a metal structure so all conductors, instruments, switches, and breakers would be fully enclosed.

Product Water Conveyance

The DeepWater Desal proposal includes product water pipelines to supply three different areas: the Monterey Peninsula; Castroville and Salinas; and North Monterey and Santa Cruz Counties. It is assumed that up to an additional 25 miles of product water pipelines could be constructed to accommodate the product water that would not serve the Monterey Peninsula.

The desalinated product water would be delivered from the desalination plant site to the Monterey Peninsula via a 36-inch diameter pipeline. The pipeline would leave the desalination plant west along Dolan Road, south along Highway 1, south/southeast along Molera Road, southwest along Monte Road, to a connection point near the intersection of Monte Road, Lapis Road, and Charles Benson Road. The pipeline would then connect to the product water conveyance system described for the proposed project in Chapter 3, Description of the Proposed Project and shown on **Figure 5.4-3**.

Hydroacoustic Monitoring System

Alternative 3 would also include the construction and operation of a hydroacoustic monitoring system. The hydroacoustic information link (HAIL) monitoring system would allow for the collection of continuous water quality data for Project monitoring, and may also be useful for other research and/or academia needs that may be of interest pertaining to the Monterey Submarine Canyon. The system would repurpose an existing, abandoned Dynegy oil pipeline in Monterey Bay and consist of three primary components: transmitter(s), receiver; and, onshore processor. The transmitter would send low-rate hydroacoustic data to the receiver located at the end of the Dynegy pipeline. The onshore computer processor would receive the data from the receiver. The HAIL system would provide a reliable underwater data link for instruments located up to approximately 6 miles from the system receiver.

This component of DeepWater Desal's application is not substantively related to the proposed project objectives or purpose and need and therefore, the hydroacoustic monitoring system and associated facilities are not analyzed in this EIR/EIS.

5.4.5.2 Construction

Open Ocean Intake System

The 42-inch-diameter dual intake pipelines would be constructed subsurface using HDD from the intake pump station site to the offshore seawater intake structure location in Monterey Bay. The installation of the pipelines would include anchoring in place and installation of ballast.

The HDD entry pit would be within the footprint of the intake pump station on Dolan Road. Prior to installation of the intake pipelines, the railroad spur and underlying embankment would be removed, and the site graded to the final elevation of the intake pump station.

The HDD segment of the intake pipelines would traverse subsurface along the north side of Dolan Road, cross under Highway 1, the Moss Landing Harbor Channel, and Moss Landing Sand

Spit within the discharge tunnel easement of the MLPP, and then to a point offshore where the pipelines would surface on the seafloor. The pipelines would also be at least 80 feet below the MLPP discharge pipe. Both intake pipelines would have similar elevations and would be separated by 10 to 20 feet along the alignment.

The HDD method uses a drill rig launched from an onshore location to drill a pilot bore to the intake structure location. The pilot bore would be enlarged by one or more back reamers to the size required for the intake pipe. It is assumed that the pipes would be assembled on barges, lowered to the seafloor and pulled back through the borehole during the final reaming process.

Construction of the intake structure would occur after installation of the pipelines has been completed. The bed of the intake structure may need to be prepared below the concrete pads. This would be accomplished using diver-assisted or lead dredging using suction and/or mechanical techniques. The amount of seafloor materials to be removed would depend on the local changes in bathymetric grade, but should be confined within the planned 120- by 50-foot area to accommodate the intake structure. Excavated materials would be transferred to a barge and disposed of in a suitable area onshore or offshore.

Embedment type anchors would be set into the seafloor to secure the concrete pads and would extend 10 feet below the seafloor. Given that sub-seafloor materials are soft, screw-type anchors would be installed and the intake structure would be placed on the seafloor. The entire assembly would be built off site and transported to the intake structure location, then lowered to the seafloor by crane and set into place by divers. Alternatively, the intake structure could be assembled in place by divers as needed using modular components that are fabricated off site then barged to the site. Once the intake structure has been installed, a prefabricated section of stiff or flexible pipe would be used to connect the intake structure to the sub-seafloor pipelines.

The 36-inch diameter transfer pipelines from the intake pump station to the desalination facility would be installed along the defined Dolan Road alignment within a conventional trench that is approximately 10 feet wide and 15 feet deep. Approximately 5 to 10 feet of cover would be provided between the top of the pipeline and roadway.

Brine Discharge Facilities

Installation of the five-jet linear diffuser would be similar to the intake structure since the diffuser structure would be supported on prefabricated concrete pads placed on the seafloor. The diffuser structure would be buried in riprap protective cover and ballast stone. The discharge pipelines would be constructed entirely subsurface except in the “breakout” location in the vicinity of the outfall structure on the shoulder of the Monterey Submarine Canyon. The same HDD pit used for the intake pipelines (within the intake pump station site) would be used to install the offshore portions of the discharge pipelines. Using conventional trench methods (as described above), the pipelines would be buried under Dolan Road between the desalination facility and the HDD site.

The onshore pipeline segments would be constructed of fiberglass-reinforced plastic or similar non-metal material onshore and high-density polyethylene (HDPE) or flexible polyvinyl chloride (PVC) for the offshore pipeline segments.

Desalination, Data Center, and Substation Construction

Construction of the data center, desalination facility, and substation on the main facility site would take approximately 2 years to complete. Activities would include site mobilization, demolition, site preparation and grading, paving for parking and access routes, trenching and backfilling for underground yard piping, excavation and installation of foundations, construction of all structures, interior finishing, equipment installation, testing, and commissioning. Construction equipment used would be very similar to equipment used for the proposed project, as listed in **Table 3-4** of Chapter 3, Description of the Proposed Project. Approximately 60 acres of land on the main facility site could be disturbed during construction. The remainder of the 110-acre main facility site is located within a PG&E easement across the site, which would be subject only to improvements related to the interconnections of the substation with the PG&E transmission system and existing natural gas pipeline.

Product Water Conveyance

The product water distribution systems would also involve site mobilization, site preparation and grading, trenching and backfilling for underground piping, and paving where pipeline alignments would be located in paved roads to the connection point with the proposed project conveyance system. Construction activities for the product water conveyance system would be the same as described for the proposed project in Section 3.3 of Chapter 3, Description of the Proposed Project in addition to the 25 miles of pipeline needed to serve Salinas and areas in Santa Cruz County.

5.4.5.3 Operation and Maintenance

Seawater Intake System

The intake system would operate 24 hours a day, 365 days a year. Redundant screens on the intake structure and the dual intake pipelines would allow for the intake system to operate continuously, even during maintenance activities.

Screen sections for the intake structure could be removed entirely for maintenance purposes when needed and the end of each intake pipe could be removed to facilitate cleaning or pigging. The intake screens would be manually cleaned by divers once per year, which would take two days to complete.

Dual-intake pipes are proposed to provide for system redundancy and to maintain source water flows during pipeline maintenance. One screen/pipeline could be out of service for maintenance while the other screen/pipeline system is in service. Annual pipeline maintenance would involve pigging to remove accumulated sediment and bio-growth. The pig has an abrasive coating that scrubs the pipeline walls, removing any buildup of ocean sediments, mineral deposits, and bio-growth.

Material removed during intake screen and pipeline maintenance would be released into the ocean at the screen location where manual screen cleanings are taking place or at the end of the intake pipeline where the pig is released. Wastes would not be disposed of elsewhere.

Brine Discharge Facilities

The brine discharge system would also operate 24 hours a day, 365 days a year. The dual discharge pipelines would allow for the discharge system to operate continuously even during routine inspections using closed-circuit television video. No other chemical- or mechanical-type cleaning system would be required.

Desalination Facility

The desalination facility would operate 24 hours a day, 365 days a year. The facility would be centrally operated from a computerized control system that would assist the facility staff in operating and monitoring the process equipment. The desalination facility would contain redundancy to facilitate periodic on-line maintenance of the individual treatment components with no reduction in facility output. However, approximately 18 days throughout the year, the facility could require reduced or no capacity for major maintenance or inspection purposes, such as those needed for State Water Resources Control Board, Division of Drinking Water Programs, compliance. This would result in an approximate annual plant availability of 95 percent, similar to the proposed project.

Chemical Storage and Use/Safety Procedures

Chemical use and storage would be similar to the proposed project (see Section 3.2.2.4 in Chapter 3, Description of the Proposed Project). Chemicals certified for use in drinking water treatment would be used in the desalination process to optimize pre-treatment filtration, ensure the correct water quality standards are met, and maintain the reverse osmosis membrane elements in a clean condition. Chemicals would also be used for stabilization and disinfection of the desalted product water to allow for distribution in a regulated potable water supply.

The chemicals would be delivered to the site in bulk quantities and stored in fully contained bulk storage tanks prior to use. All chemical storage, handling, and feed facilities would be designed, constructed, and maintained in compliance with all applicable governmental codes and regulations to ensure safe storage and handling.

Staffing

The desalination facility would be fully automated, but would be continuously staffed with a total of approximately 18 full-time employees spread over three shifts. Additionally, outside services would be required from electrical, equipment, and instrumentation contractors, and the service industry.

Data center core staffing would require 20 employees during each 8-hour shift. Additional contracted staff and client visitors could add up to an additional 20 people during any 8-hour

shift. If required, staggering shifts to avoid peak-hour traffic times could be accommodated as most scheduled maintenance would take place during non-peak load times late at night, on weekends, or during holiday shutdowns to minimize disruption.

Solid Waste Generation

The proposed desalination facility would generate waste from the solids produced in the pre-treatment process. These solids would be settled, dewatered, and ultimately disposed of in a solid waste landfill or other approved land application method. Approximately 8.5 tons per day, or 3,102 tons per year, of sludge would be generated from the pre-treatment process and would be hauled off the site for disposal. The solids would contain naturally occurring organic and inorganic matter removed from the raw seawater during the pre-treatment process and precipitated iron from coagulation dosing with ferric chloride, if needed. Other solid wastes generated would include used cartridge filters generated during routine maintenance activities. Spent reverse osmosis membranes are non-hazardous waste and would be disposed of in a landfill. The administrative activities at the facility and the data center would generate typical office wastes.

Electrical Power Consumption

The operating desalination facility would consume 12 to 16 MW of electric power to provide for desalination facility, intake system, discharge system, and product water distribution system operation. The data center would require 150 MW of electrical power to operate.

Water Use and Wastewater Generation

Potable water would be required for the main facility site breakroom/kitchen and restrooms, which would result in the demand for 2,300 gallons per day of water. Potable water would be supplied via a new water line connection to an existing potable water line located in Dolan Road. Product water from the desalination facility would not be used on site for domestic purposes. Sanitary waste would be routed to the Castroville Community Services District for delivery to MRWPCA. Peak flows associated with the discharge of water from the closed-loop cooling system would be expected to occur once a year and would be approximately 588,000 gallons.

Stormwater Drainage

Stormwater detention ponds would be installed along the north side of the main facility site to provide approximately 3.6 acre-feet of water quality treatment. The ponds would be planted with native plantings.

Fencing, Access, and Parking

The main facility site is surrounded by a 7-foot-high chain-link fence. The perimeter of the desalination facility would be similarly fenced and would include three-strand barbed wire. Facilities within the main facility site perimeter, such as the electrical substation, could have additional fencing for both safety and security reasons. The main entrance for the facility site

would be through the existing access via controlled automatic gates, located on the south side of the site at the western terminus of Via Tanques Road near its intersection with Dolan Road. A new secondary entrance would be located on the western side of the site off of Via Tanques Road. Two parking lots would also be installed at the main facility site, with a total of 158 spaces for employee and visitor parking.

Lighting and Landscaping

Outdoor area lighting for the main facility site would consist of permanently mounted fixtures secured to structures, equipment, walls, and poles as required, providing access lighting for personnel and for security. The lighting system would be designed to provide nighttime lighting levels consistent with applicable standards.

The landscaping plan for the main facility site includes planting tall native screening trees around the perimeter of the site and around major buildings. Low to medium-height native grasses and shrubs would also be planted.

Product Water Conveyance

The product distribution pipelines would likely be owned by the water agency purchasing water from the project; CalAm would own the pipelines to the Monterey Peninsula and others would own the pipelines to Salinas and Santa Cruz County. Annual flushing, valve operation, and system integrity inspection would be expected. Product water distribution system maintenance activities would be the same as for the proposed project (see Section 3.4.3 of Chapter 3).

5.4.5.4 Ability to Meet Project Objectives

Alternative 3 would meet all of the project objectives and would produce the required volume of product water, but its permitting complexity may delay the availability of the supply relative to the State Board's Cease and Desist Order. The alternative includes an open-water intake and the placement of ballast rock on the seafloor, and the desalination facilities would be co-located with a data center. The alternative would produce more water than is needed for CalAm's Monterey District and those contracts would need to be negotiated. An additional 6.5 miles of product water pipeline would be required to connect the alternative to the proposed project's pipelines in Marina; 25 additional miles of product water pipelines are also required to deliver water to other customers. DeepWater Desal would need to complete its own project-specific EIR/EIS process, develop mitigation for the impingement and entrainment losses associated with the open water intake, receive the required permits (including authorizations from MBNMS) and enter into a water purchase agreement with CalAm. The water purchase agreement would need to be approved by the CPUC prior to delivery of product water to CalAm's customers in the Monterey District service area. The increased permitting complexity may delay the ability to serve water to meet project objectives 1 through 7.

5.4.6 Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 is the People's Moss Landing Water Desalination Project (People's Project), which is proposed by Moss Landing Green Commercial Park, LLC (MLGCP). The People's Project will be evaluated in a separate EIR that is being prepared for the Moss Landing Harbor District as the CEQA Lead Agency. The Moss Landing Harbor District issued a Notice of Preparation[9] for the People's Project on June 25, 2015 (Moss Landing Harbor District, 2015). It is possible that a joint EIR/EIS will be prepared for the project, with MBNMS as lead federal agency, if a complete application is submitted to the Sanctuary.[10] For the purposes of this EIR/EIS, this project is considered as an alternative to the proposed project and the description herein is based on information received from MBNMS in June 2016. The evaluation of this alternative in this EIR/EIS is based on information that was publically available, information provided by MBNMS, and the independent judgement of the analysts based on the available information. More detailed analyses of the People's Project will be forthcoming in the separate environmental review document(s) and will be based on technical studies that were not available at the time this EIR/EIS was being prepared. The approach to analysis of the impacts of the People's Project in this EIR/EIS is based on available information, and draws conservative conclusions where information is currently unavailable.

5.4.6.1 Overview

Alternative 4 includes decommissioning the test slant well at CEMEX, and the construction and operation of an open ocean intake system, a 12 mgd desalination plant and associated components to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula area. The People's Project applicant has used CalAm's required need for replacement supplies and water needs of the General Plan Build-out to size this alternative. None of the project components would be the same as the proposed project except for the product water pipelines south of Neponset Road, at the point marked "connection to CalAm" on **Figure 5.4-4**. Alternative 4 would include the following new components:

- Open ocean intake system in the same vicinity as Alternative 3;
- Desalination plant including source water receiving tanks; pretreatment, reverse osmosis, and post-treatment systems; chemical feed and storage facilities and associated non-process facilities.
- Brine discharge system consisting of rehabilitating and extending an existing 51-inch diameter discharge pipeline; and

9 State Clearinghouse number 2015061103

10 The project proponent submitted permit application materials to MBNMS in October 2015 and the application was deemed incomplete. A revised application has not yet been submitted, as of October 2016.

SOURCE: ESA, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-4

Alternative 4 - Peoples' Moss Landing Water Desalination Project

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- All of the desalinated product water would be delivered from the desalination plant site to the Monterey Peninsula via a new 36-inch diameter pipeline. The pipeline would leave the desalination plant west along Dolan Road, then south along Highway 1, then south/southeast along Molera Road, then southwest along Monte Road, to a connection point near the intersection of Monte Road, Lapis Road, and Charles Benson Road. The almost 8-mile-long pipeline would then connect to the product water conveyance system described for the proposed project in Chapter 3, Description of the Proposed Project and shown on Figure 5.4-4.

As shown in **Figure 5.4-4**, the components of Alternative 4 would be located in the Moss Landing area of unincorporated Monterey County and offshore in the Monterey Bay. Each component is described below.

Open Ocean Intake System

The screened open ocean intake system in Monterey Bay would draw seawater for use as source water for the desalination plant. Approximately 30 mgd of source water would be needed to produce approximately 12 mgd of desalinated product water. The intake would use an existing 20-foot-diameter intake pump caisson structure located on the beach adjacent to the Monterey Bay Aquarium Research Institute on Sandholt Road in Moss Landing. The existing caisson was originally built in the 1940s and used as an open intake facility and pump house. The previous intake pipeline was removed and does not currently exist. The intake structure would be rehabilitated to include a new 40-inch diameter intake pipe that would extend approximately 1,400 feet out from the existing caisson into MBNMS. The near shore portion of the pipe (the first 300 feet) would be drilled under the seafloor and the remaining 1,100 feet would be laid on the seafloor and covered with riprap armoring.

Two wedgewire screens (one active and one stand-by) would be attached at the end of this new pipeline extension and would be located on the seafloor approximately 120 feet below mean sea level (msl). Each screen structure would be 96-inches in diameter, would be designed with 1.0 mm wedgewire slots for a maximum through-screen velocity of 0.5 feet per second and would be fabricated from copper nickel alloy to minimize the potential for biofouling.

A new 10-foot-high pump house would be built on top of the existing caisson structure with a first-floor elevation of approximately 17 feet above msl. Vertical turbine pumps would be used, with pumps submerged in the intake structure and motors in the pump house above. From the pump house, a new 40-inch diameter underground pipeline would convey the seawater under the island and beneath the Moss Landing Harbor and State Route 1 (or Highway 1) and deliver it to the proposed desalination plant at the Moss Landing Green Commercial Park.

Brine Discharge Facilities

An existing 2,750-foot outfall pipeline originates at the Moss Landing Green Commercial Park, goes under the marina and the marina parking lot island, under the commercial harbor, under the island, and extends approximately 800 feet from shore to a water depth of approximately 43 feet in Monterey Bay (Landmark Realty, 2011). The 51-inch-diameter concrete pipe is buried with approximately 25 feet of cover over the entire length (Miller, 2012). Due to the age and condition of the existing 51-inch-diameter pipeline, a new 36-inch-diameter pipeline would be slip-lined

within the existing pipeline and extended approximately 700 feet on the seafloor to a water depth of approximately 120 feet at the edge of the submarine canyon (see **Figure 5.4-4**). The discharge would include two new 16-inch-diameter diffuser ports. Alternative 4 would discharge approximately 17.5 mgd of brine effluent with a maximum concentration of 62.5 ppt.

Desalination Facility (Moss Landing Green Commercial Park)

The desalination plant for Alternative 4 would be located at the Moss Landing Green Commercial Park, located on the southeast corner of Dolan Road and Highway 1. The approximately 200-acre site is zoned under the Monterey County General Plan for Heavy Industrial Coastal Dependent use. Of the total site, a 16.5-acre parcel is being proposed for developing the Alternative 4 desalination plant and would be fenced off from the rest of the property.

The desalination plant would include: (1) an equalization basin to receive and store the incoming source water; (2) an inlet pump station to convey source water from the equalization basin to a pretreatment system; (3) a pretreatment system; (4) a reverse osmosis system; (5) a post treatment system; (6) a return flow pipeline that would convey brine and washwater back to the disengaging basin; (7) chemical feed and storage facilities; and (8) facilities for residuals management. The desalination plant site would also contain a 5 million gallon treated water storage tank, as well as non-process administrative facilities.

Equalization Basin

The source water pipeline would terminate at a series of existing open top, partially buried, concrete storage tanks to serve as an equalization basin. The equalization basin would stabilize volume and temperature of the source water received from the intake facility prior to entering the desalination pretreatment process. The equalization basin would include rehabilitating two existing partially buried concrete open tanks to provide some equalization of the seawater, adequate retention time for coagulation of chemicals (as described below: *Pretreatment*) to react with the raw seawater to provide settling of large particulates and solids that may have made it through the passive screens. Each of these two tanks would have a capacity of 1.8 million gallons and plate settlers would be installed in the tanks to enhance sedimentation and settling. A coagulant dosing system would be used upstream of the contact tanks to inject chemicals such as ferric chloride into the seawater in order to improve the efficiency of downstream treatment processes. These tanks would be equipped with hopper bottoms for solid collection. A mechanical rotating sludge collector would be installed in each tank to remove deposited solids.

Inlet Pump Station

An inlet pump station would be located at the desalination plant and would pump raw seawater from the equalization basin to the pretreatment system. The pump station would be sized for a lift of approximately 30 feet and would have a capacity of 30 mgd.

Pretreatment System

The proposed pretreatment system would have a capacity of 30 mgd, and would consist primarily of flocculation, dissolved air flotation, media filtration, ultra-filtration, and cartridge filtration.

Reverse Osmosis System

The desalination plant would utilize a RO system similar to that described for the proposed project in Section 3.2.2.2 of Chapter 3, Description of the Proposed Project. The RO membranes would be housed in a new approximately 20,000 square-foot building. The system would utilize a "first pass" and partial "second pass" process to meet water quality requirements. Hardness, alkalinity, and pH of the product water would be adjusted after the RO process to meet water quality standards. Disinfection, as required to meet regulatory requirements, would take place using hypochlorite.

Byproducts and Residual Management

The following is a summary of the types and estimated quantities of byproducts and residuals produced at the proposed facility:

- Concentrate (brine) from the RO system. This stream would essentially have all the salts and ions present in the source water but at higher concentration. At the proposed RO recovery rate of 45 percent, the concentration of salts and ions would be 1.8 times that of seawater. At this recovery rate, the concentrate would contain total dissolved solids (TDS) in the range of 63,000 to 64,000 mg/L depending on the seawater temperature and salinity.
- Recovered and Treated backwash water from the Media Filters. The back wash water from the Media Filters and UF would be transferred to backwash collection tanks and pumped to the backwash treatment system consisting of sludge tank and centrifuges. The sludge would be collected and sent to a sludge treatment facility, while the clear supernatant would be mixed with the concentrate and sent to the outfall.
- Recovered and Treated Clean Backwash from Post Treatment. Similarly recovered clean backwash from post treatment would be mixed in the outfall blend tank and sent to the outfall. **Table 5.4-5** is a summary and expected quality of the combined outfall.

TABLE 5.4-5
OUTFALL WATER QUALITY AND QUANTITY

Product	Flow (MGD)	TDS (mg/L)
Concentrate (Brine) from RO	15.46	65,000
Recovered and Treated Backwash from Media Filtration	1.98	35,800
Recovered and Treated Clean Backwash from Post Treatment	0.06	400
Combined Total	**17.5**	**61,500**

- Clean-in-Place (CIP) Wastes. All three types of membranes used in Alternative 4 would require CIP systems. A CIP involves two steps: 1) circulating cleaning chemicals through the membranes; and 2) flushing the membranes with clean water to remove the waste-cleaning solutions. Neutralization systems would be included in the membrane facility with a neutralization tank placed under the building floor. The appropriate chemical, typically either sodium bisulfite acid or sodium hydroxide, would neutralize the cleaning chemicals so the waste can be properly sent to the sanitary sewer. A vertical chemical resistant pump would serve as mixing the chemicals as well as pumping the neutralized content of the tank gradually to the sewer system. The CIP events would be scattered throughout a week to reduce peak waste flows.

- Miscellaneous Wastes. Miscellaneous drains from analyzers, wash-downs, sample panels, etc., would be connected to the sanitary sewer system.

- Bathroom and Indoor Plumbing Wastes. Bathroom, showers and other building plumbing wastes would be connected to the sanitary sewer system. **Table 5.4-6** shows the estimated peak volumes and continuous flows to the sanitary system. A sewage pump station would be included adjacent to the desalination plant site and flow would be discharged into the Castroville Sanitation District sewer at the intersection of Dolan Road and Highway 1.

TABLE 5.4-6
OTHER RESIDUALS DISPOSAL

Residual	Total Volume per Event (gallons)	Frequency	Continuous flow (gpd)	Comment	To
RO CIP Cleaning	300,000	Once per month	50,000	Neutralized	Sanitary Sewer
BWRO Cleaning	80,000	Once every 2 months	20,000	Neutralized	Sanitary Sewer
Floor Drain, Analyzers, and Wash Waters	N/A	Continuous	3,000	Neutralized	Sanitary Sewer
Sanitary Sewer from Buildings and Offices	N/A	Continuous	1,500	Neutralized	Sanitary Sewer
Combined Total			74,500	Neutralized	Sanitary Sewer

- All process solid wastes would be combined and sent to the sludge tanks and sludge treatment facility. The sludge treatment would consist of sludge conditioning, centrifuges, thickeners, belt presses and chemical treatment for production of 30-35 percent solid content sludge, which would be sent off site by dump trucks. **Table 5.4-7** shows estimated volume of sludge to be hauled offsite.

TABLE 5.4-7
ESTIMATED SLUDGE PRODUCTION

Item	Units	Design
Dry Sludge Volume (30% Solids)	Gal/Day	407
Weight of Dry Sludge	Pounds/Day	4,070
Number of Hauling Trucks per Week		<2

Product Water Conveyance

Alternative 4 would include a 5 million gallon treated water storage tank at the desalination plant site, and a product water pipeline to connect to the CalAm Monterey District distribution system. The desalinated water would be delivered from the desalination plant site to the Monterey Peninsula via a new 8-mile-long, 36-inch-diameter pipeline that would proceed south along Highway 1, south/southeast along Molera Road, southwest along Monte Road, to a connection point near the intersection of Monte Road, Lapis Road, and Charles Benson Road. At this point, the new pipeline would connect to the product water pipelines described for the proposed project in Chapter 3, Description of the Proposed Project.

The People's Project would produce more water than is needed to meet the project objectives of the MPWSP. After meeting current customer demand of approximately 12,500 afy, the People's Project, in addition to existing supplies, would result in an excess of 6,000 afy for potential growth in the region.

5.4.6.2 Construction

Construction activities would take approximately 24 months and would include site grading and excavation; installation of prefabricated and onsite fabricated components (e.g., pretreatment and RO equipment, storage tanks, etc.); construction of buildings, electrical system, pump station and pipelines; and disposal of construction waste and debris. Construction equipment and materials associated with the open ocean intake system and desalination plant would be stored within the respective construction work areas. Construction equipment and materials associated with pipeline installation, including stockpiling of material, would be stored along the pipeline easements and at nearby staging areas. Staging areas would not be sited in sensitive areas such as riparian or critical habitat for protected species. To the extent feasible, parking for construction equipment and worker vehicles would be accommodated within the construction work areas and on adjacent public roadways complying with public parking signs.

Construction estimates are presented below in **Table 5.4-8**.

TABLE 5.4-8
ASSUMPTIONS FOR CONSTRUCTION ACTIVITIES

Alternative Components	Total Excess Spoils and construction Debris (Cubic Yards)	Construction Equipment	Construction Duration and Work Hours
Open Ocean/Bay Intake	150	Barge, Excavators, HDD Drilling Equipment, Dozers, Divers, Trucks	Overall schedule is approximately 6 months. Typical construction hours are from 7am to 4pm M-F.
Desalination Plant Facilities	40,000	Excavator, Backhoe, Grader, Crane, Dozer, Compactor, Trencher/Boring Machine, Front-end Loader, Water Truck, Flat-bed Truck, Forklift	Overall schedule is approximately 24 months. Typical construction hours are from 7 am to 4 pm - Monday through Friday
Outfall Pipeline and Diffuser	100	Barge, Excavators, HDD Drilling Equipment, Dozers, Divers, Trucks, etc.	Overall schedule is approximately 3 months. Typical construction hours are from 7 am to 4 pm - Monday through Friday
Product Water Pipeline	50,000	Excavator, Backhoe, Grader, Crane, Dozer, Compactor, Trencher/Boring Machine, Front-end Loader, Water Truck, Flat-bed Truck, Forklift, Compressor Jack Hammer, Asphalt Paver/Roller, Street Sweeper	Refer to proposed project in Chapter 3. Product water would be delivered to CalAm at Marina, then same as proposed project

Open Ocean Intake Pipeline

The existing caisson intake facility would be rehabilitated to withdraw the required 30 mgd of source water. Horizontal directional drilling or another trenchless technique would be used for the near shore portion of the new intake pipe (from caisson to approximately 300 feet offshore) and the remaining 1,100 feet of new pipe would be laid on the seafloor, ballasted with concrete collars and protected with riprap armoring. Two passive wedgewire screens would be mounted on a riser. Construction would require a combination of barges and scuba divers.

From the rehabilitated caisson and new pump house, a new 40-inch diameter pipeline would be installed using horizontal directional drilling methods to transfer the seawater to the desalination plant. The intake pipeline would be horizontally directional drilled under the Moss Landing Harbor and would then cross Highway 1 using pipe bursting methods to insert the new pipe into an existing 36inch pipeline crossing Highway 1. The pipe bursting process consists of advancing a conical-shaped bursting head that has a diameter 50 to 100 mm larger than the new replacement pipe, through the existing pipe. The product pipe immediately follows the bursting head as it is simultaneously pulled or pushed into the newly formed cavity.

Construction of the open ocean intake facility would be completed within approximately six months. During peak construction, five to ten construction workers may be employed.

Brine Discharge Pipeline

A new 36-inch diameter pipeline would be slip-lined within the existing 51-inch-diameter outfall pipeline. From the end of the existing outfall pipeline, 700 feet of new, 36-inch diameter pipeline would be laid on the ocean floor at a depth of approximately 120 feet below mean sea level and would include two 16-inch diameter diffuser ports. A combination of barges and scuba divers would be required to install the outfall extension on the ocean floor. The new outfall location would be at the same elevation as (120 feet below msl) and would be approximately 630 feet away from the open ocean intake.

Desalination Plant

Construction of the desalination plant and appurtenant facilities would include site preparation, equipment delivery, and building construction. Ground clearing and excavation of the site would be performed using heavy construction equipment such as bulldozers, backhoes, cranes, and graders. Heavy equipment would be used to construct connections with existing water conveyance systems, and to construct footings of tanks and other support equipment. Upon completion of excavation, construction activities would also include pouring concrete footings for tanks, laying pipeline and making connections, installing support equipment such as control panels and fencing the perimeter of the site.

Product Water Conveyance

Construction activities associated with the product water conveyance pipelines would be the same as described for the proposed project in Section 3.3.4 in Chapter 3, Description of the Proposed Project.

5.4.6.3 Operation and Maintenance

Open Ocean/Bay Intake Pipeline

The intake screens would be provided with an automatic airburst connection from a boat for occasional cleaning. A buoy would mark the spot of the screens to help avoid potential problems with boaters and anchoring.

Brine Discharge

The People's Project has not provided any information about the maintenance of the brine discharge system.

Desalination Plant

Chemical Feed and Storage Facilities

Various chemicals to be used during treatment would be stored and processed onsite, similar to the proposed project. The chemicals include:

- Coagulant (Ferric Chloride or Ferric Sulfate)
- Flocculant/Polymer/Filter Aid
- Sulfuric Acid
- Antifoulant
- Lime
- Caustic
- CO2
- Hypochlorite
- Ammonia
- Sodium Metabisulfite

The listed chemicals are non-flammable, and would be stored in tanks that meet applicable regulatory requirements and are located within the new pre-treatment, reverse osmosis and post-treatment building. The design of this building would incorporate the regulatory requirements for hazardous materials storage. In addition, two lime saturation tanks, situated adjacent to the chemical building, would contain a bed of calcite for post treatment after the RO process. Chemicals may be purchased in bulk and then processed on site.

Power Usage

Estimated power usage is between 8 and 9 kWh, assuming average water temperatures.

The primary source of electricity would be either direct service from Moss Landing Power Plant through an over-the-fence agreement with Dynegy, or from PG&E provided from an existing 12 kV electrical system. An independent secondary power supply (if available) or emergency backup generator would be required to operate the entire facility during power shortages. The emergency generator could run on diesel fuel or natural gas (preferred, if available).

Product Water Conveyance

Operation and maintenance activities associated with the product water conveyance facilities under Alternative 4 would be the same as under the proposed project.

5.4.6.4 Ability to Meet Project Objectives

Alternative 4 would meet all of the project objectives and would produce the required volume of product water, but its permitting process may delay the availability of the supply relative to the State Board's CDO. The alternative includes an open-water intake, a new discharge, and the placement of new pipeline and ballast rock on the seafloor. The alternative would produce more water than is needed for CalAm's current needs and the surplus would be available for growth in the region. An additional 6.5 miles of product water pipeline would be required to connect the alternative to the proposed project's pipelines in Marina. The People's Project would need to complete an EIR (and an EIS) process, develop mitigation (e.g., for the approximately 42,000 ft^2 of seafloor that would be covered in ballast rock and for the impingement and entrainment losses associated with the open water intake), receive the required permits and enter into a water purchase agreement with CalAm. The water purchase agreement would need to be approved by the CPUC prior to delivery of product water to CalAm's customers in the Monterey District service area. The increased permitting complexity may delay the ability to serve water to meet project objectives 1 through 7.

5.4.7 Alternative 5a – Reduced Project 6.4-mgd Desalination Plant *(Intake Slant Wells at CEMEX)*

5.4.7.1 Overview

This alternative is a variation of the proposed project, the implementation of which would be contingent upon the successful implementation of the Pure Water Monterey Groundwater Replenishment Project (GWR). As discussed in Section 1.1, Introduction, CalAm proposes to build a desalination plant with the capacity to produce up to 9.6 mgd of desalinated product water (proposed project), but also seeks authorization to reduce the size of the proposed plant to provide 6.4 mgd, and to purchase product water from the proposed GWR Project if it becomes clear that the GWR Project will be completed and on line in a timeframe that can supply water to meet the proposed project's purpose and needs (CalAm, 2016). Since the GWR Project was approved by the MRWPCA in October 2015, and the CPUC in September 2016 authorized CalAm to purchase 3,500 afy of the GWR supply for extraction from the Seaside Groundwater Basin, the GWR Project is assumed in the No Action alternative and analyzed as a project in the cumulative scenario for several of the alternatives, including Alternatives 5a and 5b. The GWR Project is described in Table 4.1-2 in Section 4.1 of Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures, and a GWR Project Description is included in this EIR/EIS as Appendix H. Additional details on the GWR Project may be found in MRWPCA and MPWMD, 2016b.

Therefore, Alternative 5a includes the construction and operation of the reduced-capacity desalination plant capable of producing 6.4 mgd (compared with 9.6 mgd for the proposed project). Project components would be sited at the same locations as the proposed project and the only differences are the number of slant wells and the size of the desalination plant; all other facilities would be the same as for the proposed project. The GWR Project is addressed in the cumulative impacts analysis for this alternative.

Description of the Reduced Project

Figure 5.4-5 presents an overview of Alternative 5a. **Table 5.4-9** provides a detailed list of the facilities. Except for the number of slant wells (reduced to seven from 10) and the capacity of the desalination plant (reduced to 6.4 mgd from 9.6 mgd), the facilities are the same as described for the proposed project in Chapter 3, Description of the Proposed Project. Alternative 5a would include the following facilities:

- An intake system, which would consist of seven subsurface slant wells (five active and two on standby; these would consist of the converted test slant well and six new wells) located at the CEMEX site extending seaward of the mean high water line (MHWL) into MBNMS, and a source water pipeline.
- A 6.4 mgd desalination plant and appurtenant facilities, including source water receiving tanks; pretreatment, reverse osmosis (RO), and post-treatment systems; chemical feed and storage facilities; brine storage and facilities; and other associated non-process facilities.
- Desalinated water conveyance facilities, including pipelines, pump stations, and treated water storage tanks; same as the proposed project.
- An expanded ASR system, including two additional injection/extraction wells (ASR-5 and ASR-6 Wells), two parallel ASR Conveyance Pipelines to convey water to and from the ASR-5 and ASR-6 Wells, and an ASR Pump-to-Waste System; same as the proposed project.

Construction

Construction of Alternative 5a would be similar to the proposed project as described in Section 3.3 of Chapter 3, Description of the Proposed Project, and summarized in **Table 3-4**. The Alternative 5a facilities are expected to be constructed over approximately 24 months (same as the proposed project), from July 2019 through June 2021. See Section 3.3.10, Construction Schedule.

5.4.7.2 Operation and Maintenance

The Alternative 5a facilities would be operated in the same manner as for the proposed project (refer to Section 3.4, Operations and Maintenance).

Subsurface Slant Wells

Up to five subsurface slant wells would be operated at any given time, producing a combined total of up to 15.5 mgd of source water for the MPWSP Desalination Plant. Two wells would be maintained on standby. The existing test slant well would be converted into a permanent well.

6.4-mgd MPWSP Desalination Plant

The MPWSP Desalination Plant would utilize the 15.5 mgd of filtered source water to produce desalinated product water and approximately 9 mgd of brine. The 9 mgd of brine would be

discharged out of the existing MRWPCA ocean outfall and diffuser into Monterey Bay, as described for the proposed project.

Castroville Pipeline

The 4.5-mile-long, 12-inch-diameter Castroville Pipeline (same as the proposed project) would convey desalinated water (Salinas Valley return flows) from the MPWSP Desalination Plant to the CSIP distribution system and the CCSD Well #3.

Pipeline to CSIP Pond

If the Castroville Pipeline is not built, CalAm would pump the Salinas Valley return water from the MPWSP Desalination Plant through a new 1.2-mile-long, 12-inch-diameter pipeline to the existing Castroville Seawater Intrusion Project pond at the southern end of the MRWPCA Regional Wastewater Treatment Plant. From the Castroville Seawater Intrusion Project pond, water would be delivered to agricultural users in the Salinas Valley through existing infrastructure.

Seaside Groundwater Basin ASR System

The Seaside Groundwater Basin ASR system would be operated in a similar manner as under the proposed project.

5.4.7.3 Ability to Meet Project Objectives

The implementation of Alternative 5a on its own and without the GWR project and associated water purchase agreement, would only partially meet the project objectives because the 6.4-mgd project would not develop enough supply to serve the existing land uses and water entitlements [12,845 afy] baseline or associated peak demands in CalAm's Monterey District. The 6.4 mgd desalination plant in combination with other existing sources (Carmel River legal entitlement, Seaside Basin, ASR, and Sand City Desalination) would achieve compliance with Order 95-10 and the Seaside Groundwater Basin Adjudication. However, Alternative 5a would not provide water supply reliability; and would not provide supply to fully serve Pebble Beach water entitlements or anticipated economic recovery at existing businesses. It would not provide enough supply to enable development of vacant legal lots of record. Assuming that the GWR Project is constructed (which is assumed in the cumulative analysis for this alternative), it would provide 3,500 afy of potable supply for the CalAm service area. Alternative 5a in combination with the GWR Project supply would meet the project objectives.

Mean High Water (MHW) 2020

Shared Pipeline (Existing)

MRWPCA Ocean Outfall and Diffuser (Existing)

Treatment Plant

Proposed CalAm Facilities

ASR-5 and ASR-6 Wells

Slant Well

Source Water and Brine Discharge Pipelines [a]

Conveyance and Distribution Pipelines [b]

MPWSP Desalination Plant (6.4 mgd)

NOTES:

[a] Pipelines include the Source Water Pipeline, Brine Discharge Pipeline, and ASR Pump-to-Waste Pipeline.

[b] Pipelines include the Highway 68 Interconnection Improvements, Desalinated Water Pipeline, Transmission Main, Salinas Valley Return Pipeline, Castroville Pipeline, and ASR Conveyance Pipelines.

MHW 2020

Inset 1
Subsurface Intake System

MRWPCA Regional Wastewater Treatment Plant (Existing)

Salinas Valley Reclamation Plant Modifications

CSIP Pond (Existing)

Inset 2
MRWPCA Regional WWTP

0 2
Miles

Castroville

Castroville Pipeline Optional Alignment

MPWSP Desalination Plant (6.4 mgd)

Salinas River

See Inset 1

See Inset 2

MRWPCA Ocean Outfall and Diffuser (Existing)

Subsurface Slant Wells (Proposed)

MRWPCA Regional Wastewater Treatment Plant (Existing)

Reservation Rd

Marina

Monterey Bay

Pacific Grove

Sand City

La Salle Ave

General Jim Moore Blvd

Seaside

Del Monte Blvd

Hilby Ave

Lake El Estero

Monterey

Monterey Peninsula Airport

Del Rey Oaks

ASR-5 and ASR-6 Wells

Highway 68 Interconnection Improvements approximately 1 and 3 miles south. See Figure 3-10.

SOURCE: ESA, 2014

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-5

Alternative 5a - Intake Slant Wells at CEMEX

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TABLE 5.4-9
ALTERNATIVE 5A FACILITIES

Facility	Description
Intake System	
Subsurface Slant Wells (Construction technology is same as proposed project) Approximately 15.5 mgd of water drawn from beneath the ocean floor in MBNMS for use as source water for the desalination plant.	• Seven slant wells located at the CEMEX site, extending offshore beneath Monterey Bay (the conversion of an existing test slant well into a permanent well plus six new wells at five new well sites) into MBNMS, with up to five wells operating at any given time and two wells maintained on standby • The slant wells would be grouped into six well sites: three sites with one well each and two sites with two wells. Each well would have a wellhead and mechanical piping vault (meter, valves, and gauges); each well site would have one electrical enclosure, and one pump-to-waste basin (same as proposed project). • Well length, screens, pumps and concrete pads would be the same as described for the proposed project well sites 1 through 5.
Source Water Pipeline Conveys the combined source water from the slant wells to desalination plant.	• 2.2-mile-long, 42-inch-diameter pipeline • Two hydraulic surge tanks would be located near the collector pipe/Source Water Pipeline connection point, south of the CEMEX access road and inland of the dunes
Desalination Facilities	
Pretreatment System Would treat source water to remove suspended and dissolved contaminants	• Pressure filters or multimedia gravity filters would be housed within a 6,000-square-foot pretreatment building • Two 300,000-gallon backwash supply and filtered water equalization tanks • Two 0.25-acre, 6-foot-deep lined backwash settling basins with decanting system
Reverse Osmosis System Would remove salts and other minerals from pretreated source water	• Dual-pass RO system consisting of four active modules and one standby module, with each module producing 1.6 mgd of “permeate” (the purified water produced through the RO membrane) • UV disinfection system (if required) • The RO and post-treatment systems and chemical storage tanks would be housed within a 30,000-square-foot process and electrical building
Post-treatment System Would adjust the hardness, pH, and alkalinity of the desalinated product water and disinfect the water in accordance with drinking water requirements	• Chemical feed lines and injection stations (for carbon dioxide, lime, sodium hydroxide, phosphate-based corrosion inhibitor, and sodium hypochlorite)
Chemical Storage The capacity would range from less than 5,000 gallons to 20,000 gallons, depending on the treatment chemical	• Chemical storage tanks with secondary containment • Sumps and sump pumps
Administrative Building Would house restrooms, locker rooms, break rooms, conference rooms, electrical controls, laboratory facilities, equipment storage and maintenance, and electrical service equipment	• 4,000- to 6,000-square-foot building

TABLE 5.4-9 (Continued)
ALTERNATIVE 5A FACILITIES

Facility	Description
Brine Storage and Disposal Facilities	
Brine Storage and Disposal Brine concentrate produced during the RO process would be conveyed to the brine storage basin located at the MPWSP Desalination Plant before it is conveyed to the wastewater treatment plant for disposal into waters of MBNMS	• 3-million-gallon brine storage basin • 3,900-foot -long, 36-inch-diameter Brine Discharge Pipeline
MRWPCA Ocean Outfall Pipeline and Diffuser (existing) Would convey brine from the wastewater treatment plant to the existing ocean outfall pipeline in MBNMS, which terminates at a diffuser located offshore that would discharge the concentrate into Monterey Bay	• 2.3-mile long, 60-inch-diameter pipe (onshore portion) • 2.1-mile-long, 60-inch-diameter pipe (offshore portion) • 1,100-foot-long diffuser with 172 ports (129 ports are open and 43 are closed), each 2 inches in diameter and spaced 8 feet apart on alternating sides
Desalinated Water Conveyance and Storage Facilities	
Treated Water Storage Tanks Would serve as holding tanks from which water would be pumped to either the CalAm water system, the existing CSIP pond or the Castroville Pipeline.	• Two 103-foot-diameter, 1,750,000-gallon aboveground storage tanks (providing a total combined storage volume of 3.5 million gallons)
Desalinated Water Pumps Would pump desalinated product water to either the: 1) CalAm water system or; 2) CCSD and/or CSIP as Salinas Valley return flows	• Two 3.2 mgd capacity, 400-horsepower pumps and two 1.6 mgd capacity, 200-horsepower pumps to pump water through the Desalinated Water Pipeline to the CalAm water system • Two 1.4 mgd, 10-horsepower pumps to pump water through the Salinas Valley Return Pipeline CSIP Pond or the Castroville Pipeline to CCSD
New Desalinated Water Pipeline Would convey desalinated product water from the treated water storage tanks at the MPWSP Desalination Plant to the new Transmission Main at Reservation Road	• 3.3-mile-long, 36-inch-diameter pipeline
New Transmission Main Would convey desalinated product water between the Desalinated Water Pipeline at Reservation Road and ASR facilities at General Jim Moore Boulevard	• 6-mile-long, 36-inch-diameter force main
Carmel Valley Pump Station 500-square-foot facility that would provide the additional water pressure needed to pump through the existing Segunda Pipeline into Segunda Reservoir	• 3 mgd, 100 hp pump station

TABLE 5.4-9 (Continued)
ALTERNATIVE 5A FACILITIES

Facility	Description
Desalinated Water Conveyance and Storage Facilities (cont.)	
Castroville Pipeline Would convey desalinated product water from the MPWSP Desalination Plant to the Castroville Seawater Intrusion Project (CSIP) distribution system and the Castroville Community Services District (CCSD) Well #3 ● Product water would be delivered to the CSIP system via a new connection point located approximately halfway along the pipeline alignment at Nashua Road and Monte Road ● At the northern pipeline terminus, product water would be delivered to the CCSD at Del Monte Avenue and Merritt Street	4.5-mile-long, 12 inch-diameter pipeline extending from MPWSP Desalination Plant to Castroville (see **Figures 3-11** and **3-12**)
Pipeline to CSIP Pond Would convey desalinated product water from the MPWSP Desalination Plant to the CSIP pond for subsequent delivery to agricultural users in the Salinas Valley.	1.2-mile-long, 12-inch-diameter pipeline (see **Figure 3-5**)
Interconnection Improvements for State Route 68 Satellite Systems a) Ryan Ranch–Bishop Interconnection b) Main System–Hidden Hills Interconnection Would allow MPWSP supplies to be conveyed to the Ryan Ranch, Bishop, and Hidden Hills water systems	a) 1.1-mile-long, 8-inch-diameter pipeline b) 1,200-foot-long, 6-inch-diameter pipeline
ASR System	
Six ASR Injection/Extraction Wells (four existing wells and two proposed): ● ASR-1 and ASR-2 Wells (existing) ● ASR-3 and ASR-4 Wells (existing) ● ASR-5 and ASR-6 Wells (proposed) Would be used to inject Carmel River supplies and desalinated product water into the Seaside Groundwater Basin for storage; during periods of peak demand, would be used to extract the stored water for delivery to customers	● Two proposed 1,000-foot-deep injection/extraction wells (ASR-5 and ASR-6 Wells) with a combined injection capacity of 2.2 mgd and extraction capacity of 4.3 mgd ● Four existing injection/extraction wells (Phase I and II wells)

TABLE 5.4-9 (Continued)
ALTERNATIVE 5A FACILITIES

Facility	Description
ASR System (cont.)	
ASR Pipelines: 1. ASR Recirculation Pipeline 2. ASR Conveyance Pipeline 3. ASR Pump-to-Waste Pipeline ASR Recirculation pipeline would be used to convey water from existing conveyance pipelines and infrastructure at Coe Avenue and General Jim Moore Boulevard to the new ASR-5 and ASR-6 Wells for injection ASR Conveyance Pipeline would be used to convey extracted ASR water supplies to the existing infrastructure at Coe Avenue/General Jim Moore Boulevard ASR Pump-to-Waste Pipeline would convey backflush effluent produced during routine maintenance of the ASR-5 and ASR-6 Wells to the existing Phase I ASR settling basin.	● Three parallel 0.8-mile-long, 16-inch-diameter pipelines

5.4.8 Alternative 5b – Reduced Project 6.4-mgd Desalination Plant (*Intake Slant Wells at Potrero Road*)

5.4.8.1 Overview

This alternative, like Alternative 5a, is a variation of the proposed MPWSP, the implementation of which would be contingent upon the successful implementation of the GWR Project. Furthermore, Alternative 5b (**Figure 5.4-6**) is similar to Alternative 5a described above, except that the intake slant wells would be located at the Potrero Road site (same as Alternative 1 but fewer wells) instead of at the CEMEX site. Alternative 5b therefore, includes the decommissioning of the test slant well at CEMEX, and the construction and operation of the reduced-capacity desalination plant capable of producing 6.4 mgd (compared with 9.6 mgd for the proposed project), with the intake wells at Potrero Road. The effects of Alternative 5b in combination with the GWR project are discussed in the evaluation of cumulative impacts.

Only the following facilities would be different from Alternative 5a (refer to Section 5.4.7 for a description of other facilities):

- An intake system consisting of seven subsurface slant wells (five active and two on standby at any given time) located at the Potrero Road site (described in Alternative 1) extending 220 to 535 feet offshore into MBNMS.
- A 42-inch-diameter source water pipeline as described under Alternative 1 would connect the slant wells to the 6.4 mgd desalination plant at the Charles Benson Road site.

5.4.8.2 Construction

Construction methods for the intake wells and source water pipeline would be similar to those described for Alternative 1 except that only seven intake wells would be needed (five active and two on standby). The source water pipeline alignment would be the same as described under Alternative 1. All other components (i.e., desalination plant, brine discharge, ASR and product water pipelines) would be the same as described under Alternative 5a.

5.4.8.3 Operation and Maintenance

Operation and maintenance requirements would be the same as described under Alternative 5a.

5.4.8.4 Ability to Meet Project Objectives

Just like Alternative 5a, the implementation of Alternative 5b alone, without the GWR Project, would not meet project objectives because the 6.4 mgd project would not produce enough supply to meet the annual or peak demands in CalAm's Monterey District. Similar to Alternative 5a, this alternative would meet all project objectives if the GWR Project is operational and able to deliver water to CalAm.

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Shared Pipeline (Existing)
Treatment Plant
Proposed CalAm Facilities
ASR-5 and ASR-6 Wells
Source Water and Brine Discharge Pipelines [a]
Conveyance and Distribution Pipelines [b]
MPWSP Desalination Plant (6.4 mgd)

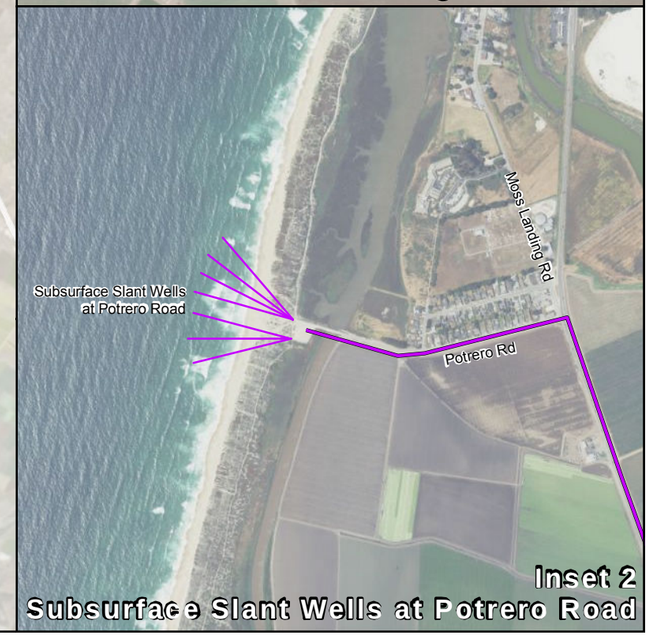
NOTES:

[a] Pipelines include the Alternative Source Water Pipeline, Brine Discharge Pipeline, and ASR Pump-to-Waste Pipeline.

[b] Pipelines include the Highway 68 Interconnection Improvements, Alternative Desalinated Water Pipeline, AlternativeTransmission Main, Alternative Monterey Pipeline, Salinas Valley Return Pipeline, Castroville Pipeline, and ASR Conveyance Pipelines.

0 2 Miles

See Inset 2
Subsurface Slant Wells at Potrero Road
Castroville Pipeline Optional Alignment
Old Salinas River
Tembladero Slough
Castroville
Prunedale
MRWPCA Ocean Outfall and Diffuser (Existing)
MPWSP Desalination Plant (6.4 mgd)
See Inset 1
MRWPCA Regional Wastewater Treatment Plant (Existing)
Reclamation Ditch
Blanco Drain
Salinas River
Salinas
Marina
Reservation Rd
Monterey Bay
Coastal Pump Station (Option 2)
ASR-5 and ASR-6 Wells
General Jim Moore Blvd
Pacific Grove
Sand City
La Salle Ave
Del Monte Blvd
Seaside
Hilby Ave
Monterey
Highway 68 Interconnection Improvements approximately 1 and 3 miles south. See Figure 3-10.



SOURCE: ESA, 2015

205335.01 Monterey Peninsula Water Supply Project

Figure 5.4-6

Alternative 5b - Intake Slant Wells at Potrero Road

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5.5-10 Alternative 5b Slant Wells: 1-Foot Response in 400-Foot Aquifer under 15.5 MGD Pumping

5.5.1 Overview

This section evaluates the comparative environmental impacts of the alternatives that are described in detail in Section 5.4 of this EIR/EIS, including the "No Project" (No Action) Alternative. Section 5.6 presents the comparative environmental impacts in summary tables. Text in this Section 5.5 is intended to be reviewed with the comparative tables in Section 5.6 that provide a summary for each relevant significance criterion.

Information about each alternative, including the No Project alternative, is provided to facilitate a meaningful evaluation, analysis, and comparison of alternatives with the proposed project, including those not within the jurisdiction of the lead agencies. A description of the CEQA and NEPA guidelines related to alternatives evaluations is included in Section 5.1.1. The analyses that follow in this section present the same topical areas, and in the same order, as those presented in Chapter 4 of this EIR/EIS. Each section includes the following:

- **Setting/Affected Environment** – Baseline information is provided for those resources where the study area for alternatives is different from the proposed project's study area. For most issue areas, the proposed project onshore study area is south of the intersection of Nashua Road and Highway 1. Several alternatives have locations in areas north of the intersection of Nashua Road and Highway 1, or in Moss Landing. Reference is made to the setting for the proposed project in Chapter 4 where the setting/affected environment is the same.

- **Direct and Indirect Effects** – A brief recap of the proposed project effects described in detail in Chapter 4 is provided for the reader's convenience. An analysis of each alternative is then provided, starting with the No Project Alternative, followed by Alternatives 1 through 5a and 5b. While providing impact conclusions required by CEQA and NEPA, the analyses focus on the differences in impacts of each alternative compared to the proposed project. Similar to the impact analysis in Chapter 4, each of the alternatives is evaluated using the following primary analysis categories:

  – Construction Impacts

  – Operational and Facility Siting Impacts

  – Cumulative Impact Analysis (refer to Section 4.1 and **Table 4.1-2** for a description and list of projects considered in the cumulative scenario)

  Within each analysis category, the impacts are summarized in the text. For specific impact statements that correspond to individual significance criteria, see the comparative tables in Section 5.6.

Reference is made to analysis in Chapter 4 for impacts that would be the same as, or similar to, the impacts of the proposed project. Each of the alternatives shares some components of the proposed project, and the impacts for those shared components would be the same as the proposed project. For instance, Alternative 1 shares all project components except the location for the slant wells, and has an additional 5.5 miles of source water pipeline to connect the slant wells at the alternative location to the desalination plant. In each resource section, the impact analysis for the shared components is in the corresponding resource section in Chapter 4, and the conclusions by resource are also summarized in 5.6. The impacts for each alternative incorporate the combined impacts of the shared and different components into the overall analysis and impact conclusion for each resource and accounts for any synergistic or accumulative impacts from all components.

Where applicable, mitigation measures that are applied to the proposed project in Chapter 4 are applied to potentially significant impacts of the alternatives. When an alternative's impact is determined to be increased in severity compared to the significant impact of the proposed project, that conclusion is being drawn from the information about the alternative that was available at the time this EIR/EIS was being prepared. In some circumstances, further analysis and technical studies could conclude that the impact could be mitigated to a less-than-significant level. In those instances, however, until such time as that information is developed and made available, the impact is declared to be significant and unavoidable.

The analysis of each alternative identifies a significance conclusion for each evaluation criterion, based on comparison to the affected environment or no action condition[1], and discusses the severity of impact compared to the proposed project. Impact significance determinations include No Impact (NI), Less than Significant (LS), Less than Significant with Mitigation (LSM), and Significant and Unavoidable (SU). For purposes of CEQA, the impacts of the alternatives compared to those of the proposed project are described using the following terms:

- ***Same impact conclusion*** – impacts would be identical to those of the proposed project or would be of the same general magnitude such that the level of significance does not change (e.g., for both the proposed project and the alternative, the impact is less than significant);
- ***Increased impact conclusion*** – impacts would be notably greater than the proposed project such that the level of significance is increased (e.g., from less than significant to less than significant with mitigation); or
- ***Reduced impact conclusion*** – impacts would be notably less than the proposed project such that the level of significance is reduced (e.g., from less than significant to no impact).

[1] The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (see Section 15126.6(e)(1) of the CEQA Guidelines). Pursuant to NEPA regulations (40 CFR 1502.14) the EIS "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public" and Section 1502.14(d), which requires that the alternatives analysis in the EIS "include the alternative of no action."

Finally, all of the projects that could contribute to cumulative impacts are listed in **Table 4.1-2**. The projects in Table 4.1-2 have occurred[2] or are anticipated to occur in the reasonably foreseeable future within the study area. Of those projects, the water supply projects that are included within the cumulative scenario for each alternative are described with additional detail in Section 4.1.7.2 and summarized below in **Table 5.5-1** for purposes of clarification. In summary, the Proposed Project, Alternatives 1, 2, and 4 are designed to meet the full project objectives and assume that GWR would not be operational, and as such, GWR is not considered in the cumulative impacts scenario for those alternatives. Whereas the reduced capacity option reflected in Alternative 5a and 5b assumes that GWR would be operational, and GWR is considered in the cumulative impacts scenario. GWR is also considered in the cumulative impacts scenario for the No Project Alternative, as CalAm intends to purchase 3,500 acre-feet/year (afy) from the GWR Project under this alternative. The project proponent for Alternative 3, DeepWater Desal, intends to serve Santa Cruz County and Salinas even if other alternatives, and/or the GWR Project are implemented, and as such, GWR is assessed in the cumulative scenario for this alternative, and for the same reason, Deepwater Desal is considered in the cumulative scenario for all other action alternatives.

TABLE 5.5-1
WATER SUPPLY PROJECTS RELEVANT TO THE CUMULATIVE SCENARIO FOR EACH ALTERNATIVE

Alternative	Cumulative Water Supply Project		
	DeepWater Desal Project (No. 34)	**People's Project (No. 57)**	**Pure Water Monterey Groundwater Replenishment (GWR) Project (No. 59)**
No Project Alternative	No	No	Yes
Proposed Project	Yes; serving Santa Cruz County and Salinas	No	No
Alternative 1: Slant Wells at Potrero Road	Yes; serving Santa Cruz County and Salinas	No	No
Alternative 2: Open-Water Intake at Moss Landing	Yes; serving Santa Cruz County and Salinas	No	No
Alternative 3: Monterey Bay Regional Water Project (DeepWater Desal)	N/A	No	Yes; serving Monterey District with 3,500afy. If this occurs, Alternative 3 would serve the Monterey District with 6.4 mgd instead of 9.6 mgd, and would serve Santa Cruz County and Salinas with the balance.
Alternative 4: People's Moss Landing Water Desalination Project (People's Project)	Yes; serving Santa Cruz County and Salinas	N/A	No
Alternatives 5: Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)	Yes; serving Santa Cruz County and Salinas	No	Yes; serving Monterey District with 3,500 afy.

[2] While a cumulative analysis includes past, present and reasonably foreseeable future projects, the category of past projects is captured within the existing setting, or baseline, against which impacts are judged throughout the EIR/EIS, including the cumulative analysis. However, where projects were implemented after 2012 (the baseline year), those projects are set forth within Table 4.1-2 and included in the cumulative analysis.

5.5.2 Geology, Soils, and Seismicity

The evaluation criteria for Geology, Soils, and Seismicity address: erosion and loss of topsoil; exposure of people or structures to effects of fault rupture, seismically-induced groundshaking, ground failure, or landslides; expansive or corrosive soils; subsidence; soils incapable of supporting alternative wastewater systems; coastal erosion/dune retreat; and the potential to degrade marine geologic resources or oceanographic processes. The study area is susceptible to seismic activity, but none of the components intersect active faults. Components proposed near the shoreline are susceptible to coastal erosion.

5.5.2.1 Setting/Affected Environment

The regional geologic setting and general information on seismicity, faults, geologic hazards and seismic hazards in Section 4.2, Geology, Soils, and Seismicity, would apply to the alternatives. Components of the alternatives similar to the proposed project located south of the Nashua Road/Highway 1 intersection would occur within the same local geologic, soils, and seismic setting as that presented in Section 4.2 and the reader is referred to that section for a detailed description. For components unique to the alternatives that are located north of the Nashua Road/Highway 1 intersection, the local geologic setting is presented below.

Local Geology and Seismicity

North of the Nashua Road/Highway 1 intersection, pipeline alignments for the alternatives would extend within or alongside segments of Molera Road, Highway 1, Potrero Road, and Dolan Road in unincorporated Monterey County and occur adjacent to active farmland. The pipelines would be located mostly on Quaternary floodplain (Qfl) and basin (Qb) deposits (see far northern coastal area on **Figure 4.2-1**, Geologic Map of Project Area). The Moss Landing area is also mostly on floodplain and basin deposits with some of the Dolan Road area on marine terrace (Qmt) deposits. No active faults pass through this area and the nearest active fault is the San Andreas Fault Zone, about 12 miles to the northeast (see **Figure 4.2-4**).

Soil Properties

Most of the components of the alternatives would be constructed in developed areas with disturbed ground consisting of an indeterminate mix of fill materials and underlying native sandy loam soil. The location for the Alternative 3 desalination facility is on soil composed mostly of Santa Inez fine sandy loam with some Diablo Clay (NRCS, 2015). The locations for pipelines that would be built on or under the seafloor within Monterey Bay are further characterized in Section 5.5.4, Marine Biological Resources.

The soil properties of linear extensibility (shrink-swell or expansion), corrosion of unprotected concrete, and corrosion of unprotected steel are defined in Section 4.2. The following alternatives' components would be located on expansive soils with a high potential for corrosion of steel: the eastern portion of the parking lot at Potrero Road and the portion of Potrero Road between Alisal Slough and Laguna Road where pipelines would be constructed for Alternatives 1 and 5b, and the desalination facility in the Moss Landing area for Alternative 3. The alternative

components in the Potrero Road and Moss Landing area would not be located on soils with a high potential for corrosion.

5.5.2.2 Direct and Indirect Effects of the Proposed Project – Slant Wells at CEMEX

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina that would create approximately 15 acres of impervious surfaces, up to nine new subsurface slant wells at the CEMEX active mining area, and conversion of the existing test slant well to a permanent well. The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system facilities, pump stations, storage tanks, and about 21 miles of new water conveyance pipelines. No construction or placement of facilities on the seafloor would occur.

The following paragraphs briefly summarize the impacts of the proposed project with respect to geology, soils, and seismicity. The detailed impact analysis of the proposed project is provided in Section 4.2.

Impact 4.2-1: Soil erosion or loss of topsoil during construction.

Project construction would involve localized, short-term ground disturbance activities (e.g., grading, excavation, trenching, and drilling). The potential for soil erosion during construction activities would be minimal because project facilities and all conveyance pipelines would be located in relatively flat areas with little topographic relief. Furthermore, project construction activities would be subject to compliance with the state Construction General Permit, the Monterey County Grading Ordinance, and Monterey County Erosion Control Ordinance, which would require the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) and best management practices (BMPs) that would reduce or prevent soil erosion that ensure erosion is minimized. Therefore, soil erosion impacts would be less than significant for all project components.

Grading, excavation, and backfill activities in vegetated areas, including sensitive natural vegetation communities as well as agricultural lands, could result in the loss of topsoil. For the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline, ASR-5 and ASR-6 Wells, and the Carmel Valley Pump Station, the impact would be potentially significant due to the presence of a well-developed topsoil horizon and the potential for it to be lost during excavation and backfilling. The impact associated with topsoil loss would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-2b** (**Avoid, Minimize, and Compensate for Construction Impacts on Sensitive Communities**) and **4.16-1** (**Minimize Disturbance to Farmland**). These measures require that topsoil be salvaged, stockpiled separately from subsoils, and returned to its appropriate location in the soil profile during backfilling activities. Surface soils at the slant wells and MPWSP Desalination Plant site are sandy and do not have a well-developed soil horizon and there are no sensitive natural communities or crop production. The pipelines and interconnection improvements south of

Reservation Road would be constructed within existing roadways and highly disturbed areas and would have no effect related to the loss of topsoil. Therefore, construction of the subsurface slant wells, MPWSP Desalination Plant and pipelines and interconnection improvements south of Reservation Road would have no impact related to loss of topsoil.

Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.

Faults mapped as inactive by the State of California because they do not display evidence of recent displacement, intersect the proposed new Transmission Main, and the Ryan Ranch-Bishop Interconnection Improvements. This impact would be less than significant, and no impact would result for all other components of the proposed project.

Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically induced groundshaking.

Monterey County will likely experience a large regional earthquake within the operational life of the MPWSP. However, because of the location of project facilities relative to the faults and the limited potential for ground surface rupture associated with these faults, the potential is low for the groundshaking to cause injury, loss of life, or substantial property damage. Completion of a comprehensive geotechnical investigation, adherence to the current building ordinances, and the application of standard engineering practices would ensure that structures are designed to withstand seismic events without sustaining substantial damage or collapsing. This impact would be less than significant.

Impact 4.2-4 Exposure of people or structures to substantial adverse effects related to seismically induced ground failure, including liquefaction, lateral spreading, or settlement; Impact 4.2-5 Exposure of people or structures to landslides or other slope failures.

The potential for ground failure[3] is higher in areas composed of granular soils with a shallow depth to groundwater. The Castroville Pipeline and the Source Water Pipeline would be located on soils with a moderate to high potential for liquefaction; the Carmel Valley Pump Station would be located on soils mapped with a moderate liquefaction potential. The other project components would not be located in areas susceptible to liquefaction-induced ground settlement. Only the Main System-Hidden Hills Interconnection Improvements (consisting of a 100-foot-long, 6-inch-diameter buried pipeline) would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the area and the project does not propose activities that would exacerbate an otherwise unstable slope condition. The impact from seismically induced ground failure would be less than significant for all components of the proposed project due to required engineering practices and construction methods.

[3] Ground failure includes liquefaction, lateral spreading, or settlement, which would cause the foundation of a structure to be damaged, or pipelines to rupture.

Impact 4.2-6, 4.2-7: Exposure to expansive or corrosive soils.

Unless properly removed or reconditioned, expansive soils (such as clay loam, fine sandy loam, or loamy fine sand) could exert additional pressures on foundations and below-grade facilities, which could lead to pipeline rupture or structural damage. Soils with a high conductivity can corrode unprotected underground metal pipes, electrical conduits, and concrete, which could lead to pipeline failure. Proposed components that would be placed on or in soils with potential for moderate to high expansion potential include the Castroville Pipeline, Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch–Bishop Interconnection Improvements. Project components that would be on or in soils with moderate to high corrosion potential include the MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, ASR Pipelines, and the Ryan Ranch–Bishop Interconnection Improvements. The structural elements would be required to undergo appropriate design-level geotechnical evaluations prior to final design and construction. If expansive and/or corrosive soils are identified during the final geotechnical design study, the project geotechnical engineer would recommend remedies to eliminate damage from expansive and corrosive soils, and those industry-standard recommendations would be implemented, including avoidance and/or removal of expansive and corrosive soils, or the use of cathodic protection. Given all of the existing building requirements and standards, the potential for expansive or corrosive soils to adversely impact project components is low and these impacts are less than significant.

Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.

Overdrafting (long-term withdrawal in excess of recharge) of the Salinas Valley Groundwater Basin has taken place over an extended time, and saltwater has replaced the freshwater in those affected areas, thereby preventing subsidence. The proposed slant wells would be screened in aquifer units composed predominantly of sand and gravel which are less prone to subsidence because of their granular structure. Seawater would replace the water pumped from the slant wells and the continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would be unable to subside as a result of pumping and there would be no impact from subsidence associated with the subsurface slant wells.

The proposed ASR-5 and ASR-6 Wells would be located about 1,000 feet below ground surface in the sandstone portions of the Santa Margarita Formation in the Seaside Groundwater Basin. The sandstone structure would be expected to support the granular structure during groundwater pumping, especially considering the depth. Furthermore, for the first 25 years of the proposed project, 700 acre-feet annually would be left in the Seaside Groundwater Basin to restore water extracted in years prior to this project. This means that the overall groundwater levels in the Seaside Groundwater Basin would increase as a result of the proposed project, thus decreasing the potential for subsidence and resulting in no subsidence impacts.

Impact 4.2-9: Have soils incapable of supporting the use of alternative wastewater disposal systems.

The construction of the subsurface slant wells and the ASR wells would require the disposal of water from well drilling and development. The high permeability of the sandy materials at the proposed locations would be suitable for the infiltration of water and the impact would be less than significant. For all other project components, there would be no impact.

Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.

The Monterey Bay coastline is expected to retreat due to rising sea level and would result in a beach and surf zone that is inland of its current location. Under a conservative predicted erosion rate, the proposed slant wells would not become exposed during their operational life (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment. However, it is possible that the existing test slant well (that would be converted to a permanent well) might become exposed on the beach during its operational life. If exposed, the subsurface slant well could accelerate and/or exacerbate natural rates of coastal erosion, scour, and dune retreat that could alter the natural coastal environment. The anticipated future presence of this slant well on the beach due to coastal retreat could result in a significant impact. **Mitigation Measure 4.2-9** (**Slant Well Abandonment Plan**) would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissioning if coastal retreat threatens the slant wells.

Impact 4.2-C: Cumulative impacts related to geology, soils, and seismicity.

Proposed project construction would not have a significant contribution to cumulative erosion-related impacts. Project operations would not have a significant contribution to cumulative effects associated with fault rupture, seismic ground shaking, ground failure, landslides, or expansive/corrosive soils. Cumulative effects on topsoil could be significant, but the proposed project's potentially significant contribution to this impact would be reduced to a level that is less than significant with implementation of mitigation measures identified in Impact 4.2-1. Similarly, although cumulative impacts related to coastal erosion could be significant, implementation of the mitigation measures identified in Impact 4.2-10 would reduce the proposed project's contribution to cumulative coastal erosion impacts to less than significant.

5.5.2.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed and the test slant well would be decommissioned. Consequently, there would be no ground disturbance or placement of new structures that could affect or be affected by soils or seismic activity, and thus no construction- or operation-related direct or indirect impacts relative to geology, soils, and seismicity associated with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to geology, soils, and seismicity, it could not contribute to cumulative effects related to these topics.

5.5.2.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the geologic impact analysis of Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

All construction activities and disturbance for the slant wells would occur in the parking lot at the western terminus of Potrero Road in northern Monterey County, near the southern border of the unincorporated community of Moss Landing. The Potrero Road beach parking lot is owned and operated by the California Department of Parks and Recreation (California State Parks) and the 10 slant wells would be buried 5 feet below the hardened sand parking surface. The approximately 4-foot-wide, 12-foot-long, and 6-foot-high electrical control building, the only above-ground structure at this location, would be located at the edge of the parking lot.

Slant well construction, using similar materials, pipe sizes, and construction methods to those described for the proposed project, would occur year-round at the Potrero Road parking lot. Construction of the slant wells would require short-term ground disturbance activities (e.g., grading, excavation, drilling, and the construction of structures) and the entire 1-acre parking lot would be closed during construction. The potential for erosion would be reduced from the 9 acres of disturbed area at CEMEX and construction at Potrero Road would not disturb the dunes or active beach area. The slant wells would be located in relatively flat areas with little topographic relief, which would minimize the potential for soil erosion during construction.

The 36-inch diameter source water pipeline for Alternative 1 would be constructed within Potrero Road and would continue south along Highway 1, then south/southeast along Molera Road, and southwest along Monte Road to the desalination plant site on Charles Benson Road (**Figure 5.4-1**). The construction of an additional 5.5 miles of source water pipeline could increase the potential for erosion compared to the proposed project. However, construction of both the slant wells and pipeline would be required to comply with the numerous existing State and local regulations described in Impact 4.2-1 that would reduce or prevent soil erosion. Thus, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and the slant wells at Potrero Road, construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Like the proposed project at CEMEX, surface soils at the Potrero Road site are sandy and do not have a well-developed soil horizon. The site is covered in rural and disturbed habitat and does not support sensitive natural communities or crop production. Similar to the proposed project, however, pipeline construction activities could disturb vegetated areas adjacent to designated farmland. Grading, excavation, and backfill activities in these areas could result in the loss of topsoil (a fertile soil horizon that typically contains a seed base) during excavation and backfilling. Like the proposed project, the potential significant impact from loss of topsoil on agricultural lands would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**). Thus, combining the impacts of the components common with the proposed project with the addition of 5.5 miles of source water pipeline and the reduction in slant well acreage at Potrero Road, construction of Alternative 1 could result in an increased potential for loss of topsoil, but with mitigation, would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The impacts of components that are common with the proposed project (i.e., the desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station) would be identical to the impacts identified for the proposed project, as summarized above in Section 5.5.2.2 (additional details in Section 4.2). The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the only components unique to Alternative 1 (see **Figure 5.4-1**) and they are not located on or near an active fault; therefore, for the exposure of people or structures to fault rupture or other ground failure, liquefaction, spreading, or settlement resulting from seismic events and groundshaking, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Only the Main System-Hidden Hills Interconnection Improvements, common with the proposed project, would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the study area and Alternative 1 does not propose activities that would exacerbate an otherwise unstable slope condition. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project relative to exposure of people or structures to landslides or other slope failures because only components shared with the proposed project would be located in an area with moderate to high susceptibility to earthquake-induced landslides, less than significant.

In addition to the Castroville Pipeline, the Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch-Bishop Interconnection Improvements that are shared with the proposed project, the slant wells at the Potrero Road parking lot and the source water pipeline in Potrero Road would be located on or in expansive soils with moderate to high corrosion potential that can corrode unprotected underground metal pipes, electrical conduits, and concrete. Like the proposed project, this alternative would be subject to existing building requirements and standards to minimize effects of expansive or corrosive soils.

Therefore, the presence of expansive or corrosive soils would result in the ***same impact conclusion*** as the proposed project, less than significant.

The slant wells at Potrero Road, like the proposed project slant wells at CEMEX, would be screened in aquifer units composed predominantly of sand and gravel, which are less prone to subsidence because of their granular structure. Seawater would replace the water pumped from the slant wells and the continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would be unable to subside as a result of pumping resulting in the ***same impact conclusion*** as the proposed project related to subsidence, no impact.

Alternative 1 would result in a different method of disposing effluent generated during construction and development of the slant wells. Development of the slant wells would require storing water and sandy soil in storage tanks to allow sediment to settle out, and then discharging this water into a buried diffuser system in the parking lot for percolation into the underlying beach sands. Cuttings generated during the drilling process and the well head construction would be drained in a separation unit, with the drainage discharged to the buried diffuser. The high permeability of the sandy materials at Potrero Road would be suitable for the alternative wastewater disposal system for the infiltration of effluent. Like the proposed project, disposal of water from drilling and development of the ASR-5 and -6 wells would occur in sandy soils suitable for the infiltration of water. None of the other Alternative 1 components would require an alternative wastewater disposal system and this alternative would result in the ***same impact conclusion*** as the proposed project, less than significant.

Unlike the proposed project, the slant well insertion points and source water pipeline of Alternative 1 would be located approximately 70 feet inland of the modeled extent of erosion resulting from the 100-year storm event in the year 2060 (ESA, 2014). Therefore, they would not be exposed to coastal retreat during the project lifetime and would not contribute to coastal erosion or scour because of their set back location inland of the dunes. Therefore, Alternative 1 would not require implementation of **Mitigation Measure 4.2-9** (**Slant Well Abandonment Plan**) identified for the proposed project. Alternative 1 would result in a ***decreased impact conclusion*** relative to coastal erosion compared to the proposed project, no impact.

In summary, this alternative would avoid the proposed project's potential impacts related to coastal erosion at the CEMEX slant well site. Similar to the proposed project, there would be no new facilities on the seafloor and Alternative 1 would not result in impacts on underwater slope stability and landslides. Similar to the proposed project, operation and siting of Alternative 1 would generally result in less-than-significant impacts relative to geology, soils, and seismicity.

Cumulative Analysis

Alternative 1 would avoid impacts related to coastal erosion, and so would have no contribution to cumulative coastal erosion effects.

The geographic scope of analysis for cumulative impacts related to geology, soils, and seismicity for Alternative 1 is defined by the location of the Alternative 1 components, and is the same as that described for the proposed project in Section 4.2.6, with the exception of the different location of the subsurface intake system (Potrero Road, instead of CEMEX), and alternative source water pipeline route. Although the geographic scope generally covers a large area, geologic impacts are localized and site-specific. Section 4.2.6 describes that because of the site-specific nature of these impacts, and because the proposed project and projects within the geographic scope would be subject to the same requirements related to erosion control and adherence to building codes, the components common to the proposed project would not have a significant contribution to significant cumulative impacts related to erosion and soil-related and seismic hazards, and that after implementation of **Mitigation Measure 4.6-2b** and **4.16-1**, these components would not have a significant contribution to cumulative impacts related to the loss of topsoil. Of the projects described in **Table 4.1-2** in Section 4.1, the DeepWater Desal Project (No. 34) is the only additional project in the Alternative 1 geographic scope that would have components located near components that are unique to Alternative 1. However, the DeepWater Desal Project facilities would be located north of Potrero Road at Moss Landing and neither the facilities nor their associated impacts would geographically overlap with impacts of Alternative 1 components; therefore, the geological impacts of these components would not combine with impacts of Alternative 1. No other cumulative projects are located in this Potrero Road area or along the alternative source water pipeline route, so no changes or increases in cumulative impacts would occur compared to the proposed project. Similar to the proposed project, with implementation of **Mitigation Measures 4.6-2b** and **4.16-1**, Alternative 1's contribution to a significant cumulative impact on topsoil would be reduced to a level that is less than significant. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to geology, soils, and seismicity, less than significant with mitigation.

5.5.2.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the geologic impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Similar to the proposed project, construction would involve localized, short-term ground disturbance activities (e.g., grading, excavation, trenching, and drilling). The potential for soil erosion during construction activities would be minimal because facilities on land and all conveyance pipelines would be located in relatively flat areas with little topographic relief. The construction of an additional 6.5 miles of source water pipeline could increase the potential for erosion. However, like the proposed project, Alternative 2 construction activities would be subject to numerous existing State and local regulations that ensure erosion is minimized. Thus, combining the impacts of the proposed project components with the addition of 6.5 miles of source water pipeline and the open water intake system, construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

There is no farmland at the open-water intake pump station site, and the disturbed nature of the area means that loss of topsoil would not be an issue. Similar to the proposed project, however, pipeline construction activities could disturb vegetated areas adjacent to designated farmland. Grading, excavation, and backfill activities in these areas could result in the loss of topsoil during excavation and backfilling. Like the proposed project, the potential significant impact from loss of topsoil on agricultural lands would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**). Therefore, the potential for loss of topsoil from the construction of the components common with the proposed project and the additional 6.5 miles of source water pipeline would be increased compared to the proposed project. However, because the mitigation measure would salvage and return topsoil to its appropriate location after construction, Alternative 2 would result in the ***same impact conclusion*** as the proposed project with respect to topsoil impacts, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts from components that are common with the proposed project would be identical to the impacts identified for these components in Section 4.2. The location of the intake system components and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**) and they are not located on or near an active fault; therefore, the components of Alternative 2 located on land would result in the ***same impact conclusion*** as the proposed project for the exposure of people or structures to fault rupture or other ground failure, liquefaction, spreading, or settlement resulting from seismic events and groundshaking, less than significant. The potential for groundshaking and liquefaction-related impacts on underwater components of Alternative 2 is discussed below.

Only the Main System-Hidden Hills Interconnection Improvements, common with the proposed project, would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the study area and the components of Alternative 2 located on land do not include activities that would exacerbate an otherwise unstable slope condition. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project relative to exposure of people or structures to landslides or other slope failures, less than significant. The potential for underwater landslide and slope failure related to underwater components of Alternative 2 is discussed below.

In addition to the Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch-Bishop Interconnection Improvements that are shared with the proposed project, the Alternative 2 intake system and the portion of the source water pipeline north of Nashua Road/Highway 1 intersection would be located on or in expansive soils with moderate to high corrosion potential that can corrode underground metal pipes, electrical conduits, and concrete. Like the proposed project, this alternative would be subject to existing building requirements and standards to minimize effects of expansive or corrosive soils. Therefore, the presence of expansive or corrosive soils would result in the ***same impact conclusion*** as the proposed project, less than significant.

Like the proposed project, Alternative 2 would extract water from the Seaside Groundwater Basin through the ASR-5 and -6 wells, but would not extract groundwater from the Salinas Valley Groundwater Basin; as described for the proposed project, this extraction from the ASR wells would have no potential to cause subsidence. This would result in the ***same impact conclusion*** as the proposed project, no impact.

Alternative 2 would produce the same amount and type of well development water during development of the ASR-5 and -6 wells, but would not produce well development water associated with the subsurface slant wells. The high permeability of the sandy materials at the ASR wells would be suitable for the infiltration of water; therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project related to the suitability of the locations for wastewater disposal, less than significant.

The subsurface pipeline from the Alternative 2 open water intake system to the pump station on Dolan Road would be installed about 100 feet below ground using horizontal directional drilling (HDD) methods as it crosses under the coastline and beneath Highway 1, an area of the coastline that is anticipated to experience coastal erosion during the project lifetime. However, the pipeline is not anticipated to become exposed within the project lifetime (ESA, 2014) nor would it contribute to coastal erosion; therefore, Alternative 2 would have a ***reduced impact conclusion*** related to coastal erosion compared to the proposed project, no impact.

The underwater components of Alternative 2 (the open water intake system) would have the potential to degrade the physical structure of a geologic resource or alter oceanographic processes, such as sediment transport, such that the result would be measurably different from pre-existing conditions. The Alternative 2 seawater intake structure would be located in Monterey Bay within MBNMS on the slopes of the Monterey Submarine Canyon. No active faults are known to occur in the local area; however, the seawater intake system would be expected to experience seismic shaking during the project lifetime, similar to the proposed project, and could be subject to damage from seismic shaking or seismically induced liquefaction, known to have occurred in the local area. Repairs would be necessary, potentially resulting in impacts on the geologic resources and oceanographic processes at this location on the seafloor, resulting in an increased potential for impact compared to the proposed project. Additionally, because the open-water intake structure in Monterey Bay would be anchored on the slopes of the Monterey Submarine Canyon, the potential for future slope instability and underwater landslide would result in greater potential for adverse impacts on marine geologic resources compared to the

proposed project. Also, placement of an open water intake on the seabed of MBNMS could affect seabed substrate and alter oceanographic processes such as sediment transport in the vicinity of Monterey Submarine Canyon. Although mitigation would be required, measures have not been defined and their efficacy cannot be guaranteed; therefore, impacts on slope stability, landslides, and alteration of geologic resources or marine processes within the Monterey Bay would result in an ***increased impact conclusion*** compared to the proposed project because they are considered to be significant and unavoidable.

In summary, Alternative 2 would avoid impacts of the proposed project related to coastal erosion at the slant wells at the CEMEX site, but the open water intake structure on the slopes of the Monterey Submarine Canyon in MBNMS could result in an ***increased impact conclusion*** compared to the proposed project because of the potential degradation of marine geologic resources or oceanographic processes. Alternative 2 would result in a significant and unavoidable impact.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 2 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. In summary, these components could have a significant contribution to potentially significant cumulative impacts related to loss of topsoil, but after implementation of mitigation measures, these components would have a less than significant cumulative impact. Alternative 2 would avoid impacts related to coastal erosion, and so would avoid a contribution to cumulative coastal erosion effects.

The geographic scope of analysis for cumulative geology, soils, and seismicity impacts for Alternative 2 is defined by the location of the Alternative 2 components, and is the same as that described for the proposed project in Section 4.2.6, with the exception that the Castroville Pipeline and Pipeline to CSIP are not included, as well as the different location of the open water intake system and alternative source water pipeline. Although the geographic scope generally covers a large area, geologic impacts are localized and site-specific. Section 4.2.6 describes that because of the site-specific nature of these impacts, and because the proposed project and projects within the geographic scope would be subject to the same requirements related to erosion control and adherence to building codes, the components common to the proposed project would not have a significant contribution to significant cumulative impacts related to erosion and soil-related and seismic hazards, and that after implementation of **Mitigation Measure 4.6-2b** and **4.16-1**, these components would have a less than significant cumulative impact related to the loss of topsoil. The DeepWater Desal Project (No. 34) and the Moss Landing Community Plan (No. 37), described in **Table 4.1-2** in Section 4.1, are the only additional projects located near or overlapping the components unique to Alternative 2. Design and construction of these projects would be required to comply with the same requirements as Alternative 2. Therefore, the cumulative impacts related to erosion and geologic impacts on land would be less than significant.

Both Alternative 2 and the DeepWater Desal project would result in the placement of structures (intakes and outfalls) in Monterey Bay that would be anchored on the slopes of the Monterey

Submarine Canyon. Therefore, the cumulative potential for future slope instability and underwater landslide would be increased compared to either project alone, and the cumulative impact would be significant. Although mitigation measures would be required, they have not been defined and their efficacy cannot be guaranteed. Therefore, cumulative impacts from the underwater landslide risk would remain significant and unavoidable, and the open-water intake component of Alternative 2 would have a significant contribution to that significant cumulative impact. Therefore, Alternative 2 would result in an ***increased impact conclusion*** compared to the proposed project for cumulative effects related to geology, soils, and seismicity, significant and unavoidable.

5.5.2.6 Direct and Indirect Effects of the Project Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the geologic impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Similar to the proposed project, construction would involve localized, short-term ground disturbance activities (e.g., grading, excavation, trenching, and drilling). The potential for soil erosion during construction activities would be minimal because facilities on land and all conveyance pipelines would be located in relatively flat areas with little topographic relief. The construction of larger facilities on land (i.e., the desalination plant and data center) and an additional 31.5 miles of desalinated water pipeline could increase the potential for erosion compared to the proposed project. However, like the proposed project, Alternative 3 construction activities would be subject to numerous existing State and local regulations that ensure erosion is minimized.

Thus, although Alternative 3 construction would have a greater potential for erosion due to the substantial additional area of ground disturbance, compliance with these regulations would ensure that it would result in the ***same impact conclusion*** as the proposed project, less than significant.

There is no farmland at the desalination plant, data center, substation, or open-water intake pump station sites, and the disturbed nature of the area means that loss of topsoil would not be an issue. Similar to the proposed project, however, pipeline construction activities could disturb vegetated areas adjacent to designated farmland. Grading, excavation, and backfill activities in these areas could result in the loss of topsoil during excavation and backfilling. Like the proposed project, the potential significant impact from loss of topsoil on agricultural lands would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**). Therefore, the potential for loss of topsoil from the construction of the components common with the proposed project and the additional 31.5 miles of pipeline would be increased compared to the proposed project. However, because the mitigation measure would salvage and return topsoil to its appropriate location after construction, Alternative 3 would result in the ***same impact conclusion*** as the proposed project with respect to topsoil impacts, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts from components that are common with the proposed project (i.e., new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station) would be identical to the impacts identified for the proposed project. The location of the intake, discharge, desalination plant, data center, substation, and additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**) and they are not located on or near an active fault; therefore, the components of Alternative 3 located on land would result in the ***same impact conclusion*** as the proposed project related to exposure of people or structures to fault rupture or other ground failure, liquefaction, spreading, or settlement resulting from seismic events and groundshaking, less than significant. The potential for groundshaking- and liquefaction-related impacts from underwater components of Alternative 3 is discussed below.

Only the Main System-Hidden Hills Interconnection Improvements, common with the proposed project, would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the area and the components of Alternative 3 located on land do not include activities that would exacerbate an otherwise unstable slope condition. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project relative to exposure of people or structures to landslides or other slope failures, less than significant. The potential for underwater landslide and slope failure related to underwater components of Alternative 3 is discussed below.

In addition to the Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch-Bishop Interconnection Improvements that are shared with the proposed project, the intake and discharge systems and the desalinated water pipeline for Alternative 3 north of Nashua Road/Highway 1 intersection would be located on or in expansive

soils with moderate to high corrosion potential Like the proposed project, this alternative would be subject to existing building requirements and standards to minimize effects of expansive or corrosive soils. Therefore, the presence of expansive or corrosive soils would result in the ***same impact conclusion*** as the proposed project, less than significant.

Like the proposed project, Alternative 3 would extract water from the Seaside Groundwater Basin through the ASR-5 and -6 wells, but would not extract groundwater from the Salinas Valley Groundwater Basin; as described for the proposed project, this extraction from the ASR wells would have no potential to cause subsidence. This would result in the ***same impact conclusion*** as the proposed project for subsidence, no impact.

Alternative 3 would produce the same amount and type of well development water during development of the ASR 5 and 6 wells but would not produce well development water associated with the subsurface slant wells. The high permeability of the sandy materials would be suitable for the infiltration of water; therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project related to the suitability of the locations for wastewater disposal, less than significant.

The four subsurface pipelines between the Alternative 3 open water intake/brine disposal systems and the pump station on Dolan Road would be installed about 100 feet below ground using HDD methods as they cross under the coastline and beneath Highway 1, an area of the coastline that is anticipated to experience coastal erosion during the project lifetime. Due to their depth below ground, the pipelines would not become exposed within the project lifetime nor would they contribute to coastal erosion; therefore, Alternative 3 would have a ***reduced impact conclusion*** related to coastal erosion compared to the proposed project, no impact.

The underwater features of Alternative 3 would have the potential to degrade the physical structure of a geologic resource or alter oceanographic processes, such as sediment transport, such that the result would be measurably different from pre-existing conditions. The Alternative 3 seawater intake and brine disposal systems would be located in Monterey Bay within MBNMS on the slopes of the Monterey Submarine Canyon. No active faults are known to occur in the local area; however, the seawater intake and brine disposal system would be expected to experience seismic shaking during the project lifetime, similar to the proposed project; and could be subject to damage from seismic shaking or seismically induced liquefaction, known to have occurred in the local area. Repairs would be necessary, potentially resulting in impacts on the geologic resources and oceanographic processes at this location on the seafloor. Additionally, because the open-water intake and brine disposal structures in Monterey Bay would be anchored on the slopes of the Monterey Submarine Canyon, the potential for future slope instability and underwater landslide would be increased compared to the proposed project. Also, placement of an open water intake and brine disposal system on the seabed of MBNMS could affect seabed substrate and alter oceanographic processes such as sediment transport in the vicinity of Monterey Submarine Canyon. Although mitigation would be required, measures have not been defined and their efficacy cannot be guaranteed. Therefore, impacts on slope stability, landslides, and alteration of geologic resources or marine processes in the Monterey Bay within MBNMS would be an

increased impact conclusion compared to the proposed project, and are considered to be significant and unavoidable.

In summary, Alternative 3 would avoid impacts related to coastal erosion at the proposed project slant wells at CEMEX, but because of significant and unavoidable impacts related to degradation of marine geologic resources or oceanographic processes as a result of the intake and brine discharge structures on the slopes of the Monterey Submarine Canyon within MBNMS, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 3 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. In summary, these components could have a cumulatively significant impact related to loss of topsoil, but after implementation of mitigation measures, these components would have a less than significant cumulative impact. Alternative 3 would avoid impacts related to coastal erosion, and so would avoid a contribution to cumulative coastal erosion effects.

The geographic scope of analysis for cumulative geology, soils, and seismicity impacts for Alternative 3 is defined by the location of the Alternative 3 components. Although the geographic scope generally covers a large area, geologic impacts are localized and site-specific. Section 4.2.6 describes that because of the site-specific nature of these impacts, and because the proposed project and projects within the geographic scope would be subject to the same requirements related to erosion control and adherence to building codes, the components common to the proposed project would not have a significant cumulative impact related to erosion and soil-related and seismic hazards, and that after implementation of **Mitigation Measure 4.6-2b** and **4.16-1**, these components would have a less than significant cumulative impact related to the loss of topsoil. The Moss Landing Community Plan (No. 37 in **Table 4.1-2** in Section 4.1) and the GWR Project (No. 59) are the only additional projects located geographically near or overlapping the components unique to Alternative 3. Design and construction of these projects would be required to comply with the same requirements as Alternative 3. Therefore, the cumulative impacts related to erosion and geologic impacts on land would be less than significant.

Alternative 3 would result in the placement of structures (intake and outfall) in Monterey Bay that would be anchored on the slopes of the Monterey Submarine Canyon, resulting in a significant and unavoidable impact relative to underwater slope stability and landslides. However, no reasonably foreseeable cumulative projects would include additional structures in this location. Therefore, a cumulative analysis is not applicable to this impact for Alternative 3.

Overall, the project-level significant and unavoidable impact underwater slope stability and landslides notwithstanding (because no cumulative analysis is applicable to this impact), with implementation of mitigation measures identified in Section 4.2, Alternative 3's contribution to significant cumulative impacts would be reduced to a level that is less than significant. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to geology, soils, and seismicity, less than significant with mitigation.

5.5.2.7 Direct and Indirect Effects of Project Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the geologic impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Similar to the proposed project, construction would involve localized, short-term ground disturbance activities (e.g., grading, excavation, trenching, and drilling). The potential for soil erosion during construction activities would be minimal because project facilities and all conveyance pipelines would be located in relatively flat areas with little topographic relief. The construction of an additional 6.5 miles of desalinated water pipeline could increase the potential for erosion. However, like the proposed project, Alternative 4 construction activities would be subject to numerous existing State and local regulations that ensure erosion is minimized. Thus, combining the impacts of the proposed project components with the Alternative 4 intake, discharge, and desalination plant and addition of 6.5 miles of desalinated water pipeline and the open water intake system, construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

There is no farmland at the intake, discharge, or desalination plant sites and the disturbed nature of the area means that loss of topsoil would not be an issue. The 16.5-acre parcel would be located within the approximately 200-acre parcel that is currently developed, and as discussed in Section 5.5.2.1, the ground consists of an intermediate mix of fill material and underlying native sandy loam soil. Therefore, no loss of topsoil would result at this site during construction. Similar to the proposed project, however, pipeline construction activities could disturb vegetated areas adjacent to designated farmland. Grading, excavation, and backfill activities in these areas could result in the loss of topsoil during excavation and backfilling. Like the proposed project, the potential significant impact from loss of topsoil on agricultural lands would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**). Thus, combining the impacts of the Alternative 4 components, construction is

expected to result in the ***same impact conclusion*** the proposed project with respect to topsoil impacts, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts from components that are common with the proposed project would be identical to the impacts identified for these components in Section 4.2. The location of the intake, discharge, desalination plant and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**) and they are not located on or near an active fault; therefore, the components of Alternative 4 located on land would result in the ***same impact conclusion*** as the proposed project related to exposure of people or structures to fault rupture or other ground failure, liquefaction, spreading or settlement resulting from seismic events and groundshaking, less than significant. The potential for groundshaking- and liquefaction-related impacts from underwater components of Alternative 4 is discussed below.

Only the Main System-Hidden Hills Interconnection Improvements, common with the proposed project, would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the study area and the components of Alternative 4 located on land do not include activities that would exacerbate an otherwise unstable slope condition. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project relative to exposure of people or structures to landslides or other slope failures, less than significant. The potential for underwater landslide and slope failure related to underwater components of Alternative 4 is discussed below.

In addition to the Carmel Valley Pump Station, the Main System-Hidden Hills Interconnection Improvements, and the Ryan Ranch-Bishop Interconnection Improvements, the intake/discharge system and the desalinated water pipeline for Alternative 4 north of Nashua Road/Highway 1 intersection would be located on or in expansive soils with moderate to high corrosion potential that can corrode underground metal pipes, electrical conduits, and concrete. Like the proposed project, this alternative would be subject to existing building requirements and standards to minimize effects of expansive or corrosive soils. Therefore, the presence of expansive or corrosive soils would result in the ***same impact conclusion*** as the proposed project, less than significant.

Like the proposed project, Alternative 4 would extract water from the Seaside Groundwater Basin through the ASR-5 and -6 wells but would not extract groundwater from the Salinas Valley Groundwater Basin; as described for the proposed project, this extraction from the ASR wells would have no potential to cause subsidence. This would result in the ***same impact conclusion*** as the proposed project for subsidence, no impact.

Alternative 4 would produce the same amount and type of well development water during development of the ASR-5 and -6 wells but would not produce well development water associated with the subsurface slant wells. The high permeability of the sandy materials would be suitable for the infiltration of water; therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project related to the suitability of the locations for wastewater disposal, less than significant.

Alternative 4 intake and outfall pipelines would be located on and under the seafloor, and would extend inland to the desalination facility from the existing caisson on the beach at the end of Sandholdt Road. The caisson itself is currently being subjected to coastal erosion (ESA, 2014) and would be removed at some point soon, re-located inland, or reinforced in place with coastal armoring. A new pump house proposed for on top of the caisson would extend the use of the caisson and postpone the need to remove it. The Coastal Act provides that seawalls and other forms of construction that alter natural shoreline processes "shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply." The Coastal Act also requires that "new development ... assure stability and structural integrity, and neither create nor contribute significantly to erosion ... or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs." The continued use of the caisson on the beach could result in accelerated erosion, could alter the existing landforms along the coast, and could expose adjacent properties to coastal flooding.

However, the application of shoreline protective measures at the existing caisson could be permitted under the Coastal Act if: (1) there is an existing structure, public beach, or coastal-dependent use that is; (2) in danger from erosion; and (3) the shoreline protection is both required to address the danger (the least environmentally-damaging, feasible alternative) and (4) designed to eliminate or mitigate impacts on sand supply. While the applicant may propose such a measure to protect the caisson during the operations of Alternative 4, the details of the proposed mitigation are unknown and therefore, their efficacy cannot be determined. The impacts identified here would result in an ***increased impact conclusion*** compared to the proposed project and impacts would be significant and unavoidable.

The underwater features of Alternative 4 would have the potential to degrade the physical structure of a geologic resource or alter oceanographic processes, such as sediment transport, such that the result would be measurably different from pre-existing conditions. The Alternative 4 seawater intake and brine disposal systems would be located in Moss Landing in Monterey Bay within MBNMS on the slopes of the Monterey Submarine Canyon. No active faults are known to occur in the local area; however, the seawater intake and brine disposal system would be expected to experience seismic shaking during the project lifetime, similar to the proposed project, and could be subject to damage from seismic shaking or seismically induced liquefaction, known to have occurred in the local area. Repairs would be necessary, potentially resulting in impacts on the geologic resources and oceanographic processes at this location on the seafloor. Additionally, because the open-water intake and brine disposal structures in Monterey Bay would be anchored on the slopes of the Monterey Submarine Canyon, the potential for future slope instability and underwater landslide would be increased compared to the proposed project. Also, placement of an open water intake and brine disposal system on the seabed of MBNMS could affect seabed substrate and alter oceanographic processes such as sediment transport in the vicinity of Monterey Submarine Canyon. Although mitigation measures would be required, they have not been defined and their efficacy cannot be guaranteed. Therefore, impacts on slope stability, landslides, and alteration of geologic resources or marine processes within the Monterey Bay

within MBNMS would be an ***increased impact conclusion*** compared to the proposed project, and are considered to be significant and unavoidable.

In summary, Alternative 4 would result in significant and unavoidable impacts related to coastal erosion and degradation of marine geologic resources or oceanographic processes. Therefore, Alternative 4 would result in an ***increased impact conclusion*** compared to the proposed project.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 4 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. In summary, these components could have a significant cumulative impact related to loss of topsoil, but after implementation of mitigation measures, the impact would be less than significant.

The geographic scope of analysis for cumulative geology, soils, and seismicity impacts for Alternative 4 is defined by the location of the Alternative 4 components. Although the geographic scope generally covers a large area, geologic impacts are localized and site-specific. Section 4.2.6 describes that because of the site-specific nature of these impacts, and because the proposed project and projects within the geographic scope would be subject to the same requirements related to erosion control and adherence to building codes, the components common to the proposed project would have less than significant cumulative impacts related to erosion and soil-related and seismic hazards, and that after implementation of **Mitigation Measure 4.6-2b** and **4.16-1**, these components would have a less than significant cumulative impact related to the loss of topsoil. The DeepWater Desal Project (No. 34) and the Moss Landing Community Plan (No. 37), described in **Table 4.1-2** in Section 4.1, are the only additional projects located near or overlapping the components unique to Alternative 4. Design and construction of these projects would be required to comply with the same requirements as Alternative 4. Therefore, the cumulative impacts related to erosion and geologic impacts on land would be less than significant.

Alternative 4 would result in an increased risk of coastal erosion compared to the proposed project. However, no reasonably foreseeable cumulative projects would include additional structures in this location. Therefore, a cumulative analysis is not applicable to this impact for Alternative 4.

Both Alternative 4 and the DeepWater Desal project would result in the placement of structures (intakes and outfalls) in Monterey Bay that would be anchored on the slopes of the Monterey Submarine Canyon. Therefore, the cumulative potential for future slope instability and underwater landslide would be increased compared to either project alone, and would be significant. Even with mitigation, cumulative impacts from the risk of underwater landslide would remain significant and unavoidable, and the incremental contribution of the open-water intake component of Alternative 4 would result in a significant cumulative impact. Therefore, Alternative 4 would result in an ***increased impact conclusion*** compared to the proposed project for cumulative effects related to geology, soils, and seismicity, significant and unavoidable.

5.5.2.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

The construction of the components of Alternative 5a and 5b would result in erosion impacts similar to those described and analyzed for the proposed project and Alternative 1, respectively, but reduced in scale due to the construction of fewer slant wells, resulting in a decreased potential for soil erosion in proportion to the decreased amount of ground disturbance necessary to construct fewer wells, but with compliance with relevant State and local regulations, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

The potential significant impact associated with loss of topsoil on agricultural lands is associated with several components that would be the same as the proposed project (i.e., Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline), and so would result in the same effect after implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**) and the ***same impact conclusion*** as the proposed project; less than significant with mitigation.

Operational and Facility Siting Impacts

For the same reasons described previously for the proposed project and Alternative 1, although components of Alternative 5a and 5b are not located on or near an active fault, they would be expected to experience seismic shaking during the project lifetime. Like the proposed project, the structural elements of these alternatives would be required to undergo appropriate design-level geotechnical evaluations prior to final design and construction. Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project relative to exposure of people or structures to fault rupture or other ground failure, liquefaction, spreading, or settlement; less than significant.

For both Alternative 5a and 5b, only the Main System-Hidden Hills Interconnection Improvements, common with the proposed project, would be located in an area characterized as having a moderate to high susceptibility to earthquake-induced landslides. There are no existing active landslides in the area and the alternatives do not propose activities that would exacerbate an otherwise unstable slope condition. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Impacts related to expansive and corrosive soils would be the same as described for the proposed project or Alternative 1 because the potentially susceptible facilities would be the same.

Therefore, the presence of expansive or corrosive soils would result in the ***same impact conclusion*** as the proposed project, less than significant.

The slant wells for both Alternative 5a and 5b, like the proposed project and Alternative 1 slant wells, would be screened in aquifer units composed predominantly of sand and gravel, which are less prone to subsidence because of their granular structure. Seawater would replace the water pumped from the slant wells and the continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would be unable to subside as a result of pumping resulting in the ***same impact conclusion*** as the proposed project on subsidence, no impact.

As described previously for the subsurface slant wells at CEMEX under the proposed project and at Potrero Road under Alternative 1, the Alternatives 5a and 5b subsurface slant wells would each require an alternative wastewater disposal system for infiltration of development water, each of which would have a less-than-significant impact. The total amount of development water generated would be reduced in proportion to the reduced number of slant wells. Additionally, both Alternatives 5a and 5b would produce the same amount and type of well development water as the proposed project during development of the ASR 5 and 6 wells. The high permeability of the sandy materials would be suitable for the infiltration of water; therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** related to the suitability of the locations for wastewater disposal as the proposed project, less than significant.

Under Alternative 5a, the existing test slant well that would be converted to a permanent well would be the same as under the proposed project. It is possible that this well might become exposed on the beach during its operational life, potentially accelerating and/or exacerbating natural rates of coastal erosion, scour, and dune retreat. This potentially significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.2-9** (**Slant Well Abandonment Plan**), and therefore would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation. Under Alternative 5b, unlike the proposed project but similar to Alternative 1, the slant wells at Potrero Road would not be exposed to coastal retreat during the project lifetime and would have no impact related to coastal erosion because of their location inland of the dunes. Alternative 5b would therefore result in a ***reduced impact conclusion*** compared to the proposed project relative to coastal erosion, no impact.

In summary, Alternatives 5a and 5b would result in less-than-significant impacts with mitigation for geology, soils, and seismicity, similar to the proposed project. As with the proposed project, these alternatives would not result in impacts related to underwater slope stability and landslides or the degradation of marine geologic resources or oceanographic processes. Unlike Alternative 5a and the proposed project, Alternative 5b would not be affected by coastal erosion during the project lifetime.

Cumulative Analysis

Combined Impacts with GWR Project

The components of the GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would overlap with components of Alternatives 5a and 5b, including pipelines and well facilities. As described in the

GWR Project EIR Section 4.8.4.3 (MRWPCA and MPWMD, 2016), standard construction practices to prevent and minimize construction-related erosion would be included in GWR Project contract documents and SWPPPs that are required pursuant to NPDES regulations and permits for construction on 1 acre or more (GWR Impact GS-1). Recommendations of the preliminary geotechnical investigations prepared for the GWR Project will be incorporated into the final design and construction specifications, and construction will comply with applicable codes and requirements of the CBC and applicable ordinances (GWR Impact GS-2). Because the GWR Project will comply with these requirements, and because geologic impacts tend to be localized and site-specific, and most GWR Project components would not overlap geographically with the Alternative 5 components, the combined impacts related to erosion and geologic impacts on land would result in the ***same impact conclusion*** as the proposed project, less than significant. The GWR Project would not contribute to combined impacts related to the loss of topsoil (GWR Impact GS-2); therefore, impacts would be as described for Alternative 5, and would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 5 and the GWR Project would not create increased combined impacts related to seismic, liquefaction, and expansive and corrosive soil issues; landslides; land subsidence; or wastewater disposal (GWR Impacts GS-3, GS-4, GS-6, and GS-7); therefore, the combined impacts would have the ***same impact conclusion*** as the proposed project, less than significant.

As described in the GWR Project EIR, a segment of the Monterey Pipeline along Del Monte Boulevard could become exposed due to projected sea level rise and associated coastal erosion (GWR Impact GS-5), and **Mitigation Measure GS-5** is required to bury the pipeline at a depth below the 2060 100-year lower profile erosion envelope. Because it would not be located in the same locations that Alternative 5 would experience coastal erosion, this impact would not combine with impacts of Alternative 5 related to coastal erosion to create increased combined impacts; and with implementation of applicable mitigation for the GWR Project and for Alternative 5a (**Mitigation Measure 4.2-9**; not applicable to Alternative 5b), this combined impact would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

The geographic scope of analysis for cumulative geology, soils, and seismicity impacts for Alternatives 5a and 5b is the same as that for the proposed project and Alternative 1, respectively. Although the geologic setting generally covers a large area, geologic impacts tend to be localized and site-specific. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) is proposed to be located north of Potrero Road at Moss Landing and neither the facilities nor their associated impacts would geographically overlap with the impacts of Alternative 5a or 5b. As described above, some components of the GWR Project would overlap with components of Alternatives 5a and 5b. Various other cumulative projects are located throughout the area. Alternatives 5a and 5b would result in contributions to cumulative impacts that would be similar to the proposed project and Alternative 1, respectively. The cumulative projects would be required to comply with the same requirements as Alternatives 5a and 5b, such as the state Construction General Permit and its required SWPPP that would control and minimize erosion

during construction activities. The design of the cumulative projects would be required to comply with the CBC and County ordinances that would require implementation of the recommendations of required geotechnical investigations. Therefore, the cumulative impacts related to erosion and geologic impacts on land would be less than significant.

As described for the proposed project in Section 4.2.6, the components affecting topsoil (listed above under Construction Impacts) would result in a significant cumulative loss of topsoil; however, no additional projects in the geographic scope would further contribute to this cumulative impact. The contribution of Alternatives 5a and 5b would be reduced to a level that is less than significant with implementation of **Mitigation Measure 4.16-1**.

Alternatives 5a and 5b would have no impact on land subsidence, and therefore would not contribute to cumulative subsidence-related impacts. No other projects would overlap with the footprints of Alternatives 5a and 5b to contribute to cumulative impacts related to seismic, liquefaction, and expansive and corrosive soil issues, landslides, or wastewater disposal.

For impacts related to coastal erosion, under Alternative 5a, none of the cumulative projects would combine with the effects of Alternative 5a to result in a cumulative impact; therefore, a cumulative analysis is not applicable to this impact for Alternative 5a. Alternative 5b would not be subject to coastal erosion and so would not contribute to a cumulative coastal erosion-related impact.

In summary, Alternatives 5a and 5b could result in significant contributions to significant cumulative impacts relative to geology, soils, and seismicity, but these contributions would be reduced to a level that is less than significant after implementation of applicable mitigation measures, thus resulting in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.2.9 References

Environmental Science Associates (ESA), 2014. *Technical Memorandum, Monterey Peninsula Water Supply Project: Analysis of Historic and Future Coastal Erosion with Sea Level Rise*, March 19, 2014.

MPWMD, 2016. Addendum to the Aquifer Storage and Recovery Project Environmental Impact Report/Environmental Assessment and the Pure Water Monterey/Groundwater Replenishment Project Environmental Impact Report for the Hilby Avenue Pump Station. http://www.mpwmd.net/asd/board/boardpacket/2016/20160620/16/Item-16-Exh-A.pdf.

MRWPCA and MPWMD, 2016. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, Volume IV, Exhibit B. http://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf.

NRCS, 2015. Soil Map Monterey County, California. July8, 2016.

5.5.3 Surface Water Hydrology and Water Quality

The evaluation criteria used to assess surface water hydrology and water quality impacts from implementation of the alternatives are the same as those used to assess impacts of the proposed project (see Section 4.3.3) and include specific thresholds related to: the degradation of water quality, including impacts on ocean waters within MBNMS from operational discharges; the alteration of drainage patterns in a manner that may result in erosion or flooding; stormwater conveyance capacity; and, flooding and flood risks.

5.5.3.1 Setting/Affected Environment

The study area relevant to the evaluation of surface water hydrology and water quality impacts for all alternatives is the same as that described for the proposed project in Section 4.3.1 and comprises the Salinas River watershed, Carmel River watershed, and the southern portion of the Monterey Bay south of Elkhorn Slough, which is a part of Monterey Bay National Marine Sanctuary (MBNMS). Water quality in the lower Salinas River is impaired by pesticides and nutrients. Excess sediment, which occurs due to various land uses and road designs, is a key issue in the Carmel River. The seawater in Monterey Bay is a mixture of water masses from different parts of the Pacific Ocean and water quality in Monterey Bay is a function, in part, of different constituents present in the water, as well as the seasonal ocean climate which affects ocean temperature and salinity. The waters of Monterey Bay contain numerous legacy pesticides such as organochlorine pesticides, Dieldrin and dichloro-diphenyl-trichloroethane (DDT), as well as chemical products in current use such as organophosphate pesticides, polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). The waters of Monterey Bay exceeded the Ocean Plan 30-day average PCB water quality objective of 1.9×10^{-5} micrograms per liter (µg/L)[4] for most of the years between 2004 and 2013. Monterey Bay also receives point source discharges from pipelines and other structures. Such permitted discharges into Monterey Bay are subject to prohibitions under MBNMS regulations as well as NPDES permit regulations and water quality requirements established by the Central Coast RWQCB. Flooding and flood hazard risks, including those from tsunami, dam failure, and sea level rise, vary throughout the study area depending on location. FEMA 100-year flood hazard zones in the study area are shown in **Figure 4.3-2**. Areas that are subject to coastal flooding and sea level rise are shown in **Figure 4.3-3**.

5.5.3.2 Summary of Direct and Indirect Effects of the Proposed Project (Slant Wells at CEMEX)

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina that would create approximately 15 acres of impervious surfaces, up to nine new subsurface slant wells at the CEMEX active mining area and conversion of the existing test slant well to a permanent well. The slant well construction at the CEMEX site would result in 9 acres of disturbance during construction with approximately 0.7 acres of permanent land alteration associated with the wells. The proposed project would also include

[4] This objective for protection of human health is listed in the Ocean Plan and is discussed further in Section 4.3.2.1, State Regulatory Framework.

improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, pump stations, storage tanks, and about 21 miles of new water conveyance pipelines. No construction or placement of facilities on the seafloor would occur.

The direct and indirect effects of the proposed project have been grouped and summarized below, in the context of the project construction phase, the operational phase and effects resulting from facility siting. For a more detailed analysis and discussion of the following summarizes refer to Section 4.3.5. Overall, the surface hydrology and water quality related impacts of the proposed project would be less than significant with mitigation.

Construction Impacts

Construction activities have the potential to degrade water quality as a result of soil erosion as a result of soil disturbance from grading and excavation as well as the accidental release of hazardous chemicals; from the discharge of dewatering effluent associated with excavations and drilling, and; from discharges associated with cleaning/flushing newly installed pipelines. Construction activities can also permanently or temporarily result in altered drainage patterns that can result in on- and off-site erosion, siltation, and flood risk increases.

Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.

Soil disturbing activities could result in soil erosion and the migration of soil and sediment in stormwater runoff to downgradient water bodies and storm drains. The temporary storage and use of construction chemicals such as adhesives, solvents, fuels, and petroleum lubricants could, if not managed appropriately, result in an accidental release or spills. For all project facilities, mandatory compliance with NPDES Construction General Permit requirements would involve implementation of erosion and stormwater and water quality control measures, which would prevent substantial adverse effects on water quality during construction. The impact would be less than significant for all project components.

Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and from water extracted during drilling and development of the subsurface slant wells, the ASR-5 and ASR-6 Wells.

The majority of general construction dewatering effluent associated with excavations would be disposed of in accordance with the General Waste Discharge Requirements (Central Coast RWQCB Order R3-2011-0223). However, discharges of dewatering effluent exceeding the water quality limitations in the General WDRs would result in a significant impact. This impact would be reduced to a less-than-significant level with implementation of the **Mitigation Measure 4.7-2b** (**Soils and Groundwater Management Plan**). Water produced during the drilling and development of the slant wells and ASR-5 and 6 Wells would be disposed of in accordance with the MRWPCA's NPDES permit (for discharges via the ocean outfall) and General Waiver. All discharges of water produced during well drilling and development would occur in compliance with regulatory requirements that are protective of the receiving waters. Therefore, the impact associated with discharges of water produced during drilling and development of the subsurface slant wells and

ASR-5 and ASR-6 Wells would be less than significant. Overall, impacts associated with discharges of dewatering effluent during construction would be less than significant with mitigation.

Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.

Prior to constructing the connections between existing and new pipelines, segments of existing pipelines would need to be drained and disinfected before being returned to service. Newly installed pipelines (i.e., Source Water Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, Brine Discharge Pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR pipelines, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements) would also be disinfected before being put into service. Adherence to the General Waste Discharge Requirements (WDRs) would ensure this impact would be less than significant.

Impact 4.3-8: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff resulting in flooding on- or offsite or the exceeding of the stormwater drainage system capacity.

For all project facilities, mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures to minimize and avoid erosion, siltation, and increased runoff on- and off-site. Implementation of the proposed facilities would not result in substantially altered drainage patterns or increased stormwater runoff as a result of increased impervious surfaces. The subsurface slant wells, MPWSP Desalination Plant, would be required to implement Low Impact Development elements into the final site design, ensuring stormwater runoff is not increased and that flood risks on- or offsite are avoided and that stormwater conveyance structure capacity is not exceeded. The impact would be less than significant. No changes in drainage patterns would result from implementation of the proposed pipelines because they would be underground. This negligible increase in impervious surfaces would not result in substantial impacts related to changes in drainage patterns, erosion or siltation, flooding, or flows in excess of the stormwater drainage system.

Operational Impacts

Operational activities that would result in potential water quality related impacts would include the discharge of desalination brine (either alone, or blended with varying volumes of secondary-treated wastewater depending on the time of year) into the waters of MBNMS. Discharges related to well maintenance activities could degrade the water quality of receiving waters. Summaries of the water quality impacts are provided below.

Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.

The modeling and analysis of salinity concentrations, mixing, and dilution at the outfall indicates that for all operational scenarios, and assuming a continuous brine discharge stream, the brine-

only discharges and discharges of brine blended with varying volumes of wastewater will meet Ocean Plan salinity and dissolved oxygen standards and will not result in salinity related toxicity or hypoxia on the ocean floor. Specifically, the discharges would result in salinity levels that would not exceed 2 ppt above ambient salinity levels at the edge of the ZID (located 10 feet to 39 feet from the diffuser depending on discharge scenario). The proposed project, therefore, would not exceed or violate the Ocean Plan salinity standards or degrade water quality in terms of salinity. Therefore, operational discharges from the MPWSP would not increase salinity levels or impact Dissolved Oxygen (hypoxia) in a manner that violates water quality standards or waste discharge requirements or otherwise degrades the water quality of receiving waters in MBNMS. Impacts would be less than significant. While impacts related to water quality from increased salinity have been determined to be less than significant based on model analyses, and although it is likely that monitoring would occur based on the Ocean Plan requirements and associated NPDES permit requirements, implementation of **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) would ensure compliance with the Ocean Plan monitoring requirements as well as consistency with MBNMS guidelines for operation of desalination facilities that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay.

Impact 4.3-5: Violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving waters in Monterey Bay as a result of brine discharge from the operation of the MPWSP Desalination Plant.

The model-based analyses of water quality constituent concentrations, mixing, and dilution at the outfall diffuser for all operational scenarios concluded constituent concentrations could become elevated to levels greater than 80 percent of the Ocean Plan water quality objectives for ammonia and cyanide for some operational discharge scenarios (when low wastewater volumes are co-mingled with the brine). For an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in Method Reporting Limits (MRLs) used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. Significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**). Mitigation Measure 4.3-5 would require CalAm to perform an extensive water quality assessment using protocols defined in Appendix II “Minimum Levels” of the 2015 California Ocean Plan prior to implementation of the MPWSP. Operational discharges that cannot be demonstrated to conform to the Ocean Plan water quality objectives may only be released following implementation of additional design features, engineering solutions, and/or operational measures that ensure compliance with objectives. Additionally, future water quality testing and analysis, as required under the NPDES permit process, would ensure that operational discharges under the MPWSP would fully comply with Ocean Plan water quality objectives and NPDES effluent limitations, including limits for toxicity and radioactivity.

Impact 4.3-6: Degrade water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR-5 and ASR-6 Wells.

Routine maintenance activities of the subsurface slant wells would disrupt roughly 6 acres at the CEMEX active mining area for 9 to 18 weeks every 5 years. Further, the effluent produced during slant well cleaning could carry sediment or other contaminants that, if discharged directly to the beach area, could adversely affect water quality in Monterey Bay. As part of routine maintenance of the ASR-5 and ASR-6 Wells, CalAm facility operators would regularly backflush accumulated sediment and turbid water from the two wells. Water produced during routine backflushing would be conveyed to the existing Phase I ASR Pump-to-Waste System. Discharges and land disturbance activities related to periodic maintenance of the subsurface slant wells and routine maintenance of the ASR-5 and ASR-6 Wells would be conducted in accordance with regulatory requirements, such as the General Waiver and the Construction General Permit, designed to protect water quality. Any water quality related impacts would be avoided or minimized to a less-than-significant level.

Facility Siting Impacts

The addition of impervious surfaces or the alteration of drainage patterns (such as through grading) can increase peak stormwater flows, causing erosion or siltation onsite or downstream, increase flood potential, and exceed the capacity of stormwater systems. The subsurface slant wells and portions of the Source Water Pipeline, Castroville Pipeline, and new Transmission Main would be constructed in a 100-year flood hazard area. The near-shore margins of Monterey County, including coastal portions of Marina, Seaside, and Monterey, are subject to flooding in the event of a tsunami. Siting facilities in flood hazard areas can increase the risk of exposing people or structures to loss, injury, or death. The subsurface slant wells, the northernmost portion of the MPWSP Desalination Plant site, and portions of the Source Water Pipeline would be located in areas that could be subject to sea level rise.

Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff or an increase in flooding on- or offsite or the exceeding of storm drain capacity.

Implementation of the subsurface slant wells at the CEMEX active mining area would result in a total increase in impervious surface area of approximately 0.7 acres (30,000 square feet). The proposed MPWSP Desalination Plant site would disturb approximately 25 acres of a 46-acre undeveloped parcel, and would add approximately 15 acres (653,400 square feet) of impervious surfaces. The proposed ASR-5 and ASR-6 Wells at the Fitch Park military housing area would add a total or approximately 0.05 to 0.06 acres (2,000 to 2,500 square feet) of impervious surface. The subsurface slant wells, MPWSP Desalination Plant, ASR-5 and ASR-6 Wellswould be subject to the post-construction stormwater management requirements of the municipal stormwater permit and CalAm would be required to implement post-construction stormwater BMPs into the final site designs. With adherence to the post-construction requirements, the existence and operation of these facilities would result in a less than significant impact related to drainage pattern alteration, storm runoff volume, stormwater conveyance capacity, increased soil erosion, and siltation. The Carmel Valley Pump Station would add approximately 600 feet of impervious surfaces and would result in a less than significant impact. No impact would result from implementation of the proposed pipelines.

Impact 4.3-9: Impedance or redirection of flood flows following construction due to the siting of project facilities in a 100-year flood hazard area.

Portions of the Source Water Pipeline, new Transmission Main, and Castroville Pipeline would be constructed in a 100-year flood hazard area. However, these facilities would be placed underground and would not impede or redirect flood flows. The electrical control cabinet at the slant wells would divert flood flows to the sandy areas immediately surrounding the cabinet, still within the CEMEX active mining area, and would not affect other properties or structures. No impact would result from implementation of all other proposed facilities because none of the other components would be located within a 100-year flood hazard area. Therefore, the impact would be less than significant.

Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.

The subsurface slant wells at CEMEX, and the Castroville Pipeline would be located in areas subject to flooding from a tsunami. Because the presence of onsite personnel would be minimal, operation of the subsurface slant wells and pipeline operations and maintenance would not expose personnel or structures to significant risks from flooding in the event of a tsunami. The impact would be less than significant.

Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.

The subsurface slant wells, the northernmost portion of the MPWSP Desalination Plant site, and portions of the Source Water Pipeline would be located in areas that could be subject to sea level rise. However, because the subsurface slant wells and the two pipelines would be constructed underground and designed to withstand inundation, these facilities would not be subject to a significant risk of damage from flooding due to sea level rise. The aboveground facilities at the proposed Desalination Plant site would be constructed on the upper terrace of the site, at an elevation higher than the predicted year 2100 sea level. It would not expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise. The impact would be less than significant for the subsurface slant wells, MPWSP Desalination Plant, and Source Water Pipeline, and Castroville Pipeline. All other proposed facilities would have no impact.

Cumulative Impacts

The geographic scope for potential cumulative surface hydrology and water quality impacts consists of the project area and surrounding Salinas River and Carmel River watershed lands as well as marine waters in Monterey Bay. The analysis of potential cumulative impacts on hydrology and water quality considers those cumulative projects listed in **Table 4.1-2** and shown in **Figure 4-1**.

Nearly every project in the cumulative scenario would be subject to the construction general permit, General Waiver, General WDRs, and other local regulations. With implementation of **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**) and mandatory compliance with the NPDES Construction General Permit, General Waiver, and General WDRs,

residual effects of MPWSP discharges of water extracted during well drilling and development would not be expected to combine with those of projects in the cumulative scenario to cause a significant cumulative impact. Therefore, with implementation of mitigation, the proposed project's contribution to any cumulative impact would be less than significant.

The requirements of NPDES permits, which incorporate the Ocean Plan water quality objectives in the case of operational discharges from the MRWPCA outfall, are designed and intended to protect beneficial uses of receiving waters (i.e., Monterey Bay) from the effects of numerous potential sources of pollution, and are therefore protective against significant adverse cumulative impacts. With mandatory compliance with the regulatory requirements and the NPDES effluent limitations, and implementation of **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**), the cumulative impact from the discharges resulting from MPWSP and the projects in **Table 4.1-2** is considered less than significant. Additionally, with implementation of mitigation measures, the proposed project's contribution to any cumulative water quality impact in Monterey Bay would be reduced to a level that is less than significant.

Regional alterations to site drainage from multiple projects in the region could cause increased peak flows in creeks, exacerbate erosion and sedimentation, and result in greater non-point source pollution in downstream water bodies. Increased areas of impervious surfaces could also increase flooding of downstream waterways and cause runoff volumes to exceed stormwater conveyance system capacities. Such developments would be required to comply with the Central Coast RWQCB Resolution No. R3-2013-0032, as implemented through the Monterey Regional Stormwater Management Program and NPDES Municipal Stormwater Permit. Further, stormwater requirements are part of a regional program designed to address the potential cumulative effects of past, present, and foreseeable projects within the region; adherence to these requirements would ensure that the alteration of drainage patterns would not cause a significant cumulative impact and the proposed project would result in a less than significant contribution to any cumulative impact.

5.5.3.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no construction would occur and no desalination facility would be built and operated. As such, there would be no construction related hydrology and water quality impacts, such as erosion or dewatering discharges. However, decommissioning of the existing test slant well could result in impacts on water quality, including increased soil erosion and the potential for a hazardous chemical release. See Impact 4.3-1, in Section 4.3.5.1. Mandatory compliance with the NPDES Construction General Permit requirements would require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would prevent significant construction-related impacts on water quality. The Plan would be required to identify standard Best Management Practices to be implemented to control erosion and reduce sedimentation. Site monitoring by the applicant's erosion-control specialist would be undertaken and a follow-up report would be prepared that documents the progress and/or completion of required erosion-control measures both during and after slant well decommissioning activities. No synthetic plastic mesh products could be used in any erosion

control materials. All plans would be required to show that sedimentation and erosion control measures are installed prior to any other ground disturbing work.

Also, no brine would be discharged from the MRWPCA outfall and no impacts related to water quality standards, waste discharge requirements, or water quality would occur as a result of operational discharges. Because no facilities would be constructed, there would be no facility siting impacts related to altered drainage patterns, impervious surfaces, flooding, and flood risks.

Under the No Project Alternative, current diversions from the Carmel River would continue consistent with existing conditions in the short-term. However, under the No Project Alternative, CalAm would not meet Milestone 3 by September 30, 2018 (receipt of a CPCN from the CPUC), nor would it meet the subsequent annual milestones associated with the construction and implementation of the MPWSP. CalAm's Effective Diversion Limit (EDL) from the Carmel River would be reduced under the terms of the Cease and Desist Order (CDO) by 1,000 afy in October 2018, and by an additional 1,000 afy in each subsequent year until October 2021. Beginning in January 2022, as with the Proposed Project, CalAm would only be allowed to divert its legal entitlement of 3,376 afy from the Carmel River. See Section 5.4.2 for details on the amounts of water allowed by the CDO to be diverted each year until the CDO expiration. Therefore, under the No Project Alternative, diversions from the Carmel River would be reduced sooner than under the proposed project and Carmel River flows would be restored with a total of an additional 10,000 acre-feet compared to the proposed project, over the period of October 2018 through 2021. The increases to Carmel River flows under the No Project Alternative compared to the proposed project would be beneficial to Carmel River hydrology, water quality, and aquatic habitat (as determined by the RWQCB as part of Order 95-10). For a more detailed discussion regarding the benefits to Carmel River aquatic habitat and species see Section 5.5.6, Terrestrial Biology.

Cumulative Analysis

In addition to the beneficial effect of increased streamflows in the Carmel River that would occur under the No Project Alternative compared to existing conditions, the GWR Project (No. 59 in **Table 4.1-2**) would provide water supply to CalAm that would further reduce CalAm's diversions from the Carmel River, per the terms of the CDO (SWRCB, 2016a). Specifically, for every acre-foot of GWR Project water supply that CalAm is able to deliver to the Monterey District, CalAm must reduce its Carmel River system diversions by one acre-foot. Therefore, if GWR Project water becomes available to CalAm prior to 2022 (when Carmel River diversions would be limited to the 3,376 afy legal limit regardless of other water sources), CalAm's diversions from the Carmel River would be reduced compared to those described in **Table 5.4-3**, leaving more streamflow in the Carmel River than under the No Project Alternative alone. This would be a cumulative beneficial less than significant effect on streamflows in the Carmel River.

5.5.3.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine

discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the surface water hydrology and water quality impact analysis of Alternative 1 focuses primarily on the intake system and source water pipeline that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1. Components that are common to both Alternative 1 and the proposed project are assessed in Section 4.3, Surface Water Hydrology and Water Quality.

Construction Impacts

Components unique to Alternative 1 would have a smaller disturbance area at the Potrero Road parking lot (1 acre) as compared to the proposed project at CEMEX (9 acres), but Alternative 1 would also include an additional 5.5 miles of source water pipeline. Overall, based on the additional 5.5 miles of pipeline under Alternative 1, the construction footprint would be increased as compared to the proposed project. Therefore, Alternative 1 would result in an increased potential for soil erosion and risk of inadvertent releases of hazardous chemicals during general construction activities. Alternative 1 would also have an increased potential for eroded soil and sediment to be transported down gradient via stormwater runoff and degrade the water quality of receiving water bodies, including the Salinas River and Monterey Bay. Mandatory compliance with NPDES Construction General Permit and local grading requirements would involve implementation of a SWPPP, including stormwater BMPs as well as erosion and stormwater control measures, which would prevent substantial adverse effects on water quality during construction. Alternative 1 construction impacts related to the degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities would result in the ***same impact conclusion*** as the proposed project, less than significant.

Construction-related discharges of dewatering effluent from open excavations and water produced during well drilling of the slant wells would be increased under Alternative 1 because of the increased number of new wells at Potrero Road compared to the proposed project (10 new wells versus 9 new wells and the converted test well at CEMEX) and the 5.5 miles of additional source water pipeline. Most of the dewatering effluent produced during construction excavation is considered a low threat and would be discharged to land or the stormwater drainage system provided it complies with the *General WDRs for Discharges with a Low Threat to Water Quality.* The development water produced during well installation would be pumped to holding tanks to allow sediment to settle out and effluent would be discharged to a buried diffuser system in the parking lot for percolation into underlying beach sands in accordance with the requirements of the General Waiver of WDRs (General Waiver). Impacts from discharges of contaminated dewatering effluent from open excavations and well development that do not meet General Waiver requirements would be reduced to a less-than-significant level with implementation of the same mitigation prescribed for the proposed project, **Mitigation Measure 4.7-2b: Soil and Groundwater Management Plan**. Alternative 1 construction impacts related to the degradation

of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Degradation of water quality from discharges of treated water and disinfectant during construction of Alternative 1 could be increased compared to the proposed project because of the additional 5.5 miles of new pipeline. Like the proposed project however, adherence to the General Waste Discharge Requirements would ensure the degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

During construction of Alternative 1, the potential for grading and earthmoving operations to alter local drainage patterns and redirect or concentrate stormflows would be increased due to the additional 5.5 miles of pipeline. Such an increased potential for altered drainage patterns could result in increased risks related to onsite and/or downstream (offsite) erosion, siltation, and flooding, especially if stormwater conveyance capacity is exceeded. Mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures which would ensure the potential for impacts related to altered drainage patterns during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational Impacts

Operation and maintenance of Alternative 1 would include the same activities as the proposed project. The source water would be the same as the proposed project in terms of water quality characteristics. The brine discharge system and volume of discharge would be the same as the proposed project, and, therefore, impacts would be the same as described in Section 4.3. Discharges would not increase salinity levels in violation of water quality standards or waste discharge requirements, nor otherwise degrade the water quality of receiving waters in Monterey Bay as a result of increased salinity.

Alternative 1 would be subject to the same mitigation as defined for the proposed project, which requires development and approval of a monitoring and reporting plan, consistent with the requirements of the Ocean Plan and MBNMS guidelines, prior to construction and operation. **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) would ensure compliance with the monitoring requirements and regulatory standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. The monitoring and reporting plan would set forth appropriate response thresholds as well as corrective actions (defined in **Mitigation Measure 4.3-5**) that would be required if the acquired data indicated deleterious effects on receiving water quality or marine resources from discharges. **Mitigation Measure 4.3-4** would minimize or avoid any potential adverse effects from increased salinity (including hypoxia); therefore, Alternative 1 would result in the ***same impact conclusion*** related to increased salinity as the proposed project, less than significant with mitigation.

Like the proposed project, no heating mechanism or process would increase the temperature of the source water as it passes through the desalination process. Alternative 1 would not increase the temperature of the discharged effluent in a manner inconsistent with the requirements of the SWRCB Thermal Plan and impacts relating to temperature would be the same as the proposed project. However, as described for the proposed project, because constituent concentrations could become elevated to levels greater than 80 percent of the Ocean Plan water quality objectives for ammonia and cyanide for some operational discharge scenarios (when low wastewater volumes are co-mingled with the brine), and there is not enough information to assess concentrations at the edge of the ZID for an additional thirteen constituents due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. With the implementation of **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives,** described in detail in Section 4.3.5.3), impacts related to the violation of regulatory standards and discharge requirements or the degradation of water quality under Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

As described for the proposed project, the routine maintenance of subsurface slant wells and the ASR-5 and ASR-6 Wells would be conducted in accordance with regulatory requirements, such as the General Waiver and Construction General Permit, designed to protect water quality. Alternative 1 impacts related to the degradation of water quality due to discharges associated with maintenance of wells would result in the ***same impact conclusion*** as the proposed project, less than significant.

Facility Siting Impacts

Under Alternative 1, the disturbance area for maintenance of the slant wells at Potrero Road would be less than that of the proposed project (less than 1 acre at Potrero Road compared to 9 acres at CEMEX) and impervious surfaces for the slant wells would also be reduced (1,250 square feet compared to approximately 30,000 square feet for the proposed project). Therefore, Alternative 1 impacts related to the alteration of drainage patterns such that there is a resultant increase in erosion, siltation, flooding on- or offsite or the exceeding of storm drain capacity would result in a slightly reduced level of impact as compared to the proposed project. With adherence to post-construction stormwater management requirements and post-construction stormwater BMPs, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Under Alternative 1, impacts related to flooding and flood risks, including those from tsunami and sea level rise would result in a slightly reduced level of impact than the proposed project due to the slant wells at Potrero Road not being located in a 100-year flood hazard area (whereas the proposed project slant wells at CEMEX would be within the 100-year flood zone) and also being set further inland behind the coastal dunes. Alternative 1 would result in the ***same impact conclusion*** associated with flooding and flood risks compared to the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts from construction and operation of Alternative 1 would be the same as those described for the proposed project (which includes consideration of the Deep Water Desal Project), as analyzed in Section 4.3.6, Surface Water Hydrology and Water Quality. Like the proposed project, Alternative 1 could contribute to significant cumulative surface water hydrology and water quality impacts, but with implementation of **Mitigation Measures 4.7-2b**, **4.3-4** and **4.3-5**, would have a less than significant contribution to such cumulative impacts (*less than significant with mitigation*).

5.5.3.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore on the seafloor in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station that would be constructed on 3,600 square feet at Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the analysis of Alternative 2 hydrology and water quality impacts focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2. Components that are common to both Alternative 2 and the proposed project are assessed in Section 4.3, Surface Water Hydrology and Water Quality.

Construction Impacts

Components unique to Alternative 2 would have a reduced onshore construction disturbance area compared to the proposed project. While the open-water intake system and an additional 6.5 miles of source water pipeline are proposed under Alternative 2, pipelines required for the return of source water that originated in the Salinas Valley Groundwater Basin would not be implemented. Like the proposed project, Alternative 2 would have 21 miles of total pipeline. Further, the land-based construction area of the intake system pump station (0.08 acres) would be less than the 9 acres associated with the slant wells at CEMEX. For land-based construction, mandatory compliance with NPDES Construction General Permit and local grading requirements, including implementation of a SWPPP and stormwater BMPs as well as erosion and stormwater control measures, would prevent substantial adverse effects on water quality during land-based construction. Alternative 2 construction impacts related to the degradation of water quality associated with soil erosion and inadvertent releases of hazardous chemicals during general land-

based construction activities would result in the ***same impact conclusion*** as the proposed project, less than significant.

Construction of the open-water intake on the seafloor (versus the proposed project's subsurface intake system) would result in an increased level of impact for construction related water quality impacts within MBNMS because the proposed project would not involve any construction on the seafloor. Water quality impacts associated with construction of the open water intake would include direct disturbance of the seafloor and associated water quality degradation in the form of increased turbidity and the potential release of drilling fluids where the Horizontal Directional Drilling technique of the intake pipeline breaks through the seafloor, and where the seafloor is prepared/graded for the placement of the intake structure. However, any disturbance of the seafloor and resulting increased turbidity would be temporary and short-term in nature (i.e. not chronic or ongoing), occurring only during the construction period, and would be highly localized in extent, occurring only within and immediately adjacent to the construction area at the intake pipeline terminus and where the seafloor is prepared for the intake structure. Any drilling fluids released would be environmentally inert and biodegradable. Water quality would return to ambient conditions following completion of construction activities as a result of the settling of suspended sediment and mixing and dilution driven by wave action and tidal current. Therefore, Alternative 2 would result in an increased level of impact compared to the proposed project because the proposed project would not have any in-water construction. However, because of the temporary and localized nature of the in water construction impacts, Alternative 2 would result in an ***increased impact conclusion*** compared to the proposed project, less than significant.

Construction-related discharges of dewatering effluent from open excavations would be the same under Alternative 2 as the proposed project since the 21 total miles of pipeline constructed would be the same (the additional 6.5 additional miles of source water pipeline and the elimination of the pipelines related to return water). Most of the dewatering effluent produced during construction excavation would be discharged to land or the stormwater drainage system in compliance with the *General WDRs for Discharges with a Low Threat to Water Quality*. Impacts from discharges of contaminated dewatering effluent from open excavations that do not meet requirements of the General WDRs would be reduced to a less-than-significant level with implementation of the same mitigation prescribed for the proposed project, **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**). Alternative 2 impacts related to the degradation of water quality from construction-related discharges of dewatering effluent from open excavations would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Degradation of water quality from discharges of treated water and disinfectant during construction of Alternative 2 would be the same as the proposed project. Like the proposed project, adherence to the General WDRs would ensure impacts related to the degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

During construction of Alternative 2, the potential for grading and earthmoving operations to alter local drainage patterns and redirect or concentrate stormflows would be reduced due to the intake

pump station resulting in less land disturbance than the 9 acres for the slant wells under the proposed project. As with the proposed project, mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures which would ensure the potential for impacts related to altered drainage patterns during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational Impacts

Under Alternative 2, the salinity of the brine would be the same as that described for the proposed project and the brine would be mixed with MRWPCA wastewater, when available, in the same volumes as described for the proposed project. Operational discharges would be discharged via the existing diffuser and subject to the same mixing and dilution dynamics as described for the proposed project.

Alternative 2 would be subject to the same mitigation as defined for the proposed project, which requires development and approval of a monitoring and reporting plan, consistent with the requirements of the Ocean Plan and MBNMS guidelines, prior to construction and operation. **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) would ensure compliance with the monitoring requirements and regulatory salinity standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. The monitoring and reporting plan would set forth appropriate response thresholds as well as corrective actions (defined in **Mitigation Measure 4.3-5**) that would be required if the acquired data indicated deleterious effects on receiving water quality or marine resources from discharges. **Mitigation Measure 4.3-4** would minimize or avoid any potential adverse effects from increased salinity (including hypoxia); therefore, Alternative 2 would result in the ***same impact conclusion*** related to increased salinity compared to the proposed project, less than significant with mitigation.

As with the proposed project, no heating mechanism or process would increase the temperature of the source water as it passes through the desalination process, and Alternative 2 would not increase the temperature of the discharged effluent in a manner inconsistent with the requirements of the SWRCB Thermal Plan and impacts relating to temperature would be the ***same*** as the proposed project; no impact.

As described for the proposed project, because constituent concentrations could become elevated to levels greater than 80 percent of the Ocean Plan water quality objectives for ammonia and cyanide for some operational discharge scenarios (when low wastewater volumes are co-mingled with the brine), and there is not enough information to assess concentrations at the edge of the ZID for an additional thirteen constituents due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. With the implementation of Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives, described in detail in Section 4.3.5.3), impacts related to the violation of regulatory standards and

discharge requirements or the degradation of water quality under Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Furthermore, as described in Section 4.3, Surface Water Hydrology and Water Quality, the concentration of polychlorinated biphenyls (PCBs) in Monterey Bay currently exceeds Ocean Plan water quality objectives under baseline conditions. Unlike the proposed project's use of subsurface slant wells, the open water intake under Alternative 2 would not pre-filter the PCBs through the seafloor and concentrations of the existing PCB-levels would expectedly increase in the brine discharge as compared to the proposed project. Because brine-only discharges form a dense sinking plume with low minimum dilution, increased concentrations of PCBs in the brine discharges would result in an increased level of impact compared to the proposed project. Unlike the proposed project, Alternative 2 could potentially exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID. However, with the implementation of Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives) impacts related to the violation of regulatory standards and discharge requirements or the degradation of water quality under Alternative 2 would result in the same impact conclusion as the proposed project, less than significant with mitigation.

Under Alternative 2, maintenance activities would be the same as those described for the proposed project, except for the new open-water intake in MBNMS. Maintenance of the new open-water intake structure and pipeline would be conducted annually and would result in a temporary short-term disturbance to the seafloor in the area immediately surrounding the intake structure, resulting in localized increases in turbidity. The material removed during intake screen cleaning and pipeline maintenance would be released into the ocean at the well screens and at the end of the intake pipeline, and could also contribute to temporary and localized increased turbidity. Water quality would return to ambient conditions following completion of maintenance activities as a result of the settling of suspended sediment and mixing and dilution driven by wave action and tidal current. Therefore, this would result in an increased level of impact compared to the proposed project because the proposed project proposes no in-water maintenance activities. However, while the impact on water quality would be localized and temporary, Alternative 2 would result in an ***increased impact conclusion*** compared to the proposed project, less than significant.

Facility Siting

Under Alternative 2, the total impervious area would be reduced compared to the proposed project (0.08 acres for the Dolan Road intake pump station compared to 9 acres for slant wells at CEMEX). Therefore, Alternative 2 would result in a reduced level of impact compared to the proposed project on the alteration of drainage patterns such that there is a resultant increase in erosion, siltation, flooding on- or offsite or the exceeding of storm drain capacity. With adherence to post-construction stormwater management requirements and post-construction stormwater BMPs, Alternative 2 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Under Alternative 2, impacts related to flooding and flood risks, including those from tsunami and sea level rise would have a similar level of impact as the proposed project due to the intake pump station being located in the coastal zone, similar to the slant wells at CEMEX. Subsurface

pipelines would have the same level of impact as the proposed project regarding flood hazards. Impacts associated with flooding and flood risks under Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts from construction of Alternative 2 would be the same as those described for the proposed project, with the exception of the construction of the open-water intake facility and longer source water pipeline; Alternative 2, like the proposed project, would use the existing MRWPCA outfall. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) also would include construction of a new open-water intake and new outfall pipelines at Moss Landing that would result in the same type of localized water quality degradation described for Alternative 2. It is unlikely that both open water intake facilities would be constructed at the same time, but conservatively assuming this would occur, it is unlikely that in-water construction activities could result in a significant cumulative impact on surface water quality. Like Alternative 2, the DeepWater Desal Project would result in elevated turbidity and disturbance of the sea floor in a localized area (i.e. the area comprising the construction footprint and immediate surroundings). Further, any disturbance of the seafloor and increased associated turbidity would be temporary and short-term in nature (i.e. not chronic or ongoing), occurring only during the construction period, and would be highly localized in extent, occurring only within and immediately adjacent to the construction area at the intake pipeline terminus and where the seafloor is prepared for the intake structure. Water quality would return to ambient conditions following completion of construction activities as a result of the settling of suspended sediment and mixing and dilution driven by wave action and tidal current. The potential contribution to cumulative surface water quality impacts from construction of Alternative 2 would be increased compared to the proposed project, but the impact of Alternative 2's contribution would be less than significant.

The increased concentration of PCBs in the brine discharge from Alternative 2 may exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID and would result in a potentially significant impact; however, as described for the proposed project, all existing and proposed outfalls associated with the cumulative projects (same as listed in Section 4.3.6) are greater than 0.26 mile from the MRWPCA outfall. Therefore, the likelihood of discharge plumes from different outfalls or their ZIDs intersecting (the ZID for the proposed project extends up to 39 feet from the outfall, as would occur under Alternative 2) or merging and resulting in exceedances of Ocean Plan defined water quality objectives and adversely affecting beneficial uses of receiving waters (Monterey Bay) is very low. Similar to the proposed project, the impact of Alternative 2's contribution would be significant, but this contribution would be minimized to a level that is not cumulatively significant with implementation of **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**) (*less than significant with mitigation*).

The contribution to less than significant cumulative surface water quality impacts from maintenance of Alternative 2 would be increased compared to the proposed project. Maintenance of the open-water intake would contribute to temporary and localized increased turbidity. Similarly, maintenance of the DeepWater Desal Project open water intake could result in

additional turbidity. However, given the size and volume of Monterey Bay, any temporary increases in turbidity associated with maintenance activities would result in a less than significant cumulative impact.

5.5.3.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. Under Alternative 3, a new 22 mgd desalination plant and co-located data center (110 acres) at "East Tank Farm Parcel" off Dolan Road would be constructed. The pipelines for the intake and brine discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and 6 wells and ASR pipelines, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the surface water hydrology and water quality impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3. Components that are common to both Alternative 3 and the proposed project are assessed in Section 4.3, Surface Water Hydrology and Water Quality.

Construction Impacts

Components unique to Alternative 3 would have a larger disturbance area as compared to the proposed project (110 acres for the desalination facility and data center with 31.5 miles of additional pipeline compared to 25 acres for the proposed project desalination facility and 21 miles of pipeline). Therefore, construction of Alternative 3 would have an increased potential for soil erosion and risk of inadvertent releases of hazardous chemicals during general construction activities. Alternative 3 would also have an increased potential for eroded soil and sediment to be transported down gradient via stormwater runoff and degrade the water quality of receiving water bodies, including Monterey Bay. As with the proposed project, mandatory compliance with NPDES Construction General Permit and local grading requirements would involve implementation of a SWPPP, including stormwater BMPs as well as erosion and stormwater control measures, which would prevent substantial adverse effects on water quality during construction. Impacts from land-based construction would be increased compared to the proposed project, and, Alternative 3

would result in the ***same impact conclusion*** compared to the proposed project related to the degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities, less than significant.

Further, offshore in MBNMS, Alternative 3 would result in approximately 16,700 square feet (about 0.4 acre) of disturbance on the seafloor from construction of an open-ocean intake (3,300 square feet) and brine discharge pipeline and diffusers (13,400 square feet); this would be an increased level of impact compared to the proposed project which proposes no construction on the seafloor. Further, since Alternative 3 would include four pipes, intake structures, and a brine discharge structure, the volume of drilling fluids required for HDD installation would be increased compared to the proposed project (which proposes no in-water construction activities) and Alternative 2 (which proposes only one pipe and one intake structure). Discharges of water produced during installation of the open-water intake would be conducted in accordance with the General Construction Waiver. Due to the substantial size of the Alternative 3 in-water seafloor construction area compared to Alternative 2 (16,700 square feet including an intake and a brine discharge structure versus 3,300 square feet for an intake structure; the proposed project would have no seafloor construction), the two subsurface brine and two subsurface intake pipelines that break through the seafloor in MBNMS (compared to none for the proposed project), and the current lack of available details regarding construction methods, techniques designed to avoid or minimize the degradation of water quality and timing of construction, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project related to the degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities, significant and unavoidable.

Construction-related discharges of dewatering effluent from open excavations would be increased under Alternative 3 because of the larger disturbance area associated with the desalination facility (110 acres versus 25 for the proposed project) and increased pipeline length (31.5 miles in addition to the 21 miles for the proposed project). Most of the dewatering effluent produced during construction excavation is considered a low threat and would be discharged to land or the stormwater drainage system provided it complies with the *General WDRs for Discharges with a Low Threat to Water Quality.* Impacts from discharges of contaminated dewatering effluent from open excavations and well development that do not meet General Waiver requirements could be reduced to a less-than-significant level with implementation of mitigation similar to that prescribed for the proposed project, **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**). Therefore, Alternative 3 would result in the ***same impact conclusion*** related to construction impacts and degradation of water quality from construction-related discharges of dewatering effluent from open excavations as the proposed project, less than significant with mitigation.

Degradation of water quality from discharges of treated water and disinfectant during construction of Alternative 3 would be increased compared to the proposed project because of the additional miles of new pipeline (31.5 miles in addition to 21 miles for the proposed project). Like the proposed project however, adherence to the General Waste Discharge Requirements would ensure the degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

During construction of Alternative 3, the potential for grading and earthmoving operations to alter local drainage patterns and redirect or concentrate stormflows would be increased compared to the proposed project due to the larger disturbance area associated with the desalination facility (110 acres versus 25 for the proposed project) and increased pipeline length (31.5 additional miles). Such an increased potential for altered drainage patterns could result in increased risks related to onsite and/or downstream (offsite) erosion, siltation, and flooding, especially if stormwater conveyance capacity is exceeded. Mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures which would ensure the potential for impacts related to altered drainage patterns during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational Impacts

Operational discharges would be released into MBNMS through a new diffuser structure without blending with wastewater. Discharge volumes would be greater than the proposed project (26 mgd versus 14 mgd) and the co-located data center would increase the temperature of the brine by about $+10^0$ C (the discharge from the proposed project would not gain heat). Impacts on water quality were assessed for salinity, temperature, and other Ocean Plan constituents.

Salinity Impacts

Alternative 3 would operate a 25-mgd desalination facility with a 46 percent recovery rate; it would need 55-mgd of source water and would produce a maximum of 27-mgd of brine with a maximum salinity of 66 ppt (compared to 58 ppt for the propose project). The brine would be discharged via a new outfall diffuser with five high velocity duckbill diffuser nozzles (**Appendix D1** provides a discussion of diffuser nozzles). Operational discharges from Alternative 3 would locally increase salinity levels within the BMZ and could violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving waters (including hypoxia) in Monterey Bay. The result would be an increased level of impact compared to the proposed project that could be mitigated to less than significant.

Approach to Analysis

Jenkins (2016) assessed the potential impacts of the DeepWater Desal Project from increased salinity against Ocean Plan water quality objectives. The analysis of brine dilution and characterization of salinity increases from discharges was performed using two models: a near field mixing zone model certified by the U.S. Environmental Protection Agency for use in ocean outfall design (detailed in Section 4.3, Surface Water Hydrology and Water Quality); and a 3-dimensional far field dispersion model. These models were used to characterize dilution and salinity, based on the mixing dynamics of a single discharge nozzle, to predict the trajectory of the brine plume following initial dilution in the nearfield of the diffuser, and to assess dilution and salinity increases from the interaction of brine plumes simultaneously discharged through five proposed outfall diffuser nozzles. The salinity increases determined by the modeling are worst-case and would occur only along the seabed (the location of the highest and most conservative salinity levels) as a reflection of the negatively buoyant discharge (discussed in

detail in Section 4.3, Surface Water Hydrology and Water Quality); salinity levels decrease with height in the water column. Therefore, the model analysis completed by Jenkins (2016) represents conservative (i.e., worst-case) salinity increases from operational discharges associated with Alternative 3; in the majority of the water column, incremental salinities would be much less than the reported values.

The models used long-term records of water quality, ocean climate, bathymetry, and meteorological conditions to reflect baseline conditions and ambient receiving water quality appropriate to assessing impacts from operational discharges. Model analyses were conducted to determine salinity increases as short-term maximum values representative of periods of mixing and transport in the local ocean environment when brine dilution would be expected to occur at lowest rates. The low mixing conditions reflect the three ocean climates: upwelling period, relaxation period, and Davidson period (detailed in Section 4.3, Surface Water Hydrology and Water Quality). Additionally, model analysis determined average incremental salinity increases over the long-term (20+ years).

Salinity Impact Results and Discussion

The model analysis by Jenkins (2016) assumed discharges of brine via five diffuser nozzles, each discharging at 5.45 mgd for a combined discharge of 27.26 mgd with a maximum brine salinity of 66.15 ppt at the diffuser. Ambient ocean salinity was assumed to be 33.4 ppt based on the 20 year average salinity record. The dilution results determined that a single diffuser nozzle would dilute brine to within 2 ppt of natural background salinity at a distance of 105 feet from the point of discharge. Additionally, the analysis determined that a single 5.45 mgd diffuser nozzle would achieve dilution of the brine to within 0.1 percent over natural background salinity of 33.4 ppt at the edge of the BMZ (a distance of 328 feet from the point of discharge); thus, discharges would be within the 2 ppt salinity standard defined in the Ocean Plan.

The 3-dimensional model analysis by Jenkins (2016) for each of the three ocean climates determined that the discharge plume characterized by salinity of 2 ppt or greater would extend to a distance of 312 to 315 feet from the diffuser, slightly less than the perimeter of the BMZ (328 feet). The 3-dimensional model analysis also determined that an area of up to 0.6 acres around the outfall diffuser along the seafloor would be characterized by salinities up to 42 ppt, representing an incremental increase of approximately 8.5 ppt.

Long-term model analysis was also conducted to determine average salinity increases and Ocean Plan compliance. Results determined that the median salinity at the edge of the BMZ would be 33.94 ppt assuming an ambient receiving water salinity of 33.39 ppt, within the Ocean Plan objective of 2 ppt. The model analysis determined that 99.9 percent of the time (based on 8,149 model simulations), salinity at the edge of the BMZ would be equal to or less than 35.39 ppt (representing the 2 ppt Ocean Plan objective). A maximum salinity of 35.54 (0.15 ppt above ambient) at the edge of the BMZ was determined to occur during the Davidson current period worst-case condition, when ambient ocean salinity exceeded the 20-year average (natural background) salinity. The probability of occurrence of this over-limit is less than 0.08 percent, or about 1 day in 3.4 years. As described above, while model simulations have identified short-term minor (0.15 ppt) exceedances of the 2 ppt threshold, such exceedances are based on worst-case

model simulations and may not occur under actual operational conditions. Additionally, the salinity increases would occur only along the seabed (the location of the highest and most conservative salinity levels) as a reflection of the negatively buoyant dense operational discharges; salinity levels decrease with height in the water column and would be less than the reported values.

Salinity Impact Summary and Conclusion

Salinity increases would be greater under Alternative 3 compared to the proposed project. Under Alternative 3, a larger desalination facility (22 mgd as compared to 9.6 mgd for the proposed project) would discharge a greater volume of brine (27 mgd of brine as compared to 14 mgd of brine for the proposed project) with a higher maximum salinity (66.2 ppt as compared to 58.2 ppt for the proposed project). The area where salinity levels exceed 2 ppt around the Alternative 3 outfall diffuser would extend up to 315 feet, almost to the boundary of the BMZ (328 feet from the diffuser) and would be greater, as would the potential for hypoxia, than that described for the proposed project (salinity levels would be less than 2 ppt at a distance of up to 39 feet from the diffuser). Model analysis (Jenkins, 2016) identified discharges from Alternative 3 would occasionally (1 day out of 3.4 years) exceed the significance threshold of 2 ppt above natural background salinity at the BMZ boundary by a small margin (i.e., by 0.15 ppt).

As described in detail in Section 4.3.2.2 for the proposed project, the Ocean Plan includes monitoring and reporting requirements for the operation of new desalination facilities (Section III.M.4, “Monitoring and Reporting Program”; SWRCB, 2016b). A monitoring and reporting plan has not been defined and proposed as part of Alternative 3; as such and similar to the proposed project, Alternative 3 would not be consistent with the Plans, Policies, and Regulations described in Section 4.3, Surface Water Hydrology and Water Quality. This would be a significant impact and would result in an increased level of impact compared to the proposed project, which could be reduced to less than significant with the implementation of a monitoring and mitigation plan consistent with Ocean Plan requirements that defines clear performance standards and feasible corrective actions linked to the defined performance standards substantially similar to **Mitigation Measure 4.3-4** (but revised specific to the Alternative 3 project final design and defined operating conditions). Therefore, Alternative 3 would result in the ***same impact conclusion*** for salinity compared to the propose project, less than significant with mitigation.

Temperature Impacts

As described in Section 4.3.2, the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) contains water quality objectives relevant to operational discharges that may elevate the temperature of receiving waters. The Thermal Plan specifies that the maximum temperature of discharges shall not exceed the natural temperature of receiving waters by more than 20°F, and the discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at: (a) the shoreline; (b) the surface of any ocean substrate; or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation must be maintained at least 50 percent of the duration of any complete tidal cycle. This impact analysis uses the Thermal Plan’s receiving water temperature limitations as significance thresholds.

Because the desalination source water would be used to cool a data center before entering the desalination facility, the temperature of the brine discharge would be increased up to 10°C (18°F) over ambient receiving ocean water temperature before being released into Monterey Bay (Jenkins, 2016). Based on model analysis, a median temperature difference of 0.11°C (0.2°F) would occur on the seabed at a distance of 328 feet from the outfall diffuser (Jenkins, 2016). The maximum temperature increase near the seabed at a distance of 328 feet from the outfall diffuser would be 0.96°C (1.73°F). The maximum modeled temperature increase is less than the natural temperature variations that occur daily at a depth of 65 feet. This would be an increased level of impact compared to the proposed project since the proposed project (or any other alternatives') discharge would not have any heat gain. Based on the temperature model results for the dispersion of the heated brine effluent, discharges would not exceed temperature related significance thresholds. Therefore, Alternative 3 would result in an ***increased impact conclusion*** for temperature impacts compared to the proposed project, and would be less than significant.

Other Ocean Plan Constituents

Brine discharges from Alternative 3 would not be combined with wastewater effluent, such as described for the proposed project. Therefore, Alternative 3 discharges are unlikely to exceed the numeric Ocean Plan objectives provided in **Table 4.3-4** for most of the listed water quality constituents because most of the listed constituents originate in wastewater. However, as described in Section 4.3, Surface Water Hydrology and Water Quality, the concentration of polychlorinated biphenyls (PCBs) in Monterey Bay exceeds Ocean Plan water quality objectives under baseline conditions. Unlike the proposed project's use of subsurface slant wells, the open water intake would not pre-filter the PCBs through the seafloor. As such, the source water for the desalination process would be out of compliance with the Ocean Plan numeric Water Quality Objectives (WQO) for PCBs prior to processing at the desalination facility. The nature of reverse osmosis treatment results in the concentration of existing constituents (such as salinity). Therefore, the concentration of the existing PCB-levels through the desalination process would be expected to further increase the PCB-levels in the brine discharge and therefore, exceed the Ocean Plan WQO upon discharge. Also, because brine discharges form a sinking plume and minimum dilution values are typically low, increased concentrations of PCBs in the brine would result in an increased level of impact compared to the proposed project and unlike the proposed project, Alternative 3 could potentially exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID. The average concentration of PCBs observed in receiving the ocean waters of Monterey Bay is 2.32 nanograms per liter (ng/L) as determined through the CCLEAN program. This PCB concentration is already greater under baseline conditions than the Ocean Plan objective of 0.019 ng/L (**Table 4.3-4**). Assuming a concentration factor of 1.85, representing a recovery rate of 46 percent for the Alternative 3 desalination facility, an in-pipe brine PCB concentration of 4.29 ng/L was calculated. This concentration of PCB in the desalination brine would result in a concentration at the edge of the ZID of 2.68 ng/l based on a dilution factor of 20:1 (parts seawater to effluent). Therefore, Alternative 3 would have the potential of a 15.5 percent increase at the edge of the ZID compared to ambient ocean conditions, causing an exceedance of the Ocean Plan water quality objective for PCBs, resulting in an increased level of impact compared to the proposed action and a potentially significant impact. However, with implementation of mitigation substantially similar to **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding**

Water Quality Objectives), but revised specific to the Alternative 3 project final design and defined operating conditions, the significant impact would be reduced to a less-than-significant level and therefore, Alternative 3 would result in the ***same impact conclusion*** on other Ocean Plan constituents compared to the proposed project, less than significant with mitigation.

Maintenance Activities

Under Alternative 3, open water intake facility maintenance would involve regular cleaning from a boat using an automatic airburst connection and would not disturb the ocean floor. Periodic maintenance of the intake pipelines would temporarily increase turbidity in the immediate area surrounding the intake, but dilution, dispersion, and dynamic mixing by waves and tidal currents would result in turbidity levels rapidly reducing to ambient levels. Alternative 3 would therefore, have an increased potential to degrade of water quality due to discharges associated with maintenance of the intake. However, the impacts would be temporary and localized and Alternative 3 would result in the ***same impact conclusion*** as the proposed project; less than significant.

Facility Siting Impacts

Under Alternative 3, impervious surfaces would be increased by approximately 36 acres compared to the 15 acres for the proposed project. Impacts related to the alteration of drainage patterns, the amount of surface runoff, increases in flooding, erosion, siltation, or exceed storm drain capacity on or off-site would result in an increased level of impact compared to the proposed project. As for the proposed project, Alternative 3 would be subject to the post-construction stormwater management requirements of the municipal stormwater permit and the applicant would be required to implement post-construction stormwater BMPs into the final site designs. With adherence to the post-construction requirements, impacts related to drainage pattern alteration, storm runoff volume, stormwater conveyance capacity, increased soil erosion, and siltation associated with Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Under Alternative 3, impacts related to flooding and flood risks, including those from tsunami and sea level rise would result in a slightly reduced level of impact compared to the proposed project due to the inland location of the desalination facility and data center. Impacts associated with flooding and flood risks under Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

The MBNMS Desalination Guidelines (NOAA, 2010) state: “project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges.” Although a combined discharge currently is not proposed for Alternative 3, the DeepWater Desal Project proponent is investigating the feasibility of diluting brine effluent by blending it with Moss Landing Power Plant cooling water through a combined discharge. If proposed by DeepWater Desal, the separate EIR/EIS for the DeepWater Desal Project will evaluate this option in detail, but it is not included as part of Alternative 3.

Cumulative Analysis

Construction of Alternative 3 would result in the same types of impacts as the proposed project (for onshore construction) and Alternative 2 (for offshore construction), but would have a larger

construction-related disturbance area (both onshore and offshore) compared to the proposed project and Alternative 2. The cumulative impacts from onshore construction would be the same as those described for the proposed project, but the contribution of Alternative 3 would be incrementally greater. Onshore construction-related activities could result in a cumulatively significant impact when combined with the water quality and hydrology effects of construction activities associated with the projects listed in **Table 4.1-2** in Section 4.1. However, as described for the proposed project, mandatory compliance with the NPDES Construction General Permit, General Waiver, and General WDRs as well as implementation of mitigation similar to the management plan described under **Mitigation Measure 4.7-2b**, would reduce the contribution of Alternative 3 to a level that is less than significant.

For offshore construction, no other reasonably foreseeable projects would result in offshore disturbance. Therefore, although Alternative 3 would have a significant and unavoidable impact related to offshore construction, a cumulative analysis is not applicable to impacts of offshore construction disturbance for Alternative 3.

Maintenance of the open-water intake would contribute to temporary and localized increased turbidity. However, no other reasonably foreseeable projects in the cumulative scenario for Alternative 3 would contribute to such turbidity impacts. Therefore, although Alternative 3 would have a significant and unavoidable impact related to turbidity during maintenance of the open-water intake, a cumulative analysis is not applicable to impacts of intake maintenance for Alternative 3.

The geographic area associated with the assessment of cumulative water quality impacts from Alternative 3 operational discharges is Monterey Bay, and the cumulative projects include the Sand City Coastal Desalination Plant (No. 6), RUWAP Desalination Element (No. 31), RUWAP Recycled Water Project (No. 35), and Pure Water Monterey's GWR Project (No. 59). The Sand City Coastal Desalination Plant was completed in 2010. The significance thresholds identified for the analysis of cumulative water quality impacts from cumulative projects are defined below. Alternative 3 would have a cumulatively significant impact if operational discharges, in combination with other past, current, or future point discharges, would:

- Exceed the receiving water limitation for salinity of 2 ppt at the edge of the BMZ established in the Ocean Plan, or;
- Exceed water quality objectives established in the Ocean Plan at the edge of the zone of initial dilution (ZID).

Implementation of Alternative 3, or ocean discharges related to other projects, would require coverage under a NPDES permit that would be required to meet the Ocean Plan water quality objectives and limitations for salinity. Further, operation of cumulative projects would be required to adhere to all monitoring and reporting requirements prescribed in the Ocean Plan (described in Section 4.3.2) for discharges and receiving water characteristics and for impacts on all forms of marine life.

As discussed in Section 4.3, Surface Water Hydrology and Water Quality, future water quality testing and analysis, required as part of the NPDES permit process, would determine whether operational discharges under Alternative 3 could comply with Ocean Plan water quality objectives.

The most recent amendment to the Ocean Plan (SWRCB, 2016b) reflects the SWRCB's process of adapting to the need to regulate discharges from desalination projects. Ocean Plan water quality objectives are incorporated into NPDES permits in the form of specific water quality requirements. As discussed above, under some circumstances, Alternative 3 discharges occasionally could exceed the 2 ppt salinity significance threshold by 0.15 ppt, and could exceed Ocean Plan water quality objectives for PCBs. Because proponents of the DeepWater Desalination Project have not proposed a monitoring and reporting plan that demonstrates methods of compliance with the Ocean Plan objectives that are protective of beneficial uses, and feasible mitigation strategies have not yet been identified, Alternative 3 in combination with other cumulative projects could result in significant cumulative impacts on ocean water quality and Alternative 3 would have a significant contribution to such effects. However, with the implementation of a monitoring plan consistent with Ocean Plan requirements that defines clear performance standards and feasible corrective actions linked to the defined performance standards substantially similar to **Mitigation Measures 4.3-4 and 4.3-5** (but revised specific to the Alternative 3 project final design and defined operating conditions), the contribution of Alternative 3 could be reduced to a level that is less than significant because it would comply with Ocean Plan requirements (*less than significant with mitigation*).

5.5.3.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipelines, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water originating from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the surface water hydrology and water quality impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4. Components that are common to both Alternative 4 and the proposed project are assessed in Section 4.3, Surface Water Hydrology and Water Quality.

Construction Impacts

Components unique to Alternative 4 would have a reduced land-based disturbance area compared to the proposed project. Land-based construction activities would result in 16 acres of disturbance at the proposed desalination plant site (compared to 25 acres for the proposed project) and the installation of 20 total miles of pipeline (compared to 21 miles of pipeline for the proposed project). Therefore, construction of Alternative 4 would have a *reduced* potential for soil erosion

and risk of inadvertent releases of hazardous chemicals during general construction activities on land. For the same reason, Alternative 4 would also have a reduced potential for eroded soil and sediment to be transported down gradient via stormwater runoff and degrade the water quality of receiving water bodies, including Monterey Bay, compared to the proposed project. As with the proposed project, mandatory compliance with NPDES Construction General Permit and local grading requirements would involve implementation of a SWPPP, including stormwater BMPs as well as erosion and stormwater control measures, which would prevent substantial adverse effects on water quality during land-based construction.

However, offshore in MBNMS, Alternative 4 would result in approximately 43,200 square feet (approximately 1 acre) of disturbance on the seafloor from installation of the open ocean intake, outfall pipeline and diffuser, and laying of 1,100 feet of intake pipeline and 700 feet of brine discharge pipeline on the seafloor, ballasted with concrete collars and protected with riprap armoring. This would result in an increased level of impact on water quality from construction activities compared to the proposed project which proposes no construction on the seafloor. Due to the substantially increased size of the Alternative 4 in-water construction area and the lack of details available regarding construction techniques designed to avoid or minimize the degradation of water quality, Alternative 4 would result in an ***increased impact conclusion*** related to the degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities compared to the proposed project, significant and unavoidable.

Construction-related discharges of dewatering effluent from open excavations would be reduced under Alternative 4 because of the reduced disturbance area associated with the desalination facility (16 acres versus 25 for the proposed project) and reduced total pipeline length (20 miles as compared to 21 for the proposed project). Most of the dewatering effluent produced during construction excavation is considered a low threat and would be discharged to land or the stormwater drainage system provided it complies with the *General WDRs for Discharges with a Low Threat to Water Quality*. Impacts from discharges of contaminated dewatering effluent from open excavations and well development that do not meet General Waiver requirements could be reduced to a less-than-significant level with implementation of mitigation similar to that prescribed for the proposed project, **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**). Therefore, Alternative 4 would result in the ***same impact conclusion*** related to the degradation of water quality from construction-related discharges of dewatering effluent from open excavations compared to the proposed project, less than significant with mitigation.

Degradation of water quality from discharges of treated water and disinfectant during construction of Alternative 4 would be slightly reduced compared to the proposed project because of the reduced length of new pipeline (20 miles as compared to 21 miles for the proposed project). Like the proposed project however, adherence to the General Waste Discharge Requirements would ensure the degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction and Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant.

During construction of Alternative 4, the potential for grading and earthmoving operations to alter local drainage patterns and redirect or concentrate stormflows would be reduced compared to the

proposed project due to the smaller disturbance area associated with the desalination facility (16 acres versus 25 for the proposed project) and decreased pipeline length (20 miles as compared to 21 miles for the proposed project). However, although reduced, altered drainage patterns associated with Alternative 4 could result in increased risks related to onsite and/or downstream (offsite) erosion, siltation, and flooding, especially if stormwater conveyance capacity is exceeded. Mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures which would ensure the potential for impacts related to altered drainage patterns during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational Impacts

Operational discharges associated with Alternative 4 would be released to Monterey Bay through a rehabilitated diffuser structure without blending with wastewater; there would be no heat gain in the brine. Discharge volumes would be increased (17.5 mgd) compared to the proposed project (14 mgd). Operational impacts on MBNMS water quality are assessed below for salinity and other Ocean Plan constituents.

Salinity Impacts

Alternative 4 would operate a 12 mgd desalination facility at a 45 percent recovery rate (based on 30 mgd of source water), producing a maximum of 17.5 mgd of brine (compared to 14 mgd for the proposed project) with a maximum salinity of 62.5 ppt (compared to 58.2 ppt for the proposed project). Brine would be discharged via an existing outfall, proposed to be rehabilitated and fitted with two, 16-inch diameter diffuser ports that the applicant states would be designed to meet Ocean Plan objectives for receiving water salinity limitations.

The Ocean Plan (SWRCB, 2016b) identifies multiport diffusers as the best method for disposing of brine when the brine cannot be diluted by wastewater and they are described as an end-of-pipe system that can be installed on submerged marine outfalls to discharge effluent through numerous ports or openings to enable rapid turbulent mixing that disperses and dilutes brine within a relatively small area. However, no studies or other information have been provided to support the conclusion that two 16-inch diameter diffuser ports proposed by the Alternative 4 proponent would meet the Ocean Plan objectives, and therefore, the areal extent of potentially increased salinity levels around the proposed diffuser is unknown. Discharges from Alternative 4 could locally increase salinity levels and could violate water quality standards, waste discharge requirements or otherwise degrade the water quality (including hypoxia) in Monterey Bay. Similar to the proposed project, a monitoring and reporting plan, consistent with the requirements of the Ocean Plan has not been defined and proposed. As such, Alternative 4 would not be consistent with the Plans, Policies, and Regulations described in Section 4.3, Surface Water Hydrology and Water Quality.

It is feasible that impacts relating to salinity could be reduced to less-than-significant levels and a monitoring and reporting plan, consistent with the requirements of the Ocean Plan could be proposed; with such measures, impacts could be less than significant. However, while the applicant may propose such measures and provide model analyses to demonstrate compliance with Ocean Plan objectives, compliance with the Ocean Plan objectives cannot be assumed at this

time. Therefore, impacts related to operational discharges and impacts on water quality associated with Alternative 4 would have an increased salinity impact and would result in an ***increased impact conclusion*** compared to the proposed project; significant and unavoidable.

Other Ocean Plan Constituents

As described for Alternative 3, above, brine discharges from Alternative 4 would not be comingled with wastewater effluent, such as described for the proposed project. Therefore, Alternative 4 discharges are unlikely to exceed the numeric Ocean Plan objectives provided in **Table 4.3-4** for most of the listed water quality constituents since most of the listed constituent originate in wastewater. However, as described in Section 4.3, Surface Water Hydrology and Water Quality, the concentration of PCBs in Monterey Bay exceeds Ocean Plan water quality objectives under baseline conditions. Unlike the proposed project's use of subsurface slant wells, the open water intake would not pre-filter the PCBs through the seafloor. As such, the source water for the desalination process would be out of compliance with the Ocean Plan numeric WQO for PCBs, the desalination process would concentrate the PCB-levels and the brine discharge would exceed the Ocean Plan WQO. Also, as described in Section 4.3, brine-only discharges are dense and form a sinking or negatively buoyant plume. Such dense plumes are characterized by low dilution and mixing with receiving waters (as compared to brine that is comingled with municipal secondary treated waste water). Therefore, Alternative 4 operational discharges would be characterized by increased concentrations of PCBs in the brine as compared to the proposed project. This increase would result in an increased level of impact compared to the proposed project and unlike the proposed project, Alternative 4 could potentially exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID.

It is feasible that impacts relating to exceedances of Ocean Plan objectives could be reduced to less-than-significant levels with mitigation similar to **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**). However, while the applicant may propose such measures or provide model analyses to demonstrate compliance with Ocean Plan objectives, the effectiveness of the diffuser design is currently unknown and feasible mitigation cannot be designed without additional information related to facility design, operational protocols, and diffuser dynamics. Therefore, Alternative 4 would result in an ***increased impact conclusion*** related to operational discharges and water quality for other Ocean Plan constituents compared to the proposed project, significant and unavoidable.

Maintenance Activities

The screened open water intake facility would involve regular maintenance cleaning from a boat using an automatic airburst connection and would not disturb the ocean floor. Periodic maintenance of the intake would increase turbidity temporarily in the immediate area surrounding the intake compared to the proposed project, but dilution, dispersion, and dynamic mixing by waves and tidal currents would result in turbidity levels rapidly reducing to ambient levels. Therefore, Alternative 4 would result in the ***same impact conclusion*** related to the degradation of water quality due to discharges associated with maintenance of wells and the open water intake compared to the proposed project, less than significant.

Facility Siting Impacts

Under Alternative 4, the desalination facilities would be constructed on 16.5 acres of the Moss Landing Green Commercial Business Park. Because the proposed development area is currently impervious, implementation of the desalination facilities would replace, and not increase, impervious surface area. As a result, there would be no anticipated changes in drainage patterns at the People's Project desalination plant site. When compared to the proposed action, Alternative 4 would reduce the total impervious surfaces by the roughly 15 acres of impervious surfaces that would be created under the proposed project. Impacts related to the alteration of drainage patterns, the amount of surface runoff, increases in flooding, erosion, siltation, or exceed storm drain capacity on or off-site would result in a reduced level of impact compared to the proposed project. As for the proposed project, Alternative 4 would be subject to the post-construction stormwater management requirements of the municipal stormwater permit and the applicant would be required to implement post-construction stormwater BMPs into the final site designs. With adherence to the post-construction requirements, Alternative 4 would result in the ***same impact conclusion*** related to drainage pattern alteration, storm runoff volume, stormwater conveyance capacity, increased soil erosion, and siltation compared to the proposed project, less than significant.

Impacts related to flooding due to the siting of Alternative 4 in a 100-year flood hazard area would result in an increased level of impact compared to the proposed project and all alternatives because a substantial portion of the 16.5-acre desalination plant site is located within a 100-year flood hazard zone. This area is designated as Zone A, indicating the base flood elevations have not been determined (FEMA, 2009). Based on the limited information available at this time regarding project design and flood hazard mitigation, the impact associated with the siting of project facilities in a 100-year flood hazard zone and the impedance or redirection of flood flows, Alternative 4 would result in an ***increased impact conclusion*** related to flooding and flood risks from tsunami and sea level rise compared to the proposed project due to the location of the desalination facility, significant and unavoidable.

The existing caisson, proposed to be rehabilitated for the seawater intake and brine disposal system, is located at the coastline, within the surf zone and within the anticipated extent of ongoing coastal erosion (**Appendix C2**). It can be reasonably expected that the existing caisson would continue to be exposed to ongoing coastal erosion, and would at some point be either removed or armored from the ongoing effects sea level rise. A new pump house on the existing caisson, as proposed by this alternative, would require the caisson to remain in place, potentially exposing adjacent properties to flooding from sea level rise. Mitigation would be required to address the flooding, including a coastal retreat strategy or a plan to armor the caisson, and in so doing, the applicant must demonstrate that flooding will not occur. However, while the applicant may propose such measures or provide model analyses to demonstrate compliance with Coastal Act requirements related to armoring, erosion, and sea level rise resilience, the final design is currently unknown and the feasibility of any proposed mitigation cannot determined at this time. Therefore, impacts related to coastal erosion from facility siting would have an increased level of impact as compared to the proposed project and Alternative 4 would result in an ***increased impact conclusion*** compared to the proposed project; significant and unavoidable.

In addition to physical impacts, Alternative 4 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its lack of a combined discharge compared to the proposed project, which would use an existing operating outfall. One of the guidelines states: "project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges." Alternative 4 would utilize an existing outfall, but the brine discharge would not be combined with other existing discharges.

Cumulative Analysis

The cumulative impacts from onshore construction would be the same as those described for the proposed project, but the contribution of Alternative 4 would be incrementally greater. Onshore construction-related activities could have a cumulatively considerable contribution to a significant cumulative impact when combined with the water quality and hydrology effects of construction activities associated with the projects listed in **Table 4.1-2** in Section 4.1. However, as described for the proposed project, mandatory compliance with the NPDES Construction General Permit, General Waiver, and General WDRs as well as implementation of mitigation similar to the management plan described under **Mitigation Measure 4.7-2b**, would reduce the contribution of Alternative 4 to a level that is not cumulatively significant (less than significant with mitigation).

The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) also would include construction of a new open-water intake in Moss Landing and new outfall pipelines that would result in the type of localized water quality degradation described for Alternative 4. The proximity of these two projects' in-water construction activities in Moss Landing could result in a significant cumulative impact on surface water quality. Like Alternative 4, the DeepWater Desal Project would be required to adhere to MBNMS regulations and requirements to ensure the protection of the beneficial uses of Sanctuary waters to prevent significant impacts on water quality in the Monterey Bay. However, until those provisions are defined and demonstrated to ensure compliance with the construction-related recommendations detailed in the MBNMS Desalination Guidelines, the cumulative impact would be significant and unavoidable, and the contribution of Alternative 4 to this impact would be cumulatively significant (*significant and unavoidable*).

The contribution to cumulative surface water quality impacts from operation of Alternative 4 would be increased compared to the proposed project. Maintenance of the open-water intake would contribute to temporary and localized increased turbidity. Similarly, maintenance of the DeepWater Desal Project open water intake could result in additional turbidity, potentially resulting in a significant cumulative impact. Like Alternative 4, the DeepWater Desal Project would be required to adhere to MBNMS regulations and requirements to ensure the protection of the beneficial uses of Sanctuary waters to prevent significant impacts on water quality in the Monterey Bay. However, until those provisions are defined and demonstrated to ensure compliance with the construction-related recommendations detailed in the MBNMS Desalination Guidelines, the cumulative impact would be significant and unavoidable, and the contribution of Alternative 4 to this impact would be significant and unavoidable.

The increased concentration of PCBs in the brine discharge from Alternative 4 may exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID. The proposed outfall

location for Alternative 4 is near the proposed outfall location for the DeepWater Desal project. Therefore, the discharge plumes from these two outfalls or their ZIDs could intersect or merge and result in exceedances of Ocean Plan defined water quality objectives, thereby adversely affecting beneficial uses of receiving waters (Monterey Bay). This would be a significant cumulative impact, and the contribution of Alternative 4 would be cumulatively significant. Because proponents of the People's Project have not demonstrated methods of compliance with the Ocean Plan objectives that are protective of beneficial uses, and feasible mitigation strategies have not yet been identified, Alternative 4 in combination with other cumulative projects would result in significant and unavoidable cumulative impacts on ocean water quality and Alternative 4 would have a cumulatively significant unavoidable contribution to such effects.

5.5.3.8 Direct and Indirect Effects of Alternative 5 - Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Components unique to Alternative 5a and 5b would have a smaller disturbance area at the CEMEX site (the converted test well and six new wells would disturb 1 less acre) and the Potrero Road Site (seven new wells would disturb 7 fewer acres) compared to the proposed project (the converted test well plus nine new wells). Therefore, the overall construction area for Alternatives 5a and 5b would be reduced compared to the proposed project. However, Alternatives 5a and 5b would still have a potential for soil erosion and risk of inadvertent releases of hazardous chemicals during general construction activities. Under Alternatives 5a and 5b, the potential for eroded soil and sediment to be transported down gradient via stormwater runoff and degrade the water quality of receiving water bodies, including the Salinas River and Monterey Bay, would remain. Mandatory compliance with NPDES Construction General Permit and local grading requirements would involve implementation of a SWPPP, including stormwater BMPs as well as erosion and stormwater control measures, which would prevent substantial adverse effects on water quality during construction. Alternatives 5a and 5b would result in the ***same impact conclusion*** related to the degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities, less than significant.

Construction-related discharges of dewatering effluent from open excavations and water produced during well drilling of the slant wells would be decreased under Alternatives 5a and 5b because of the reduced number of proposed new wells at CEMEX and Potrero Road compared to the proposed project. Dewatering effluent produced during construction excavation would likely be considered a low threat and would be discharged to land or the stormwater drainage system provided it complies with the *General WDRs for Discharges with a Low Threat to Water Quality*.

The development water produced during well installation would be pumped to holding tanks to allow sediment to settle out and effluent would be discharged to the beach sands (Alternative 5a) or into a buried diffuser system in the parking lot for percolation into underlying beach sands (Alternative 5b) in accordance with the requirements of the General Waiver of WDRs (General Waiver). Impacts from discharges of contaminated dewatering effluent from open excavations and well development that do not meet General Waiver requirements would be reduced to a less-than-significant level with implementation of the same mitigation prescribed for the proposed project, **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**). Alternative 5a and 5b would result in the ***same impact conclusion*** related to the degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development compared to the proposed project, less than significant with mitigation.

Degradation of water quality from discharges of treated water and disinfectant during construction of Alternative 5a and 5b would be the same as the proposed project and Alternative 1 because proposed pipelines would be the same. Adherence to the General Waste Discharge Requirements would ensure Alternatives 5a and 5a would result in the ***same impact conclusion*** as the proposed project and Alternative 1 and the degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction would be less than significant.

During construction of Alternative 5a and 5b, the potential for grading and earthmoving operations to alter local drainage patterns and redirect or concentrate stormflows would be decreased slightly compared to the proposed project due to the reduced number of proposed wells. Although reduced, the potential for altered drainage patterns could result in increased risks related to onsite and/or downstream (offsite) erosion, siltation, and flooding, especially if stormwater conveyance capacity is exceeded, as compared to existing conditions. Mandatory compliance with NPDES Construction General Permit requirements and local regulations would involve implementation of erosion and stormwater control measures which would ensure the potential for impacts related to altered drainage patterns during construction would be less than significant, which would result in the ***same impact conclusion*** as the proposed project.

Operational Impacts

Impacts on water quality related to discharges of brine would result in a decreased level of impact compared to the proposed project because of the reduced volumes of brine produced from the smaller desalination plant. Under Alternatives 5a and 5b, a 6.4 mgd desalination plant would be constructed at Charles Benson Road (as compared to a 9.6 mgd facility for the proposed project). The reduced-capacity desalination plant would treat 15.5 mgd of source water at a 42 percent recovery rate and would generate approximately 9 mgd of brine (as compared to 14 mgd of brine for the proposed project) that would be discharged through the MRWPCA's existing ocean outfall. Similar to the proposed project, discharges from Alternative 5a and 5b would meet the Ocean Plan objective for salinity but would degrade the water quality in Monterey Bay in a very localized area, discussed below. Because no heating mechanism or process would increase the temperature of the source water as it passes through the treatment units, thermal impacts on receiving waters are not discussed further.

Salinity Impacts

This analysis of impacts related to increased salinity from operational discharges incorporates the significance thresholds, approach to analysis, and methodologies described in detail under Impact 4.3-4 in Section 4.3, Surface Water Hydrology and Water Quality.

Plant Operation and Discharge Scenarios

The reduced-capacity desalination plant proposed under both Alternatives 5a and 5b would treat 15.5 mgd of source water at a 42 percent recovery rate and would generate approximately 9 mgd of brine (as compared to 14 mgd of brine for the proposed project) that would be discharged through the MRWPCA's existing ocean outfall. During the non-irrigation season (November through March), brine would be combined and discharged with varying amounts of secondary treated wastewater. During the irrigation season, only brine would be discharged.

As discussed in detail under Impact 4.3-4, the treated wastewater flow from the MRWPCA Regional Wastewater Treatment Plant varies throughout the year (**Table 4.3-9**). The highest wastewater flows occur during the non-irrigation season (November through March) and the lowest flows during the irrigation season (April through October) when the secondary treated wastewater is processed through the SVRP for tertiary treatment and distributed to irrigators through the CSIP. During the irrigation season, on some days, all of the wastewater flows could be provided to irrigators, and only the brine would be discharged into Monterey Bay through the outfall. The following discharge scenarios are assessed for salinity related water quality impacts (**Table 5.5-2**):

- **Scenario V1, Brine-only**: 8.99 mgd of brine would be discharged alone through the MRWPCA outfall. This operating scenario would occur during the irrigation season.
- **Scenarios V2 toV11, Brine-with-Wastewater**: 8.99 mgd of brine would be discharged with varying volumes of treated wastewater from the MRWPCA Regional Wastewater Treatment Plant. These operating scenarios would occur when treated wastewater is available during the non-irrigation season during typical desalination plant operations.
- **Scenario V12, High Brine Only**: as described in Section 3.4.1, following a shutdown of the desalination facility for repair or routine maintenance, CalAm may temporarily (up to 11 days) operate the desalination facility with one additional reverse osmosis module in service to catch up on production; however, the total annual production would not be increased. As with Scenario V1, brine would be discharged without wastewater into Monterey Bay/MBNMS through the outfall during the irrigation season as a result of the MRWPCA wastewater flows being provided to irrigators.
- **Scenarios V13 toV26, High Brine-with-Wastewater**: as with Scenarios V2 through V11, the analysis accounted for different wastewater flows being combined with the higher volume brine discharges.

Approach to Analysis

The approach to analysis for assessing discharges is consistent with the approach described under Impact 4.3-4 for the proposed project (Section 4.3, Surface Hydrology and Water Quality). A detailed description of the model methodology and conservative assumptions applied for

calculating discharge dilution and salinity at the outfall diffuser is provided under Impact 4.3-4, with further details provided in **Appendix D1** and **D2**.

To model the discharge scenarios, Roberts (2016, 2017) combined the ambient conditions for Monterey Bay, the operational scenarios from **Table 5.5-2**, and the effluent water quality characteristics of the brine and the MRWPCA wastewater (**Table 4.3-11**) to calculate flow, salinity, and density for all assessed discharge scenarios (**Table 5.5-3**). The calculated values were then used to compute minimum dilution ratios (Dm) at the edge of the ZID, estimate the gradient of salinity between the diffuser ports and the edge of the ZID, and calculate the salinity beyond the ZID but within the BMZ (see **Appendix D1** for details).

TABLE 5.5-2
ALTERNATIVE 5 DISCHARGE SCENARIOS MODELED

Scenario No.	Discharge Scenario	Constituent Flows (mgd)	
		Secondary Effluent	Desal Brine
Typical Discharge Scenarios			
V1	Brine only	0	8.99
V2	Brine + Low (1) SE	1	8.99
V3	Brine + Low (2) SE	2	8.99
V4	Brine + Low (3) SE	3	8.99
V5	Brine + Low (4) SE	4	8.99
V6	Brine + Moderate (5) SE	5	8.99
V7	Brine + Moderate (5.8) SE	5.80	8.99
V8	Brine + Moderate (7) SE	7	8.99
V9	Brine + High (10) SE	10	8.99
V10	Brine + High (14) SE	14	8.99
V11	Brine + High (19.78) SE	19.78	8.99
High Brine Discharge Scenarios (post-shutdown operations)			
V12	High Brine only	0	11.24
V13	High Brine + Low (0.5) SE	0.5	11.24
V14	High Brine + Low (1) SE	1	11.24
V15	High Brine + Low (2) SE	2	11.24
V16	High Brine + Low (3) SE	3	11.24
V17	High Brine + Low (4) SE	4	11.24
V18	High Brine + Moderate (5) SE	5	11.24
V19	High Brine + Moderate (6) SE	6	11.24
V20	High Brine + Moderate (7) SE	7	11.24
V21	High Brine + Moderate (8) SE	8	11.24
V22	High Brine + Moderate (9) SE	9	11.24
V23	Brine + High (10) SE	10	11.24
V24	Brine + High (12) SE	12	11.24
V25	Brine + High (14) SE	14	11.24
V26	Brine + High (16) SE	16	11.24

NOTES: SE = MRWPCA secondary effluent wastewater

SOURCE: Roberts, 2017.

Salinity Impact Results and Discussion

The potential for a salinity-related water quality impact to occur was analyzed from the diffuser port to the edge of the BMZ (328 feet). Discharge scenarios comprised of only brine (Scenarios V1 and V12) and brine with low to moderate volumes of wastewater (Scenarios V2 to V8 for typical operations and V13 to V21 for post shut-down operations) were determined to be dense (i.e., with salinity levels in excess of ambient conditions) and, thus, negatively buoyant. When the brine is mixed with high volumes of wastewater (Scenarios V9 to V11 for typical operations and V22 to V26 for post shut-down operations), the plume would be positively buoyant because the salinity and density of the effluent is substantially lower than that of receiving waters (**Table 5.5-3**).

TABLE 5.5-3
ALTERNATIVE 5 OPERATIONAL DISCHARGE FLOW, SALINITY AND DENSITY

Scenario No.	Discharge Scenario	Combined effluent		
		Flow (mgd)	Salinity (ppt)[1]	Density (kg/m3)
Typical Discharge Scenarios				
V1	Brine only	8.99	58.23	1045.2
V2	Brine + Low (1) SE	9.99	52.48	1040.6
V3	Brine + Low (2) SE	10.99	47.78	1036.8
V4	Brine + Low (3) SE	11.99	43.86	1033.6
V5	Brine + Low (4) SE	12.99	40.55	1030.9
V6	Brine + Moderate (5) SE	13.99	37.70	1028.6
V7	Brine + Moderate (5.8) SE	14.79	35.71	1027.0
V8	Brine + Moderate (7) SE	15.99	33.09	1024.9
V9	Brine + High (10) SE	18.99	27.99	1020.8
V10	Brine + High (14) SE	22.99	23.26	1017.0
V11	Brine + High (19.78) SE	28.77	18.75	1013.3
High Brine Discharge Scenarios (post-shutdown operations)				
V12	High Brine only	11.24	58.23	1045.2
V13	High Brine + Low (0.5) SE	11.74	55.78	1043.3
V14	High Brine + Low (1) SE	12.24	53.54	1041.4
V15	High Brine + Low (2) SE	13.24	49.55	1038.2
V16	High Brine + Low (3) SE	14.24	46.13	1035.5
V17	High Brine + Low (4) SE	15.24	43.16	1033.0
V18	High Brine + Moderate (5) SE	16.24	40.55	1030.9
V19	High Brine + Moderate (6) SE	17.24	38.24	1029.1
V20	High Brine + Moderate (7) SE	18.24	36.19	1027.4
V21	High Brine + Moderate (8) SE	19.24	34.35	1025.9
V22	High Brine + Moderate (9) SE	20.24	32.69	1024.6
V23	Brine + High (10) SE	21.24	31.19	1023.4
V24	Brine + High (12) SE	23.24	28.58	1021.3
V25	Brine + High (14) SE	25.24	26.38	1019.5
V26	Brine + High (16) SE	27.24	24.50	1018.0

NOTES: SE = MRWPCA secondary effluent wastewater

SOURCE: Roberts, 2017.

The results of modeled salinity predictions and minimum dilution values for each discharge scenario, and the distance from the diffuser port at which the dense discharge plume makes contact with the seabed, is shown in **Table 5.5-4** for all dense discharge scenarios. The worst case condition for dilution, as expected, would be when only brine is discharged during the irrigation season (Scenarios V1 and V12). The salinity increment in Scenario V1 at the edge of the ZID (approximately 9 feet from the diffuser port) and at the BMZ was modeled to be 1.59 ppt and 1.32 ppt above ambient, respectively. Scenario V12 would be relatively similar due to the Tideflex diffusers, as discussed under Impact 4.3-4 in Section 4.3. All other discharge scenarios evaluated are shown to have lower incremental salinities (and higher Dm) than Scenario V1. In all scenarios modeled, the Ocean Plan salinity limit of 2 ppt would be met within the ZID, the length of which ranges from approximately 9 to 30 feet from the outfall diffuser for the dense scenarios.

Positively buoyant discharge plumes (i.e., those with densities less than the receiving water) require different analytical procedures than are used for negatively buoyant plumes. The plume dynamics for buoyant plume operational scenarios were assessed using the same procedure as that described under Impact 4.3-4 (see Section 4.3, Surface Water Hydrology and Water Quality).

The modeling results for the buoyant plumes are presented in **Table 5.5-5** and indicate that the dilution would be higher for the buoyant scenarios evaluated than for any of the dense plumes and that buoyant operational discharges would not exceed the significance threshold of 2 ppt at the BMZ.

Salinity Impact Summary and Conclusion

The analysis of salinity levels indicates that all discharge scenarios would result in salinity increases of less than 2 ppt above ambient levels at the edge of the ZID (up to 30 feet from the diffuser for Alternative 5a or 5b, as compared to 39 feet for the proposed project, when considering worst-case post shut-down operations) and at the edge of the BMZ (328 feet from the diffuser). Therefore, Alternative 5 (either 5a or 5b) would not exceed or violate the salinity standards. The salinity increases presented here represent conservative values and would occur only along the seabed. For the majority of the water column, incremental salinities would be much lower than reported values. Therefore, Alternative 5 discharges would not violate water quality standards, waste discharge requirements, or otherwise degrade the water quality (including hypoxia) of receiving waters in Monterey Bay by increasing salinity levels, and would result in a slightly reduced level of impact compared to the proposed project due to the reduced volume of brine discharged (9 mgd as compared to 14 for the proposed project) and the reduced extent of the ZID associated with operational discharges (21 feet from the diffuser as compared to 39 feet for the proposed project for typical operations). However, as described in Section 4.3.2.2, the Ocean Plan includes monitoring and reporting requirements for operation of new desalination facilities (Section III.M.4, “Monitoring and Reporting Program”; SWRCB, 2016b). The Monitoring and Reporting Plan must include provisions for monitoring of effluent and receiving water characteristics and impacts on all forms of marine life. The implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** would ensure compliance with Ocean Plan objectives and requirements. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** for salinity increases as the proposed project, less than significant with mitigation.

TABLE 5.5-4
DILUTION MODEL RESULTS FOR ALTERNATIVE 5 DENSE DISCHARGE SCENARIOS

Scenario No.	Scenario	Predictions			At impact (ZID)		At BMZ	
		SEA	VP					
		Dilution	Dilution	Distance (ft)	Dilution[a]	Salinity increment (ppt)	Dilution	Salinity increment (ppt)
Typical Discharge Scenarios								
V1	Brine only	15.7	16.0	8.6	15.7	1.59	18.8	1.32
V2	Brine + Low (1) SE	16.3	16.9	9.6	16.3	1.17	19.6	0.98
V3	Brine + Low (2) SE	17.4	18.1	10.5	17.4	0.83	20.8	0.69
V4	Brine + Low (3) SE	18.8	19.8	12.4	18.8	0.56	22.6	0.47
V5	Brine + Low (4) SE	20.9	21.6	14.4	20.9	0.35	25.0	0.29
V6	Brine + Moderate (5) SE	24.6	24.9	17.5	24.6	0.18	29.5	0.15
V7	Brine + Moderate (5.8) SE	30.3	29.4	21.4	29.4	0.08	35.3	0.07
V8	Brine + Moderate (7) SE	110.2	67.6	51.4	67.6	0.00	81.1	0.00
V9	Brine + High (10) SE[1]	-	-	-	-	-	-	-
V10	Brine + High (14) SE[1]	-	-	-	-	-	-	-
V11	Brine + High (19.78) SE[1]	-	-	-	-	-	-	-
High Brine Discharge Scenarios (post-shutdown operations)								
V12	High Brine only	15.4	16.1	9.3	15.4	1.61	18.5	1.34
V13	High Brine + Low (0.5) SE	15.8	16.5	9.2	15.8	1.42	19.0	1.18
V14	High Brine + Low (1) SE	16.1	16.8	10.3	16.1	1.26	19.3	1.05
V15	High Brine + Low (2) SE	16.9	17.8	11.0	16.9	0.96	20.3	0.80
V16	High Brine + Low (3) SE	18.1	19.0	12.4	18.1	0.71	21.7	0.59
V17	High Brine + Low (4) SE	19.6	20.3	13.9	19.6	0.50	23.5	0.42
V18	High Brine + Moderate (5) SE	21.5	22.0	15.8	21.5	0.33	25.9	0.28
V19	High Brine + Moderate (6) SE	24.7	24.6	18.2	24.6	0.20	29.5	0.17
V20	High Brine + Moderate (7) SE	30.0	28.8	22.0	28.8	0.10	34.6	0.08
V21	High Brine + Moderate (8) SE	42.4	37.4	29.7	37.4	0.03	44.9	0.02
V22	High Brine + Moderate (9) SE[1]	-	-	-	-	-	-	-
V23	Brine + High (10) SE[1]	-	-	-	-	-	-	-
V24	Brine + High (12) SE[1]	-	-	-	-	-	-	-
V25	Brine + High (14) SE[1]	-	-	-	-	-	-	-
V26	Brine + High (16) SE[1]	-	-	-	-	-	-	-

NOTES: SE = MRWPCA secondary effluent wastewater

[1] See Table 5.5-5 for results of buoyant discharges.

SOURCE: Roberts, 2017

TABLE 5.5-5
DILUTION RESULTS FOR BUOYANT ALTERNATIVE 5 DISCHARGE SCENARIOS

Scenario No.	Scenario	Season	Effluent conditions			UM3 simulations		NRFIELD simulations		
			Flow (mgd)	Salinity (ppt)	Density (kg/m^3)	Average dilution	Rise height (centerline) (ft)	Minimum dilution	Rise height (centerline) (ft)	Rise height (top) (ft)
V9	Brine + High (10) SE	Upwelling	18.99	27.99	1020.8	101	28	-	-	-
		Davidson				145	55	-	-	-
		Oceanic				-	-	-	-	-
V10	Brine + High (14) SE	Upwelling	22.99	23.26	1017.0	110	37	-	-	-
		Davidson				172	75	-	-	-
		Oceanic				116	42	-	-	-
V11	Brine + High (19.78) SE	Upwelling	28.77	18.75	1013.3	-	-	100	39	41
		Davidson				-	-	215	97	100
		Oceanic				-	-	134	57	59
V22	High Brine + Mod (9) SE	Upwelling	20.24	32.69	1024.6	91	17	-	-	-
		Davidson				100	15	-	-	-
		Oceanic				138	41	-	-	-
V23	Brine + High (10) SE	Upwelling	21.24	31.19	1023.4	88	20	-	-	-
		Davidson				124	47	-	-	-
		Oceanic				88	18	-	-	-
V24	Brine + High (12) SE	Upwelling	23.24	28.58	1021.3	96	28	-	-	-
		Davidson				133	55	-	-	-
		Oceanic				95	26	-	-	-
V25	Brine + High (14) SE	Upwelling	25.24	26.38	1019.5	100	32	-	-	-
		Davidson				144	64	-	-	-
		Oceanic				104	35	-	-	-
V26	Brine + High (16) SE	Upwelling	27.24	24.50	1018.0	103	36	-	-	-
		Davidson				155	73	-	-	-
		Oceanic				109	41	-	-	-

NOTES: SE = MRWPCA secondary effluent wastewater

SOURCE: Roberts, 2017

Other Ocean Plan Constituents

Consistent with the approach to analysis described under Impact 4.3-5 (see Section 4.3, Surface Water Hydrology and Water Quality), this impact analysis uses the Ocean Plan water quality objectives, applied at the edge of the ZID, as significance thresholds for determining whether or not the discharges would result in a significant impact related to water quality, water quality standards, and waste discharge requirements.

Approach to Analysis

The same approach to analysis was applied to Alternative 5 that was described for the proposed project under Impact 4.3-5 (Section 4.3, Surface Hydrology and Water Quality). Potential water quality impacts were identified by determining whether discharges would exceed the conservative threshold of 80 percent of the Ocean Plan objective. **Appendix D3** documents the data sources and provides further detail on the methodology used to perform the ocean water quality modeling analysis. **Table 4.3-4** provides the suite of constituents and their numeric Ocean Plan water quality objectives.

Results and Impact Discussion

The estimated concentrations for the full suite of Ocean Plan constituents are presented as concentrations at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective in **Appendix D3** (**Tables 8** and **10**; **Tables A3** and **A4**). Consistent with the results discussed under Impact 4.3-5 for the proposed project, the model analysis determined that Alternative 5 discharges would not exceed Ocean Plan water quality objectives for the majority of constituents listed in **Table 4.3-4**. Additionally, no exceedances or potential exceedances were determined to occur for discharge scenarios involving brine-only or high volumes of MRWPCA wastewater (see **Appendix D3**, **Table 4**).

However, consistent with impacts assessed for the proposed project (see Impact 4.3-5), when brine is combined with low to moderate volumes of MRWPCA wastewater, ammonia and cyanide are predicted to exceed 80 percent of the Ocean Plan WQOs at the edge of the ZID. Also, specific to Alternative 5, chlordane is predicted to exceed 80 percent of the Ocean Plan WQOs at the edge of the ZID for a single operational scenario when brine is combined with low (4 mgd) volumes of MRWPCA wastewater. For an additional eleven constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Only future water quality testing and analysis, such as that required under the NPDES permit process, would determine whether discharges under Alternative 5 would fully comply with Ocean Plan water quality objectives. Therefore, it must be concluded that Alternative 5 could result in a significant impact that could be reduced to less than significant with the implementation of **Mitigation Measure 4.3-5**. (**Implement Protocols to Avoid Exceeding Water Quality Objectives**), which would require CalAm to perform an extensive water quality assessment prior to implementation; in addition, operational discharges that cannot be demonstrated to conform to the prescribed performance standards may only be released following implementation of additional design features, engineering solutions, and/or operational measures to ensure compliance with provisions of the Ocean Plan.

Impact Summary and Conclusion – Ocean Plan Water Quality Constituents

The model-based analyses concluded that constituent concentrations would become elevated to levels greater than 80 percent of the Ocean Plan objective (established as a conservative significance threshold for determining impacts) under some of the assessed discharge scenarios involving low and moderate volumes of MRWPCA wastewater. For an additional eleven constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it was concluded that Alternative 5 could result in a significant impact related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. Significant impacts would be reduced to a less-than-significant levels by implementing **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**).

Also, **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**), described under Impact 4.3-4 (Section 4.3, Surface Water Hydrology and Water Quality), would further reduce and minimize potential impacts by requiring CalAm to implement a comprehensive Monitoring and Reporting Plan (Plan), following approval by the RWQCB and MBNMS, to obtain field monitoring and marine biological resource data in the area affected by a project. The Plan would set forth appropriate response thresholds and trigger corrective actions (defined in **Mitigation Measure 4.3-5**) that would be required if the acquired data indicated deleterious effects to receiving water quality or marine resources from discharges. Therefore, although Alternatives 5a and 5b would produce less brine because of the reduced capacity desalination plant, they would each result in the ***same impact conclusion*** for meeting Ocean Plan water quality objectives for other constituents compared to the proposed project, less than significant with mitigation.

Facility Siting Impacts

Under Alternative 5a and 5b, the disturbance area for maintenance of the slant wells at the CEMEX site and the Potrero Road site would be slightly reduced as compared to proposed project due to the reduced number of wells at each location (7 wells under Alternatives 5a and 5b as compared to ten wells for the proposed project). Impervious surfaces would remain substantially similar to the proposed project in the context of storm runoff volume generation. Therefore, Alternative 5a and 5b impacts related to the alteration of drainage patterns such that there is a resultant increase in erosion, siltation, flooding on- or offsite or the exceeding of storm drain capacity would be similar as compared to the proposed project. With adherence to post-construction stormwater management requirements and post-construction stormwater BMPs, Alternatives 5a and 5b would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Under Alternative 5a and 5b, impacts related to flooding and flood risks, including those from tsunami and sea level rise would remain the same as those described for the proposed project due to all project facilities being located at the same sites despite the reduced number of wells and the reduced desalination facility under Alternatives 5a and 5b as compared to the proposed project. Impacts associated with flooding and flood risks under Alternative 5a and 5b would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project would produce between 0.94 mgd and 1.17 mgd of RO treated effluent that would be discharged into Monterey Bay through the MRWPCA's existing ocean outfall. GWR Project discharges could combine with discharges of Alternative 5 and potentially violate water quality standards or degrade water quality in the area immediately surrounding the outfall diffuser.

Salinity Impacts

The discharges of the 6.4 mgd desalination plant, combined with effluent from the GWR Project and varying volumes of treated wastewater from the existing MRWPCA Regional Wastewater Treatment Plant, would be discharged into Monterey Bay through the MRWPCA's existing ocean outfall and would locally increase salinity levels that could violate water quality standards, waste discharge requirements, or otherwise degrade the water quality in Monterey Bay, thus resulting in a significant water quality impact from these combined discharges. The analysis of impacts related to discharges that include GWR effluent presented here incorporates the significance thresholds, approach to analysis, and methodologies described in detail under Impact 4.3-4 in Section 4.3, Surface Water Hydrology and Water Quality, as well as above under the discussion of the operational impacts of Alternative 5.

Combined Desalination Plant and GWR Operation and Discharge Scenarios

Operation of Alternative 5 and the GWR project would result in discharges that would include brine from the Alternative 5 6.4 mgd desalination plant, effluent from the GWR Project, and treated wastewater from the existing MRWPCA Regional Wastewater Treatment Plant. During certain times of the year, a blend of brine and GWR effluent would be discharged. Additionally, the blend of brine and GWR effluent would be further combined with varying amounts of treated wastewater from the MRWPCA Regional Wastewater Treatment Plant, depending on the time of year (see **Table 4.3-8**). A wide range of operational discharge scenarios was assessed for salinity-related water quality impacts (**Table 5.5-6**) as follows:

- **Brine-with-GWR**: 8.99 mgd of brine generated from the Alternative 5 Desalination Plant would be discharged with either 0.94 mgd or 1.17 mgd of GWR effluent under either typical or post shut-down operations. These operating scenarios (C1, C12, C17 from **Table 5.5-6**) would typically occur during the irrigation season when wastewater is not available.
- **Combined Discharge**: The brine and GWR discharge (8.99 mgd of brine and either 0.94 mgd or 1.17 mgd of GWR effluent) would be combined with varying volumes of treated wastewater from the MRWPCA Regional Wastewater Treatment Plant under typical and post shut-down operations. These operating scenarios (**Table 5.5-6**) would typically occur in the non-irrigation season when wastewater is available.

Additionally, potential discharge scenarios would include combinations of treated wastewater with GWR effluent or GWR effluent alone (i.e., without desalination brine). Such discharge scenarios could occur if the GWR Project comes on line before the Alternative 5 Desalination Plant, or if the Alternative 5 desalination plant periodically shuts down. These scenarios would not represent a contribution to combined impacts for Alternative 5, but have been modeled and

TABLE 5.5-6
MPWSP CUMULATIVE DISCHARGE SCENARIOS MODELED

Scenario No.	Discharge Scenario	Constituent Flows (mgd)		
		Secondary Effluent	Desal Brine	GWR
Typical Discharge Scenarios				
C1	Brine + High GWR only	0	8.99	1.17
C2	Brine + High GWR + Low (1) SE	1	8.99	1.17
C3	Brine + High GWR + Low (2) SE	2	8.99	1.17
C4	Brine + High GWR + Low (3) SE	3	8.99	1.17
C5	Brine + High GWR + Low (4) SE	4	8.99	1.17
C6	Brine + High GWR + Mod (5) SE	5	8.99	1.17
C7	Brine + High GWR + Mod (5.3) SE	5.3	8.99	1.17
C8	Brine + High GWR + Mod (6) SE	6	8.99	1.17
C9	Brine + High GWR + Mod (7) SE	7	8.99	1.17
C10	Brine + High GWR + High (11) SE	11	8.99	1.17
C11	Brine + High GWR + High (15.92) SE	15.92	8.99	1.17
C12	Brine + Low GWR only	0	8.99	0.94
C13	Brine + Low GWR + Low (1) SE	1	8.99	0.94
C14	Brine + Low GWR + Low (3) SE	3	8.99	0.94
C15	Brine + Low GWR + Mod (5.3) SE	5.3	8.99	0.94
C16	Brine + Low GWR + High (15.92) SE	15.92	8.99	0.94
High Brine Discharge Scenarios (post-shutdown operations)				
C17	High Brine + High GWR only	0	11.24	1.17
C18	High Brine + High GWR + Low (0.5) SE	0.5	11.24	1.17
C19	High Brine + High GWR + Low (1) SE	1	11.24	1.17
C20	High Brine + High GWR + Low (2) SE	2	11.24	1.17
C21	High Brine + High GWR + Low (3) SE	3	11.24	1.17
C22	High Brine + High GWR + Low (4) SE	4	11.24	1.17
C23	High Brine + High GWR + Mod (5) SE	5	11.24	1.17
C24	High Brine + High GWR + Mod (6) SE	6	11.24	1.17
C25	High Brine + High GWR + Mod (7) SE	7	11.24	1.17
C26	High Brine + High GWR + Mod (8) SE	8	11.24	1.17
C27	High Brine + High GWR + Mod (9) SE	9	11.24	1.17
C28	High Brine + High GWR + High (10) SE	10	11.24	1.17
C29	High Brine + High GWR + High (12) SE	12	11.24	1.17
C30	High Brine + High GWR + High (14) SE	14	11.24	1.17
C31	High Brine + High GWR + High (16) SE	16	11.24	1.17

NOTES: SE = MRWPCA secondary effluent wastewater

SOURCE: Roberts, 2017

impacts comprehensively assessed and documented under Impact HS-5 in Section 4.11.4.4 of the GWR Project Final EIR (MRWPCA and MPWMD, 2016; p. 4.11-78 *et seq*.). Additionally, such scenarios have been further investigated for dilution and mixing at the outfall in EIR/EIS **Appendices D1** and **D3**. Because the salinity of discharges that do not include Alternative 5 Desalination Plant brine would be substantially lower than that of ambient conditions and therefore would not exceed the significance threshold of 2 ppt at the BMZ, impacts would be less than significant and these scenarios are not discussed further.

Approach to Analysis

The approach to analyzing the combined discharges of Alternative 5 and the GWR Project is consistent with the approach described under Impact 4.3-4 for the proposed project (Section 4.3, Surface Hydrology and Water Quality). A detailed description of the model methodology and conservative assumptions applied for calculating operational discharge dilution and salinity at the outfall diffuser is provided under Impact 4.3-4, with further details provided in **Appendices D1** and **D2**.

To revise the brine discharge model analysis for the Alternative 5 with GWR Project operational discharge scenarios, Roberts (2016, 2017) combined the site-specific conditions for Monterey Bay receiving waters, the combined discharge scenarios in **Table 5.5-6** and the effluent water quality characteristics of the brine, GWR effluent, and the MRWPCA wastewater to calculate flow, salinity, and density for all assessed combined discharge scenarios (**Table 5.5-7**). The calculated values (**Table 5.5-7**) were then utilized to compute minimum dilution ratios (Dm) at the edge of the ZID, estimate the gradient of salinity between the diffuser ports and the edge of the ZID, and calculate the salinity beyond the ZID but within the regulatory brine mixing zone (BMZ) (see **Appendix D1** for details). These results are presented and discussed below.

Results and Impact Discussion

Alternative 5 was analyzed for potential water quality impacts as a result of combined discharges from the diffuser port to the edge of the BMZ. Of the Alternative 5 combined discharge scenarios assessed (**Table 5.5-6**), discharges comprising brine and GWR effluent only (Scenario C1 and C12), and combined flows comprising brine and GWR effluent as well as low to moderate volumes of wastewater (Scenarios C2 through C8 and C12 through C15 for typical operations; Scenarios C17 through C25 for post shut-down operations) were determined to be dense (i.e., with salinity levels in excess of ambient conditions) and, thus, negatively buoyant. When the Alternative 5 brine is combined with GWR effluent and a high volume of wastewater (Scenarios C9 through C11 and C16 for typical operations; Scenarios C26 through C31 for post shut-down operations), the plume is positively buoyant because the salinity and density of the effluent is substantially lower than that of receiving waters (**Table 5.5-7**).

Model simulations were run for all of the combined discharge scenarios (discussed in detail in Appendices D1 and D2). The results of the salinity predictions and minimum dilution values, the distance between the diffuser port and the point where the plume contacts the seabed, and the incremental salinity increases above background conditions for each dense cumulative discharge scenario at the edge of the ZID and the BMZ are presented in **Table 5.5-8**.

TABLE 5.5-7
ALTERNATIVE 5 COMBINED OPERATIONAL DISCHARGE FLOW, SALINITY, AND DENSITY

Scenario No.	Discharge Scenario	Combined effluent		
		Flow (mgd)	Salinity (ppt)[1]	Density (kg/m3)
Typical Discharge Scenarios				
C1	Brine + High GWR only	10.16	52.19	1040.3
C2	Brine + High GWR + Low (1) SE	11.16	47.59	1036.6
C3	Brine + High GWR + Low (2) SE	12.16	43.74	1033.5
C4	Brine + High GWR + Low (3) SE	13.16	40.48	1030.9
C5	Brine + High GWR + Low (4) SE	14.16	37.67	1028.6
C6	Brine + High GWR + Mod (5) SE	15.16	35.24	1026.6
C7	Brine + High GWR + Mod (5.3) SE	15.46	34.57	1026.1
C8	Brine + High GWR + Mod (6) SE	16.16	33.11	1024.9
C9	Brine + High GWR + Mod 7) SE	17.16	31.23	1023.4
C10	Brine + High GWR + High (11) SE	21.16	25.48	1018.7
C11	Brine + High GWR + High (15.92) SE	26.08	20.82	1015.0
C12	Brine + Low GWR only	9.93	53.27	1041.2
C13	Brine + Low GWR + Low (1) SE	10.93	48.47	1037.3
C14	Brine + Low GWR + Low (3) SE	12.93	41.09	1031.4
C15	Brine + Low GWR + Mod (5.3) SE	15.23	35.01	1026.4
C16	Brine + Low GWR + High (15.92) SE	25.85	20.95	1015.1
High Brine Discharge Scenarios (post-shutdown operations)				
C17	High Brine + High GWR only	12.41	53.29	1041.2
C18	High Brine + High GWR + Low (0.5) SE	12.91	51.25	1039.6
C19	High Brine + High GWR + Low (1) SE	13.41	49.37	1038.0
C20	High Brine + High GWR + Low (2) SE	14.41	46.00	1035.3
C21	High Brine + High GWR + Low (3) SE	15.41	43.07	1033.0
C22	High Brine + High GWR + Low (4) SE	16.41	40.49	1030.9
C23	High Brine + High GWR + Mod (5) SE	17.41	38.21	1029.0
C24	High Brine + High GWR + Mod (6) SE	18.41	36.18	1027.4
C25	High Brine + High GWR + Mod (7) SE	19.41	34.36	1025.9
C26	High Brine + High GWR + Mod (8) SE	20.41	32.71	1024.6
C27	High Brine + High GWR + Mod (9) SE	21.41	31.22	1023.4
C28	High Brine + High GWR + High (10) SE	22.41	29.87	1022.3
C29	High Brine + High GWR + High (12) SE	24.41	27.48	1020.4
C30	High Brine + High GWR + High (14) SE	26.41	25.46	1018.7
C31	High Brine + High GWR + High (16) SE	28.41	23.73	1017.3

SOURCE: Roberts, 2017.

TABLE 5.5-8
DILUTION MODEL RESULTS FOR ALTERNATIVE 5 COMBINED DENSE DISCHARGE SCENARIOS

Scenario No.	Scenario	Predictions			At impact (ZID)		At BMZ	
		SEA	VP					
		Dilution	Dilution	Distance (ft)	Dilution[a]	Salinity increment (ppt)	Dilution	Salinity increment (ppt)
Typical Discharge Scenarios								
C1	Brine + High GWR only	16.5	17.3	9.9	16.5	1.14	19.8	0.95
C2	Brine + High GWR + Low (1) SE	17.4	18.3	10.8	17.4	0.82	20.9	0.68
C3	Brine + High GWR + Low (2) SE	18.7	19.3	12.3	18.7	0.56	22.4	0.46
C4	Brine + High GWR + Low (3) SE	21.1	21.8	14.5	21.1	0.34	25.4	0.28
C5	Brine + High GWR + Low (4) SE	24.8	24.9	17.5	24.8	0.17	29.8	0.15
C6	Brine + High GWR + Mod (5) SE	33.2	31.7	23.5	31.7	0.06	38.0	0.05
C7	Brine + High GWR + Mod (5.3) SE	37.7	34.3	25.6	34.3	0.04	41.2	0.03
C8	Brine + High GWR + Mod (6) SE	113.5	68.5	53.5	68.5	0.00	82.2	0.00
C9	Brine + High GWR + Mod (7) SE[1]	-	-	-	-	-	-	-
C10	Brine + High GWR + High (11) SE[1]	-	-	-	-	-	-	-
C11	Brine + High GWR + High (15.92) SE[1]	-	-	-	-	-	-	-
C12	Brine + Low GWR only	16.3	16.9	9.5	16.3	1.22	19.6	1.02
C13	Brine + Low GWR + Low (1) SE	17.1	17.8	10.7	17.1	0.88	20.6	0.74
C14	Brine + Low GWR + Low (3) SE	20.6	21.1	13.9	20.6	0.38	24.7	0.31
C15	Brine + Low GWR + Mod (5.3) SE	34.1	32.6	24.1	32.6	0.05	39.1	0.04
C16	Brine + Low GWR + High (15.92) SE[1]	-	-	-	-	-	-	-
High Brine Discharge Scenarios (post-shutdown operations)								
C17	High Brine + High GWR only	16.2	17.0	10.0	16.2	1.23	19.5	1.02
C18	High Brine + High GWR + Low (0.5) SE	16.5	17.3	10.5	16.5	1.09	19.8	0.91
C19	High Brine + High GWR + Low (1) SE	17.0	17.8	11.1	17.0	0.95	20.4	0.79
C20	High Brine + High GWR + Low (2) SE	18.1	18.8	12.4	18.1	0.70	21.7	0.58
C21	High Brine + High GWR + Low (3) SE	19.6	20.2	14.0	19.6	0.50	23.5	0.41
C22	High Brine + High GWR + Low (4) SE	21.7	22.3	16.0	21.8	0.33	26.1	0.27
C23	High Brine + High GWR + Mod (5) SE	24.7	24.7	18.4	24.7	0.20	29.6	0.16
C24	High Brine + High GWR + Mod (6) SE	30.0	28.7	22.0	28.7	0.10	34.4	0.08
C25	High Brine + High GWR + Mod (7) SE	42.9	37.6	29.8	37.6	0.03	45.1	0.02
C26	High Brine + High GWR + Mod (8) SE[1]	-	-	-	-	-	-	-
C27	High Brine + High GWR + Mod (9) SE[1]	-	-	-	-	-	-	-
C28	High Brine + High GWR + High (10) SE[1]	-	-	-	-	-	-	-
C29	High Brine + High GWR + High (12) SE[1]	-	-	-	-	-	-	-
C30	High Brine + High GWR + High (14) SE[1]	-	-	-	-	-	-	-
C31	High Brine + High GWR + High (16) SE[1]	-	-	-	-	-	-	-

NOTES: SE = MRWPCA secondary effluent wastewater

[1] See Table 5.5-9 for results of buoyant discharges.

SOURCE: Roberts, 2017.

All combined discharge scenarios under Alternative 5 are shown to have incremental salinities that would be lower than that assessed for the brine-only discharge (worst-case scenario, Scenario V1, **Table 5.5-5**). Dilution is increased and incremental salinity is reduced (as compared to the brine-only discharge scenario) as increasing fresh water in the form of GWR effluent and MRWPCA wastewater are co-mingled with the brine. For all combined discharge scenarios, the Ocean Plan salinity limit of 2 ppt is met within the ZID, the length of which ranges from approximately 10 to 30 feet from the outfall diffuser. Further, the computed salinities presented in **Table 5.5-8** would occur only along the seabed. Salinities decrease with height in the water column (see **Appendix D1** for details) and would only be above ambient close to the seabed. For most of the water column, incremental salinities would be much less than the conservative values in **Table 5.5-8**.

Positively buoyant plumes require different analytical procedures than are used for negatively buoyant plumes. The plume dynamics for these scenarios were assessed using the same procedure as that described under Impact 4.3-4 (see Section 4.3, Surface Water Hydrology and Water Quality). In summary, the internal hydraulics of the outfall diffuser was computed, and then the average diffuser port diameter and discharge flows were calculated. Model analyses were then run, accounting for effluent water quality characteristics and receiving water quality conditions.

The results, summarized in **Table 5.5-9**, show that when brine is combined with GWR effluent and moderate to high volumes of wastewater, dilution is high, the plume is positively buoyant and the discharges would not exceed the significance threshold of 2 ppt at the BMZ. These moderate to high volumes of wastewater flow occur during the non-irrigation season (November through March; **Table 4.3-9**).

Impact Summary and Conclusion for Salinity Impacts under Combined Discharge Scenarios

The analysis of salinity levels indicates that all discharges associated with the Alternative 5 combined discharge scenarios would result in salinity less than 2 ppt above ambient levels at the edge of the ZID (up to approximately 30 feet from the diffuser) and at the edge of the BMZ (328 feet from the diffuser). The Alternative 5 combined operational discharges from the MRWPCA outfall would therefore not exceed or violate the salinity standards or degrade water quality in terms of salinity. For all Alternative 5 combined discharge scenarios involving dense, negatively buoyant plumes (worst case scenarios), discharges would result in salinity increases of less than 2 ppt at the point where the discharge plume makes contact with the sea floor following discharge from the outfall diffuser ports and undergoes rapid mixing and dilution (edge of ZID). As discussed in detail under Impact 4.3-4, areas where salinity levels exceed 2 ppt would be confined to a relatively small area adjacent to each diffuser port and above the sea floor, after which the plumes attenuate rapidly with distance from each port. Also, the salinity increases presented here represent conservative values and would occur only along the seabed. For the majority of the water column, incremental salinities would be much lower than the reported values.

The current NPDES Permit (Order No. R3-2014-0013, NPDES Permit No. CA0048551) regulates the wastewater discharge from the existing outfall and would be amended to incorporate the specific effluent limitations, including salinity limitations for receiving waters. Further, implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** would ensure compliance with the monitoring requirements and regulatory standards protective of the beneficial uses of Monterey Bay.

TABLE 5.5-9
DILUTION MODEL RESULTS FOR ALTERNATIVE 5 COMBINED BUOYANT DISCHARGE SCENARIOS

Scenario No.	Scenario	Season	Effluent conditions			UM3 simulations		NRFIELD simulations		
			Flow (mgd)	Salinity (ppt)	Density (kg/m^3)	Average dilution	Rise height (centerline) (ft)	Minimum dilution	Rise height (centerline) (ft)	Rise height (top) (ft)
C9	Brine + High GWR + Mod (7) SE	Upwelling	17.16	31.23	1023.4	91	20	-	-	-
		Davidson				131	46	-	-	-
		Oceanic				91	18	-	-	-
C10	Brine + High GWR + High (11) SE	Upwelling	21.16	25.48	1018.7	107	33	-	-	-
		Davidson				159	65	-	-	-
		Oceanic				111	37	-	-	-
C11	Brine + High GWR + High (15.92) SE	Upwelling	26.08	20.82	1015.0	115	41	-	-	-
		Davidson				191	89	-	-	-
		Oceanic				124	49	-	-	-
C16	Brine + Low GWR + High (15.92) SE	Upwelling	25.85	20.95	1015.1	115	41	-	-	-
		Davidson				191	89	-	-	-
		Oceanic				124	49	-	-	-
C26	High Brine + High GWR + Mod (8) SE	Upwelling	20.41	32.71	1024.6	92	17	-	-	-
		Davidson				139	41	-	-	-
		Oceanic				101	15	-	-	-
C27	High Brine + High GWR + Mod (9) SE	Upwelling	21.41	31.22	1023.4	91	20	-	-	-
		Davidson				126	64	-	-	-
		Oceanic				91	18	-	-	-
C28	High Brine + High GWR + High (10) SE	Upwelling	22.41	29.87	1022.3	93	24	-	-	-
		Davidson				128	51	-	-	-
		Oceanic				90	21	-	-	-
C29	High Brine + High GWR + High (12) SE	Upwelling	24.41	27.48	1020.4	98	30	-	-	-
		Davidson				138	59	-	-	-
		Oceanic				101	31	-	-	-
C30	High Brine + High GWR + High (14) SE	Upwelling	26.41	25.46	1018.7	101	34	-	-	-
		Davidson				149	68	-	-	-
		Oceanic				106	38	-	-	-
C31	High Brine + High GWR + High (16) SE	Upwelling	28.4	23.73	1017.3	105	37	-	-	-
		Davidson				161	78	-	-	-
		Oceanic				110	43	-	-	-

NOTES: SE = MRWPCA secondary effluent wastewater

SOURCE: Roberts, 2017

Therefore, because all combined discharge scenarios involving GWR effluent under Alternative 5 would comply with salinity objectives after implementation of mitigation, the combined salinity-related water quality impact in Monterey Bay would result in the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Other Ocean Plan Constituents

Discharges through the existing MRWPCA outfall could violate water quality standards or waste discharge requirements, or otherwise degrade the water quality in Monterey Bay. Consistent with the approach to analysis described under Impact 4.3-5 (see Section 4.3, Surface Water Hydrology and Water Quality), this impact analysis uses the Ocean Plan water quality objectives, applied at the edge of the ZID, as significance thresholds for determining whether or not the discharges associated with Alternative 5 in combination with discharges from the GWR Project would result in a significant water quality impacts in Monterey Bay.

Based on the analysis, operational discharges under the combined discharge scenario (i.e., with GWR effluent included) would result in specific exceedances of Ocean Plan water quality objectives for a number of constituents. Exceedances of Ocean Plan water quality objectives were identified to occur for discharge scenarios that include brine-with-GWR effluent without MRWPCA wastewater, and brine-with-GWR effluent combined with low and moderate volumes of MRWPCA wastewater. The constituents that would exceed the Ocean Plan water quality objective (or the conservative 80 percent threshold) are ammonia, cyanide, acrylonitrile, bis(2-ethyl-hexyl)phthalate, chlordane, PCBs, TCDD equivalents, and toxaphene. For an additional eleven constituents[5], there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact.

Combined Desalination Plant and GWR Operation and Discharge Scenarios

The combined discharge scenarios including brine and GWR effluent are summarized in **Table 5.5-8** and are assessed in this EIR/EIS. Additionally, potential discharge scenarios could include combinations of treated wastewater with GWR effluent or GWR effluent alone (i.e., without desalination brine). Specifically, it is possible that a GWR-only discharge of 0.94 mgd or 1.17 mgd of effluent could be discharged alone or discharged with varying volumes of treated wastewater from the MRWPCA Regional Wastewater Treatment Plant without brine from the Alternative 5 Desalination Plant. These scenarios have been previously modeled and impacts comprehensively assessed and documented under Impact HS-5 in Section 4.11.4.4 in the Final EIR for the GWR Project (MRWPCA and MPWMD, 2016; p. 4.11-78 *et se*q.). The GWR Project EIR concluded that discharges comprising GWR effluent and varying amounts of MRWPCA wastewater (i.e., discharges without brine present) would comply with the Ocean Plan water quality objectives and would have a less-than-significant impact on water quality in the Monterey Bay and Pacific Ocean. Further, the GWR Project EIR concluded there would be a beneficial impact on Monterey Bay

[5] Chlorinated phenolics, 2,4-dinitrophenol, tributyltin, aldrin, benzidine, beryllium, bis(2-chloroethyl)ether, 3,3-dichlorobenzidine, 1,2-diphenylhydrazine, heptachlor, 2,4,6-trichlorophenol

since pollutant loads would be reduced compared to baseline discharges due to diversions of GWR source waters of marginal quality to the Regional Treatment Plant for treatment and disposal that would have otherwise flowed into Monterey Bay. A portion of the pollutants in the new source waters would be removed from the wastewater streams through the treatment processes and disposed of as solids to the adjacent landfill where they would no longer adversely affect Monterey Bay water quality. Therefore, the impact analysis for such discharge scenarios, as well as the results and impact conclusions relating to these scenarios, are not discussed further.

Approach to Analysis

Potential water quality impacts were identified by determining whether cumulative operational discharges would exceed the conservative threshold of 80 percent of the Ocean Plan water quality objective. **Figure 5.5-1** illustrates the approach to analysis and summarizes the water quality data sources for assessing cumulative discharge scenarios associated with Alternative 5.

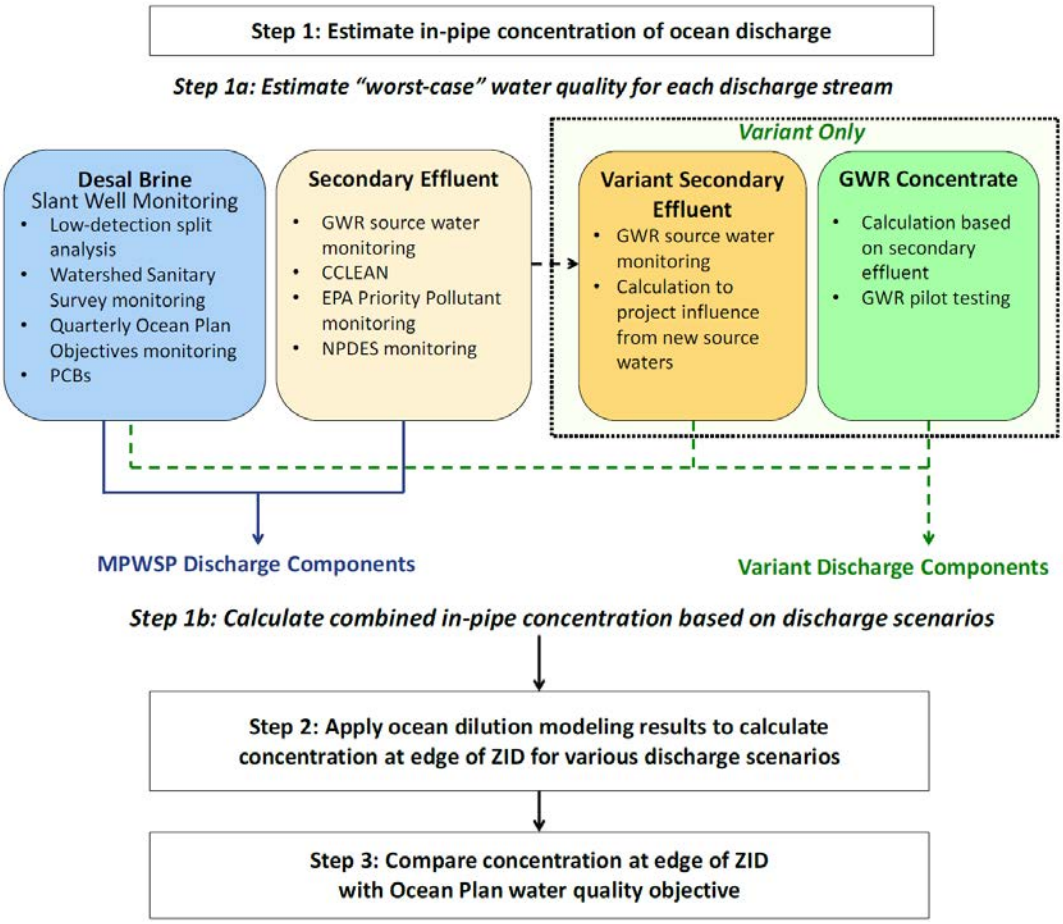

Figure 5.5-1
Summary of Approach to Analysis for Determining Ocean Plan Compliance for Alternative 5 and GWR Combined Discharge Scenarios

Results and Impact Discussion

The estimated concentrations for the full suite of Ocean Plan constituents are presented as concentrations at the edge of the ZID and as a percentage of the Ocean Plan numeric water quality objective in the revised **Appendix D3** (**Tables A3** and **A4**) for the combined discharge scenarios assessed under Alternative 5. The model analysis determined that discharges would not exceed Ocean Plan water quality objectives for the majority of constituents listed in **Table 4.3-4**. Most of the constituents in the desalination brine, GWR effluent, and MRWPCA wastewater were detected at levels sufficiently below the Ocean Plan objectives (i.e., were not detected in any of the component discharge source waters) that the operational discharges would pose no risk of exceeding the objectives for these constituents under the assessed discharge scenarios (**Appendix D3**, **Table 4**).

A number of constituents were identified at concentrations that have the potential to exceed the conservative threshold of 80 percent of the Ocean Plan objective (the significance threshold for this analysis) under the combined discharge scenario. The identified constituents of concern detected in the source waters are: ammonia, cyanide, acrylonitrile, bis(2-ethyl-hexyl)phthalate, chlordane, PCBs, TCDD equivalents, and toxaphene. **Table 5.5-10** presents these constituents along with the calculated concentration of each constituent at the edge of the ZID for a representative range of discharge scenarios. **Table 5.5-11** presents these constituents along with the calculated constituent concentration at the edge of the ZID expressed as a percentage of the Ocean Plan objective. Water quality constituents would exceed, or have the potential to exceed, the Ocean Plan objective when brine-with-GWR effluent would be discharged without MRWPCA wastewater or combined with low to moderate wastewater flows. When combined discharges included moderate to high flows of wastewater, no exceedances or potential exceedances were determined to occur.

For an additional eleven constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Only future water quality testing and analysis, such as that required under the NPDES permit process, would determine whether discharges under the combined discharge scenarios associated with Alternative 5 would fully comply with Ocean Plan water quality objectives. Therefore, it must be conservatively concluded that, because the predictive models have shown that certain constituent concentrations would become elevated under combined discharge scenarios in excess of the conservative threshold of 80 percent of the Ocean Plan objective and because, there is not enough information to assess concentrations at the edge of the ZID for eleven constituents, the combination of Alternative 5 and the GWR Project could result in a significant water quality impact in Monterey Bay. However, as described below, the contribution of Alternative 5 to this impact would be mitigated through implementation of **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**) to a less-than-significant level.

TABLE 5.5-10
ALTERNATIVE 5 COMBINED OPERATIONAL DISCHARGE SCENARIOS: PREDICTED CONCENTRATIONS AT THE EDGE OF THE ZID FOR OCEAN PLAN CONSTITUENTS OF CONCERN

Constituent	Ocean Plan Objective	Estimated Percentage of Ocean Plan Objective at Edge of ZID by Flow Scenario[d]											
		Cumulative Operations with Normal Flows					Cumulative Operations with High Desal Brine Flows						
		C1	C3	C5	C8	C10	C11	C17	C19	C22	C27	C29	C31
Objectives for protection of marine aquatic life - 6-month median limit													
Cyanide (µg/L)	1	1.5	1.9	1.7	0.7	0.5	0.6	1.3	1.6	1.8	0.6	0.6	0.6
Ammonia (as N) – 6-mo median [a] (µg/L)	600	1593	1551	1248	473	326	316	1333	1363	1227	335	327	320
Objectives for protection of human health - carcinogens - 30-day average limit[c,d]													
Acrylonitrile [b] (µg/L)	0.1	0.1	0.1	0.1	0.03	0.02	0.02	0.1	0.1	0.1	0.02	0.02	0.02
Bis(2-ethyl-hexyl)phthalate (µg/L)	4	2.9	2.9	2.3	0.9	0.6	0.6	2.5	2.5	2.3	0.6	0.6	0.6
Chlordane (µg/L)	2.3E-05	5E-05	4E-05	4E-05	1E-05	9E-06	9E-06	4E-05	4E-05	4E-05	1E-05	9E-06	9E-06
PCBs (µg/L)	1.9E-05	3E-05	3E-05	2E-05	9E-06	6E-06	5E-06	3E-05	3E-05	2E-05	6E-06	6E-06	6E-06
TCDD Equivalents (µg/L)	3.9E-09	5E-09	5E-09	4E-09	2E-09	1E-09	1E-09	4E-09	4E-09	4E-09	1E-09	1E-09	1E-09
Toxaphene [c] (µg/L)	2.1E-04	3E-04	3E-04	2E-04	8E-05	5E-05	5E-05	2E-04	2E-04	2E-04	6E-05	5E-05	5E-05

NOTE: Shading indicates constituent is expected to be greater than 80 percent (orange shading) or exceed (red shading) the ocean plan objective for that discharge scenario.

[a] Ammonia (as N) represents the total ammonia concentration, *i.e.* the sum of unionized ammonia (NH_3) and ionized ammonia (NH_4).

[b] Acrylonitrile, beryllium, and TCDD equivalents represent a special case; they were detected in some source waters, but were also not detected above the MRL in others, and the MRL values were greater than the Ocean Plan objectives. For these constituents, a value of 0 was assumed when it was not detected in a source water and the MRL value was assumed where a non-detect occurred but the MRL was greater than the Ocean Plan objective. This assumption was made to show there is potential for the constituent to exceed the Ocean Plan objective in some flow scenarios.

[c] Toxaphene was only detected using the low-detection techniques of the CCLEAN program. It was detected once (09/2011) out of 12 samples collected from the secondary effluent from 2010 through 2015, and during the 7-day composite sample from the test slant well.

[d] Operational scenarios modeled for Ocean Plan compliance – C1: Brine + High GWR only; C3: Brine + High GWR + Low (2) SE; C5: Brine + High GWR + Low (4) SE; C8: Brine + High GWR + Mod (6) SE; C10: Brine + High GWR + High (11) SE; C11: Brine + High GWR + High (15.92) SE; C17: High Brine + High GWR only; C19: High Brine + High GWR + Low (1) SE; C22: High Brine + High GWR + Low (4) SE; C27: High Brine + High GWR + Mod (9) SE; C29: High Brine + High GWR + High (12) SE; C31: High Brine + High GWR + High (16) SE.

SOURCE: Trussell, 2017 (**Appendix D3**)

Impact Summary and Conclusion for Ocean Plan Constituents under Combined Discharge Scenarios

The analysis of potential water quality impacts evaluated a representative range of combined discharge scenarios. The model-based analyses concluded that under certain scenarios, some constituent concentrations would become elevated to levels greater than 80 percent of the Ocean Plan objective. Further, for an additional eleven constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. Therefore, Alternative 5

TABLE 5.5-11
ALTERNATIVE 5 COMBINED OPERATIONAL DISCHARGE SCENARIOS: PREDICTED CONCENTRATIONS AT THE EDGE OF THE ZID EXPRESSED AS PERCENTAGE OF OCEAN PLAN OBJECTIVE FOR OCEAN PLAN CONSTITUENTS OF CONCERN

Constituent	Ocean Plan Objective	Estimated Percentage of Ocean Plan objective at Edge of ZID by Flow Scenario[d]											
		Cumulative Operations with Normal Flows					Cumulative Operations with High Desal Brine Flows						
		C1	C3	C5	C8	C10	C11	C17	C19	C22	C27	C29	C31
Objectives for protection of marine aquatic life - 6-month median limit													
Cyanide (µg/L)	1	150%	189%	173%	71%	55%	56%	135%	158%	176%	55%	56%	57%
Ammonia (as N) – 6-month median[a] (µg/L)	600	266%	258%	208%	79%	54%	53%	222%	227%	205%	56%	54%	53%
Objectives for protection of human health - carcinogens - 30-day average limit													
Acrylonitrile[b] (µg/L)	0.1	94%	92%	74%	28%	19%	19%	79%	81%	73%	20%	19%	19%
Bis(2-ethyl-hexyl) phthalate (µg/L)	4	84%	81%	65%	25%	17%	17%	70%	72%	64%	18%	17%	17%
Chlordane (µg/L)	2.3E-05	199%	193%	155%	59%	40%	39%	167%	170%	153%	42%	40%	40%
PCBs (µg/L)	1.9E-05	169%	156%	121%	45%	30%	28%	149%	147%	124%	32%	30%	29%
TCDD Equivalents (µg/L)	3.9E-09	131%	128%	103%	39%	27%	26%	110%	112%	101%	28%	27%	26%
Toxaphene[c] (µg/L)	2.1E-04	126%	122%	98%	37%	26%	25%	105%	108%	97%	26%	26%	25%

NOTE: Shading indicates constituent is expected to be greater than 80 percent (orange shading) or exceed (red shading) the ocean plan objective for that discharge scenario.

[a] Ammonia (as N) represents the total ammonia concentration, *i.e.* the sum of unionized ammonia (NH_3) and ionized ammonia (NH_4).

[b] Acrylonitrile, beryllium and TCDD equivalents represent a special case; they were detected in some source waters, but were also not detected above the MRL in others, and the MRL values were greater than the Ocean Plan objectives. For these constituents, a value of 0 was assumed when it was not detected in a source water and the MRL value was assumed where a non-detect occurred but the MRL was greater than the Ocean Plan objective. This assumption was made to show there is potential for the constituent to exceed the Ocean Plan objective in some flow scenarios.

[c] Toxaphene was only detected using the low-detection techniques of the CCLEAN program. It was detected once (09/2011) out of 12 samples collected from the secondary effluent from 2010 through 2015, and during the 7-day composite sample from the test slant well.

[d] Operational scenarios modeled for Ocean Plan compliance – C1: Brine + High GWR only; C3: Brine + High GWR + Low (2) SE; C5: Brine + High GWR + Low (4) SE; C8: Brine + High GWR + Mod (6) SE; C10: Brine + High GWR + High (11) SE; C11: Brine + High GWR + High (15.92) SE; C17: High Brine + High GWR only; C19: High Brine + High GWR + Low (1) SE; C22: High Brine + High GWR + Low (4) SE; C27: High Brine + High GWR + Mod (9) SE; C29: High Brine + High GWR + High (12) SE; C31: High Brine + High GWR + High (16) SE

SOURCE: Trussell, 2017 (**Appendix D3**)

in combination with the GWR Project could result in a significant impact related to water quality standards, waste discharge requirements, and water quality in Monterey Bay and could exceed Ocean Plan water quality objectives for certain constituents under low wastewater flow conditions. Impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**). Further, **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**), described under Impact 4.3-4 (Section 4.3, Surface Water Hydrology and Water Quality), would further reduce and minimize potential impacts by requiring CalAm to implement a comprehensive Monitoring and Reporting Plan, following approval by the RWQCB and MBNMS, to obtain field monitoring and marine biological resource data in the area affected by a project.

With implementation of **Mitigation Measure 4.3-5**, combined discharges of Alternative 5 and the GWR Project would comply with regulatory standards that would ensure combined impacts would be reduced to a less-than-significant level. Therefore, the combined discharges of Alternative 5 and the GWR Project would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

Cumulative impacts on hydrology and water quality for construction of Alternatives 5a and 5b would be the same as those described and analyzed for the proposed project and Alternative 1, respectively. Construction activities associated with either Alternative 5a or 5b would result in a less than significant contribution to any significant cumulative impact, after adherence to mandatory regulatory requirements and implementation of mitigation measures (*less than significant with mitigation*).

Alternative 5 (a and b) would have operation-related impacts on water quality similar to the proposed project, as analyzed in Section 4.3, Surface Water Hydrology and Water Quality), and Alternative 1. The cumulative projects whose water quality impacts could overlap with those of the combined discharges of Alternative 5 and the GWR Project include the same as those described for the proposed project (see Section 4.3.6 and **Table 4.1-2** for details). This analysis assumes that the GWR Project would be implemented and that operation of Alternative 5 would result in the combined discharge scenarios analyzed above under "Combined Impacts with GWR Project." Therefore, references to Alternative 5 operation in the following paragraph include operation of the GWR Project.

The contribution to cumulative impacts from operation of Alternative 5 would be similar, but reduced compared to those described for the proposed project due to the reduced volume of brine under Alternative 5. Nonetheless, cumulative impacts related to salinity and other water quality constituents in Monterey Bay would be significant, and the contribution of Alternative 5 to these impacts would be cumulatively significant for the same reasons described for the proposed project. Implementation of **Mitigation Measures 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**) would ensure that operational discharges associated with Alternative 5 would comply with Ocean Plan water quality objectives, reducing the contribution of Alternative 5 to a level that is less than significant.

5.5.3.9 References

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5.5.4 Groundwater Resources

The evaluation criteria for groundwater resources address the depletion of groundwater quantity, and the degradation of groundwater quality as a result of construction activities, and from operations. All alternatives, including the proposed project, have the potential for limited water supply and quality impacts from the use and disposal of water during excavation, trenching, de-watering, well drilling and dust suppression activities. The proposed project, as well as alternatives that propose to draw source water through subsurface slant wells, have the potential for impacts during operations to groundwater supplies, groundwater levels and groundwater quality, that alternatives proposing open water intakes (Alternatives 2, 3, and 4) would not. This evaluation addresses the physical impacts on groundwater supplies, levels, and quality as a result of project construction and project pumping, and how potential effects of the project pumping might impact neighboring, active wells.

5.5.4.1 Setting/Affected Environment

The groundwater resources setting/affected environment for this alternatives analysis is similar to that described for the proposed project in Section 4.4, Groundwater Resources and generally includes the northern portion of the 150-mile-long Salinas Valley Groundwater Basin (SVGB), and the Seaside Groundwater Basin (SGB); specifically, the areas that could be affected by the installation and operation of the subsurface slant wells and the ASR wells (see **Figure 4.4-1**).

The proposed slant wells (at either the CEMEX or Potrero Road sites) would be located within the 84,400-acre, 132-square-mile subarea of the SVGB known as the 180/400 Foot Aquifer Subbasin (DWR, 2004), the boundaries of which (Elkhorn Slough to the north, the East Side Area to the east, the SGB to the south, and the Pacific Ocean to the west, although the precise locations fluctuate depending on seasonal variations, longer-term climate changes and local groundwater pumping) generally coincide with those of the SVGB Pressure Area (or Subbasin) traditionally recognized by the Monterey County Water Resources Agency (MCWRA) and California Department of Water Resources.

The Pressure Area includes three prominent water supply aquifers: the 180-Foot Aquifer, the 400-Foot Aquifer, and the deeper aquifers.[6] Shallow groundwater is present directly over the 180-Foot Aquifer, in the Dune Sands Aquifer which is about 60 feet thick at the locations of the proposed slant wells at CEMEX. As shown in **Figure 4.4-2**, the Dune Sands Aquifer transitions into a similar shallow aquifer underlying the Moss Landing Area to the north, referred to as the Perched-A Aquifer. The Perched-A Aquifer differs from the Dune Sand Aquifer in that it is underlain by a defined layer of less permeable, fine-grained sediments (clay) known as the Salinas Valley Aquitard. Water quality of the Perched-A Aquifer and Dune Sand Aquifer is directly influenced and controlled by seawater, as verified by the saline chemistry of the groundwater samples collected from borings drilled along the coast. The SVGB is in overdraft, meaning the existing basin outflow of 555,000 afy exceeds the estimated 504,000 afy of inflow;

[6] The deeper aquifer units in the SVGB have been referred to as the "Deep Zone," "900-Foot Aquifer," and "1,500-Foot Aquifer." For the purposes of this EIR/EIS, the term "deeper aquifers" is used to describe these units.

this imbalance is documented by seawater intrusion which has been detected several miles inland in the 180-Foot and 400-Foot aquifers.

The ASR-5 and ASR-6 Wells would be located in the SGB. The SGB encompasses 24 square miles at the southwest corner of the Salinas Valley, adjacent to the Pacific Ocean and is divided into four subareas, with the northern two composing the Northern Subbasin and the southern two composing the Southern Subbasin. The proposed ASR injection/extraction wells would be located near the northern border of the Northern Subbasin. There is a groundwater depression in both the shallow and deep aquifers in the Northern Subbasin, resulting in some landward flow along the coast.

5.5.4.2 Direct and Indirect Effects of the Proposed Project (10 slant Wells at CEMEX)

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina that would create approximately 15 acres of impervious surfaces, up to nine new subsurface slant wells at the CEMEX active mining area and conversion of the existing test slant well to a permanent well; the eight operating slant wells (two wells would be on stand-by) would extract a total of approximately 24 mgd of source water.

The proposed project would also include two new injection/extraction wells (ASR-5 and ASR-6 Wells) at the existing SGB aquifer storage and recovery (ASR) system, Carmel Valley Pump Station and about 21 miles of new water conveyance pipelines.

The following paragraphs briefly summarize the impacts of the proposed project with respect to groundwater resources. The detailed impact analysis of the proposed project is provided in Section 4.4.

Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.

The proposed slant wells and ASR wells would be built using a dual-rotary drill rig that may require between 4 to 5 million gallons of water during the drilling, but could use much less, and perhaps none, depending on how the drilling proceeds. The water that may be required for ASR injection/extraction well construction would be less. If the proposed project requires well drilling water, it would be purchased from an outside water purveyor and delivered to the drill site by truck; water would not be extracted from local groundwater sources.

The proposed project pipelines and MPWSP Desalination Plant, and Carmel Valley Pump Station would be built using standard construction methods that would require water for dust suppression, concrete washouts, tire washing, and general site maintenance. Water for these operations would be purchased from a local water purveyor and delivered to each construction site by truck. No impacts on local groundwater supplies would occur.

Impact 4.4-2: Violate any groundwater quality standards or otherwise degrade groundwater quality during construction.

Construction of the slant wells would use drilling fluids, which would not adversely affect groundwater quality. Construction of the ASR-5 and ASR-6 Wells would use additives that are non-corrosive and biodegradable and do not contain chemicals that would degrade groundwater quality. Construction of all other facilities would not occur in groundwater-bearing zones and would have low potential to degrade groundwater quality. Impacts associated with discharges to groundwater and impacts on groundwater quality during construction would be less than significant for all project components.

Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.

The proposed slant wells would extract mostly seawater and some brackish groundwater from a capture zone that is within a localized area adjacent to the coast that currently contains highly brackish groundwater. The drawdown response from extraction of slant wells would occur in the Dune Sand and 180-FTE Aquifer. When water is returned to the Basin to replace the portion of the source water that originated in the Basin by providing desalinated water to Castroville Community Services District (CCSD) and/or to the Castroville Seawater Intrusion Project (CSIP) in lieu of an equal amount of groundwater pumping, groundwater levels in the 400-Foot Aquifer would improve. Localized depressed groundwater levels in the Dune Sands and 180-FTE aquifers would persist but the capture zone would eventually be recharged by seawater. The impact on groundwater supplies would be less than significant.

A localized water level decline of between 1 and 5 feet is expected as a result of proposed project pumping at CEMEX. Neighboring groundwater supply wells that could be affected by proposed project pumping have well screens and pumps that are considerably deeper than the depths at which localized changes in water levels could occur due to proposed project pumping. Proposed project pumping therefore, would not expose screens, cause damage, or reduce yield in neighboring groundwater supply wells and the impact on nearby water supply wells would be less than significant. However, to ensure that a groundwater monitoring program is in place before and during commencement of groundwater pumping operations and to verify that the subsurface intake system performs as expected, CalAm would implement **Applicant Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage)** which would establish baseline groundwater levels and detect changes to local groundwater elevations and quality, evaluate whether those changes could damage neighboring active wells and require a remedy to mitigate any damage.

Management of the rates and volumes of ASR injection and extraction would ensure that operation of the proposed ASR Wells would remain constant and, therefore, would not cause groundwater mounding, change groundwater gradients, or lower groundwater levels. Operational impacts associated with ASR Wells would be less than significant.

Operation of the proposed Desalination Plant, pipelines, or pump station would not interfere with, extract from, or inject water into the groundwater aquifers in the SVGB or the SGB. Consequently, there would be no impact associated with these facilities.

Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations.

Operation of the proposed slant wells would not violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users since current groundwater quality in the capture zone is highly brackish and the affected area is used minimally for groundwater extraction. The impact on local groundwater degradation would be less than significant.

Proposed project slant well pumping would not exacerbate seawater intrusion because the slant wells would capture seawater as it crosses the coast and proposed project pumping is therefore, expected to retard future inland migration of the seawater/freshwater interface. The impact on seawater intrusion would be less than significant.

The slant well pumping drawdown could interfere with inland remediation activities at existing groundwater contamination sites, by altering the localized groundwater gradients such that the existing contaminated groundwater plumes become drawn toward currently uncontaminated areas and degrade the existing water quality. This would violate the state non-degradation policy of maintaining the existing water quality. The North Marina Groundwater Model (NMGWM^{2016}) simulations indicate that a decrease in groundwater elevations is possible and could affect a Carbon Tetrachloride Plume located about 2 miles from the proposed slant wells in the former Fort Ord, resulting in a potentially significant impact. This impact would be reduced to less than significant with the implementation of **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**), which would require monitoring for changes in the groundwater surface elevation caused by proposed project pumping near the plume.

Operation of the ASR Wells would not interfere with groundwater remediation activities since there are no known contaminated sites undergoing groundwater remediation in the area between the ASR wells and the edge of the groundwater depression. The injection of treated desalinated groundwater into the Santa Margarita Sandstone underlying the ASR Wells would have the same benign reaction as injecting treated Carmel River water. Therefore, groundwater quality impacts would be less than significant for the ASR Wells. All other project components would have no impact on groundwater quality during operations.

Impact 4.4-C: Cumulative impacts related to Groundwater Resources.

The geographic scope of the cumulative analysis for groundwater resources includes portions of the SVGB and the SGB. The geographic scope also includes a vertical element, which includes the underground aquifers in the SVGB and the SGB. In the SVGB, the aquifers of concern are the Dune Sand Aquifer, 180-FTE Aquifer, 180-Foot Aquifer (inland and east of CEMEX), and 400-Foot Aquifer. In the SGB, the aquifer of concern is the surficial shallow aquifer, which is in

the unconfined Paso Robles Formation and the underlying confined Santa Margarita Sandstone. The current and reasonably foreseeable future projects listed in **Table 4.1-2** that are within the geographic scope and have the potential to combine with the groundwater-related impacts of the proposed project are the Salinas Valley Water Project Phase II (No. 1), the Interlake Tunnel (No. 24), and the Regional Urban Water Augmentation Project (RUWAP) Desalination Element (No. 31). These projects are located within the SVGB. The Interlake Tunnel project, which would produce additional surface water storage and supply for downstream groundwater recharge and reduction of saltwater intrusion in the SVGB, would not adversely affect groundwater resources. The proposed project, in combination with the other two identified cumulative projects, would not cause a significant adverse cumulative impact and the proposed project would not have a significant contribution to cumulative adverse groundwater quality and supply-related impacts; the proposed project, in combination with applicable cumulative projects, would have a cumulative beneficial effect on groundwater supply and quality.

5.5.4.3 Direct and Indirect Effects of the No Project Alternative

Under the No Project Alternative, no slant wells would be installed, resulting in no construction-related impacts and no operational drawdown/recharge effects in the Dune Sand Aquifer, the 180-Foot/180-FTE Aquifers or the 400-Foot Aquifer as a result of proposed project pumping. Because no water would be extracted by slant well pumping, no water that originated in the basin would be returned to the SVGB as in-lieu recharge; therefore, the projected beneficial groundwater response from that return water would not occur in the 400-Foot Aquifer. Seawater intrusion under the No Project Alternative would continue migrating inland as it does currently, and the SVGB would not benefit from the retardation of the inland migration afforded by the proposed project pumping. The ASR system would continue to operate as it does currently and the additional ASR wells would not be installed. CalAm would reduce its pumping from the SGB to 1,474 afy by 2021 per the terms of the CDO, and continue to extract its 1,474 afy adjudicated supply thereafter, rather than reducing pumping to 774 afy for 25 years. Therefore, the basin replenishment that would occur under the proposed project (17,500 af over the 25 years) would not occur under the No Project Alternative. Plumes of contaminated water beneath the former Fort Ord property would not be intersected or disrupted by proposed project pumping and ongoing remediation activities would continue. The No Project Alternative would not result in actions that would deplete groundwater supply or interfere with recharge, but also would not provide the beneficial effect of the proposed project on basin replenishment.

Although the No Project Alternative would have no adverse impact on groundwater compared to baseline conditions, because it would not have the benefit of retarding ongoing seawater intrusion compared to the proposed project, a brief discussion of the cumulative scenario under the No Project Alternative is included for purposes of comparison. Existing, ongoing regional groundwater pumping would continue throughout the Salinas Valley, as would efforts to develop a sustainable groundwater management plan. Projects such as the Pure Water Monterey GWR Project (No. 59 in **Table 4.1-2**) would be implemented. The GWR Project would provide additional irrigation water to the CSIP growers in the northern Salinas Valley that would raise groundwater levels in the 400-Foot Aquifer because of reduced groundwater pumping. This

would be a beneficial effect of the GWR Project on groundwater levels in the SVGB; however, the No Project Alternative would not contribute to this cumulative beneficial effect.

5.5.4.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Alternative 1 includes one additional well compared to the proposed project, because the existing test well at CEMEX would be converted to a permanent well. Therefore, the groundwater impact analysis of Alternative 1 focuses primarily on the slant wells at Potrero Road and the source water pipeline; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

Groundwater Supply

Construction of Alternative 1 would use the same water supply sources as the proposed project (see Section 4.4, Groundwater Resources) for drilling the slant wells and for dust suppression; water would be delivered by truck and would not be extracted from local groundwater sources. Alternative 1 would have one additional new well at Potrero Road, and 5.5 miles of additional source water pipeline, and therefore, Alternative 1 would use more water during construction than the proposed project. However, because none of the water used during construction would be drawn from the groundwater basin, Alternative 1 would result in the ***same impact conclusion*** as the proposed project on groundwater supply during construction; no impact.

Water Quality

Similar to the proposed project, the Alternative 1 slant wells would be drilled using a dual rotary drill rig that would use re-circulated drilling fluids through the first approximately 100 feet of dry dune sands. The remaining length of borehole would be drilled using water present in the sands and added potable water to circulate the drill cuttings if necessary. If potable water were added, drill cuttings would be removed after use, and the water would be clarified and percolated into the sands through the diffuser in the parking lot; the quality of that water would be better than the underlying brackish water, and therefore, would not result in groundwater degradation.

Construction of Alternative 1 would use the same construction techniques as the proposed project, and would include 10 new slant wells drilled in a parking lot inland of the dunes (compared to the 9 new wells at CEMEX), as well as an additional 5.5 miles of source water pipeline. Because the water used for slant well drilling would be re-circulated and then clarified

and discharged into the parking lot, Alternative 1 would result in the ***same impact conclusion*** on groundwater quality as the proposed project, less than significant.

Operational and Facility Siting Impacts

Groundwater Supply

Modeled Pumping Effects

The potential effects of the proposed project on groundwater resources were modeled with the North Marina Groundwater Model (version 2016, referred to as NMGWM^{2016}, see **Appendix E2**); the results are presented in Section 4.4, Groundwater Resources. The same model was used to evaluate the impacts on groundwater resources for this alternative at Potrero Road (see **Appendix E2**). Slant wells at Potrero Road would be screened in the Perched-A Aquifer and would only capture water from that aquifer and Monterey Bay (within MBNMS) due in part to the existence and thickness of the underlying Salinas Valley Aquitard (see **Appendix C3**) at this location. In contrast, the slant wells at the CEMEX site would have a capture zone in the Dune Sands Aquifer and the 180-Foot Equivalent Aquifer, because the Salinas Valley Aquitard does not underlie the CEMEX site. Sea level rise over the 63 years of modeled groundwater pumping would not change the projected drawdown in the Perched-A aquifer as it is expected to do at the CEMEX site, because sea level rise would not erode the coastline at Potrero Road and the shoreline would not advance inland toward the slant wells. As a result, the output for all modeling scenarios for Potrero Road shows no changes (unlike the proposed project) between the drawdown contours for current and future sea levels.

Effects on the Perched-A Aquifer

Slant well pumping at Potrero Road would create a cone of depression in the Perched-A Aquifer that would extend up to 5 miles inland, as shown in **Figure 5.5-2**.[7] The extent of modeled drawdown in the Perched-A Aquifer is almost twice the inland distance modeled at CEMEX for the proposed project because: 1) the Perched-A Aquifer is not as thick as the Dune Sand Aquifer underlying the CEMEX site, and 2) the ocean water capture zone is restricted at Potrero Road to the Perched-A Aquifer (the wells would not also be screened in the 180/180-FTE Aquifers) because the underlying Salinas Valley Aquitard separates the Perched-A Aquifer from the 180-Foot Aquifer. The capture zone created by the slant well pumping, as projected by the NMGWM^{2016}, would extend south along the coast, north to encompass Elkhorn Slough and inland approximately 2 miles, as shown on **Figure 5.5-2**. The 1-foot drawdown response would be similar in the Perched-A Aquifer with and without modeled return water scenarios (0, 3, 6, and 12 percent), because the resulting in-lieu recharge in the 400-Foot Aquifer would have a negligible effect on recharge in the Perched-A Aquifer. Modeling indicates that pumping under Alternative 1 would influence the Perched-A Aquifer north of Potrero Road and the cone of depression would encompass the mouth of the Elkhorn Slough and about 1 mile inland up the slough (a portion of which is within MBNMS). This effect is shown by the configuration of the model-projected capture zone and 1-foot drawdown contour lines on **Figures 5.5-2** and **5.5-3** and

[7] The full extent of the Dune Sand Aquifer cone of depression created by pumping 9.6 mgd under Alternative 1 is not shown because it extends out to and intersects a bedrock boundary condition near Prunedale.

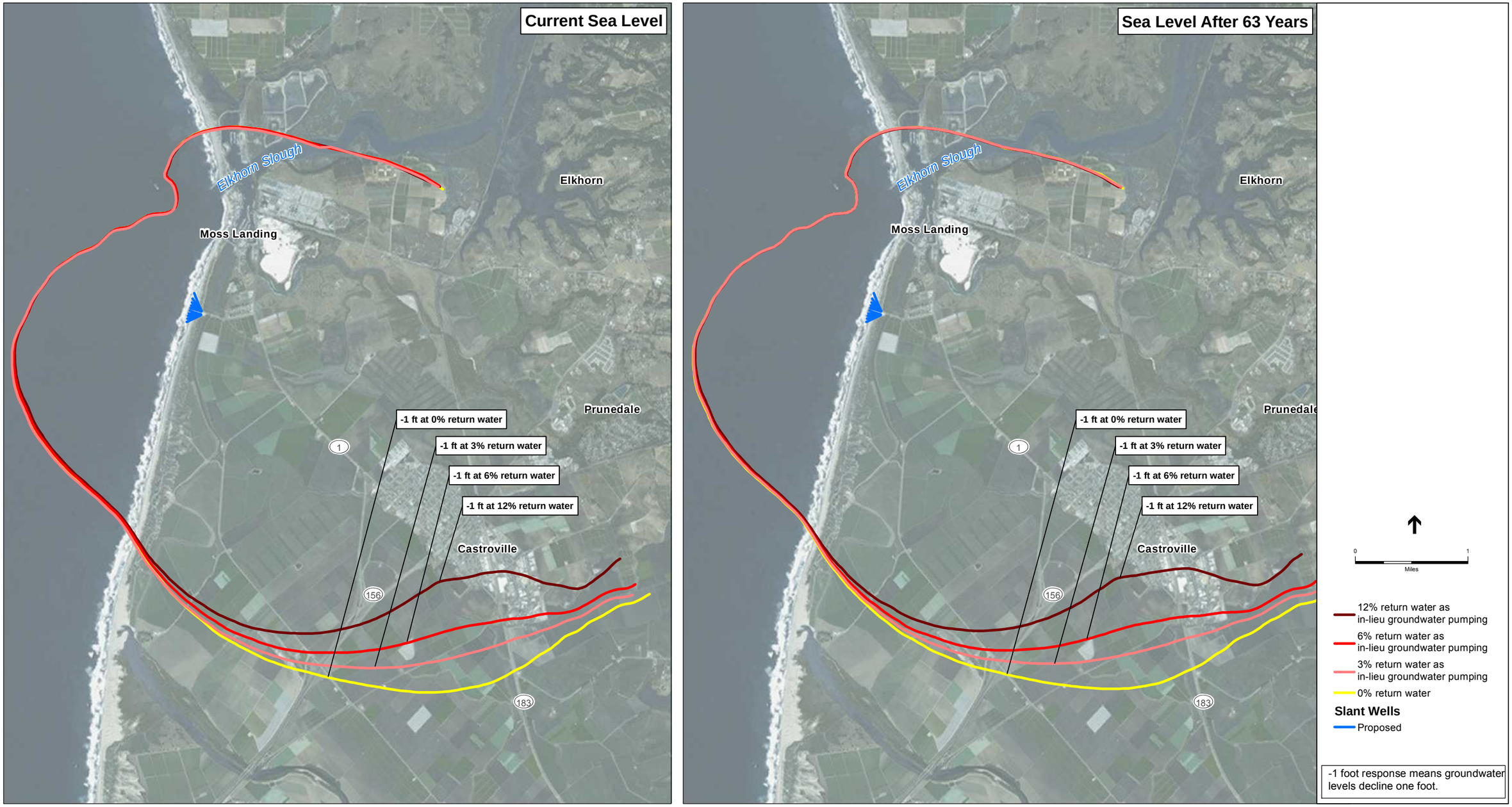
these results suggest a direct or indirect effect of project pumping at Potrero Road on the surface water-groundwater interaction in the Elkhorn Slough. For example, the slant well pumping at Potrero Road could draw in groundwater that would otherwise flow to recharge the Slough, or draw surface water directly from the Slough that would not occur under the proposed project. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Effects on the 180-Foot Aquifer

Figure 5.5-3 shows the effects on the 180-Foot Aquifer from slant well pumping for Alternative 1, for varying percentages of Salinas Valley return water (0, 3, 6 and 12 percent return water). There would be no capture zone created because the proposed slant wells would be drawing water from the Perched-A Aquifer only. The modeled aquifer response shows a cone of depression that extends a maximum of about 4 miles inland with 0 percent return water, and the maximum extent of the cone is reduced by about 2 miles with increased percentages of return water. The modeled drawdown in the 180-Foot Aquifer is not directly due to project pumping because the slant wells at Potrero Road would not be screened in the 180-Foot Aquifer; rather, the water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 180-Foot Aquifer may have been interpreted by the model as drawdown due to pumping. Similar to the effects on the Perched-A Aquifer, the response from slant well pumping (1-foot contour line at 0 percent and 3 percent return water) extends north to partially encompass the mouth of the Elkhorn Slough, indicating a possible surface water-groundwater interaction with the Slough. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Pumping Response on 400-Foot Aquifer

Figure 5.5-4 shows the effects of the slant well pumping at Potrero Road on the 400-Foot Aquifer. The 1-foot drawdown contour, representing 0 percent return water, shows the largest area of drawdown extending about 2 miles inland and offshore about 0.75 mile. The 1-foot drawdown contour with 3 percent return water extends inland only about 1.5 miles and offshore about 0.5 mile. There is also a localized groundwater level increase in Castroville with 3 percent return water. The 1-foot contour resulting from 6 percent return water shows a groundwater level rise in Castroville, as does the 12 percent return water contour that is almost 5 miles in diameter. The response from slant well pumping, as shown by the 1-foot drawdown contour at 0 percent and 3 percent return water, extends north to partially encompass the mouth of the Elkhorn Slough. Given the depth of the 400-Foot Aquifer and the presence of the Salinas Valley Aquitard, it is unlikely that there would be a direct surface water-groundwater interaction between the Elkhorn Slough and the 400-Foot Aquifer. The water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 400-Foot Aquifer was likely interpreted by the model as drawdown in the 400-Foot Aquifer and given the location of Elkhorn Slough relative to the northern boundary of the NMGWM, quantification is not feasible within the context of the model.

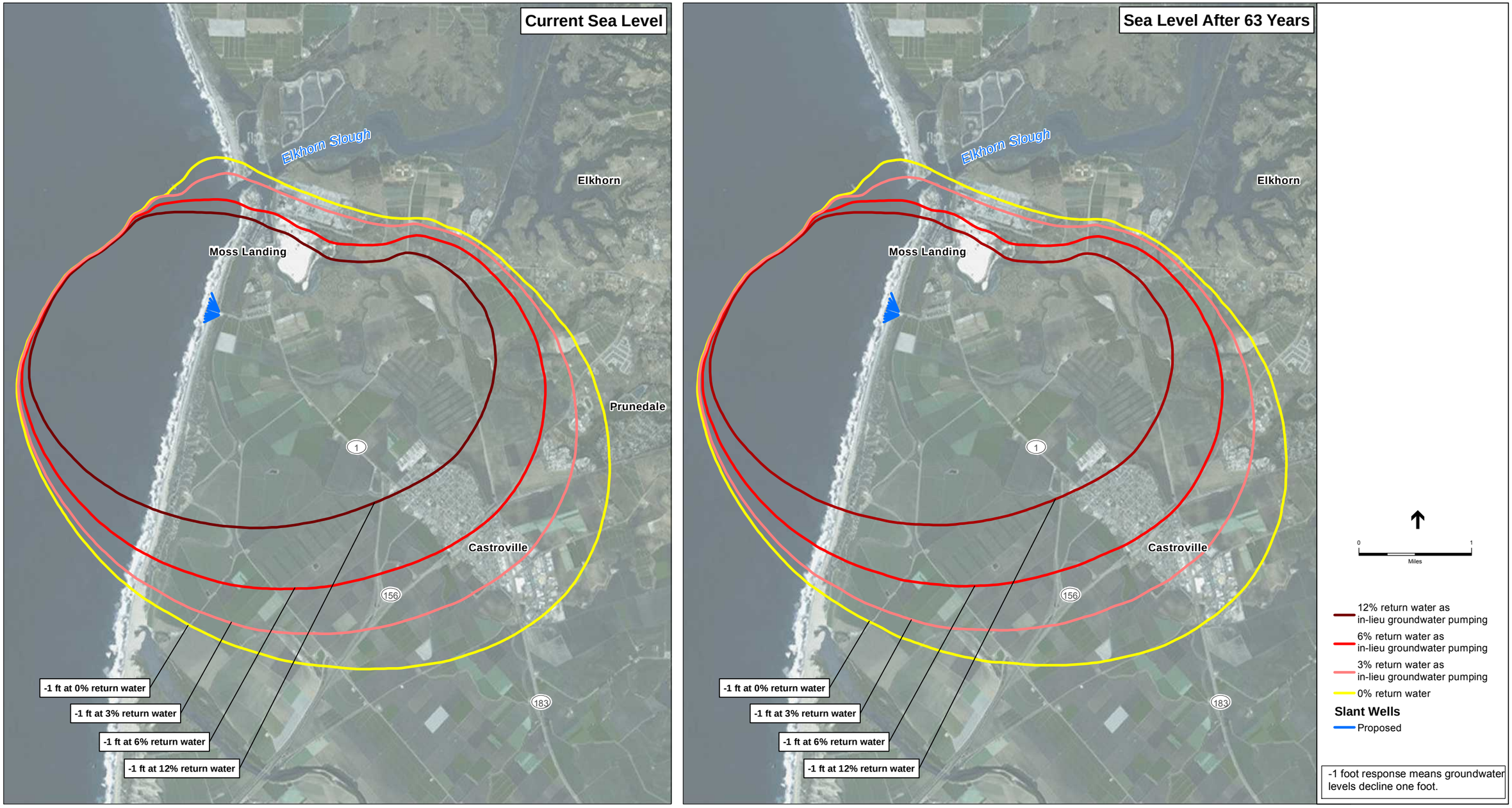


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-2

Potrero Rd Slant Wells: 1-Foot Response in Dune Sand Aquifer under 24.1 MGD Pumping

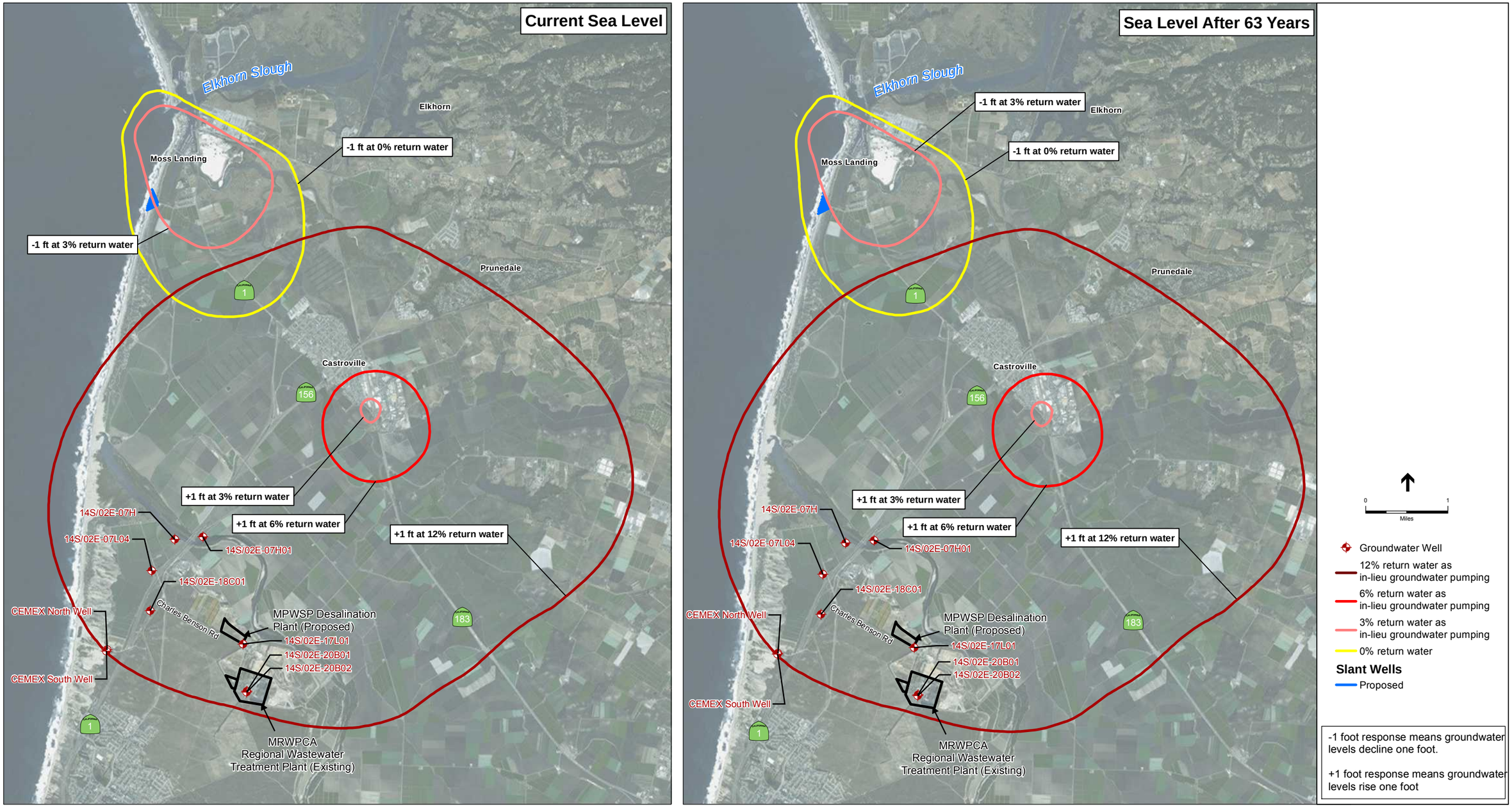


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-3

Potrero Rd Slant Wells: 1-Foot Response in 180-Foot Aquifer under 24.1 MGD Pumping



SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-4

Potrero Rd Slant Wells: 1-Foot Response in 400-Foot Aquifer under 24.1 MGD Pumping

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Analysis and Conclusion of Operational Impacts

Pumping of slant wells at Potrero Road under Alternative 1 would extract mostly seawater and inland brackish water through its capture zone from an area where groundwater is not extracted for beneficial uses by others. There would be some degree of water level increase in areas of the 400-Foot Aquifer as a result of the Salinas Valley return water. No groundwater supply wells are currently pumping within the area of influence of the affected aquifers; therefore, Alternative 1 would have a reduced potential for impact on supply at nearby wells compared to the proposed project. However, like the proposed project, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant. However, like the proposed project, **Applicant Proposed Measure 4.4-3** (**Groundwater Monitoring and Avoidance of Well Damage**) would be implemented under Alternative 1, in recognition of the need to provide continued verification that project pumping from Alternative 1 would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB.

Water Quality

Similar to the proposed project, Alternative 1 would gradually and locally replace highly brackish groundwater with seawater as project pumping continues. However, this degradation would not violate water quality standards or interrupt or eliminate groundwater supply for other users. Groundwater modeling results show that Alternative 1 slant well pumping would hold back inland migration of the seawater intrusion front similar to the proposed project. However, because the boundary of the capture zone and cone of depression from the slant well pumping at Potrero Road would extend farther north than the proposed project, it would have a greater positive influence on the northern half of the seawater intrusion front compared to the proposed project because it would cover a larger area.

Unlike the proposed project, Alternative 1 groundwater extraction would occur too far north to interfere with groundwater remediation systems currently operating at the former Fort Ord Army base. Therefore, the Alternative 1 intake system would not interfere with active remediation systems or contaminant plumes, the impact would be decreased compared to the proposed project and **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**) would not have to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality.

In summary, project pumping at Potrero Road, like the proposed project at CEMEX, would cause the brackish groundwater within the capture zone to become more saline, but not in violation of water quality standards; it would hold back seawater intrusion similar to the proposed project but would have a greater positive effect on the northern portion of the intrusion front; and it would eliminate the potential interference with existing contaminant plumes and remediation systems at the former Fort Ord military base as a result of slant well operation, eliminating the need for mitigation. Therefore, Alternative 1 would result in a ***reduced impact conclusion*** on groundwater quality compared to the proposed project, less than significant.

Cumulative Analysis

The geographic scope of the cumulative groundwater analysis for Alternative 1 impacts on groundwater supply and quality is the Perched-A Aquifer and coastal area supporting future groundwater and seawater extraction in the Moss Landing/Elkhorn Slough Area. As stated above, Alternative 1 would draw water from the Monterey Bay through the coastal sediment of the Perched-A Aquifer, resulting in a less-than-significant impact on the supply and quality of the water in this aquifer. However, no projects in **Table 4.1-2** in Section 4.1 are located in the same geographic area and have the potential to affect groundwater resources in the Perched-A Aquifer; thus, there would be no potential for cumulative impacts on this resource. Similarly, there are no known present or reasonably foreseeable future cumulative projects in the Santa Margarita Sandstone of the SGB; therefore, there would be no potential cumulative impacts on the SGB. Alternative 1 would have a ***reduced impact conclusion*** for cumulative impacts compared to the proposed project, no impact.

5.5.4.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located on the seafloor in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water extracted by slant wells that originated in the SVGB, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the groundwater resources impact analysis of Alternative 2 focuses primarily on the intake system and the source water pipeline; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Construction of Alternative 2 would use the same water supply sources as the proposed project (see Section 4.4, Groundwater Resources) for drilling the intake pipeline between the offshore intake structure and the new intake pump station on Dolan Road (as well as new two ASR wells). Alternative 2 would include 6.5 miles of additional source water pipeline, and therefore, would use more water during construction for dust suppression than the proposed project. Water would be delivered by truck and would not be extracted from local groundwater sources. Because none of the water used during construction would be drawn from the groundwater basin, Alternative 2 would result in the ***same impact conclusion*** as the proposed project on groundwater supply during construction; no impact.

The construction of the ASR injection/extraction wells would use the same techniques as the proposed project and would not result in groundwater quality degradation. The slant wells would not be drilled, but Alternative 2 would include a new subsurface intake pipeline and an additional 6.5 miles of source water pipeline which would increase the potential for impacts on groundwater quality compared to the proposed project. While pipeline trenches may encounter shallow groundwater, the construction operation of laying a pipeline and backfilling the trench would not release contaminants into the shallow groundwater zone. Therefore, impacts associated with discharges to groundwater and impacts on groundwater quality during construction of Alternative 2 would result in the ***same impact conclusion*** on groundwater quality compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

Alternative 2 would include a screened open water intake, would not extract source water from groundwater aquifers, and would not include in-lieu recharge of the 400-Foot aquifer because Salinas Valley return water would not be required; the open water intake would not deplete groundwater supplies or interfere with groundwater recharge. Operation of Alternative 2 would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project. The ASR Wells, however, would be operated the same as the proposed project to prevent mounding and over-extraction. Therefore, Alternative 2 would result in the ***same impact conclusion*** on groundwater supplies compared to the proposed project, less than significant. **Applicant Proposed Measure 4.4-3** would not be relevant and therefore would not be implemented.

Operation of the screened open water intake would not adversely affect groundwater quality. In fact, unlike the proposed project and Alternative 1, the Alternative 2 screened open water intake would not capture seawater from the seawater-intruded aquifers that would otherwise migrate inland, and Alternative 2 therefore would not temper the continued inland migration of the seawater intrusion front. Unlike the proposed project, the Alternative 2 intake system would not affect the remediation of the contaminated plumes because it would not affect groundwater levels in the SVGB, and **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**) would not need to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality. Therefore, the operation of Alternative 2 would result in a ***reduced impact conclusion*** with respect to groundwater quality compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 2 would not require the construction of subsurface slants wells for the intake system and would extract water directly from an open-water intake, it would have no impact within the SVGB, and could not contribute to a cumulative effect on groundwater supply or quality within the SVGB. There are no known present or reasonably foreseeable future cumulative projects in the Santa Margarita Sandstone of the SGB; therefore, a cumulative analysis is not relevant to the components of Alternative 2 affecting the SGB. Alternative 2 would have a ***reduced impact conclusion*** for cumulative impacts compared to the proposed project, no impact/not relevant.

5.5.4.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR facilities, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water extracted by slant wells that originated in the SVGB, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**).

Construction Impacts

Construction of Alternative 3 would use the same water supply sources as the proposed project (see Section 4.4, Groundwater Resources) for installing the intake and brine discharge pipelines between the offshore intake and brine discharge structures and the new pump station on Dolan Road (as well as the ASR-5 and -6 wells). Alternative 3 would include 31.5 miles of additional pipelines, and therefore, would use more water during construction for dust suppression than the proposed project. However, like the proposed project, water would be delivered by truck and would not be extracted from local groundwater sources. Because none of the water used during construction would be drawn directly from the groundwater basin, Alternative 3 would result in the ***same impact conclusion*** as the proposed project on groundwater supply during construction; no impact.

The construction of the ASR injection/extraction wells would use the same techniques as the proposed project and would not result in groundwater quality degradation. No slant wells would be drilled, but Alternative 3 would include new subsurface intake and discharge pipelines and an additional 31.5 miles of pipeline which would increase the potential for impacts on groundwater quality during construction compared to the proposed project. While pipeline trenches may encounter shallow groundwater, the construction operation of laying a pipeline and backfilling the trench would not release contaminants into the shallow groundwater zone. Therefore, impacts associated with discharges to groundwater and impacts on groundwater quality during construction of Alternative 3 would result in the ***same impact conclusion*** on groundwater quality as the proposed project, less than significant.

Operational and Facility Siting Impacts

Alternative 3 would include a screened open water intake, and thus would not extract source water from groundwater aquifers and would not include in-lieu recharge of the 400-Foot aquifer because Salinas Valley return water would not be required; the open water intake would not deplete groundwater supplies or interfere with groundwater recharge. Operation of Alternative 3 would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project. The ASR Wells, however, would be operated the same as the proposed project to prevent mounding and over-extraction. Therefore, Alternative 3 would result in the ***same impact conclusion*** on groundwater supplies compared to the proposed project, less than significant. **Applicant Proposed Measure 4.4-3** would not be relevant and therefore would not be implemented.

Operation of the screened open water intake would not adversely affect groundwater quality. In fact, unlike the proposed project and Alternative 1, the Alternative 3 screened open water intake would not capture seawater from the seawater-intruded aquifers that would otherwise migrate inland, and Alternative 3 therefore would not temper the continued inland migration of the seawater intrusion front. Unlike the proposed project, Alternative 3 would not affect the remediation of the contaminated plumes because it would not affect groundwater levels in the SVGB, and **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**) would not need to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality. Therefore, the operation of Alternative 3 would result in a ***reduced impact conclusion*** with respect to groundwater water quality compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 3 would not require the construction of subsurface slant wells for the intake system and would extract water directly from an open-water intake, it would have no impact within the SVGB, and could not contribute to a cumulative effect on groundwater supply or quality within the SVGB. There are no known present or reasonably foreseeable future cumulative projects in the Santa Margarita Sandstone of the SGB; therefore, a cumulative analysis is not relevant to the components of Alternative 3 affecting the SGB. Alternative 3 would have a ***reduced impact conclusion*** for cumulative impacts compared to the proposed project, no impact/not relevant.

5.5.4.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because the open water

intake would eliminate the need for returning source water extracted by slant wells that originated in the SVGB, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**).

Construction Impacts

Construction of Alternative 4 would use the same water supply sources as the proposed project (see Section 4.4, Groundwater Resources) for installing the intake and brine discharge pipelines between the offshore intake and brine discharge structures and the existing caisson at the end of Sandholdt Road, and between the existing caisson and the desalination plant (as well the ASR-5 and -6 wells). Alternative 3 would include 6.5 miles of additional pipeline, and therefore, would use more water during construction for dust suppression than the proposed project. However, like the proposed project, water would be delivered by truck and would not be extracted from local groundwater sources. Because none of the water used during construction would be drawn directly from the groundwater basin, Alternative 4 would result in the ***same impact conclusion*** as the proposed project on groundwater supply during construction; no impact.

The construction of the ASR injection/extraction wells would use the same techniques as the proposed project and would not result in groundwater quality degradation. No slant wells would be drilled, but Alternative 4 would include rehabilitated as well as new intake and discharge pipelines and an additional 6.5 miles of pipeline which would increase the potential for impacts on groundwater quality compared to the proposed project. While pipeline trenches may encounter shallow groundwater, the construction operation of laying a pipeline and backfilling the trench would not release contaminants into the shallow groundwater zone. Therefore, impacts associated with discharges to groundwater and impacts on groundwater quality during construction of Alternative 4 would result in the ***same impact conclusion*** on groundwater quality as the proposed project, less than significant.

Operational and Facility Siting Impacts

Alternative 4 would include a screened open water intake, and thus would not extract source water from groundwater aquifers and would not include in-lieu recharge of the 400-Foot aquifer because Salinas Valley return water would not be required; the open water intake would not deplete groundwater supplies or interfere with groundwater recharge. Operation of Alternative 4 would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project. The ASR Wells, however, would be operated the same as the proposed project to prevent mounding and over-extraction. Therefore, Alternative 4 would result in the ***same impact conclusion*** on groundwater supplies compared to the proposed project, less than significant. **Applicant Proposed Measure 4.4-3** would not be relevant and therefore would not be implemented.

Operation of the screened open water intake would not adversely affect groundwater quality. In fact, unlike the proposed project and Alternative 1, the Alternative 4 screened open water intake would not capture seawater from the seawater-intruded aquifers that would otherwise migrate

inland, and Alternative 4 therefore would not temper the continued inland migration of the seawater intrusion front. Unlike the proposed project, Alternative 4 would not affect the remediation of the contaminated plumes because it would not affect groundwater levels in the SVGB, and **Mitigation Measure 4.4-4** (**Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes**) would not need to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality. Therefore, the operation of Alternative 4 would result in a ***reduced impact conclusion*** with respect to groundwater water quality compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 4 would not require the construction of subsurface slant wells for the intake system and would extract water directly from an open-water intake, it would have no impact within the SVGB, and could not contribute to a cumulative effect on groundwater supply or quality within the SVGB. There are no known present or reasonably foreseeable future cumulative projects in the Santa Margarita Sandstone of the SGB; therefore, a cumulative analysis is not relevant to the components of Alternative 4 affecting the SGB. Alternative 4 would have a ***reduced impact conclusion*** for cumulative impacts compared to the proposed project, no impact/not relevant.

5.5.4.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Construction of Alternatives 5a and 5b would use the same water supply sources as the proposed project (see Section 4.4, Groundwater Resources) and Alternative 1 for drilling the slant wells and for dust suppression; water would be delivered by truck and would not be extracted from local groundwater sources. Alternatives 5a and 5b would have fewer new wells than the proposed project or Alternative 1, and Alternative 5b would have 5.5 miles of additional source water pipeline and would use more water during construction than Alternative 5a or the proposed project. However, because none of the water used during construction would be drawn from the groundwater basin, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project on groundwater supply during construction; no impact.

Similar to the proposed project and Alternative 1, slant wells would be drilled using a dual rotary drill rig that would use re-circulated drilling fluids through the first approximately 100 feet of dry dune sands. The remaining length of borehole would be drilled using water present in the sands and added potable water to circulate the drill cuttings if necessary. If potable water were added,

drill cuttings would be removed after use, and the water would be clarified and percolated into the sands through the diffuser in the parking lot; the quality of that water would be better than the underlying brackish water, and therefore, would not result in groundwater degradation.

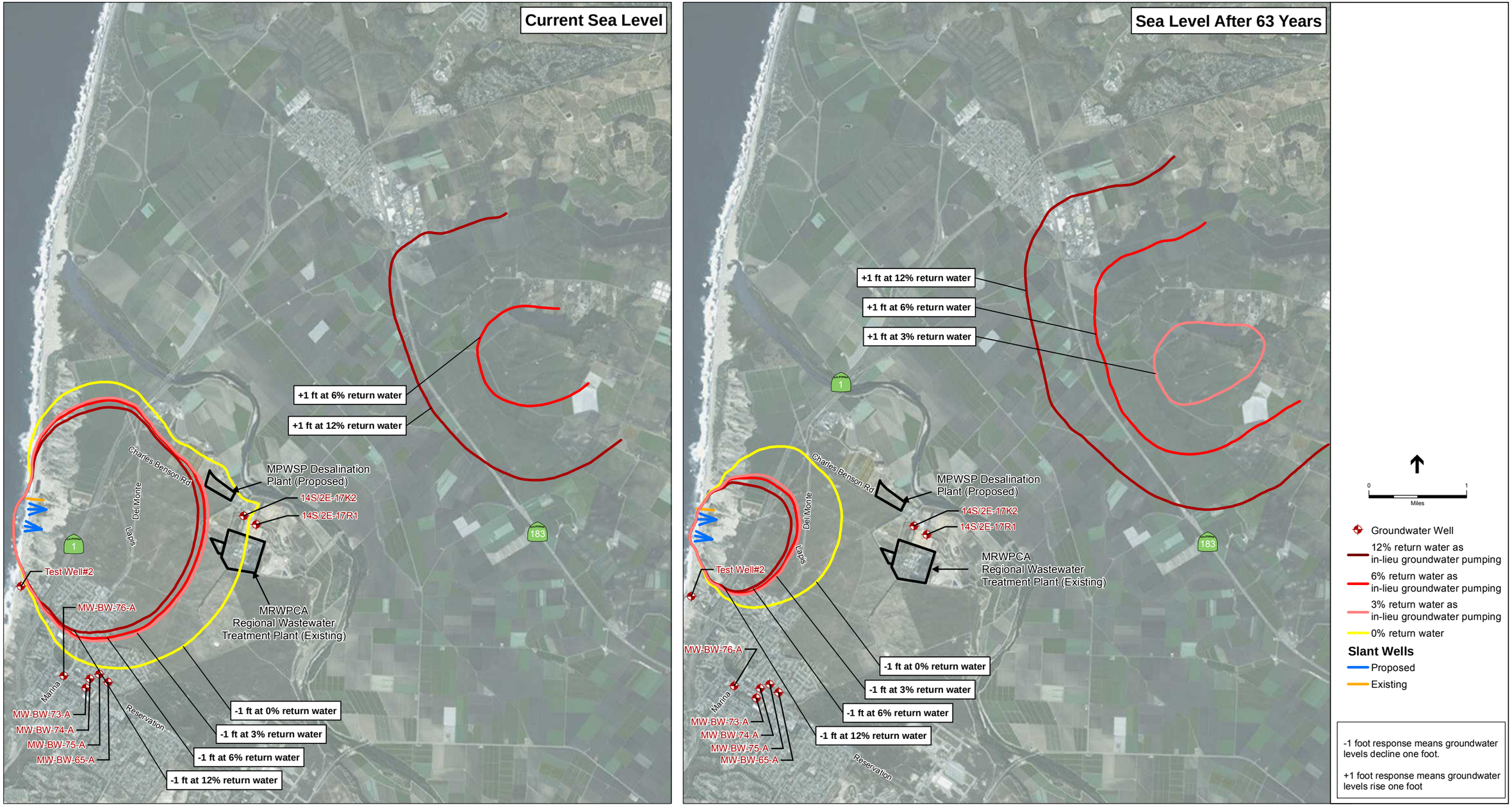
Construction of Alternatives 5a and 5b would use the same construction techniques as the proposed project, but would include 6 new slant wells at CEMEX (compared to 9 new wells for the proposed project) or 7 new slant wells drilled in the Potrero Road parking lot inland of the dunes (compared to 10 new wells for Alternative 1), as well as an additional 5.5 miles of source water pipeline for Alternative 5b. Because the water used for slant well drilling would be re-circulated and then clarified and discharged into the beach or parking lot, Alternatives 5a and 5b would result in the ***same impact conclusion*** on groundwater quality as the proposed project, less than significant.

Operational and Facility Siting Impacts

Like the proposed project, the operation of Alternative 5a (reduced wells at CEMEX) would create a modeled aquifer response in the Dune Sand Aquifer, 180-FTE Aquifer and 400-Foot Aquifer as shown in **Figures 5.5-5** through **5.5-7**. The size of the capture zone and cone of depression created by Alternative 5a would be similar to or less pronounced than the modeled response (depending on the aquifer) for the proposed project, and similar to the proposed project, no existing active wells would be affected.

The capture zone and the cone of depression resulting from slant well pumping at Potrero Road in Alternative 5b (**Figures 5.5-8** through **5.5-10**), would be similar to or less pronounced than Alternative 1 and no existing wells would be affected. However, as a result of the surface water/groundwater interface, Alternative 5b pumping at Potrero Road, like Alternative 1, would result in loss of water at Elkhorn Slough (see also the potential implications of this effect, in Section 5.5.3, Surface Water Hydrology and Water Quality, and Section 5.5.5, Marine Biological Resources), the impacts of which cannot be quantified because of the location at the boundary of the model domain. However, Alternatives 5a and 5b would not affect neighboring well levels and would result in the ***same impact conclusion*** on groundwater supply compared to the proposed project, less than significant. CalAm would still implement **Applicant Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage)** in recognition of the need to provide continued verification that project pumping from Alternatives 5a and 5b would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB.

Like the proposed project and Alternative 1, reduced project pumping at CEMEX (Alternative 5a) at Potrero Road (Alternative 5b), would, over time, draw seawater into the capture zone causing the brackish groundwater to increase in salinity. Alternatives 5a and 5b would have less of an effect on seawater intrusion than the proposed project and Alternative 5b would have a greater positive effect on the northern portion of the intrusion front than Alternative 5a. Alternative 5b would eliminate the proposed project's potential interference with existing contaminant plumes and remediation systems at the former Fort Ord military base. Therefore, Alternative 5a would result in the ***same impact conclusion*** on groundwater quality compared to the proposed project, less than significant with mitigation. By contrast, Alternative 5b would have a ***reduced impact conclusion*** on groundwater quality compared to the proposed project, less than significant.



SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-5

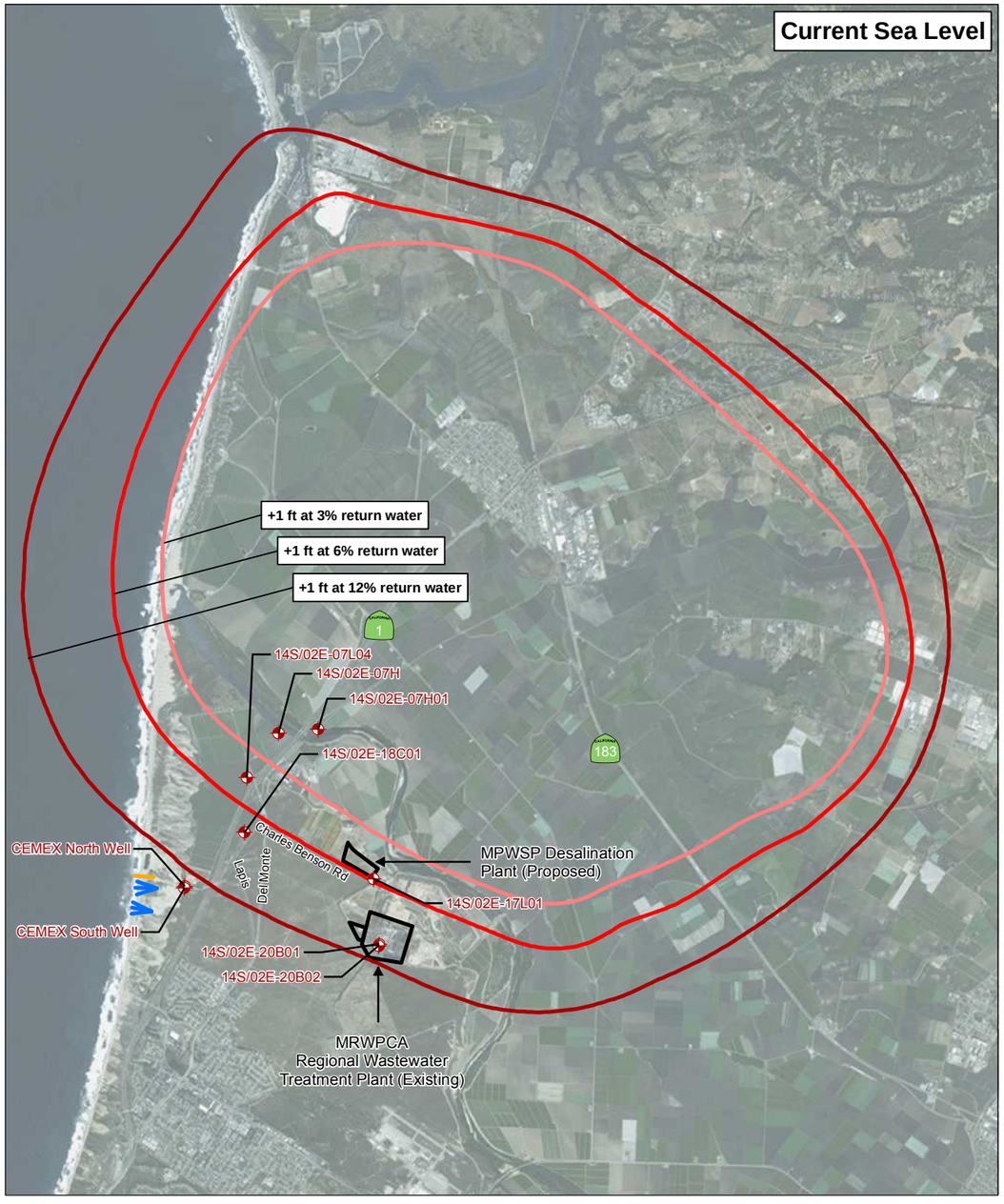
Alternative 5a Site: 1-Foot Response in Dune Sand Aquifer under 15.5 MGD Pumping

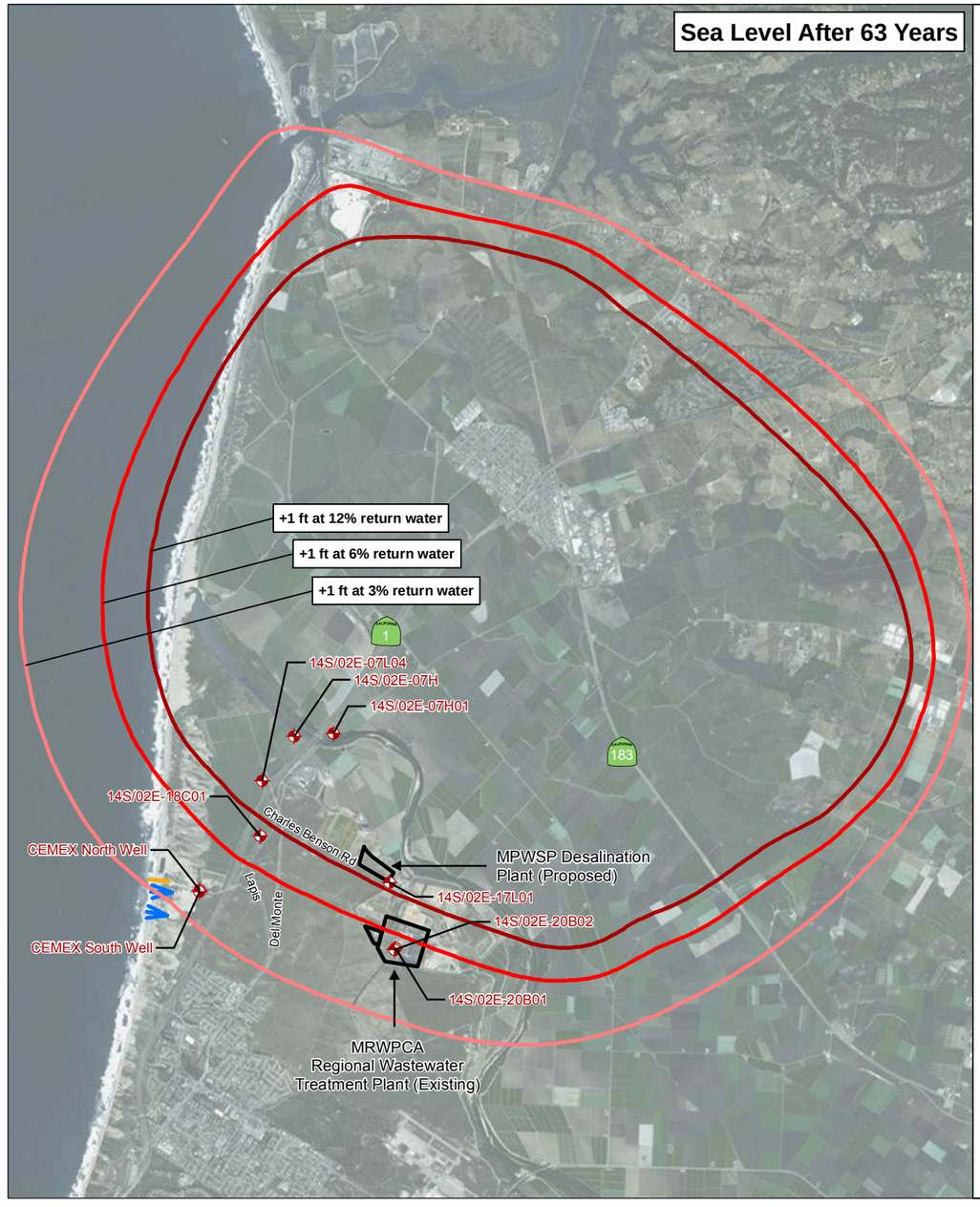
SOURCE:HydroFocus, 2016

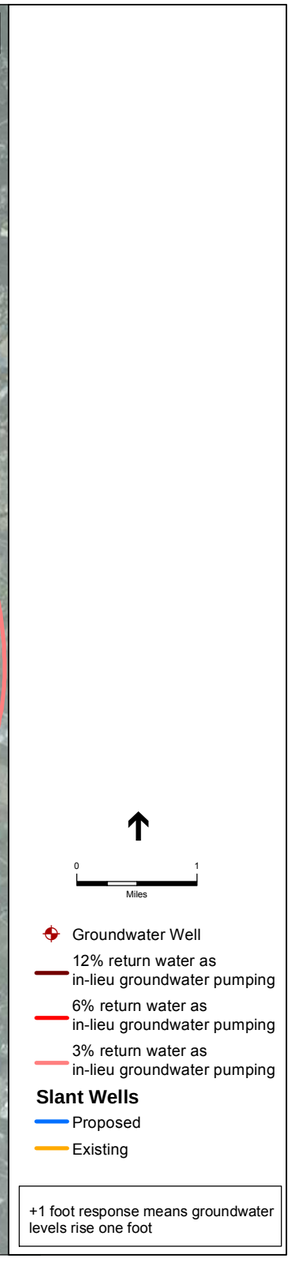
205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-6

Alternative 5a Site: 1-Foot Response in 180-Foot Aquifer under 15.5 MGD Pumping





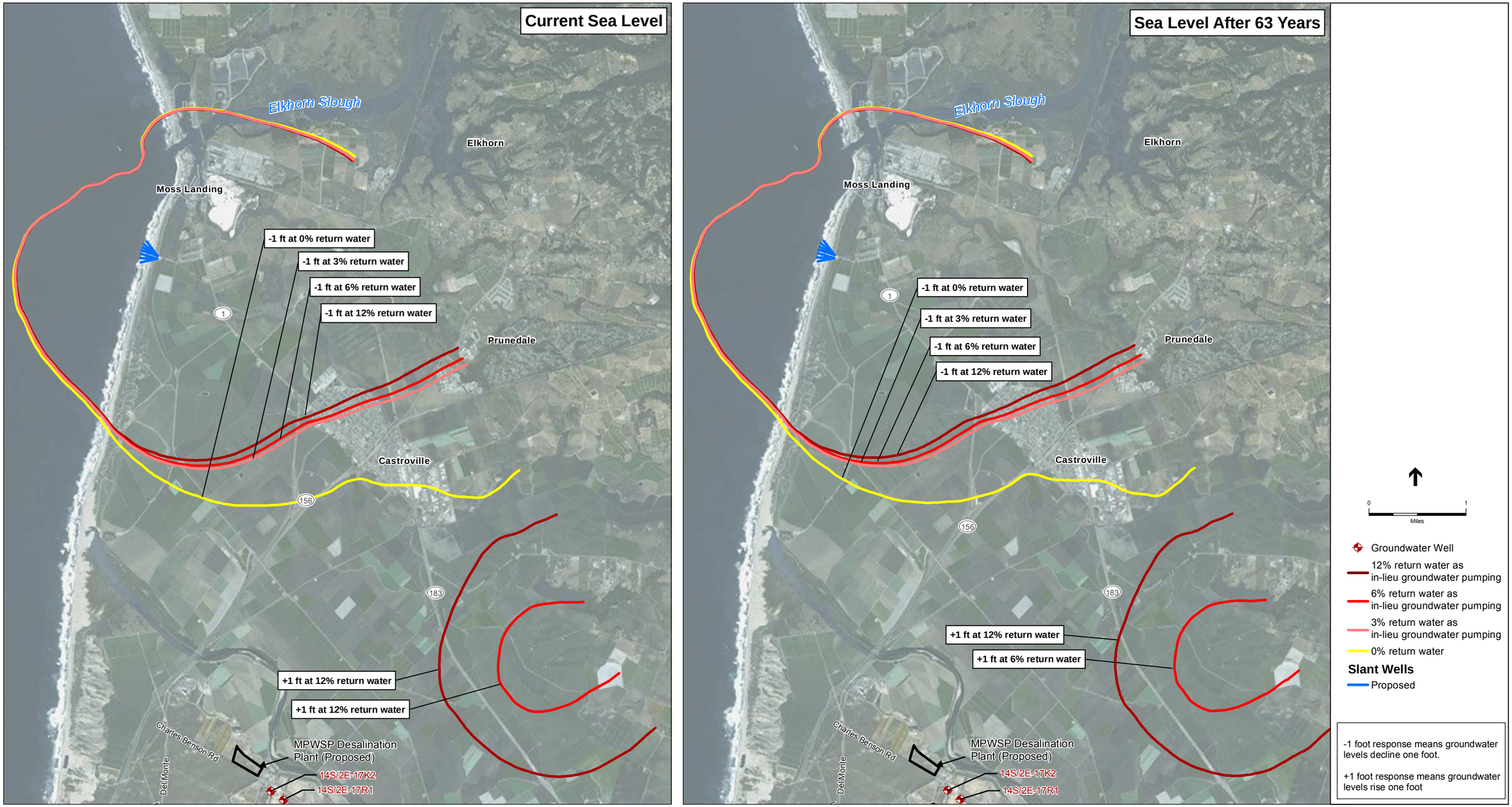


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-7

Alternative 5a Site: 1-Foot Response in 400-Foot Aquifer under 15.5 MGD Pumping

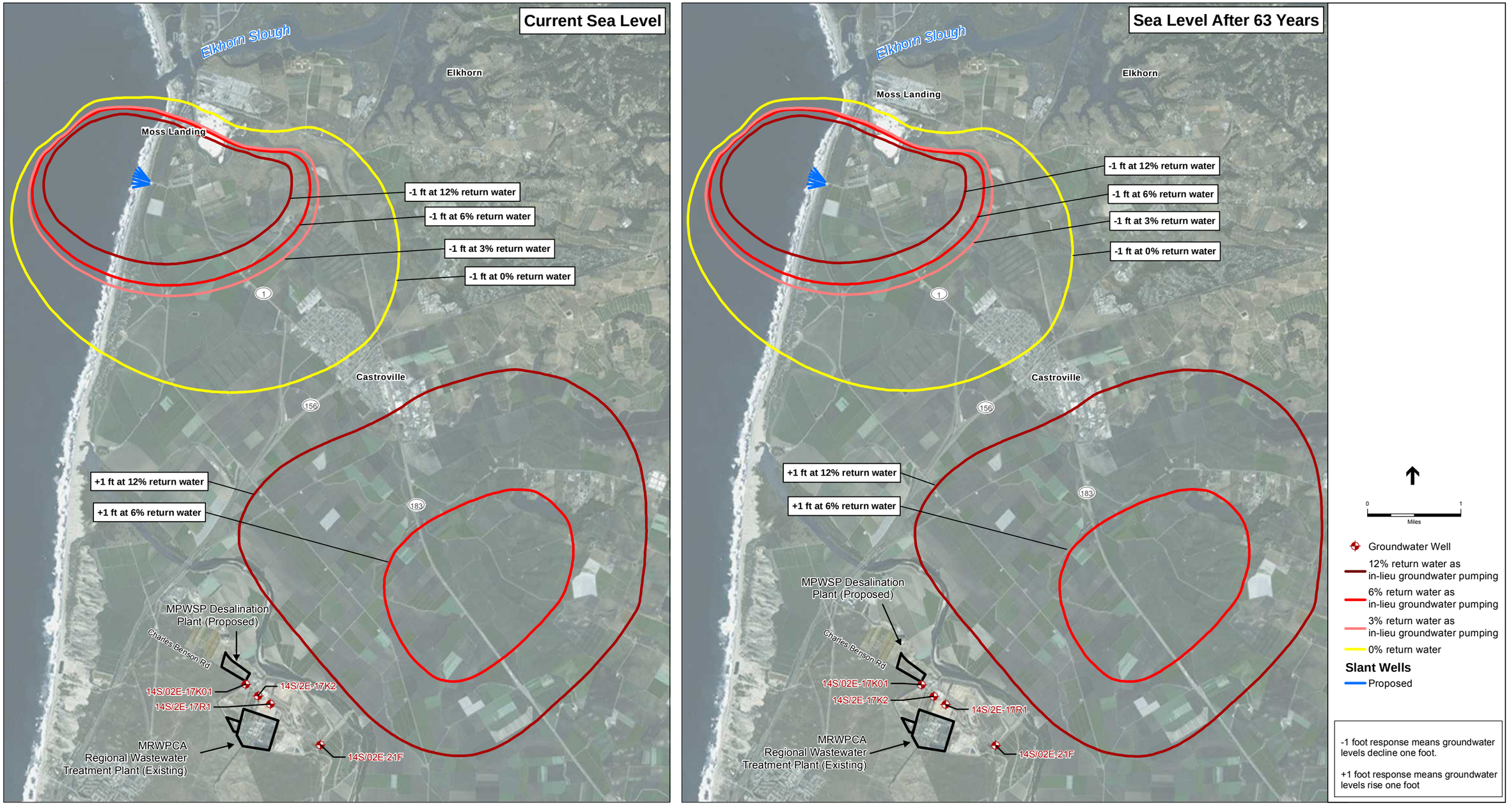


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-8

Alternative 5b Slant Wells: 1-Foot Response in Dune Sand Aquifer under 15.5 MGD Pumping

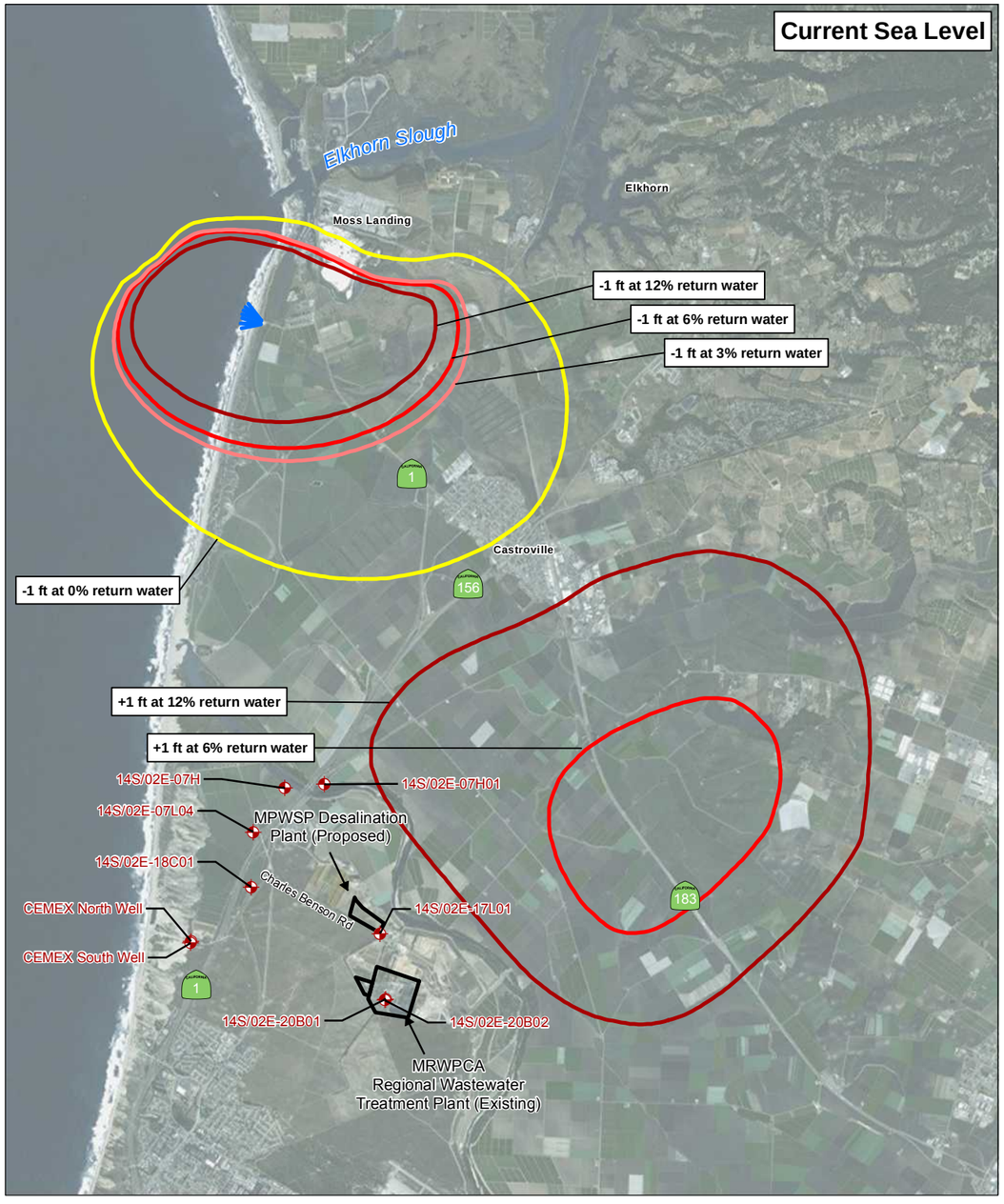


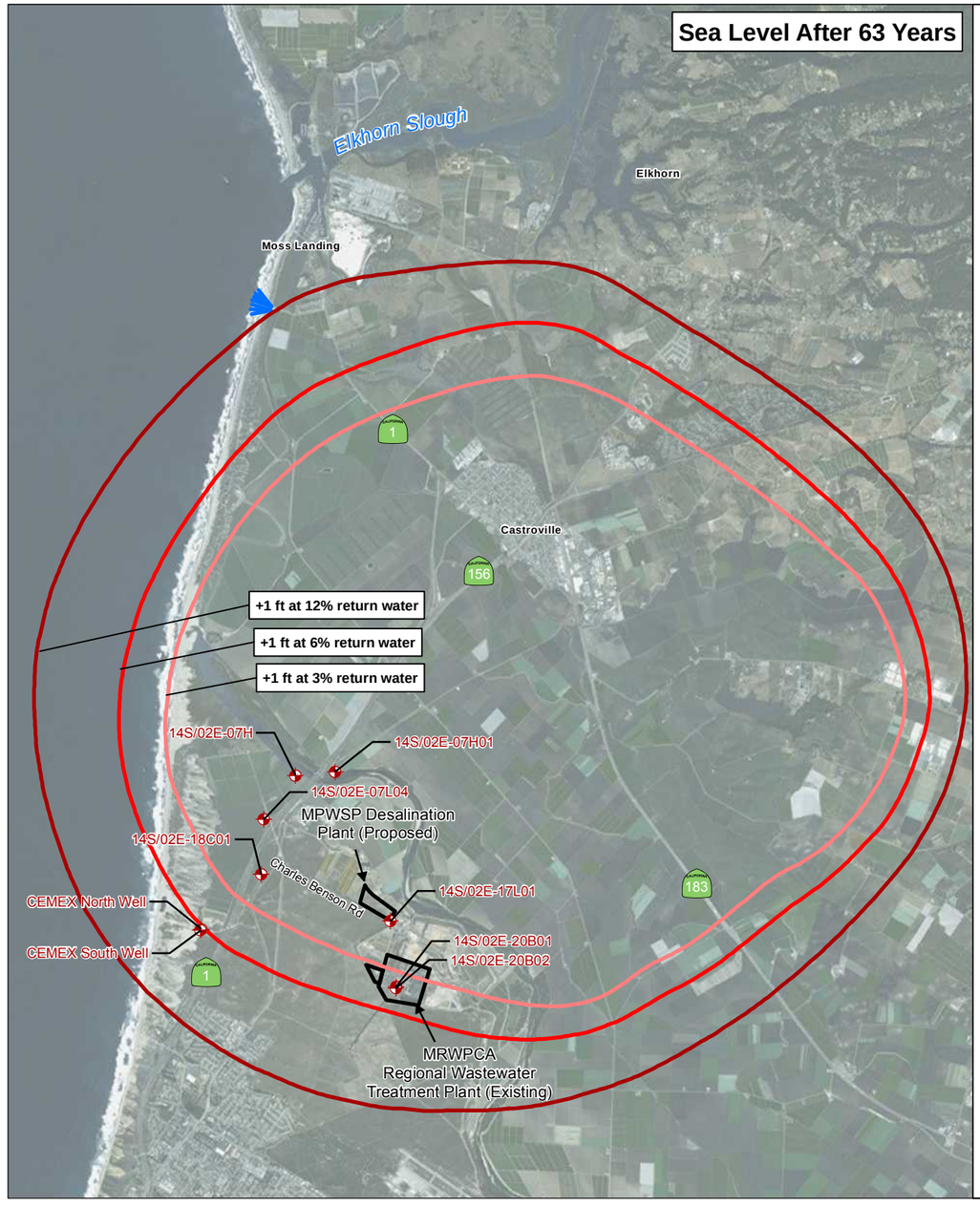
SOURCE:HydroFocus, 2016

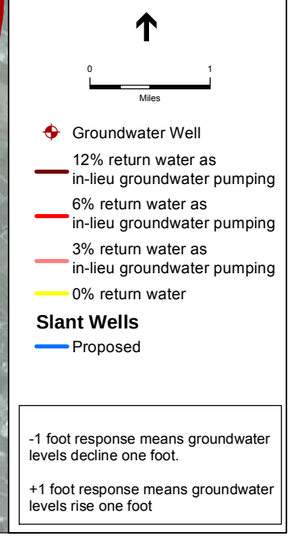
205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-9

Alternative 5b Slant Wells: 1-Foot Response in 180-Foot Aquifer under 15.5 MGD Pumping







SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 5.5-10

Alternative 5b Slant Wells: 1-Foot Response in 400-Foot Aquifer under 15.5 MGD Pumping

Cumulative Analysis

Combined Impacts with GWR Project

With the implementation of the GWR Project, groundwater levels in the 400-Foot Aquifer would rise because of the additional irrigation water provided to the CSIP area, resulting in a less-than-significant impact that is improved compared to Alternative 5 alone and to the proposed project. All other groundwater impacts would be the same in this combined scenario as under Alternative 5 alone.

Impacts of Full Cumulative Scenario

No additional projects would be relevant to the cumulative scenario compared to those addressed in Section 4.4.6 (for the proposed project, relevant to Alternative 5a) and Section 5.5.4.4 (for Alternative 1, relevant to Alternative 5b). In summary, Alternative 5a would result in improved groundwater levels compared to the proposed project because of the improved cumulative effects resulting from the contribution of the GWR Project, and thus would result in the ***same impact conclusion*** as the proposed project for cumulative impacts on groundwater resources, less than significant.

Although Alternative 5b would result in the same type of groundwater impacts as Alternative 5a, Alternative 5b would affect groundwater in the Perched-A Aquifer, and because no other projects would affect this resource, a cumulative impact analysis is not relevant to this impact. Thus, Alternative 5b would have a ***reduced impact conclusion*** for cumulative impacts compared to the proposed project, no impact/not relevant.

5.5.4.9 References

Department of Water Resources (DWR), 2004. *California's Groundwater, Bulletin 118, Central Coast Hydrologic Region, Salinas Valley Groundwater Basin, 180/400 Foot Aquifer Subbasin.* February 27, 2004.

Monterey Peninsula Water Management District, 2016. Addendum to the Aquifer Storage and Recovery Project Environmental Impact Report/Environmental Assessment and the Pure Water Monterey/Groundwater Replenishment Project Environmental Impact Report for the Hilby Avenue Pump Station. http://www.mpwmd.net/asd/board/boardpacket/2016/20160620/16/Item-16-Exh-A.pdf.

Monterey Regional Water Pollution Control Agency and Monterey Peninsula Water Management District, 2016. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, Volume IV, Exhibit B. http://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf.

United States Geological Survey (USGS), 2011. *Status and Understanding of Groundwater Quality in the Monterey Bay and Salinas Valley Groundwater Basins, 2005: California GAMA Priority Basin Project,* Scientific Investigations Report 2011-5058, 2011.

5.5.5 Marine Biological Resources

The evaluation criteria for marine biological resources address the effects from construction and operation on: any identified marine species, natural community or habitat, including candidate, sensitive or special status species; sustainability of marine species' community or population; and interference with movement of marine species or effects on nursery sites.

5.5.5.1 Setting/Affected Environment

The marine resources study area for the proposed project encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from the Salinas River southward to the northern limits of Sand City and is described in Section 4.5.1. Several alternatives propose offshore intake and brine discharge facilities located north of the Salinas River, and offshore in Monterey Bay within MBNMS near Moss Landing Harbor and Elkhorn Slough.[8] This portion of the setting/affected environment contains a large amount of open water including ponds, flooded mudflats, Moss Landing Harbor, Old Salinas River Channel, Moro Cojo Slough, Elkhorn Slough, and Bennett Slough.

Moss Landing Harbor serves as the gateway to the Elkhorn Slough National Estuarine Research Reserve, California's second largest marine wetland administered by the National Oceanic and Atmospheric Administration (NOAA) and managed by the California Department of Fish and Wildlife (CDFW). This expansive tidal wetland is an important habitat for terrestrial and marine species. In addition to NOAA and CDFW, the Elkhorn Slough Foundation and other agencies and organizations protect natural resources and manage many conservation areas within this area, including Moss Landing State Beach, Moss Landing Wildlife Area, and Salinas River State Beach.

Aquatic habitats within MBNMS, Moss Landing Harbor, and Elkhorn Slough include tidal salt marsh, rocky intertidal, sand and gravel beaches, tidal sand and mudflats, pelagic habitat, and subtidal benthic (seafloor) habitat.

Aquatic Habitats

Tidal Salt Marsh. Elkhorn Slough's large tract of tidal salt marsh is an important avian stop along the "Pacific Flyway" migration route, and provides habitat for over 135 aquatic bird, 550 marine invertebrate, and 102 fish species. Elkhorn Slough supports more than 20,000 shorebirds annually, including the western snowy plover (*Charadrius alexandrines nivosus*), a federally threatened and state species of special concern.

Rocky Intertidal. Where artificial rocky rubble, steel and concrete bulkheads, and pilings are present throughout the Harbor and slough, the mussel *M. californianus* and *M. Trosulus* can both be found, depending on their proximity to the main channels and tidal flows of ocean water. Green algal beds of *Enteromorpha* and *Ulva*, the red algae *Mastocarpu/Gigartinas* and *Polysiphonia*, striped shore crabs (*Pachgrapsus crassipes*), mud flat crabs (*Hemigrapsus oregonensis*), barnacles (*Chtalamus and Semibalanus cariosus*), limpets (*Acmaea spp.*), turban

[8] Moss Landing Harbor is not within MBNMS. Portions of Elkhorn Slough east of Highway 1 are within MBNMS.

snails (*Tegula funebralis*), and hydroids are also present. In addition, under the rocky rubble in some areas of the Harbor, the tube-building crustacean, *Corophium*, has been observed.

Sand and Gravel Beaches. Various invertebrates live in the sand and in wracks of decaying seaweed and other detritus. These include cirolanid isopods and mole crabs (Oakden and Nybakken, 1977). Polychaete worms, bivalves (i.e., clams, mussels, and scallops) are also regularly present, though typically in lower abundances. In addition, there are numerous shorebird species that use these beaches, such as sanderlings, marbled godwits, and willets that feed at the water's edge, and western snowy plovers and California least terns, both protected species, that nest there. Marine mammals, including California sea lions, harbor seals, and elephant seals, haul-out on isolated beaches and sands spits in Moss Landing's South Harbor. Sand dollars, worms, clams, crabs, and a variety of fish, including surfperch and flatfish, live in the surf zone.

Tidal sand and mud flats. Sheltered and exposed tidal flats support diverse populations of worms dominated by *Notosmastus tenuis* as well as the fat innkeeper worm (*Urechis caupo*); clams including the bentnose clam (*Macoma nasuta* and *M. secta*), gaper clam (*Tresus nuttalli*), Washington clam (*Saxidomus nuttalli*) and littleneck clam (*Prototheca staminea*); and snails (*Tegula spp.*) and provide important foraging area for migrating and resident shorebirds. Exposed tidal flats also support several areas of eelgrass beds (*Zostera marina*) that provide important nursery habitat for juvenile fish, crabs, and shrimp, as well as many other invertebrate species. Sea otters (*Enhydra lutris*) use mudflats within Elkhorn Slough as a pupping ground (Elkhorn Slough Foundation, 2011).

Pelagic Habitat. Monterey Bay, which is within MBNMS, has a high level of phytoplankton primary production due to annual seasonal upwelling, providing the base in a food web including zooplankton, fish, and marine mammals. Fish and marine mammal species occurring in the pelagic environment in this region are largely the same as those described in Section 4.5.1 (Setting/Affected Environment for the proposed project). The close proximity of Monterey Submarine Canyon to the shoreline means that certain fish, sharks, and marine mammals that would normally be found only in deeper offshore waters are frequent inhabitants of the nearshore pelagic environment surrounding Moss Landing. Many organisms found in the nearshore coastal environment use Elkhorn Slough mid-water habitat as nursery or spawning grounds and are therefore, temporary inhabitants (Caffrey et al., 2002). Permanent residents of Elkhorn Slough's pelagic habitat include black surfperch (*Leptocottus armatus*), striped mullet (*Mugil cephalus*), and bay pipefish (*Syngnathus leptorhynchus*). Recent studies of the plankton and larval fish communities inhabiting the coastal waters adjacent to the proposed Deep Water Desal project (Alternative 3) indicate that the plankton community is dominated by calanoid copepods, cyclopod copepods, and euphausiids (AMS, 2016). The larval fish and invertebrate larvae population appears to be dominated by northern anchovy (*Engraulis mordax*), white croaker (*Genyonemus lineatus*), gobies, assorted unidentified larval fish, the bay goby (*Lepidogobius lepidus*), sanddabs (Citharichthys spp.), lanternfishes, the blue rockfish complex (Sebastes), smelts, Pacific Sardines (*Sardinops sagax*), Dungeness crab (*Metacarcinus magister*), assorted cancer crabs, and market squid (*Doryteuthis opalescens*) (Tenera Environmental, 2014). Krill, a major prey item for many cetaceans, also are found in high concentrations along canyon walls and near canyon heads.

Subtidal Benthic (Seafloor) Habitat. The submarine canyon walls are a mixture of soft substrate and rocky outcrops, providing subtidal habitat for a very diverse biota of benthic organisms, such as corals, sea pens, tunicates, sponges, crinoids, and fishes. Species primarily associated with the freshwater areas of Elkhorn Slough include American shad (*Alosa sapidissima*), threadfin shad (*Dorosoma petenense*), mosquitofish (*Gambusia affinis*), prickly sculpin (*Cottus asper*), and threespine stickleback (*Gasterosteus aculeatus*). Few non-native species have been observed but do include the yellowfin goby (*Acanthogobius flavimanus*), mosquitofish, American shad, and striped bass. Within the Elkhorn Slough, the only permanent benthic resident is the Pacific staghorn sculpin (*Leptocottus armatus*). Other species occurring in the subtidal habitat within the slough are largely the same as those described in Section 4.5.1 (Setting/Affected Environment for the proposed project).

Special-Status Marine Species and Marine Natural Communities

The region assessed as part of the alternatives analysis includes USFWS-designated critical habitat areas for tidewater goby (*Eucyclogobius newberryi*), western snowy plover (*Charadrius alexandrinus nivosus*), and steelhead (*Oncorhynchus mykiss*), each of which is described in **Table 4.5-2** in Section 4.5. Specific to the alternative study area, tidewater goby is known to occur in Bennett Slough and Moro Cojo Slough (CNDDB, 2010), both of which are part of Elkhorn Slough. Furthermore, Bennett Slough has been federally designated as a critical habitat recovery unit (MNT-1) for the species (USFWS, 2014). Threats to the recovery of the tidewater Goby include: 1) coastal development projects that result in the loss or alteration of coastal wetland habitat; 2) water diversions, alterations of water flow, and groundwater overdraft upstream of coastal lagoons and estuaries that negatively impact the species' breeding and foraging activities; 3) channelization of habitats, and; 4) nonpoint- and point-source pollution or discharge of agricultural and sewage effluents that are likely to impact the species' health or breeding and foraging activities.

Of the three listed salmonid species that occur in the waters of Monterey Bay (Coho salmon, Chinook salmon, and steelhead), only the Chinook salmon are known to occur within Elkhorn Slough. Chinook salmon of unknown origin have been recorded occasionally occurring in Elkhorn Slough (Yoklavich et al., 2002; Tenera Environmental, 2007), although no known critical habitat or access to spawning grounds is known to be present.

Elkhorn Slough, as well as protected habitat areas (e.g., Salinas River State Beach, Moss Landing State Beach, Moss Landing Wildlife Area, conservation lands managed by the Elkhorn Slough Foundation), support numerous special-status species of marine mammals, birds, turtles, and fish. In addition to these species, southern sea otter is a frequent inhabitant within Elkhorn Slough, which is used as both a foraging and a pupping ground. Southern sea otters inhabit open water and haul out on the mudflats in the main slough channel, from Moss Landing Harbor to Hudson Landing, but they are most common in the North Harbor area.

Additional natural communities present in the alternatives study area and not discussed in Section 4.5 include eelgrass and Native Olympia Oysters (*Ostrea lurida*). Eelgrass is a native marine vascular plant that has been afforded special management considerations by CDFW, USFWS, NMFS, and USEPA. Major eelgrass beds exist along the main slough channel east of

Highway 1 and at Seal Bend. In addition to providing refugia for young fish and invertebrates and foraging areas for waterfowl, eelgrass beds stabilize shorelines by dampening wave energy, collecting sediments transported to the shore, and preventing shore erosion. They also improve water quality by collecting and filtering organic matter and suspended sediment. In Elkhorn Slough, eelgrass is threatened by high erosion rates in the main channel; dredging in its historical Moss Landing harbor location; and light limitation caused by turbid water, eutrophication, and high abundance of algae (Elkhorn Slough Foundation, 2016).

Olympia oysters are a sensitive natural community known to provide high biodiversity habitat because they provide physical habitat structure sought by juvenile fish and crustaceans, worms, and foraging fish and birds (NOAA, 2008). They also stabilize sediment, reduce suspended sediment, and improve light penetration, thereby improving the physical conditions that encourage the establishment of submerged aquatic vegetation, such as eelgrass beds. Additionally, a robust population of filter feeders can help modulate plankton blooms (NOAA, 2008). Naturally occurring populations of native oysters within the Elkhorn Slough are extremely rare in most parts of the estuary, including areas where it once thrived. Threats to Olympia oysters include predation from indigenous and non-native marine snails (*Acanthina spirata* and *Urosalpinx cinerea*, respectively), birds, bat rays, and crabs. Limited suitable hard substrate and physical water quality conditions are also important parameters (NOAA, 2008).

5.5.5.2 Direct and Indirect Effects of the Proposed Project (10 slant wells at CEMEX)

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on Charles Benson Road, up to nine new subsurface slant wells at the CEMEX active mining area and conversion of the existing test slant well to a permanent well, and the discharge of brine through the existing wastewater outfall. The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, and about 21 miles of new water conveyance pipelines. No construction or placement of facilities on the seafloor would occur. Accordingly, drilling of the slant wells is the only construction activity that is considered; the operational activities include the pumping of the slant wells and the discharge of brine.

The following paragraphs summarize the direct and indirect effects of the proposed project and some of the impact categories are grouped; for a more detailed analysis and discussion, refer to Section 4.3.5. Overall, the effect of the proposed project on marine biological resource would be less than significant.

Construction Impacts

The subsurface slant wells are the only project components that would involve construction in or near the study area. Since none of the other project facilities would require construction in the study area, construction of the other project facilities would not directly or indirectly affect marine biological resources.

Impact 4.5.1: Have a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH)); or as identified by the CDFW, USFWS, or NMFS during construction.

Impact 4.5.2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction.

Impact 4.5.3: Interfere substantially with the movement of any native resident or migratory fish or marine wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.

Underwater noise associated with drilling during well construction activities, the potential accidental release of drilling fluid, and the possible discharge of clarified[9] groundwater recovered during drilling operations are the only construction activities that could potentially affect marine biological resources and habitats.

Any drilling noise reaching overlying ocean waters would be below background underwater noise levels as a result of attenuation through the seafloor; underwater noise generated during slant well drilling would have no impact during construction.

Because the drilling operation would be set back approximately 900 feet from the mean high water mark (MHW) on the shoreline and the construction contractor would manage drilling fluids and potential discharges of clarified groundwater in accordance with regulatory requirements, the potential for an accidental release of any hazardous drilling fluids into waters of MBNMS, or increased turbidity in Monterey Bay during slant well construction, would be less than significant (see Section 4.3.5.1 for details). Because construction would not directly disturb marine habitat or cause stress, mortality, or behavioral avoidance as a result of construction noise or water quality degradation, the construction of the proposed project would not have a substantial adverse effect on any marine biological resources in MBNMS including special-status species, would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS; the impact would be less than significant. No impacts would occur from the construction of any other proposed facility because none occur within the marine biological resources study area.

Operation Impacts

Potential operational impacts on marine biological resources would be limited to adverse effects associated with operation of the subsurface slant wells and the discharge of brine generated at the proposed MPWSP desalination plant. Because none of the other project facilities would affect marine biological resources, none of the other facilities are discussed.

[9] Clarified Water: Water that has been processed to remove suspended sediments and is therefore “clear” and when discharged to the ocean will not result in increased turbidity.

Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.

Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.

Impact 4.5-6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.

Impacts on marine biological resources during operations could result from impingement of organisms or through the accumulation of fine particulate material on the seafloor during pumping of the slant wells, from elevated salinity or other constituents in the brine, or from shear stress[10] on plankton from discharged brine.

Impingement of plankton, aquatic species eggs, larval fish and other organic matter on the seafloor or a potential deterioration of seafloor sediments and soft substrate benthic habitat from the operation of the slant wells is not likely because the ocean currents at the seafloor and swimming speeds of aquatic species are greater than the low intake velocity. Furthermore, because squid spawning typically occurs on sand and mud seafloor habitats at depths greater than the intertidal zone where slant wells would be located, potential impacts on market squid eggs from slant well pumping would also not likely occur.

The increased salinity in the brine discharge would meet Ocean Plan water quality objectives at the edge of the BMZ (see Section 4.3.5.2 for details) and would not affect marine habitat by reducing dissolved oxygen content (hypoxia). The model-based analyses of water quality constituent concentrations, mixing, and dilution at the outfall diffuser for all operational scenarios concluded constituent concentrations would become elevated to levels greater than 80 percent of the Ocean Plan water quality objectives for ammonia, and cyanide at the edge of the ZID. For an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives (see Section 5.5.3). Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. As discussed in Section 4.3, Surface Water Hydrology and Water Quality, significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measures 4.3-4** and **4.3-5**, which would ensure that monitoring is conducted to confirm that the brine is discharged at concentrations below Ocean Plan water quality objectives and further ensure compliance with the

[10] Shear stress is a strain in the structure of a substance produced by pressure, when its layers are laterally shifted in relation to each other.

monitoring requirements and regulatory standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. In the event that monitoring reveals non-compliance with Ocean Plan water quality objectives, corrective actions would be implemented (through implementation of **Mitigation Measure 4.3-5**) that would ensure operational discharges adhere to regulatory standards that are protective of beneficial uses.

Impacts due to shear stress caused by the brine discharge would be limited to plankton, because motile organisms would be able to avoid turbulence in the immediate vicinity of the brine discharge. The impact on plankton from shear stress would be less than significant because of the small percentage of plankton abundances potentially affected in the context of plankton abundance in the study area. Moreover, the Ocean Plan (OP) Provisions for Desalination Facilities require modeling and estimating of potential mortality due to shear stress entrainment, and require periodic re-evaluation to ensure the operational procedures employed result in acceptable plankton mortality (SWRCB, 2016). Ongoing evaluations and analysis, as required by the OP, will ensure that plankton losses remain less than significant, even if influencing factors related to plankton or the potential for plankton loss (plankton abundance, ocean conditions, etc.) fluctuate in the future, as is typical for such a dynamic environment.

Therefore, the operation of the proposed project would not have a substantial adverse effect on any marine biological resources in MBNMS including special-status species, would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS; the impact would be less than significant. Because there is little risk that benthic infauna and macrofauna populations would decline due to impingement, shear stress, and increased salinity, impacts are not anticipated on fish, marine mammals (such as the Southern sea otter and California gray whale), seabirds, and other species. Transfer of bioaccumulated contaminants from benthic infauna to higher trophic levels also would be limited by the very small area of seafloor potentially affected. Transfer to predators in higher trophic levels would be proportional (e.g., very limited) to the relative consumption of prey from within and outside of the affected seafloor area. Therefore, the indirect impacts on fish, marine mammals, sea birds, and other species are also determined to be less than significant.

Cumulative Impacts

Impact 4.5-C: Cumulative impacts on marine biological resources. (*Less than Significant*)

The geographic scope for the cumulative analysis of impacts on marine biological resources encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from north of Moss Landing Harbor southward to the northern limits of Sand City, including the subtidal and intertidal habitats contained therein, and all marine biological communities.

The proposed MPWSP would use subsurface slant wells in-lieu of an open ocean intake. As a result, there are no anticipated or proposed construction activities within the coastal waters of the MPWSP project area that are expected to result in disturbance or effects on marine biological resources. Because any drilling noise reaching ocean waters overlying the slant wells is expected to be below background underwater noise levels, the lack of noise generated by slant well drilling

could not combine with other sources of underwater noise generated by projects in the cumulative scenario to result in increased noise above ambient levels. The Deepwater Desal project would also involve offshore construction, but the Deepwater Desal intake and discharge facilities would be constructed approximately 6.5 miles to the north, and possibly years later than the MPWSP; therefore, noise would not accumulate with the proposed project's construction noise.

While Deepwater Desal is expected to have a high impingement risk due to its open water intake design, the MPWSP's impingement risk is low and is not likely to incrementally increase the impingement risks caused by Deepwater Desal. Therefore, the MPWSP could not contribute to any cumulative impacts related to the impingement or entrainment of fish or invertebrate species, or the impingement of fine organic matter.

The MPWSP and the DeepWater Desal project would discharge a brine solution with an elevated salinity concentration as well as potentially elevated concentrations of contaminants to the ocean through the existing MRWPCA ocean outfall. The distance between the DeepWater Desal proposed outfall and the existing outfall proposed for use by the MPWSP (i.e., 31,511 feet; 9,605 meters; 5.96 miles) leads to the determination that there is no expectation of the two BMZs reaching each other or intermixing discharge waters. The area within the BMZ for the MPWSP that could exceed 2 ppt is estimated at a total volume of approximately 31 cubic meters (1,100 cubic feet) of pelagic habitat and associated marine taxa, including special status fish, invertebrate, and marine mammal species. Since the DeepWater Desal project proposes to discharge more brine than the MPWSP, its BMZ would be larger than that of the MPWSP. Depending on operating conditions, the DeepWater Desal project could result in approximately 150 to 1,500 cubic meters (5,300 to 53,000 cubic feet) of pelagic habitat exceeding 2 ppt around the diffuser structure. Based on the comparative scale of the volume of pelagic habitat that could exceed 2 ppt salinity as compared to the nearshore pelagic habitat available in Monterey Bay, there would be no significant cumulative impacts in Monterey Bay regardless of other external stressors. Therefore, the cumulative effect of the two projects from increased salinity concentrations in their brine discharges on marine biological resources, including special status fish, invertebrates, and marine mammal species, would be less than significant.

However, the proposed MPWSP discharge could be out of compliance with the Ocean Plan for cyanide and ammonia and, for an additional thirteen constituents, there is not enough information to assess concentrations at the edge of the ZID. The implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** would ensure that brine constituents from the MPWSP, such as cyanide and ammonia, are discharged at concentrations below Ocean Plan requirements and would result in a less than significant contribution to a cumulative impact related to cyanide and ammonia. The constitution of the brine that would be discharged from the DeepWater Desal project is currently unknown but this analysis assumes that, at a minimum, contaminants detected in the ocean water (CCLEAN, 2015) that currently exceed Ocean Plan water quality objectives (PCBs) would in all likelihood also exceed Ocean Plan water quality objectives at the edge of the DeepWater Desal ZID. If there are no operational actions available for dilution of the brine from the DeepWater Desal project, or feasible mitigation actions to reduce potential increased PCB concentrations, and therein reduce the potential impact on pelagic marine biological resources, then the potential impact on marine

biological resources inhabiting pelagic habitat within the ZID of the DeepWater Desal project would be significant and unavoidable.

The DeepWater Desal project would have to implement operational actions that ensure its brine discharges also achieve the Ocean Plan water quality objectives. Since the MPWSP would be using subsurface intakes, the PCBs drawn into the source water through the ocean floor would be less than ambient ocean water and would not exceed Ocean Plan objectives at the edge of the ZID. Thus, the MPWSP would have a less than significant contribution to a cumulative impact related to PCB concentrations.

As discussed in Impact 4.5-4, impacts on marine organisms caused by shear stress from the proposed project would be concentrated on plankton smaller than 1.0 mm and would be less than significant (0.00261 percent of nearshore planktonic organisms killed). At present, only a preliminary assessment of potential shear stress impacts on planktonic organisms has been performed for the DeepWater Desal project. However, the assessment of potential brine discharge effects on planktonic organisms relative to the volume of the MPWSP brine discharge (Impact 4.5-4) can be used as a basis for estimating similar impacts from the DeepWater Desal project. If the MPWSP and DeepWater Desal were both built and operated, DeepWater Desal is estimated to have a brine discharge of approximately 27 mgd, in comparison to the MPWSP's 14 mgd brine discharge. Assuming that the DeepWater Desal diffuser jets would cause no greater shear impact than the diffusers used on the MRWPCA outfall, DeepWater Desal brine discharges are estimated to cause plankton mortality rates of approximately 447 million individuals per day, assuming plankton densities similar to those measured at the MRWPCA outfall (see Table 4.5-1). As a result, the estimated potential cumulative effect of brine discharge shear stress on planktonic organisms less than 1 mm in size would be approximately 3.8 billion planktonic organisms per day or 0.011 percent of the potential nearshore plankton in Monterey Bay, a small fraction of the plankton less than 1 mm in size inhabiting the nearshore waters near the ocean outfalls. Additionally, the Ocean Plan water quality objectives for brine discharges require modeling and estimating of potential mortality due to shear stress entrainment and require periodic re-evaluation to ensure the operational procedures employed result in acceptable plankton mortality (SWRCB, 2016). No significant cumulative impact from brine discharge shear stress would occur as a result of the MPWSP and DeepWater Desal project.

5.5.5.3 Direct and Indirect Effects of the No Project Alternative

Under the No Project Alternative, no desalination facility would be built and operated, no slant wells would be drilled, the test slant well would be decommissioned and no brine would be discharged through the MRWPCA outfall. Therefore, there would be no impacts on marine habitats and taxa as a result of construction activities or operational discharges. There would be beneficial impacts on steelhead under the No Project Alternative while they are present in terrestrial habitat, due to reductions in withdrawals from the Carmel River. For more information, see Section 5.5.6.3. Because the No Project Alternative would have no other direct or indirect impacts with respect to marine biological resources, it could not contribute to cumulative effects.

5.5.5.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road is the only component unique to Alternative 1 (see **Figure 5.4-1**) that could affect marine biological resources; brine would be discharged through the existing outfall just like the proposed project. Therefore, the marine biological resources impact analysis of Alternative 1 focuses primarily on the effects of the intake system; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

The component unique to Alternative 1 that would involve construction in or near the marine resources study area would be the subsurface slant wells at Potrero Road. Just like the proposed project, underwater noise from the drilling operation would be below background underwater noise levels due to attenuation through the seafloor. Slant well drilling activities would occur in the parking lot approximately 600 feet inland from MHW on the back side of the dunes, and the contractor would discharge drilling liquids in accordance with regulatory requirements (see Section 5.5.3 for analysis of construction related water quality impacts). Although the potential impact would be increased from the proposed project because of the additional slant well at Potrero Road, the construction of Alternative 1 would not have a substantial adverse effect on any marine biological resources in MBNMS including special-status species, would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS. Therefore, Alternative 1 would result in the ***same impact conclusions*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

Unlike the proposed project, groundwater modeling (see **Appendix E2**) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in **Figure 5.5-2**. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an ***increased impact conclusion*** on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

As described for the proposed project, impingement of plankton, larval fish and other organic matter on the seafloor from the operation of the slant wells at Potrero Road would not occur because ocean currents at the seafloor are greater than the low intake velocities from the slant wells, the increased salinity and other constituents in the brine discharge (see Section 5.5.3) would not threaten to eliminate a marine plant or animal wildlife community or cause a marine population to drop below self-sustaining levels, and would not interfere with the movement of native resident or migratory fish or marine wildlife species. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

The brine would be discharged at the same location and at the same concentration as the proposed project (see Section 4.5 for details). Therefore, operational discharge impacts on marine biological resources would be the same as the proposed project, less than significant with implementation of **Mitigation Measures 4.3-4** and **4.3-5**.

In summary, the operation of Alternative 1 would have a greater potential impact on marine biological resources compared to the proposed project. While the operation of Alternative 1 would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS, Alternative 1 could cause potentially significant and unavoidable effects on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats in Elkhorn Slough as a result of the groundwater elevation drawdown from project pumping at Potrero Road.

Cumulative Analysis

Cumulative impacts during construction would be the same as those described for the proposed project in Section 4.5.6; the location of the slant wells at Potrero Road and the additional duration associated with construction of one additional slant well would not change the applicable geographic scope of the analysis or the type or intensity of Alternative 1's contributions to cumulative impacts during construction, which would be less than significant.

During operations, the impacts associated with seawater intake and brine discharge would be the same as those described for the proposed project in Section 4.5.6. Although the additional impact of Alternative 1 on surface water flow and volumes in Elkhorn Slough would be significant and unavoidable, as discussed in Section 5.5.4.3 regarding groundwater impacts, no other projects are located in the same geographic area and have the potential to affect groundwater resources in the Perched A Aquifer, which in turn could result in impacts on surface water in Elkhorn Slough. Because no other projects would affect surface water flows and volumes in Elkhorn Slough, a cumulative impact analysis is not relevant to this impact.

5.5.5.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a

subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented.

Therefore, the open water intake system is the unique component of Alternative 2 (see **Figure 5.4-2**) that could affect marine biological resources and this impact analysis focuses primarily on the potential impacts of construction and operation of the intake system; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

The construction of an open-water intake, including the placement of the intake structure on the seafloor and the installation of the intake pipeline at the breakout face where the pipeline emerges from the seafloor, would result in a temporary localized disturbance of seafloor habitat, associated marine infaunal and epifaunal community, and habitat function that could have a temporary effect on some special-status fish species. The construction barges and drilling methods employed in installing the pipeline itself would pose temporary obstructions (anchor chains) to the movement of marine mammals and sea turtles, temporary disturbance and possible loss of soft substrate habitat and habitat function for special-status fish and marine mammal species under temporary barge anchors, and increased underwater noise from the construction activities. These activities could cause altered behavior (altered foraging and swimming patterns) in some special status fish, marine mammals, and sea turtles. The possible use of barges from outside Monterey Bay could pose a risk of introducing non-native invasive species attached to their hulls or in their ballast water which could indirectly affect marine community composition and habitat function in Monterey Bay.

These potential impacts would be considered significant and substantially more severe than construction impacts of the proposed project. **Mitigation Measure ALT 2-Marine-1** would require actions to avoid or minimize construction impacts on marine biological resources. While these measures would reduce construction-related impacts on marine biological resources, residual impacts may remain significant due to the sensitivity of the resources. Therefore, the construction of Alternative 2 could result in an increased impact on marine biological resources including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans during construction and would result in an ***increased impact conclusion*** compared to the proposed project; significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 1**.

While Alternative 2 would have an increased impact on marine biological resources compared to the proposed project because of the in-water construction described above, Alternative 2 would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife

species in MBNMS. For these potential effects, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant. No impacts would occur from the construction of any other proposed facility because none occur within the marine biological resources study area.

Mitigation Measure ALT 2-Marine-1 applies to the Alternatives 2, 3, and 4 (alternatives with open-water intakes) and would not apply to the proposed project or Alternatives 1, 5a, or 5b.

Mitigation Measure ALT 2-Marine-1: Marine Construction Measures.

CalAm and/or its contractors shall implement avoidance and minimization measures including, but not limited to:

1. Limit marine construction activities to periods of the year in which marine mammals and sea turtles are not migrating through the area;
2. Prior to construction, conduct seafloor habitat surveys of potential anchor chain corridors to determine locations of sensitive habitats, such as hard bottom substrate habitat, and avoid siting anchor chain corridors within these sensitive habitats;
3. The hulls of non-local work vessels and barges shall be cleaned prior to commencing work in Monterey Bay;
4. On-board qualified marine mammal observers (as defined by NOAA Fisheries) shall be present during all offshore construction activities with a requirement to cease all work if marine mammals or turtles come within 50 yards from the work vessels, and;
5. Provide environmental training to all marine work crews prior to start of construction to prevent environmental incidents. Training shall include information about how to identify marine biological resources to be avoided during construction, protocols for reporting to marine mammal observers, the importance of avoiding impacts on marine biological resources, and measures to avoid or minimize impacts during construction.

In summary, the construction of Alternative 2 would have a greater potential impact on marine biological resources compared to the proposed project because of the in-water construction activities. While the construction of Alternative 2 would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS, Alternative 2 could result in potentially significant and unavoidable effects on marine species, natural communities or habitat, protected wetlands or waters in Monterey Bay within MBNMS as a result of residual impacts from in-water construction activities.

Operational and Facility Siting Impacts

Alternative 2 would include a screened open water intake within MBNMS that would be anchored to the seafloor and would result in a permanent loss of approximately 3,300 ft^2 of soft substrate benthic habitat, affecting marine species dependent on this habitat and habitat function. This would result in a greater impact compared to the proposed project, which proposes subsurface slant wells and no new structures on the seafloor.

Additionally, the same volume of source water as the proposed project would be provided by a screened open water intake. Consistent with the requirements of the Ocean Plan (SWRCB, 2016), the passive narrow-slot wedgewire screens would have a 1-millimeter (mm) slot size, and the screened intake water velocity would be at or below 0.5 feet per second. Although the screen design and operating intake velocity would be consistent with the requirements of the Ocean Plan, Alternative 2 could still result in an increased long-term impact on pelagic planktonic organisms and community through impingement and entrainment. Direct impingement of larger fish and invertebrate organisms is not expected due to the wedgewire screens and the low flow rate. However, as shown in **Table 4.5-8** in Section 4.5, the swimming speeds of several species of plankton, larval invertebrates, and larval fish are below the 0.5 feet per second intake velocity; therefore, such organisms could be entrained. Operation of Alternative 2 would result in 100 percent mortality of all organisms entrained through the open-water intake. A preliminary baseline characterization of the habitat in the vicinity of the Alternative 2 intake indicates that larval northern anchovy, Pacific sardines, white croaker, sanddab, rockfish, smelt, sculpin, Dungeness crab, cancer crabs, and unidentified larval fish are present and could be entrained (Tenera Environmental, 2014).

The Ocean Plan requires mitigation for loss of marine life or habitat due to the operation of an open ocean intake. Such loss is assessed through the conversion of Empirical Transport Modeling (ETM) results into an estimate of the habitat necessary to replace the production lost due to entrainment, called the Area of Production Foregone (APF). The APF is calculated by multiplying the area of habitat present within the estimated source water that would be drawn into the intake, by the proportional entrainment mortality estimated from ETM, to provide a habitat acreage that may be useful for understanding the extent of compensation required to mitigate impacts from entrainment (SWRCB, 2016). Potential APF for the magnitude of the loss under Alternative 2 was estimated (Luster, 2016) at less than 20 acres and therefore, potential operational impacts would be substantially greater than the proposed project and would be significant, with mitigation required per the Ocean Plan. **Mitigation Measure ALT 2-Marine-2** would be required to minimize and mitigate for impacts on marine biological resources from entrainment. While these measures would minimize impacts on marine biological resources, residual impacts may remain significant due to the uncertainty of the efficacy of the mitigation.

Furthermore, Alternative 2 would use the existing MRWPCA outfall and would generate the same volume of brine discharge, with the same salinity characteristics, as the proposed project (see Section 4.5 for details). Unlike the proposed project however, the open water intake would not pre-filter PCBs through the seafloor and the resultant concentration of PCB in the brine would be greater than the proposed project and Alternative 2 could potentially exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID. As described for the proposed project, because other Ocean Plan-regulated constituent concentrations (ammonia and cyanide) could become elevated under certain discharge scenarios, and because there is not enough information to assess concentrations for an additional thirteen constituents at the edge of the ZID, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. Similar to the Proposed Project (see Section 5.5.3 for water quality analysis related to operational discharges under Alternative 2), Alternative 2 would be subject to the same mitigation as defined for the

proposed project, which requires development and approval of a monitoring and reporting plan, consistent with the requirements of the Ocean Plan and MBNMS guidelines, prior to construction and operation. **Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) would ensure compliance with the monitoring requirements and regulatory salinity standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. The monitoring and reporting plan would set forth appropriate response thresholds as well as corrective actions (defined in **Mitigation Measure 4.3-5**) that would be required if the acquired data indicated deleterious effects on receiving water quality or marine resources from discharges. Implementation of **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)** would reduce the potentially significant impact to a less-than-significant level. Overall, considering loss of benthic habitat, impingement/entrainment, and brine discharge effects, the operation of Alternative 2 would result in a greater impact on marine species, natural community, or habitat, during operations and an ***increased impact conclusion*** compared to the proposed project; impacts would be significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 2, Mitigation Measure 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**), and **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)**.

At present, there are no known marine species in Monterey Bay with population numbers suspected of dropping below self-sustaining levels with the exception of the California sea otter. Although sea otters feed within the study area, sea otter prey would not be reduced and other species would not be expected to be reduced in number because of entrainment of juvenile larvae and plankton. For the past several decades, the Moss Landing Power Plant has been using approximately 1.2 billion gallons per day of ocean water to cool power plant turbines (Tetra Tech, 2008). The entrainment of larval fish and plankton at the Moss Landing Power Plant has not resulted in effects on local marine species such that populations have been substantially affected. Therefore, the potential would be increased compared to the proposed project for the open-water intake to directly or indirectly threaten a marine plant, animal or wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels or interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS but would result in the ***same impact conclusion*** as the proposed project, less than significant.

Mitigation Measure ALT 2-Marine-2 applies to the Alternatives 2, 3, and 4 (alternatives with open-water intakes) and would not apply to the proposed project or Alternatives 1, 5a, or 5b.

> **Mitigation Measure ALT 2-Marine-2: Minimization of and Mitigation for Loss of Marine Life and Habitat.**
>
> To ensure that design and operation of the Alternative 2 open ocean intake complies with the requirements of the California Ocean Plan, CalAm and/or its contractors shall:
>
> 1. In addition to implementing the required design standard of screening the open ocean intake using a screen with a 1.0-millimeter or smaller slot size screen, and the required operational standard of limiting through-screen velocity at the intake to not exceed 0.15 meters per second (0.5 feet per second), implement the best available technology

feasible to minimize intake and mortality of all forms of marine life in the context of design and operation of an open ocean intake. Submit design of the open ocean intake to the RWQCB, CPUC, and MBNMS for review and approval.

2. Prepare a Marine Life Mortality Report to estimate the marine life mortality resulting from construction and operation of the facility after implementation of the facility's required site, design, and technology measures. The report shall use the methods specified in chapter III.M.2.e.(1) of the Ocean Plan, including using the Empirical Transport Model (ETM)/Area of Production Forgone (APF) approach to estimate entrainment impacts. Submit the draft report to RWQCB, CPUC, and MBNMS with the item 1 design submittal, for review and approval.

3. Based on the results of the report prepared in item 2, implement measures to meet the Ocean Plan fully mitigated standard of replacement of all forms of marine life or habitat lost. This can be accomplished in one of the following two ways or as a combination of both:

    a. *Mitigation Project*: Implement a mitigation project satisfying the provisions listed in Ocean Plan chapter III.M.2.e.(3), including preparing and submitting a Mitigation Plan as described in subsection (a) and meeting the requirements of subsection (b). Submit the Mitigation Plan to RWQCB, CPUC, and MBNMS for review and approval.

    b. *Fee-Based Mitigation Program*: If the RWQCB determines that an appropriate fee-based mitigation program has been established by a public agency, and that payment of a fee to the mitigation program will result in the creation and ongoing implementation of a mitigation project that meets the requirements of Ocean Plan chapter III.M.2.e.(3), CalAm may pay a fee to the mitigation program in lieu of completing a mitigation project. If implementation of this option is feasible, CalAm shall adhere to the requirements of chapter III.M.2.e.(4).

    For either of the above options, CalAm shall ensure that the requirements of Ocean Plan chapter III.M.2.e.(5 and 6) are met regarding site inspections of mitigation projects and mitigation project performance reporting.

In addition to physical impacts, Alternative 2 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its open water intake. Guidelines state that "all desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. Project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods."

Cumulative Analysis

The geographic scope for the cumulative analysis of the components of Alternative 2 that differ from the proposed project (i.e., the proposed open water intake) includes Monterey Bay, which is within MBNMS. The only project relevant to the cumulative scenario for Alternative 2 is the DeepWater Desal project (No. 34), described in **Table 4.1-2** in Section 4.1. The proximity of the DeepWater Desal Project to the Monterey Canyon increases the potential risk to different fish and marine mammal species.

Assuming both Alternative 2 and the DeepWater Desal project are implemented, each with their proposed open water intakes, the construction of both Alternative 2 and the DeepWater Desal Project would increase the temporary disturbance to marine soft substrate habitats, and increase disturbances to marine mammal and sea turtle movements from work barge anchors, anchor cables and underwater noise. Additionally, the increased magnitude of the marine construction effort required for DeepWater Desal would increase the risk of introducing non-native invasive species from work barges that originate from outside Monterey Bay. As described above, these impacts can be reduced through implementation of mitigation such as **Mitigation Measure ALT 2-Marine-1**; however, it is assumed that residual impacts may remain significant due to the sensitivity of the resources. Therefore, the cumulative impact from construction of Alternative 2 and the DeepWater Desal Project would be significant and unavoidable and Alternative 2 would have a cumulatively significant contribution to this impact, even with implementation of mitigation.

Alternative 2 and the DeepWater Desal Project would result in the combined permanent loss of approximately 20,000 ft^2 (about 0.5 acre) of benthic habitat. Additionally, the operation of the open-water intake would result in the entrainment of plankton and larval fish, including those of the DeepWater Desal Project (APF of greater than 40 acres), resulting in a cumulative APF estimated at approximately 60 acres (Luster, 2016). However, the existing Moss Landing Power Plant continues to draw 1.2 billion gallons per day for cooling water, which also results in the entrainment of larval fish and plankton. Through a settlement agreement executed on October 9, 2014 between the SWRCB and the current owner of the power plant, the Moss Landing Power Plant must reduce its intake of cooling water to meet an 83.7 percent or greater reduction in mortality from entrainment and impingement impacts beginning with reductions on December 31, 2016 and achieving full compliance by December 31, 2020. The Moss Landing Power Plant owner has indicated its intention to retrofit the power plant's four generating units to reduce entrainment and impingement impacts in compliance with the Once-Through-Cooling (OTC) policy and this would likely occur prior to the operation of any desalination project in Moss Landing. Regardless, the retrofit of the power plant would not offset the adverse cumulative impact attributable to entrainment and impingement at the screened open water intake component of Alternative 2, and these potential losses are considered a significant cumulative impact. As stated above, mitigation such as **Mitigation Measure ALT 2-Marine-2** would be necessary to compensate for the loss of habitat, but the efficacy of the available mitigation options has not been tested. Therefore, Alternative 2 could still result in a cumulatively significant contribution and the cumulative impacts would be significant and unavoidable.

Because the open water intake would not pre-filter the PCBs through the seafloor, the PCB levels in the brine discharge could result in exceedances of Ocean Plan water quality objectives. For the same reasons described for exceedances of salinity objectives in Section 4.5.6, this would result in a cumulatively significant impact related to PCB concentrations. However, implementation of **Mitigation Measure 4.3-5** would reduce the concentration of PCBs in brine discharge to a level that meets Ocean Plan water quality objectives and is therefore less than significant with mitigation.

5.5.5.6 Direct and Indirect Effects of Project Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting a pump station on Dolan Road to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The construction and operation of the screened open water intake, the brine discharge facility and the HDD construction of the intake and brine discharge pipelines are the unique components of Alternative 3 that could affect marine biological resources.

In addition to the desalination plant and co-located data center, Alternative 3 would include 6.5 miles of additional desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey desalinated water to other areas (total of 31.5 miles of additional pipeline).

Several components of Alternative 3 would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project, but these components would not affect marine biological resources and are not discussed. Therefore, the marine biological resources impact analysis of Alternative 3 focuses primarily on the new intake and discharge; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Alternative 3 would include the construction of a new screened open water intake system and a new brine discharge system in Monterey Bay within MBNMS. Offshore construction activities would be greater than those described for Alternative 2 because of the larger intake system, the additional discharge structure, and the two intake and two brine discharge pipelines; temporary disturbances and/or loss of seafloor habitat and function would be greater than those discussed for Alternative 2. Construction barges used during placement of both intake and discharge structures would pose temporary obstructions (anchor chains), temporary disturbance and possible loss of soft substrate habitat. HDD construction equipment would be used to install the two intake and two discharge pipelines under the ocean floor and would result in increased underwater noise compared to the proposed project. These activities could cause altered behavior (altered foraging and swimming patterns) in some special status fish, marine mammals, and sea turtles. The possible use of barges from outside Monterey Bay could pose a risk of introducing non-native invasive species and result in collisions with marine mammals and sea turtles.

Similar to Alternative 2, mitigation would be required to reduce the short and long-term impacts of construction on marine biological resources in MBNMS. Although implementation of **Mitigation Measure ALT 2-Marine-1** or similar measures would reduce this impact, it would not be reduced to a less-than-significant level for the same reasons described for Alternative 2. Therefore,

compared to the proposed project, the construction of Alternative 3 could result in a substantially increased impact on marine biological resources including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans during construction and would result in an ***increased impact conclusion*** compared to the proposed project; significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 1**.

Alternative 3 would have an increased impact on marine biological resources compared to the proposed project because of the in-water construction described above, but would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS. Therefore, Alternative 3 would have the ***same impact conclusion*** as the proposed project, less than significant. No impacts would occur from the construction of any other proposed facility because none occur within the marine biological resources study area.

Operational and Facility Siting Impacts

Anchoring of the Alternative 3 intake and outfall structures with collars and ballast rock would result in approximately 16,700 ft^2 of permanent loss of seafloor habitat (about 0.4 acres). This would be a significant and substantially greater impact compared to the proposed project, which would not involve placement of any structures on the seafloor.

Additionally, Alternative 3 would draw up to 55 mgd of source water (compared to 24.1 mgd for the proposed project and Alternatives 1 and 2) through a screened open-water intake. A preliminary assessment determined that northern anchovy, Pacific sardines, white croaker, sanddab, rockfish, smelt, sculpin, Dungeness crab, cancer crabs, and unidentified larval fish would all be entrained (Tenera Environmental, 2014).

The potential ETM/APF for this alternative was estimated at greater than 40 acres (Luster, 2016), and similar to Alternative 2, would result in a significant impact, with mitigation required per the Ocean Plan. **Mitigation Measure ALT 2-Marine-2** would be required to minimize and mitigate for impacts on marine biological resources, but similar to Alternative 2, residual impacts may remain due to the uncertainty of the efficacy of the mitigation.

Furthermore, the Alternative 3 brine discharge would result in an increased impact on marine resources within MBNMS compared to the proposed project since both the volume (about 27 mgd compared to about 14 mgd for the proposed project) and concentration of the brine (about 66 ppt compared to about 58 ppt for the proposed project) would be greater. Modeling performed for the alternative by the proponent determined that the area of salinity that would exceed 2 ppt above natural background levels would extend almost to the boundary of the BMZ, up to 315 feet from the outfall diffuser (Jenkins, 2016). Modeling performed for this EIR/EIS (**Appendix D1**) indicates the brine discharge from the proposed project would only exceed 2 ppt above ambient within a small area at the port and above the seafloor; the brine from the proposed project would be under 2 ppt where it contacts the seafloor within 39 feet of the diffuser (see Section 5.5.3 for details). Therefore, Alternative 3 would result in a larger area of the seafloor that would be exposed to increased salinity concentrations, could potentially cause hypoxia as a result of the extent of the seafloor area exposed to salinities exceeding 2 ppt (i.e. the majority of the area

within the BMZ boundary), and could pose direct and indirect impacts on marine fish, invertebrates, marine mammals, and sea turtles in the pelagic waters of the BMZ.

Unlike the proposed project, the open water intake would not pre-filter PCBs through the seafloor; the concentration of PCB-levels in the brine discharge would be greater than the proposed project and would exceed the Ocean Plan water quality objective for PCBs at the edge of the ZID (see Section 5.5.3 for analysis of operational water quality impacts associated with Alternative 3). Implementation of mitigation substantially similar to **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**), but revised specific to the Alternative 3 project final design and defined operating conditions, as described and analyzed in Section 4.3, would reduce the potentially significant impact to less than significant.

In addition, the cooling of the proposed co-located data center would increase the temperature of the brine by up to10° C above ambient ocean waters (the proposed project would have no heat gain). The increased temperature can be expected to result in potential additional impacts adjacent to the outfall, including the establishment of non-native invasive invertebrate and fish species in Monterey Bay by changing the conditions around the outfall to be more habitable.

Therefore, the operation of Alternative 3 would result in a greater impact on marine species, natural community, or habitat, during operations and would result in an ***increased impact conclusion*** compared to the proposed project; impacts would be significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 2** and **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**).

At present, there are no known marine species in Monterey Bay with population numbers suspected of dropping below self-sustaining levels with the exception of the California sea otter which feeds within the study area. Other species would not be threatened to go extinct because of entrainment of juvenile larvae and plankton. Therefore, the potential for the open-water intake to directly or indirectly threaten a marine plant, animal or wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels would be similar to, and would result in the ***same impact conclusion*** as the proposed project, less than significant.

Overall, the operations of Alternative 3 would have a greater impact on marine biological resources in MBNMS compared to the proposed project because of the potential impingement and entrainment resulting from the screened open water intake; from the increased area of seafloor that could be exposed to salinity greater than 2 ppt above ambient; from the increased levels of PCBs in the discharge water; and from the increased heat gain from cooling the co-located data center. It is unknown what mitigation measures would be required to protect the marine biological resources, and whether they would be effective in reducing impacts to less than significant. Therefore, impacts on marine biological resources including candidate, sensitive, or special-status species would be significant and unavoidable even with mitigation. However, the operations of Alternative 3 would not substantially threaten a marine plant, animal or wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels, and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS.

In addition to physical impacts, Alternative 3 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its open water intake and lack of a combined discharge. Guidelines state:

- All desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. Project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods.
- Project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges.

Cumulative Analysis

The geographic scope for the Alternative 3 cumulative impact assessment is Monterey Bay, within MBNMS. However, for the reasons described in Section 4.5.6 and in Section 5.5.1, no other reasonably foreseeable projects described in **Table 4.1-2** in Section 4.1 would have the potential to combine with the effects of Alternative 3 to cause a cumulative effect on marine biological resources. However, the existing Moss Landing Power Plant continues to draw 1.2 billion gallons per day for cooling water, which also results in the entrainment of larval fish and plankton. Through a settlement agreement executed on October 9, 2014 between the SWRCB and the current owner of the power plant, the Moss Landing Power Plant must reduce its intake of cooling water to meet an 83.7 percent or greater reduction in mortality from entrainment and impingement impacts beginning with reductions on December 31, 2016 and achieving full compliance by December 31, 2020. The Moss Landing Power Plant owner has indicated its intention to retrofit the power plant's four generating units to reduce entrainment and impingement impacts in compliance with the OTC policy, and this would likely occur prior to the operation of any desalination project in Moss Landing. No other reasonably foreseeable projects in the context of Alternative 3 would construct or use an open water intake or new discharge pipeline. However, while GWR would create additional brine discharges in Monterey Bay through an existing outfall, the impacts would be less than significant and would be located several miles to the south. Therefore, a cumulative impact analysis is not relevant to Alternative 3.

5.5.5.7 Direct and Indirect Effects of Project Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system, intake and discharge pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**).

Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipelines, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this

alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the proposed Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented.

The construction and operation of the screened open water intake, the brine discharge facility and the construction of the source water and brine discharge pipelines are the unique components of Alternative 4 that could affect marine biological resources. Therefore, the marine biological resources impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Some of the components of Alternative 4 would utilize existing infrastructure; existing pipelines would be rehabilitated to convey source water and brine between the new desalination plant and the existing caisson on the beach, which would also be rehabilitated. But rather than using HDD to install the entire offshore portion of the pipelines, new intake and discharge pipelines would be laid on the seafloor with concrete collars and protected with approximately 100,000 cubic yards of riprap armoring along the last 1,100 feet and 700 feet, respectively.

Pipeline and intake and discharge system installation activities would result in increased underwater noise, temporary restrictions/barriers to whale and turtle movements, potential vessel collisions with marine mammals and sea turtles, and increased risk of introducing non-native invasive species from the use of construction barges. Similar to Alternatives 2 and 3, mitigation would be required to reduce the short and long-term impacts of construction in MBNMS. Although implementation of **Mitigation Measure ALT 2-Marine-1** or similar measures would reduce this impact, it would not be reduced to a less-than-significant level for the same reasons described for Alternatives 2 and 3. Therefore, the construction of Alternative 4 could result in an increased impact on marine biological resources including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans during construction and would result in an ***increased impact conclusion*** compared to the proposed project; significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 1**.

Alternative 4 would have an increased impact on marine biological resources compared to the proposed project because of the in-water construction described above, but would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS. Therefore, Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant. No impacts would occur from the construction of any other proposed facility because none occur within the marine biological resources study area.

Operational and Facility Siting Impacts

The permanent structures on the seafloor under Alternative 4 would result in the permanent loss of approximately 43,200 ft^2 (about 1 acre) of benthic habitat (1,800 feet of pipeline with 12 feet of riprap per side), affecting marine species dependent on this habitat and habitat function.

Additionally, Alternative 4 would require up to 30 mgd of source water (compared to 24.1 mgd for the proposed project, and Alternatives 1 and 2) through a screened open-water intake. A preliminary assessment determined that northern anchovy, Pacific sardines, white croaker, sanddab, rockfish, smelt, sculpin, Dungeness crab, cancer crabs, and unidentified larval fish would all be entrained (Tenera Environmental, 2014).

The potential APF for the magnitude of the intake under Alternative 4 was estimated at greater than 20 acres (Luster, 2016) and, similar to Alternatives 2 and 3, would require mitigation. Although implementation of **Mitigation Measure ALT 2-Marine-2** or similar measures would reduce operational impacts, they would not be reduced to a less-than-significant level due to the uncertainty of the efficacy of the mitigation.

Furthermore, impacts associated with brine discharge would be increased compared to the proposed project since the volume and concentration of the brine would be greater (about 17 mgd compared to about 14 mgd for the proposed project). No dilution modeling conducted by the proponent, if any, has been made available; therefore, it is currently unknown if the proposed 16-inch diffusers would be capable of meeting salinity concentrations and other Ocean Plan water quality objectives. Unlike the proposed project, the open water intake would not pre-filter PCBs through the seafloor and the concentration of the PCB-levels in the brine discharge would be greater than the proposed project. Implementation of a measure similar to **Mitigation Measure 4.3-5** (Implement Protocols to Avoid Exceeding Water Quality Objectives) could potentially reduce the significant impact. However, the design of the diffuser is not consistent with the Ocean Plan which states that brine discharge technologies other than wastewater dilution and multiport diffusers may be used if an owner or operator can demonstrate to the regional water board that the technology provides a comparable level of intake and mortality of all forms of marine life. It has not been demonstrated that the 16-inch diffusers would be effective at reducing the impacts since there has been no modeling conducted by the proponent, it is unknown if other mitigation would be required to protect the marine biological resources within MBNMS, and whether mitigation would be effective in reducing impacts to less than significant. Therefore, the overall operation of Alternative 4 would result in a greater potential impact on marine species, natural community, or habitat, during operations and would result in an ***increased impact conclusion*** compared to the proposed project; impacts would be significant and unavoidable even with implementation of **Mitigation Measure ALT 2-Marine 2** and **Mitigation Measure 4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**).

At present, there are no known marine species in Monterey Bay with population numbers suspected of dropping below self-sustaining levels with the exception of the California sea otter which feeds within the study area. Other species would not be threatened to go extinct because of entrainment of juvenile larvae and plankton. Therefore, the potential for Alternative 4 to directly or indirectly threaten a marine plant, animal or wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels would be similar to, and would result in the ***same impact conclusion*** as the proposed project, less than significant.

In addition to physical impacts, Alternative 4 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its open water intake and lack of a combined discharge. Guidelines state:

- All desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. Project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods.
- Project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges.

Cumulative Analysis

The geographic scope for the Alternative 4 cumulative impact assessment is Monterey Bay, within MBNMS. The only project relevant to the cumulative scenario for Alternative 4 is the DeepWater Desal project (No. 34), described in **Table 4.1-2** in Section 4.1.

Cumulative impacts from construction would be of a similar nature to those described for the cumulative scenario under Alternative 2, though increased due to the larger area of temporary construction impacts under Alternative 4. For the same reasons described for Alternative 2, even with mitigation, Alternative 4 would result in a significant contribution to the significant and unavoidable cumulative impacts of construction.

Combined, Alternative 4 (43,200 ft^2) and the DeepWater Desal Project (16,700 ft^2) would result in the permanent loss or change of approximately 59,900 ft^2 of benthic habitat. Additionally, the operation of the open-water intake would result in the entrainment of plankton and larval fish, including those of the DeepWater Desal Project (APF of greater than 40 acres), resulting in a cumulative APF estimated at greater than 60 acres (Luster, 2016). However, the existing Moss Landing Power Plant continues to draw 1.2 billion gallons per day for cooling water, which also results in the entrainment of larval fish and plankton. Through a settlement agreement executed on October 9, 2014 between the SWRCB and the current owner of the power plant, the Moss Landing Power Plant must reduce its intake of cooling water to meet an 83.7 percent or greater reduction in mortality from entrainment and impingement impacts beginning with reductions on December 31, 2016 and achieving full compliance by December 31, 2020. The Moss Landing Power Plant owner has indicated its intention to retrofit the power plant's four generating units to reduce entrainment and impingement impacts in compliance with the OTC policy and this would likely occur prior to the operation of any desalination project in Moss Landing. Regardless, the retrofit of the power plant would not offset the adverse cumulative impact attributable to entrainment and impingement at the screened open water intake component of Alternative 4, and these potential losses are considered a significant cumulative impact. As stated above, mitigation to compensate for the loss of habitat would be necessary, but the efficacy of the available mitigation options has not been tested. Therefore, Alternative 4 plus the DeepWater Desal Project could still result in a significant and unavoidable impact, with Alternative 4 having a significant contribution to such cumulative impact (significant and unavoidable).

Because it is unknown if the proposed 16-inch diffusers are capable of meeting salinity concentrations and other Ocean Plan water quality objectives, and because the open water intake

would not pre-filter the PCBs through the seafloor, the salinity, PCB, and other Ocean Plan constituent levels in the brine discharge could result in exceedances of Ocean Plan water quality objectives. For the same reasons described for exceedances of salinity objectives in Section 4.5.6, this would result in a significant cumulative impact related to salinity and other Ocean Plan constituent concentrations. For salinity and other Ocean Plan constituents, it is unknown whether mitigation would be effective in reducing impacts to a level that is less than significant (significant and unavoidable).

5.5.5.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Construction impacts of Alternatives 5a and 5b would be of the same types as described for the proposed project and Alternative 1, respectively, but reduced in proportion to the reduced number of slant wells. Therefore, Alternative 5 would result in reduced impact on marine biological resources within MBNMS, and would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

Slant well operation under Alternative 5a would be the same as the proposed project and would not affect marine biological resources. However, for the same reasons explained for Alternative 1, pumping from slant wells at Potrero Road under Alternative 5b would result in drawing or diverting water from Elkhorn Slough. This would result in a greater impact on marine biological habitat and associated species compared to the proposed project and Alternative 1; therefore, Alternative 5b would result in an ***increased impact conclusion*** compared to the proposed project because of the drawdown and the impact would be significant and unavoidable.

Impacts from brine discharges under Alternatives 5a and 5b would result in a reduced impact compared to the proposed project and Alternative 1 due to the decreased brine discharge volumes (about 9 mgd compared to about 14 mgd for the proposed project and Alternative 1) and reduced distance from the diffuser to the edge of the ZID (up to 30 feet from the diffuser for Alternative 5a or 5b, as compared to 39 feet for the proposed project). Alternative 5 (either 5a or 5b) would not exceed or violate salinity standards defined in the Ocean Plan. As with the proposed project and Alternative 1, Alternative 5 could result in a significant impact related to Ocean Plan water quality objectives for a number of constituents. Implementation of **Mitigation Measure 4.3-4** would require CalAm to monitor the discharges in a manner consistent with Ocean Plan

requirements to ensure the modeled dilutions are being met, and if not, implementation of **Mitigation Measure 4.3-5** would reduce or avoid the impact on water quality and thus reduce or avoid impacts on marine habitats and biota, including special-status species. Alternative 5 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

At present, there are no known marine species in Monterey Bay with population numbers suspected of dropping below self-sustaining levels with the exception of the California sea otter which feeds within the study area. The operation of Alternative 5a and 5b would not cause a fish or marine wildlife population to drop below self-sustaining levels and would not interfere with the movement of any native marine resident or migratory fish or marine wildlife species in MBNMS. Therefore, Alternative 5a and 5b and would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project (No. 59) described in **Table 4.1-2** in Section 4.1 would discharge reverse osmosis-treated effluent through the MRWPCA's existing outfall. The water quality effects of the various discharge scenarios in the cumulative context of Alternative 5 and the GWR Project are described in Section 5.5.3.8 in the cumulative analysis of surface water quality impacts under Alternative 5. As described therein, all discharges associated with the Alternative 5 cumulative scenario would result in salinity less than 2 ppt above ambient levels at the edge of the ZID and at the edge of the BMZ, and would therefore not exceed or violate the salinity standards or degrade water quality in terms of salinity, and thus be protective of the marine biota and habitat of Monterey Bay. As was determined for other alternatives, with the addition of GWR effluent to operational discharges under Alternative 5, under certain scenarios some constituent concentrations would become elevated to levels greater than 80 percent of the Ocean Plan objective. Also, for an additional eleven constituents, there is not enough information to assess concentrations at the edge of the ZID due to differences in MRLs used to assess the source waters or due to MRLs being higher than Ocean Plan objectives. Therefore, it is conservatively concluded that Ocean Plan water quality objectives could potentially be exceeded during operations for some operational discharge scenarios, resulting in a significant impact. Therefore, Alternative 5 in combination with the GWR Project could result in a significant impact related to water quality. Exceedances of Ocean Plan water quality objectives could result in significant impacts on marine resources, of which these water quality objectives are meant to be protective. However, impacts would be reduced to a less-than-significant level by implementing **Mitigation Measures 4.3-4** and **4.3-5**, which would ensure compliance with Ocean Plan objectives and monitoring requirements. Implementation of these Mitigation Measures would reduce combined impacts, and Alternative 5's contribution, to less than cumulatively significant (less than significant with mitigation). The combined impact of Alternative 5 and the GWR Project would result in the ***same impact conclusion*** on marine resources related to brine discharges compared to the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

The cumulative setting and geographic area for Alternatives 5a and 5b would be the same as that described in Section 4.5.6 and as for Alternative 1, and would include DeepWater Desal. With the exception of impacts related to brine discharge, cumulative impacts from the construction and operation of Alternative 5a would be the same or slightly less than those described for the cumulative impacts for the proposed project, as described in Section 4.5.6. Therefore, Alternative 5a would result in a less than significant contribution to cumulative impacts on marine habitats and associated biological resources and cumulative impacts would be less than significant. Alternative 5b would have the same type and intensity of effects as Alternative 5a, but would result in the additional impact on surface water flows and volumes in Elkhorn Slough, as described above. Although the additional impact of Alternative 5b on surface water flow and volumes in Elkhorn Slough would be significant and unavoidable, as discussed in Section 5.5.4.3 regarding groundwater impacts, no other projects are located in the same geographic area and have the potential to affect groundwater resources in the Perched A Aquifer, which in turn could result in impacts on surface water in Elkhorn Slough. Because no other projects would affect surface water flows and volumes in Elkhorn Slough, a cumulative impact analysis is not relevant to this impact.

5.5.5.9 References

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5.5.6 Terrestrial Biological Resources

The evaluation criteria for Terrestrial Biological Resources address: candidate, sensitive, or special-status species; riparian habitat or other sensitive natural communities; critical habitat; federally protected wetlands, federal "other waters," and waters of the state; movement of native resident or migratory fish or wildlife species, established native resident or migratory wildlife corridors, or native wildlife nursery sites; consistency with local policies or ordinances protecting biological resources; spread of invasive non-native species; and consistency with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

5.5.6.1 Setting/Affected Environment

The general environmental setting and regulatory framework for components of the alternatives in common with the proposed project would be similar to that described for the proposed project in Section 4.6.

Several alternatives include a pipeline route in common, which extends north from Charles Benson Road along an abandoned railroad alignment to Monte Road, then follows Nashua Road, Molera Road and Highway 1 to either Potrero Road (Alternatives 1 and 5b) or Dolan Road (Alternatives 2, 3, and 4). Vegetation communities and wildlife habitats along these routes are primarily agricultural fields, but with several crossings of tidal rivers and sloughs (Salinas River, Old Salinas River, Tembladero Slough, and Moro Cojo Slough). Salt marsh and brackish marsh vegetation is associated with the latter three, and is therefore in greater abundance than in the study area for the proposed project.

Alternative 1 and 5b slant wells at Potrero Road would be situated in an existing unpaved parking lot, but adjacent to restored and native central dune scrub vegetation with a potential to support special status plant and wildlife species.

The East Tank Farm Parcel (Alternative 3) is a remediated and capped site that supports non-native grassland and seasonal wetlands, with the potential to support California red-legged frog, California tiger salamander, and Santa Cruz long-toed salamander aquatic breeding and upland aestivation habitat (EMC Planning Group, Inc., 2016). This habitat type also supports burrowing owl, nesting birds, and American badger, as well as special-status plants.

The former National Refractories facility site (Alternative 4) is a largely disturbed post-industrial site with magnesium oxide waste, but includes a small drainage and salt marsh vegetation connected hydrologically to Moro Cojo Slough.

5.5.6.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly, or through habitat modification, during construction.

Construction could result in direct impacts on special-status plants through mortality of individuals during earthwork and loss of habitat. Indirect impacts on plants can result from population fragmentation, introduction of non-native weeds, and interference with plant metabolic processes from construction effects such as fugitive dust and sedimentation. Construction can result in direct impacts on wildlife by direct trampling or entrapment of individuals and habitat removal. Indirect impacts on wildlife can occur from harassment, behavior disruption, increased predation, nest abandonment, and degradation of habitat. Significant impacts on special-status plant and animal species could occur during construction at all of the proposed MPWSP facility sites and pipeline alignments; however, all impacts could be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures)**, **4.6-1b (Construction Worker Environmental Awareness Training and Education Program)**, **4.6-1c (General Avoidance and Minimization Measures)**, **4.6-1d (Protective Measures for Western Snowy Plover)**, **4.6-1e (Avoidance and Minimization Measures for Special-status Plants)**, **4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly)**, **4.6-1g (Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard)**, **4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl)**, **4.6-1i (Avoidance and Minimization Measures for Nesting Birds)**, **4.6-1j (Avoidance and Minimization Measures for American Badger)**, **4.6-1k (Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat)**, **4.6-1l (Avoidance and Minimization Measures for Special-status Bats), 4.6-1m (Avoidance and Minimization Measures for Native Stands of Monterey Pine)**, **4.6-1n (Habitat Mitigation and Monitoring Plan)**, **4.6-1o (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander)**, **4.6-1p (Control Measures for Spread of Invasive Plants)**, **4.6-1q (Frac-out Contingency Plan)**, **4.12-1b (General Noise Controls for Construction Equipment)**, and **4.14-2 (Site-Specific Construction Lighting Measures)**.

Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.

Project construction could result in significant impacts on sensitive natural communities (including riparian habitat) and critical habitat. The subsurface slant wells, MPWSP Desalination Plant, and Source Water Pipeline would result in significant impacts on central dune scrub; the new Desalinated Water Pipeline would result in significant impacts on central dune scrub, coast live oak woodland, and riparian woodland and scrub; the new Transmission Main would result in significant impacts on central dune scrub, coast live oak woodland, and northern coastal scrub; the Castroville Pipeline would result in significant impacts on central dune scrub, northern coastal scrub, riparian woodland and scrub, and freshwater marsh; the ASR facilities would result in significant impacts on coast live oak woodland, northern coastal scrub, and central maritime chaparral; the Ryan Ranch-

Bishop Interconnection Improvements would significantly impact coast live oak woodland and northern coastal scrub; the Main System-Hidden Hills Interconnection Improvements would result in significant impacts on coast live oak woodland; and proposed project staging areas would significantly impact coast live oak woodland and northern coastal scrub.

Construction of the subsurface slant wells and portions of the Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, and a staging area would occur within local coastal zones in areas where certain vegetation communities may be designated environmentally significant habitat areas (ESHA) under Local Coastal Programs (LCPs). Construction within vegetation communities designated as primary habitat or ESHA under an LCP would result in significant impacts on these sensitive natural communities.

Construction of the subsurface slant wells and Source Water Pipeline would result in significant impacts on critical habitat for western snowy plover; and construction of the Carmel Valley Pump Station and Main System-Hidden Hills Interconnection Improvements would result in significant impacts on critical habitat for California red-legged frog. None of the other project facilities would result in significant impacts on critical habitat.

Construction of the Brine Discharge Pipeline and Pipeline to CSIP Pond would result in less-than-significant impacts on sensitive natural communities or critical habitat. All impacts on sensitive natural communities and critical habitat would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, **4.6-1d**, **4.6-1n**, **4.6-1o**, **4.6-1p, 4.6-1q, 4.6-2a** (**Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas**), and **4.6-2b** (**Avoid, Minimize, and Compensate for Construction Impacts on Sensitive Communities and Environmentally Sensitive Habitat Areas**).

Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction.

Direct impacts on wetlands include removal of vegetation, soil, or structures and/or the placement of fill in the wetland, or hydrological modifications (i.e. altering the flow of water in or out of the wetland or water). Indirect impacts could occur from construction activities or construction worker foot traffic that inadvertently extend beyond the designated construction work area and into waters or wetland features, trash and debris left in the features following construction, sedimentation of the feature as a result of increased soil erosion from construction work areas, and degradation of water quality from pollutants (e.g., oil, hydraulic fluid) that are conveyed by surface runoff from the construction site to offsite waters. With respect to sedimentation and degradation of water quality from construction pollutants, for all proposed project components, implementation of the BMPs in the project-specific SWPPP would include measures to manage soil erosion and protect water quality in receiving waterbodies.

Construction of the new Desalinated Water Pipeline, Castroville Pipeline, Carmel Valley Pump Station, and Ryan Ranch-Bishop Interconnection Improvements would result in direct impacts on potential waters of the U.S. and/or waters of the State. Construction of the subsurface slant wells, Source Water Pipeline, Castroville Pipeline, Brine Discharge Pipeline and Pipeline to CSIP Pond,

new Transmission Main, and Ryan Ranch-Bishop Interconnection Improvements could result in significant indirect impacts on wetlands/waters if construction activities or construction worker foot traffic were to extend beyond the designated construction work area.

Less than significant impacts on wetlands/waters would occur during construction of the MPWSP Desalination Plant or proposed ASR facilities, and staging areas because no waters of the U.S. or waters of the state occur within or adjacent to these sites. All significant direct and indirect impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, and **4.6-3** (**Avoid, Minimize, and or Mitigate Impacts on Wetlands**).

Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

With the exception of the subsurface slant wells and staging areas, all other proposed project facilities have the potential to conflict with a local tree ordinance, either by requiring removal or resulting in injury to a protected tree, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-4** (**Compliance with Local Tree Ordinances**).

A significant unavoidable impact would occur resulting from development within primary habitat as designated under the City of Marina LCLUP at the subsurface slant wells, Source Water Pipeline, and potentially the new Desalinated Water Pipeline, new Transmission Main, and a staging area, which would be inconsistent with the City of Marina LCLUP policies. Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1n, and 4.6-2b (See Impact 4.6-1 above, for the names of these mitigation measures) would be implemented to reduce impacts to special-status species habitat. No mitigation measures are available that would reduce the project's conflict with City of Marina LCLUP policies, a significant and unavoidable impact.

Impact 4.6-5: Introduce or spread an invasive non-native species during construction.

Project construction activities at the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Castroville Pipeline, proposed ASR facilities, and new Transmission Main, could contribute to the spread of invasive plants and/or introduce new invasive plants to the project area or adjacent lands with native plant communities through earth moving, transport of vehicles, equipment and materials, and unanticipated sediment dispersal during rain events, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a** and **4.6-1p** (see Impact 4.6-1 above, for the names of these mitigation measures).

Construction activities at the Brine Discharge Pipeline, Pipeline to CSIP Pond, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and staging areas are not expected to result in the introduction or spread of invasive non-native species.

Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.

Routine maintenance of the subsurface slant wells would be conducted every 5 years and access to the wells would be from the wellheads. Estimated disturbance area for maintenance is roughly 6 acres which include the access roads and staging. Maintenance activities would be conducted between October and February to avoid the snowy plover nesting season. This maintenance could result in significant impacts on special-status plant and wildlife species with potential to occur in the central dune scrub at the slant wells that are similar to the impacts of slant well construction. Routine maintenance would also result in loss of snowy plover nesting habitat, which would be a significant impact. However, with implementation of the same mitigation measures prescribed for construction, these impacts would be reduced to a less-than-significant level.

The 3-million-gallon brine storage basin at the MPWSP Desalination Plant could attract waterfowl. Migratory waterfowl could become sick or die from use of the brine storage basin, which would be a significant impact. However, with implementation of **Mitigation Measure 4.6-6** (**Installation and Monitoring of Bird Deterrents at the Brine Storage Basin**), the impact would be reduced to a less-than-significant level.

Maintenance and operations of all other proposed facilities would not result in substantial noise increases, new permanent sources of glare or light, or foreseeable surface disturbance in undeveloped areas. Therefore, no impact or less than significant impacts on special-status species would result from implementation of all other facilities.

Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations.

Routine maintenance of the subsurface slant wells would result in significant impacts on central dune scrub sensitive natural community, primary habitat under the City of Marina LCLUP/ESHA, and critical habitat for western snowy plover. However, with implementation of the same mitigation measures prescribed for construction, these impacts would be reduced to a less-than-significant level.

Maintenance and operations of all other proposed facilities would not result in foreseeable surface disturbance in undeveloped areas, and would result in negligible impacts relative to this criterion.

Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations.

Periodic maintenance of the subsurface slant wells could adversely affect the CEMEX settling ponds through indirect disturbance by worker foot or vehicle traffic, resulting in a significant impact. However, with implementation of some of the same mitigation measures prescribed for construction, these impacts would be reduced to a less-than-significant level.

Maintenance and operations of all other proposed facilities would not result in foreseeable surface disturbance in undeveloped areas. Implementation of these facilities would result in negligible impacts relative to this criterion.

Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.

Maintenance activities at the subsurface slant wells would include ground disturbance, which could contribute to the spread of invasive plants and/or introduce new invasive plants to the project area or adjacent lands with native plant communities through earth moving, transport of vehicles, equipment and materials, and unanticipated sediment dispersal during rain events, resulting in a significant impact. However, with implementation of **Mitigation Measures 4.6-1a** and **4.6-1p** (see Impact 4.6-1 above, for the names of these mitigation measures), these impacts would be reduced to a less-than-significant level.

Maintenance and operations of all other proposed facilities would not result in foreseeable surface disturbance in undeveloped areas. Implementation of these facilities would result in negligible impacts relative to this criterion.

Impact 4.6-10: Be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan or other approved local, regional, or state habitat conservation plan.

A portion of the new Transmission Main could conflict with the *1997 Installation-Wide Multispecies Habitat Management Plan (HMP)* for the former Fort Ord area, which is considered a significant impact. Implementation of **Mitigation Measures 4.6-1a**, **4.6-1n**, and **4.6-2b** (See Impact 4.6-1 and 4.6-2 above, for the names of these mitigation measures) would reduce the impact to a less-than-significant level.

The proposed ASR Facilities and some staging areas are located within the HMP area and would be located within designated development areas. Construction and operations of these facilities would therefore, be consistent with the HMP.

None of the other project components are located within an approved HMP/HCP area.

Impact 4.6-C: Cumulative impacts related to terrestrial biological resources.

The incremental effects of the MPWSP would have a less than significant cumulative effect on special-status species, sensitive natural communities, wetlands or other waters, conflicts with local tree ordinances, and consistency with an adopted habitat conservation plan. Implementation of the MPWSP would have a cumulatively significant contribution to the test slant well impact related to inconsistencies with the City of Marina LCLUP policies. Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1n, and 4.6-2b (See Impact 4.6-1 above, for the names of these mitigation measures) would be implemented to reduce impacts on special-status species habitat, but no mitigation measures are available that would reduce the impact of conflicting with the City of Marina LCLUP policies, and it would remain significant and unavoidable.

To facilitate review of the following sections, the full suite of mitigation measures associated with terrestrial biological resource impacts include the following:

4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.

4.6-1b: Construction Worker Environmental Awareness Training and Education Program.

4.6-1c: General Avoidance and Minimization Measures.

4.6-1d: Protective Measures for Western Snowy Plover.

4.6-1e: Avoidance and Minimization Measures for Special-status Plants.

4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.

4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.

4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl.

4.6-1i: Avoidance and Minimization Measures for Nesting Birds.

4.6-1j: Avoidance and Minimization Measures for American Badger.

4.6-1k: Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat.

4.6-1l: Avoidance and Minimization Measures for Special-status Bats.

4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine.

4.6-1n: Habitat Mitigation and Monitoring Plan.

4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.

4.6-1p: Control Measures for Spread of Invasive Plants

4.6-1q: Frac-out Contingency Plan

4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.

4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.

4.6-3: Avoid, Minimize, and or Mitigate Impacts to Wetlands.

4.6-4: Compliance with Local Tree Ordinances.

4.6-6: Installation and Monitoring of Bird Deterrents at the Brine Storage Basin.

4.6-8: Management Requirements within Borderland Development Areas along Natural Resource Management Area Interface.

5.5.6.3 Direct and Indirect Effects of No Project Alternative

The No Project Alternative would avoid the construction-related impacts of the proposed project. Direct or indirect impacts on biological resources, including species, habitat, and wetlands, would not occur because there would be no ground disturbance. However, the decommissioning of the existing test slant well could result in potentially significant but mitigable impacts on terrestrial biological resources, including:

- Special-Status Species. See Impact 4.6-1 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, and 4.14-2 would reduce impacts to a less-than-significant level.

- Sensitive natural communities and critical habitat. See Impact 4.6-2 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a through 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b would reduce impacts to a less-than-significant level.
- Introduction or spread of invasive non-native species. See Impact 4.6-5 in Section 4.6.5.1. Implementation of Mitigation Measures 4.6-1a and 4.6-1p would reduce impacts to a less-than-significant level.

Under the No Project Alternative, current diversions from the Carmel River would continue consistent with existing conditions in the short-term. However, under the No Project Alternative, CalAm would not meet Milestone 3 by September 30, 2018 (receipt of a CPCN from the CPUC), nor would it meet the subsequent annual milestones associated with the construction and implementation of the MPWSP. CalAm's Effective Diversion Limit (EDL) from the Carmel River would be reduced under the terms of the CDO by 1,000 afy in October 2018, and by an additional 1,000 afy in each subsequent year until October 2021. Beginning in January 2022, as with the proposed project, CalAm would only be allowed to divert its legal entitlement of 3,376 afy from the Carmel River. See Section 5.4.2 for details on the amounts of water allowed by the CDO to be diverted each year until the CDO expiration. Therefore, under the No Project Alternative, diversions from the Carmel River would be reduced sooner than under the proposed project and Carmel River flows would be restored by a total of 10,000 acre-feet over the period of October 2018 through 2021. The increases to Carmel River flows under the No Project Alternative would be beneficial to Carmel River steelhead habitat.

Cumulative Analysis

In addition to the beneficial effect of increased streamflows in the Carmel River that would occur under the No Project Alternative compared to existing conditions, the GWR Project (No. 59 in **Table 4.1-2**) would provide water supply to CalAm that would further reduce CalAm's diversions from the Carmel River, per the terms of the CDO (SWRCB, 2016). This would also benefit riparian species as discussed in SWRCB Order 95-10. Specifically, for every acre-foot of GWR Project water supply that CalAm is able to deliver to the Monterey District, CalAm must reduce its Carmel River system diversions by one acre-foot. Therefore, if GWR Project water becomes available to CalAm prior to 2022 (when Carmel River diversions would be limited to the 3,376 afy legal limit regardless of other water sources), CalAm's diversions from the Carmel River would be reduced compared to those described in **Table 5.4-3**, leaving more streamflow in the Carmel River than under the No Project Alternative alone. This would be a cumulative beneficial effect on steelhead and riparian habitat in the Carmel River.

Since no construction would occur under the No Project Alternative, and impacts from decommissioning of the test slant well would be less than significant with mitigation, the No Project Alternative contribution to cumulative impacts would be less than significant.

5.5.6.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a

different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the analysis of impacts of Alternative 1 on terrestrial biological resources focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

With respect to effects on special-status species and their habitat, Alternative 1 would reduce the potential for impacts associated with the subsurface slant wells and increase the potential for impacts associated with risk of frac-out using HDD crossings, including the release of bentonite slurry into nearby waterways. Similar to the proposed project, construction of new subsurface slant wells at Potrero Road could result in significant indirect impacts on adjacent sensitive habitats, including central dune scrub, salt marsh, and a tidal slough. Due to the disturbed nature of the location of the Alternative 1 subsurface slant wells, the area would provide lower quality habitat for federal and state-listed endangered species, including western snowy plover (which mainly consists of sensitive central dune scrub vegetation) compared to the proposed project by avoiding disturbance of 9 acres of central dune scrub habitat. Some indirect or temporary impact could occur, but it would be substantially less than what would result from construction of the new subsurface slant wells at the CEMEX mining area. Western snowy plover are not known to breed or winter in the vicinity of the Potrero Road parking lot construction site, but may still occur on the beach west of the site. Other special-status species with potential to occur adjacent to the Potrero Road parking lot could include Smith's blue butterfly, black legless lizard, Monterey spineflower, Menzies wallflower, sand gilia, and other special-status plants, as described in Section 4.6.1.8 and summarized in **Table F-1** of **Appendix F**. Special-status plants could be indirectly impacted from population fragmentation, introduction of non-native weeds, and interference with plant metabolic processes caused by construction fugitive dust and sedimentation. Special-status wildlife could be indirectly impacted from harassment, behavior disruption, increased predation, nest abandonment, and degradation of habitat caused by construction noise and soil erosion. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1p**, **4.12-1b**, and **4.14-2** (see Section 5.5.6.2 for the names of these mitigation measures) would reduce these impacts to less than significant.

Additionally, construction of the alternative source water pipeline north of Charles Benson Road could result in significant impacts at multiple river and tidal slough crossings and associated wetlands, including an additional separate pipeline crossing of Tembladero Slough at Molera Road, and of Old Salinas River at Potrero Road, and wetlands adjacent to the pipeline route. Although not anticipated, there is potential for frac-outs to occur using HDD. If a frac-out occurs, bentonite slurry could be released into the Salinas River and/or Tembladero Slough, which could degrade water quality and adversely impact steelhead habitat and/or individual fish by increasing suspended sediments that may inhibit fish respiration and degrade habitat, a significant impact.

Implementation of **Mitigation Measure 4.6-1q** (Frac-out Contingency Plan) would reduce this impact to less than significant.

The Alternative 1 source water pipeline alignment provides lower habitat value for special-status plant and animal species in comparison with the proposed project's Source Water Pipeline alignment, resulting in a less severe impact on special-status plants and animals; nonetheless, identified mitigation measures for construction would be required. All other components and potential impacts under Alternative 1 would be the same as in the proposed project. Thus, with respect to adverse effects on special-status species, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and the slant wells at Potrero Road, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to effects on riparian habitat, critical habitat, and other sensitive natural communities, Alternative 1 would reduce the amount of impact on designated critical habitat and ESHA compared to the proposed project by using the less sensitive unpaved parking lot at Potrero Road (avoiding 9 acres of central dune scrub, a sensitive natural community,and primary habitat under the City fo Marina LCLUP). The Alternative 1 source water pipeline would have less severe impacts on central dune scrub than the MPWSP Source Water Pipeline and impacts on northern coastal scrub and riparian woodland and scrub sensitive natural communities similar to the Castroville Pipeline. Similar types of indirect impacts on western snowy plover critical habitat would occur under Alternative 1 as under the proposed project. Additional potential indirect impacts on Monterey spineflower critical habitat would occur at Potrero Road. All other components and potential impacts under Alternative 1 would be the same as in the proposed project, and could be reduced to less than significant through implementation of **Mitigation Measures 4.6-1a** through **4.6-1e**, **4.6-1n**, **4.6-1o**, **4.6-1p**, **4.6-2a**, and **4.6-2b** (see Section 5.5.6.2 for the names of these mitigation measures). Thus, with respect to riparian habitat, critical habitat, and sensitive natural communities, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and the slant wells at Potrero Road, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 1 would increase the potential for construction impacts on wetlands at multiple crossings of open water features, but could avoid or minimize those significant impacts to less than significant through the use of trenchless construction methods and implementation of the mitigation measures identified for the proposed project in Section 4.6 (**Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1g**, and **4.6-3**). Therefore, with respect to wetlands, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and slant wells at Potrero Road, although the potential for significant impacts would increase, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 1 would avoid slant well construction within primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 1 would be constructed within primary habitat in the City of Marina. The City of Marina LCLUP prohibits development in primary habitat that is not protective of and dependent upon that resource. Therefore, construction of the desalinated water pipeline and

transmission main would conflict with the City of Marina LCLUP policies. Additionally, Alternative 1 would result in the development of the subsurface slant wells at Potrero Road within 100 feet of the Old Salinas River (see **Figure 5.4-1**, inset). This development would conflict with Policy 2.3.3.B4 of the North County LCP/LUP, which requires a setback of 100 feet from the landward edge of vegetation of all coastal wetlands (such as those present along the Old Salinas River) to be provided and maintained in open space use, and requires that no permanent structures except for those necessary for resource-dependent use which cannot be located elsewhere can be constructed in the setback area. Prior to approval of all proposed structures in the setback area, it must be demonstrated that the development does not significantly disrupt the habitat resource. It is noted that the Alternative 1 subsurface slant well construction would occur within the disturbed parking lot area and would not significantly disrupt habitat in this location; nonetheless, because the subsurface slant wells are not a resource-dependent use, they would conflict with this policy. No mitigation is available to reduce this impact to a less-than-significant level. All other facilities common with the proposed project have the potential to conflict with a local tree ordinance, either by requiring removal or resulting in injury to a protected tree, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-4** (**Compliance with Local Tree Ordinances**). Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, as a result of the impact related to conflict with the Marina LCLUP and the North County LCP/LUP policies.

The additional 5.5 miles of source water pipeline under Alternative 1 would increase the potential for pipeline construction to introduce or spread an invasive non-native species. Locating the subsurface slant wells at Potrero Road would decrease the potential for slant well construction to spread invasive species within central dune scrub. This significant impact could be avoided or minimized to less than significant through implementation of **Mitigation Measures 4.6-1a** and **4.6-1p** (see Section 5.5.6.2 for the names of these mitigation measures). Thus, with respect to invasive species, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and the slant wells at Potrero Road, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

With respect to operational impacts on special-status species and their habitat, disturbance from maintenance of the slant wells at Potrero Road would result in a reduced impact on western snowy plover habitat compared to the proposed project; however, significant indirect impacts could still occur and would be reduced to less than significant with **Mitigation Measure 4.6-1d (Protective Measures for Western Snowy Plover)**. Indirect impacts on central dune scrub habitat, which borders the Potrero Road slant well site, and special-status plants and animals known to occur or with potential to occur in this habitat, would be less severe than operations and maintenance activities at the CEMEX mining facility under the proposed project. Additional indirect impacts on special-status species with potential to occur in the Old Salinas River, adjacent to the east of the parking lot, could occur during operations and maintenance activities under Alternative 1. Noise generated during operation of the pumping wells at Potrero Road would be more severe than at the CEMEX facility due to the relative lower baseline noise

environment; however, this difference would not change the impact level of significance. Operation of the pumping wells would not produce groundborne vibration and, therefore, there would be no impacts on special-status species from vibration. This is the same as described for the proposed project. Operation and maintenance of components common to the proposed project would be the same as described in Impact 4.6-6. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p** (see Section 5.5.6.2 for the names of these mitigation measures), **Mitigation Measure 4.6-6 (Installation and Monitoring of Bird Deterrents at the Brine Storage Basin)**, **Mitigation Measure 4.12-5 (Stationary Source Noise Controls)**, and **Mitigation Measures 4.14-2 (Site-Specific Nighttime Lighting Measures)** would reduce this impact to less than significant. Therefore, with respect to impacts on special-status species, combining the proposed project components with those unique to Alternative 1, operation would result in a reduced impact due to the lower habitat value at the slant well site, but would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to operational impacts on riparian habitat, critical habitat, or other sensitive natural communities, operation and maintenance of the Alternative 1 subsurface slant wells at Potrero Road would occur in and around the well heads at the parking lot. The direct impact on approximately 6 acres of central dune scrub sensitive natural community during operations and maintenance activities at the CEMEX slant wells under the proposed project is avoided under Alternative 1. Indirect impacts on central dune scrub sensitive natural community, which borders the Potrero Road slant well site, would be less severe than operations and maintenance activities at the CEMEX mining facility under the proposed project. Impacts on primary habitat at the CEMEX mining facility during operations and maintenance are avoided under Alternative 1 as compared with the proposed project. Operations and maintenance of the Alternative 1 subsurface slant wells at Potrero Road could result in indirect impacts on vegetation communities or features designated as ESHA under the North County LCP/LUP; however, potential impacts would be less severe than under the proposed project. Similar indirect impacts on western snowy plover critical habitat would occur during operations and maintenance under Alternative 1 as the proposed project. Additional indirect impacts on Monterey spineflower critical habitat would occur during operations and maintenance under Alternative 1 slant wells at Potrero Road as compared to the proposed project.

Alternative 1 would also avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough, but instead may affect steelhead habitat in Elkhorn Slough. As described in Section 5.5.4, the slant wells at Potrero Road could draw in groundwater that would otherwise flow to recharge the slough or draw surface water directly from the slough. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect steelhead habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an ***increased impact conclusion*** with respect to riparian habitat, critical habitat, or other sensitive natural communities compared to the proposed project, significant and unavoidable.

Under Alternative 1, no maintenance would occur near the CEMEX settling ponds; however, operations and maintenance of subsurface slant wells at Potrero Road have some potential to cause runoff or sediment discharge to nearby Old Salinas River and associated tidal salt marsh. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c** would reduce these potential impacts to less than significant. No impact on waters of the U.S./waters of the State would result from maintenance and operation of all other facilities. Therefore, Alternative 1 would result in the ***same impact conclusion*** with respect to wetlands and other waters during operation, less than significant with mitigation.

Alternative 1 would avoid impacts of the proposed project on the spread of invasive plants during operation because no maintenance would occur at the CEMEX site, and the Potrero Road site is disturbed and thus not susceptible to the spread of invasive plants. Maintenance and operations of all other facilities would not result in foreseeable surface disturbance which could contribute to the introduction or spread of invasive plants and would therefore have no impact. Therefore, Alternative 1 would result in a ***reduced impact conclusion*** with respect the spread of invasive plants during operation, no impact.

Alternative 1 would have the same impact related to inconsistency with an adopted habitat conservation plan because all facilities contributing to this impact would be common with the proposed project. Implementation of **Mitigation Measures 4.6-1a, 4.6-1n**, and **4.6-2b** would reduce the impact to a less-than-significant level. Therefore, with respect to consistency with an adopted habitat conservation plan, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Alternative 1 would have no foreseeable operational potential to spread invasive plants, and so would not contribute to cumulative impacts related to invasive plants during operation.

The geographic scope of analysis for cumulative impacts related to terrestrial biological resources for Alternative 1 is defined by the location of the Alternative 1 components as well as biologically linked terrestrial areas within approximately 5 miles of these sites, and is the same as that described for the proposed project in Section 4.6.6, with the exception of the different location of the intake system (Potrero Road, instead of CEMEX), and alternative source water pipeline route. Cumulative impacts, and the contribution of Alternative 1 to those impacts, within former Fort Ord lands and on migrating waterfowl would be exactly the same as described for the proposed project because the components that contribute to these impacts are the same under Alternative 1.

With respect to cumulative impacts on western snowy plover, Smith's blue butterfly, and sensitive dune scrub habitat, the location of subsurface slant wells at the Potrero Road parking lot would reduce Alternative 1 construction-related impacts compared to the proposed project because the Potrero Road parking lot location is disturbed and does not contain habitat or sensitive natural communities. Therefore, locating the subsurface slant wells at the Potrero Road parking lot would reduce potential direct and indirect impacts on western snowy plover, Smith's blue butterfly, and sensitive central dune scrub habitat and the potential to spread invasive species during construction and maintenance. The same cumulative projects listed in Section 4.6.6 would contribute to potential

impacts on western snowy plover, Smith's blue butterfly, and sensitive vegetation types and wildlife habitat, including projects near the Potrero Road site (e.g., the Moss Landing Community Plan). In combination, these projects would result in significant cumulative impacts due to the potential to adversely affect western snowy plover, Smith's blue butterfly, and their habitat through heavy equipment use, dust generation, elevated noise levels, and increased human activity. Although it would reduce impacts on western snowy plover and Smith's blue butterfly, given the sensitivity of these species, and given the potential to affect other special-status species listed above, Alternative 1 could result in a significant contribution to cumulative impacts on special-status species and sensitive habitat types. The impacts of Alternative 1 would be mitigated consistent with what is described for the proposed project in Section 4.6.5 (**Mitigation Measures 4.6-1a** through **4.6-1q**, **4.6-2**), and therefore, for the same reasons described in Section 4.6.6, Alternative 1's contribution to cumulative impacts on these biological resources, would be less than significant with mitigation.

Construction of Alternative 1 would reduce impacts on wetlands by avoiding the CEMEX settling ponds, but disturbance at the Potrero Road site and components that are common with the proposed project could result in significant impacts. Thus, with the exception of avoiding the CEMEX settling ponds, the contribution of Alternative 1 to cumulative impacts on wetlands would be the same as described for the proposed project. As a result, the same projects listed in Section 4.6.6 would contribute to potential impacts on wetlands and other waters, potentially resulting in a significant cumulative impact. Alternative 1 components that are common with the proposed project could have a significant cumulative impact on wetlands in the region, as described in Section 4.6.6. After implementation of mitigation measures identified for the proposed project (i.e., **Mitigation Measures 4.6-1a**, **4.6-1b, 4.6-1c**, and **4.6-3**), Alternative 1 would have a less than significant cumulative impact on wetlands for the same reasons described in Section 4.6.6.

Alternative 1 would avoid construction within the primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 1 would be constructed within primary habitat in the City of Marina and would conflict with the City of Marina LCLUP policies. Additionally, Alternative 1 would have a significant and unavoidable impact related to placing structures within or adjacent to habitat that is inconsistent with the North County LCP/LUP. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) could place its proposed desalination plant within or adjacent to habitat considered to be ESHA under the North County LCP/LUP, and would conflict with North County LCP/LUP policies, also a significant and unavoidable impact. In combination, these projects would result in a significant cumulative impact, and Alternative 1's contribution wouldbe significant.

Overall, while some contributions to cumulative impacts would be avoided or reduced, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

5.5.6.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the analysis of Alternative 2 on terrestrial biological resources focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

With respect to effects on special-status species and their habitat, by eliminating onshore construction and maintenance activities and structures associated with the subsurface slant wells, Alternative 2 would avoid disturbance of 9 acres of central dune scrub habitat that would occur under the proposed project, eliminating impacts on western snowy plover and reducing overall impacts on special-status species and their habitat. Mitigation for impacts on snowy plover (**Mitigation Measure 4.6-1d**) would not be needed. Construction of the Alternative 2 intake would not have the potential for indirect impacts on sensitive habitats, as none are located adjacent to sites where construction of the intake would occur. Alternative 2 would reduce impacts on special-status species and their habitat compared to the proposed project, but would still result in significant impacts as a result of the components common with the proposed project. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1e** through **4.6-1p**, and **4.14-2** would reduce these impacts to less than significant.

Additionally, construction of the Alternative 2 source water pipeline north of Charles Benson Road could result in significant impacts at multiple river and tidal slough crossings and associated wetlands, including an additional separate pipeline crossing of Tembladero Slough at Molera Road, and of Old Salinas River at Potrero Road, and wetlands adjacent to the pipeline route. Although not anticipated, there is potential for frac-outs to occur using HDD. If a frac-out occurs, bentonite slurry could be released into the Tembladero Slough, which could degrade water quality and adversely impact steelhead habitat and/or individual fish by increasing suspended sediments that may inhibit fish respiration and degrade habitat, a significant impact. Implementation of **Mitigation Measure 4.6-1q (Frac-out Contingency Plan)** would reduce this impact to less than significant.

The Alternative 2 source water pipeline alignment provides lower habitat value for special-status plant and animal species in comparison with the proposed project's Source Water Pipeline

alignment, therefore impacts on special-status plants and animals would be less severe; nonetheless, identified mitigation measures for construction would be required. All other components and potential impacts under Alternative 2 would be the same as in the proposed project. Thus, with respect to adverse effects on special-status species, although impacts would be decreased compared to the proposed project, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to effects on riparian habitat, critical habitat, and other sensitive natural communities, Alternative 2 would reduce the amount of impact on designated critical habitat and ESHA compared to the proposed project construction at the CEMEX slant well site by using industrial land on Dolan Road that is not adjacent to sensitive habitats. The Alternative 2 source water pipeline would have less severe impacts on central dune scrub than the MPWSP Source Water Pipeline and impacts on northern coastal scrub and riparian woodland and scrub sensitive natural communities similar to the Castroville Pipeline. Alternative 2 would avoid impacts on western snowy plover critical habitat. All other components and potential impacts under Alternative 2 would be the same as in the proposed project, and could be reduced to less than significant through implementation of **Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1e**, **4.6-1n**, **4.6-1o**, **4.6-1p**, **4.6-2a**, and **4.6-2b**. Thus, with respect to riparian habitat, critical habitat, and sensitive natural communities, although impacts would be reduced compared to the proposed project, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 2 would increase the potential for significant construction impacts on wetlands with multiple crossings of open water features and associated wetlands, but could avoid or minimize those significant impacts through the use of trenchless construction methods and implementation of mitigation measures identified for the proposed project in Section 4.6 (**Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1g**, and **4.6-3**), which would reduce these impacts to less than significant. Additionally, the open water intake structure would be constructed on the seafloor in waters of the U.S. and of the State, resulting in discharge of fill material over an estimated 3,300 ft^2 (0.07 acre), a significant impact that would be reduced to less than signfiicant with implementation of **Mitigation Measure 4.6-3**. Therefore, with respect to wetlands, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline and open water intake, although the potential for significant impacts would increase, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 2 would avoid slant well construction within primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 2 would be constructed within primary habitat in the City of Marina and would conflict with the city of Marina LCLUP policies. No mitigation is available to reduce this impact to a less-than-significant level. The Alternative 2 source water pipeline between Charles Benson Road and north of the Moro Cojo Slough would traverse agricultural lands without tree cover, and no impact on trees or conflict with local tree ordinances is expected to occur. All other facilities common with the proposed project have the potential to conflict with a local tree

ordinance, either by requiring removal or resulting in injury to a protected tree, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-4** (**Compliance with Local Tree Ordinances**). Therefore, although the impact of construction within primary habitat would be reduced, Alternative 2 would result in ***the same impact conclusion*** as the proposed project, significant and unavoidable, due to the impact related to conflict with the City of Marina LCLUP policy.

Eliminating the subsurface slant wells at CEMEX would decrease the potential for slant well construction to spread invasive species within central dune scrub, but the additional 5.5 miles of source water pipeline under Alternative 2 would increase the potential for pipeline construction to introduce or spread an invasive non-native species. This significant impact could be avoided or minimized to less than significant through implementation of **Mitigation Measures 4.6-1a** and **4.6-1p**. Thus, with respect to invasive species, combining the impacts of the proposed project components with the addition of 5.5 miles of source water pipeline, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

With respect to operational impacts on special-status species and their habitat, eliminating the need for recurring maintenance of slant wells within or adjacent to sensitive central dune scrub habitat would eliminate operational impacts on this habitat type and associated special-status species. Maintenance of the new intake pump station would occur within areas that would be developed and disturbed as part of construction, which are located among already disturbed industrial areas on Dolan Road. Nearby habitat consists of ruderal vegetation, coyote brush, and non-native trees that do not provide high quality habitat for sensitive species (e.g., western snowy plover). Operation of Alternative 2 would eliminate impacts on western snowy plover as they do not occupy this area; therefore, the need for mitigation of those impacts, as described in the proposed project, would also be eliminated. Noise generated during operation of the intake pump station would have a less severe impact on special-status species than the subsurface slant wells under the proposed project. Therefore, with respect to impacts on special-status species, combining the proposed project components with those unique to Alternative 2, operation would result in a reduced impact, compared to the proposed project, due to the lower habitat value where sensitive species are less likely to occur, but would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to operational impacts on riparian habitat, critical habitat, or other sensitive natural communities, Alternative 2 would avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough because it would not draw groundwater that could affect surface water flows, and would avoid maintenance-related impacts within snowy plover critical habitat and central dune scrub, a sensitive natural community, and primary habitat under the City of Marina LCLUP. Construction of other components would result in similar impacts on vegetation communities designated as primary habitat or ESHA under LCPs as the proposed project. Operation and maintenance of the intake pump station and source water pipeline would have similar impacts to those described for the proposed project and could be significant, but impacts would be reduced to a less-than-significant level with implementation of **Mitigation**

Measures 4.6-1a, **4.6-1b**, **4.6-1c**, **4.6-1n**, **4.6-1p**, **4.6-2a**, and **4.6-2b**. Therefore, although it would greatly reduce impacts on critical habitat and other sensitive natural communities compared to the proposed project, Alternative 2 would result in the ***same impact conclusion*** with respect to riparian habitat, critical habitat, or other sensitive natural communities compared to the proposed project, less than significant with mitigation.

Under Alternative 2, operation and maintenance of the new open water intake at Moss Landing would not result in any potential impacts on jurisdictional wetlands or waters. No impact on waters of the U.S./waters of the State would result from maintenance and operation of all other facilities. Therefore, Alternative 2 would result in a ***reduced impact conclusion*** with respect to wetlands and other waters during operation, no impact.

Alternative 2 would avoid impacts of the proposed project on the spread of invasive plants during operation because no maintenance would occur at the CEMEX site. Maintenance and operations of all other facilities would not result in foreseeable surface disturbance that could contribute to the introduction or spread of invasive plants and would have no impact. Therefore, Alternative 2 would result in a ***reduced impact conclusion*** with respect the spread of invasive plants during operation, no impact.

With respect to inconsistency with an adopted habitat conservation plan, Alternative 2 would have the same impact related to inconsistency with an adopted habitat conservation plan because all facilities contributing to this impact would be common with the proposed project. Implementation of **Mitigation Measures 4.6-1a, 4.6-1n**, and **4.6-2b** would reduce the impact to a less-than-significant level. Therefore, with respect to consistency with an adopted habitat conservation plan, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Alternative 2 would have no impact on wetlands or other waters during operation and no foreseeable operational potential to spread invasive plants; therefore, unlike the proposed project, it would avoid contributions to cumulative impacts on these resources.

The geographic scope of analysis for cumulative impacts related to terrestrial biological resources for Alternative 2 is defined by the location of the Alternative 2 components, as well as biologically linked terrestrial areas within approximately 5 miles of these sites, and is the same as that described for the proposed project in Section 4.6.6, with the exception that the Castroville Pipeline and Pipeline to CSIP are not included, as well as the different location of the open water intake system and alternative source water pipeline. Cumulative impacts, and the contribution of Alternative 2 to those impacts, within former Fort Ord lands and on migrating waterfowl would be exactly the same as described for the proposed project because the components that contribute to these impacts are the same under Alternative 2.

Eliminating disturbance associated with the subsurface slant wells at the CEMEX site would eliminate impacts on western snowy plover and reduce overall impacts on special-status species and their habitat and the potential to spread invasive species within sensitive dune scrub habitat

compared to the proposed project. The same projects listed in Section 4.6.6 would contribute to potential impacts on sensitive vegetation types and wildlife habitat that could be affected by Alternative 2 components, including projects near the intake location (e.g., the Moss Landing Community Plan). In combination, these projects would result in significant cumulative impacts due to the potential to adversely affect special-status species and sensitive habitat types. Given the potential to adversely affect special-status species, Alternative 2 could result in a significant contribution to significant cumulative impacts on special-status species and sensitive habitat types. These impacts would be mitigated consistent with what is described for the proposed project in Section 4.6.5 (**Mitigation Measures 4.6-1a** through **4.6-1q**, **4.6-2**), and therefore, for the same reasons described in Section 4.6.6, Alternative 2's contribution and the overall cumulative impact would be reduced to a level that is less than significant.

Construction of Alternative 2 would have potentially significant impacts on wetlands as a result of multiple river and tidal slough crossings and associated wetlands. Additionally, components that are common with the proposed project could result in significant impacts as described in Section 4.6.5. The same projects listed in Section 4.6.6 would contribute to potential impacts on wetlands and other waters, potentially resulting in a significant cumulative impact. Alternative 2 river and tidal slough crossings, along with components common with the proposed project, could have a significant contribution to cumulative impacts on wetlands in the region. After implementation of mitigation measures identified for the proposed project (i.e., **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c,** and **4.6-3**), Alternative 2 would result in a less than significant cumulative impact on wetlands for the same reasons described in Section 4.6.6.

Alternative 2 would avoid construction within primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 2 would be constructed within primary habitat in the City of Marina and would conflict with the City of Marina LCLUP policies. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) could place its proposed desalination plant within or adjacent to habitat considered to be ESHA under the North County LCP/LUP, and would conflict with North County LCP/LUP policies, also a significant and unavoidable impact. In combination, these projects would result in a significant cumulative impact, and Alternative 2's contribution would be significant and unavoidable.

Overall, although the impact related to the conflict with the City of Marina LCLUP policies would be reduced compared to the proposed project, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

5.5.6.6 Direct and Indirect Effects of Alternative 3 - Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems

would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

With respect to effects on special-status species and their habitat, by eliminating onshore construction and maintenance activities and structures associated with the subsurface slant wells, Alternative 3 would avoid disturbance of 9 acres of central dune scrub habitat that would occur under the proposed project, eliminating impacts on western snowy plover and reducing overall impacts on special-status species and their habitat. However, Alternative 3 would result in potentially greater significant impacts (up to 91 acres) on habitat that could support other special-status animal species, including California tiger salamander and California red-legged frog breeding and dispersal or refugia, Santa Cruz long-toed salamander, burrowing owl, nesting birds, and American badger, as well as special-status plants. Additionally, the desalination plant could indirectly reduce the habitat value of adjacent or nearby aquatic breeding habitats by reducing the the availability of upland aestivation sites and restricting migration. Construction of the new open-water intake and brine discharge outfall at Moss Landing would have negligible impacts on terrestrial biological resources, if any, because construction on land would be limited to a small parcel of already disturbed land.

The new desalinated water pipeline between the desalination plant and the "Connection to CalAm" point could result in the same impacts described above for these components of Alternative, 2 with potential for significant impacts on steelhead habitat and/or individual fish if a frac-out occurs using HDD. The Alternative 3 desalinated water pipeline alignment provides lower habitat value for special-status plant and animal species in comparison with the proposed project's Source Water Pipeline alignment, resulting in a less severe impact on special-status plants and animals; nonetheless, identified mitigation measures for construction would be required. The addition of approximately 25 miles of desalinated water pipelines to serve other areas likely would result in impacts similar to the desalinated water pipeline; however, alignments are not currently known. All other components and potential impacts on special-status species under Alternative 3 would be the same as in the proposed project.

In comparison with the proposed project, the potentially significant impact on special-status species during construction would be increased but could be reduced to less than significant by implementation of the same mitigation measures identified for the proposed project in Section 4.6. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1e** through **4.6-1q**, and **4.14-2** identified for the proposed project in Section 4.6 would reduce these impacts on special-status species and their habitat to less than significant. Thus, with respect to adverse effects on special-status species, although impacts would be increased compared to the proposed project, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to effects on riparian habitat, critical habitat, and other sensitive natural communities, Alternative 3 would avoid approximately 9 acres of central dune scrub sensitive natural community and primary habitat under the City of Marina LCLUP, and indirect impacts on snowy plover critical habitat at the CEMEX site. However, construction of the Alternative 3 desalination facility, source water pipeline, and outfall pipeline would occur within or adjacent to vegetation communities or features considered ESHA under the North County LCP. The potential impacts on sensitive natural communities along Dolan Road could be significant and unavoidable even with implementation of **Mitigation Measures 4.6-2a** and **4.6-2b**. Construction of other components would result in similar impacts on vegetation communities designated as primary habitat or ESHA under LCPs as the proposed project. Thus, with respect to riparian habitat, critical habitat, and sensitive natural communities, construction would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Alternative 3 would increase the potential for significant construction impacts on wetlands with multiple crossings of open water features and associated wetlands as described above for Alternative 2. Additionally, construction impacts would be greater than the proposed project, mainly due to location of the intake and brine discharge structures on the seafloor in comparison with the use of subsurface slant wells. The open water intake structure and brine discharge structure would be constructed on the seafloor in waters of the U.S. and of the State, resulting in discharge of fill material over approximately 16,700 ft^2 (0.4 acre). Installation of the intake and brine discharge pipelines would result in disturbance-related impacts within waters of the U.S. at their point of emergence from the seafloor. Installation of the pipelines within Dolan Road could result in additional impacts on wetlands and other waters located on either side of the roadway as a result of runoff from active construction sites. Construction of Alternative 3 could result in an unspecified amount of impacts on seasonal freshwater wetlands in the northwest corner of Moss Landing Power Plant East Parcel through direct fill. Implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, and **4.6-3** would reduce impacts to a less-than-significant level. Therefore, with respect to wetlands, although the extent of impacts would increase, Alternative 3 construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 3 would avoid slant well construction within primary habitat at the CEMEX site. However, similar to the proposed project the desalinated water pipeline and transmission main under Alternative 3 would be constructed within primary habitat in the City of Marina. The City of Marina LCLUP prohibits development in primary habitat that is not protective of and dependent upon that resource. Therefore, construction of the desalinated water pipeline and

transmission main would conflict with the City of Marina LCLUP policies. Alternative 3 would result in the development of the intake and discharge pipelines under the Old Salinas River (also called the Moss Landing Harbor in that location) (see **Figure 5.4-3**, inset). This development could conflict with Policy 2.3.3.B4 of the North County LCP/LUP, which requires a setback of 100 feet from the landward edge of vegetation of all coastal wetlands (such as those present along the Old Salinas River) to be provided and maintained in open space use, and requires that no permanent structures except for those necessary for resource-dependent use which cannot be located elsewhere can be constructed in the setback area. Prior to approval of all proposed structures in the setback area, it must be demonstrated that the development does not significantly disrupt the habitat resource. Because the intake and discharge pipelines are not a resource-dependent use, they would conflict with this policy. No mitigation is available to reduce this impact to a less-than-significant level. The Alternative 3 desalinated water pipeline between Charles Benson Road and north of the Moro Cojo Slough would traverse agricultural lands without tree cover, and no impact on trees or conflict with local tree ordinances is expected to occur. All other facilities common with the proposed project have the potential to conflict with a local tree ordinance, either by requiring removal or resulting in injury to a protected tree, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-4** (**Compliance with Local Tree Ordinances**). Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

Eliminating the subsurface slant wells at CEMEX would decrease the potential for slant well construction to spread invasive species within central dune scrub, but the longer desalinated water pipeline under Alternative 3 would increase the potential for pipeline construction to introduce or spread an invasive non-native species. This significant impact could be avoided or minimized to less than significant through implementation of **Mitigation Measures 4.6-1a** and **4.6-1p**. Thus, with respect to invasive species, combining the impacts of the proposed project components with the longer pipeline, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

With respect to operational impacts on special-status species and their habitat, eliminating the need for recurring maintenance of slant wells within or adjacent to sensitive central dune scrub habitat would eliminate operational impacts on this habitat type and associated special-status species. Maintenance of the new intake pump station would occur within already-developed and disturbed industrial areas on Dolan Road. Operation of Alternative 3 would eliminate impacts on western snowy plover; therefore, the need for mitigation of those impacts, as described in the proposed project, would also be eliminated. Noise generated during operation of the intake pump station would have a less severe impact on special-status species than the subsurface slant wells under the proposed project. Impacts on waterfowl associated with operation and maintenance activities at the MPWSP Desalination Plant brine storage tank are avoided under Alternative 3. Therefore, with respect to impacts on special-status species, combining the proposed project components with those unique to Alternative 3, operation would result in a reduced impact, but would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to operational impacts on riparian habitat, critical habitat, or other sensitive natural communities, Alternative 3 would avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough because it would not draw groundwater that could affect surface water flows, and would avoid maintenance-related impacts within snowy plover critical habitat and central dune scrub, a sensitive natural community, and primary habitat under the City of Marina LCLUP. Construction of the Alternative 3 desalination facility, source water pipeline, outfall pipeline, and ASR pipelines would occur within or adjacent to vegetation communities or features considered ESHA under the North County LCP/LUP. Operation and maintenance of the intake pump station would have similar impacts to those described for the proposed project and could be significant. All impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, **4.6-1n**, **4.6-1p**, **4.6-2a**, and **4.6-2b**. Therefore, Alternative 3 would result in the ***same impact conclusion*** with respect to riparian habitat, critical habitat, or other sensitive natural communities compared to the proposed project, less than significant with mitigation.

Operation and maintenance of the new open water intake and brine discharge outfall at Moss Landing would not result in any potential impacts on jurisdictional wetlands or waters. Operation and maintenance of the new desalination plant at Moss Landing Power Plant East Parcel could result in runoff and sediment discharge impacts on seasonal freshwater wetlands in the northwest corner of the parcel and to a drainage parallel to Dolan Road. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c** would reduce these potential impacts to less than significant. No impact on waters of the U.S./waters of the State would result from maintenance and operation of all other facilities. Therefore, Alternative 3 would result in the ***same impact conclusion*** with respect to wetlands and other waters during operation, less than significant with mitigation.

Alternative 3 would avoid impacts of the proposed project on the spread of invasive plants during operation because no maintenance would occur at the CEMEX site. Maintenance and operations of all other facilities would not result in foreseeable surface disturbance which could contribute to the introduction or spread of invasive plants and would therefore have no impact. Therefore, Alternative 3 would result in a ***reduced impact conclusion*** with respect the spread of invasive plants during operation, no impact.

With respect to inconsistency with an adopted habitat conservation plan, Alternative 3 would have the same impact as the proposed project because all facilities contributing to this impact would be common with the proposed project. Implementation of **Mitigation Measures 4.6-1a, 4.6-1n**, and **4.6-2b**would reduce the impact to a less-than-significant level. Therefore, with respect to consistency with an adopted habitat conservation plan, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Alternative 3 would avoid the effects of the proposed project on migrating waterfowl, and would have no foreseeable operational potential to spread invasive plants; therefore, unlike the proposed project, it would avoid contributions to cumulative impacts on these resources.

The geographic scope of analysis for cumulative impacts related to terrestrial biological resources for Alternative 3 is defined by the location of the Alternative 3 components as well as biologically linked terrestrial areas within approximately 5 miles of these sites. Cumulative impacts within former Fort Ord lands, and the contribution of Alternative 3 to those impacts, would be exactly the same as described for the proposed project because the components that contribute to these impacts are the same under Alternative 3.

Eliminating disturbance associated with the subsurface slant wells at the CEMEX site would eliminate impacts on western snowy plover and reduce overall impacts on special-status species and their habitat and the potential to spread invasive species within sensitive dune scrub habitat compared to the proposed project. The same projects listed in Section 4.6.6 would contribute to potential impacts on sensitive vegetation types and wildlife habitat that could be affected by Alternative 3 components, including projects near the intake and desalination plant location (e.g., the Moss Landing Community Plan). In combination, these projects would result in significant cumulative impacts due to the potential to adversely affect special-status species and sensitive habitat types. Given the potential to adversely affect special-status species, Alternative 3's contribution to cumulative impacts on special-status species and sensitive habitat types would be significant. These impacts would be mitigated consistent with what is described for the proposed project in Section 4.6.5 (**Mitigation Measures 4.6-1a** through **4.6-1q**, **4.6-2**), and therefore, for the same reasons described in Section 4.6.6, while Alternative 3 could result in a significant cumulative impact on these biological resources, with mitigation, its contribution would be reduced to a level that is less than significant.

Construction of Alternative 3 would have potentially significant impacts on wetlands as a result of multiple river and tidal slough crossings and associated wetlands. Additionally, components that are common with the proposed project could result in significant impacts as described in Section 4.6.5. The same projects listed in Section 4.6.6 would contribute to potential impacts on wetlands and other waters, potentially resulting in a significant cumulative impact. Alternative 3 river and tidal slough crossings, along with components common with the proposed project, could have a significant contribution to cumulative impacts on wetlands in the region. After implementation of mitigation measures identified for the proposed project (i.e., **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c,** and **4.6-3**), Alternative 3's incremental contribution to cumulative impacts on wetlands would be less than significant for the same reasons described in Section 4.6.6.

Alternative 3 would avoid construction within the primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 3 would be constructed within primary habitat in the City of Marina and would conflict with the City of Marina LCLUP policies. Additionally, Alternative 3 would have a significant and unavoidable impact related to placing structures within or adjacent to habitat that is inconsistent with the North County LCP/LUP. Alternative 3 is the only reasonably foreseeable project in **Table 4.1-2** in Section 4.1 that would place structures within or adjacent to habitat considered to be ESHA under the Marina LCLUP and North County LCP/LUP policies; therefore, a cumulative impact analysis is not relevant to this impact.

Overall, Alternative 3 would result in a ***reduced impact conclusion*** compared to the proposed project, less than significant with mitigation.

5.5.6.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

With respect to effects on special-status species and their habitat, by eliminating onshore construction and maintenance activities and structures associated with the subsurface slant wells, Alternative 4 would avoid disturbance of 9 acres of central dune scrub habitat that would occur under the proposed project, eliminating impacts on western snowy plover and reducing overall impacts on special-status species and their habitat. Construction of the new open-water intake and brine discharge pipelines at Moss Landing and new alternative source water pipeline would have neglible impacts on terrestrial biological resources, if any, because construction on land would be limited to an existing 20-foot-diameter intake pump caisson structure located on the beach; Alternative 4 would avoid proposed project impacts on special-status plants and animals known to occur or with potential to occur at the subsurface slant well site and along the Source Water Pipeline; and impacts on special-status plants and animals at the MPWSP Desalination Plant, Brine Discharge Pipeline, and Pipeline to CSIP Pond. As described for Alternative 3, the Alterntive 4 desalinated water pipeline alignment provides lower habitat value for special-status plant and animal species in comparison with the proposed project's Source Water Pipeline alignment, resulting in a less severe impact on special-status plants and animals; nonetheless, construction activities could still result in direct or indirect impacts, which would be potentially significant, and identified mitigation measures for construction would be required. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1e** through **4.6-1q,** and **4.14-2** identified for the proposed project in Section 4.6 would reduce these impacts on special-status species and their habitat to less than significant. Thus, with respect to adverse effects on special-status species, although impacts would be decreased compared to the proposed project, combining the impacts of the proposed project components with the components unique to Alternative 4, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to effects on riparian habitat, critical habitat, and other sensitive natural communities, Alternative 4 would avoid approximately 9 acres of central dune scrub sensitive natural community and primary habitat under the City of Marina LCLUP, and indirect impacts on snowy plover critical habitat at the CEMEX site. However, the new alternative desalination plant would be situated adjacent to wetland sensitive habitat, consisting of saltmarsh wetlands connected to Moro Cojo Slough, with the potential for direct impacts from construction disturbance or runoff. This habitat also consitutes ESHA and under the North County LCP/LUP. However, Alternative 4 would not include facilities located within designated Critical Habitat, and overall impacts on sensitive habitats, including those on ESHA, would be decreased compared to the proposed project. Nonetheless, construction activities could still result in direct or indirect impacts, which would be potentially significant. Implementation of mitigation measures identified for the proposed project in Section 4.6 (i.e., **Mitigation Measures 4.6-1a** through **4.6-1c**, **4.6-1e** through **4.6-1q**, **4.12-1b**, and **4.14-2**) would reduce these impacts to less than significant. Thus, with respect to riparian habitat, critical habitat, and sensitive natural communities, construction would result in the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Alternative 4 would increase the potential for significant construction impacts on wetlands with multiple crossings of open water features and associated wetlands as described above for Alternative 2. Additionally, construction impacts would be greater than the proposed project, mainly due to location of the intake and brine discharge structures on the seafloor in comparison with the use of subsurface slant wells. The open water intake structure and brine discharge structure would be constructed on the seafloor in waters of the U.S. and of the State, resulting in discharge of fill material over approximately 43,200 ft^2 (about 1 acre). Construction of the desalination plant at the former National Refractories facility could impact salt marsh wetlands located along the site's western margin, and connected to Moro Cojo Slough. Implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, and **4.6-3** would reduce impacts to a less-than-significant level. Therefore, with respect to wetlands, although the extent of impacts would increase, Alternative 4 construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 4 would avoid slant well construction within primary habitat at the CEMEX site. However, similar to the proposed project, the Desalinated Water Pipeline and Transmission Main under Alternative 4 would be constructed within primary habitat in the City of Marina. The City of Marina LCLUP prohibits development in primary habitat that is not protective of and dependent upon that resource. Therefore, construction of the desalinated water pipeline and transmission main would conflict with the City of Marina LCLUP policies. Additionally, Alternative 4 would result in the development of the intake and discharge pipelines under the Old Salinas River (see **Figure 5.4-4**, inset). This development could conflict with Policy 2.3.3.B4 of the North County LCP/LUP, which requires a setback of 100 feet from the landward edge of vegetation of all coastal wetlands (such as those present along the Old Salinas River) to be provided and maintained in open space use, and requires that no permanent structures except for those necessary for resource-dependent use which cannot be located elsewhere can be constructed in the setback area. Prior to approval of all proposed structures in the setback area, it must be demonstrated that the development does not significantly disrupt the habitat resource. Because the intake and discharge pipelines are not a resource-dependent use, they would conflict with this

policy. No mitigation is available to reduce this impact to a less-than-significant level. The Alternative 4 desalinated water pipeline between Charles Benson Road and north of the Moro Cojo Slough traverses agricultural lands without tree cover, and no impact on trees or conflict with local tree ordinances is expected to occur. All other facilities common with the proposed project have the potential to conflict with a local tree ordinance, either by requiring removal or resulting in injury to a protected tree, which would be a significant impact. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances)**. Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

Eliminating the subsurface slant wells at CEMEX would decrease the potential for slant well construction to spread invasive species within central dune scrub, but the longer desalinated water pipeline under Alternative 4 would increase the potential for pipeline construction to introduce or spread an invasive non-native species. This significant impact could be avoided or minimized to less than significant through implementation of **Mitigation Measures 4.6-1a** and **4.6-1p** (see Section 5.5.6.2 for the names of these mitigation measures). Thus, with respect to invasive species, combining the impacts of the proposed project components with the longer pipeline, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

With respect to operational impacts on special-status species and their habitat, eliminating the need for recurring maintenance of slant wells within or adjacent to sensitive central dune scrub habitat would eliminate operational impacts on this habitat type and associated special-status species. Noise generated during operation of the intake pump station (see Section 5.5.12.7) would have a less severe impact on special-status species than the subsurface slant wells under the proposed project . Impacts on waterfowl associated with operation and maintenance activities at the MPWSP Desalination Plant brine storage tank are avoided under Alternative 4. Therefore, with respect to impacts on special-status species, combining the proposed project components with those unique to Alternative 4, operation would result in a reduced impact, but would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to operational impacts on riparian habitat, critical habitat, or other sensitive natural communities, Alternative 3 would avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough because it would not draw groundwater that could affect surface water flows, and would avoid maintenance-related impacts within snowy plover critical habitat and central dune scrub, a sensitive natural community, and primary habitat under the City of Marina LCLUP. Additional indirect impacts on Monterey spineflower critical habitat could occur during operations and maintenance at the Alternative 4 intake facility at the existing beach caisson. Operations and maintenance of the Alternative 4 components, including the alternative source water pipeline, outfall pipeline, and components common with the proposed project would have similar potentially significant impacts on sensitive natural communities and critical habitat as the proposed project. All impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a**, **4.6-1b**, **4.6-1c**, **4.6-1n**, **4.6-1p**,

4.6-2a, and **4.6-2b**. Therefore, Alternative 4 would result in the ***same impact conclusion*** with respect to riparian habitat, critical habitat, or other sensitive natural communities compared to the proposed project, less than significant with mitigation.

Operation and maintenance of the new open water intake and brine discharge outfall at Moss Landing would not result in any potential impacts on jurisdictional wetlands or waters in comparison to the proposed project. Operation of the desalination plant at the former National Refractories facility could impact salt marsh wetlands located along the site's western margin, and connected to Moro Cojo Slough, through runoff and sediment discharge. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c** would reduce these potential impacts to less than significant. No impact on waters of the U.S./waters of the State would result from maintenance and operation of all other facilities. Therefore, Alternative 4 would result in the ***same impact conclusion*** with respect to wetlands and other waters during operation, less than significant with mitigation.

Alternative 4 would avoid impacts of the proposed project on the spread of invasive plants during operation because no maintenance would occur at the CEMEX site. Maintenance and operations of all other facilities would not result in foreseeable surface disturbance that could contribute to the introduction or spread of invasive plants and would therefore have no impact. Therefore, Alternative 4 would result in a ***reduced impact conclusion*** with respect the spread of invasive plants during operation, no impact.

With respect to inconsistency with an adopted habitat conservation plan, the Alternative 4 would have the same impact as the proposed project because all facilities contributing to this impact (Transmission Main) would be common with the proposed project. Implementation of **Mitigation Measures 4.6-1a, 4.6-1n**, and **4.6-2b** would reduce the impact to a less-than-significant level. Therefore, with respect to consistency with an adopted habitat conservation plan, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Alternative 4 would have no foreseeable operational potential to spread invasive plants, and so would not contribute to cumulative impacts related to invasive plants during operation.

The geographic scope of analysis for cumulative impacts related to terrestrial biological resources for Alternative 4 is defined by the location of the Alternative 4 components as well as biologically linked terrestrial areas within approximately 5 miles of these sites. Cumulative impacts within former Fort Ord lands, and the contribution of Alternative 4 to those impacts, would be exactly the same as described for the proposed project because the components that contribute to these impacts are the same under Alternative 4.

Eliminating disturbance associated with the subsurface slant wells at the CEMEX site would eliminate impacts on western snowy plover and reduce overall impacts on special-status species and their habitat and the potential to spread invasive species within sensitive dune scrub habitat compared to the proposed project. The same projects listed in Section 4.6.6 would contribute to potential impacts on sensitive vegetation types and wildlife habitat that could be affected by

Alternative 4 components, including projects near the intake and desalination plant location (e.g., the Moss Landing Community Plan). In combination, these projects would result in significant cumulative impacts due to the potential to adversely affect special-status species and sensitive habitat types. Given the potential to adversely affect special-status species, Alternative 4 could result in a cumulatively considerable contribution to significant cumulative impacts on special-status species and sensitive habitat types. These impacts would be mitigated consistent with what is described for the proposed project in Section 4.6.5 (**Mitigation Measures 4.6-1a** through **4.6-1q**, **4.6-2**), and therefore, for the same reasons described in Section 4.6.6, while Alternative 4 could result in a significant contribution to cumulative impacts on these biological resources, with mitigation, its contribution and the overall cumulative impacts would be reduced to a level that is less than significant.

Construction of Alternative 4 would have potentially significant impacts on wetlands as a result of multiple river and tidal slough crossings and associated wetlands. Additionally, components that are common with the proposed project could result in significant impacts as described in Section 4.6.5. The same projects listed in Section 4.6.6 would contribute to potential impacts on wetlands and other waters, potentially resulting in a significant cumulative impact. Alternative 4 river and tidal slough crossings, along with components common with the proposed project, could have a considerable contribution to significant cumulative impacts on wetlands in the region. After implementation of mitigation measures identified for the proposed project (i.e., **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c,** and **4.6-3**), Alternative 4's contribution would result in a less than significant cumulative impact on wetlands for the same reasons described in Section 4.6.6.

Alternative 4 would avoid construction within the primary habitat at the CEMEX site. However, similar to the proposed project, the desalinated water pipeline and transmission main under Alternative 4 would be constructed within primary habitat in the City of Marina and would conflict with the City of Marina LCLUP policies. Additionally, Alternative 4 would have a significant and unavoidable impact related to placing structures within or adjacent to habitat that is inconsistent with the North County LCP/LUP. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) could place its proposed desalination plant within or adjacent to habitat considered to be ESHA under the North County LCP/LUP, and would conflict with North County LCP/LUP policies, also a significant and unavoidable impact. In combination, these projects would result in a significant cumulative impact, and Alternative 4's contribution would be significant and unavoidable.

Overall, while some contributions to cumulative impacts would be avoided, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

5.5.6.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as

Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Alternative 5a would reduce impacts on sensitive central dune scrub and associated special-status species compared to the proposed project by reducing the area of construction impact at the CEMEX site by approximately 15 percent. However, construction activities in proximity to endangered species habitat (i.e., western snowy plover, Smith's blue butterfly, and others described in Section 4.6) would result in similar levels of potential direct and indirect effects on individuals and habitat quality compared with the project. Alternative 5b would result in construction of fewer subsurface slant wells at Potrero Road compared to Alternative 1, but would have the same area of disturbance, and so would result in the same types of impacts described for Alternative 1. Under both Alternatives 5a and 5b, the area of disturbance of California annual grassland and associated special-status species, including California tiger salamander, at the desalination plant site may be reduced, but potential significant impacts on special-status species would be the same as the proposed project. All other components and potential impacts under Alternatives 5a and 5b would be the same as in the proposed project and Alternative 1, respectively. Thus, although impacts would be reduced compared to the proposed project because of the smaller area of disturbance, construction would result in the ***same impact conclusion*** with respect to adverse effects on special-status species as the proposed project, less than significant with mitigation.

With respect to effects on riparian habitat, critical habitat, and other sensitive natural communities, Alternative 5a would reduce the area of sensitive central dune scrub disturbance, but potential significant impacts on central dune scrub sensitive natural community, primary habitat under the Marina LCP, and western snowy plover critical habitat would be the same. Alternative 5b impacts on sensitive natural communities would be the same as described under Alternative 1. Overall, Alternative 5b would have less severe significant impacts on sensitive natural communities and similar significant impacts on critical habitat compared to the proposed project. With respect to riparian habitat, critical habitat, and sensitive natural communities, construction of Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The same impacts on jurisdictional wetlands and other waters would occur during construction of Alternative 5a as under the proposed project. Construction impacts resulting from Alternative 5b would result in greater potential impacts on jurisdictional wetlands and other waters associated with multiple crossings of jurisdictional features by the new alternative source water pipeline. **Mitigation Measures 4.6-1a** through **4.6-1c, 4.6-1g,** and **4.6-3** would be relevant to both Alternatives 5a and 5b. Construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 5a would result in the same significant unavoidable impact from conflict with the Marina LCLUP as the proposed project, and Alternative 5b would result in the same significant unavoidable impact from conflict with the Marina LCLUP and the North County LCP/LUP as

Alternative 1. Therefore, Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

Less ground disturbance would occur at the desalination plant site under Alternatives 5a and 5b than under the proposed project and therefore the potential impact resulting from the spread of non-native, invasive species at this site would be less. Alternative 5b would include a longer source water pipeline as described for Alternative 1, increasing the potential to spread invasive species along that alignment compared to the proposed project or Alternative 5a. Impacts would be significant and would require implementation of **Mitigation Measure 4.6-1p** (**Control Measures for Spread of Invasive Plants**) to reduce impacts to less than significant. Thus, with respect to invasive species, construction would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

With respect to operational impacts on special-status species and their habitat, operation of the pumping wells (from both Alternative 5a and 5b) would not produce groundborne vibration and therefore, there would be no impacts on special-status species from vibration. This is the same as described for the proposed project and for Alternative 1. Disturbance from maintenance of the slant wells and the resulting impact on western snowy plover habitat would be similar to the proposed project under Alternative 5a (CEMEX site) and decreased compared to the proposed project under Alternative 5b (Potrero Road site); under either alternative, significant indirect impacts could still occur and would be reduced to less than significant with **Mitigation Measure 4.6-1d**. All other components would result in the same potentially significant impacts described for the proposed project, and thus would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

With respect to operational impacts on riparian habitat, critical habitat, or other sensitive natural communities, under Alternative 5a, similar impacts on central dune scrub sensitive natural community, primary habitat under the City of Marina LCLUP, and western snowy plover critical habitat would occur at the CEMEX facility subsurface slant wells and source water pipeline during operations and maintenance activities as the proposed project. The area of disturbance would be reduced under Alternative 5a but potential significant impacts on central dune scrub sensitive natural community, primary habitat under the City of Marina LCP, and western snowy plover critical habitat would be the same. Under Alternative 5b, impacts on sensitive natural communities during operations would be the same as described under Alternative 1, and would be potentially significant. Impacts of both Alternatives 5a and 5b would be mitigated to a less-than-significant level with implementation of **Mitigation Measures 4.6-1a** through **4.6-1d**, **4.6-1n**, **4.6-1p**, **4.6-2a**, and **4.6-2b**.

Alternative 5a would reduce impacts on steelhead habitat compared to the proposed project. Although slant well pumping under Alternative 5a would not directly pull surface water from the Salinas River, like the proposed project slant well pumping, it could draw in groundwater that would otherwise discharge to the river. Alternative 5a would remove less groundwater from the river recharge system compared to the proposed project – approximately 270 afy compared to the proposed project's 400 afy, proportional to the reduced capacity of the Alternative 5a desalination

plant. This would represent 0.11 percent of the total annual flow volume of the Salinas River, compared to the proposed project's 0.16 percent. Similarly, Alternative 5a would remove approximately 47 afy from Tembladero Slough, compared to the proposed project's 65 afy. These impacts would be reduced compared to the proposed project and would remain less than significant. Alternative 5b, similarly, would reduce impacts on Elkhorn Slough compared to those described for Alternative 1; however, because impacts cannot be quantified with the information available, it is assumed this impact would remain significant and unavoidable. Therefore, with respect to riparian habitat, critical habitat, or other sensitive natural communities, Alternative 5a would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation, and Alternative 5b would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Under Alternative 5a, operation and maintenance of a reduced number of subsurface slant wells at CEMEX would reduce the potential for impacts on jurisdictional wetlands and other waters. Under Alternative 1, no maintenance would occur near the CEMEX settling ponds; however, operations and maintenance of subsurface slant wells at Potrero Road have some potential to cause runoff or sediment discharge to nearby Old Salinas River and associated tidal salt marsh. Implementation of **Mitigation Measures 4.6-1a** through **4.6-1c** would reduce these potential impacts to less than significant. No impact on waters of the U.S./waters of the State would result from maintenance and operation of all other facilities. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** with respect to wetlands and other waters during operation, less than significant with mitigation.

Alternative 5a would result in the same potential as the proposed project to spread invasive plants at the CEMEX site during operation (significant, but reduced to less than significant implementation of **Mitigation Measures 4.6-1** and **4.6-1p**). Alternative 5b would avoid impacts of the proposed project on the spread of invasive plants during operation because no maintenance would occur at the CEMEX site, and the Potrero Road site is disturbed and thus not susceptible to the spread of invasive plants. Maintenance and operations of all other facilities would not result in foreseeable surface disturbance which could contribute to the introduction or spread of invasive plants and would therefore have no impact. Therefore, Alternative 5a would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation, and Alternative 5b would result in a ***reduced impact conclusion*** with respect the spread of invasive plants during operation, no impact.

Alternatives 5a and 5b would have the same impact related to inconsistency with an adopted habitat conservation plan because all facilities contributing to this impact would be common with the proposed project. Implementation of **Mitigation Measures 4.6-1a**, **4.6-1n**, and **4.6-2b**, would reduce the impact to a less-than-significant level. Therefore, with respect to consistency with an adopted habitat conservation plan, operation of Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Combined Impacts with GWR Project

Construction of GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) facilities may adversely affect, either directly or through habitat modification, special-status plant and wildlife species and their habitat. Significant impacts on special-status plant and animal species could occur during construction at all of the proposed GWR Project facility sites including impacts on some of the same resources as Alternatives 5a and 5b: sandmat manzanita, Monterey ceanothus, Monterey spineflower, Eastwood's goldenbush, and Kellogg's horkelia; roosting special-status bat species and nesting raptors, migratory birds, tricolored blackbird, western burrowing owl, California horned lark, white-tailed kite, or other protected avian species; Smith's blue butterfly; California tiger salamander, California red-legged frog; western pond turtle; California legless lizard; coast horned lizard; Monterey dusky-footed woodrat; Monterey ornate shrew; and American badger. The GWR Project also would include construction of facilities that could adversely affect jurisdictional wetlands and other waters and could result in the removal and/or trimming of protected trees. All impacts could be reduced to a less-than-significant level with implementation of mitigation approved as part of the adopted Mitigation Monitoring and Reporting Program for the GWR Project (MRWPCA and MPWMD, 2016). For the same reasons described for the proposed project and Alternatives 5a and 5b, the GWR Project could have a cumulatively significant impact on these resources, but after implementation of adopted mitigation measures, the GWR Project, in combination with the contribution of Alternatives 5a and 5b would result in a less than significant impact on these resources.

Operation of the GWR Project would affect the hydrology of the Salinas River with a potential reduction of up to 1 percent of the average annual flow, which would not be substantial in relation to total flows. In combination with the effects of Alternative 5a, the total effect would be a potential reduction of up to 1.11 percent of the average annual flow. These combined diversions would not result in significant cumulative impact on Salinas River flows or the associated riparian habitats, and the contribution of Alternative 5a would be less than significant. Alternative 5b would result in impacts on steelhead habitat in Elkhorn Slough, which was determined to be significant and unavailable. However, GWR would not affect steelhead habitat in Elkhorn Slough. Therefore, the GWR Project's effects on the hydrology of the Salinas River would not combine with potential effects of Alternative 5b and would not contribute to a significant impact on the hydrology of Elkhorn Slough.

Several components of Alternatives 5a and 5b that are common with the proposed project would be located within the *1997 Installation-Wide Multispecies Habitat Management Plan* (HMP) for the former Fort Ord area and construction and operations of these facilities could be inconsistent with the HMP. The GWR Project components located within the boundaries of former Fort Ord could be inconsistent with the local requirements for HMP plant species. Implementation of mitigation approved as part of the adopted Mitigation Monitoring and Reporting Program for the GWR Project (MRWPCA and MPWMD, 2016) would reduce the GWR Project's impact. Similarly, implementation of **Mitigation Measures 4.6-1a**, **4.6-1n**, and **4.6-2b** for Alternatives 5a and 5b would reduce potential impacts to a less-than-significant level, and for the same reasons described in Section 4.6.6 for the proposed project, the contribution of Alternatives 5a and 5b to a

cumulative impact on the HMP would be less than significant. Alternative 5a, in combination with GWR, would result in significant unavoidable impacts because of conflict with City of Marina LCLUP policies. Alternative 5b, in combination with GWR, would result in significant unavoidable impacts because of Alternative 5b's conflict with the Marina LCLUP and the North County LCP/LUP policies and because of significant unavoidable impacts on steelhead habitat within Elkhorn Slough. Thus, considering either Alternative 5a or 5b together with the GWR Project, would result in significant and unavoidable cumulative effects.

Impacts of Full Cumulative Scenario

The cumulative scenario for Alternatives 5a and 5b would be the same as described in Section 4.6.6 for the proposed project, but as described above, would include the additional GWR Project. Contributions to cumulative impacts resulting from construction of Alternatives 5a and 5b would be reduced compared to those described for the proposed project, which is described in Section 4.6.6, consistent with the reduced impacts associated with fewer slant wells and a reduced desalination plant footprint as described above. While these impacts could result in cumulatively significant impacts, as described for the proposed project, these impacts would be mitigated consistent with what is described for the proposed project in Section 4.6.5. Following implementation of these mitigation measures, for the same reasons described for the proposed project in Section 4.6.6, the contributions of Alternatives 5a or 5b would result in a less than significant cumulative impact with the exception of the significant and unavoidable impact related to inconsistencies with the City of Marina LCLUP (Alternative 5a) and the City of Marina LCLUP and North County LCP/LUP (Alternative 5b). Construction of Alternative 5a and 5b could result in a significant cumulative impact on wetlands, but mitigation measures described as part of the proposed project (i.e., **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c,** and **4.6-3**), would reduce the contribution of Alternative 5a and 5b to less than significant.

Overall, while some contributions to cumulative impacts would be reduced, the project footprint of the combined projects would result in an increased level of impact, and Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable.

5.5.6.9 References

EMC Planning Group, Inc., 2016. Habitat Assessment for the California Red-Legged Frog, California Tiger Salamander, and Santa Cruz Long-Toed Salamander, Monterey Bay Regional Water Project, Moss Landing, Monterey County, California. Prepared for Deep Water Desal, LLC. Feb. 26, 2016.

Monterey Regional Water Pollution Control Agency and Monterey Peninsula Water Management District (MRWPCA and MPWMD), 2016. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, Volume IV, Exhibit B. http://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf.

State Water Resources Control Board (SWRCB), 2016. *Order WR 2016-0016, In the Matter of Application of California American Water Company, To Amend State Water Board Order 2009-0060*. Adopted July 19, 2016.

5.5.7 Hazards and Hazardous Materials

The evaluation criteria for Hazards and Hazardous Materials address: hazards to the public or the environment from accidental spills during construction, and during operation; encountering hazardous materials from, or locating facilities on a hazardous materials site; handling hazardous materials near a school, and; increased risk of wildland fires during construction. Construction of all facilities will involve the use of hazardous materials (e.g. fuel, lubricants, paints, and solvents) but only the slant wells, the desalination plant, the ASR wells, and the Carmel Valley Pump Station would use hazardous materials during operation. Proposed facilities near the wildlands of the former Fort Ord, and in Carmel Valley, are located in or near areas classified by CAL FIRE as High or Very High Hazard Severity Zones.

5.5.7.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.7, Hazards and Hazardous Materials. The setting for the components north of the Nashua Road/Highway 1 intersection is presented below.

Hazardous Materials Sites in the Moss Landing Area

The hazardous materials sites discussed below are the only active hazardous materials sites in the Moss Landing area and would have the potential to overlap with the components unique to Alternatives 2, 3, and 4. There are no hazardous sites that overlap with the components unique to Alternatives 1 or 5b and there are no known hazardous materials sites within Monterey Bay in MBNMS.

Former National Refractories

The former refractory property, which is the site for the Alternative 4 desalination plant, is located at the southeast corner of Highway 1 and Dolan Road. It was used as a mineral extraction and processing facility and a brick production plant until the bankruptcy of National Refractories in 2002 (CapRock, 2013, 2016). This facility had several onsite landfills, settling ponds, borrow areas, above and below ground storage tanks, and underground fuel lines. The refractory had historic releases of hexavalent chromium, other metals (barium, total chromium, molybdenum, nickel, and zinc), solvents, and fuels to soil and groundwater. Most of the historical structures have been removed. Site investigation and remediation activities are in progress.

Fuel contamination was released from the former USTs located about 200 feet south of Dolan Road. The contamination in soil and groundwater is reportedly limited to the former refractory property and is being remediated by a soil vapor extraction system.

Chromite ore piles have been removed from the property, eliminating a source of hexavalent chromium. However, hexavalent chromium is reportedly present in groundwater throughout the former refractory property and may extend for an unknown distance to areas north of Dolan Road and south of the former refractory property. Some of the source of hexavalent chromium in

groundwater is from the onsite historical use of chromium. Background studies also revealed that naturally-occurring chromium-bearing minerals in the local Aromas Red Sands Formation are a source of the hexavalent chromium detected in the Aromas Aquifer. Remediation activities for hexavalent chromium in groundwater have consisted of the injection of a lactate solution to stimulate microbial activity to transform hexavalent chromium to the less toxic trivalent chromium, which largely precipitates out of groundwater. Hexavalent chromium concentrations have been reduced but are still above action levels in some areas. The depth to groundwater ranged from 16.65 to 29.96 feet below the ground surface on November 11, 2015 (CapRock, 2016).

Dynegy Moss Landing (aka Moss Landing Power Plant)

The Dynegy Moss Landing site, also known as the Moss Landing Power Plant, is located along the north side of Dolan Road extending from Highway 1 east to Via Tanques Road (DTSC, 2016). This site is located north across Dolan Road from the Alternative 4 desalination plant site; and directly west of the Alternative 3 desalination plant site. Portions of the Alternative 2 and 3 intake pump station and intake pipeline would overlap with the area of contamination reported at this site. PG&E is the original owner and retains responsibility for environmental cleanup. Dynegy, current owner, took control of the facility in 2007. Nine power generation units have been used at the site since its inception. Fuel oil was burned to generate power before switching to natural gas. The constituents of concern at the facility are petroleum hydrocarbons, volatile organic compounds, polynuclear aromatic hydrocarbons, metals, polychlorinated biphenyls (PCBs), and asbestos. Soil and groundwater investigation and cleanup are in progress. The extent of soil and groundwater contamination is both onsite and offsite. The property has land use restrictions that prohibit onsite soil excavation and groundwater extraction without the approval of the DTSC. The power generation and subsequent investigation and cleanup activities are in the western portion of the property and contamination has not been reported in the eastern portion of the property.

Calera Corporation Moss Landing Cement Company

The Calera Corporation Moss Landing Cement Company is located at 7696 Highway 1 in Moss Landing just southeast of the Highway 1 and Dolan Road intersection. It is located west-southwest of the Alternative 3 desalination plant site and adjacent to the Alternative 4 desalination plant site. The site had seven containment structures that have not been used since 2011. Remediation was conducted in 2011 and the site owners are planning to submit a case closure request (RWQCB, 2016). The GeoTracker website provided summary information but no investigation or cleanup reports.

Other Hazards Considerations

There are no airports within 2 miles and no schools within 0.25 mile of the components located north of the Nashua Road/Highway 1 intersection; the area is not within a very high or high fire hazard severity zone (CAL FIRE, 2007, 2008).

5.5.7.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during construction.

Petroleum products, such as gasoline, diesel fuel, lubricants, and cleaning solvents would be utilized to fuel and maintain construction vehicles and equipment for all project components. The proposed slant wells would use drilling fluids, such as bentonite mud and foam to assist the rotary drilling techniques. The construction contractor would pump out all of the sand-bentonite mud slurry and put it in a storage container for offsite hauling and disposal. Installation of the ASR Wells may use non-corrosive, environmentally inert, biodegradable additives to keep the drill hole open. Construction activities are required to comply with numerous hazardous materials and stormwater regulations, (such as the Hazardous Materials Business Plan (HMBP), Stormwater Pollution Prevention Plan (SWPPP), and California Fire Code) designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner. Through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would be less than significant for all project components.

Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.

The proposed project involves excavation, trenching, and grading for the construction of water conveyance pipelines, building footings, and utilities. Some sites with known soil and/or groundwater contamination are located within 0.25 mile of project facilities and may have affected subsurface conditions at various locations along the project area. If substantial hazardous materials are present in excavated soils, health and safety risks to workers and the public could occur. Such risks could occur from stockpiling, handling, or transportation of contaminated soils. The dewatering of contaminated groundwater could also present risks to public health and safety, and the environment, if the contaminated groundwater (i.e., dewatering effluent) is not handled properly. The potential for contaminated soil and groundwater to be released into the environment during project construction would be considered a significant impact. These impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.7-2a** (**Health and Safety Plan**), which requires that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations and **4.7-2b** (**Soil and Groundwater**

Management Plan), which requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater.

Impact 4.7-3: Location on a known hazardous materials site.

Portions of the new Transmission Main and ASR Pipelines would be located in the former Fort Ord Seaside Munition Response Areas, a known former hazardous materials site that is identified on the National Priorities List. Construction activities within this area have the potential to encounter undiscovered unexploded ordnance, which, if not identified and properly handled, could cause injury to or death of construction workers or result in wildfire. Compliance with the City of Seaside's Ordnance Remediation District regulations and the environmental protection provisions of the Findings of Suitability for Early Transfer (FOSET) agreement between Fort Ord Reuse Authority and the City of Seaside would ensure that project impacts are less than significant. None of the other project components are located within a known hazardous materials site.

Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of a school during construction.

The new Desalinated Water Pipeline, new Transmission Main, ASR Pipelines, and Ryan Ranch-Bishop Interconnection Improvements Pipeline would be located within 0.25 miles of a school and, as discussed in Impact 4.7-1, would require the use of fuel, lubricants, paints, and solvents. The HMBP and SWPPP discussed under Impact 4.7-1, above, impose performance standards on the construction activities that would ensure the risk of release of hazardous materials during construction would be low. Therefore, the potential for a hazardous materials release during construction to result in increased exposure to hazardous materials at the nearby schools is remote; this impact is less than significant. None of the other proposed project components are located within 0.25-mile of a school. No impact would result.

Impact 4.7-5: Increased risk of wildland fires during construction.

The new Transmission Main, ASR Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station are proposed in or near areas classified by CAL FIRE as High or Very High Fire Hazard Severity Zones. California regulations governing the use of construction equipment in fire prone areas are designed to minimize the risk of wildland fires (e.g., PRC Sections 4411 et seq.). In addition, the California Fire Code addresses the fire safety of general construction operations. The construction contractor must comply with these regulations and any additional requirements imposed by CAL FIRE or the local fire protection departments. With compliance, the impact associated with an increased risk of wildland fires during construction would be less than significant.

None of the other project facilities are located within or near an area classified by CAL FIRE as a High or Very High Fire Hazard Severity Zone; however, construction activities could temporarily increase fire risk. Compliance with California Fire Code regulations would ensure that the potential impact associated with an increased risk of fire during construction of all other project components would be less than significant.

Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.

Operation and maintenance of the proposed subsurface slant wells, MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station would involve the routine use and storage of hazardous materials. Through compliance with existing state and federal laws and regulations regarding hazardous materials storage and management, the potential for environmental impacts due to the accidental release of hazardous materials would be less than significant. Operation of all pipelines, Ryan Ranch-Bishop Interconnection Improvements, and the Main System-Hidden Hills Interconnection Improvements would have no impact related to the inadvertent release of hazardous materials.

Impact 4.7-C: Cumulative impacts related to hazards and hazardous materials.

Proposed project construction and operation would not have a significant contribution to cumulative impacts on the public or the environment through the transport, use, disposal, or accidental release of hazardous materials or to cumulative effects associated with wildfire risk because the likelihood that the proposed project and cumulative projects in the vicinity of project components would be under construction at the same time is remote. The proposed project's contribution could result in a potentially significant cumulative impact from the potential release of or exposure to hazardous materials in soil or groundwater from more than one project, but implementation of mitigation measures identified in Impact 4.7-2 would reduce the overall cumulative impact to a less-than-significant level.

5.5.7.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated. Consequently, there would be no construction- or operations-related use of hazardous materials, no chance of encountering or releasing hazardous materials or of locating a facility on an existing hazardous materials site associated with the No Project Alternative. However, decommissioning of the existing test slant well could result in potentially significant but mitigable impacts related to hazards and hazardous materials, including the potential to encounter contaminated soil/and or groundwater. See Impact 4.7-2 in Section 4.7.5.1. Implementation of Mitigation Measures 4.7-2a and 4.7-2b would reduce the impacts to a less-than-significant level.

Because the No Project Alternative's impact would be less than significant with mitigation, its contribution to cumulative effects related to hazards or hazardous materials would be less than significant.

5.5.7.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.3.3.2, Intake Option 3 – Subsurface Slant Wells at Potrero Road). The desalination plant, brine discharge pipeline, Castroville

Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction Impacts

Petroleum products, such as gasoline, diesel fuel, lubricants, and cleaning solvents would be used to fuel and maintain construction vehicles and equipment for all components of Alternative 1. The 5.5 miles of additional source water pipeline, and the one additional well required for Alternative 1 (10 new wells at Potrero Road versus 9 new wells plus the converted test well at CEMEX) would increase the potential for accidental spills compared to the proposed project. However, through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 1 would involve excavation, trenching, and grading for the construction of water conveyance pipelines and building footings. If substantial hazardous materials are present in excavated soils, health and safety risks to workers and the public could occur. The dewatering of contaminated groundwater could also present risks to public health and safety, and the environment, if the contaminated groundwater (i.e., dewatering effluent) is not handled properly. The change from the CEMEX site to the Potrero Road site would not result in encountering any additional known hazardous materials sites and the potential impact would be the same as the proposed project. The potential impact at common component locations would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.7-2a** (**Health and Safety Plan**), which requires that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations and **4.7-2b** (**Soil and Groundwater Management Plan**), which requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater. Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

No component unique to Alternative 1 would be located within 0.25 mile of a school and the potential for Alternative 1 to emit hazardous emissions within 0.25 miles of a school would be the same as the proposed project. Compliance with all relevant hazardous materials storage and permitting requirements would minimize the risk of releases and Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component unique to Alternative 1 would be located in a High or Very High Fire Hazard Safety Zone and Alternative 1 would result in a the same level of impact and the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

Operations and maintenance activities associated with Alternative 1 would involve the same storage and use of hazardous materials and the transport of hazardous wastes generated during operations as the proposed project and compliance with applicable laws, permits and regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component unique to Alternative 1 would be located on a known hazardous material site. Therefore, the potential to create a hazard to the public would be the same as the proposed project and Alternative 1 would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 1 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. The geographic scope of analysis for cumulative impacts related to hazards and hazardous materials for the components that differ from the proposed project is defined by the location of the Alternative 1 intake system and associated pipelines north of the Nashua Road/Highway 1 intersection. Of the cumulative projects described in **Table 4.1-2** in Section 4.1, the DeepWater Desal Project (No. 34) is the only additional project that would have components located near Alternative 1 components; however, the DeepWater Desal Project facilities would be located north of Potrero Road at Moss Landing and would not geographically overlap with Alternative 1 components; therefore, the impacts of these components would not combine with impacts of Alternative 1. No other cumulative projects are located in this Potrero Road area, and no changes or increases in cumulative impacts would occur. Similar to the proposed project, with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, Alternative 1's contribution to a significant cumulative impact regarding encountering hazardous materials sites would be reduced to a level that is less than significant. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to hazardous materials, less than significant with mitigation.

5.5.7.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see

Figure 5.4-2). Therefore, the hazards and hazardous materials impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Petroleum products would be used to fuel and maintain construction vehicles and equipment for all components of Alternative 2. The 6.5 miles of additional source water pipeline, the new screened open water intake and the elimination of the Castroville Pipeline would increase the potential for accidental spills compared to the proposed project. However, through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

The construction of the open water intake system, including a pump station on Dolan Road and the installation of the intake pipeline (HDD technique), and the additional 6.5 miles of source water pipeline (open trench and HDD construction), would result in an increase in potential of encountering hazardous materials in soil and groundwater from the known hazardous materials sites in the Moss Landing area compared to the proposed project, resulting in a potentially significant impact. The potential release of or exposure to hazardous materials in soil or groundwater would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.7-2a** (**Health and Safety Plan**) which would require that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations, and **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**) which requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater, when encountered. Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

No component unique to Alternative 2 would be located within 0.25 mile of a school and the potential for Alternative 2 to emit hazardous emissions within 0.25 miles of a school would be the same as the proposed project. Compliance with all relevant hazardous materials storage and permitting requirements would minimize the risk of releases and Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component unique to Alternative 2 would be located in a High or Very High Fire Hazard Safety Zone and Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

In addition to portions of the new Transmission Main and ASR Pipelines, the Alternative 2 pump station on Dolan Road would be located on or near the known hazardous material sites at Moss Landing. Therefore, the potential to create a hazard to the public would be increased compared to the proposed project. However, compliance with regulations would ensure that project impacts are less than significant. Therefore, Alternative 2 would have the ***same impact conclusion*** as the proposed project, less than significant.

Operations and maintenance activities associated with Alternative 2 would involve the same storage and use of hazardous materials and the transport of hazardous wastes generated during operations as the proposed project and compliance with applicable laws, permits and regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 2 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. The geographic scope of analysis for cumulative impacts related to hazards and hazardous materials for the components that differ from the proposed project is defined by the location of the Alternative 2 open water intake system and associated pipelines north of the Nashua Road/Highway 1 intersection. Alternative 2 would not contribute to cumulative impacts related to proximity to schools or airports, or location within a very high or high fire severity hazard zone.

The DeepWater Desal Project (No. 34) and the Moss Landing Community Plan (No. 37), described in **Table 4.1-2** in Section 4.1 are located geographically near or overlap the Alternative 2 components. Various proposed surface construction projects are included in the Moss Landing Community Plan and the estimated time of construction is unknown. These projects would be required to comply with the same requirements as Alternative 2. All project components involving the handling, storage, and disposal of hazardous materials would be required to prepare a HMBP and comply with applicable regulations, including those governing containment, site layout, and emergency response and notification procedures in the event of a spill or release. Transportation and disposal of wastes, such as spent cleaning solutions, would also be subject to regulations for the safe handling, transportation, and disposal of chemicals and wastes. Such regulations include standards to which parties responsible for hazardous materials releases must return spill sites, regardless of location, frequency, or size of release, or existing background contaminant concentrations. Compliance with existing laws and regulations regarding hazardous materials transport would reduce the risk of environmental or human exposure to such materials and would reduce impacts of each project to a level and geographic scope such that they would not combine with one another to cause significant cumulative impacts. Similar to the proposed project, with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, Alternative 2's contribution to a significant cumulative impact regarding encountering hazardous materials sites would be reduced to a level that is less than significant. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to hazardous materials, less than significant with mitigation.

5.5.7.6 Direct and Indirect Effects of the Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The 2 pipelines for the intake and 2 pipelines for the

discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Petroleum products would be used to fuel and maintain construction vehicles and equipment for all components of Alternative 3. The 6.5 miles of additional source water pipeline, the new screened open water intake and discharge, the 25 miles of additional desalinated water pipeline, and the larger desalination facility and co-located data center would increase the potential for accidental spills during construction compared to the proposed project. However, through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

The construction of the open water intake system, including a pump station on Dolan Road and the installation of the 2 intake and 2 discharge pipelines (HDD technique), and the additional 31.5 miles of additional pipeline (open trench and HDD construction), would result in an increase in potential, of encountering hazardous materials in soil and groundwater from the known hazardous materials sites in the Moss Landing area compared to the proposed project, resulting in a potentially significant impact. The potential release of or exposure to hazardous materials in soil or groundwater would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.7-2a** (**Health and Safety Plan**) which would require that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations, and **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**) which requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater, when encountered. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

No component unique to Alternative 3 would be located within 0.25 mile of a school and the potential for Alternative 3 to emit hazardous emissions within 0.25 miles of a school would be the

same as the proposed project. Compliance with all relevant hazardous materials storage and permitting requirements would minimize the risk of releases and Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component unique to Alternative 3 would be located in a High or Very High Fire Hazard Safety Zone and Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

In addition to portions of the new Transmission Main and ASR Pipelines, the Alternative 3 pump station on Dolan Road would be located on or near the known hazardous material sites at Moss Landing. Therefore, the potential to create a hazard to the public would be increased compared to the proposed project. However, compliance with regulations would ensure that project impacts are less than significant. Therefore, Alternative 3 would have the ***same impact conclusion*** as the proposed project, less than significant.

Operations and maintenance activities associated with Alternative 3 would involve increased volumes of hazardous materials storage and use of hazardous materials and the transport of hazardous wastes generated during operations as the proposed project because of the much larger desalination plant capacity. However, Alternative 3 compliance with applicable laws, permits and regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 3 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. The geographic scope of analysis for cumulative impacts related to hazards and hazardous materials for components that differ from the proposed project is defined by the location of the Alternative 3 components located north of the Nashua Road/Highway 1 intersection. Alternative 3 would not contribute to cumulative impacts related to proximity to schools or airports, or location within a very high or high fire severity hazard zone.

The Moss Landing Community Plan (No. 37 in **Table 4.1-2** in Section 4.1) is located in the Moss Landing area. The contributions of the Moss Landing Community Plan projects to hazards and hazardous materials-related impacts would be as described under Alternative 2. As described for Alternative 2, compliance with existing laws and regulations regarding hazardous materials transport would reduce the risk of environmental or human exposure to such materials and would reduce impacts of each project to a level and geographic scope such that they would not combine with one another to cause significant cumulative impacts. Similar to the proposed project, with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, Alternative 3's contribution to a significant cumulative impact regarding encountering hazardous materials sites would be reduced to a level that is less than significant. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to hazardous materials, less than significant with mitigation.

5.5.7.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water originating from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Petroleum products would be used to fuel and maintain construction vehicles and equipment for all components of Alternative 4. The installation of the intake and discharge pipelines, the new screened open water intake and brine discharge system, the 6.5 miles of additional desalinated water pipeline, and the larger desalination facility would increase the potential for accidental spills compared to the proposed project. However, through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

The construction of the open water intake system, including the pump station at the caisson, the installation of the intake and brine discharge pipelines (HDD technique), and the additional 6.5 miles of desalinated water pipeline (open trench and HDD construction), would result in an increase in potential of encountering hazardous materials in soil and groundwater from the known hazardous materials sites in the Moss Landing area compared to the proposed project, resulting in a potentially significant impact. The potential release of or exposure to hazardous materials in soil or groundwater would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.7-2a** (**Health and Safety Plan**) which would require that construction contractors prepare a health and safety plan in accordance with Cal OSHA regulations, and **Mitigation Measure 4.7-2b** (**Soil and Groundwater Management Plan**) which requires construction contractors to comply with all relevant environmental regulations and plan appropriately for the safe and lawful handling and disposal of excavated soil and groundwater, when encountered. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

No component unique to Alternative 4 would be located within 0.25 mile of a school and the potential for Alternative 4 to emit hazardous emissions within 0.25 miles of a school would be the same as the proposed project. Compliance with all relevant hazardous materials storage and permitting requirements would minimize the risk of releases and Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component unique to Alternative 4 would be located in a High or Very High Fire Hazard Safety Zone and Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

In addition to portions of the new Transmission Main and ASR Pipelines, the Alternative 4 desalination plant would be located on or near a known hazardous material site at Moss Landing. Therefore, the potential to create a hazard to the public would be increased compared to the proposed project. However, compliance with regulations would ensure Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant.

Operations and maintenance activities associated with Alternative 4 would involve an increased volume of storage and use of hazardous materials and the transport of hazardous wastes generated during operations compared to the proposed project due to the larger desalination capacity. However, Alternative 4 compliance with applicable laws, permits and regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts resulting from the components of Alternative 4 that are common with the proposed project would be the same as those described for the proposed project in Section 4.2.6. The geographic scope of analysis for cumulative hazards and hazardous materials impacts is defined by the location of the Alternative 4 open water intake system, desalination facility, and associated pipelines north of the Nashua Road/Highway 1 intersection. Alternative 4 would not contribute to cumulative impacts related to proximity to schools or airports, or location within a very high or high fire severity hazard zone.

The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) and the Moss Landing Community Plan (No. 37) are located in the Moss Landing area. The contributions of these projects to hazards and hazardous materials-related impacts would be as described under Alternative 2. As described for Alternative 2, compliance with existing laws and regulations regarding hazardous materials transport would reduce the risk of environmental or human exposure to such materials and would reduce impacts of each project to a level and geographic scope such that they would not combine with one another to cause significant cumulative impacts. Similar to the proposed project, with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, Alternative 4's contribution to a significant cumulative impact regarding encountering hazardous materials sites would be reduced to a level that is less than significant. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to hazardous materials, less than significant with mitigation.

5.5.7.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1 (5.5 additional miles compared to the proposed project). Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Construction of Alternatives 5a and 5b components would have a slightly reduced footprint because of the reduced number of wells and smaller sized desalination plant compared to the proposed project and Alternative 1, respectively, resulting in a similar level of potential for accidental spills compared to the proposed project. However, through compliance with applicable hazardous materials storage, disposal, and stormwater permitting regulations, impacts associated with potential releases from the routine transport, use, or disposal of hazardous materials or the accidental release of hazardous materials during construction would result in the ***same impact conclusion*** as the proposed project, less than significant.

Similar to the proposed project and Alternative 1, the implementation of **MMs 4.7-2a** and **4.7-2b** would reduce the potential for harmful exposure to hazardous materials present in soil or groundwater during construction of Alternative 5a or 5b, respectively, to a less-than-significant level and would result in the ***same impact conclusions*** compared to the proposed project; less than significant with mitigation.

No components of Alternative 5a or 5b would be located within 0.25 mile of a school and the potential for Alternative 5a or 5b to emit hazardous emissions within 0.25 miles of a school would be the same as the proposed project. Compliance with all relevant hazardous materials storage and permitting requirements would minimize the risk of releases and Alternative 5a or 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

No component of Alternative 5a or 5b would be located in a High or Very High Fire Hazard Safety Zone and Alternative 5a or 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

Other than portions of the new Transmission Main and ASR Pipelines, no other components of Alternative 5a or 5b would be located on or near the known hazardous material site at Moss Landing. Therefore, the potential to create a hazard to the public would be increased compared to the proposed project and compliance with regulations would ensure Alternative 5a or 5b would have the ***same impact conclusion*** as the proposed project, less than significant.

Operations and maintenance activities associated with Alternative 5a or 5b would involve reduced storage and use of hazardous materials and the transport of hazardous wastes generated during operations compared to the proposed project, and compliance with applicable laws, permits and regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative hazards and hazardous materials impacts for Alternatives 5a and 5b is the same as for the proposed project and Alternative 1, respectively. In addition to the projects identified as relevant to the cumulative analyses for the proposed project and Alternative 1, the GWR Project (No. 58 in **Table 4.1-2** in Section 4.1) is relevant to both Alternatives 5a and 5b. The GWR Project would be subject to compliance with existing laws and regulations regarding hazardous materials transport that would reduce the risk of environmental or human exposure to such materials and would reduce impacts of each project to a level and geographic scope such that they would not combine with one another to cause significant cumulative impacts. Similar to the proposed project, with implementation of **Mitigation Measures 4.7-2a** and **4.7-2b**, Alternative 5a and 5b's contribution to a significant cumulative impact regarding encountering hazardous materials sites would be reduced to a level that isless than significant. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to hazardous materials, less than significant with mitigation.

5.5.7.9 References

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5.5.8 Land Use, Land Use Planning, and Recreation

The evaluation criteria for Land Use, Land Use Planning, and Recreation address: consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating and environmental effect; and disrupting or precluding public access to or along the coast during construction.

5.5.8.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.8, Land Use, Land Use Planning, and Recreation. The setting for the components north of the Nashua Road/Highway 1 intersection is presented below.

Pipeline Alignments North of Nashua Road/Highway 1 Intersection

Lands adjacent to the pipeline alignments north of the Nashua Road/Highway 1 Intersection that are part of Alternatives 1, 2, 3, 4 and 5b are used for agricultural, light and heavy industrial, commercial, residential, and public/quasi-public purposes. Local Coastal Program (LCP) land use plan designations for lands adjacent to the pipeline alignments include: Agricultural Preservation, Recreation and Visitor Serving, Residential – Medium Density, Outdoor Recreation, General Commercial, Wetlands and Coastal Strand, Industrial – Coast Dependent – Heavy, and Heavy Industrial. The zoning designations of lands adjacent to the pipeline alignments for Alternatives 1, 2, 3, 4 and 5b include: Coastal Agricultural Preservation (CAP), Agricultural Conservation (AC), Heavy Industrial (HI) and Resource Conservation (RC). All pipeline segments north of the Nashua Road/Highway 1 intersection would occur within the Coastal Zone. Nearby recreational lands and facilities include Salinas River State Beach, the Elkhorn Slough National Estuarine Research Reserve ("Elkhorn Slough") and the Moro Cojo Slough State Marine Reserve ("Moro Cojo Slough"). The Monterey Bay Sanctuary Scenic Trail alignment follows Highway 1 through Moss Landing. However, the segment that passes through Moss Landing is either undeveloped or limited to the Highway 1 shoulder.

Potrero Road Parking Lot

The Potrero Road parking lot (part of Alternatives 1 and 5b) is located at the western terminus of Potrero Road and serves Salinas River State Beach. Lands adjacent to the parking lot include the Salinas River State Beach to the west and the Old Salinas River channel and fringing marshes to the north, south, and east. The nearest development is a small neighborhood located approximately 800 feet to the northeast. The LCP land use plan designation for lands adjacent to the Potrero Road parking lot is Scenic and Natural Resource Recreation. The zoning designation of lands adjacent to the parking lot is Open Space Recreation (OR). The parking lot lies within the Coastal Zone. Recreational resources in the vicinity of the Potrero Road parking lot include Salinas River State Beach.

Moss Landing

The stretch of Moss Landing beach in the vicinity of components of Alternatives 1, 2, 3, 4, and 5b is located on the west side of Moss Landing's southern peninsula, approximately 250 feet west of Sandholdt Road. Land uses in this area include Moss Landing Beach, the Monterey Bay Aquarium Research Institute, restaurants, and various commercial and marine-related light-industrial developments. Sandholdt Lot, Salinas River State Beach, is located approximately 150 feet to the south of this area. The LCP land use plan designations are Industrial – Coast Dependent – Light and Education – Scientific. The zoning designations are Light Industrial (LI) and Public/Quasi-Public (PQP). The area lies within the Coastal Zone. Nearby recreational lands and facilities include the Salinas River State Beach and the Elkhorn Slough National Estuarine Research Reserve.

Moss Landing Green Commercial Park

The Moss Landing Green Commercial Park is located east of Highway 1 and south of Dolan Road, in Moss Landing. The site is the location of the Alternative 4 desalination plant and it includes various tanks, warehouses, and administrative structures remaining from the former National Refractories & Minerals Corporation's magnesium production operations. The LCP land use plan designation is Industrial – Coast Dependent – Heavy. The zoning designation is Heavy Industrial (HI). The site lies within the Coastal Zone. Nearby recreational resources and facilities include the Monterey Bay Sanctuary Scenic Trail and Elkhorn Slough.

East Tank Farm Parcel

The East Tank Farm Parcel is located north of and adjacent to Dolan Road, approximately 2 miles east of Highway 1 and is the Alternative 3 desalination plant site. The former fuel oil storage site has been remediated and is presently clear of development except for one storage tank and appurtenant facilities. The site is bordered by lands used for agricultural and light industrial activities. The LCP land use plan designation is Heavy Industrial. The zoning designation is Heavy Industrial (HI). The site lies within the Coastal Zone. Recreational facilities and resources in the vicinity include Elkhorn Slough and Moro Cojo Slough.

Regulatory Framework

Regulatory requirements applicable to the proposed project that are related to land use and recreation are presented in Section 4.8.2, Regulatory Framework. Many of the plans, policies, and regulations identified in that section would also apply to the components unique to the project alternatives, including: the National Marine Sanctuaries Act; the California Coastal Act; and the Monterey County Local Coastal Program (LCP). In addition, the Salinas River State Beach General Plan and the Moss Landing Community Plan would apply to components of project alternatives. With respect to land use and recreation, key tenets of these regulatory requirements include prioritizing coastal dependent land uses, maximizing public access to and along the coast, and preserving and enhancing recreational opportunities. The consistency analyses presented in the impacts subsections below consider each alternative's conformity with these principles.

Salinas River State Beach General Plan

The Salinas River State Beach General Plan (General Plan) outlines a framework for park management, providing for protection of natural resources; improving park access; and for the siting, design, and construction of future park improvements in a manner that avoids environmental effects. Prominent among the General Plan's guiding principles is the provision and management of recreational opportunities consistent with resource management and protection. Alternatives' components that could occur on Salinas River State Beach include the subsurface slant wells and Source Water Pipeline (Alternatives 1 and 5b).

Moss Landing Community Plan

The Moss Landing Community Plan (MLCP) Area encompasses the Moss Landing neighborhoods of Elkhorn, Dolan, North Harbor, Island, South Harbor, Village Center, and Heights. The MLCP is a component of and contains community-specific policies that supplement the more general North County Land Use Plan policies to achieve the basic goals of the California Coastal Act, including maximizing public access and recreational opportunities in the coastal zone, among others. The MLCP is presently undergoing a comprehensive update. All alternatives' components sited along and north of Potrero Road would be subject to the MLCP.

Monterey County Land Use Plan and Zoning Designations

This subsection includes an evaluation of the potential for alternatives' components' to conflict with existing Monterey County land use plan and zoning designations. As noted previously, all facilities would be located within Monterey County's coastal zone on lands for which land uses have been classified and zoned pursuant to the North County Land Use Plan and the Monterey County Coastal Implementation Plan (Title 20, Zoning Ordinance), respectively. As discussed below, all alternatives' facilities would require a use permit from Monterey County and would be subject to review and approval pursuant to the provisions of the Local Coastal Plan and other applicable land use policies and regulations. The following is an assessment of established land use plan and zoning designations for alternatives' facilities north of the Nashua Road/Highway 1 intersection.

- Pipelines north of the Nashua Road/Highway 1 intersection would be sited primarily within existing road rights-of-way or utility corridors. Similarly, the Potrero Road subsurface slant wells (Alternatives 1 and 5b) would be sited beneath an existing parking lot at the western terminus of Potrero Road. Road rights-of-way do not have land use or zoning designations in Monterey County; nor does the Potrero Road parking. Nevertheless, because all pipelines and subsurface slant wells would be buried below ground surface, none would have the opportunity to conflict with existing land use or zoning designations.

- The existing caisson at Sandholdt Road that would be utilized for an intake pump system (Alternative 4) would occur on lands designated for Industrial – Coast Dependent – Light and zoned Light Industrial (LI). The Industrial – Coast Dependent – Light land use designation is intended primarily to support marine-related industry, including fishing, canning, boat storage, and other related support facilities and infrastructure. The pump station would be in keeping with the types of industrial facilities envisioned for this classification. The zoning regulations for LI zoning districts allow public utility facilities with a coastal development permit (Section 20.26.060.X). Public utility facilities include

those for the production, storage, transmission, distribution, and recovery of water, sewage, energy, and other similar utilities (Section 20.06.910).

- The intake pump station on Dolan Road (Alternatives 2 and 3), the desalination plant and other facilities at the East Tank Farm Parcel (Alternative 3), and the desalination plant at Moss Landing Green Commercial Park (Alternative 4), would each occur on lands designated for industrial land uses and zoned for heavy industry (HI). The land use designations for the intake pump station site and Moss Landing Green Commercial Park prioritize coastal-dependent industry; the designation for the East Tank Farm Parcel allows for general heavy industry. Each facility would be in keeping with the envisioned uses for its respective land use classification. The zoning regulations for the HI zoning district allow for public utility facilities with a coastal development permit (20.28.060.U).

5.5.8.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin ASR system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.8.5.

Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect.

The proposed MPWSP would not be expected to conflict with applicable policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Although construction of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the Ryan Ranch–Bishop Interconnection Improvements, and ASR pipelines could affect recreational facilities, any disruptions would be temporary and limited to the construction phase. Therefore, the proposed project would not substantially conflict with plans, policies related to land use or recreation. The impact would be less than significant.

Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.

The proposed new Transmission Main and optional alignment would intersect three Fort Ord Dunes State Park entrances. The effects of the new Transmission Main construction on vertical and lateral public accessways within Fort Ord Dunes State Park would be significant. **Mitigation Measure 4.9-1**, **Traffic Control and Safety Assurance Plan**, which would require the implementation of a traffic control safety plan for project construction activities that could affect the public right-of-way, (including roads and trails leading into Fort Ord Dunes State Park), and include measures that would provide for continuity of vehicular, pedestrian, and bicyclist access, would reduce the effects on public access to a less-than-significant level.

Impact 4.8-C: Cumulative impacts related to land use and recreation.

The proposed project would not have a significant contribution to cumulative impacts related to conflicts with plans, policies, and regulations adopted to protect public access or recreational facilities because any effects associated with construction would be temporary and no long-term effects would result. Cumulative effects on coastal public access during construction could be significant if the Fort Ord Dunes Campground project (No. 46 in **Table 4.1-2**) was constructed at the same time as the new Transmission Main, but the proposed project's contribution to this impact would be reduced to a less-than-significant level with implementation of the mitigation measure identified in Impact 4.8-2.

5.5.8.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated and the existing test slant well would be decommissioned. Consequently, there would be no construction- or operations-related impacts on land use, land use planning, or recreation associated with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to land use, land use planning, or recreation, it could not contribute to cumulative effects related to these topics.

5.5.8.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Similar to the proposed project, and based upon an initial review of consistency, components of Alternative 1 that are common with the proposed project would not be expected to conflict with applicable land use policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Although construction of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, Ryan Ranch–Bishop Interconnection Improvements, and ASR pipelines could affect recreational facilities, any disruptions would be temporary and limited to the construction phase.

Alternative 1 facilities at Potrero Road would also be subject to the Salinas River State Beach General Plan. The subsurface slant wells and Source Water Pipeline are coastal-dependent land uses because they depend upon proximity to the coast in order to function. These facilities would

generally occur in areas without land use or zoning regulations and would be permissible on adjacent lands with a coastal development permit (CDP). Subsurface slant well and pipeline construction activities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, would disrupt public access and recreational opportunities in the coastal zone through increased traffic and potential lane closures, and through the temporary closure of the Potrero Road parking lot and coastal access. During the 24-month construction period, travel to or along the coast could take longer than usual and parking options for Salinas River State Beach visitors would be limited to two of three existing options (Sandholdt Road lot or Monterey Dunes Way lot). These effects would be limited to the construction period and alternative recreational beach access opportunities in the area would remain open. For these reasons, components unique to Alternative 1 would not result in conflicts with plans, policies or regulations related to land use or recreation. Additional discussion of traffic and transportation is provided in Section 5.5.9. Public beach access is discussed further below.

Therefore, Alternative 1 would not conflict with plans and policies related to land use or recreation adopted for the purpose of avoiding or mitigating an environmental effect, and would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 1 would result in construction-related impacts on public access to or along the coast for the new Transmission Main. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The Alternative 1 subsurface slant well installation would require complete closure of the Potrero Road parking lot for the 24-month construction period and closure of the parking lot would temporarily disrupt public access to the shore at that location. Nearby alternative beach access opportunities at the end of Sandholdt Road (approximately 0.6 mile north) and Monterey Dunes Way (approximately 1 mile south) would remain open. However, because existing vertical access from Potrero Road would be precluded, the effect would result in an increased level of impact on recreational access compared to the proposed project. However, implementation of **Mitigation Measures ALT 1-REC-1a** (**Public Notification)** and **ALT 1-REC-1b** (**Beach Access Management Plan**), listed below, would reduce impacts to less than significant. These measures provide for the maintenance of existing public access where feasible and safe, posting of public notice in advance of any closures, and the development of a plan for managing public safety in and around the work areas and accessways. Lateral public access seaward of the Potrero Road parking lot would remain open and unimpeded.

Mitigation Measures ALT 1-REC-1a and ALT 1-REC-1b apply to the Alternatives 1 and 5b work at the Potrero Road parking lot and Alternative 4 beach construction and would not apply to the proposed project or other alternatives.

Mitigation Measure ALT 1-REC-1a: Public Notification.

Two weeks prior to construction, CalAm shall post signs notifying the public of the dates of construction operations and locations of beach or beach access closure. The signs shall be printed on weather-proof materials and posted at public access points and other highly visible locations for the duration of the closure period. In addition, the signs shall include a

map showing the nearest alternative access point. At the end of the closure period, CalAm or its contractors shall retrieve all notice materials.

Mitigation Measure ALT 1-REC-1b: Beach Access Management Plan.

Prior to commencement of construction activities, CalAm shall submit a Beach Access Management Plan to the CPUC, MBNMS, and California State Parks Department for review and approval. The Beach Access Management Plan shall provide for maintenance of clear public access routes through to the beach, such that physical construction interference shall be kept to a minimum. The plan shall describe the strategies that the construction contractor(s) will employ during construction to maintain beach access to the maximum extent feasible while ensuring public safety. As appropriate, the plan shall include, but not be limited to: construction fencing, signs, use of enclosed storage areas, construction and construction worker vehicle parking and access routes, and nightly removal of equipment to a designated area. CalAm shall ensure that its construction contractor(s) implement the provisions of the approved plan throughout construction at the Potrero Road parking lot. CalAm shall also provide the public with contact information in order to report immediate hazards related to the project. This information shall be provided in a public notice posted on-site prior to the commencement of any project-related activity.

Therefore, Alternative 1 would have a greater potential to disrupt recreational access than the proposed project, but after implementation of the mitigation measures above, would result in the ***same impact conclusion*** as the proposed project during construction, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 1 would not result in any above-ground facilities that would permanently affect coastal public access. The above-ground facilities proposed within the Coastal Zone at Potrero Road would be relatively small and would not block public access to the beach. No other project components have the potential to permanently affect public access. Therefore, Alternative 1 would result in the ***same impact conclusion*** on land use and recreation as the proposed project, less than significant.

Cumulative Analysis

No facility siting and operations-period effects would occur that could contribute to cumulative effects. Therefore, the geographic scope of analysis for cumulative impacts related to land use and recreation for Alternative 1 is defined by the lands and recreational resources that would be affected by Alternative 1 construction, and is the same as that described for the proposed project in Section 4.2.6, with the exception of the different location of the intake system (Potrero Road, instead of CEMEX), and alternative source water pipeline route. Concurrent construction and operation of Alternative 1 and projects in the cumulative scenario, including the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1), would increase the duration and geographic extent of recreational access disruptions within the study area. The impacts of Alternative 1 on recreational access and access to the shore at the Potrero Road location would be significant, and if other projects were to affect recreational or public shore access concurrently, the cumulative impact would be significant and the contribution of Alternative 1 would be significant. With implementation of **Mitigation Measures 4.9-1**, **ALT 1-REC-1a**, and **ALT 1-REC-1b**, this

contribution and overall impact would be reduced to a level that is less than significant. Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.8.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction

Based upon an initial review of consistency, components of Alternative 2 that are common with the proposed project would only have temporary effects during construction activities, and would not be expected to conflict with applicable land use policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Facilities in Moss Landing that are unique to Alternative 2 would be subject to the Moss Landing Community Plan. The effects of components unique to Alternative 2 are presented below.

- The intake structure, intake pump station, and the Source Water Pipeline are coastal-dependent land uses, because they depend upon proximity to the coast in order to function. The intake structure and pipelines would generally occur in areas without land use or zoning regulations and would be permissible on adjacent lands with a CDP. The intake pump station would occur on a site reserved for heavy industrial uses, where public utility facilities are permissible with a CDP.

- Intake pump station and pipeline construction activities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, would disrupt public access and recreational opportunities in the coastal zone through increased traffic and potential lane closures. During the construction period, travel to or along the coast could take longer than usual. Similarly, recreational boating and other open-water recreational activities in MBNMS could be disrupted in the vicinity of offshore barges during intake structure construction (approximately 1,300 feet offshore). These effects would be limited to the construction period and would not preclude other public access or recreational opportunities in the area. For these reasons, components unique to Alternative 2 would not

result in conflicts with plans, policies or regulations related to land use or recreation. Additional discussion of traffic and transportation is provided in Section 5.5.9. Public beach access is discussed further below.

Installation of the intake structure, intake pump station at Dolan Road, and the additional length of pipeline would not conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect, and overall Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

There are other facilities unique to Alternative 2 that would substantially disrupt or preclude public shoreline access. Construction-related impacts on public access to or along the coast for the new Transmission Main would result in the same significant impact. However with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 2 would not result in any above-ground facilities that would conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect, and would not affect coastal public access. Therefore, Alternative 2 would result in the ***same impact conclusion*** on land use and recreation as the proposed project, less than significant.

Cumulative Analysis

No facility siting and operations-period effects would occur that could contribute to cumulative effects. Therefore, the geographic scope of analysis for cumulative impacts related to land use and recreation for Alternative 2 is defined by the lands and recreational resources that would be affected by Alternative 2 construction, and is the same as that described for the proposed project in Section 4.2.6, with the exception of the different location of the seawater intake system (Moss Landing), and alternative source water pipeline route. Concurrent construction and operation of Alternative 2 and projects in the cumulative scenario, including the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1), would increase the duration and geographic extent of recreational access disruptions within the study area. The impacts of Alternative 2 on recreational access would be significant, and if other projects were to affect recreational access concurrently, the cumulative impact would be significant and the contribution of Alternative 2 would be cumulatively significant. With implementation of **Mitigation Measure 4.9-1**, this contribution would be reduced to a level that is less than significant. Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.8.6 Direct and Indirect Effects of Project Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and

co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction

Similar to the proposed project, and based upon an initial review of consistency, effects from construction of components of Alternative 3 that are common with the proposed project would be temporary, and therefore would not be expected to conflict with applicable land use policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Alternative 3 facilities in Moss Landing would also be subject to the Moss Landing Community Plan. The effects of components unique to Alternative 3 are presented below.

- The proposed screened open water intake and brine disposal structures in MBNMS, the intake pump station, the source water pipeline, and the brine discharge pipeline are coastal-dependent land uses because they depend upon proximity to the coast in order to function. The intake/outfall structures and pipelines would generally occur in areas without land use or zoning regulations and would be permissible on adjacent lands with a CDP. The intake pump station would occur on a site reserved for heavy industrial uses, where public utility facilities are permissible with a CDP. The East Tank Farm Parcel land use and zoning designations allow public utility facilities and other industrial-type facilities with a CDP.

- Intake pump station, pipelines, and East Tank Farm Parcel facilities construction activities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, would disrupt public access and recreational opportunities in the coastal zone through increased traffic and potential lane closures. During the 24-month construction period, travel to or along the coast could take longer than usual. Similarly, recreational boating and other open-water recreational activities could be disrupted in the vicinity of offshore barges during intake/outfall construction (approximately 1,300 feet offshore). These effects would be limited to the construction period and would not preclude other public access or recreational opportunities in the area. For these reasons, components unique to Alternative 3 would not result in conflicts with plans, policies or regulations related to land use or recreation. Additional discussion of traffic and transportation is provided in Section 5.5.9. Public beach access is discussed further below.

Installation of the intake/outfall, intake pump station and East Tank Farm Parcel facilities along Dolan Road, and the additional length of pipelines would not conflict with plans and policies related to land use or recreation and would be compatible with existing land use and zoning designations. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Similar to the proposed project, construction-related impacts on public access to or along the coast would be significant for the new Transmission Main. Facilities unique to Alternative 3 would not preclude public shoreline access but would disrupt public access and recreational opportunities in the coastal zone during the 24-month construction period through increased traffic and potential lane closures; travel to or along the coast could take longer than usual. Similarly, recreational boating and other open-water recreational activities could be disrupted in the vicinity of offshore barges during intake/outfall construction (approximately 1,300 feet offshore). With implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 3 would result in the ***same impact conclusion*** on coastal public access as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 3 would not result in any above-ground facilities that would conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect, and would not affect coastal public access. Therefore, Alternative 3 would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

No facility siting and operations-period effects would occur that could contribute to cumulative effects. Therefore, the geographic scope of analysis for cumulative impacts related to land use and recreation for Alternative 3 is defined by the lands and recreational resources that would be affected by Alternative 3 construction. Concurrent construction and operation of Alternative 3 and projects in the cumulative scenario, including the GWR Project (No. 59 in **Table 4.1-2** in Section 4.1), would increase the duration and geographic extent of land use and recreational access impacts within the study area. The impacts of Alternative 3 on recreational access and recreational boating during construction would be significant, and if other projects were to affect recreational access concurrently, the cumulative impact would be significant and the contribution of Alternative 3 would be cumulatively significant. With implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), this contribution would be reduced to a level that is less than significant. Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.8.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of

water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction

Similar to the proposed project, and based upon an initial review of consistency, effects from construction of components of Alternative 4 that are common with the proposed project would be temporary, and therefore would not be expected to conflict with applicable land use policies related to land use and recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Facilities in Moss Landing that are unique to Alternative 4 would also be subject to the Moss Landing Community Plan. The effects of components unique to Alternative 4 are presented below.

- The screened open water intake, the brine discharge structure and the use of the existing caisson at the end of Sandholdt Road along with the desalinated water pipeline, source water pipeline and outfall pipeline, are all coastal-dependent land uses, because they depend upon proximity to the coast in order to function. The pipelines would generally occur in areas without land use or zoning regulations and would be permissible on adjacent lands with a CDP. The intake pump system would occur on a site reserved for light industrial uses, where public utility facilities are permissible with a CDP. The Heavy Industrial zoning designation for the Moss Landing Green Commercial Park, on which the desalination facility would be built, also allows for public utility facilities and water system facilities with a CDP. However, the site's land use plan designation prioritizes coastal-dependent uses. A desalination plant (as opposed to an intake structure) may or may not be considered a coastal-dependent land use. Such a determination would be made by the appropriate regulatory body (e.g., Monterey County and/or California Coastal Commission) at time of permitting. If the use is found to not be coastal-dependent, a variance or other exception would be required for the Alternative 4 desalination plant to gain CDP approval at the proposed location.

- Activities associated with construction of the intake pump system, pipelines, and Moss Landing Green Commercial Park facilities, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, would disrupt public access and recreational opportunities in the coastal zone through increased traffic and potential lane closures. During the construction period, travel to or along the coast could take longer than usual. Similarly, recreational boating and other open-water recreational activities could be disrupted in the vicinity of offshore barges during intake/outfall construction (approximately 300 to 1,400 feet offshore). These effects would be limited to the construction period and would not preclude public access or recreational opportunities in

the area. For these reasons, components unique to Alternative 4 would not result in substantial conflicts with plans, policies or regulations related to land use or recreation. Additional discussion of traffic and transportation is provided in Section 5.5.9. Public beach access is discussed further below.

Installation of the intake/outfall structures, the intake pump station on top of the existing caisson, the desalination plant, and the additional length of pipelines would not conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect. Overall, construction of Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Construction-related impacts on public access to or along the coast would be significant for the new Transmission Main, and with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The public beach access effects of components unique to Alternative 4 are presented below.

- The existing caisson that would be used for the intake pump station is located between Moss Landing Beach and Sandholdt Road and could require construction access from the beach. The beach is generally narrow at this location and would not likely accommodate both on-beach construction and public access. If beach construction were to be required, lateral public access would likely be precluded. The effect would be significant. With implementation of feasible mitigation, such as that described in **Mitigation Measures ALT 1-REC-1a** (**Public Notification**) and **ALT 1-REC 1b** (**Beach Access Management Plan**), the significant impact would be reduced to a less-than-significant level. Nearby alternative lateral beach access opportunities would remain open.

The effects of Alternative 4 on coastal public access would be increased compared to the proposed project because the construction activities associated with the rehabilitation of the existing caisson and construction of the new pump house would temporarily preclude lateral public access along the shoreline during the 24-month construction period. Implementation of feasible mitigation, such as measures described in **Mitigation Measures ALT 1-REC-1a** and **ALT 1-REC-1b** would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 4 would not result in any above-ground facilities that would conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect, and would not affect coastal public access. Therefore, Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

No facility siting and operations-period effects would occur that could contribute to cumulative effects. Therefore, the geographic scope of analysis for cumulative impacts related to land use and recreation for Alternative 4 is defined by the lands and recreational resources that would be affected by Alternative 4 construction. Concurrent construction and operation of Alternative 4

and projects in the cumulative scenario, including the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1), would increase the duration and geographic extent of recreational access disruptions within the study area. The impacts of Alternative 4 on recreational access and access to the shore at Moss Landing would be significant, and if other projects were to affect recreational or public shore access concurrently, the cumulative impact would be significant and the contribution of Alternative 4 would be cumulatively significant. With implementation of **Mitigation Measures 4.9-1**, **ALT 1-REC-1a**, and **ALT 1-REC-1b**, this contribution would be reduced to a level that is less than significant. Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.8.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction

Because Alternative 5a facilities would be constructed in the same areas as the proposed project, Alternative 5a would temporarily disrupt public access and recreational facilities, but would not conflict with applicable regulatory requirements related to land use or recreation adopted for the purpose of avoiding or mitigating an environmental effect, and Alternative 5a facilities would be similarly compatible with existing land use and zoning designations as the proposed project. Impacts of Alternative 5a would, therefore, result in the ***same impact conclusion*** as the proposed project, less than significant.

The effects of Alternative 5b would be the same as described for Alternative 1. Installation of fewer subsurface slant wells at Potrero Road would not disturb any less area than Alternative 1 since the parking lot is so small, and the construction of the additional length of pipeline from the slant well intakes would not result in a potential conflict with applicable plans, policies, and regulations related to land use and recreation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, Alternative 5b would have result in the ***same impact conclusion*** as the proposed project, less than significant.

The public shoreline access effects of Alternative 5a would in the same as the proposed project and with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 5a would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The public shoreline access effects of Alternative 5b would be the same as described for Alternative 1. Impacts associated with the subsurface slant wells at Potrero Road would be

increased compared to the proposed project, because construction would require the complete closure of the Potrero Road parking lot and trails, which would temporarily preclude vertical public access to the shore and MBNMS during the 24-month construction period. However, with implementation of **Mitigation Measures ALT 1-REC-1a** and **ALT 1-REC-1b**, Alternative 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternatives 5a and 5b would not result in any above-ground facilities that would conflict with plans and policies related to land use or recreation that were adopted for the purpose of avoiding or mitigating an environmental effect, and would not affect coastal public access. Therefore, Alternatives 5a and 5b would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would not affect vertical or lateral public access to the shore. Therefore, it would not have impacts that could combine with those of Alternative 5a or 5b; combined impacts would be as described for Alternatives 5a and 5b, above.

Impacts of Full Cumulative Scenario

The geographic scope of impacts and the cumulative scenario relevant to Alternatives 5a and 5b would be as described for the proposed project and Alternative 1, respectively, with the exception that the GWR Project also would be relevant to the cumulative scenario. As noted above, the GWR Project would not contribute to the same potential cumulative effects to which Alternatives 5a and 5b would contribute. Therefore, cumulative impacts would be identical to those described for the proposed project and Alternative 1, and with mitigation identified in those analyses, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.9 Traffic and Transportation

The evaluation criteria for Traffic and Transportation address: temporary traffic increases on regional and local roadways from construction vehicle trips; temporary reduction in roadway capacities and increased traffic delays during construction, increased traffic safety hazards during construction; impaired emergency access during construction; temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction; construction vehicle related wear-and-tear on designated haul routes; parking interference during construction; and, long-term traffic increases on regional and local roadways during operation and maintenance. Construction of all facilities would require the use of equipment and vehicles that would travel on local and regional roadways in Monterey County. Pipeline installation could also occupy roadways.

5.5.9.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.9, Traffic and Transportation. The setting for the components north of the Nashua Road/Highway 1 intersection is presented in **Table 5.5-12**, which provides roadway characteristics for additional roads that would be affected by the alternatives (i.e., installation of pipelines within road rights-of-way).

TABLE 5.5-12
CHARACTERISTICS OF ADDITIONAL ROADS THAT COULD BE DIRECTLY AFFECTED BY PROJECT CONSTRUCTION ACTIVITIES

Roadway / Segment	No. of Travel Lanes	Average Daily Traffic Volumes[b]	Bike Route?	On-Street Parking?	Public Transit Lines[c]	Figure Reference
Source Water Pipeline (Alternatives 1 and 2) New Desalinated Water Pipeline (Alternatives 3, 4, and 5b)						
Potrero Road: • Highway 1 to Beach parking lot	2 lanes	--	No	No	N/A	Figure 5.4-3
Molera Road • Highway 1 (north) to Highway 1 (south)	2 lanes	--	No	No	N/A	Figure 5.4-3
Nashua Road • Highway 1 to Monte Road	2 lanes	--	No	No	N/A	Figure 5.4-3
New Desalinated Water Pipeline (Alternative 3)						
Dolan Road • Highway 1 to Moss Landing Power Plant East Parcel	2 lanes	--	No	No	N/A	Figure 5.4-5

5.5.9.2 Direct and Indirect Effects of the Proposed Project – Slant Wells at CEMEX

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on 25 acres along Charles Benson

Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, and conversion of the existing test slant well to a permanent well. The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system facilities, pump stations, storage tanks, and about 21 miles of new water conveyance pipelines. No construction or placement of facilities on the seafloor would occur.

The following paragraphs briefly summarize the impacts of the proposed project with respect to traffic and transportation. The detailed impact analysis of the proposed project is provided in Section 4.9.

Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.

Project-related construction activities would result in a temporary increase in traffic from construction workers and trucks traveling to and from the construction work areas. Although the estimated maximum increase in traffic along regional roadways would remain within the carrying capacities of the regional roadways and would not substantially affect traffic flow, construction-related traffic increases along local and neighborhood (residential) streets could result in adverse traffic conditions; this impact would be less than significant for all project components located north of Reservation Road and for the Carmel Valley Pump Station. This impact would be potentially significant for the new Transmission Main, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, ASR Recirculation Pipeline, ASR-5 and ASR-6 Wells, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements. Implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) would reduce this potentially significant impact to a less-than-significant level.

Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.

Traffic delays resulting from temporary lane closures and detours would be a potentially significant impact for all of the proposed pipelines, but implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) would reduce the impact to a less-than-significant level. For all other proposed facilities, the impact would be less than significant because none of the non-linear facilities would require temporary lane closures or detours.

Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.

For all proposed project facilities, construction activities could increase traffic safety hazards in the project area due to conflicts among construction vehicles, automobiles, bicyclists, and pedestrians using the roadways; traffic issues on public roadways near construction vehicle access points; and confused bicyclists and pedestrians during temporary changes in circulation patterns on recreational trails, bicycle routes, sidewalks, and other public walkways. Potential increases in traffic safety hazards during project construction would be a potentially significant impact. Implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) would reduce this impact to a less-than-significant level.

Impact 4.9-4: Impaired emergency access during construction.

Pipeline installation activities could require construction within vehicle travel lanes and road shoulders that could temporarily reduce travel lanes and roadway capacity. Delays for emergency vehicles and disruptions of emergency vehicle access to adjacent land uses would result in a potentially significant impact. Implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), which contains provisions to maintain access during construction, would reduce the impact to a less-than-significant level.

Construction activities and staging areas for the subsurface slant wells, MPWSP Desalination Plant, ASR-5 and ASR-6 Wells, and Carmel Valley Pump Station are not expected to require construction in roadways or road shoulders and impacts related to disrupted access to adjacent land uses for emergency vehicles would be less than significant.

Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.

Pipeline installation activities of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and Castroville Pipeline, including vehicle ingress and egress, equipment and materials staging, trenching, and stockpiling, could temporarily affect public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails in the project area. Construction-related impacts on alternative transportation modes and facilities during pipeline installation activities would be potentially significant. Implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), which includes measures to minimize impacts on public transportation and provide for continuity of pedestrian and bicyclist traffic during construction, would reduce the impact to a less-than-significant level. There would be no impacts on public transportation and bicycle and pedestrian facilities from the construction of all other proposed facilities and pipelines.

Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.

The use of trucks to transport equipment and material to and from the construction work areas could affect road conditions on the designated haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the roadway design and the existing road condition. Highways 1, 68, 101, 156, 183, and 218, Del Monte Boulevard, and Fremont Boulevard / Fremont Street are designed to handle a mix of vehicle types, including heavy trucks; therefore, the impacts of project-related construction traffic are expected to be negligible on those roads. However, some of the smaller roadways and residential streets may not have been constructed to support use by heavy construction trucks and vehicles, and project-related increases in construction truck trips could cause excessive wear-and-tear on these roadways, a potentially significant impact. Implementation of **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**), which requires rehabilitation of any roadways damaged following construction, would reduce this impact to a less-than-significant level.

Impact 4.9-7: Parking interference during construction.

Use of public parking lots for construction staging areas would result in potentially significant parking impacts due to temporary increases in parking demand associated with construction worker vehicles and/or temporary displacement of parking spaces. Implementation of **Mitigation Measure 4.9-7** (**Construction Parking Requirements**) would reduce this impact to a less-than-significant level. Construction activities for the subsurface slant wells and MPWSP Desalination Plant would have no effect on parking. Parking displacement impacts resulting from construction of the proposed ASR-5 and ASR-6 Wells, Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and all other proposed pipelines would be less than significant.

Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance.

The impact related to long-term increases in vehicle trips during project operations and maintenance is less than significant for all project facilities due to the low volumes of daily trips that would be generated by the project.

Impact 4.9-C: Cumulative impacts related to traffic and transportation.

Proposed project construction would have a significant contribution to cumulative traffic and transportation impacts, even with implementation of mitigation measures identified in Impacts 4.9-1 through 4.9-7. Implementation of a mitigation measure designed to further reduce the MPWSP's incremental contribution to cumulative impacts, **Mitigation Measure 4.9-C** (**Construction Traffic Coordination Plan**), proposes coordination among planning agencies in each affected jurisdiction to develop and implement a Construction Traffic Coordination Plan to address construction-related traffic associated with all concurrent project sites in the vicinity of MPWSP project components. Since there is no guarantee that local agencies would participate in such coordination efforts, the proposed project's incremental contribution would be a significant and unavoidable impact. Project operations would result in a less than significant contribution to cumulative traffic and transportation-related impact.

5.5.9.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed and the existing test slant well would be decommissioned. Consequently, there would be no construction or operational impacts on traffic and transportation. Because the No Project Alternative would have no direct or indirect impacts with respect to traffic and transportation, it could not contribute to cumulative effects related to these topics.

5.5.9.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would site the subsurface intake system at a different location (Potrero Road parking lot), which would require an additional 5.5 miles of source water pipeline. The desalination plant at Charles Benson Road, brine discharge pipeline, Castroville Pipeline, Pipeline

to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 Interconnection Improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the traffic and transportation impact analysis of Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

All construction activities and disturbance for the slant wells would occur in the parking lot at the western terminus of Potrero Road in northern Monterey County, near the southern border of the unincorporated community of Moss Landing. The Potrero Road beach parking lot is owned and operated by the California Department of Parks and Recreation (California State Parks) and the 10 slant wells would be buried 5 feet below the hardened sand parking surface. The approximately 4-foot-wide, 12-foot-long, and 6-foot-high electrical control building, the only above-ground structure at this location, would be located at the edge of the parking lot.

Similar to the proposed project, construction-related traffic would access the work areas using the roads described in Section 4.9 for components similar to the proposed project, except for Alternative 1 facilities located north of Charles Benson Road which would be accessed from the roads listed in **Table 5.5-12**. Similar to the proposed project, construction of Alternative 1 would temporarily affect segments of the roadway network in the project area including roads used for recreation and coastal access by: increasing traffic volumes and congestion; introducing temporary lane closures and detours; increasing traffic safety hazards; reducing roadway capacity; affecting public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails; and increasing the rate of road wear.

Construction-related vehicle traffic could result in increased congestion and delays for vehicles on some roadway segments because the source water pipeline for Alternative 1 would be 5.5 miles longer compared to the proposed project and because the longer pipeline would take longer to install it would result in an increased number of vehicle trips. The additional roads affected by construction of the longer source water pipeline and the closure of the beach access parking lot at Potrero Road during the 24-month construction period, would result in traffic directed to other access roads in the area. Alternative 1 would result in an increased potential for regional and local roadway congestion compared to the proposed project, but with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) would result in the ***same impact conclusion*** as the proposed project related to increased traffic congestion, less than significant with mitigation.

Construction associated with the longer source water pipeline would result in additional activities in vehicle travel lanes and road shoulders compared to the proposed project. These lane closures and detours would temporarily result in traffic delays during construction of Alternative 1 greater than the proposed project due to additional length of construction and additional roadways used. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety**

Assurance Plan) Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction activities could increase traffic safety hazards in the project area due to conflicts between haul trucks and other large construction vehicles, automobiles, bicyclists, and pedestrians using the roadways and impedance of bicycle and pedestrian circulation. Potential increases in traffic safety hazards during construction of Alternative 1 would be increased compared to the proposed project because of the longer source water pipeline. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Temporary reductions in travel lanes and roadway capacity to accommodate the construction work areas (for pipeline installation) for Alternative 1 could result in an increase in delays for emergency vehicles, and temporary disruption of emergency vehicle access to adjacent land uses compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 1 would result in the ***same impact conclusion*** as the proposed project, to less than significant with mitigation.

Pipeline installation activities for Alternative 1 could temporarily affect public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails in the project area. Construction-related impacts on alternative transportation modes and facilities during pipeline installation activities would be potentially increased compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The use of trucks to transport equipment and material to and from the construction work areas could affect road conditions on the designated haul routes by increasing the rate of road wear. Alternative 1 would result in an increase in construction truck trips that could cause excessive wear-and-tear on potentially more roadways compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**), Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction in the Potrero Road beach parking lot would result in potentially significant parking impacts due to temporary increases in parking demand associated with construction worker vehicles and/or temporary displacement of parking spaces. Alternative 1 would result in an increase in construction in parking interference compared to the proposed project. With the implementation of **Mitigation Measure 4.9-7 (Construction Parking Requirements)** Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Overall, construction of Alternative 1 could have a potential increase in effects on traffic and transportation compared to the proposed project because of the additional 5.5 miles of source water pipeline. However, Alternative 1 impacts would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The impacts of components that are common with the proposed project (i.e., the desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station) would be identical to the impacts identified for proposed project, as summarized above in Section 5.5.9.2 (additional details in Section 4.9). The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the only components unique to Alternative 1 (see **Figure 5.4-1**) and the operation and maintenance activities would be the same as the proposed project, and the minimal number of daily vehicle trips associated with worker commutes and deliveries would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, Alternative 1 would result in the ***same impact conclusion*** on long-term traffic as the proposed project, less than significant.

Cumulative Analysis

For the same reasons discussed in Section 4.9, Traffic and Transportation, there is no discussion in the alternatives analysis of the cumulative impact of conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The geographic scope for the cumulative traffic impacts analysis for Alternative 1 is the same as for the proposed project, described in Section 4.9.6. Due to increased traffic and transportation network disruptions, concurrent construction of Alternative 1 and the projects listed in **Table 4.1-2** in Section 4.1 would result in potentially significant cumulative impacts on traffic and transportation access and facilities, similar to those of the proposed project.

Based on the assumption that long-term vehicle trips generated by Alternative 1 would be similar to those generated by the proposed project, operations and maintenance activities for Alternative 1 would have similar impacts on regional and local roadways as the proposed project, and therefore would result in a less than significant cumulative impact.

Similar to the proposed project, for Alternative 1, CalAm would be required to implement **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), and **4.9-7** (**Construction Worker Parking Requirements**), discussed in Sections 4.9.4 and 4.9.5, each of which would lessen Alternative 1's contribution to cumulative construction-related traffic and transportation impacts. **Mitigation Measure 4.9-C** (**Construction Traffic Coordination Plan**) is designed to further reduce the MPWSP's (and Alternative 1's) incremental contribution to address the potential significant cumulative impact. However, even though this mitigation measure could reduce Alternative 1's cumulative contribution to a less-than-significant level, the conclusion remains that the incremental contribution to potential significant and unavoidable cumulative effects would be cumulatively significant, for the same reasons described for the proposed project. Therefore, Alternative 1 would have the *same impact conclusion* as the proposed project for cumulative construction effects related to traffic and transportation, significant and unavoidable.

5.5.9.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**).

Construction Impacts

Similar to the proposed project, construction-related traffic would access the work areas using the roads described in Section 4.9 for components similar to the proposed project, except for Alternative 2 facilities located north of Charles Benson Road which would be accessed from the roads listed in **Table 5.5-12**. Similar to the proposed project, construction of Alternative 2 would temporarily affect segments of the roadway network in the project area including roads used for recreation and coastal access by: increasing traffic volumes and congestion; introducing temporary lane closures and detours; increasing traffic safety hazards; reducing roadway capacity; affecting public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails; and increasing the rate of road wear.

Construction-related vehicle traffic could result in increased congestion and delays for vehicles on some roadway segments compared to the proposed project because the source water pipeline for Alternative 2 would be 6.5 miles longer and because the longer pipeline would take longer to install and would result in an increased number of vehicle trips. The additional roads affected by construction of the longer source water pipeline would result in traffic directed to other access roads in the area. Alternative 2 would result in an increased potential for regional and local roadway congestion compared to the proposed project, but with. implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) would result in the ***same impact conclusion*** as the proposed project related to increased traffic congestion, less than significant with mitigation.

Construction associated with the longer source water pipeline would also result in additional activities in vehicle travel lanes and road shoulders compared to the proposed project. These lane closures and detours would temporarily result in traffic delays during construction of Alternative 2 that are greater than the proposed project due to additional length of construction and additional roadways used. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction activities could increase traffic safety hazards in the project area due to conflicts between haul trucks and other large construction vehicles, automobiles, bicyclists, and pedestrians using the roadways and impedance of bicycle and pedestrian circulation. Potential increases in traffic safety hazards during construction of Alternative 2 would be increased compared to the proposed project because of the longer source water pipeline. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Temporary reductions in travel lanes and roadway capacity to accommodate the construction work areas (for pipeline installation) for Alternative 2 could result in an increase in delays for emergency vehicles, and temporary disruption of emergency vehicle access to adjacent land uses compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, to less-than-significant with mitigation.

Pipeline installation activities for Alternative 2 could temporarily affect public transportation, bicycle travel, and pedestrian travel along affected roadways and recreational trails in the project area. Construction-related impacts on alternative transportation modes and facilities during pipeline installation activities would potentially increase compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The use of trucks to transport equipment and material to and from the construction work areas could affect road conditions on the designated haul routes by increasing the rate of road wear. Alternative 2 would result in an increase in construction truck trips that could cause excessive wear-and-tear on potentially more roadways compared to the proposed project. However, with implementation of **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**), Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction of Alternative 2 would not impact on-street parking as shown in **Table 5.5-12**, and it is unknown whether parking lots would be used for construction equipment staging. Therefore, Alternative 2 would have a similar level of impact regarding parking interference as the proposed project, which has the potential to be significant. Implementation of **Mitigation Measure 4.9-6 (Roadway Rehabilitation Program)** would reduce impacts to less than significant. Combining the components unique to Alternative 2 with those in common with the proposed project, Alternative 2 would result in the ***same impact conclusion***, less than significant with mitigation.

Overall, construction of Alternative 2 could have a potential increase in effects on traffic and transportation compared to the proposed project because of the additional 5.5 miles of source water pipeline. However, Alternative 2 impacts would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The impacts of components that are common with the proposed project (i.e., the desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station) would be identical to the impacts identified for proposed project, as summarized above in Section 5.5.9.2 (additional details in Section 4.9). The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the only components unique to Alternative 2 (see **Figure 5.4-2**), the operation and maintenance activities would be the same as those for the proposed project, and the minimal number of daily vehicle trips associated with worker commutes and deliveries would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, Alternative 2 would result in the ***same impact conclusion*** on long-term traffic as the proposed project, less than significant.

Cumulative Analysis

For the same reasons discussed in Section 4.9, Traffic and Transportation, there is no discussion in the alternatives analysis of the cumulative impact of conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The geographic scope for the cumulative traffic impacts analysis for Alternative 2 is the same as for the proposed project. Like Alternative 1, based on the assumption that long-term vehicle trips generated by Alternative 2 would be similar to those generated by the proposed project, operations and maintenance activities for Alternative 2 would have similar impacts on regional and local roadways as the proposed project, and therefore would result in a less than significant cumulative impact.

Alternative 2 would have similar contributions to cumulative construction impacts as described for Alternative 1, and also would be subject to implementation of **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), **4.9-7** (**Construction Worker Parking Requirements**), and **4.9-C** (**Construction Traffic Coordination Plan**). Similar to the proposed project, even with implementation of mitigation, the incremental contribution of Alternative 2 to potential cumulative effects would be significant. Therefore, Alternative 2 would have the ***same impact conclusion*** as the proposed project for cumulative construction effects related to traffic and transportation, significant and unavoidable.

5.5.9.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, two subsurface pipelines connecting to each the intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be

installed using HDD from the location of the proposed pump station on Dolan Road. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and 6 wells and ASR pipelines, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and co-located data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Similar to the proposed project, construction-related traffic would access work areas using the roads described in Section 4.9 for components common to the proposed project south of Charles Benson Road, including the Desalinated Water Pipeline, new Transmission Main, and ASR facilities and pipelines. Facilities unique to Alternative 3 that would be located north of Charles Benson Road include: 31.5 additional miles of Desalinated Water Pipeline; the desalination plant and co-located data center on the East Tank Farm parcel; the screened open water intake and brine discharge systems in Monterey Bay within MBNMS; the pump station along Dolan Road at the railspur; the two intake and two brine discharge pipelines in Dolan Road between the pump station and the desalination plant, and; treated water pipelines in Dolan Road to Salinas and Santa Cruz counties.

As a result, Alternative 3 could result in potential increases in construction-related vehicle traffic, congestion and delays for vehicles. For the same reasons described above for Alternative 2, Alternative 3 would result in potentially significant impacts from construction-related traffic, road hazards, emergency vehicle access, public transportation, and road wear. These temporary traffic impacts on regional and local roadways would be increased compared to the proposed project because multiple pipelines would be installed via open-trenching in Dolan Road, which would require full closure of that road during construction work hours. While there is an available detour (via Castroville Boulevard and State Route 156), the resulting impact on traffic would be greater than for the proposed project. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) and **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**), Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction of Alternative 3 would not impact on-street parking as shown in **Table 5.5-12**, and it is unknown whether parking lots would be used for construction equipment staging. Therefore, Alternative 3 would have a similar level of impact regarding parking interference as the proposed

project, which has the potential to be significant. Implementation of **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**) would reduce impacts to less than significant. Combining the components unique to Alternative 3 with those in common with the proposed project, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Overall, construction of Alternative 3 could have a potential increase in effects on traffic and transportation compared to the proposed project because of the additional 31.5 miles of pipeline. However, Alternative 3 impacts would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The impacts of components that are common with the proposed project would be identical to the impacts identified for proposed project, as summarized above in Section 5.5.9.2 (additional details in Section 4.9). The location of the intake and outfall pipelines, Desalination Plant, and the additional 31.5 miles of pipeline are the only components unique to Alternative 3 on land (see **Figure 5.4-3**) and the operation and maintenance activities on land would be similar to those for the proposed project, and the minimal number of daily vehicle trips associated with worker commutes and deliveries would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, Alternative 3 would result in the ***same impact conclusion*** on long-term traffic as the proposed project, less than significant.

Cumulative Analysis

For the same reasons discussed in Section 4.9, Traffic and Transportation, there is no discussion in the alternatives analysis of the cumulative impact of conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The geographic scope for the cumulative traffic impacts analysis for Alternative 3 is the same as for the proposed project. Like Alternative 1, based on the assumption that long-term vehicle trips generated by Alternative 3 would be similar to those generated by the proposed project, operations and maintenance activities for Alternative 3 would have similar impacts on regional and local roadways as the proposed project, and therefore its contribution to cumulative effects would be less than significant.

Alternative 3 would have similar contributions to cumulative construction impacts as described for Alternative 1, and also would be subject to implementation of **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), **4.9-7** (**Construction Worker Parking Requirements**), and **4.9-C** (**Construction Traffic Coordination Plan**). Similar to the proposed project, even with implementation of mitigation, the incremental contribution of Alternative 3 to potential cumulative effects would be significant. Therefore, Alternative 3 would have the ***same impact conclusion*** as the proposed project for cumulative construction effects related to traffic and transportation, significant and unavoidable.

5.5.9.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake system and intake pipeline and a brine discharge system and discharge pipeline including the placement of ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Similar to the proposed project, construction-related traffic would access the work areas using the roads described in Section 4.9 for components common to the proposed project south of Charles Benson Road, including the Desalinated Water Pipeline, new Transmission Main, and ASR facilities and pipelines Facilities unique to Alternative 4 that would be located north of Charles Benson Road include: 6.5 additional miles of Desalinated Water Pipeline; the desalination plant located at the Moss Landing Green Commercial Park; the screened open water intake and brine discharge systems in Monterey Bay within MBNMS; the pump station at the existing caisson at the end of Sandholdt Road, and; the intake and brine discharge pipelines between the caisson and the desalination plant. For the same reasons described above for Alternative 1, Alternative 4 would result in potentially significant impacts from construction-related traffic, lane closures, road hazards, emergency vehicle access, public transportation, and road wear. However, with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**) and **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**), Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Construction of Alternative 4 would not impact on-street parking as shown in **Table 5.5-12**, and it is unknown whether parking lots would be used for construction equipment staging. Therefore, Alternative 4 would have a similar level of impact regarding parking interference as the proposed project, which has the potential to be significant. Implementation of **Mitigation Measure 4.9-6** (**Roadway Rehabilitation Program**) would reduce impacts to less than significant. Combining the components unique to Alternative 4 with those in common with the proposed project, Alternative 4 would result in the ***same impact conclusion***, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts from components that are common with the proposed project would be identical to the impacts identified for these components in Section 4.2. The location of the intake, discharge, desalination plant and the additional 6.5 miles of desalinated water pipeline are the on land components unique to Alternative 4 (see **Figure 5.4-4**); therefore, the components of Alternative 4 located on land would result in a similar level of impact as the proposed project associated with operation and maintenance activities, and the minimal number of daily vehicle trips associated with worker commutes and deliveries would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

For the same reasons discussed in Section 4.9, Traffic and Transportation, there is no discussion in the alternatives analysis of the cumulative impact of conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The geographic scope for the cumulative traffic impacts analysis for Alternative 4 is the same as for the proposed project. Like Alternative 1, based on the assumption that long-term vehicle trips generated by Alternative 4 would be similar to those generated by the proposed project, operations and maintenance activities for Alternative 4 would have similar impacts on regional and local roadways as the proposed project, and therefore would result in a less than significant cumulative impact.

Alternative 4 would have similar contributions to cumulative impacts as described for Alternative 1, and also would be subject to implementation of **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), **4.9-7** (**Construction Worker Parking Requirements**), and **4.9-C** (**Construction Traffic Coordination Plan**). Similar to the proposed project, even with implementation of mitigation, the incremental contribution of Alternative 4 would be significant. Therefore, Alternative 4 would have the ***same impact conclusion*** as the proposed project for cumulative construction effects related to traffic and transportation, significant and unavoidable.

5.5.9.8 Direct and Indirect Effects of Project Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Similar to the proposed project, construction-related vehicle traffic could result in increased congestion and delays for vehicles. Alternative 5a would have the ***same impact conclusion*** for construction-related vehicle traffic impacts as the proposed project for the same roads as described in Section 4.9, less than significant with mitigation. For Alternative 5b, except for facilities north of Charles Benson Road (5.5 additional miles of source water pipeline and the slant wells at the Potrero Road parking lot), construction-related traffic would access the work areas using the roads described in Section 4.9 for the proposed project. For the same reasons described above for Alternative 1, Alternative 5b would result in potentially significant impacts from construction-related traffic, lane closures, road hazards, emergency vehicle access, public transportation, road wear, and parking interference. However, with implementation of **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), **4.9-7** (**Construction Parking Requirements**) Alternative 5b would result an increased level of impact but the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The operation and maintenance activities for Alternatives 5a and 5b would be the same as those for the proposed project, and the minimal number of daily vehicle trips associated with worker commutes and deliveries would be negligible compared to existing conditions and would not result in a noticeable increase in traffic on adjacent streets. Therefore, Alternatives 5a and 5b would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

For the same reasons discussed in Section 4.9, Traffic and Transportation, there is no discussion in the alternatives analysis of the cumulative impact of conflicts with an applicable congestion management plan, changes in air traffic patterns, permanent increases in traffic safety hazards, or conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

The geographic scope for the cumulative traffic impacts analysis for Alternatives 5a and 5b is the same as for the proposed project. Like Alternative 1, based on the assumption that long-term vehicle trips generated by Alternatives 5a and 5b would be similar to those generated by the proposed project, operations and maintenance activities for Alternatives 5a and 5b would have similar impacts on regional and local roadways as the proposed project, and therefore would result in a less than significant cumulative impact.

Alternatives 5a and 5b would have similar contributions to cumulative impacts as described for Alternative 1, and also would be subject to implementation of **Mitigation Measures 4.9-1** (**Traffic Control and Safety Assurance Plan**), **4.9-6** (**Roadway Rehabilitation Program**), **4.9-7** (**Construction Worker Parking Requirements**), and **4.9-C** (**Construction Traffic Coordination Plan**). Similar to the proposed project, even with implementation of mitigation, the incremental contribution of Alternatives 5a and 5b to potential significant and unavoidable cumulative effects would be significant. Therefore, Alternatives 5a and 5b would have the ***same impact conclusion*** as the proposed project for cumulative construction effects related to traffic and transportation, significant and unavoidable.

5.5.10 Air Quality

The evaluation criteria for Air Quality address: construction emissions of criteria air pollutants that could violate air quality standards; construction emissions that could conflict with implementation of the applicable air quality plan; exposure of people to health risks and/or objectionable odors during construction; long-term increase in criteria pollutant emissions during operations; and exposure of people to a substantial increase in pollutants and/or objectionable odors during operations. Construction of all facilities would result in significant emissions of criteria pollutants in the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

5.5.10.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.10, Air Quality. The setting with respect to sensitive receptors for the alternatives components north of the Nashua Road/Highway 1 intersection is presented below.

Pipeline Alignments North of Nashua Road/Highway 1 Intersection and South of Moss Landing

The Alternative 1 source water pipeline along Potrero Road, between the slant wells in the parking lot and Highway 1, would be located within 50 feet of approximately 20 residences. The additional length of source water pipeline associated with Alternative 1, as well as the source water pipelines associated with Alternatives 2 and 5b, would pass within 100 feet of several residences along Nashua Road, Molera Road, and Highway 1.

Potrero Road Parking Lot

The closest sensitive receptors to the alternative slant wells site at the Potrero Road parking lot are residences along Laguna Place located approximately 1,000 feet east of the slant wells site.

Moss Landing Area

The closest sensitive receptors to the Open Water Intake Pump Station site along Dolan Road associated with Alternatives 2 and 3 are boat slips at Moss Landing Harbor, located approximately 1,600 feet to the west. The boat slips would also be within 200 feet of construction activity associated with the source water pipeline and desalinated water pipeline for Alternatives 2 and 3, respectively. In addition, the northwestern boundary of the People's Moss Landing Desalination Plant site (Alternative 4) at the Moss Landing Green Commercial Park and the desalinated water pipeline alignment associated with this alternative are approximately 300 feet and 200 feet east of boat slips in the southeastern part of the harbor, respectively.

The closest sensitive receptors to the desalination plant and data center site along Dolan Road under Alternative 3 are two residences, one approximately 300 feet from the southern boundary of the site, and the other approximately 1,500 feet from the eastern boundary of the site. The residence near the southern border of the site would be within 100 feet of construction activities associated with the brine, source water, and desalinated water pipelines under Alternatives 2 and 3.

5.5.10.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin ASR system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.10-1: Generate emissions of criteria air pollutants that could contribute to a violation of an ambient air quality standard during construction.

Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.

Short-term emissions associated with construction of the proposed project could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and, PM_{10} based on the estimated maximum daily mass emissions levels presented in **Table 4.10-5**, which would exceed the MBUAPCD significance threshold for PM_{10}. However, this impact with respect to the ozone and NO_2 standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. This significant impact could increase the susceptibility of sensitive individuals to respiratory infections. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Short-term construction emissions associated with other criteria pollutants, including ROG, CO, and $PM_{2.5}$, would not be expected to contribute to an exceedance of an ambient air quality standard and the associated impact for all other criteria pollutants would be less than significant.

The most recently adopted air quality plan for the project area is the 2012 AQMP which documents the MBUAPCD's progress toward attaining the state 8-hour ozone standard. Any project that could conflict with the MBUAPCD's goal of attaining the state 8-hour ozone standard would be considered to conflict with the intent of the 2012 AQMP. The method used for determining whether construction of the project would conflict with the intent of the 2012 AQMP is to compare the project emissions with the CEQA thresholds of significance for the ozone precursors NOx and ROG.

The project-related short-term construction emissions with mitigation measures incorporated would exceed the significance threshold for NOX (see Impact 4.10-1); therefore, the project would not support the primary goal of the 2012 AQMP, and the impact associated with conflicting or obstructing implementation of the applicable air quality plan would be significant and unavoidable, even with implementation of mitigation.

Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or coccidioides immitis spores or create objectionable odors affecting a substantial number of people during construction.

Short-term generation of diesel particulate matter (DPM) emissions from off-road diesel equipment could result in the temporary exposure of local sensitive receptors to toxic air contaminants (TACs) (i.e., DPM). Cancer risk and health hazard index values associated with the project are less than the significance thresholds established by MBUPACD. Therefore, impacts would be less than significant.

Ground-disturbing construction activities could release *coccidioides immitis* (Valley Fever) spores. Construction activities are similar to those that occur continually within the County and the project would not result in a substantial increase in spore release. Therefore, construction of the project would not represent an increased risk to public health.

Construction activities could result in temporary odors from use of diesel-fueled equipment. These odors would dissipate quickly, and would be unlikely to create objectionable odors that would affect a substantial number of people.

Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.

The combined operational emissions associated with the MPWSP Desalination Plant, Monterey Pump Station, Carmel Valley Pump Station, and the slant wells would not exceed any of the MBUAPCD's significance thresholds; therefore, operational emissions would not be expected to result in or contribute to an exceedance of an ambient air quality standard and the associated impact would be considered to be less than significant. No impact would result from operation and maintenance of all other project components.

Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.

The only DPM emissions sources associated with MPWSP operations would be the emergency standby generators at the MPWSP Desalination Plant, Monterey Pump Station, and the Carmel Valley Pump Station. Routine testing and operation of the emergency generators would generate a negligible amount of DPM emissions. The generator emissions would not exceed the MBUAPCD TAC significance threshold for increased health risks. Therefore, the impact would be less than significant for the MPWSP Desalination Plant, Monterey Pump Station, and the Carmel Valley Pump Station.

None of the other project facilities would include on-site DPM emissions sources. Therefore, no impact related to the exposure of sensitive receptors to substantial pollutant concentrations would result from operation of any other MPWSP facility.

Long-term operations associated with the MPWSP would not create objectionable odors that could affect a substantial number of people because the MPWSP Desalination Plant would be designed with odor control features and operational controls to limit and contain odors. Further,

the MPWSP Desalination Plant site is located at least 2,000 feet away from the closest residences and in an industrial area with existing sources of objectionable odors. Therefore, operational impacts related to the creation of objectionable odors affecting a substantial number of people would be less than significant.

Impact 4.10-C: Cumulative impacts related to air quality,

The cumulative impact of construction emissions associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan and would be significant when combined with the emissions associated with the cumulative projects in **Table 4.1-2**. The cumulative impact with respect to the ozone and NO_2 standards would be significant and unavoidable, even with implementation of **Mitigation Measure 4.10-1a** and **4.10-1b**. Therefore, the MPWSP's incremental contribution to this cumulative impact would be significant. However, with respect to the PM_{10} standards, the cumulative impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.10-1a** through **4.10-1d**.

5.5.10.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated. Consequently, there would be no construction- or operations-related air quality emissions associated with the No Project Alternative. However, decommissioning of the test slant well could result in potentially significant but mitigable short-term impacts on air quality, including the potential to violate ambient air quality standards associated with ozone, NO_x, and, PM_{10}. See Table 4.10-5, Estimated Maximum Daily Construction Emissions, which includes the estimated emissions for construction of the slant wells. Slant well decommissioning would produce a fraction of the emissions associated with the slant well construction period since decommissioning would not involve drilling and would take 4 weeks rather than 15 or more months; construction emissions would only occur as a result of grading, excavation, and earth moving activities. Impacts would be less than significant with mitigation. Mitigation Measures 4.10-1a through 4.10-1c would apply to slant well decommissioning. Because the No Project Alternative would have a less than significant impact with respect to air quality emissions after mitigation, cumulative effects related to these topics would also be less than significant.

5.5.10.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction Impacts

Potential to Violate an Air Quality Standard and Conflict with an Air Quality Plan

The 5.5 miles of additional source water pipeline, and the one additional well required for Alternative 1 (10 new wells at Potrero Road versus 9 new wells plus the converted test well at CEMEX) would result in an overall increase in the generation of short-term criteria pollutant emissions. Although Alternative 1 would increase the duration of pipeline construction activities compared to the proposed project, the daily construction activities associated with Alternative 1 would be same as the proposed project. Therefore, short-term emissions associated with construction of Alternative 1 could contribute to an exceedance of a state and/or federal ambient air quality standard for ozone, NO_2, and PM_{10}. This impact with respect to the ozone and NO_x standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. The overall increase in construction emissions under Alternative 1 compared to the proposed project would increase the potential for this alternative to result in a violation of an air quality standard and conflict with the 2012 Air Quality Management Plan. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Impacts on Sensitive Receptors

Construction of Alternative 1 would result in the short-term generation of diesel particulate matter (DPM) emissions from the use of off-road diesel equipment. These emissions could result in the short-term exposure of local sensitive receptors to toxic air contaminants (TACs) (i.e., DPM). Under Alternative 1, the slant well site would be about half the distance to residences compared to the proposed project and the alternative source water pipeline from the Potrero Road parking lot south to Charles Benson Road would be constructed in close proximately to dozens more residences compared to the proposed project Source Water Pipeline. More sensitive receptors would be exposed to DPM and dust emissions that could contain *coccidioides immitis* (Valley Fever) spores under this alternative compared to the proposed project. Construction could result in temporary odors from use of diesel-fueled equipment, which would dissipate quickly and be unlikely to create objectionable odors that would affect a substantial number of people. Although Alternative 1 would have an increase in the number of nearby sensitive receptors compared to the proposed project, given the distance of the alternative slant wells site to the nearest sensitive receptors (i.e., 1,000 feet) and the limited duration of exposure for any given sensitive receptor associated with pipeline construction, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

Alternative 1 would have the ***same impact conclusion*** related to long-term operational emissions and objectionable odors on sensitive receptors as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for potential cumulative air quality impacts related to Alternative 1 is the North Central Coast Air Basin, same as for the proposed project. As indicated in Section 4.10.6, the air basin does not attain the state ambient air quality standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, conditions in the air basin reflect the contributions of past and ongoing projects that have resulted in an existing significant cumulative impact with respect to attainment of state standards for ozone and PM_{10} concentrations.

As discussed above, with respect to the PM_{10} standards, the impact of Alternative 1 would be significant, but would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, for the reasons described for the proposed project in Section 4.10.6, Alternative 1 would result in a significant contribution to the existing significant cumulative impact related to PM_{10}, but with mitigation, the contribution would be reduced to less than significant.

As discussed above, construction emissions associated with Alternative 1 would exceed the MBUAPCD significance thresholds and therefore could have a significant contribution to an exceedance of a state and/or federal standard for ozone or NO_2 even with mitigation. Therefore, the incremental impact of Alternative 1 associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan would be significant when combined with the emissions associated with the cumulative projects identified in **Table 4.1-2** in Section 4.1, and the incremental contribution to significant cumulative impacts related to ozone and NO_2 would be cumulatively significant and unavoidable, similar to but more severe than the proposed project.

Operations of Alternative 1 would not cause emissions that would exceed the MBUAPCD significance thresholds. Therefore, Alternative 1 would result in a less than significant cumulative impact related to emissions of criteria pollutants.

Alternative 1 would not result in short-term or long-term significant impacts from the exposure of sensitive receptors to TAC emissions, *coccidioides immitis* spores, or objectionable odors and there are no cumulative projects in the vicinity of the Potrero Road slant well site that would emit TACs, dust emissions that could contain *coccidioides immitis* spores, or objectionable odors with which the emissions of that component of Alternative 1 could combine. As a result, no significant cumulative impact would occur as a result of Alternative 1 and the identified projects relative to exposure of sensitive receptors to TAC emissions, *coccidioides immitis* spores, or objectionable odors.

Overall, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality (NO_2), significant and unavoidable.

5.5.10.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Potential to Violate an Air Quality Standard and Conflict with an Air Quality Plan

The construction of a new screened open water intake system in Monterey Bay that would require the use of marine vessel(s) and/or barge(s), and land-based Horizontal Directional Drilling (HDD) equipment for installation of a 36-inch-diameter 3,600-foot-long pipeline from the Intake Pump Station on Dolan Road to the intake location on the seafloor within MBNMS. Total emissions from these activities would likely be similar to those that would occur for the construction of the nine new slant wells for the proposed project. The additional 6.5-mile length of the alternative source water pipeline would result in a net increase in pipeline construction even though Alternative 2 would not include construction of the proposed 4.5-mile-long Castroville Pipeline or the proposed 1.2-mile-long Pipeline to the CSIP Pond. The net increase in pipeline construction would occur even though the net pipeline length under the alternative would be reduced compared to the proposed project because the diameter of the Source Water Pipeline would be much larger (i.e., 42 inches) than the Castroville Pipeline or the Pipeline to the CSIP (12-inch diameters).

Alternative 2 would result in an overall increase in construction emissions compared to the proposed project from the increase in duration of pipeline construction activities compared to the proposed project. However, the daily construction activities associated with Alternative 2 would be the same as the proposed project. Short-term emissions associated with construction of Alternative 2 could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and/or PM_{10}. This impact with respect to the ozone and NO_2 standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. With respect to PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Construction emissions under

Alternative 2 would be increased compared to the proposed project due to the longer construction period and thus more days of exceedances, increasing the potential for this alternative to result in a violation of an air quality standard and conflict with the 2012 Air Quality Management Plan. However, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Impacts on Sensitive Receptors

Construction of Alternative 2 would result in the short-term generation of DPM emissions from the use of off-road diesel equipment. These emissions could result in the short-term exposure of local sensitive receptors to TACs. Under Alternative 2, the intake pump station site would be constructed approximately 1,600 feet from the nearest sensitive receptors, which would be closer to sensitive receptors compared to the proposed slant wells site. In addition, the Alternative 2 source water pipeline would be constructed in close proximately to several more residences compared to the proposed project Source Water Pipeline. More sensitive receptors would be exposed to DPM and dust emissions that could contain *coccidioides immitis* spores under this alternative compared to the proposed project. Construction could result in temporary odors from use of diesel-fueled equipment, which would dissipate quickly and be unlikely to create objectionable odors that would affect a substantial number of people. However, given the distance of the Intake Pump Station site to the nearest sensitive receptors and the limited duration of exposure for any given sensitive receptor associated with pipeline construction, Alternative 2 would result in the ***same impact conclusion*** as the proposed project however, less than significant.

Operational and Facility Siting Impacts

Because the source water from the open water intake system would not have the benefit of being filtered through the seafloor, and would require an increased level of pre-treatment at the desalination plant, there would be an increase in the amount of annual emissions and objectionable odors compared to the proposed project. However, in terms of maximum daily emissions, the criterion which significance is based on, long-term operational emissions under Alternative 2 would result in the ***same impact conclusion*** related to sensitive receptors as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for potential cumulative air quality impacts related to Alternative 2 is the North Central Coast Air Basin, same as for the proposed project. As indicated in Section 4.10.6, the air basin does not attain the state standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, conditions in the air basin reflect the contributions of past and ongoing projects that have resulted in an existing significant cumulative impact with respect to attainment of state standards for ozone and PM_{10} concentrations.

As discussed above, with respect to the PM_{10} standards, the impact of Alternative 2 would be significant, but would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, for the reasons described for the

proposed project in Section 4.10.6, Alternative 2 would result in a cumulatively significant contribution to the existing significant cumulative impacts related to PM_{10}, but with mitigation, the contribution would be reduced to less than significant.

As discussed above, construction emissions associated with Alternative 2 would exceed the MBUAPCD significance thresholds and therefore could contribute to an exceedance of a state and/or federal standard for ozone or NO_2 even with mitigation. Therefore, the incremental impact of Alternative 2 associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan would be significant when combined with the emissions associated with the cumulative projects identified in **Table 4.1-2**, and the incremental contribution to existing significant cumulative impacts related to ozone and NO_2 would be cumulatively significant and the overall cumulative impact would be significant and unavoidable.

Operations of Alternative 2 would not cause emissions that would exceed the MBUAPCD significance thresholds. Therefore, Alternative 2's contribution to cumulative impacts related to criteria pollutant emissions would be less than significant.

Alternative 2 would not result in short-term or long-term significant impacts from the exposure of sensitive receptors to TAC emissions, dust emissions that contain *coccidioides immitis* spores, or objectionable odors. There is one project in the cumulative scenario described in **Table 4.1-2** and Section 4.1 – the DeepWater Desal Project – that could result in significant impacts on sensitive receptors in the vicinity of the open water intake and pump station; however, given the distance of the Alternative 2 Open Ocean Intake Pump Station site to the nearest sensitive receptors and the limited duration of exposure for any given sensitive receptor associated with Alternative 2 pipeline construction, these components of Alternative 2 would have a less than significant contribution to cumulative impacts.

Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality (NO_2), significant and unavoidable.

5.5.10.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley

Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Potential to Violate an Air Quality Standard and Conflict with an Air Quality Plan

The construction of a new screened open water intake and discharge system in Monterey Bay that would require the use of marine vessel(s) and/or barge(s), and land-based HDD equipment for the installation of four 42-inch diameter pipelines from the pump station on Dolan Road to the intake and discharge structures on the seafloor in MBNMS, and four 1.1-mile pipelines from the pump station to the desalination/data center site, resulting in 2.5 additional miles of pipeline compared to the proposed project Source Water Pipeline. In addition, the construction of a large data center and cooling system, and 31.5 miles of additional Desalinated Water Pipeline (25 of which would for delivery of water to potential customers in Santa Cruz County, Salinas, or both) would result in a net increase in total construction emissions compared to the proposed project.

Because Alternative 3 would result in greater construction-related emissions of criteria pollutants than the proposed project, short-term emissions associated with construction of Alternative 3 could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and/or PM_{10}. With respect to the ozone and NO_2 standards, Alternative 3 would result in the same impact conclusion as the proposed project, and would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**.

The desalination facility, the data center, and the cooling system would result in an increased amount of ground disturbance during construction (i.e., 60 acres compared to 25 acres associated with the proposed MPWSP plant site). It is not currently known how construction of these facilities would proceed; however, if the data center and/or cooling system were constructed concurrently with the desalination facility, the combined daily emissions would exceed the MBUAPCD threshold for PM_{10} emissions, resulting in an increased level of impact compared to the proposed project, significant and unavoidable impact even with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Overall, construction emissions would increase the potential for this alternative to result in a violation of an air quality standard and conflict with the 2012 Air Quality Management Plan; therefore Alternative 3 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Impacts on Sensitive Receptors

Alternative 3 would result in the short-term generation of DPM emissions from the use of off-road diesel equipment that could result in the short-term exposure of local sensitive receptors to

TACs (i.e., DPM). Under Alternative 3, construction of the 60-acre desalination plant and data center would occur within 300 feet of a residence on Dolan Road, and this residence would also be within 100 feet of construction of the brine, source water, and desalinated water pipelines. This residence would be exposed to substantially higher concentrations of DPM, dust emissions that could contain *coccidioides immitis* spores, and objectionable odors from the use of diesel-fueled equipment compared to the exposure of the closest residence to the proposed MPWSP desalination plant site. Given the close proximity to the residence and the substantial amount of construction activities that would occur at the 60-acre site over a 24-month period, this impact would likely be significant and unavoidable due to elevated emissions exposure even with implementation of **Mitigation Measures 4.10-1a** and **4.101b**, which would require the applicant and/or its construction contractor to make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards and limit equipment and vehicle idling, respectively. Therefore, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable, even with mitigation.

Operational and Facility Siting Impacts

Alternative 3 would include the operation of three natural gas emergency generators that would have a total combined capacity of up to 30 MW of generation, substantially more than the 0.7 MW of emergency generation for the proposed MPWSP desalination plant site. Based on information available about Alternative 3, the proponent expects to operate each generator for up to 1,500 hours per year; however, the MBUAPCD limits operation of standby natural gas engines to no more than 60 hours per year for testing/exercising purposes (MBUAPCD, 2013). Assuming that each of the three generators would be tested for 5 hours once a month on different days and that each of the generators would be subject to MBUAPCD Best Available Control Technology (BACT) requirements for stand-by generators, maximum-day NO_x emissions would be approximately 219 pounds per day, which would exceed the MBUAPCD's significance threshold of 137 pounds per day (refer to Emergency Generator Emissions in **Appendix G1** for details on the emission calculation). This would be a significant impact that would occur three times a month and 36 times a year. However, it is assumed that implementation of a mitigation measuresimilar to **Mitigation Measure ALT 3-AQ**, below, which would restrict test/exercise operations of the emergency generators to no more than three hours per day, would be required for this alternative to reduce this significant impact to a less-than-significant level.

Although the health risk that would be associated with operating the emergency generators under Alternative 3 may be elevated compared to the proposed project, the associated impact would not be significant if the generators were sited on the north side of the property away from the residence. Further, combustion of natural gas does not result in high concentrations of TACs and no DPM would be generated, therefore objectionable odors would also be minimized. To ensure that the operational health risk impact would be reduced to a less-than-significant level, implementation of **Mitigation Measure ALT 3-AQ** would be required. Therefore, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project during operations, less than significant with mitigation.

Mitigation Measure ALT 3-AQ applies to the emergency backup generators associated with the Alternative 3 data center and cooling system and would not apply to the proposed project or other alternatives.

> **Mitigation Measure ALT 3-AQ: Restrict Daily Testing and Locations of Emergency Generators.**
>
> Each of the three 10 MW natural gas emergency generators associated with Alternative 3 shall be restricted to no more than three hours of testing/exercising per day. Only one emergency generator shall be tested per day. The emergency generators shall be located at the site as far as practicable from the nearest residences.

Cumulative Analysis

The geographic scope of analysis for potential cumulative air quality impacts related to Alternative 3 is the North Central Coast Air Basin, same as for the proposed project. As indicated in Section 4.10.6, the air basin does not attain the state standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, conditions in the air basin reflect the contributions of past and ongoing projects that have resulted in an existing significant cumulative impact with respect to attainment of state standards for ozone and PM_{10} concentrations.

As discussed above, construction emissions associated with Alternative 3 would exceed the MBUAPCD significance thresholds and therefore could contribute to an exceedance of a state and/or federal ambient air quality standard for ozone, NO_2, and PM_{10} even with mitigation. Therefore, the cumulative impact of Alternative 3 associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan would be significant and unavoidable when combined with the emissions associated with the cumulative projects identified in **Table 4.1-2** in Section 4.1, and the incremental contribution to the cumulative impact would be significant and the significant and unavoidable impact would be substantially greater than for the proposed project.

Operations of Alternative 3 could cause emissions that would exceed the MBUAPCD significance thresholds. However, implementation of **Mitigation Measure ALT 3-AQ** would reduce the operational emissions to a less-than-significant level. Therefore, Alternative 3's contribution to cumulative criteria pollutants emissions impacts would be significant; however, the incremental contribution would be reduced to a level that is less than significant with implementation of mitigation.

With regard to exposure of sensitive receptors to TAC emissions, *coccidioides immitis* spores, or objectionable diesel fuel-related odors, Alternative 3 could result in a short-term impact that would be significant even with mitigation.

Overall, Alternative 3 would have the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality, significant and unavoidable.

5.5.10.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Potential to Violate an Air Quality Standard and Conflict with an Air Quality Plan

The construction of a new screened open water intake and discharge system in Monterey Bay would require the use of marine vessel(s) and/or barge(s), and land-based HDD equipment for installation of a portion of the pipelines from the existing caisson to the intake and discharge on the seafloor in MBNMS. Emissions from these sources may be less than those that would be required to construct the nine proposed slant wells that would each be up to 1,000 feet in length. However, this alternative would have a longer desalinated water pipeline (6.5 miles longer), resulting in a net increase in pipeline construction and associated emissions even though it would not include construction of the proposed 4.5-mile-long Castroville Pipeline or the proposed 1.2-mile-long Pipeline to CSIP Pond. Overall, the net emissions associated with Alternative 4 would be similar to those that would occur under the proposed project. Short-term emissions associated with construction of Alternative 4 could contribute to an exceedance of a state and/or federal standard for ozone, NO_2, and/or, PM_{10}. This impact with respect to the ozone and NO_2 standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. The potential for Alternative 4 to result in a violation of an air quality standard and conflict with the 2012 Air Quality Management Plan would be significant and unavoidable, even with mitigation. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Impacts on Sensitive Receptors

Construction would result in the short-term generation of DPM emissions from the use of off-road diesel equipment that could result in the short-term exposure of local sensitive receptors to

TACs (i.e., DPM). Under Alternative 4, construction of the desalination plant would occur within 200 feet of boat slips at Moss Landing Harbor where people could reside, and receptors would also be within 200 feet of construction activities that would be associated with the longer desalinated water pipeline. These sensitive receptors would be exposed to substantially higher concentrations of DPM, dust emissions that could contain *coccidioides immitis* spores, and objectionable odors from the use of diesel-fueled equipment compared to the closest sensitive receptors to the proposed MPWSP plant site. Given this alternative site's close proximity to sensitive receptors and the amount of construction activities that would occur at the project site over the construction period, this impact would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**, which would require the applicant and/or its construction contractor to make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards and limit equipment and vehicle idling, respectively. Therefore, Alternative 4 would have result in an ***increased impact conclusion*** on sensitive receptors compared to the proposed project, significant and unavoidable, even with mitigation.

Operational and Facility Siting Impacts

Because the source water from the open water intake system would not have the benefit of being filtered through the seafloor, and would require an increased level of pre-treatment at the desalination plant, there would be an increase in the amount of annual emissions compared to the proposed project. However, in terms of maximum daily emissions, the criterion which significance is based on, long-term operational emissions under Alternative 4 would result in the ***same impact conclusion*** related to sensitive receptors as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for potential cumulative air quality impacts related to Alternative 4 is the North Central Coast Air Basin, same as for the proposed project. As indicated in Section 4.10.6, the air basin does not attain the state standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, conditions in the air basin reflect the contributions of past and ongoing projects that have resulted in an existing significant cumulative impact with respect to attainment of state standards for ozone and PM_{10} concentrations.

As discussed above, with respect to the PM_{10} standards, the impact of Alternative 4 would be significant, but would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, for the reasons described for the proposed project in Section 4.10.6, Alternative 4 would have a significant contribution to existing significant cumulative impacts related to PM_{10}, but that contribution would be reduced by mitigation to a less than significant impact.

As discussed above, construction emissions associated with Alternative 4 would exceed the MBUAPCD significance thresholds and therefore could contribute to an exceedance of a state and/or federal standard for ozone or NO_2 even with mitigation. Therefore, the cumulative impact of Alternative 4 associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan would be significant

when combined with the emissions associated with the cumulative projects identified in **Table 4.1-2** in Section 4.1, and the incremental contribution to the cumulative impact would be significant and unavoidable.

Operations of Alternative 4 would not cause emissions that would exceed the MBUAPCD significance thresholds. Therefore, Alternative 4 would have a less than significant contribution to a cumulative impact related to emissions of criteria pollutants.

With regard to exposure of sensitive receptors to TAC emissions, *coccidioides immitis* spores, and objectionable odors from diesel-fueled equipment, Alternative 4 could result in a short-term impact that would be significant even with mitigation. As a result, the cumulative health risk impact of Alternative 4 would also be significant and unavoidable, as would the incremental contribution of Alternative 4.

Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality, significant and unavoidable.

5.5.10.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Potential to Violate an Air Quality Standard and Conflict with an Air Quality Plan

Because the construction of Alternative 5a components would be located in the same location and would have a slightly reduced footprint because of the reduced number of wells compared to the proposed project, Alternative 5a would result in a similar level of impact compared to the proposed project. Likewise, construction of Alternative 5b would result in nearly the same footprint as Alternative 1, and would result in a similar level of impact compared to Alternative 1 and the proposed project. Similar to the proposed project, impacts related to ozone and NO_2 standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. The potential for this alternative to result in a violation of an air quality standard and conflict with the 2012 Air Quality Management Plan would be the same as the propose project. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Impacts on Sensitive Receptors

Similar to the proposed project, short-term generation of DPM emissions from the use of off-road diesel equipment could result in the short-term exposure of local sensitive receptors to TACs (i.e., DPM). Construction could result in temporary odors from use of diesel-fueled equipment, which would dissipate quickly and be unlikely to create objectionable odors that would affect a substantial number of people. Under Alternative 5a and 5b, construction would result in the same less-than-significant health risk-related impacts as identified for the proposed project and under Alternative 1. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Operational and Facility Siting Impacts

Alternative 5a and 5b would result in long-term operational and maintenance emissions and objectionable odors that would be less than significant and would be less than those that would be generated under the proposed project because there would be three fewer slant wells to maintain and the horsepower rating of the emergency generator at the desalination plant would be reduced. Therefore, Alternatives 5a and 5b would have result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

Because Alternative 5 alone would not fully meet the project objectives and must be paired with the approved GWR Project in order to do so, for informational purposes, this analysis provides the "subtotal" of the Alternative 5 impacts in combination with the impacts of the GWR Project, even though MBUAPCD project-level thresholds are intended to be applied to projects separately, rather than applied to a combination of projects in a cumulative sense. Although both Alternative 5 and the GWR Project were found to have less-than-significant impacts related to daily PM_{10} emissions after mitigation when viewed individually, if Alternative 5 and the GWR Project are under construction concurrently, the post-mitigation daily PM_{10} emissions of Alternative 5 (i.e., 68 pounds) in combination with the mitigated daily PM_{10} emissions of the GWR Project (i.e., 64 pounds; MRWPCA, 2016) would exceed the MBUAPCD significance threshold of 82 pounds per day, resulting in a significant combined impact that could not be further reduced by mitigation and thus would remain significant and unavoidable. The already significant and unavoidable impact with respect to the ozone and NO_2 standards would be worsened in combination with construction emissions of the GWR Project. The GWR Project could expose several of the same sensitive receptors to emissions of TACs or dust that may contain *coccidioides immitis* spores along the new Desalinated Water Pipeline and new Transmission Main alignments. However, due to the nature of pipeline construction, exposures at these locations would be limited in duration and would not result in a significant impact even if construction occurred concurrently. The operational emissions of Alternative 5 would be well below MBUAPCD thresholds, and the addition of GWR Project operational emissions would not result in an exceedance of these thresholds; therefore, in combination, these projects would not result in a significant air quality impact during operation. Overall, Alternative 5 considered in

combination with the GWR Project would result in the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality, significant and unavoidable.

Impacts of Full Cumulative Scenario

The geographic scope of analysis for potential cumulative air quality impacts related to Alternative 5 is the North Central Coast Air Basin, same as for the proposed project. As indicated in Section 4.10.6, the air basin does not attain the state standards for ozone or PM_{10}; however, it attains (or is unclassified for) all federal standards. Therefore, conditions in the air basin reflect the contributions of past and ongoing projects that have resulted in an existing significant cumulative impact with respect to attainment of state standards for ozone and PM_{10} concentrations.

As discussed above, with respect to the PM_{10} standards, the impact of Alternative 5 would be significant, but would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, for the reasons described for the proposed project in Section 4.10.6, Alternative 5 would result in a significant contribution to the existing significant cumulative impacts related to PM_{10}, but with mitigation the contribution would be reduced to less than significant.

As discussed above, construction emissions associated with Alternative 5 would exceed the MBUAPCD significance thresholds and therefore could have a significant contribution to an exceedance of a state and/or federal standard for ozone or NO_2 even with mitigation. Therefore, the cumulative impact of Alternative 5 associated with the potential to contribute to a violation of an ambient air quality standard and conflict with implementation of the applicable air quality plan would be significant when combined with the emissions associated with the cumulative projects identified in **Table 4.1-2** in Section 4.1, and the incremental contribution to the significant cumulative impact related to ozone and NO_2 would be significant and unavoidable.

Operations of Alternative 5 would not cause emissions that would exceed the MBUAPCD significance thresholds. Therefore, Alternative 5 would have a less than significant incremental contribution to a significant cumulative impact related to emissions of criteria pollutants.

With regard to exposure of sensitive receptors to TAC emissions, *coccidioides immitis* spores, or objectionable odors, Alternative 5 would not result in short-term or long-term significant impacts associated with exposure of sensitive receptors to TAC emissions when combined with the cumulative projects. For the same reasons described for the proposed project in Section 5.10.6, Alternative 5a would have a less than significant contribution to cumulative impacts related to exposure to TAC emissions, *coccidioides immitis* spores, or objectionable odors. There are no cumulative projects in the vicinity of the Potrero Road slant well site that would emit TACs or dust emissions that could contain *coccidioides immitis* spores with which the emissions of that component of Alternative 5b could combine. As a result, the cumulative impact on sensitive receptors as a result of Alternative 5 would be less than significant.

Overall, Alternative 5 would result in the ***same impact conclusion*** as the proposed project for cumulative impacts related to air quality, significant and unavoidable.

5.5.10.9 References

Monterey Bay Unified Air Pollution Control District (MBUAPCD), 2013. Basic Requirements for Natural Gas/Propane (LPG) Electric Generators & Water Pumps, Revised June 12, 2013.

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. Consolidated Final EIR for the Pure Water Monterey GWR Project, Section 4.3, Air Quality and Greenhouse Gas. http://purewatermonterey.org/wp/wp-content/uploads/Volume-I-Consolidated-Final-EIR-Jan-2016.pdf

5.5.11 Greenhouse Gas Emissions

The evaluation criteria for greenhouse gas (GHG) emissions address: contribution to climate change from GHG emissions; conflict with Executive Order B-30-15 Emissions Reduction Goal; and conflict with AB 32 Climate Change Scoping Plan.

5.5.11.1 Setting/Affected Environment

The setting/affected environment related to GHG emissions for the alternatives is the same as described for the MPWSP in Section 4.11, Greenhouse Gas Emissions.

5.5.11.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin ASR system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.

Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.

Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.

Implementation of the MPWSP would result in short-term construction and long-term operational emissions of GHGs. The sum of GHG emissions generated by MPWSP construction amortized over the 40-year project lifetime and the net annual emissions generated by project operation would total approximately 8,365 metric tons CO_2e per year. These emissions would exceed the 2,000 metric tons per year significance threshold; therefore, a significant impact would occur. GHG emissions associated with the proposed project would exceed the emissions significance threshold, which indicates that implementation of the project would not be consistent with the GHG emission reduction goals for year 2030 identified in Executive Order B-30-15. Therefore, it can be concluded that the proposed project would conflict with Executive Order B-30-15 and would result in a potentially significant impact.

The MPWSP Desalination Plant designs include state of the art energy recovery and energy efficient features in place of standard energy saving systems; there may be additional feasible energy reducing features available to further reduce the electrical consumption. CARB has set a 20 percent electricity use reduction target for AB 32 Climate Change Scoping Plan Measure W-3; therefore, a 20 percent reduction in electricity use associated with the proposed project's energy recovery and energy saving features would indicate a less-than-significant impact associated with the proposed project's consistency with this measure.

Implementation of **Mitigation Measure 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) would ensure that construction activities are conducted in a fuel-efficient manner and would reduce the overall carbon footprint of the MPWSP. Implementation of **Mitigation Measure 4.11-1** (**GHG Emissions Reduction Plan**) is required to reduce the carbon footprint of electricity consumption for the proposed project to zero; the electricity would be generated from renewable energy sources, and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Overall project emissions would be less than 2,000 metric tons CO_2e per year. The mitigated amortized project emissions would be approximately 1,480 metric tons CO_2e per year. Therefore, these impacts would be mitigated to less-than-significant levels. (Note this significance determination was revised from significant, unavoidable in the Draft EIR/EIS due to the adoption of a GHG Emissions Reduction Plan).

Impact 4.11-C: Cumulative impacts related to greenhouse gas emissions.

Because GHG emissions have global climate change implications, the evaluation of GHG emissions impacts is inherently a cumulative impact analysis. Implementation of the MPWSP would result in short-term construction and long-term operational emissions of GHGs. With implementation of **Mitigation Measures 4.11-1** and **4.18-1**, the project's incremental contribution to the significant cumulative climate change impacts related to GHG emissions and conflicts with the AB 32 Climate Change Scoping Plan would be less than significant. Therefore, cumulative impacts would be less than significant with mitigation.

5.5.11.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated. However, decommissioning of the test slant well could result in potentially significant but mitigable impacts on greenhouse gas (GHG) emissions, including the potential to incrementally contribute to climate change. See Table 4.11-3, Total GHG Emissions from Project Construction, which includes the estimated emissions for construction of the slant wells. Slant well decommissioning would produce a fraction of the emissions associated with the slant well construction period since decommissioning would not involve drilling and would take 4 weeks rather than 15 or more months; construction emissions would only occur as a result of grading, excavation, and earth moving activities. Impacts would be less than significant with implementation of Mitigation Measure 4.18-1, which would apply to slant well decommissioning.

Consequently, the construction- or operations-related direct or indirect adverse effects related to GHG emissions would be less than significant. Because the No Project Alternative would have a less than significant impact with respect to GHG emissions, the cumulative effects related to this topic would be less than significant.

5.5.11.4 Direct and Indirect Effects of Alternative 1 - Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed

project, but at a different location (Potrero Road). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction and Operation Impacts

The 5.5 miles of additional source water pipeline, and the one additional well required for Alternative 1 (10 new wells at Potrero Road versus 9 new wells plus the converted test well at CEMEX) would result in an increase in amortized GHG emissions compared to the proposed project. In addition, due to the increased length of the Source Water Pipeline, there would be more than three times the energy demand to pump source water to the MPWSP Desalination Plant compared to the proposed project. Thus, this alternative would result in increased indirect GHG emissions associated with electricity usage. Although Alternative 1 would result in the permanent removal of approximately one less acre of scrub vegetation due to the slant wells' location at an existing paved parking lot, the sum of the 40-year amortized construction GHG emissions and the total net operation emissions that would be associated with Alternative 1 would be higher than the emissions shown in **Table 4.11-5** for the proposed project. The emissions of Alternative 1 would exceed the 2,000 metric tons carbon dioxide-equivalent (CO_2e) per year significance threshold resulting in a significant impact. This impact would be reduced to less than significant with implementation of **Mitigation Measures 4.11-1** and **4.18-1**. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, and impacts would be less than significant with mitigation.

Since mitigated GHG emissions would not exceed the emissions significance threshold, Alternative 1 would not conflict with Executive Order B-30-15. As with the proposed project, the only plan that would be directly applicable to Alternative 1 would be the AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. CARB has set a 20 percent electricity use reduction target from 2006 levels for this measure. Pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply Alternative 1 would be generated from renewable energy sources and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Therefore, this impact is also considered to be less than significant with implementation of mitigation. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, and impacts would be less than significant with mitigation.

Cumulative Analysis

Because GHG emissions have global climate change implications, the evaluation of GHG emissions impacts is inherently a cumulative impact analysis. Thus, all of the projects listed in **Table 4.1-2** in Section 4.1, as well as all other sources of GHG emissions, are relevant to the cumulative impacts discussion, and are not discussed in further detail. Through Executive Orders S-3-05 and B-30-15, as well as AB 32, the State has established goals and policies for

reducing its contribution of GHG emissions. Accordingly, these policy documents provide goals against which the significance of individual projects' emissions can be measured. Consistent with the emissions reduction goal for 2030 identified in Executive Order B-30-15, the numeric significance threshold used to evaluate operational emissions plus construction emissions amortized over the project's estimated 40-year lifetime is 2,000 metric tons CO_2e per year. The analysis also considers the alternative's consistency with applicable AB 32 Scoping Plan Measure W-3. Since construction and operations under Alternative 1 would not result in GHG emissions greater than the significance threshold and would not conflict with AB 32 Scoping Plan Measure W-3 with implementation of mitigation, Alternative 1 would not result in a cumulatively considerable contribution to significant cumulative impacts. Thus, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to greenhouse gas emissions, less than significant with mitigation.

5.5.11.5 Direct and Indirect Effects of Alternative 2 - Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction and Operation Impacts

Construction of a screened open water intake and system, compared to construction of nine proposed slant wells at CEMEX and a longer source water pipeline from Moss Landing south to Charles Benson Road, would result in a net increase of pipeline length and an associated increase in amortized construction emissions of approximately 50 metric tons per year compared to the proposed project. In addition, due to the increased length of the source water pipeline under Alternative 2 (i.e., 7.7 miles compared to 2.2 miles under the proposed project), there would be nearly four times the energy demand to pump source water to the MPWSP Desalination Plant compared to the proposed project, which would increase the indirect GHG emissions associated with electricity usage.

A recent analysis conducted for the project that compared water quality data from the existing test slant well at the CEMEX site to water quality representative of average open-ocean intake conditions in the vicinity of Monterey Bay found that CO_2 degassing from discharged brine would be about 87 percent less than discharged brine water obtained from subsurface slant wells (**Appendix G2**). Given that Alternative 2 would result in the same amount of discharged brine as the proposed project, but would include an open water intake, CO_2 degassing would be reduced by 640 metric tons CO_2 under Alternative 2 compared to the proposed project. In addition, this alternative would result in approximately 1 less acre of permanent scrub vegetation removal and associated 14 metric tons CO_2 of carbon sequestration compared to the proposed project due to the location of the intake pump station at an existing disturbed area.

The sum of the 40-year amortized construction GHG emissions and the total net operation emissions associated with Alternative 2 would be less than the emissions that would be generated under the proposed project (see **Table 4.11-5**). The emissions of Alternative 2 would exceed the 2,000 metric tons CO_2e per year significance threshold, but the impact would be less than significant with implementation of **Mitigation Measures 4.11-1** and **4.18-1**. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Since mitigated GHG emissions associated with Alternative 2 would not exceed the emissions significance threshold, Alternative 2 would not conflict with Executive Order B-30-15. As with the proposed project, the only plan that would be directly applicable to Alternative 2 would be the AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. Pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply Alternative 2 would be generated from renewable energy sources and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Therefore, this impact is also considered to be less than significant with implementation of mitigation. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Construction and operations under Alternative 2 would result in GHG emissions less than the applicable numeric significance threshold and would not conflict with AB 32 Scoping Plan Measure W-3 with implementation of mitigation. Therefore, Alternative 2 would not result in a cumulatively considerable contribution to significant cumulative impacts. Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to greenhouse gas emissions, less than significant with mitigation.

5.5.11.6 Direct and Indirect Effects of Alternative 3 - Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water

and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction and Operation Impacts

Construction of a screened open water intake and brine discharge system would require the use of a marine barge(s), and land-based HDD equipment for the installation of four 42-inch diameter pipelines from the pump station on Dolan Road to the intake and discharge structures on the seafloor in MBNMS, and four 1.1-mile pipelines from the pump station to the desalination/data center site, resulting in 2.5 additional miles of pipeline compared to the proposed project Source Water Pipeline. This alternative would also include construction of a larger desalination plant, data center and cooling system, and up to 25 miles of additional desalinated water pipelines to deliver water (in addition to the 9.6 mgd served to CalAm's Monterey District) to potential customers in Santa Cruz County, Salinas, or both. Therefore, there would be an overall increase in amortized annual construction emissions under Alternative 3 compared to the proposed project.

Operations of the data center and cooling system under Alternative 3 would result in a considerable energy demand increase compared to the proposed project. The data center would require 150 megawatts (MW) of electrical power to operate. Compared to the proposed project, which would result in a net power consumption increase of less than 6 MW, Alternative 3 would substantially increase indirect GHG emissions associated with electricity usage. This energy demand would be more than 25 times the net energy demand increase that would occur under the proposed project. This would result in an additional 171,000 metric tons CO_2e per year beyond the indirect emissions that would occur as a result of only the desalination facility. With regard to CO_2 degassing from discharged water, given that Alternative 3 would result in approximately twice the amount of discharged brine as the proposed project, but would include an open-ocean intake, CO_2 degassing would be reduced by 545 metric tons CO_2 under Alternative 3 compared to the proposed project. With regard to the loss of vegetation-related carbon sequestration, Alternative 3 would result in the loss of up to 91 acres of grassland at the desalination facility, data center, and electrical substation location compared to 15 acres of grassland under the proposed project. This would increase the loss of sequestration potential by more than 313 metric tons CO_2 per year. See **Appendix G1** for emissions estimates.

The sum of the 40-year amortized construction GHG emissions and the total net operation emissions associated with Alternative 3 would be substantially higher than the emissions presented in **Table 4.11-5** for the proposed project. Although Alternative 3 does not include GHG reduction measures, the DeepWater Desal Project proponent indicates that energy minimization and other GHG reduction measures to make the DeepWater Desal Project net-carbon neutral are being considered (DeepWater Desal, 2016). The separate EIR/EIS for the DeepWater Desal Project will evaluate any such project features if they are identified, but they are not included as part of Alternative 3 in this EIR/EIS. The emissions of Alternative 3 would exceed the 2,000 metric tons CO_2e per year significance threshold. Due to the large scale of Alternative 3, it is not certain that implementation of measures similar to **Mitigation Measures 4.11-1** and **4.18-1** would be feasible to the extent that they would be able to reduce the impact to a less-than-significant level. Therefore, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project; it would be significant and unavoidable, even with mitigation.

Since GHG emissions associated with Alternative 3 would exceed the emissions significance threshold, Alternative 3 would conflict with Executive Order B-30-15 and would result in a significant impact even with implementation of mitigation. As with the proposed project, the only plan that would be directly applicable to Alternative 3 would be the AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. The lead agencies cannot substantiate that GHG emissions under Alternative 3 would be reduced to a less-than-significant level. Therefore, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project; it would be significant and unavoidable, even with mitigation.

Cumulative Analysis

Construction and operations under Alternative 3 would result in GHG emissions greater than the applicable numeric significance threshold and would conflict with AB 32 Scoping Plan Measure W-3. Therefore, Alternative 3 would result in a cumulatively considerable contribution to significant cumulative impacts, of a higher magnitude than the proposed project. Overall, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project for cumulative effects related to greenhouse gas emissions; it would be significant and unavoidable, even with mitigation.

5.5.11.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn

from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction and Operation Impacts

Construction of a screened open water intake and brine discharge system would require the use of marine vessel(s) and land-based HDD equipment for installation of a portion of the pipelines from the existing caisson to the intake and discharge on the seafloor in MBNMS. Therefore, there would be an overall increase in amortized construction emissions under Alternative 4 compared to the proposed project.

Long-term operations of the People's Project would produce approximately 25 percent more product water than the proposed project. This increase in product water would result in an approximately 25 percent increase in energy demand, that would increase the net indirect emissions from electricity usage under Alternative 4 by 1,715 metric tons CO_2e per year compared to the proposed project. With regard to CO_2 degassing from discharged water, given that Alternative 4 would result in approximately 32 percent more discharged brine compared to the proposed project, but would include an open water intake, CO_2 degassing would be reduced by 610 metric tons compared to the proposed project. In addition, this alternative would result in approximately one less acre of permanent scrub vegetation removal and 15 less acres of permanent grassland removal compared to the proposed project due to the location of its intake pump station and desalination plant at existing disturbed areas. This would result in approximately 79 metric tons CO_2e per year additionally sequestered compared to the proposed project. See **Appendix G1** for emissions estimates.

The sum of the 40-year amortized construction GHG emissions and the total net operation emissions associated with Alternative 4 would be higher compared to the proposed project. The emissions of Alternative 4 would exceed the 2,000 metric tons CO_2e per year significance threshold. Due to the similar scale of Alternative 4 to the MPWSP, it is anticipated that implementation of measures similar to **Mitigation Measures 4.11-1** and **4.18-1** would be feasible and would reduce the impact to less than significant. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Since GHG emissions associated with Alternative 4 would be mitigated to a less-than-significant level, Alternative 4 would not conflict with Executive Order B-30-15. As with the proposed project, the only plan that would be directly applicable to Alternative 4 would be the AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. Pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply Alternative 4 would be generated from renewable energy sources and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project; less than significant with mitigation.

Cumulative Analysis

Construction and operations under Alternative 4 would result in GHG emissions less than the applicable numeric significance threshold and would not conflict with AB 32 Scoping Plan Measure W-3 with implementation of mitigation. Therefore, Alternative 4 would not result in a cumulatively considerable contribution to significant cumulative impacts. Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to greenhouse gas emissions, less than significant with mitigation.

5.5.11.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction and Operation Impacts

The facilities that would be constructed under Alternative 5a would be the same as those constructed under the proposed project, with the exception that there would be three fewer slant wells at CEMEX compared to the proposed project. Alternative 5b would locate the seven new slant wells at the Potrero Road parking lot, and include construction of a longer source water pipeline, as under Alternative 1. There would be an overall decrease in amortized construction emissions of 16 metric tons CO_2e per year under Alternative 5a compared to the proposed project. Given the longer distance of the source water pipeline under Alternative 5b, amortized construction emissions would be increased by approximately 59 metric tons CO_2e per year compared to Alternative 5a, and by approximately 44 metric tons CO_2e per year compared to the proposed project. In addition, due to the increased length of the source water pipeline, Alternative 5b would result in more than three times the energy demand to pump source water to the desalination plant compared to Alternative 5a; however, the overall energy demand associated with Alternative 5b would be less than the proposed project given the lower source water demand than the proposed project.

In addition, due to the desalination plant's decreased product capacity under Alternative 5a or 5b, total operational emissions would be less compared to emissions generated under the proposed project. With regard to CO_2 degassing from discharged water, given that Alternative 5a or 5b would result in approximately two thirds the discharged brine from the MPWSP plant compared to the proposed project, CO_2 degassing would be reduced to 490 metric tons CO_2 per year. It is assumed that approximately the same area would be permanently disturbed under Alternative 5a as the proposed project so the reduction in carbon sequestration would be the same, and under 5b would be less so the carbon sequestration would be greater. As shown in **Table 5.5-13**, the total GHG emissions that would be associated with Alternative 5a would be 5,530 metric tons CO_2e

per year, which would be approximately 2,835 metric tons less than would be generated under the proposed project. Alternative 5b would have the higher indirect operational emissions due to increased pumping associated with the longer source water pipeline length, and as described above, would have an additional 59 metric tons CO_2e per year associated with amortized construction emissions compared to Alternative 5a. The emissions of Alternatives 5a and 5b would exceed the 2,000 metric tons CO_2e per year significance threshold, but the impact would be less than significant with implementation of **Mitigation Measures 4.11-1** and **4.18-1**. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

TABLE 5.5-13
TOTAL GHG EMISSIONS ASSOCIATED WITH ALTERNATIVE 5A

Construction Emission Source	CO_2e (metric tons per year)
Amortized Construction[1]	342
Operations[2]	5,188
Total Emissions	5,530

NOTES:

[1] Construction emissions are based on the emissions for the proposed project presented in Table 4.11-3 (rounded) with adjustments to the slant well emissions to account for construction of three fewer slant wells.

[2] Operational emissions are based on emissions from Table 4.11-4 (rounded) with adjustments made to account for lower electricity consumption and emergency generation capacity due to the decreased product water capacity. In addition, due to the reduced capacity of the MPWSP plant under Alternative 5, degassing emissions would be two thirds the degassing emissions identified for proposed project, and because there would be maintenance of three fewer slant wells compared to the proposed project, emissions associated with off-road equipment use to maintain slant wells would be approximately 70 percent of the off-road equipment emissions identified for the proposed project.

SOURCES: ESA, 2016 (**See Appendix G1**).

Since mitigated GHG emissions associated with Alternative 5 would not exceed the emissions significance threshold, Alternative 5 would not conflict with Executive Order B-30-15. As with the proposed project, the only plan that would be directly applicable to Alternative 5 would be the AB 32 Scoping Plan Measure W-3, Water System Energy Efficiency. Pursuant to implementation of Mitigation Measure 4.11-1, the electricity that would supply Alternatives 5a or 5b would be generated from renewable energy sources and/or would otherwise be offset through the procurement of Renewable Energy Certificates and/or retirement of Carbon Offsets. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Combined Impacts with GWR Project

Because Alternative 5 alone would not meet the project objectives and must be paired with the approved GWR Project in order to do so, for informational purposes, this analysis provides the "subtotal" of the Alternative 5 impacts in combination with the impacts of the GWR Project, even though project-specific significance thresholds are not intended to be applied to combined or cumulative emissions levels. The GWR Project would emit amortized GHG emissions of

201 metric tons CO_2e per year and annual emissions of 1,699 metric tons CO_2e per year during operation, of which 1,642 metric tons CO_2e per year would be associated with new electrical demand. Total amortized emissions would be 1,900 metric tons CO_2e per year. These emissions are amortized or would occur over the GWR Project's expected 30-year lifetime (MRWPCA, 2016). Thus, during the years these projects overlap, the total amortized annual GHG emissions would be 7,631 metric tons CO_2e per year for Alternative 5a and slightly higher for Alternative 5b, a significant and unavoidable combined impact. These combined emissions would be approximately 734 metric tons CO_2e per year less than the emissions that would be associated with the proposed project. It should be noted that the GWR EIR did not include mitigation for GHG because the estimated CO_2e emissions are below the significance threshold. Overall, Alternative 5 considered in combination with the unmitigated GWR Project would result in a ***different impact conclusion*** compared to the proposed project for cumulative impacts related to GHG emissions; it would be significant and unavoidable even with implementation of mitigation for the Alternative 5 portion. However, if **Mitigation Measures 4.11-1** and **4.18-1** are also applied to the GWR Project, the combination of these projects would result in the ***same impact conclusion*** the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

Similar to the proposed project, construction and operations under Alternative 5 would not result in GHG emissions greater than the significance threshold and would not conflict with AB 32 Scoping Plan Measure W-3. Therefore, with implementation of Mitigation Measure 4.11-1: GHG Emissions Reductions Plan, Alternative 5's contribution to GHG emissions would be less than significant and Alternative 5 would be considered consistent with the State's GHG reduction goals.

Overall, Alternative 5 would result in a reduced level of impact but the ***same impact conclusion*** as the proposed project for cumulative effects related to greenhouse gas emissions, less than significant with mitigation.

5.5.11.9 References

DeepWater Desal LLC., 2016. *Monterey Bay Regional Water Project, Project Narrative: Supplement to California State Lands Lease Application.* Available at www.deepwaterdesal.com/reports-and-publications.htm.

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. Consolidated Final EIR for the Pure Water Monterey GWR Project, Section 4.3, Air Quality and Greenhouse Gas. http://purewatermonterey.org/wp/wp-content/uploads/Volume-I-Consolidated-Final-EIR-Jan-2016.pdf

5.5.12 Noise and Vibration

The evaluation criteria for Noise and Vibration address: temporary increases in ambient noise in the vicinity of construction; exposure of people to noise levels in excess of established standards during construction; exposure of people to or generation of excessive groundborne vibration during construction; consistency with construction time limits established by local jurisdictions; substantial permanent increase in ambient noise levels above existing levels during project operations; and, exposure of people to noise levels in excess of established standards during operations. Construction of all project facilities will result in temporary increases in noise.

5.5.12.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.12, Noise and Vibration. Alternative components north of the Nashua Road/Highway 1 intersection would primarily affect receptors in unincorporated Monterey County north of Charles Benson Road. This would include the primary residential area of Moss Landing along Potrero Road and Pieri Court, as well as intermittent rural residences along Nashua Road, Molera Road, Dolan Road and Via Tanques Road and houseboats at Moss Landing Harbor. Noise monitoring conducted along Potrero Road indicated daytime noise levels of 54.1 dBA. The regulatory environment of unincorporated Monterey County with respect to noise is discussed in Section 4.12.3 of this EIR/EIS.

5.5.12.2 Direct and Indirect Effects of the Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.12-1: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.

Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.

Construction of the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline, Pipeline to the CSIP Pond, and Brine Discharge Pipeline would result in less-than-significant daytime and nighttime noise impacts. Construction of ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline, Main System-Hidden Hills Interconnection Improvements, and Ryan Ranch-Bishop Interconnection Improvements would result in a less-than-significant impact related to temporary increases in daytime noise levels and no impact

related to nighttime noise. Significant impacts related to temporary increases in daytime noise levels would result during construction of the ASR-5 and ASR-6 Wells and the Carmel Valley Pump Station, but these impacts would be reduced to less-than-significant levels with implementation of the prescribed mitigation measures. Significant nighttime noise impacts would result during construction of the new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, and the ASR-5 and ASR-6 Wells. With the exception of nighttime noise impacts associated with the Castroville Pipeline Optional Alignment 1 and ASR-5 and ASR-6 Wells, implementation of **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**) and **4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce all other construction-related nighttime noise impacts to a less-than-significant level. Nighttime noise impacts during installation of the Castroville Pipeline Optional Alignment 1 and during drilling and development of the ASR-5 and ASR-6 Wells would remain significant and unavoidable, even with implementation of mitigation.

There are no established construction noise level standards that would apply to the ASR-5 and ASR-6 Wells. Construction of the subsurface slant wells, Source Water Pipeline, Brine Discharge Pipeline, Pipeline to the CSIP Pond, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, Carmel Valley Pump Station, and MPWSP Desalination Plant would result in less-than-significant impacts with regard to the generation of construction noise levels in excess of local noise level standards.

Construction of the remaining project components (new Desalinated Water Pipeline, Castroville Pipeline, new Transmission Main, ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) would generate noise levels in excess of local noise level standards. The new Desalinated Water Pipeline and new Transmission Main would exceed the City of Marina's 60-dBA noise level standard for construction noise, a significant impact. In the absence of project-specific information regarding noise-reduction measures that would be implemented during project construction, it is conservatively assumed that noise resulting from construction of ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline would violate Noise Policy B-9 of the Fort Ord Reuse Plan, a significant impact. Implementation of **Mitigation Measures 4.12-1b** and **4.12-1c** would reduce these impacts to a less-than-significant level.

Impact 4.12-3: Exposure of people to or generation of excessive groundborne vibration during construction.

Construction of the subsurface slant wells, MPWSP Desalination Plant, Pipeline to the CSIP Pond, Brine Discharge Pipeline ASR-5 and ASR-6 Wells, ASR Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Carmel Valley Pump Station, and Main System-Hidden Hills Interconnection Improvements would result in less-than-significant vibration impacts with regard to both structural damage and human annoyance. There could be significant vibration impacts related to structural damage and human annoyance from construction of the Castroville Pipeline and Source Water Pipeline, as well as the new Desalinated Water Pipeline and new Transmission Main where trenchless construction methods are required for these pipelines. However, with implementation of the **Mitigation**

Measures 4.12-3 (**Vibration Reduction Measures**) and **4.15-1a** (**Avoidance and Vibration Monitoring for Pipeline Installation in the Lapis Sand Mining Plant Historic District**), all significant construction vibration impacts would be reduced to a less-than-significant level.

Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions.

Several of the proposed facilities could require nighttime construction. Construction of the Slant Wells and Source Water Pipeline would not be subject to the city of Marina's construction time limits, which only apply to outdoor construction activities adjacent to residential land uses. Construction of the Desalinated Water Pipeline and new Transmission Main within the City of Marina would be consistent with construction time limits because work within the City would only be conducted during daytime hours. The southern portion of the new Transmission Main would be constructed within the City of Seaside. Because the City of Seaside Municipal Code will allow construction activity outside listed hours under certain circumstances, the construction activities would not violate local regulations and the impact would be less than significant. All nighttime construction work would be conducted only with prior approval from the relevant jurisdictions. **Mitigation Measure 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce the nighttime construction noise impact but would not change the inconsistency with the restriction of the noise ordinance.

The Desalination Plant, Pipeline to the CSIP Pond, Castroville Pipeline, and Brine Discharge Pipeline could require nighttime construction but there are no local construction time limits that would apply; no impact would result. None of the remaining facilities would require nighttime construction and therefore, the remaining facilities would be consistent with applicable construction time limits.

Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations.

Operation of the subsurface slant wells, MPWSP Desalination Plant, Ryan Ranch-Bishop Interconnection Improvements, and Carmel Valley Pump Station would result in less-than-significant noise impacts with regard to permanent operational noise increases. Significant noise impacts would result from operation of the ASR-5 and ASR-6 Wells and the booster stations that would be upgraded by the Main System-Hidden Hills Interconnection Improvements; however, implementation of **Mitigation Measure 4.12-5** (**Stationary Source Noise Controls**) would reduce all significant operational noise impacts to a less-than-significant level. No impact would result from operation of the proposed pipelines.

Impact 4.12-6: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operations.

Operation of the Subsurface Slant Wells, MPWSP Desalination Plant, Source Water Pipeline, Pipeline to the CSIP Pond, Brine Discharge Pipeline, Desalinated Water Pipeline, Transmission Main, Ryan Ranch-Bishop Interconnection Improvements, Carmel Valley Pump Station, the booster stations that would be upgraded by the Main System-Hidden Hills Interconnection

Improvements would result in less than significant noise impacts with regard to generation of noise levels in excess of local noise level standards. No impact would result from operation of the ASR-5 and ASR-6 Wells with regard to generation of noise in excess of local noise level standards because none would apply to these sources on federal lands. No impact would result from operation of the proposed pipelines because the pipelines would not involve the installation of stationary noise sources.

Impact 4.12-C: Cumulative impacts related to noise and vibration.

MPWSP pipeline construction noise could combine with one or more of five cumulative projects to cause nighttime noise levels to exceed the sleep interference threshold. Nighttime construction noise could have a significant contribution to a significant cumulative effect.

Ten cumulative projects would potentially occur within the 120-foot geographic scope of cumulative vibration impacts analysis but four of these cumulative projects (Nos. 31, 35, 55, and 63) would not be located within 120 feet of any sensitive receptors or structures and, therefore, would not contribute to cumulative impacts. However, the project-specific vibratory impact monitoring required under **Mitigation Measure 4.12-3** (**Vibration Reduction Measures**) would also capture vibration contributed by the other six cumulative projects, should the timing and location of construction overlap, Consequently, no significant cumulative construction-related vibration impact would result.

The MPWSP's project-specific operational noise impacts would be less than significant for the MPWSP Desalination Plant and the Carmel Valley Pump Station. Impacts of the ASR well facilities and the Main System-Hidden Hills Interconnection Improvements would be less than significant with mitigation. There are no cumulative projects within 500 feet of these proposed facilities. Therefore, no other projects could combine with the operational noise effects of the proposed project to result in a significant cumulative impact.

5.5.12.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated and the existing test slant well would be decommissioned. Consequently, there would be no construction- or operations-related noise or vibrations associated with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to noise or vibrations, it could not contribute to cumulative effects related to these topics.

5.5.12.4 Direct and Indirect Effects of Alternative 1 - Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.3.3.2, Intake Option 3 – Subsurface Slant Wells at Potrero Road). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the

Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the noise impact analysis of Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

The construction of the additional pipeline north of the Nashua Road/Highway 1 intersection in unincorporated Monterey County would temporarily increase noise levels at intermittent rural residences along Nashua Road and Molera Road, and at the primary residential area of Moss Landing along Potrero Road. Some of these receptors would be as close as 50 feet from the Source Water Pipeline installation trench.

Construction of the additional Source Water Pipeline under Alternative 1 is estimated to progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Consequently, although construction noise at adjacent residences could exceed the speech interference threshold of 70 dBA, the duration of the impact at any given sensitive noise receptor would be less than two weeks. While the construction noise impact associated with increases in daytime noise levels along this additional segment of pipeline would be less than significant, construction of other components common to the proposed project would be reduced to a less than significant level with **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**). Therefore, Alternative 1 would result in the ***same impact conclusion*** on daytime noise levels as the proposed project, less than significant with mitigation.

If nighttime work were to be conducted along the extended portions of the Source Water Pipeline along Potrero Road, Molera Road and Nashua Road noise from construction equipment could exceed the sleep interference threshold of 60 dBA. Implementation of **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**), and **4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce the severity of this impact but not to below the sleep interference threshold of 60 dBA, L_{eq}. Nighttime noise impacts during installation of the Castroville Pipeline Optional Alignment 1 and during drilling and development of the ASR-5 and ASR-6 Wells would remain significant and unavoidable, even with implementation of mitigation. Consequently, construction related noise increases under Alternative 1 would result in the ***same impact conclusion*** as the proposed project, significant unavoidable, even with mitigation.

Installation of Subsurface Slant Wells would occur closer to noise sensitive receptors (1,000 feet) than the proposed project (4,000 feet). However, the distance is still sufficient to attenuate noise to below both the speech interference and sleep interference thresholds and Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Monterey County Policy S-7.9 requires the project sponsor to complete a noise mitigation study if construction noise would exceed the “acceptable” levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because the Source Water Pipeline west of

Highway 1 would be within 100 feet from the nearest receptors on Potrero Road, Molera Road and Nashua Road, **Mitigation Measure 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would be required to reduce this impact to less than significant. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for noise impacts during construction, less than significant with mitigation.

Vibration impacts would be less than significant for the additional 5.5 mile Source Water Pipeline construction under Alternative 1 because it would no longer occur adjacent to a historic structure (CEMEX building) as it would for the proposed project. Further, vibration impacts on residential uses along the Potrero Road alignment would result in human annoyance impacts from vibration. Implementation of **Mitigation Measure 4.12-3** (**Vibration Reduction Measures**) would reduce impacts to less than significant. Therefore, Alternative 1 would result in the ***same impact conclusion*** from vibration as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 1 would operate the slant wells closer to noise sensitive receptors (1,000 feet) than the proposed project (4,000 feet). Simultaneous operation of 8 well pumps would conservatively generate a noise level of approximately 66 dBA at 50 feet. At 1,000 feet, slant well pump noise would be reduced to 40 dBA, which is below ambient levels monitored along Potrero Road (54 dBA, L_{eq}) and would not contribute to a substantial permanent increase in ambient noise levels.

All remaining components would be the same as the proposed project and would result in less-than-significant operational noise impacts with implementation of **Mitigation Measure 4.12-5** (**Stationary Source Noise Controls**). Consequently, operation of the slant wells within unincorporated Monterey County would result in less than significant noise impacts with regard to generation of noise levels in excess of local noise level standards as well as to permanent increases in noise levels. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Policy S-7.6 of the County General Plan Noise Element requires an acoustical analysis for proposed noise generators that produce a noise level exceeding 85 dBA at 50 feet from the source. Simultaneous operation of the 8 slant well pumps would conservatively generate a noise level of approximately 66 dBA at 50 feet and would be consistent with noise policies of the County General Plan. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

No additional cumulative projects would be within the geographic scope of the cumulative analysis for construction-related vibration impacts (within 120 feet of Alternative 1 components whose construction-related vibration could cause damage to structures); therefore, the analysis of cumulative vibration impacts would be the same as that described for the proposed project, with the exception that no construction would occur adjacent to a historic structure (CEMEX building), so cumulative impacts from construction vibration would be reduced compared to the proposed project. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the

proposed project for cumulative effects related to vibration during construction, less than significant with mitigation.

The components of Alternative 1 that would result in operational noise are the same as for the proposed project. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative noise impacts during operation, less than significant.

The geographic scope of analysis for cumulative noise impacts during construction is defined by the presence of sensitive receptors within 500 feet of components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. These components include the Source Water Pipeline and the slant wells.

One additional cumulative project described in **Table 4.1-2** in Section 4.1 would have the potential to combine with Alternative 1 to result in cumulative noise impacts during construction: the DeepWater Desal Project (No. 34). In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably conducted. However, it is conservatively assumed that the potential exists for residual (post-mitigation) MPWSP pipeline and slant well construction noise to combine with that of the DeepWater Desal Project to cause nighttime noise levels to exceed the sleep interference threshold. As a result, temporary cumulative increases in nighttime construction noise could result in a cumulatively significant nighttime noise impact. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a cumulatively significant nighttime noise impact. Nighttime construction noise could have a significant contribution to a significant and unavoidable cumulative effect. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

5.5.12.5 Direct and Indirect Effects of Alternative 2 - Open Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the noise impact analysis of Alternative 2 focuses

primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

The construction of a centralized bore pit/pump station and HDD activities associated with the source water pipeline to the open water intake as well as the additional 6.5 miles of open trench pipeline construction, would temporarily increase noise levels at intermittent rural residences along Nashua Road and Molera Road and at the primary residential area of Moss Landing along Potrero Road and Pieri Court. Some of these receptors would be as close as 50 feet from the pipeline installation trench.

Construction of the 6.5 miles of Source Water Pipeline is estimated to progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Consequently, although construction noise at adjacent residences could exceed the speech interference threshold of 70 dBA, the duration of the impact at any given sensitive noise receptor would be less than two weeks. While the construction noise impact associated with increases in daytime noise levels along this additional segment of pipeline would be less than significant, construction of other components common to the proposed project would be less than significant with **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**). Overall, Alternative 2 would, result in the ***same impact conclusion*** on daytime noise levels as the proposed project, less than significant with mitigation.

If nighttime work were to be conducted along the additional 6.5 miles of Source Water Pipeline, noise from construction equipment could exceed the sleep interference threshold of 60 dBA, a potentially significant impact. Implementation of **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**), and **4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce the severity of this impact but not to below the sleep interference threshold of 60 dBA, L_{eq}. However, nighttime noise impacts during installation of the Castroville Pipeline, and drilling and development of the ASR-5 and ASR-6 Wells, would remain significant and unavoidable, even with implementation of mitigation. Consequently, construction related noise increases under Alternative 2 would result in an increased level of impact compared to the proposed project. Therefore, Alternative 2 would have the ***same impact conclusion*** as the proposed project, significant unavoidable, even with mitigation.

Installation of the screened open water intake would occur closer to noise sensitive receptors (1,300 feet) than the subsurface slant wells of the proposed project (4,000 feet). The HDD boring pit would require sheet pile installation and is 1,500 feet from live-aboard residents in the Moss Landing Marina. Additionally, drilling activities would occur at the HDD pit and reaming and pipeline installation would occur from barges approximately 1,300 feet from live-aboard marina residents. Noise from drilling, reaming, and pipeline installation would be 57 dBA, L_{eq}, which would be below the speech interference threshold for daytime work and below the sleep interference threshold for nighttime work. Sheet pile installation, which would be conducted for railroad and water crossings and would occur during daytime hours, would temporarily generate

substantial noise levels that would dominate over other construction activity associated with trenchless construction. Sheet pile installation would generate noise level of 64.4 dBA, L_{eq} which would be below the speech interference threshold for daytime work. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant impact.

For Monterey County-permitted projects, Policy S-7.9 requires the project sponsor to complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because the Source Water Pipeline west of Highway 1 would be within 100 feet from the nearest receptors on Potrero Road, Molera Road and Nashua Road, construction activities would be inconsistent with this policy. However, implementation of **Mitigation Measure 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce this impact to less than significant. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Vibration impacts would be reduced under Alternative 2 because construction of the Source Water Pipeline would no longer occur adjacent to a historic structure (CEMEX building) as it would under the proposed project. Vibration impacts on residential uses along the Nashua Road and Molera Road alignments would be similar to those identified for the proposed project for open trench construction. Implementation of **Mitigation Measure 4.12-3** (**Vibration Reduction Measures**) would reduce impacts to less than significant. All remaining components of Alternative 2 would be the same as the proposed project and Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The Pump Station for the screened open water intake would operate closer to noise sensitive receptors (1,500 feet) than the Slant Well pumps under the proposed project (4,000 feet). It would contain four centrifugal intake pumps (three operating and one stand-by), each with a rated capacity of approximately 12,000 GPM. The pumps would be located below grade and the simultaneous operation would conservatively generate a noise level of approximately 61 dBA at 50 feet, accounting for attenuation resulting from their below grade location and the presence of the surrounding building and, thereby consistent with noise policies of the County General Plan. Therefore Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

At 1,500 feet, the intake Pump Station noise would be reduced to 32 dBA, which is below ambient levels and would not contribute meaningfully to ambient levels. All remaining components would be the same as the proposed project with implementation of **Mitigation Measure 4.12-5** (**Stationary Source Noise Controls**). Therefore, Alternative 2 would result in ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

No additional cumulative projects would be within the geographic scope of the cumulative analysis for vibration impacts (within 120 feet of Alternative 2 components whose construction-

related vibration could cause damage to structures); therefore, the analysis of cumulative vibration impacts would be the same as that described for the proposed project. The components of Alternative 2 that would result in operational noise are the same as for the proposed project; therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to vibration during construction, less than significant with mitigation.

The geographic scope of analysis for cumulative noise impacts during construction is defined by the presence of sensitive receptors within 500 feet of components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. These components include the Source Water Pipeline, screened seawater intake, and Intake Pump Station.

One additional cumulative project described in **Table 4.1-2** in Section 4.1 would have the potential to combine with Alternative 2 to result in cumulative noise impacts during construction: the DeepWater Desal Project (No. 34). In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) pipeline, Intake and Pump Station construction noise to combine with that of the DeepWater Desal Project to cause nighttime noise levels to exceed the sleep interference threshold. As a result, temporary cumulative increases in nighttime construction noise could result in a cumulatively significant nighttime noise impact. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a cumulatively significant nighttime noise impact. Therefore, nighttime construction noise could have a significant contribution to a significant and unavoidable cumulative effect, similar to the proposed project.

Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to noise, significant and unavoidable, even with mitigation.

5.5.12.6 Direct and Indirect Effects of Alternative 3 - the Monterey Bay Regional Water Project

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the

Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Construction of open trench pipeline installation and a centralized pump station/boring pit north of Nashua Road/Highway 1 intersection would temporarily increase noise levels at intermittent rural residences along Nashua Road and Molera Road and at the primary residential area of Moss Landing along Potrero Road and Pieri Court. Some of the receptors would be as close as 50 feet from the installation trench. In addition, this alternative would include construction of a larger desalination plant, data center and cooling system, and up to 31.5 miles of additional desalinated water pipelines to deliver water (above the 9.6 mgd demand from CalAm's Monterey District service area) to potential customers in Santa Cruz County, Salinas, or both, resulting in more receptors exposed to construction noise.

Construction of the Desalinated Water Pipeline is estimated to progress at a rate of approximately 250 feet per day, so the maximum noise levels at any one location would be limited to a period of 1 to 3 days. Consequently, although construction noise at adjacent residences could exceed the speech interference threshold of 70 dBA, the duration of the impact at any given sensitive noise receptor would be less than two weeks. Therefore, the construction noise impact associated with increases in daytime noise levels would be less than significant.

If nighttime work were to be conducted along the Desalinated Water Pipeline, noise from construction equipment could exceed the sleep interference threshold of 60 dBA, a significant impact. Implementation of **Mitigation Measures 4.12-1a** (**Neighborhood Notice**), **4.12-1b** (**General Noise Controls for Construction Equipment**), and **4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would reduce the severity of this impact, but not to below the sleep interference threshold of 60 dBA, L_{eq}.

The HDD pit would require sheet pile installation, which is 1,500 feet from live-aboard residents of the Moss Landing Marina. Additionally, drilling activities would occur at the HDD pit and reaming and pipeline installation would occur from barges approximately 1,300 feet from live-aboard marina residents. Noise from drilling reaming and pipeline installation would be 57 dBA, L_{eq}, which would be below the speech interference threshold for daytime work and below the sleep interference threshold for nighttime work and represent a less than significant impact.

Sheet pile installation, which would occur during daytime hours, is estimated to generate a noise level of 64.4 dBA, L_{eq}, which would be below the speech interference threshold for daytime work.

Construction of the desalination facility, data center and cooling system would occur as close as 600 feet from the nearest receptor on Dolan Road. However, this distance is sufficient to attenuate construction noise to 59.0 dBA, which would be below both the speech interference and

sleep interference thresholds. All remaining components would be the same as the proposed project. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project from construction-related noise, significant and unavoidable, even with mitigation.

Alternative 3 would construct pipelines, a desalination facility, and a data center and cooling system within unincorporated Monterey County where, for County-permitted projects, Policy S-7.9 requires the project sponsor to complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because the additional length of pipelines, desalination facility, data center and cooling system would be within 100 feet from the nearest receptors on Dolan Road, Via Tanques Road, Potrero Road, Molera Road and Nashua Road, construction activities would be inconsistent with this policy and **Mitigation Measure 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would be required to reduce this impact to a less than significant level. All remaining components would be the same as the proposed project and Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Vibration impacts would not occur adjacent to a historic structure (CEMEX building). All remaining components would be the same as the proposed project, requiring implementation of **Mitigation Measure 4.12-3** (**Vibration Reduction Measures**) near residences. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 3 would include an additional source of noise not associated with the proposed project. Noise sources associated with the data center and cooling system would include an unspecified number of natural gas fired emergency backup generators of up to 10 MW in size that could operate up to 4 hours per day or 1,500 hours per year. Equipment associated with power plants of this size can result in operational noise levels of approximately 65 dB at 300 feet (Siemens AG, 2005). Thus, the operation of generators has the potential to increase noise levels over 5 dBA above existing noise levels at the nearest sensitive receptors. Mitigation of operational noise levels of natural gas fired emergency backup generators is feasible to establish a performance standard of 5 dBA increase over existing noise levels to address this potential impact. To ensure that the operational noise impact would be reduced to a less-than-significant level, implementation of **Mitigation Measure ALT 3-NO** would be required.

Mitigation Measure ALT 3-NO applies to the emergency backup generators associated with the Alternative 3 data center and cooling system and would not apply to the proposed project or other alternatives.

> **Mitigation Measure ALT 3-NO: Operational Performance Noise Standard for Data Center Generators**
>
> Proposed generators shall include acoustical shielding, critical grade exhaust silencers and/or low pressure loss silencers at the intake and exhaust vents sufficient to achieve a noise level no greater than 5 dBA above the existing nighttime noise level at the nearest sensitive receptor.

Thus, in combination with the components unique to Alternative 3 and those in common with the proposed project, Alternative 3 would result in an increased level of impact but the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

As stated earlier, the data center and cooling system would be located 600 feet or further from the nearest receptor on Dolan Road. Policy S-7.4 of the Monterey County General Plan Noise Element requires an acoustical analysis for proposed noise generators that are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors. The Monterey County Code, Chapter 10.60, Noise Control, Section 10.60.030 limits the operation of any machine, mechanism, device, or contrivance that produces a noise level exceeding 85 dBA at 50 feet from the source. Assuming the data center generators as a point source operating at 65 dB at 300 feet, acoustical equations yield a noise level of 81 dBA at 50 feet. Consequently, the emergency backup generators would be consistent with noise policies of the County General Plan. Therefore Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

No additional cumulative projects would be within the geographic scope of the cumulative analysis for construction-related vibration impacts (within 120 feet of Alternative 3 components whose construction-related vibration could cause damage to structures); therefore, the analysis of cumulative vibration impacts would be the same as that described for the proposed project, with the exception that no construction would occur adjacent to a historic structure (CEMEX building), so cumulative impacts from construction vibration would be reduced compared to the proposed project. The components of Alternative 3 that are common with the proposed project would result in the same operational noise impacts; therefore, the analysis of cumulative noise impacts during operation of those components is the same as described in Section 4.12.6. The desalination plant would be in a different location and the data center and backup generators would be new sources of operational noise compared to the proposed project, but no projects relevant to the cumulative scenario for Alternative 3 would be located within 500 feet of these components and create new sources of noise; therefore, the cumulative analysis associated with these components is the same as described above for Alternative 3 alone.

The geographic scope of analysis for cumulative noise impacts during construction is defined by the presence of sensitive receptors within 500 feet of components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. These include the additional pipelines, desalination facility, data center and ancillary equipment.

One additional cumulative project described in **Table 4.1-2** in Section 4.1 would have the potential to combine with Alternative 3 to result in cumulative noise impacts during construction: the GWR Project (No. 59). In the absence of detailed information regarding exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) construction noise to combine with that of the GWR Project to cause nighttime

noise levels to exceed the sleep interference threshold. As described in the FEIR for the GWR Project, construction activities associated with the injection well facilities of the GWR Project, which would be located within 500 feet of the southern end of the new Transmission Main, would result in significant and nighttime noise impacts that would be reduced to a less than significant level with implementation of adopted mitigation measures (MRWPCA, 2016). The new Transmission Main also would result in less-than-significant noise impacts after implementation of mitigation, as described in Section 4.12.6.1. As a result, temporary cumulative increases in nighttime construction noise could result in a cumulatively significant nighttime noise impact that would be increased compared to either Alternative 3 or the GWR Project alone, and could remain significant and unavoidable even with mitigation specified for each project. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a cumulatively significant nighttime noise impact. Therefore, nighttime construction noise could have a significant contribution to a significant cumulative impact.

Overall, Alternative 3 would result in an increased severity but the ***same impact conclusion*** as the proposed project for cumulative effects related to construction noise, significant and unavoidable, even with mitigation.

5.5.12.7 Direct and Indirect Effects of Alternative 4 - the People's Moss Landing Water Desalination Project

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Alternative 4 would construct intake and brine discharge pipelines and a pump station on the beach and adjacent to the Monterey Bay Aquarium Research Institute that would require HDD equipment and marine barge(s), and require additional lengths of Source Water and Desalinated Water Pipelines. Sheet pile installation, which would occur during daytime hours, would generate a noise level of 75.8 dBA, L_{eq} which is above the speech interference threshold for daytime work. Implementation of **Mitigation Measures 4.12-1a** (**Neighborhood Notice**) and **4.12-1b** (**General**

Noise Controls for Construction Equipment) would reduce impacts to less-than-significant levels.

Construction of the desalination facility would occur as close as 420 feet from the live aboard receptors at Moss Landing Marina. This distance is sufficient to attenuate construction noise to 62.0 dBA, which would be below the speech interference threshold for daytime work but above the sleep interference threshold for nighttime work. Thus, Alternative 4 would result in exposure of additional receptors to nighttime construction noise compared to the proposed project. Implementation of **Mitigation Measures 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) and **4.12-1e** (**Offsite Accommodations for Substantially Affected Receptors**) would reduce impacts to less than significant.

Alternative 4 would construct pipelines and a desalination facility within unincorporated Monterey County where, Policy S-7.9 requires the project sponsor to complete a noise mitigation study if construction noise would exceed the "acceptable" levels listed in Policy S-7.1 within 500 feet of a noise-sensitive land use during evening hours. Because the additional length of pipelines and desalination facility would be within 500 feet from the nearest receptors at the Moss Landing Marina, Potrero Road, Molera Road and Nashua Road, construction activities would be inconsistent with this policy and **Mitigation Measure 4.12-1c** (**Noise Control Plan for Nighttime Pipeline Construction**) would be required to reduce this impact to less than significant. All remaining components of Alternative 4 would be the same as the proposed project, and nighttime noise impacts during drilling and development of the ASR-5 and ASR-6 Wells would remain significant an unavoidable. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project related to noise impacts, significant and unavoidable, even with mitigation.

Because nighttime construction of the additional length of Desalinated Water Pipeline would occur, Alternative 4 would exceed the significance threshold for sleep interference due to the proximity of additional sensitive receptors on Potrero Road and Nashua Road. Implementation of **Mitigation Measures 4.12-1a**, **4.12-1b**, **4.12-1c**, and **4.12-1e** would reduce impacts to a less-than-significant level for the Potrero Road residences, but would not reduce the impact to less than significant for Nashua Road residences. All remaining components would be the same as the proposed project and Alternative 4 would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Vibration impacts would not occur adjacent to a historic structure (CEMEX building). All remaining components would be the same as the proposed project, requiring implementation of **Mitigation Measure 4.12-3** (**Vibration Reduction Measures**) near residences. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternative 4 would locate the desalination facility and intake pump station closer to additional sensitive receptors than the proposed project. Operational noise from the desalination plant and pump station could result in a noise impact in excess of 5 dBA above existing levels at live-aboard residences of the Moss Landing Marina, approximately 420 feet away from each

respective source. Existing ambient noise levels at the Marina are elevated due to the presence of Highway 1 and operations of the Moss Landing Power Plant. Mitigation measures would likely be required to ensure compliance with a performance standard of no more than a 5 dBA increase over existing noise levels and ensure that plant and inlet pump operations would not result in a significant permanent increase in noise levels. To ensure that the operational noise impact would be reduced to a less-than-significant level, implementation of **Mitigation Measure ALT 4-NO** would be required.

Mitigation Measure ALT 4-NO applies to the Alternative 4 desalination plant and intake pump station and would not apply to the proposed project or other alternatives.

> **Mitigation Measure ALT 4-NO: Operational Performance Noise Standard for Desalination Facilities and Pump Station**
>
> Proposed generators shall include acoustical shielding sufficient to achieve a noise level no greater than 5 dBA above the existing nighttime noise level at the nearest sensitive receptor.

All remaining components of Alternative 4 would result in an increased level of impact compared to the proposed project. Thus, Alternative 4 would have the ***same impact conclusion*** as the proposed project related to operational noise, less than significant impacts with mitigation.

Desalination equipment and pumps would be installed in unincorporated Monterey County. Policy S-7.6 of the County Plan Noise Element requires an acoustical analysis for proposed noise generators that produce a noise level exceeding 85 dBA at 50 feet from the source. The RO system at the Desalination Plant would include a series of pumps, but these would be located inside the treatment building and are not expected to generate substantial noise and would hence be unlikely to generate noise levels exceeding 85 dBA at 50 feet. Alternative 4 would result in an increased level of impact compared to the proposed action, but would have the ***same impact conclusion***, less than significant.

Cumulative Analysis

No additional cumulative projects would be within the geographic scope of the cumulative analysis for construction-related vibration impacts (within 120 feet of Alternative 4 components whose construction-related vibration could cause damage to structures); therefore, the analysis of cumulative vibration impacts would be the same as that described for the proposed project, with the exception that no construction would occur adjacent to a historic structure (CEMEX building). Cumulative impacts from construction vibration would be reduced compared to the proposed project.

The geographic scope of analysis for cumulative noise impacts during construction is defined by the presence of sensitive receptors within 500 feet of components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. These include the additional pipelines and the desalination facility.

One additional cumulative project described in **Table 4.1-2** in Section 4.1 would have the potential to combine with Alternative 4 to result in cumulative noise impacts: the DeepWater Desal Project (No. 34). In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) construction noise to combine with that of the DeepWater Desal Project to cause nighttime noise levels to exceed the sleep interference threshold. As a result, temporary cumulative increases in nighttime construction noise could result in a cumulatively significant nighttime noise impact. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a cumulatively significant nighttime noise impact. Therefore, nighttime construction noise of Alternative 4 could have a significant contribution to a significant and unavoidable cumulative effect, similar to the proposed project.

The components of Alternative 4 that are common with the proposed project would result in the same operational noise impacts; therefore, the analysis of cumulative noise impacts during operation of those components is the same as described in Section 4.12.6. The DeepWater Desal desalination plant and data center would be greater than 500 feet from the Alternative 4 facilities and would therefore be outside the geographic scope for cumulative operational noise impacts. No other cumulative projects would be within 500 feet of components unique to Alternative 4 that would generate operational noise.

Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to noise and vibration, significant and unavoidable, even with mitigation.

5.5.12.8 Direct and Indirect Effects of Project Alternatives 5a and 5b

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Alternative 5a would construct the same facilities, with fewer slant wells and a smaller desalination plant, in the same locations as the proposed project, and construction-related increases in ambient noise for the slant well installation would be less than significant. All other construction noise impacts would be the same as the proposed project. Even with implementation of mitigation measures, Alternative 5a would have a significant and unavoidable increase in noise levels during nighttime construction of pipeline segments close to sensitive receptors and at the ASR-5 and ASR-6 wells. Therefore, Alternative 5a would result in a ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Alternative 5b would construct the same facilities, with fewer slant wells and a smaller desalination plant, in the same locations as for Alternative 1. Therefore, all construction-related noise impacts would be the same as for Alternative 1, as discussed previously. Alternative 5b would result in the ***same impact conclusion*** as the proposed project, significant and unavoidable, even with mitigation.

Operational and Facility Siting Impacts

Alternative 5a would operate the same facilities in the same locations as the proposed project. A reduced number of subsurface slant wells would be installed, and the operational noise impact of the slant wells would be less than 5 dBA at the nearest receptors for both the project and Alternative 5a. Operation of the ASR-5 and ASR-6 Wells, and the booster stations at the Main System-Hidden Hills Interconnection could result in a significant impact. However, implementation of the **Mitigation Measure 4.12-5** (**Stationary Source Noise Controls**) would reduce operational noise impacts to less-than-significant level. Therefore, Alternative 5a would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Subsurface Slant Wells under Alternative 5b would operate closer to noise sensitive receptors (1,000 feet) than the proposed project (4,000 feet). Simultaneous operation of 5 well pumps would conservatively generate a noise level of approximately 63 dBA at 50 feet. At 1,000 feet, slant well pump noise would be reduced to 37 dBA, which is below ambient levels monitored along Potrero Road (54 dBA, L_{eq}) and would not contribute meaningfully to ambient noise levels. Operation of the ASR-5 and ASR-6 Wells, and the booster stations at the Main System-Hidden Hills Interconnection could result in a significant impact. However, implementation of the **Mitigation Measure 4.12-5** (**Stationary Source Noise Controls**) would reduce operational noise impacts to less-than-significant level.

Under Alternative 5b, the source water pipeline and subsurface Slant Wells would be installed in unincorporated Monterey County instead of the City of Marina. Policy S-7.6 of the County Plan Noise Element requires an acoustical analysis for proposed noise generators that produce a noise level exceeding 85 dBA at 50 feet from the source. Simultaneous operation of 5 well pumps would be consistent with Noise policies of the County Plan.

Consequently, Alternative 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

No additional cumulative projects would be within the geographic scope of the cumulative analysis for vibration impacts (within 120 feet of Alternative 2 components whose construction-related vibration could cause damage to structures); therefore, the analysis of cumulative vibration impacts would be the same as that described for the proposed project, with the exception that for Alternative 5a, less construction would occur near an historic structure (CEMEX building), and that for Alternative 5b, no construction would occur adjacent to this structure, so cumulative impacts from construction vibration would be reduced compared to the proposed project. The components of Alternative 5 that would result in operational noise are the same as for the proposed project; therefore, the analysis of cumulative noise impacts during

operation is the same as described in Section 4.12.6; no additional projects – including the GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) – would include operational noise-generating components that would be within the geographic scope for operational noise impacts.

The geographic scope of analysis for cumulative noise impacts during construction is defined by the presence of sensitive receptors within 500 feet of components whose daytime construction noise could exceed speech interference thresholds or whose nighttime construction noise could exceed sleep interference thresholds. These include the Source Water Pipeline and the Subsurface Slant Wells.

Two additional cumulative projects described in **Table 4.1-2** in Section 4.1 would have the potential to combine with Alternative 5 to result in cumulative noise impacts: the DeepWater Desal Project (No. 34) and the GWR Project. In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) construction noise to combine with that of the DeepWater Desal and GWR projects to cause nighttime noise levels to exceed the sleep interference threshold. As described in the FEIR for the GWR Project, construction activities associated with the injection well facilities of the GWR Project, which would be located within 500 feet of the southern end of the new Transmission Main, would result in significant and unavoidable nighttime noise impacts even with implementation of adopted mitigation measures (MRWPCA, 2016). As a result, temporary cumulative increases in nighttime construction noise could result in a cumulatively significant nighttime noise impact that would be increased compared to Alternative 5, the DeepWater Desal Project, or the GWR Project alone, and would remain significant and unavoidable even with mitigation specified for each project. No additional mitigation within the scope of this EIR/EIS is available to further reduce the potential for a cumulatively significant nighttime noise impact. Therefore, nighttime construction noise of Alternative 5a and 5b could have a significant contribution to a significant and unavoidable cumulative impact.

Overall, Alternatives 5a and 5b would result in a reduced severity but the ***same impact conclusion*** as the proposed project for cumulative effects related to noise, significant and unavoidable, even with mitigation.

5.5.12.9 References

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. *Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project.* Prepared by Denise Duffy and Associates, January 2016.

Siemens AG, 2005. Siemens Gas Turbines (SGT), SGT-500 Industrial Gas Turbine.

5.5.13 Public Services and Utilities

The evaluation criteria for Public Services and Utilities address: disruption or relocation of utilities; exceedance of wastewater treatment requirements; wastewater treatment and outfall capacity; landfill capacity and compliance with solid waste regulations; and corrosion of the existing MRWPCA outfall and diffuser.

5.5.13.1 Setting/Affected Environment

The general environmental setting and regulatory framework for the alternatives would be similar to the proposed project, which includes the public services, utilities, and local and state regulations that apply to Monterey County. As such, descriptions of the environmental setting and regulatory framework for public services and utilities are provided in Section 4.13 and are not repeated in this section.

5.5.13.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.

Proposed project construction, including trenching, excavation, and pipeline installation, could damage or interfere with existing water, sewer, stormwater drainage, natural gas, electric, or communication utility service lines. Construction could require the permanent relocation of these utility lines, potentially interrupting service. Accidental damage to utility lines during construction could temporarily disrupt utility services and, in the case of high-risk utilities, could result in significant safety hazards for construction workers. This potentially significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a (Locate and Confirm Utility Lines)**, **4.13-1b (Coordinate Final Construction Plans with Affected Utilities)**, **4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities)**, **4.13-1d (Emergency Response Plan)**, **4.13-1e (Notify Local Fire Departments)**, and **4.13-1f (Ensure Prompt Reconnection of Utilities)**. These mitigation measures would require the construction contractor(s) to: confirm the location of existing utilities; work with utility service providers to minimize the risk of damage to existing utility lines and ensure prompt reconnection of service in the event of a service disruption; take special precautions when working near high-risk utility lines; clearly outline the procedures to follow in the event of a leak or explosion; and immediately notify local fire departments of any damage to high-risk utility lines. These mitigation measures would apply to all project components.

Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.

Project construction would generate approximately 25,110 cubic yards total (37,665 tons), or up to 59 tons per day, of excess spoils and construction materials. Instead of being recycled, conservative analysis assumes that all excess spoils and construction debris would be disposed of at the Monterey Peninsula Landfill, which is permitted to receive 3,500 tons of waste per day and has an estimated remaining capacity of 48,560,000 cubic yards. The total amount of excess spoils

and construction debris generated by the project represents approximately 0.05 percent of the landfill's remaining capacity. Therefore, project construction waste would not exceed or substantially deplete the landfill capacity.

Failure to reuse or recycle excavation materials and other construction waste generated during MPWSP construction would conflict with the County's Integrated Waste Management Plan policies and could also adversely affect state-mandated diversion rates. This significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**). This measure would require CalAm's construction contractor(s) to prepare and implement a plan to divert recoverable materials from landfills. This mitigation measure would apply to all project components.

Impact 4.13-3: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.

MPWSP Desalination Plant operations would generate approximately 5 cubic yards per day (7.5 tons) of solid waste that would be routinely disposed of at the Monterey Peninsula Landfill. There are no known opportunities for reusing or recycling these solids, but the landfill could accept the waste without exceeding its permitted daily tonnage or substantially depleting long-term capacity. Maintenance of the ASR Pump-to-Waste System would generate approximately 240 pounds (less than 1 ton) per year of sediment materials that would be taken to the Waste Management District's materials recovery facility for reuse or recycling. All other proposed facilities would have a very limited potential to generate waste. Impacts related to solid waste disposal and landfill capacity during operations and maintenance would be less than significant.

Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.

Brine generated by the MPWSP Desalination Plant would be discharged to Monterey Bay in MBNMS through the MRWPCA's existing ocean outfall and diffuser. Depending upon the season, brine could be discharged without dilution for extended periods, since treated wastewater is used for irrigation in the dry season. The *Waste Discharge Requirements for the Monterey Regional Water Pollution Control Agency Treatment Plant* [Order No. R3-2014-0013, NPDES Permit No. CA0048551], which regulate discharges from the outfall, would be amended before the MPWSP Desalination Plant starts operating to incorporate the "brine only" and combined discharges. Both the "brine only" and the combined discharges would comply with Ocean Plan water quality objectives for the majority of constituents. However, the concentrations of two constituents, cyanide and ammonia, could become elevated to a level that is close to or that exceeds the Ocean Plan standard (as discussed in Section 4.3.5.2, Operational and Facility Siting Impacts). Also, there is not enough information to assess concentrations for an additional thirteen individual constituents and, consequently, it is conservatively assumed that an exceedance of Ocean Plan water quality objectives could occur as a result of operational discharges. Exceedances of wastewater treatment requirements would be a significant impact. In addition to amending discharge requirements, **Mitigation Measures 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **Mitigation Measure 4.3-5**

(**Implement Protocols to Avoid Exceeding Water Quality Objectives**) are prescribed to monitor, report and reduce any water quality impacts associated with potential exceedances of the Ocean Plan water quality objective to a less-than-significant level.

Wastewater generated by 25 to 30 employees (approximately 750 gallons per day) at the MPWSP Desalination Plant would require treatment at the MRWPCA Regional Wastewater Treatment Plant. This volume would have a negligible impact on the MRWPCA treatment capacity of 29.6 mgd and discharge capacity of 81.2 mgd. None of the treatment processes at the MPWSP Desalination Plant site and none of the other proposed project facilities would generate wastewater during operations that would require treatment at the MRWPCA Regional Wastewater Treatment Plant. Therefore, project operations would not exceed wastewater treatment capacity and would have a less than significant impact on wastewater treatment capacity.

The MPWSP Desalination Plant would discharge approximately 14 mgd of brine through the MRWPCA outfall and diffuser, which have a physical discharge capacity of between 66.5 and 94.6 mgd and are permitted to discharge up to 81.2 mgd. Between 1998 and 2012, treated wastewater flows on average ranged from 19.78 mgd to 0.90 mgd, depending upon the irrigation season. Maximum instantaneous flows during the same time period ranged from 40.4 mgd to 59.9 mgd. Assuming full outfall capacity of 81.2 mgd, there would be sufficient capacity to accept the brine generated by the MPWSP Desalination Plant combined with maximum instantaneous flow. In case the volume of brine flows, plus maximum instantaneous wastewater flows during large storm events could exceed outfall and diffuser capacity, a 3-million-gallon brine storage basin has sufficient capacity to detain flows from approximately 6 hours of desalination plant operations. Therefore, the impact related to outfall capacity would be less than significant.

Impact 4.13-5: Increased corrosion of the MRWPCA outfall as a result of brine discharges associated with project operations.

Turbulence might be expected to occur in the land segment of the outfall, the junction drop structure at the shoreline, and approximately the first 100 feet of the offshore pipeline. This turbulence could introduce oxygen into the system and increase the potential for corrosion, which is considered a significant impact. As a project separate from the MPWSP, the beach junction box will be replaced and pre-lined with corrosion-resistant lining prior to accepting MPWSP brine discharge. The impacts on the land and ocean segments of the outfall would be reduced to a level that is less than significant with implementation of **Mitigation Measures 4.13-5a** (**Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall**), which requires the replacement of the existing WEKO seal clamps in the nearshore portion of the outfall pipeline with new corrosion-resistant clamps and periodic inspections of the outfall thereafter, and **4.13-5b** (**Install Protective Lining in Land Segment of MRWPCA Ocean Outfall**), which requires the phased application of a protective liner system along the entire 13,000-foot-long land segment.

Impact 4.13-C: Cumulative impacts related to public services and utilities.

Cumulative effects related to utility relocation or disruption and to landfill capacity during proposed project construction could be significant since all cumulative projects involving future

construction would be applicable, but the proposed project's potentially significant contribution to this impact would be reduced to a less-than-significant level with implementation of mitigation measures identified in Impacts 4.13-1 and 4.13-2. Proposed project operations would have a less than significant contribution to cumulative landfill capacity impacts since operational wastes would have a relatively small effect on daily and absolute landfill receiving capacity. Cumulative effects on effluent flows that could exceed wastewater treatment requirements could be significant, but the proposed project's contribution to this impact would be reduced to a less-than-significant level with implementation of mitigation measures in Impact 4.13-4. Similarly, although cumulative impacts related to corrosion of the MRWPCA outfall could be significant, implementation of the mitigation measures identified in Impact 4.13-5 would reduce the proposed project's contribution to cumulative corrosion impacts to less than significant.

5.5.13.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed and the existing test slant well would be decommissioned. Consequently, there would be no ground disturbance or placement of new structures that could affect public services or utilities, and therefore, no construction- or operation-related direct or indirect impacts on public services or utilities associated with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to public services and utilities, it could not contribute to cumulative effects related to these topics.

5.5.13.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the utilities impact analysis of Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

Construction of the additional 5.5 miles of source water pipeline in Alternative 1 could result in an increased potential for disruption or relocation of regional or local utilities compared to the proposed project. The potential significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines**), **4.13-1b** (**Coordinate Final Construction Plans with Affected Utilities**), **4.13-1c** (**Safeguard Employees from Potential Accidents Related to Underground Utilities**), **4.13-1d** (**Emergency Response Plan**), **4.13-1e** (**Notify Local Fire Departments**), and **4.13-1f** (**Ensure**

Prompt Reconnection of Utilities). Therefore, combining the impacts of the components common with the proposed project and the addition of 5.5 miles of source water pipeline, Alternative 1 construction effects on regional or local utilities would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The additional length of the Alternative 1 source water pipeline would generate slightly more solid waste during construction compared to the proposed project. However, the increased amount would not exceed landfill capacity. As discussed in Section 4.13.2, Regulatory Framework, state and county waste diversion regulations require that specific portions of construction waste be recycled and diverted from landfill. Failure to comply with waste diversion regulations would be a significant impact that would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**). Therefore, combining the impacts of the components common with the proposed project with the additional 5.5 miles of source water pipeline, Alternative 1 construction effects on landfill capacity or solid waste regulations would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

No components unique to Alternative 1 would create waste during operations. All components that generate operational wastes would be the same as the proposed project. Therefore, Alternative 1 operational effects on landfill capacity or solid waste regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 1 would use the same outfall and desalination plant as the proposed project; therefore, "brine only" and combined discharges would be the same as the proposed project, resulting in the same potentially significant impacts related to wastewater treatment requirements of the RWQCB as those under the proposed project. Implementation of **Mitigation Measures 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**) would reduce impacts to a less-than-significant level. In addition, Alternative 1 would generate the same volume of brine, approximately 14 mgd, and the same amount of wastewater during operations as the proposed project, which would not exceed wastewater treatment and outfall capacity, resulting in a less-than-significant impact. Therefore, Alternative 1 operational effects on wastewater treatment requirements would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Brine in Alternative 1 would have the same salinity levels as the proposed project, resulting in the same potentially significant impact from increase in corrosion of the MRWPCA outfall . Implementation of **Mitigation Measures 4.13-5a** (**Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall**) and **4.13-5b** (**Install Protective Lining in Land Segment of MRWPCA Ocean Outfall**) would reduce significant impacts to a less-than-significant level. Therefore, Alternative 1 operation would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to utilities for Alternative 1 is defined by the location of Alternative 1 components, and is the same as that described for the proposed project in Section 4.13.6, with exception of the different location of the subsurface intake system and alternative source water pipeline route. The cumulative scenario for Alternative 1 includes the projects in **Table 4.1-2** in Section 4.1 that have the potential to disrupt utilities during construction and generate waste during construction and operations. That would include the majority of the projects, including the DeepWater Desal project (No. 34). The RUWAP Recycled Water Project (No. 35) and the RUWAP Desalination Element (No. 31) are included since each has the potential to impact MRWPCA outfall capacity, outfall quality as it relates to corrosion of the outfall pipe, and wastewater treatment requirements. The impacts from construction and operation of Alternative 1 would be the same as those described for the proposed project, and have the potential to be significant. With implementation of mitigation measures described above, Alternative 1 would have a less than significant contribution to significant cumulative impacts. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to utilities, less than significant with mitigation.

5.5.13.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the utilities impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Construction of the additional 6.5 miles of source water pipeline in Alternative 2 could result in an increased potential for disruption or relocation of regional or local utilities compared to the proposed project. The potential significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines**), **4.13-1b** (**Coordinate Final Construction Plans with Affected Utilities**), **4.13-1c** (**Safeguard Employees from Potential Accidents Related to Underground Utilities**), **4.13-1d** (**Emergency**

Response Plan), 4.13-1e (**Notify Local Fire Departments**), and **4.13-1f** (**Ensure Prompt Reconnection of Utilities**). Therefore, combining the impacts of the components common with the proposed project and the additional 6.5 miles of source water pipeline, Alternative 2 construction effects on regional or local utilities would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The additional length of the Alternative 2 source water pipeline would generate slightly more solid waste during construction compared to the proposed project. However, the increased amount would not exceed landfill capacity. Since compliance with solid waste diversion rates are required by state and county regulation, failure to comply with such regulations would be a significant impact that would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**). Therefore, combining the impacts of the components common with the proposed project with the additional 6.5 miles of the source water pipeline, Alternative 2 construction effects on landfill capacity or solid waste requirements would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

No components north of the Salinas River would create waste during operations. All components that generate operational wastes south of the Salinas River would be the same as the proposed project. Therefore, Alternative 2 operational effects on landfill capacity and solid waste requirements would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 2 would use the same outfall and desalination plant as the proposed project; therefore, it would have the same impact on wastewater treatment requirements and MRWPCA treatment and outfall capacity as Alternative 1 and the proposed project. The potentially significant impacts on wastewater treatment requirements of the RWQCB would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**). Similar to the proposed project, impacts on treatment and outfall capacity would be less than significant. Therefore, Alternative 2 operational effects on wastewater treatment requirements would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Alternative 2 would result in the same potentially significant corrosive impact on the MRWPCA outfall and diffuser as Alternative 1 and the proposed project. Implementation of **Mitigation Measures 4.13-5a** (**Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall**) and **4.13-5b** (**Install Protective Lining in Land Segment of the MRWPCA Ocean Outfall**) would reduce the brine corrosion impact on the MRWPCA outfall lining and diffuser to less than significant. Therefore, Alternative 2 operations would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative utility impacts for Alternative 2 is defined by the location of the Alternative 2 components, and is the same as that described for the proposed project in Section 4.13.6, with exception that the Castroville Pipeline and Pipeline to CSIP are not included, as well as the different location of the open water intake system and alternative source water pipeline. The cumulative scenario for Alternative 2 includes the projects in **Table 4.1-2** in Section 4.1 that have the potential to disrupt utilities during construction and generate waste during construction and operations. That would include the majority of the projects, including the DeepWater Desal project (No. 34). The RUWAP Recycled Water Project (No. 35) and the RUWAP Desalination Element (No. 31) are included since each has the potential to impact MRWPCA outfall capacity, outfall quality as it relates to corrosion of the outfall pipe, and wastewater treatment requirements. The impacts from construction and operation of Alternative 2 would be the same as those described for the proposed project, and have the potential to be significant. With implementation of mitigation measures described above, Alternative 2 would have a less than significant contribution to significant cumulative impacts. Therefore, Alternative 2's contribution would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to utilities, less than significant with mitigation.

5.5.13.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the utility impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Construction of Alternative 3 would result in an increased potential for disruption or relocation of regional or local utilities compared to the proposed project. The potential significant impact would be reduced to a less than significant level with implementation of **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines**), **4.13-1b** (**Coordinate Final Construction Plans with Affected Utilities**), **4.13-1c** (**Safeguard Employees from Potential Accidents Related to Underground Utilities**), **4.13-1d** (**Emergency Response Plan**), **4.13-1e** (**Notify Local Fire Departments**), and **4.13-1f** (**Ensure Prompt Reconnection of Utilities**). Therefore, combining the impacts of the components common with the proposed project and the additional components, construction effects on regional or local utilities would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

While the exact volume is unknown at this time, Alternative 3 would generate more construction solid waste than the proposed project due to the additional length of required pipelines, construction of intake and discharge conveyance, and larger construction footprint of the desalination plant, data center, and substation. However, the additional amount would be unlikely to cause landfill capacity to be exceeded. In addition, state and county waste diversion regulations require that specific portions of construction waste be recycled and diverted from landfill. Failure to comply with waste diversion regulations would be a significant impact that would be reduced to a less-than-significant level with implementation of proposed project **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**). Therefore, combining the impacts of the components common with the proposed project and those unique to Alternative 3, construction effects on landfill capacity or compliance with solid waste requirements would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Operation of the Alternative 3 desalination plant would generate approximately 8.5 tons per day of dried sludge or cake, compared to the 7.5 tons for the MPWSP Desalination Plant. Maintenance of ASR Pump-to-Waste System, common with the proposed project, would generate approximately 240 pounds per year of operational waste. The additional cake volume from this alternative would not exceed landfill capacity or be out of compliance with federal, state, and local regulations related to solid waste during operations. Therefore, combining the impacts of the components common to the proposed project and the DeepWater desalination plant, Alternative 3 operational effects on landfill capacity or solid waste regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 3 would not discharge brine to a wastewater treatment utility; therefore, brine discharges would have no impact on the MRWPCA's wastewater treatment requirements or outfall capacity. Employees would generate approximately 1,150 gpd of wastewater. Peak flows associated with the discharge of water from the closed-loop cooling system would be expected to occur less than a day per year and would be approximately 588,000 gallons per day. Such wastewater flows would be conveyed to the Castroville Sanitary District sanitary sewer system, which feeds into the MRWPCA wastewater treatment facility and would have a negligible impact on the MRWPCA discharge capacity of 81.2 mgd. Therefore, combining the impacts of the

components common with the proposed project and those unique to Alternative 3, operational effects would result in a decreased level of impact on wastewater treatment requirements (no impact); an increased level of impact on wastewater treatment capacity (less than significant); and a decreased level of impact on outfall capacity (less than significant). Overall, Alternative 3 would result in a ***reduced impact conclusion*** as the proposed project, less than significant.

Alternative 3 would not discharge brine to the MRWPCA outfall; therefore, operational effects related to corrosion of the outfall would result in a ***reduced impact conclusion*** compared to the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for cumulative utilities impacts for Alternative 3 is defined by the location of the Alternative 3 components. The cumulative scenario for Alternative 3 includes the projects in **Table 4.1-2** in Section 4.1 that have the potential to disrupt utilities during construction and generate waste during construction and operations. That would include the majority of the projects, including the GWR Project (No. 59). Unlike for the proposed project and Alternatives 1 and 2, the RUWAP projects would not be relevant to the operational cumulative scenario since they would not share a wastewater/brine discharge outfall with Alternative 3.

Impacts from construction of Alternative 3 would be similar to those described for the proposed project, and have the potential to be significant in light of the potentially significant cumulative impacts of multiple simultaneous projects on regional or local utilities and landfill capacity and solid waste regulations. However, with implementation of mitigation measures described above, the contributions of Alternative 3 to significant cumulative impacts would be reduced to a level that is less than significant because the potential for disruption of utilities would be reduced to the extent feasible and the likelihood of overlapping impacts would be minimized, and because Alternative 3 would comply with applicable solid waste regulations, reducing its construction and demolition waste to the extent feasible and required by such regulations. Impacts of Alternative 3 associated with operational wastes would be the same as the proposed project and would not have a significant contribution to a significant cumulative impact on landfill capacity or solid waste regulations. Operation of Alternative 3 would result in negligible impacts on a wastewater treatment utility due to wastewater volume, and would not contribute to cumulative impacts on wastewater treatment requirements or corrosion of the MRWPCA outfall and diffuser. Therefore, Alternative 3 would have the ***same impact conclusion*** as the proposed project for cumulative effects related to utilities, less than significant with mitigation.

5.5.13.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and

ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the utilities impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Construction of Alternative 4 could result in an increased potential for disruption or relocation of regional or local utilities compared to the proposed project associated with the additional desalinated water pipeline alignment. In particular, to rehabilitate the outfall/diffuser system at the caisson, service to the MLML, Phil's Fish Market, sea lion facilities, and MBARI could be disrupted since these entities draw seawater from two 8-inch intakes that are installed within the outfall/diffuser system. To ensure there would be no disruption in service to these customers during rehabilitation and to avoid a potentially significant impact, Alternative 4 would be required to implement **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines**), **4.13-1b** (**Coordinate Final Construction Plans with Affected Utilities**), **4.13-1c** (**Safeguard Employees from Potential Accidents Related to Underground Utilities**), **4.13-1d** (**Emergency Response Plan**), **4.13-1e** (**Notify Local Fire Departments**), and **4.13-1f** (**Ensure Prompt Reconnection of Utilities**). Therefore, combining the impacts of the components common with the proposed project and those unique to Alternative 4, construction effects on regional or local utilities would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Solid waste from construction of Alternative 4 would be approximately 93,250 cy, which is more than three times the volume for the proposed project. The proposed project conservatively assumes that all excess solid waste and construction debris would be disposed at the Monterey Peninsula Landfill, which has an estimated remaining capacity of 48,560,000 cubic yards. The total amount of excess solid waste and construction debris generated by the MPWSP represents approximately 0.06 percent of the landfill's remaining capacity, while disposal of the Alternative 4 solid waste would represent approximately 0.1 percent. In addition, state and county waste diversion regulations require that construction waste be recycled and diverted from landfill at specific levels. Failure to comply with waste diversion regulations would be a significant impact. Alternative 4 would result in an increased potential for a significant impact on landfill capacity during construction compared to the proposed project, if wastes are not diverted. Implementation of **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**) would reduce impact on landfill capacity to less than significant. Therefore, combining the impacts of the components common with the proposed project and those unique to Alternative 4, construction effects on landfill capacity or compliance with solid waste requirements would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Operation of the Alternative 4 desalination plant would generate approximately 2 tons per day of cake, compared to 7.5 tons per day by the MPWSP Desalination Plant. Therefore, Alternative 4 would have a decreased level of impact on landfill capacity during operations compared to the proposed project. Combining the impacts of the components common to the proposed project and the Alternative 4 desalination plant, operational effects on landfill capacity and compliance with solid waste regulations would result in the ***same impact conclusion*** as the proposed project, less than significant.

Alternative 4 would not discharge brine to a wastewater treatment utility; therefore, brine discharges would have no impact on the MRWPCA's wastewater treatment requirements or outfall capacity. Operation of Alternative 4 would generate approximately 74,500 gpd of wastewater discharge to the Castroville Sanitary District sanitary sewer system, which feeds into the MRWPCA wastewater treatment facility. Such wastewater volumes would have a negligible impact on the MRWPCA discharge capacity of 81.2 mgd. Therefore, combining the impacts of the components common with the proposed project and those unique to Alternative 4, operational effects would result in a decreased level of impact on wastewater treatment requirements (no impact); an increased level of impact on wastewater treatment capacity (less than significant); and a decreased level of impact on outfall capacity (less than significant). Overall, Alternative 4 would result in a ***reduced impact conclusion*** compared to the proposed project, less than significant.

Alternative 4 would not discharge brine to the MRWPCA outfall; therefore, operational effects related to corrosion of the outfall would result in a ***reduced impact conclusion*** compared to the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for cumulative utility impacts for Alternative 4 is defined by the location of the Alternative 4 components. The cumulative scenario for Alternative 4 includes the projects in **Table 4.1-2** in Section 4.1 that have the potential to disrupt utilities during construction and generate waste during construction and operations. That would include the majority of the projects, including the DeepWater Desal Project (No. 34). Unlike the proposed project and Alternatives 1 and 2, the RUWAP projects would not be relevant to the operational cumulative scenario since they would not share a wastewater/brine discharge outfall with Alternative 4. Unlike Alternative 3, the GWR Project (No. 59) is not relevant to the operational cumulative scenario for Alternative 4 because Alternative 4 would serve all of CalAm's Monterey District demand.

Impacts from construction of Alternative 4 would be similar to those described for the proposed project, and have the potential to be significant in light of the potentially significant cumulative impacts of multiple simultaneous projects on regional or local utilities and landfill capacity and solid waste regulations. However, with implementation of mitigation measures described above, the contributions of Alternative 4 to significant cumulative impacts would be reduced to a level that is less than significant because the potential for disruption of utilities would be reduced to the extent feasible and the likelihood of overlapping impacts would be minimized, and because

Alternative 4 would comply with applicable solid waste regulations, reducing its construction and demolition waste to the extent feasible and required by such regulations. Impacts of Alternative 4 associated with operational wastes would be similar to the proposed project and would have a less than significant contribution to a significant cumulative impact on landfill capacity or compliance with solid waste regulations. Operation of Alternative 4 would result in negligible impacts on a wastewater treatment utility due to wastewater volume, and would not contribute to cumulative impacts on wastewater treatment requirements or corrosion of the MRWPCA outfall and diffuser. Therefore, Alternative 4 would have the ***same impact conclusion*** as the proposed project for cumulative effects related to utilities, less than significant with mitigation.

5.5.13.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Construction of Alternatives 5a and 5b would have the same potential for disruption or relocation of regional or local utilities as the proposed project. The potentially significant impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-1a** (**Locate and Confirm Utility Lines**), **4.13-1b** (**Coordinate Final Construction Plans with Affected Utilities**), **4.13-1c** (**Safeguard Employees from Potential Accidents Related to Underground Utilities**), **4.13-1d** (**Emergency Response Plan**), **4.13-1e** (**Notify Local Fire Departments**), and **4.13-1f** (**Ensure Prompt Reconnection of Utilities**). Therefore, construction of Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project regarding regional or local utilities, less than significant with mitigation.

Besides constructing fewer slant wells and a smaller capacity desalination plant, Alternative 5a would not result in changes to other proposed project components and would produce a similar volume of construction waste. Alternative 5b would result in a higher volume of construction waste due to the increased length of source water pipeline, but like Alternative 1, would not exceed landfill capacity. Therefore, Alternative 5a would have a similar level of impact on landfill capacity and Alternative 5b would have a slightly increased level of impact on landfill capacity compared to the proposed project. Failing to divert a substantial portion of construction waste could conflict with solid waste regulations, which would be a significant impact. Implementation of **Mitigation Measure 4.13-2** (**Construction Waste Reduction and Recycling Plan**) would reduce impacts related to landfill capacity and compliance with solid waste regulations to less than significant by ensuring that construction waste is reduced and recycled to the extent feasible in compliance with such regulations. Therefore, construction of Alternatives 5a

and 5b would result in the ***same impact conclusion*** as the proposed project regarding landfill capacity and compliance with solid waste regulations, less than significant with mitigation.

Operational and Facility Siting Impacts

Alternatives 5a and 5b would operate the proposed MPWSP desalination plant and ASR Pump-to-Waste System, which are the only features expected to generate waste during operation. The volume of cake would be reduced under Alternatives 5a and 5b compared to the proposed project due to the reduced-capacity desalination plant. Therefore, operation of Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project regarding landfill capacity, less than significant.

Wastewater flows generated by the employees in Alternatives 5a and 5b would be the same as the proposed project. Alternatives 5a and 5b would operate a reduced-capacity desalination plant compared to the proposed project, which would produce reduced volumes of brine relative to the proposed project. Therefore, Alternatives 5a and 5b would have a decreased level of impact on the MRWPCA outfall capacity compared the proposed project. However, the same MRWPCA outfall would be used, and the "brine only" and combined discharges would be of the same quality as the proposed project. Therefore, Alternatives 5a and 5b would have the same level of impact related to wastewater treatment requirements as the proposed project. Potentially significant impacts related to exceedances of wastewater treatment requirements would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.3-4** (**Operational Discharge Monitoring, Analysis, Reporting, and Compliance**) and **4.3-5** (**Implement Protocols to Avoid Exceeding Water Quality Objectives**). Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project regarding wastewater treatment requirements, less than significant with mitigation.

Because Alternatives 5a would draw water from the same location as the proposed project and since Alternative 5b would draw water from an aquifer that contains salt water (same location as Alternative 1), brine generated by Alternatives 5a and 5b would result in the same or similar salinity levels as the proposed project. Like the proposed project and Alternative 1, Alternatives 5a and 5b would utilize the MRWPCA outfall and diffuser. Therefore, Alternatives 5a and 5b would have the same level of impact as the proposed project, resulting in potentially significant impacts on the outfall lining and diffuser, which would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.13-5a** (**Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall**) and **4.13-5b** (**Install Protective Lining in Land Segment of MRWPCA Ocean Outfall**). Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project regarding corrosion of the MRWPCA outfall, less than significant with mitigation.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project would produce approximately 35,000 cubic yards (11,700 tons) of excess construction and demolition waste, or about 30 tons per day (MRWPCA, 2016). If construction

were to overlap, combined with the 59 tons per day from Alternative 5a or 5b, the approximately 90 tons per day of waste would not exceed or substantially deplete the landfill capacity, and the combined projects would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

During operations, the GWR Project could produce up to 800 lbs/day (less than 1 ton per day) of solid wet waste requiring disposal in a landfill. However, as stated above, the volume of solid waste generated by Alternative 5a or 5b would be reduced compared to the proposed project, balancing out this increase in the combined scenario with the GWR Project. Therefore, the combined operational wastes would result in the ***same impact conclusion*** as the proposed project regarding landfill capacity, less than significant.

Impacts on wastewater treatment requirements from the operational brine stream in Alternatives 5a and 5b would be the same as the proposed project. The addition of GWR Project effluent (analyzed in Section 5.5.3.8) would reduce the volume of treated effluent that would be available to combine with brine flows, but the combined discharges would be of the same quality as analyzed under the proposed project and may result in a significant impact with respect to both wastewater treatment requirements and corrosion of the MRWPCA outfall. With implementation of **Mitigation Measures 4.3-4**, **4.3-5**, **4.13-5a**, and **4.13-5b**, impacts would be reduced to less than significant. Combined impacts on outfall capacity would be less than significant. Therefore, Alternatives 5a and 5b in combination with the GWR Project would result in the ***same impact conclusion*** as the proposed project regarding wastewater treatment requirements and corrosion of the MRWPCA outfall, less than significant with mitigation.

Impacts of Full Cumulative Scenario

The geographic scope of analysis for cumulative utility impacts for Alternatives 5a and 5b is the same as that for the proposed project and Alternative 1. The cumulative scenario for Alternatives 5a and 5b includes the projects in **Table 4.1-2** in Section 4.1 that have the potential to disrupt utilities during construction and generate waste during construction and operations. That would include the majority of the projects, including the DeepWater Desal project (No. 34) and the GWR Project. The RUWAP Recycled Water Project (No. 35) and the RUWAP Desalination Element (No. 31) are included since each has the potential to impact MRWPCA outfall capacity, outfall quality as it relates to corrosion of the outfall pipe, and wastewater treatment requirements.

Cumulative impacts from construction of Alternatives 5a and 5b would be similar to those described for the proposed project, which has the potential to result in significant impacts regarding regional and local utilities and landfill capacity. With implementation of mitigation measures described above, Alternatives 5a and 5b would have a less than significant contribution to significant cumulative impacts for the same reasons described for the proposed project in Section 4.13.6.

Impacts from operation of Alternatives 5a and 5b related to landfill capacity and compliance with solid waste regulations would be the same as those described for the proposed project and, with mitigation, would have a less than significant contribution to significant cumulative impacts on landfill capacity.

Because Alternatives 5a and 5b would have a reduced desalination plant capacity, they would have a reduced impact on MRWPCA outfall capacity compared to the proposed project. Combined with the effects of the RUWAP Recycled Water Element and the GWR Project, the impact on MRWPCA outfall capacity would be reduced compared to the cumulative scenario for the proposed project due to the increased volume of wastewater effluent that would be recycled instead of discharged through the outfall. Therefore, no significant cumulative impact on outfall capacity would occur. Cumulative impacts from the brine's potential to corrode the MRWPCA outfall in Alternatives 5a and 5b would be the same as described for the proposed project, and with implementation of mitigation measures described above, Alternatives 5a and 5b would have a less than significant contribution to significant cumulative impacts. Overall, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to utilities, less than significant with mitigation.

5.5.13.9 References

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. *Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project.* Prepared by Denise Duffy and Associates, January 2016.

5.5.14 Aesthetic Resources

The evaluation criteria for Aesthetics address: construction-related impacts on scenic resources or the visual character of the project area and surroundings, temporary sources of light or glare during construction, permanent impacts on scenic resources or the visual character of the project area and surroundings, and permanent sources of light or glare.

5.5.14.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in Section 4.14.2, Setting/Affected Environment. The setting for the components north of the Nashua Road/Highway 1 intersection is presented below.

Pipeline Alignments North of Nashua Road/Highway 1 Intersection

North and west of the Nashua Road/Highway 1 intersection, pipeline alignments for all Alternatives could extend within or alongside segments of Molera Road, Highway 1, Potrero Road, and Dolan Road, in unincorporated Monterey County. These alignments occur within the Agricultural and Urban and Built-up landscape units (see Section 4.14.2 for definitions of these units). There are no designated scenic corridors in the vicinity of these pipeline alignments.

The aesthetic character of the areas south of Moro Cojo Slough is predominantly agricultural, defined by two-lane roads bisecting mostly flat agricultural lands where row crops extend towards the horizon. In the vicinity of Moro Cojo slough, the aesthetic character is more scenic, defined by open views of the broad meandering slough channel, undeveloped grass- and marshlands extending out from the channel edge, and mature vegetation and mixed development visible in the distance. Within Moss Landing, the aesthetic character is defined by Moss Landing Harbor and the industrial Moss Landing Green Commercial Park and Moss Landing Power Plant, views of which are partially obscured by vegetated berms, mature vegetation, and opaque fencing. East of Moss Landing, along Dolan Road, the aesthetic character returns to one that is predominantly agricultural, defined by expanses of undeveloped grasslands and row crops, interspersed with residential and light industrial developments.

Sources of nighttime lighting and glare include residential developments near the Potrero Road/Highway 1 intersection, commercial and industrial development near the Dolan Road/Highway 1 intersection, commercial and institutional developments within Moss Landing Harbor, and headlights from vehicles traveling along area roads. Owing to intensive and largely inharmonious mix of land uses in the vicinity of the alignments, while also considering the broader natural context (e.g., Elkhorn Slough and the Pacific Coast), the visual quality is considered moderate. Given the existing land use patterns and highly modified landforms, the public's expectation for aesthetically pleasing views in the alignment area is limited; the visual sensitivity is, therefore, also considered moderate. Views of the alignments are generally limited to viewers in motion, such as motorists and cyclists traveling along area roads or the California Coastal Trail, and would be fleetingly visible. The landscape exposure is, therefore, considered low. For these reasons, the aesthetic resource value of the alignment area is considered moderate.

Potrero Road Parking Lot

The Potrero Road parking lot, which is the site of slant well construction in Alternative 1, is located approximately 0.4 mile west of Highway 1, within the Beaches and Coastal Dunes landscape unit. The aesthetic character of the Potrero Road parking lot is defined by the Old Salinas River channel and fringing marshes to the east and croplands beyond, and the gently rolling scrub-covered coastal dunes to the west. The nearest potential sources of nighttime lighting and glare are the homes along Laguna Place, approximately 0.25 mile to the east. Given its proximity to a vast expanse of mostly undeveloped coastal dunes and wetlands, and with consideration for its location within a state park, the site is considered to have high visual quality and high visual sensitivity. At the same time, views of the parking area are generally limited to park visitors approaching or within the parking lot. It is not visible from Highway 1 or the beach. Therefore, the site's landscape exposure is considered low. For these reasons, the aesthetic resource value is considered moderate.

Moss Landing Beach

The stretch of Moss Landing Beach in the vicinity of the Alternative 4 intake system, is located on the west side of Moss Landing's southern peninsula, approximately 250 feet west of Sandholdt Road, within the Beaches and Coastal Dunes landscape unit. The aesthetic character is defined by the narrow band of white sand beach, vegetated dunes, and Pacific Ocean to the west and south. The inland extent of the beach is flanked by revetment rock and a seawall; as well as various institutional, commercial, and marine-related industrial developments beyond. Given the types and extents of development along the beach, the aesthetic quality is considered moderate. The visual sensitivity is moderate because visitors to the area are likely drawn by and have expectations for scenic coastal views. However, views of the beach are limited to those on or immediately adjacent to the beach; it is not plainly visible from Highway 1 or other area roads. As such, the landscape exposure is low. For these reasons, the aesthetic resource value is considered moderate. Sources of nighttime lighting and glare include development fronting Sandholdt Road, along the back of the beach.

Moss Landing Green Commercial Park

The Moss Landing Green Commercial Park is located east of and adjacent to Highway 1, and south of Dolan Road and the Moss Landing Power Plant, within the Urban and Built-up landscape unit. Former home to the National Refractories & Minerals Corporation's magnesium production plant, the 200-acre site is highly degraded, characterized by a landscape denuded of all vegetation, and including a tank farm and various industrial warehouse buildings. Views of the site are generally limited to those from Highway 1 and Dolan Road, and are obscured by a vegetated earthen berm, mature vegetation, and opaque fencing. Given the site's industrial legacy and the public's lack of expectation for scenic resources, the site is considered to have a low visual quality and sensitivity. Similarly, given that views into the site are obscured by topography and vegetation, the landscape exposure is also low. For these reasons, the aesthetic resource value is considered low. Sources of nighttime lighting and glare include developments within Moss Landing and the Moss Landing Power Plant.

East Tank Farm Parcel

The East Tank Farm Parcel is located north of and adjacent to Dolan Road, approximately 2 miles east of Highway 1, within the Agricultural landscape unit. The aesthetic character of the site is defined by the large tracts of mostly-flat grasslands, coastal scrub, and marsh and slough, interspersed with various residential, agricultural, and industrial developments. Given its openness and relatively undeveloped character, while accounting for the varied types of developments existent, the site is considered to have a moderate visual quality. The public would have little expectation for scenic views in this area and so the visual sensitivity is considered low. Similarly, public views of the site are limited to those from motorists or cyclists traveling along Dolan Road, and so would be fleeting. While over 8,000 feet away, elements of the project may be visible from various vantage points within the Elkhorn Slough channel. Thus, the visual exposure is considered low. For these reasons, the aesthetic resource value of the East Tank Farm Parcel is considered low. Sources of nighttime light and glare in the site's vicinity are few and generally include distant developments and headlights from vehicles traveling along Dolan Road.

5.5.14.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2)** and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin ASR system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.

Construction equipment and machinery, spoils stockpiles, vegetation removal, and exposed earth associated with the implementation of many project components would be temporarily visible to motorists, bicyclists, pedestrians, and other observers such as nearby residents and park visitors. Some of these construction activities would be visible from Highways 1, 68, and 156, which are eligible for designation or officially designated as State Scenic Highways. These construction activities could disrupt the visual character of the surrounding areas. However, due to the temporary nature of these construction effects, and because work areas would be restored to their approximate pre-construction condition upon completion of construction, such impacts would be less than significant. Although mitigation is not required to reduce a significant impact under CEQA, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-1 (Maintain Clean and Orderly Construction Sites)**.

Impact 4.14-2: Temporary sources of substantial light or glare during construction,

Project construction activities have the potential to introduce temporary sources of substantial light into the project area. This impact would be significant but mitigable for the subsurface slant wells and the ASR-5 and ASR-6 Wells, as well as for the Source Water Pipeline, Brine Discharge

Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**), which requires site-specific construction lighting controls, would reduce the potential impacts of nighttime construction lighting to a less-than-significant level. No impacts related to nighttime lighting would result from construction of the ASR pipelines, Carmel Valley Pump Station, Ryan Ranch- Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements.

Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.

Permanent aboveground facilities proposed for the MPWSP could have an adverse impact on scenic resources or the existing visual character of facility sites within the project area. This impact would be significant but mitigable for the subsurface slant wells, ASR-5 and ASR-6 wells. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.14-3a** (**Facility Design**) and **4.14-3b** (**Facility Screening**), which require that CalAm design the facilities to avoid or minimize contrast with the surrounding setting and ensure the facilities are screened from public views to the extent feasible. Although mitigation is not required for the MPWSP Desalination Plant, or the Carmel Valley Pump Station, this EIR/EIS recommends implementation of **Mitigation Measures 4.14-3a** and **4.14-3b** for all above-ground project components to further reduce potential aesthetic resources effects and facilitate compatibility of project design with the natural and built environment. No operational impacts related to scenic resources and visual character would result from below-ground facilities, including proposed pipelines and optional alignments.

Impact 4.14-4: Permanent new sources of light or glare.

Project operations would introduce permanent sources of substantial light into the project area. This impact would be significant but mitigable for the ASR injection/extraction wells, and the Carmel Valley Pump Station. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**), which requires site-specific lighting controls, would reduce the potential impacts of nighttime operations lighting to a less-than-significant level. Although such mitigation is not required for the MPWSP Desalination Plant this EIR/EIS recommends implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**) for all above-ground project components with permanent sources of nighttime lighting to further reduce potential light spillover and dark night skies impacts. No operational impacts related to nighttime lighting would result from below-ground facilities, including proposed pipelines and optional alignments.

Impact 4.14-C: Cumulative impacts related to aesthetic resources.

Effects of the proposed project in scenic areas could overlap with those of Fort Ord Dunes State Park Campground Project (No. 46) and the Castroville Bicycle and Pedestrian Overcrossing Project (No. 36). The overall duration of the visual disturbance would be temporary, limited to the construction phases of these projects. Effects of the proposed project nighttime construction lighting could overlap with those of the RUWAP Recycled Water Project (No. 35) and possibly

the city of Monterey Sanitary Sewer System Rehabilitation Program (No. 51). However, the combined effects would not exceed the established thresholds of significance. There are no projects in the cumulative scenario whose effects would combine with those of the proposed project to cause a significant cumulative impact. However, following implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**), the proposed project would have a less-than-significant impact related to nighttime construction lighting, and its contribution to any cumulative impacts would be reduced to a level that is less than significant because this measure would ensure that nighttime lighting has minimal spillover from active construction sites. Therefore, the overall cumulative impact would be less than significant, with mitigation.

5.5.14.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated. However, decommissioning of the test slant well could result in potentially significant but mitigable impacts on aesthetic resources, including nighttime lighting. See Impact 4.14-2 in Section 4.14.6.1. Slant well decommissioning could adversely affect nighttime views of this mostly undeveloped stretch of coastline from the viewpoint of Highway 1 motorists and coastal Marina residents. If slant well decommissioning involves nighttime lighting, implementation of Mitigation Measure 4.14-2 would reduce impacts to a less-than-significant level. There would be no other construction- or operations-related effects on aesthetics associated with the No Project Alternative. Because the No Project Alternative would have a less than significant impact with respect to aesthetics, cumulative effects related to this topic would be less than significant.

5.5.14.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (Potrero Road). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction Impacts

Scenic Resources and Visual Character

Construction equipment and machinery, spoils stockpiles, vegetation removal, and exposed earth associated with the implementation of components common to the proposed project would temporarily disrupt the visual character of the surrounding areas and would be visible to motorists, bicyclists, pedestrians, and other observers such as nearby residents and park visitors. However, because work areas would be restored to their approximate pre-construction condition upon completion of construction, such impacts would be less than significant. Although mitigation is not

required to reduce a significant impact under CEQA, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-1** (**Maintain Clean and Orderly Construction Sites**).

The Alternative 1 Source Water Pipeline would be longer compared to the proposed project, and would be constructed mainly in an area considered to have a low aesthetic resource value. The subsurface slant wells at Potrero Road would be constructed in an area of moderate aesthetic resource value. The construction-period disturbance would be temporary and generally be limited in visibility to residents using Potrero Road to access their homes. Such impacts would be for very short durations, as most viewers would be in motion, either traveling along area roads or walking in the vicinity of the Potrero Road parking lot. The visual impact severity would be low.

Impacts associated with the additional length of pipeline installation would be visible over a larger area, but would not have an increased effect on scenic resources. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Nighttime Lighting and Glare

The additional 5.5 miles of Alternative 1 Source Water Pipeline and the subsurface slant wells at Potrero Road could require nighttime construction, which would temporarily introduce new substantial sources of nighttime light into otherwise dark and near-roadway areas. Such lighting could substantially change the lighting environment and present a nuisance or hazard to area motorists. In addition, construction activities associated with the components common to the proposed project would have the potential to introduce temporary sources of substantial light into the project area. This impact would be significant for the ASR-5 and ASR-6 Wells, as well as for the Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**) would reduce the potential impacts of nighttime construction lighting to a less-than-significant level.

Alternative 1 construction would not involve reflective materials that could cause substantial glare impacts. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Scenic Resources and Visual Character

The subsurface slant wells for Alternative 1would be located in an area identified as having moderate aesthetic resource value. While the wells would be buried below ground surface, an electrical control building for the wells would be constructed at the edge of the parking lot. The structure would measure approximately 12 feet long, 4 feet wide and 6 feet tall. As there are few other structures in the vicinity of the parking lot, the well control structure could contrast with other landscape elements. However, the structure would be subordinate in size relative to the adjacent dunes, which rise some 20 feet above the parking lot, and would not be visible from the beach or otherwise block coastal views. As such, the visual impact severity would be low. Permanent aboveground facilities common with the proposed project could have an adverse

impact on scenic resources or the existing visual character of facility sites within the project area. This impact would be significant for the subsurface slant wells, ASR-5 and ASR-6 wells, and this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.14-3a** (**Facility Design**) and **4.14-3b** (**Facility Screening**).

Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

Project operations would introduce permanent sources of substantial light into the project area. This impact would be significant for the ASR injection/extraction wells, and the Carmel Valley Pump Station. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**) would reduce the potential impacts of nighttime operations lighting to a less-than-significant level. The Alternative 1 subsurface slant wells control structure would not require nighttime lighting and no additional operational impacts related to nighttime lighting and glare would result.

Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to aesthetics for Alternative 1 is defined by the locations from which a viewer could see the Alternative 1 construction or operations effects, and is the same as that described for the proposed project in Section 4.2.6, with the exception of the different location of the subsurface intake system (Potrero Road, instead of CEMEX) and alternative source water pipeline route. Cumulative impacts resulting from the components of Alternative 1 that are common with the proposed project would be the same as those described for the proposed project in Section 4.14.7. Beyond those identified and addressed under Section 4.14.7, there are no additional cumulative projects whose effects could combine with those of Alternative 1 to result in impacts different from those described for the proposed project. For the reasons described in Section 4.14.7, the cumulative effects of the projects in the cumulative scenario could be significant, but the potentially considerable contribution of Alternative 1 would be reduced to a level that is less than significant with implementation of **Mitigation Measure 4.14-2**. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.14.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission

Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

Scenic Resources and Visual Character

Construction equipment and machinery, spoils stockpiles, vegetation removal, and exposed earth associated with the implementation of components common to the proposed project would temporarily disrupt the visual character of the surrounding areas and would be visible to motorists, bicyclists, pedestrians, and other observers such as nearby residents and park visitors. However, because work areas would be restored to their approximate pre-construction condition upon completion of construction, such impacts would be less than significant. Although mitigation is not required to reduce a significant impact under CEQA, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-1** (**Maintain Clean and Orderly Construction Sites**).

The Alternative 2 Source Water Pipeline would be constructed within an area generally considered to have low aesthetic resource value. The intake pump station would be constructed within an existing industrial area generally considered to have a low aesthetic resource value. Barges used for installation of the intake structure would be visible offshore (approximately 1,300 feet). The construction-period disturbance would be temporary for all facilities. Pipeline construction would be fleetingly visible, as most viewers would be in motion, traveling along area roads. Views of the intake pump station construction would be mostly obscured by topography and mature vegetation. The barges would be visible in the distance, but would not impair coastal views. The visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant.

Impacts associated with the additional length of pipeline installation would be visible over a larger area, but would not have an increased effect on scenic resources compared to the proposed project. Effects of the intake pump station would be similar – involving similar types of activities and occurring within areas of similar aesthetic character. Therefore, Alternative 2 would result in a ***same impact conclusion*** as the proposed project, less than significant.

Nighttime Lighting and Glare

The longer Source Water Pipeline and intake pump station could require nighttime construction. Barges used for intake structure installation and moored offshore could also require nighttime safety lighting. These components of Alternative 2 would temporarily introduce new substantial

sources of nighttime light into otherwise dark and near-roadway areas. Such lighting could substantially change the lighting environment and present a nuisance or hazard to area motorists. Alternative 2 construction activities would not involve reflective materials that could cause substantial glare impacts. In addition, construction activities associated with the components common to the proposed project would have the potential to introduce temporary sources of substantial light into the project area. This impact would be significant for the ASR-5 and ASR-6 Wells, as well as for the Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**) would reduce the potential impacts of nighttime construction lighting to a less-than-significant level. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Scenic Resources and Visual Character

The intake pump station would be the only above-ground facility unique to Alternative 2. The facility would be constructed within an existing industrial area generally considered to have a low aesthetic resource value. The facility would be in keeping with the industrial character of the site, and public views of the intake pump station site would be limited to those from Dolan Road, where the majority of potential viewers would be in vehicles traveling past the site and focused on the road. For these reasons, the visual impact severity would be low and the effect would be less than significant.

The overall effects of Alternative 2 would be reduced compared to the proposed project. There would be fewer above-ground facilities visible within scenic areas (i.e., no wellhead vaults visible at the CEMEX property). The intake pump station may be visible from Dolan Road, but would not further degrade the industrial aesthetic character of the setting. Alternative 2 permanent above-ground facilities common to the proposed project would result in potentially significant impacts on scenic resources and visual quality. However, implementation of **Mitigation Measures 4.14-3** (**Facility Design**) and **4.14-b** (**Facility Screening**) would reduce the impact to less than significant. Therefore, Alternative 2 would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

The intake pump station would be the only above-ground facility unique to Alternative 2 and may require nighttime operations or security lighting. The facility would be sited in an industrial area with existing nighttime lighting and partially screened from Dolan Road. However, new sources of unconfined nighttime lighting in proximity to the road could present a nuisance or hazard to motorists which would be significant. The nighttime lighting effects of Alternative 2 permanent above-ground facilities common to the proposed project would be significant. However, impacts would be reduced to a less than significant level with implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**).

The effects of Alternative 2 would be similar to those of the proposed project. Nighttime lighting at the intake pump station site would result in a localized increase in nighttime lighting. Alternative 2 facilities would not utilize large amounts of highly reflective materials that could cause substantial glare impacts. Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to aesthetics for Alternative 2 is defined by the locations from which a viewer could see the Alternative 2 construction or operations effects, and is the same as that described for the proposed project in Section 4.2.6, with the exception of the different location of the seawater intake system Moss Landing) and alternative source water pipeline route. Cumulative impacts resulting from the components of Alternative 2 that are common with the proposed project would be the same as those described for the proposed project in Section 4.14.7. Beyond those identified and addressed under Section 4.14.7, there are two additional reasonably foreseeable future cumulative projects that could overlap in time and space with Alternative 2: the Moss Landing Community Plan (No. 37 in **Table 4.1-2** in Section 4.1) and the DeepWater Desal Project (No. 34). Adoption of the Moss Landing Community Plan could include the enactment of new policies regarding protection of aesthetic resources in the Community Plan area. However, the Community Plan would not authorize development that could have physical aesthetic resources impacts that could combine with those of Alternative 2.

As analyzed above, the Alternative 2 intake pump station and alternative source water pipeline would have a less-than-significant construction impacts with mitigation. The DeepWater Desal Project would include development of similar facilities to those in Alternative 2 in similar or the same locations. The effects would be similar to those described for Alternative 2 components; i.e., increased visual disturbances and nighttime lighting during construction. The effects would generally be confined to the north side of Dolan Road, in the vicinity of the Moss Landing Power Plant, but would also occur offshore in association with the intake/outfall structure barges. It is assumed that nighttime lighting associated with DeepWater Desal Project construction would be controlled to limit spill-over and light pollution. If the projects were constructed sequentially, the duration of effects could be extended. However, given that the landside site is highly industrial, and that the landside and offshore effects would be localized and temporary, the combined effects of these projects would not exceed the established thresholds of significance. If lighting associated with construction of the DeepWater Desal Project were not controlled to limit spill-over, it could result in a significant impact that could combine with the potentially significant impact of Alternative 2 to cause a significant cumulative impact; however, with implementation of **Mitigation Measure 4.14-2**, Alternative 2 would have a less than significant contribution to a significant cumulative effect.

Operation of the DeepWater Desal Project would include an intake pump station in a location similar to or the same as that described for Alternative 2. The effects would be similar to those described for Alternative 2 components: additional industrial-looking development adjacent to an existing industrial site, with increased nighttime security lighting. Colocation of the Alternative 2 and DeepWater Desal Project facilities adjacent to the Moss Landing Power Plant site could

increase the area of the effect, but would not increase its severity. This is because the site is already highly industrial and contains existing sources of nighttime lighting. For these reasons, the combined effects would not exceed the established thresholds of significance, and the cumulative impact would not be significant. While it is assumed that nighttime lighting associated with the DeepWater Desal Project operations would be controlled to limit spill-over and light pollution, if not controlled, it could result in a significant impact that could combine with the potentially significant impact of Alternative 2 to cause a significant cumulative impact; however, with implementation of **Mitigation Measure 4.14-2**, Alternative 2 would have a less than significant contribution to a significant cumulative effect related to nighttime lighting during operations. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.14.6 Direct and Indirect Effects of Project Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open-water intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Scenic Resources and Visual Character

The segment of the Alternative 3 Desalinated Water Pipeline north of the Nashua Road/Highway 1 intersection and the Source Water Pipeline would be constructed mainly in alignment areas generally considered to have low aesthetic resource value. The intake pump station would also be constructed within an existing industrial area generally considered to have a low aesthetic resource value. Barges used for the intake structure installation would be visible offshore (approximately 1,300 feet). The construction-period disturbance would be temporary for each

facility. Pipeline construction would be fleetingly visible, as most viewers would be in motion, traveling along area roads. Views of the intake pump station construction would be mostly obscured by topography and mature vegetation. The barges would be visible in the distance, but would not impair coastal views. The visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant. Although mitigation is not required to reduce a significant impact, this EIR/EIS recommends implementation of **Mitigation Measure 4.14-1** (**Maintain Clean and Orderly Construction Sites**).

The East Tank Farm Parcel – on which the Alternative 3 desalination plant, data center and ancillary equipment would be constructed – is generally considered to have low aesthetic resource value. Construction activities would not be substantially out of character with the setting or appear dominant on the landscape; various industrial and intensive agricultural operations exist nearby. Nor would these activities impair public views of valued aesthetic resources; the site is not visible from any designated scenic areas or roadways. Views of the site from public vantage points are largely obscured by intervening topography and vegetation. While over 8,000 feet away, elements of the project may be visible from various vantage points within the Elkhorn Slough channel. The views would not be out of character with the existing industrial land uses and the zoning in the area. For these reasons, the visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant.

Impacts associated with the additional length of desalinated water pipeline installation would be visible over a larger area, but would not have a substantial increased effect on scenic resources compared to the proposed project. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Nighttime Lighting and Glare

The Desalinated Water Pipeline north of the Nashua Road/Highway 1 intersection, the Source Water Pipeline, and the intake pump station could require nighttime construction. Barges used for the intake and outfall installations moored offshore could also require nighttime lighting. These elements of Alternative 3 would temporarily introduce new substantial sources of nighttime light into otherwise dark and near-roadway areas. Such lighting could substantially change the lighting environment and present a nuisance or hazard to area motorists.

Alternative 3 facilities at the East Tank Farm Parcel could also require nighttime construction. Such activities would introduce a new substantial source of temporary lighting into an area that is generally dark, with existing sources of lighting distant and limited to residential and industrial security and safety lighting, and the headlights of vehicles traveling along Dolan Road and Via Tanques Road. The site is partially screened from view by intervening topography and vegetation, but other areas are plainly visible from Dolan Road. The nearest residence is approximately 400 feet to the southwest. Such temporary nighttime lighting increases could present a nuisance and hazard to area residents and motorists, respectively.

Nighttime lighting impacts of the proposed project subsurface slant well installation in the vicinity of the CEMEX site would be eliminated, while nighttime lighting effects from barges used for Alternative 3 intake and discharge structure installation would be increased. Lighting

effects from pipeline installation north of Nashua Road/Highway 1 intersection, intake pump station installation, and East Tank Farm Parcel work would be similarly increased. In addition, construction activities associated with the components common to the proposed project would have the potential to introduce temporary sources of substantial light into the project area. This impact would be significant for the ASR-5 and ASR-6 Wells, as well as for the Source Water Pipeline, Brine Discharge Pipeline, Pipeline to CSIP Pond, Castroville Pipeline, new Desalinated Water Pipeline, new Transmission Main, and their corresponding optional alignments. Implementation of **Mitigation Measure 4.14-2** (**Site-Specific Nighttime Lighting Measures**) would reduce the potential impacts of nighttime construction lighting to a less-than-significant level. Alternative 3 construction activities would not involve reflective materials that could cause substantial glare impacts. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Scenic Resources and Visual Character

The Alternative 3 intake pump station would be located within an existing industrial area generally considered to have a low aesthetic resource value. The facility would be in keeping with the industrial character of the site, and public views of the intake pump station site would be limited to those from Dolan Road, where the majority of viewers would be in vehicles traveling past the site and focused on the road. For these reasons, the visual impact severity would be low and the effect would be less than significant.

The East Tank Farm Parcel is generally considered to have low aesthetic resource value. Siting and operation of the Alternative 3 desalination plant, data center and ancillary equipment facilities would not be completely out of character with the setting, as various industrial and intensive agricultural land uses exist nearby. Nor would these facilities impair public views of valued aesthetic resources; the site is not visible from any designated scenic areas or roadways. Given the low density of development in the site's vicinity and the scale and height of existing development, the Alternative 3 facilities proposed for the East Tank Farm Parcel could appear dominant on the landscape. However, views of the site from public vantage points are largely obscured by intervening topography and vegetation. While over 8,000 feet away, elements of the project may be visible from various vantage points within the Elkhorn Slough channel. The views would not be out of character with the existing industrial land uses and the zoning in the area. For these reasons, the visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant.

Alternative 3 would have fewer above-ground facilities visible within scenic areas (i.e., no wellhead vaults visible at the CEMEX property). Effects of facilities at the East Tank Farm Parcel would be similar to those of the proposed project location of the desalination plant – occurring in proximity to other industrial land uses and ultimately partially screened from public view by trees and fencing. The effects of Alternative 3 permanent above-ground facilities common to the proposed project would be the same as described in Impact 4.14-3, and Alternative 3 would result in a significant impact. Implementation of **Mitigation Measures 4.14-3** (**Facility Design**) and **4.14-b** (**Facility Screening**) would reduce impacts to less than significant.

Overall, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

The Alternative 3 intake pump station may require nighttime operations or security lighting. The facility would be sited in an industrial area with existing nighttime lighting and partially screened from Dolan Road. However, new sources of unconfined nighttime lighting in proximity to the road could present a nuisance or hazard to motorists, which would be significant.

Alternative 3 facilities at the East Tank Farm Parcel would include outdoor nighttime lighting for access and security. Such activities would introduce a new substantial source of temporary lighting into an area that is generally dark, with existing sources of lighting distant and limited to residential and industrial security and safety lighting, and the headlights of vehicles traveling along Dolan Road and Via Tanques Road. The site is partially screened from view by intervening topography and vegetation, but other areas are plainly visible from Dolan Road. The nearest residence is approximately 400 feet to the southwest. Such nighttime lighting increases could present a nuisance and hazard to area residents and motorists, respectively. Alternative 3 facilities would not utilize large amounts of highly reflective materials that could cause substantial glare impacts.

The nighttime lighting effects of Alternative 3 permanent above-ground facilities, including those common to the proposed project, would result in significant impacts. Implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**) would reduce nighttime lighting and glare impacts to less than significant.

Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to aesthetics for Alternative 3 is defined by the locations from which a viewer could see the Alternative 3 construction or operations effects. Cumulative impacts resulting from the components of Alternative 3 that are common with the proposed project would be the same as those described for the proposed project in Section 4.14.7. Beyond those identified and addressed under Section 4.14.7, one additional reasonably foreseeable future cumulative project that could overlap in time and space with the components of Alternative 3 that differ from the proposed project: the Moss Landing Community Plan (No. 37 in **Table 4.1-2** in Section 4.1). Adoption of the Moss Landing Community Plan could include the enactment of new policies regarding protection of aesthetic resources in the Community Plan area. However, the Community Plan would not authorize development that could have physical aesthetic resources impacts that could combine with those of Alternative 3. Therefore, because no other projects would contribute to cumulative aesthetic resources impacts in combination with Alternative 3, the cumulative impacts associated with the components of Alternative 3 that differ from the proposed project would be as described for Alternative 3 alone. Therefore, overall, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.14.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

Scenic Resources and Visual Character

The segment of Alternative 4 Desalinated Water Pipeline north of the Nashua Road/Highway 1 intersection would be constructed mainly within areas generally considered to have low aesthetic resource value. The construction-period disturbance would be temporary and only fleetingly visible, as most viewers would be in motion, traveling along area roads. The visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant.

The Sandholdt Road pump house structure would be constructed in an area of moderate aesthetic resource value. Construction activity would be visible from Sandholdt Road and the Moss Landing Beach. Given its proximity to the coast and public use areas (e.g., Salinas River State Beach), the construction area could substantially degrade the visual character of the beach if not properly contained and maintained. However, with implementation of feasible mitigation, such as that identified in **Mitigation Measure 4.14-1** (**Maintain Clean and Orderly Construction Sites**) the effect would be reduced to a less-than-significant level.

The Moss Landing Green Commercial Park – on which the Alternative 4 desalination plant would be constructed – is generally considered to have low aesthetic resource value. Construction activities would not be out of character with the setting or appear dominant on the landscape; intensive industrial operations exist at the site and nearby. Nor would these activities impair public views of valued aesthetic resources; the site is not visible from any designated scenic areas or roadways. Views of the site from public vantage points are generally obscured by intervening topography and vegetation. For these reasons, the visual impact severity would be low. The effect

on scenic resources and visual character of the Alternative 4 desalination plant construction would, therefore, be less than significant.

Impacts associated with the additional length of pipeline installation would be visible over a larger area, but would not have an increased effect on scenic resources. The effects of Alternative 4 construction, including components common to the proposed project, would be t significant, but would be reduced to less than significant with **Mitigation Measure 4.14-1** (**Maintain Clean and Orderly Construction Sites**). Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

The segment of the new Desalinated Water Pipeline north of the Nashua Road/Highway 1 intersection and the Sandholdt Road pump house structure could require nighttime construction, which would temporarily introduce new substantial sources of nighttime light into otherwise dark and near-roadway areas. Alternative 4 construction activities would not involve reflective materials that could cause substantial glare impacts. Barges used for intake and discharge structure installation and be moored offshore and could also require nighttime safety lighting. These elements of Alternative 4 could substantially change the lighting environment and present a nuisance or hazard to area motorists.

If the Alternative 4 desalination facility at the Moss Landing Green Commercial Park required nighttime construction, a new substantial source of temporary lighting would be introduced into the area. Existing sources of lighting in the area are numerous and include outdoor safety and security lighting in the Moss Landing Power Plant, commercial developments along Highway 1, and developments within Moss Landing Harbor. Public views of the site are limited to those from Highway 1 and are mostly screened from view by intervening topography and vegetation. The nearest residence is approximately 1,800 feet (0.34 mile) to the southwest. As a result, any nighttime lighting impacts on area motorists and area residents would be negligible. The temporary lighting impacts associated with nighttime construction at the Moss Landing Green Commercial site would be less than significant.

The effects of Alternative 4 construction lighting, including components common to the proposed project, would result in significant impacts, but would be reduced to less than significant with implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**).

Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Scenic Resources and Visual Character

The Moss Landing Green Commercial Park is generally considered to have low aesthetic resource value. Siting and operation of the Alternative 4 desalination plant and ancillary equipment facilities would not be out of character with the setting, as the site is an intensive industrial area. The site is not visible from any designated scenic areas or roadways. Highway 1 is eligible for designation as a

scenic highway. However, views to the site from Highway 1 are mostly screened from view by intervening topography and mature vegetation. Due to this screening, the desalination plant and appurtenant facilities would not appear dominant on the landscape, nor would they obstruct public views of valued aesthetic features. For these reasons, the visual impact severity would be low. The effect on scenic resources and visual character would, therefore, be less than significant.

The Sandholdt Road pump house structure would be located near an existing developed area generally considered to be of moderate aesthetic resource value. However, given its location along the beach and seaward of the existing line of development, the facility would contrast and change and contrast with the visual character of existing features along Sandholdt Road and the Salinas River Beach. Rising to a height of approximately 27 feet, the facility would be a dominant feature among surrounding existing heights of other features. Due to its height, the structure could also impede, but would not be expected to impair, important public views of the coast. For these reasons, the pump house would have a significant visual impact. These effects of Alternative 4 permanent above-ground facilities, and those common to the proposed project, would be significant. Implementation of **Mitigation Measures 4.14-3a** (**Facility Design**) and **4.14-3b** (**Facility Screening**) would reduce impacts to less than significant.

Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

Alternative 4 facilities would not utilize large amounts of highly reflective materials that could cause substantial glare impacts. The desalination plant and associated facilities at the Moss Landing Green Commercial Park would likely include outdoor security and access lighting. These fixtures would introduce additional sources of nighttime lighting into a highly industrialized area with multiple sources of existing nighttime lighting. As noted previously, views of the site are obscured by existing topography and vegetation and the nearest residence is more than 1/3 mile away. As a result, nighttime lighting impacts on area motorists and area residents would be negligible. The temporary lighting impacts associated with nighttime security and access lighting at the Moss Landing Green Commercial site would be less than significant.

Nighttime outdoor security lighting may be required for the Sandholdt Road pump house structure. The installation of such fixtures could introduce substantial sources of nighttime light into an otherwise mostly dark area along the beach, and at an elevation at or above that of nearby structures. These nighttime lighting effects of Alternative 4 permanent above-ground facilities, and of those common to the proposed project, would result in significant impacts. Implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**) would reduce impacts to less than significant. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to aesthetics for Alternative 4 is defined by the locations from which a viewer could see the Alternative 4 construction or

operations effects. Cumulative impacts resulting from the components of Alternative 4 that are common with the proposed project would be the same as those described for the proposed project in Section 4.14.7. Beyond those identified and addressed under Section 4.14.7, there are two additional reasonably foreseeable future cumulative projects that could overlap in time and space with Alternative 4: the Moss Landing Community Plan (No. 37 in **Table 4.1-2** in Section 4.1) and the DeepWater Desal Project (No. 34). Adoption of the Moss Landing Community Plan could include the enactment of new policies regarding protection of aesthetic resources in the Community Plan area. However, the Community Plan would not authorize development that could have physical aesthetic resources impacts that could combine with those of Alternative 4.

As analyzed above, the Alternative 4 new Desalinated Water Pipeline and Alternative Source Water Pipeline would have significant construction impacts. Visual impacts of the Alternative 4 desalination plant construction would be less than significant, as they would be mostly shielded from public view by intervening topography and vegetation. Construction of the DeepWater Desal Project would include development of an intake pump station, pipelines, and a desalination plant and associated facilities along the north side of Dolan Road. Concurrent or sequential construction of these project elements would increase or prolong visual disturbance and nighttime lighting impacts in Moss Landing. However, the combined effects of the two projects would not be substantial, because these facilities would not occur in a scenic area, nor would they be plainly visible from the same public vantage point. Intake/outfall construction would increase the number of barges and associated nighttime lighting offshore, but would be distant from the shore and in the same general vicinity. Given that the landside setting is highly industrial, and the landside and offshore effects would be localized and temporary, the combined effects of these projects would not exceed the established thresholds of significance. If lighting associated with construction of the DeepWater Desal Project were not controlled to limit spill-over, it could result in a significant impact that could combine with the potentially significant impact of Alternative 4 to cause a significant cumulative impact; however, with implementation of **Mitigation Measure 4.14-2**, Alternative 4 would have a less than significant contribution to a significant cumulative effect.

As analyzed above, the desalination plant and appurtenant facilities at the Moss Landing Green Commercial Park would have a less-than-significant effect because the site is mostly screened from outside public view. Operation of the DeepWater Desal Project's intake pump station would be partially visible from Dolan Road and would introduce a new source of nighttime lighting into the area. However, for the same reasons described for cumulative construction-period effects, the combined effects of project operations would not be substantial. While it is assumed that nighttime lighting associated with the DeepWater Desal Project operations would be controlled to limit spill-over and light pollution, if not controlled, it could result in a significant impact. However, given that the setting is highly industrial and the effects would be localized and largely screened from public view, the combined effects of these projects would not exceed the established thresholds of significance. With implementation of **Mitigation Measure 4.14-2**, Alternative 4 would have a less than significant contribution to a significant cumulative effect related to nighttime lighting during operations. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.14.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Scenic Resources and Visual Character

The visual effects of Alternative 5a and 5b construction would be the same as described for the proposed project and Alternative 1, respectively. For the reasons discussed for the proposed project and Alternative 1, Alternatives 5a and 5b would result in the ***same impact conclusions*** as the proposed project, less than significant.

Nighttime Lighting and Glare

The visual effects of Alternative 5a and 5b construction lighting would be the same as described for the proposed project and Alternative 1, respectively. Implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**) would reduce impacts to less than significant. Alternatives 5a and 5b would result in a ***similar level of impact*** compared to the proposed project and impacts would be less than significant with mitigation.

Operational and Facility Siting Impacts

Scenic Resources and Visual Character

The effects of Alternative 5a and 5b permanent above-ground facilities would be the same as described for the proposed project and Alternative 1, respectively, and would be significant but mitigable to a less-than-significant level with implementation of **Mitigation Measures 4.14-3a** (**Facility Design**) and **4.14-3b** (**Facility Screening**). Alternatives 5a and 5b would result in the ***same impact conclusions*** as the proposed project, less than significant with mitigation.

Nighttime Lighting and Glare

The nighttime lighting effects of Alternative 5a and 5b permanent above-ground facilities would be the same as described for the proposed project and Alternative 1, respectively, and would be significant but mitigable to a less-than-significant level with implementation of **Mitigation Measure 4.12-2** (**Site-Specific Nighttime Lighting Measures**). Alternatives 5a and 5b would result in a ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Cumulative Analysis

Combined Impacts with GWR Project

Construction Impacts

The construction-period effects of Alternative 5 on scenic resources and visual character would be less than significant. Segments of the Alternative 5 New Desalinated Water Pipeline and New Transmission Main would follow an alignment similar to the GWR Project's Product Water Conveyance Coastal Alignment Pipeline. Concurrent pipeline construction could affect the same viewsheds, including scenic areas along the west side of Highway 1, a State-eligible Scenic Highway. As pipeline installation impacts would be limited to the construction period, and with construction expected to progress at a rate of 150 to 250 feet per day, the aesthetic resources effects from any particular vantage point would generally be limited to a few days to a few weeks. The combined effects would not substantially affect scenic resources or the visual character of the area. Therefore, concurrent construction would not substantially affect scenic resources or the visual character of the area, and would not combine to result in a significant cumulative effect.

The nighttime construction lighting effects of Alternative 5 would be less than significant with implementation of mitigation. GWR Project components that could require nighttime construction lighting near Alternative 5 components also potentially requiring nighttime construction lighting include the treatment plant facilities and the injection well clusters. The Alternative 5 Pipeline to CSIP Pond construction could occur at the same time and in proximity to the GWR treatment plant facilities. The effects would occur in a remote location, adjacent to existing industrial development (MRWPCA Regional Treatment Plant), with no nearby residential development. Nighttime construction lighting associated with the Alternative 5 ASR Pipelines and GWR injection wells would be visible from residences on the west side of General Jim Moore Boulevard. Considering their distance and the intervening topography, the residual effects of nighttime lighting from both projects following mitigation would not be visible from any single residence. For these reasons, concurrent nighttime construction of Alternative 5 and the GWR Project would not substantially affect the nighttime lighting environment, and therefore would not combine to result in a significant cumulative impact. Therefore, combined with the GWR Project, Alternative 5 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operations and Facility Siting Impacts

The operations and facility siting effects of Alternative 5 on scenic resources and visual character and nighttime lighting would be less than significant with mitigation. GWR Project above-ground components that would be located near Alternative 5 above-ground components include the treatment plant facilities and the injection well cluster. The Alternative 5 Desalination Plant would be sited approximately 3,000 feet north of the GWR Project's treatment plant facilities. Both facilities would include nighttime security lighting resulting in individual potentially significant impacts that would be reduced to a less-than-significant level with mitigation. Considering their distance and the intervening topography and vegetation, none of these facilities would be plainly visible from the site of another, nor would multiple facilities be plainly visible from the same public vantage point. Therefore, the residual effects of these facilities following mitigation would not substantially affect the area's scenic resources, visual character, or lighting

environment, and cumulative impacts would not be significant. Therefore, combined with the GWR Project, Alternative 5 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

The geographic scope of analysis for potential cumulative aesthetic resources impacts encompasses the locations from which a viewer could see the Alternative 5a and 5b construction or operations effects, and would be the same as described for the proposed project and Alternative 1, respectively. Beyond those identified and addressed under Section 4.14.7, there is only one additional reasonably foreseeable future cumulative project that could overlap in time and space with Alternative 5, the GWR Project. As described above, the addition of the GWR Project to the cumulative scenario would not change the magnitude of or significance conclusions for aesthetic resources. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.15 Cultural and Paleontological Resources

The evaluation criteria for Cultural and Paleontological Resources address: historical resources or historic properties during construction; archeological resources during construction; paleontological resources or sites, or geologic features during construction; and, human remains during construction. The facilities located at the CEMEX site overlap with recorded historical resources.

5.5.15.1 Setting/Affected Environment

The components of the alternatives that are common to the proposed project are located south of the Nashua Road/Highway 1 intersection and the setting/affected environment for those facilities is described in in Section 4.15, Cultural and Paleontological Resources. The setting for the components north of the Nashua Road/Highway 1 intersection is presented below. Site specific information for Alternative 4 components (People's Project) was not available.

Pipeline Alignments North of Nashua Road/Highway 1 Intersection

North and west of the Nashua Road/Highway 1 intersection, alternative pipeline alignments could extend within or alongside segments of Molera Road, Highway 1, Potrero Road, and Dolan Road, in unincorporated Monterey County. ESA conducted a records search at the Northwest Information Center (NWIC) for components north of the Nashua Road/Highway 1 intersection on February 28, 2013 (File No. 12-0934) and May 31, 2016 (File No. 15-1766) in order to: (1) determine whether known cultural resources have been recorded within the alternative locations; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby resources; and (3) develop a context for the identification and preliminary evaluation of cultural resources. As discussed below, several previously recorded prehistoric archaeological sites and historic-era artifact scatters are in the vicinity of the alternative alignments, especially near Moss Landing.

Potrero Road Parking Lot

Based on the results of the ESA records search at the NWIC, there are no recorded cultural resources in the Potrero Road Parking Lot. Previously recorded prehistoric resources are recorded within a 0.25-mile radius of the parking lot. ESA surveyed the parking lot in December 2014 and did not identify any cultural materials or evidence of past human use.

Moss Landing Beach and Monterey Bay

Based on the results of the ESA records search at the NWIC, there are no recorded cultural resources on Moss Landing Beach. Previously recorded prehistoric resources are recorded within a 0.25-mile radius of the parking lot.

Deep Water Desal, LLC contracted with William Self Associates, Inc. (WSA) to review existing literature on the maritime history and archaeology of the offshore locations of Moss Landing in MBNMS (WSA, 2016). WSA reviewed the California State Lands Commission (CSLC) Shipwreck database, and contacted the Monterey Maritime Museum and Monterey Bay National Marine Sanctuary for information housed in those repositories to determine the likelihood that submerged

marine resources are present. WSA also contacted the Bureau of Ocean Energy Management (BOEM) to consult the Bureau's Pacific Coastal Cultural Resources Database to determine if there are recorded submerged cultural resources in the Moss Landing area. The BOEM database identified 15 potential shipwrecks within the region surrounding the locations of the proposed intake and discharge points, but the exact locations of the vessels have not been determined.

Moss Landing Green Commercial Park

Based on the results of the ESA records search at the NWIC, there are no cultural resources recorded in the Moss Landing Green Commercial Park, in part because it has not been surveyed. Several previously recorded cultural resources are within a 0.25-mile radius. Site specific information for the Moss Landing Green Commercial Park was not made available.

East Tank Farm Parcel

WSA conducted a records search and surface survey of the East Tank Farm Parcel. The results of the surface survey indicate sites extend into the DeepWater Desal Project area (WSA, 2016). Two additional prehistoric archaeological sites and three historic-era artifact scatters are also within a 0.25-mile radius of Moss Landing.

5.5.15.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area and conversion of the test well to a permanent well, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.

No historical resources listed in or eligible for listing in the California Register, or historic properties listed in or eligible for listing in the National Register, are within the direct or indirect APE of all project components. Therefore, no impact on historical resources or historic properties would result from construction of any project facilities.

Impact 4.15-2: Cause a substantial adverse change in the significance of an archeological resource pursuant to Section 15064.5 of the CEQA Guidelines during construction.

A significant impact on archaeological resources could occur during construction of the proposed Castroville Pipeline at Tembladero Slough and the Source Water Pipeline in the Lapis Sand Mining Plant Historic District; as well as those areas designated as archaeologically sensitive in the geoarchaeological analysis (Tembladero Slough near Castroville and the Salinas River). The

impact or adverse effects would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**).

While no additional impacts or adverse effects on archaeological resources are expected, the possibility of uncovering unknown archaeological resources in the remaining direct APE cannot be entirely discounted. The potential inadvertent discovery of archaeological resources could be a significant impact or adverse effect. Implementation of **Measure 4.15-2b** (**Inadvertent Discovery of Cultural Resources**) would ensure that potential impacts are less than significant.

Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature during construction.

Construction of the proposed project components would require excavation through three geologic units that have the potential to contain paleontological resources, particularly vertebrate fossils. Of these three geologic units, only the Monterey Formation is known to contain vertebrate fossils that would qualify as a unique paleontological resource. However, because construction would occur in a limited area of the Monterey Formation and within previously-disturbed rights-of way of existing roads, potential impacts on unique paleontological resources would be less than significant.

Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction.

While no known human remains have been documented within the proposed project direct APE, the possibility of inadvertently uncovering human remains cannot be entirely discounted. The potential inadvertent discovery of human remains is considered a significant impact. The impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remain**s).

Impact 4.15-C: Cumulative impacts related to cultural and paleontological resources.

The geographic scope of analysis for cumulative impacts on cultural resources includes the direct and indirect Area of Potential Effects for the proposed project. The geographic scope of analysis for paleontological resources includes the portion of the aforementioned underlain by the Monterey Formation geologic unit. Applicable projects from **Table 4.1-1** are those that involve ground disturbance or could cause vibratory impacts on historic buildings or structures. Overall, the MPWSP would not contribute to cumulative impacts associated with Impacts 4.15-1 through 4.15-4.

5.5.15.3 Direct and Indirect Effects of No Project Alternative A

Under the No Project Alternative, no new facilities would be constructed or operated and the existing test slant well would be decommissioned. Consequently, there would be no construction- or operations-related impacts on cultural or paleontological resources with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to cultural or paleontological resources, it could not contribute to cumulative effects related to these topics.

5.5.15.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvement, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction Impacts

No historical resources listed in or eligible for listing in the California Register, or historic properties listed in or eligible for listing in the National Register, are within the direct or indirect APE of any project components. Therefore, Alternative 1 would result in the same impact and the ***same impact conclusion*** on historical resources or historic properties compared to the proposed project; no impact would result from construction of any project facilities.

Construction of the Alternative 1 Source Water Pipeline along Potrero Road would be adjacent to two previously recorded large prehistoric archaeological sites. The results of a pedestrian survey in December 2014 were inconclusive as to whether these sites extend into the alignment. One additional prehistoric archaeological site and two historic-era artifact scatters are also within a 0.25-mile radius of Alternative 1 components north of the Nashua Road/ Highway 1 intersection. But the potential impacts at CEMEX would be avoided, therefore, the potential for impacts on undiscovered archaeological resources would be the same compared to the proposed project, and the applicant would need to implement **Mitigation Measure ALT 1-CULT** (**Conduct Subsurface Investigation**) and **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) to reduce the impact to less than significant.

Mitigation Measure ALT 1-CULT applies to the Alternatives 1, 2, 3, 4, and 5b components that differ from the proposed project and would not apply to the proposed project or Alternative 5a.

> **Mitigation Measure ALT 1-CULT (Conduct Subsurface Investigation)**
>
> The applicant shall contract a professional archeologist to conduct a subsurface investigation to disclose whether nearby archaeological sites overlap with the project alignment.

If archaeological resources are found to extend into the Alternative 1 Source Water Pipeline alignment, the applicant would conduct a data recovery investigation or other appropriate measures in accordance with **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**), which includes provisions for an Archaeological Research Design and Treatment Plan in the event a significant archaeological resources cannot be avoided. Implementation of these mitigation measures would reduce the potentially significant impact on archaeological resources and Alternative 1 would result in the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Of the geologic units through which Alternative 1 would require excavation, Older Dune Sands and Terrace Deposits may have the potential for paleontological resources. The University of California Museum of Paleontology (UCMP) database search indicated a few microfossils have been identified from these younger geologic units but none near the location of Alternative 1. Therefore, the potential impact on paleontological resources would be the same as the proposed project and would result in the ***same impact conclusion***, less than significant.

While no known human remains have been documented within the Alternative 1 APE, the possibility of inadvertently uncovering human remains cannot be entirely dismissed. Implementation of **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remains**) would ensure that if human remains are uncovered during project construction the Most Likely Descendant of the deceased Native American is contacted and the remains are treated per the recommendations of the Coroner, reducing impacts to less than significant. Alternative 1 would result in the same impact and the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts on cultural and paleontological resources, if any, would only occur during ground disturbing activity. There would be no operational and facility siting impacts on cultural and paleontological resources and Alternative 1 would have the ***same impact conclusion*** as the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for potential cumulative cultural resources impacts encompasses locations where ground disturbing activity would occur under Alternative 1. In addition to the projects relevant to the cumulative scenario for the proposed project, the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) would be located in close proximity to Alternative 1 ground disturbance. This analysis assumes that all of the cumulative projects have a similar potential impact on cultural and paleontological resources. However, because each project's potential impacts would be site-specific to individual components, they would not combine with those of Alternative 1. Therefore, there would be no significant cumulative impact and Alternative 1 would have a less than significant contribution to cumulative impacts on cultural and paleontological resources. Alternative 1 would have the ***same impact conclusion*** as the proposed project, less than significant.

5.5.15.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the

Proposed Project. Because the open water intake would eliminate the need for returning source water originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

No historical resources listed in or eligible for listing in the California Register, or historic properties listed in or eligible for listing in the National Register, are within the direct or indirect APE of any project components. Therefore, Alternative 2 would result in the same impact and the ***same impact conclusion*** on historical resources or historic properties compared to the proposed project; no impact would result from construction of any project facilities.

Similar to Alternative 1, the construction of the Source Water Pipeline along Highway 1 and Dolan Road to Moss Landing would be adjacent to two previously recorded prehistoric archaeological sites. The results of a pedestrian survey in December 2014 were inconclusive as to whether these sites extend into the alignment. Two additional prehistoric archaeological sites and three historic-era artifact scatters are also within a 0.25-mile radius of Alternative 2 components north of Nashua Road and Highway 1 intersection. Alternative 2 would avoid the sites at CEMEX but the potential impacts on undiscovered archaeological resources would be increased compared to the proposed project because of the additional sites. The applicant would implement **Mitigation Measure Alt 1-CULT** (**Conduct Subsurface Survey**) and in the event that archaeological resources do extend into the Source Water Pipeline alignment, the applicant would avoid or otherwise mitigate significant impacts by conducting a data recovery investigation or other appropriate measures in accordance with **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) which includes provisions for an Archaeological Research Design and Treatment Plan in the event a significant archaeological resources cannot be avoided.

As stated previously in the setting, there is the potential for shipwrecks to be in the vicinity of Moss Landing. To determine whether shipwrecks or other submerged cultural resources are in the project vicinity, the project sponsor would have to implement a study that included a geophysical survey (magnetometer and side scan sonar) of the project area. Because the locations of all shipwrecks are not mapped, Alternative 2 could result in an increased potential impact compared to the proposed project. Implementation of **Mitigation Measures ALT 1-CULT** (**Conduct Subsurface Survey**) and **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) would reduce impacts on archaeological resources and Alternative 2 would result in the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Of the geologic units through which Alternative 2 would require excavation, Older Dune Sands and Terrace Deposits may have the potential for paleontological resources. The UCMP database search indicated a few microfossils have been identified from these younger geologic units but none near the location of Alternative 2. Therefore, potential impacts on paleontological resources would be

increased compared to the proposed project but would result in the ***same impact conclusion***, less than significant.

While no known human remains have been documented within Alternative 2, the possibility of inadvertently uncovering human remains cannot be entirely dismissed. The potential inadvertent discovery of human remains would be increased compared to the proposed project because of the additional 6.5 miles of source water pipeline and could be mitigated to less than significant with implementation of **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remains**), which would ensure that if human remains are uncovered during project construction the Most Likely Descendant of the deceased Native American is contacted and the remains are treated per the recommendations of the Coroner. Alternative 2 would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts on cultural and paleontological resources, if any, would only occur during ground disturbing activity. There are no operational and facility siting impacts on cultural and paleontological resources and Alternative 2 would result in the ***same impact conclusions*** as the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for potential cumulative cultural resources impacts encompasses locations where ground disturbing activity would occur under Alternative 2. In addition to the projects relevant to the cumulative scenario for the proposed project, the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) would be located in close proximity to or overlapping Alternative 2 ground disturbance. This analysis assumes that all of the cumulative projects have a similar potential impact on cultural and paleontological resources. However, because each project's potential impacts would be site-specific to individual components, they would not combine with those of Alternative 2 to create a significant cumulative effect. Alternative 2 has the potential to disturb shipwrecks, which could be significant. The DeepWater Desal Project also would have the potential to disturb shipwrecks, potentially resulting in a significant cumulative impact to which the contribution of Alternative 2 would be significant. However, as described above, implementation of **Mitigation Measures Alt 1-CULT** and **4.15-2a** would result in avoidance of any shipwrecks. Alternative 2 would have a greater potential for a significant contribution to a significant cumulative impact on cultural resources, and would result in an ***increased impact conclusion*** compared to the proposed project, less than significant with mitigation.

5.5.15.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The two pipelines for the intake and two pipelines for

the discharge systems would be installed under the seafloor in MBNMS using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

Construction of Alternative 3 near Moss Landing would impact two previously recorded prehistoric archaeological sites that have been evaluated as eligible for listing in the National Register of Historic Places. The results of the surface survey indicate these sites extend into the DeepWater Desal Project area (WSA, 2016). Two additional prehistoric archaeological sites and three historic-era artifact scatters are also within a 0.25-mile radius of Moss Landing, resulting in an increased potential impact on undiscovered resources and the need to implement **Mitigation Measure ALT 1-CULT** (**Conduct Subsurface Survey**). Further, if site locations cannot be avoided, implementation of **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) would be necessary to mitigate significant impacts on archaeological resources to less than significant.

As stated previously in the setting, there is also the potential for shipwrecks in the vicinity of Moss Landing. To determine whether shipwrecks or other submerged cultural resources are in the project vicinity, a study would be required that included a geophysical survey (magnetometer and side scan sonar) of the project area. Because the locations of shipwrecks are currently unknown, Alternative 3 could result in an increased potential impacts compared to the proposed project and implementation of **Mitigation Measures ALT 1-CULT** and **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) would result in an ***increased impact conclusion*** on historic properties or sites, and the ***same impact conclusion*** on archaeological resources compared to the proposed project, less than significant with mitigation.

Of the geologic units through which Alternative 3 would require excavation, Older Dune Sands and Terrace Deposits may have the potential for paleontological resources. The UCMP database search indicated a few microfossils had been identified from these younger geologic units but none near the location of Alternative 3. Therefore, the potential impact on paleontological resources would be the same compared to the proposed project and would result in the ***same impact conclusion***, less than significant.

While no known human remains have been documented within the Alternative 3 site, the possibility of inadvertently uncovering human remains cannot be entirely dismissed. The potential for inadvertent discovery of human remains would be the same compared to the proposed project and could be mitigated to less than significant with implementation of proposed project **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remains**), which would ensure that if human remains are uncovered during project construction the Most Likely Descendant of the deceased Native American is contacted and the remains are treated per the recommendations of the Coroner. Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts on cultural and paleontological resources, if any, would only occur during ground disturbing activity. There are no operational and facility siting impacts on cultural and paleontological resources and Alternative 3 would have the ***same impact conclusion*** as the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for cumulative cultural resources impacts is defined by the location of the components of Alternative 3 and those of other projects that are located within the same area. The GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would be located south and east of the Alternative 3 components and would not geographically overlap with the Alternative 3 components. The Moss Landing Community Plan (No. 37) is located geographically near or overlapping some Alternative 3 components, but proposed development under this plan would not have physical impacts on cultural resources that could combine with those of Alternative 3. Other projects that include ground disturbance would be required to comply with similar mitigation to that described for Alternative 3, including inadvertent discovery measures, monitoring, and data recovery, which would reduce impacts to less-than-significant levels. Additionally, Alternative 3 has the potential to disturb shipwrecks, a potentially significant impact that could be reduced to less than significant with implementation of **Mitigation Measures ALT 1-CULT** and **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**). However, no other project in the cumulative scenario for Alternative 3 would have the potential to disturb shipwrecks. Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project, less than significant with mitigation.

5.5.15.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station

would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

There are several structures at the proposed location of the Alternative 4 desalination plant on the National Refractories site that have not been evaluated for listing in the California and National Registers and this would be an increased impact on historic structures compared to the proposed project. If determined to be legally significant historical resources/historic properties, impacts from construction of Alternative 4 could result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

The location of Alternative 4 near Moss Landing would be adjacent to two previously recorded prehistoric archaeological sites. Two additional prehistoric archaeological site and three historic-era artifact scatters are also within a 0.25-mile radius of the Alternative 4 and this would be an increased impact compared to the proposed project. Additionally, there is the potential for shipwrecks to be in Monterey Bay within MBNMS in the vicinity of Moss Landing. To determine whether shipwrecks or other submerged cultural resources are in the project vicinity, a study that includes a geophysical survey (magnetometer and side scan sonar) of the project area would be required. Because the locations of these resources are not entirely known relative to the Alternative 4 components north of the Nashua Road/Highway 1 intersection, there would be potentially significant impact. Implementation of **Mitigation Measure ALT 1-CULT** would reduce impacts to less than significant. Further, if site locations cannot be avoided, implementation of **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) would impacts on archaeological resources and Alternative 4 would result in the ***same impact conclusion*** compared to the proposed project, less than significant with mitigation.

Of the geologic units through which Alternative 4 would require excavation, Older Dune Sands and Terrace Deposits may have the potential for paleontological resources resource. The UCMP database search indicated a few microfossils from these younger geologic units had been identified but none near the location of Alternative 4. Therefore, the potential impact on paleontological resources would be the same, and Alternative 4 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

While no known human remains have been documented within the Alternative 4 site, the possibility of inadvertently uncovering human remains cannot be entirely discounted. The potential inadvertent discovery of human remains could be mitigated to less than significant with implementation of **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remains**), which would ensure that if human remains are uncovered during project construction the Most Likely Descendant of the deceased Native American is contacted and the remains are treated per

the recommendations of the Coroner. Alternative 4 would result in the ***same impact conclusion***, less than significant with mitigation.

Operational and Facility Siting Impacts

Impacts on cultural and paleontological resources, if any, would only occur during ground disturbing activity. There are no operational and facility siting impacts on cultural and paleontological resources and Alternative 4 would have the ***same impact conclusion*** as the proposed project, no impact.

Cumulative Analysis

The geographic scope of analysis for cumulative cultural resources impacts is defined by the location of Alternative 4 and those of other projects that are located within the same area. The DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) and the Moss Landing Community Plan (No. 37) are located geographically near or overlapping some of the Alternative 4 components. Other projects that include ground disturbance would be required to comply with similar mitigation to that described for Alternative 4, including inadvertent discovery measures, monitoring, and data recovery, which would reduce impacts to less-than-significant levels. Alternative 4 has the potential for significant and unavoidable impacts on historical resources/historic properties at the National Refractories site. However, no other project in the cumulative scenario for Alternative 4 would be located at or result in impacts at the National Refractories site; therefore, a cumulative analysis is not relevant to this impact. Alternative 4 has the potential to disturb shipwrecks, which could be significant. The DeepWater Desal Project also would have the potential to disturb shipwrecks, potentially resulting in a significant cumulative impact to which the contribution of Alternative 4 would be significant. However, as described above, implementation of **Mitigation Measures Alt 1-CULT** and **4.15-2a** would result in avoidance of any shipwrecks. Alternative 4 would have a greater potential for a significant contribution to a significant cumulative impact on cultural resources; it would result in an ***increased impact conclusion*** compared to the proposed project, less than significant with mitigation.

5.5.15.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

Construction of Alternative 5a would occur in the same locations as the proposed project. Construction of Alternative 5b would be located in the same locations as Alternative 1 north of the Nashua Road/Highway 1 intersection. Therefore, even though Alternative 5a and 5b would

have fewer wells and a reduced size desalination facility compared to the proposed project, and Alternative 5b would have a longer source water pipeline, Alternatives 5a and 5b would result in the ***same impact conclusions*** as the proposed project for historic properties (No Impact), archaeological resources (less than significant with mitigation), paleontological resources (less than significant) and disturbance of human remains (less than significant with mitigation). CalAm would need to implement **Mitigation Measure ALT 1-CULT (Conduct Subsurface Investigation)** for Alternative 5b and **Mitigation Measure 4.15-2a** (**Establish Archaeologically Sensitive Area**) and **Mitigation Measure 4.15-4** (**Inadvertent Discovery of Human Remains**), for both Alternatives 5a and 5b to reduce the impact on archaeological resources and disturbance of human remains to less than significant.

Operational and Facility Siting Impacts

Impacts on cultural and paleontological resources, if any, would only occur during ground disturbing activity. There are no operational and facility siting impacts on cultural and paleontological resources and Alternatives 5a and 5b would have the ***same impact conclusions*** as the proposed project, no impact.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would have similar potential impacts on cultural and paleontological resources as ground disturbance under Alternatives 5a and 5b. However, because each project's potential impacts would be site-specific to individual components, they would not combine to result in a significant cumulative impact.

Impacts of Full Cumulative Scenario

The cumulative impact analysis for Alternatives 5a and 5b would be the same as that described for the proposed project and Alternative 1, respectively. As described above, the GWR Project would not contribute to a cumulative impact with Alternatives 5a and 5b. Therefore, Alternatives 5a and 5b would have the ***same impact conclusion*** as the proposed project, less than significant.

5.5.15.9 References

William Self Associates (WSA), 2016. *Cultural Resources Assessment Report, Monterey Bay Regional Water Project, Main Facility Site, Moss Landing, Monterey County, California*. Prepared for DeepWater Desal LLC, April 2016.

5.5.16 Agricultural Resources

The evaluation criteria for Agricultural Resources address: disruption of agricultural activities or permanent conversion of farmland to non-agricultural use; conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; and potential conflicts with zoning for agricultural uses or with Williamson Act contracts.

5.5.16.1 Setting/Affected Environment

The environmental setting and regulatory framework for the alternatives would be similar to the proposed project, which includes local and state regulations that apply to agricultural resources in Monterey County. As such, descriptions of the environmental setting and regulatory framework for agricultural resources are provided in Section 4.16. The environmental setting for the components that are common to the proposed project are also discussed in Section 4.16. This section focuses on the facilities that are unique to the alternatives

The area north of the Salinas River and south of the Moro Cojo Slough is primarily Prime Farmland, with small pockets of Farmland of Statewide Importance, Unique Farmland, and Grazing Lands as designated by the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP) (CDC, 2015). Williamson Act contracted lands make up approximately half of the agricultural parcels in this area (CDC, 2016) and the area is primarily zoned for Agricultural Preservation (Monterey County, 2007).

In the Moss Landing area north of the Moro Cojo Slough, lands are designated primarily as Urban and Built-Up, and Other Land (CDC, 2015). No agricultural zoning exists there except for a parcel located one mile from Highway 1 on the north side of Dolan Road that is designated for Agricultural Preservation (Monterey County, 2007).

5.5.16.2 Direct and Indirect Effects of the Proposed Project – Slant Wells at CEMEX

The proposed project extends from Castroville in the north to the city of Carmel in the south (see **Figure 3-2**) and would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina, up to nine new subsurface slant wells at the CEMEX active mining area, two new wells (ASR-5 and ASR-6) at the existing Seaside Groundwater Basin ASR system, the Carmel Valley Pump Station, and about 21 miles of water conveyance pipelines. The direct and indirect impacts of the proposed project are described in detail in Section 4.7.5.

The following paragraphs briefly summarize the impacts of the proposed project with respect to agricultural resources. The detailed impact analysis of the proposed project is provided in Section 4.16.

Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.

Construction of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline that would be installed within a 2,500 foot segment of designated farmland that is currently under cultivation for flower production north of Charles Benson Road would cause physical changes to the environment that could result in the conversion of farmland to non-agricultural uses, a significant impact. Implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**) would reduce this impact to a less-than-significant level. This measure requires coordination with property owners, separation of soil layers when stockpiling during excavation, avoidance of soil compaction measures, and inspection and restoration of all drainage systems.

None of the other proposed facilities or pipeline alignments in areas mapped as designated farmland by the California Department of Conservation would result in conversion of farmland since installation would be confined to rights-of-way or road shoulders where no crops are grown, or land that has been fallow for more than four years prior to the farmland mapping date.

Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Implementation of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline installed in the farmland north of Charles Benson Road would result in a less-than-significant impact related to the permanent conversion of important farmland to non-agricultural uses since farming practices would resume after construction and important farmland would not be displaced. For all other facilities, no impact would result.

Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.

None of the proposed facilities would conflict with agricultural zoning. The Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline installed in farmland north of Charles Benson Road (a portion of which is designated as Williamson Act land) would result in a less-than-significant impact related to conflicts with Williamson Act contracts because existing agricultural uses could resume during operations. All other proposed facilities, including all optional pipeline alignments, would have no impact on Williamson Act land.

Impact 4.16-C: Cumulative impacts related to agricultural resources.

Proposed project construction could have a significant contribution to significant cumulative effects on the conversion of farmland to non-agricultural use because cumulative projects in the project area would temporarily disrupt agricultural uses during construction, but since cumulative projects enlist mitigation measures to reduce construction impacts and because the proposed project would implement mitigation measures identified in Impact 4.16-1, this impact would be reduced to a less-than-significant level. Project operations would not have a significant contribution to a cumulative impact associated with the conversion of Prime Farmland, Unique Farmland, Farmland of

Statewide Importance to non-agricultural use, nor with land zoned for agricultural uses or with Williamson Act contracts regardless of the impacts of other projects in the cumulative scenario because it would not result in the conversion of such resources during operation.

5.5.16.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed and the existing test slant well would be decommissioned. Consequently, there would be no ground disturbance or placement of new structures that could affect agricultural resources, and thus no construction-related direct or indirect impacts on agricultural resources. Additionally, changes in future water supplies described in Section 5.4.2 as a result of the No Project Alternative would not directly or indirectly adversely affect the availability of water currently used for agricultural purposes, and thus would not result in the permanent conversion of farmland to non-agricultural use. Because the No Project Alternative would have no direct or indirect impacts with respect to agricultural resources, it could not contribute to cumulative effects related to these topics.

5.5.16.4 Direct and Indirect Effects of Alternative 1 - Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the agricultural impact analysis of Alternative 1 focuses primarily on locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Impacts

The intakes at the Potrero Road parking lot would not be located within or adjacent to farmland. Therefore, construction of these components would have no impact on agricultural resources. North of the Salinas River, construction of the alternative source water pipeline would not result in the disturbance of agricultural activities or farmland because the disturbance would be contained to rights-of-way, and would not extend into cultivated land. Construction would not affect soil conditions in farmland areas and would not result in the conversion of farmland to non-agricultural uses. No impact on agricultural activities or farmland would result from construction of the source water pipeline north of the Salinas River.

Thus, combining the impacts of the components common to the proposed project and Alternative 1 with the addition of 5.5 miles of source water pipeline and slant wells at Potrero Road, construction of Alternative 1 would have the same potential for disruption to agricultural activities or the conversion of farmland to non-agricultural use, but with implementation of

Mitigation Measure 4.16-1 (**Minimize Disturbance to Farmland**), would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The intake system at Potrero Road would not be located within or adjacent to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, land zoned for agricultural uses, or land under Williamson Act contract. Therefore, operation and siting of the intake system would have no impact on agricultural resources. Since the alternative source water pipeline would be located within rights-of-way and not within cultivated land, the additional 5.5 miles of pipeline would have no impact on Prime Farmland, Farmland of Statewide Importance, or Williamson Act contracts. The source water pipeline would be buried, and therefore, consistent with Section 21.64.160 of the Monterey County Zoning Ordinance, which allows underground public utilities in all zoning districts without obtaining a use permit.

Thus, combining the impacts of components common to the proposed project and Alternative 1 with the addition of 5.5 miles of source water pipeline and slant wells at Potrero Road, operation of Alternative 1 would result in the ***same impact conclusion*** as the proposed project with respect to both operational evaluation criteria, conversion of farmland to non-agricultural use and conflicts with zoning for agricultural uses or with Williamson Act contracts, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to agricultural resources for Alternative 1 is defined by the location of the Alternative 1 components, and is the same as that described for the proposed project in Section 4.16.6, with the exception of the different location of the subsurface intake system (Potrero Road, instead of CEMEX), and the alternative source water pipeline route. The cumulative scenario for Alternative 1 includes the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (No. 35), the Monterey Peninsula Light Rail Project (No. 38), and the DeepWater Desal Project (No. 34) described in **Table 4.1-2** in Section 4.1. Cumulative impacts from construction and operation of Alternative 1 would be the same as those described for the proposed project. Construction impacts have the potential to be significant, but with implementation of mitigation measures described above, Alternative 1 would not have a significant contribution to significant cumulative impacts. Operational and facility siting impacts would have a less than significant contribution to significant cumulative impacts related to farmland conversion, conflicts with zoning, or Williamson Act lands. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to agricultural resources, less than significant with mitigation.

5.5.16.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a

subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the agricultural impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Impacts

The intake system at Moss Landing and the pump station on Dolan Road would not be located within or adjacent to farmland. Therefore, construction of these components would have no impact on agricultural resources. No part of the source water pipeline from Dolan Road to Potrero Road would be constructed within or adjacent to farmland. From Potrero Road south, the alternative source water pipeline would be the same as Alternative 1. There would be no impacts on farmland from construction of Alternative 2 components north of the Salinas River.

Thus, combining the impacts of the components common to the proposed project and Alternative 2 with the addition of 6.5 miles of source water pipeline and the open water intake system, construction of Alternative 2 would have the same potential for disruption to agricultural activities or the conversion of farmland to non-agricultural use, but with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**), would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The intake system at Moss Landing and the pump station on Dolan Road would not be located within or adjacent to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, land zoned for agricultural uses, or land under Williamson Act contract; therefore, operation and siting of the intake system would have no impact on agricultural resources.

No part of the alternative source water pipeline from Dolan Road to Potrero Road would be located within or adjacent to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or land under Williamson Act contracts. A small portion of this alignment would be located in the right-of-way adjacent to land zoned for Agricultural Conservation (Monterey County, 2007), but the pipeline would be buried and therefore consistent with Section 21.64.160 of the Monterey County Zoning Ordinance, which allows underground public utilities in all zoning districts, without the necessity of obtaining a use permit.

From Potrero Road south, the alternative source water pipeline would be the same as the source water pipeline in Alternative 1. In sum, there would be no impact on Prime Farmland, Unique

Farmland, or Farmland of Statewide Importance, land zoned for agricultural uses, or Williamson Act contracts from the operation and siting of the source water pipeline north of the Salinas River.

Thus, combining the impacts of the components common to the proposed project and Alternative 2 with the addition of 6.5 miles of source water pipeline and the open water intake system, operation of Alternative 2 would result in the ***same impact conclusion*** as the proposed project with respect to both operational evaluation criteria, conversion of farmland to non-agricultural use and conflicts with zoning for agricultural uses or with Williamson Act contracts, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to agricultural resources for Alternative 2 is defined by the location of the Alternative 2 components, and is the same as that described for the proposed project in Section 4.16.6, with exception of the different location of the seawater intake system (Moss Landing instead of CEMEX) and the alternative source water pipeline route, and the elimination of the Castroville Pipeline and Pipeline to CSIP. The cumulative scenario for Alternative 2 includes the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (No. 35), the Monterey Peninsula Light Rail Project (No. 38) and the DeepWater Desal Project (No. 34) described in **Table 4.1-2** in Section 4.1. Cumulative impacts from construction and operation of Alternative 2 would be the same as those described for the proposed project. Construction impacts have the potential to be significant, but with implementation of **Mitigation Measure 4.16-1**, Alternative 2 would have a less than significant contribution to significant cumulative impacts. Operational and facility siting impacts would not have a less than significant contribution to significant cumulative impacts related to farmland conversion, conflicts with zoning, or Williamson Act lands. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to agricultural resources, less than significant with mitigation.

5.5.16.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville

Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. In addition, proposed project components along Charles Benson Road would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the agricultural impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Impacts

The seawater intake system at Moss Landing, source water pipeline, and brine discharge pipeline and outfall would not be located within or adjacent to farmland. Therefore, construction of these components would have no impact on agricultural resources. The desalination plant, data center, and substation would border farmland, but construction activities would be contained to the project area boundary and not disturb agricultural activities or convert farmland to non-agricultural uses. From Dolan Road and Highway 1, the desalinated water pipeline would be the same as the source water pipeline in Alternative 2, and similarly would have no impact on agricultural resources. Up to 25 miles of additional desalinated water pipelines would need to be constructed to deliver excess water (above the 9.6 mgd demand from CalAm's Monterey District service area) to potential customers in Santa Cruz County, Salinas, or both. Due to the presence of farmland between Moss Landing and Santa Cruz County to the north and Salinas to the southeast, it is likely that construction of these pipelines could be located in rights-of-way, but would still have the potential to disturb agricultural activities or result in the conversion of farmland; however, the exact alignments for these pipelines are currently not known.

South of the Salinas River, the desalinated water pipeline would join the proposed project at the "Connection to CalAm" Point. No pipelines would be constructed within farmland north of Charles Benson Road. All pipelines would be constructed within rights-of-way and no disturbance to farmland would result.

Because construction of pipelines between Moss Landing and Santa Cruz County to the north and Salinas to the southeast could disturb agricultural activities or convert farmland, Alternative 3 has an increased potential to impact agricultural resources compared to the proposed project; however, implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**) would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational and Facility Siting Impacts

The intake system at Moss Landing, source water pipeline, desalination plant, data center, substation, and brine discharge pipeline and outfall would not be located within or adjacent to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or land under Williamson Act contract. Therefore, operation of these components would have no impact on agricultural resources. The desalination plant, data center and substation would border land zoned for Agricultural Preservation, but the footprint would not extend into agricultural land and no impact would result.

Operational and facility siting impacts of the desalinated water pipeline would be the same as described for the source water pipeline in Alternative 2; no impact on Prime Farmland, Unique Farmland, Farmland of Statewide Importance, land zoned for agricultural uses, or Williamson Act contracts would result.

Because pipelines between Moss Landing and Santa Cruz County to the north and Salinas to the southeast could be installed within designated farmland or Williamson Act contracts, Alternative 3 has an increased potential to impact agricultural resources compared to the proposed project. However, since underground utilities are allowed in all zoning districts in Monterey County and Santa Cruz County (Santa Cruz County, 2015), and since agricultural uses could resume during operations, Alternative 3 would have the ***same impact conclusion*** as the proposed project with respect to both operational evaluation criteria, conversion of farmland to non-agricultural use and conflicts with zoning for agricultural uses or with Williamson Act contracts, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative agricultural impacts for Alternative 3 is defined by the location of the Alternative 3 components. The cumulative scenario for Alternative 3 includes the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (No. 35) and the Monterey Peninsula Light Rail Project (No. 38), described in **Table 4.1-2** in Section 4.1. Construction impacts have the potential to be significant, but with implementation of **Mitigation Measure 4.16-1**, Alternative 3 would have a less than significant contribution to significant cumulative impacts. Operational and facility siting impacts would have a less than significant contribution to significant cumulative impacts related to farmland conversion or Williamson Act lands. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to agricultural resources, less than significant with mitigation.

5.5.16.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. In addition, proposed project components along Charles Benson Road would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the agricultural impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Impacts

The intake system at Moss Landing, source water pipeline, desalination plant, and brine discharge pipeline and outfall would not be located within or adjacent to farmland. Therefore, construction of these components would have no impact on agricultural resources.

From Dolan Road and Highway 1 south, the desalinated water pipeline would be the same as the source water pipeline in Alternative 2, and similarly would have no impact on agricultural resources. Similar to Alternative 3, pipelines south of the Salinas River would be constructed within rights-of-way and no disturbance to farmland would result. Thus, combining the impacts of proposed project components with the addition of the components unique to Alternative 4, construction of Alternative 4 would result in a ***reduced impact conclusion*** compared to the proposed project, no impact.

Operational and Facility Siting Impacts

The intake system at Moss Landing, the source water pipeline, desalination plant, and brine discharge pipeline and outfall would not be located within or adjacent to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, land zoned for agricultural uses, or land under Williamson Act contract. Therefore, operation of these components would have no impact on agricultural resources.

From Dolan Road and Highway 1 south, the desalinated water pipeline would be the same as the source water pipeline in Alternative 2; therefore, there would be no impacts on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, land zoned for agricultural uses, or Williamson Act contracts from the operation and siting of the source water pipeline north of the Salinas River. No pipelines south of the Salinas River would be installed in areas mapped as designated farmland, land zoned for agricultural uses, or Williamson Act contracts.

Thus, combining the impacts of proposed project components with the addition of components unique to Alternative 4, operation and siting of Alternative 4 would result in a ***reduced impact conclusion*** compared to the proposed project, no impact.

Cumulative Analysis

Because construction and operation of Alternative 4 would have no impact on agricultural resources, Alternative 4 would not contribute to a cumulative impact on agricultural resources. Therefore, Alternative 4 would result in a ***reduced impact conclusion*** compared to the proposed project for cumulative effects related to agricultural resources, no impact.

5.5.16.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and

the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction, Operational, and Facility Siting Impacts

Alternatives 5a and 5b would have the same pipeline configurations and facility locations as the proposed project and Alternative 1, respectively. Therefore, Alternatives 5a and 5b would have the same construction impacts on agricultural resources as the proposed project and Alternative 1, respectively. Thus, construction of Alternatives 5a and 5b would have the same potential for disruption to agricultural activities or the conversion of farmland to non-agricultural use, but with implementation of **Mitigation Measure 4.16-1** (**Minimize Disturbance to Farmland**), would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation. Similarly, operation of Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

As described in the GWR Project FEIR (MRWPCA, 2016), the GWR Project would have no permanent impact on agricultural resources. It would result in temporary disruption to agricultural production during construction of the Salinas Treatment Facility and a portion of the Blanco Drain Diversion that would be of the same nature as temporary impacts described for the proposed project. The GWR Project would not convert farmland to non-agricultural use, and after implementation of adopted GWR FEIR **Mitigation Measure LU-1**, which would minimize disturbance to farmland during construction of these components, GWR Project impacts would be less than significant. The GWR Project would have no impact on the conversion of important farmland during operation, and no impact related to conflicting with zoning for agricultural uses or Williamson Act contracts during construction or operation (MRWPCA, 2016). Therefore, it would not contribute to the less-than-significant impacts of Alternatives 5a and 5b. Because both projects would minimize construction-related disturbance to farmland through mitigation, the combined temporary impact of construction-related disturbance from Alternatives 5a or 5b and the GWR Project would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

The geographic scope for the cumulative analysis of impacts from Alternative 5a and 5b is the same as that described for the proposed project and Alternative 1, respectively. The cumulative scenario for Alternatives 5a and 5b includes the same projects discussed for the cumulative analysis of the proposed project, with the addition of the GWR Project, which as described above would not increase the overall cumulative impact. Therefore, Alternatives 5a and 5b would have the same contribution to cumulative impacts on agricultural resources as the proposed project during construction and operation. Construction impacts have the potential to be cumulatively significant, but with implementation of mitigation measures described above, Alternatives 5a and 5b would have a less than significant contribution to significant cumulative impacts. Operational

and facility siting impacts would have a less than significant contribution to cumulative impacts related to farmland conversion, conflicts with zoning, or Williamson Act lands. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to agricultural resources, less than significant with mitigation.

5.5.16.9 References

California Department of Conservation (CDC), Division of Land Resource Protection, 2015. *Monterey County Important Farmland 2012, Sheet 1 of 2*. Available online at: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/.../2012/mnt12_no.pdf. Accessed May 6, 2016.

California Department of Conservation (CDC), Division of Land Resource Protection, 2016. *Monterey County Williamson Act FY 2015/2016, Sheet 1 of 2*. Available online at: ftp://ftp.consrv.ca.gov/pub/Dlrp/WA/Monterey_no_15_16_WA.pdf. Accessed May 6, 2016.

Monterey County, 2007. *Land Use Plan – North County*. Map prepared by Monterey County Planning and Building Inspection Department August 21, 2007.

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. *Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project.* January 2016.

Santa Cruz County, 2015. *Zoning and Development Code*. Available online at http://www.santacruzcountyaz.gov/DocumentCenter/Home/View/5116. Accessed December 8, 2016.

5.5.17 Mineral Resources

The evaluation criteria for Mineral Resources address the loss of availability of known mineral resources that are of value to the region or residents of the state and the loss of a locally recognized important mineral resource recovery site.

5.5.17.1 Setting/Affected Environment

The environmental setting and regulatory framework for the alternatives would be similar to the proposed project, which includes local and state regulations that apply to mineral resources in Monterey County. As such, descriptions of the environmental setting and regulatory framework for mineral resources are provided in Chapter 4.17. The environmental setting for the components that are common to the proposed project are also discussed in Chapter 4.17. This section focuses on the facilities that are unique to the alternatives.

The setting for facilities unique to the alternatives includes the area north of the Salinas River and south of Elkhorn Slough. This area has no MRZ-2 designation (areas with limited mining potential) but a small portion is classified as MRZ-1 (areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence) and MRZ-4 (areas where available information is inadequate for assignment to any other zone), as mapped by the California Department of Conservation, California Geological Survey (CDMG, 1987).

5.5.17.2 Direct and Indirect Effects of the Proposed Project (Slant Wells at CEMEX)

Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state, or result in the loss of a locally recognized important mineral resource recovery site.

The proposed slant wells site at the CEMEX sand mining facility, portions of the Source Water Pipeline, the MPWSP Desalination Plant, the Brine Discharge Pipeline, the Pipeline to CSIP Pond, the new Desalinated Water Pipeline, the southern portion of the Castroville Pipeline, the new Transmission Main, the ASR conveyance pipelines, the ASR 5 and ASR-6 Wells, and the Ryan Ranch-Bishop Interconnection Improvements would be located in areas designated as MRZ-2 – that is, areas where information indicates that significant mineral deposits (in this case, sand for use as aggregate) are either present or are likely to be present. The subsurface slant wells for the intake system are proposed within the southern portion of the CEMEX property, in an area that is no longer mined and has been restored by CEMEX consistent with the Reclamation Plan. The proposed Source Water Pipeline would be aligned beneath the existing CEMEX access road. Although mining operations could experience minor disruptions during project construction, mining activities would continue throughout project construction and potentially during the first several months of operations. Therefore, project implementation would not result in the temporary loss of known mineral resources and temporary construction-related impacts would be less than significant. Operation of the slant wells could preclude mineral resource extraction but since this particular area is no longer being mined, is under a reclamation plan, and it is unlikely

that future sand mining would be permitted in the southern portion of the CEMEX property, this impact would be less than significant.

The seafloor and subsurface mineral materials (e.g., sand, sediments) within MBNMS would provide filtration for the water taken in by the subsurface slant wells. The proposed project's filtration process would not result in the loss of a known mineral resource and no mineral resource consumption or extraction would occur related to the operation of the subsurface slant wells, and therefore, no impact would occur.

Construction and operation of the MPWSP Desalination Plant, which is located in an area designated as MRZ-2, could limit future recovery of mineral resources beneath the plant footprint. However, California Department of Conservation designated important farmland surrounds the site, and mineral extraction would be an incompatible use. Implementation of the desalination plant would have a less than significant impact on mineral resources. All proposed pipelines within MRZ-2 would have a less than significant impact on mineral resources since they would be constructed in or adjacent to rights-of-way and would have limited footprints.

Portions of the Castroville Pipeline north of the Salinas River would be located within MRZ-1 and MRZ-4, which are areas where information indicates that no significant mineral deposits are likely to be present, and areas where information is inadequate to assign a mineral resource zone, respectively. The Main System–Hidden Hills Interconnection Improvements, and the Carmel Valley Pump Station would not be located within an MRZ. These components would have no impact on mineral resources.

Impact 4.17-C: Cumulative impacts related to mineral resources.

The proposed project construction and operation would not contribute to cumulative impacts on mineral resources because all cumulative projects in MRZ-2 are on developed lands or on land where mining is prohibited.

5.5.17.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed and the existing test slant well would be decommissioned. Consequently, there would be no ground disturbance or placement of new structures that could affect mineral resources, and thus no construction- or operation-related direct or indirect impacts relative to mineral resources associated with the No Project Alternative. Because the No Project Alternative would have no direct or indirect impacts with respect to mineral resources, it could not contribute to cumulative effects related to these topics.

5.5.17.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline,

new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the mineral resources impact analysis of Alternative 1 focuses primarily on locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction and Operational Impacts

No Alternative 1 components north of the Salinas River would be located in an active mining area or MRZ-2. Portions of the source water pipeline would be located in land designated as MRZ-1 and MRZ-4. Therefore, construction and operation of Alternative 1 components north of the Salinas River would have no impact on mineral resources. Because the slant wells would not be located on MRZ-2 lands, Alternative 1 would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Since Alternative 1 components south of the Salinas River would be located in MRZ-2, but with limited mining potential, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to mineral resources for Alternative 1 is defined by the location of Alternative 1 components, and is the same as that described for the proposed project in Section 4.17.6, with exception of the different location of the subsurface intake system (Potrero Road, instead of CEMEX), and the alternative source water pipeline route. Alternative 1 would reduce impacts on mineral resources compared to the proposed project, reducing construction within land designated as MRZ-2. No new impacts on mineral resources would occur under Alternative 1. Therefore, as described for the proposed project, the combined effects of cumulative projects in MRZ-2 would not have a significant cumulative impact on the availability of mineral resources relative to the total amount of known mineral resources available. As a result, implementation of Alternative 1 would have a less than significant contribution to a cumulative mineral resources effect. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to mineral resources, less than significant.

5.5.17.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed

Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the mineral resource impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction and Operational Impacts

No Alternative 2 components north of the Salinas River would be located in an active mining area or MRZ-2. Portions of the source water pipeline would be located in land designated as MRZ-1 and MRZ-4. Therefore, construction and operation of Alternative 2 components north of the Salinas River would have no impact on mineral resources. Because the seawater intake would not be located on MRZ-2 lands, Alternative 2 would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Since Alternative 2 components south of the Salinas River would be located in MRZ-2, but with limited mining potential, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to mineral resources for Alternative 2 is defined by the location of Alternative 2 components, and is the same as that described for the proposed project in Section 4.17.6, with exception of the different location of the seawater intake system (Moss Landing, instead of CEMEX), and the alternative source water pipeline route. Alternative 2 would reduce impacts on mineral resources compared to the proposed project, reducing construction within land designated as MRZ-2. No new impacts on mineral resources would occur under Alternative 2. Therefore, as described for the proposed project, the combined effects of cumulative projects in MRZ-2 would not have a significant cumulative impact on the availability of mineral resources relative to the total amount of known mineral resources available. As a result, implementation of Alternative 2 would have a less than significant contribution to a cumulative mineral resources effect. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to mineral resources, less than significant.

5.5.17.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to

connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the mineral resources impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction and Operational Impacts

No Alternative 3 components north of the Salinas River would be located in an active mining area or MRZ-2. Portions of the source water pipeline would be located in land designated as MRZ-1 and MRZ-4. Therefore, construction and operation of Alternative 3 components north of the Salinas River would have no impact on mineral resources. Because the seawater intake system would not be located on MRZ-2 lands, Alternative 3 would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Since Alternative 3 components south of the Salinas River would be located in MRZ-2, but with limited mining potential, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to mineral resources for Alternative 3 is defined by the location of Alternative 3 components. Alternative 3 would reduce impacts on mineral resources compared to the proposed project, reducing construction within land designated as MRZ-2. No new impacts on mineral resources would occur under Alternative 3. Therefore, as described for the proposed project, the combined effects of cumulative projects in MRZ-2 would not have a significant cumulative impact on the availability of mineral resources relative to the total amount of known mineral resources available. As a result, implementation of Alternative 3 would have a less than significant contribution to a cumulative mineral resources effect. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to mineral resources, less than significant.

5.5.17.7 Direct and Indirect Effects of Project Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components

would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the mineral resources impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction and Operational Impacts

No Alternative 4 components north of the Salinas River would be located in an active mining area or MRZ-2. Portions of the source water pipeline would be located in land designated as MRZ-1 and MRZ-4. Therefore, construction and operation of Alternative 4 components north of the Salinas River would have no impact on mineral resources. Because the seawater intake system would not be located on MRZ-2 lands, Alternative 4 would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Since Alternative 4 components south of the Salinas River would be located in MRZ-2, but with limited mining potential, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope of analysis for cumulative impacts related to mineral resources for Alternative 4 is defined by the location of Alternative 4 components. Alternative 4 would reduce impacts on mineral resources compared to the proposed project, reducing construction within land designated as MRZ-2. No new impacts on mineral resources would occur under Alternative 4. Therefore, as described for the proposed project, the combined effects of cumulative projects in MRZ-2 would not have a significant cumulative impact on the availability of mineral resources relative to the total amount of known mineral resources available. As a result, implementation of Alternative 4 would have a less than significant contribution to a cumulative mineral resources effect. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to mineral resources, less than significant.

5.5.17.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b

would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction and Operational Impacts

All components of Alternative 5a would be in the same location as the proposed project, but with fewer slant wells at CEMEX. Therefore, construction and operation of Alternative 5a would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Alternative 5a would result in the ***same impact conclusion*** as the proposed project, less than significant.

All components of Alternative 5b would be in the same location as Alternative 1. Therefore, construction and operation of Alternative 5b would have a decreased potential to result in the loss of mineral resources or a mineral resource recovery site, compared to the proposed project. Alternative 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

The GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would have no impact on the availability of mineral resources during construction, and would have a less-than-significant impact on availability of mineral resources during operations (MRWPCA, 2016). No mineral extraction currently is occurring within the GWR Project component sites, and the GWR Project would not preclude or obstruct future mineral extraction in areas potentially subject to mineral development. In combination with Alternatives 5a and 5b, the GWR Project would result in a less-than-significant impact on mineral resources.

Impacts of Full Cumulative Scenario

The geographic scope for the cumulative analysis of impacts from Alternatives 5a and 5b is the same as that described for the proposed project and Alternative 1, respectively. Impacts from construction and operation of Alternatives 5a and 5b would be the same as those described for the proposed project and Alternative 1, respectively. One additional project, the GWR Project, would be relevant to the cumulative scenario for Alternatives 5a and 5b. As indicated above, the addition of the GWR Project would not result in significant cumulative impact. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to mineral resources, less than significant.

5.5.17.9 References

California Division of Mines and Geology (CDMG), 1987. *Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area*, Special Report 146, Part IV, Monterey Bay Production-Consumption Region, 1987.

Monterey Regional Water Pollution Control Agency (MRWPCA), 2016. *Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project.* January 2016.

5.5.18 Energy Conservation

The evaluation criteria for Energy Conservation address: use of large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning; use of large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance; and, constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.

5.5.18.1 Setting/Affected Environment

The setting/affected environment for alternatives is the same as described for the proposed project in Section 4.18, Energy Conservation, and the reader is referred to that section for a detailed description.

5.5.18.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning.

Construction of the proposed project (and decommissioning) would require the use of fuels for operation of heavy construction equipment (e.g., dozers, excavators, and trenchers), construction vehicles (e.g., dump and delivery trucks), and construction worker vehicles. Operation of some construction equipment (e.g., welding machines and electric power tools) would require the use of electricity. Construction (and decommissioning) would also result in indirect energy use associated with the extraction, manufacturing, and transportation of raw materials to make construction materials.

Construction (and decommissioning) activities could result in wasteful or inefficient use of energy if equipment is not well maintained, if equipment is left to idle when not in use, or if haul trips are not planned efficiently. The potential to use large amounts of fuel or energy in a wasteful manner is considered a significant impact. However, implementation of **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1c** (**Idling Restrictions**) would reduce the impact to a less-than-significant level.

Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance.

Operation and maintenance of the proposed project would result in the consumption of fuel for CalAm staff commute trips to and from the MPWSP Desalination Plant, and vehicle trips associated with routine maintenance and operations. Project operations would also result in the consumption of electricity to operate the MPWSP Desalination Plant (i.e., reverse osmosis [RO] modules, pumps, lighting, process controls, heating, ventilation, and air conditioning [HVAC] systems) and other proposed facilities (i.e., ASR Pump Station, Carmel Valley Pump Station, etc.). Although implementation of the proposed project would result in a substantial increase in electrical power demand (63,364 MWh/year minus a baseline energy use of 11,466 MWh/year equals a net increase of 51,898 MWh/year), the use of energy for operation of the MPWSP

Desalination Plant is necessary because it would provide a reliable supply of water to meet existing demand for the Monterey District. Therefore, electricity consumed as a result of project operations would not be wasteful or inefficient and the impact related to the use of fuel and energy during project operations would be less than significant.

Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.

Implementation of the proposed project would increase CalAm's total electrical demand by an amount that would represent approximately two percent of the County's electricity usage in 2014. The preliminary review of the proposed project's annual and maximum electrical demand by the electricity provider, Pacific Gas and Electric (PG&E), has indicated that PG&E has adequate capacity and infrastructure to support the proposed project. Therefore, this impact would be less than significant.

Impact 4.18-C: Cumulative impacts related to energy conservation.

Implementation of mitigation would ensure that the proposed project construction activities would be conducted in a fuel-efficient manner. Idling times would be limited for construction equipment and vehicles to ensure that energy waste and inefficiency would be minimized. The cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies intended to address cumulative energy consumption statewide. Implementation of **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1c** (**Idling Restrictions**) would reduce the cumulative impact to a less-than-significant level.

During project operation, the anticipated increase in electricity consumption for the proposed project would represent approximately 2 percent of Monterey County's annual usage, and an even smaller fraction of PG&E's overall service area usage. In the event that other cumulative projects listed in **Table 4.1-2** that would be high demand electricity users, such as the Monterey Bay Regional Water Project (DeepWater Desal, No. 34), which would require 25 times the amount of energy, request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E. This would be considered a significant impact. In addition, some reinforcement of the existing distribution system may also be required, but this would not substantially constrain local or regional energy supplies. However, the proposed project would have a less than significant contribution to this significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation.

5.5.18.3 Direct and Indirect Effects of No Project Alternative

Under the No Project Alternative, no new facilities would be constructed or operated and the existing test slant well would be decommissioned Consequently, there would be no construction-related energy use associated with the No Project Alternative. Under the No Project Alternative, there would be less pumping from the Carmel River, resulting in a decrease in the use of energy.

Because the No Project Alternative would have no direct or indirect impacts with respect to energy conservation, it could not contribute to cumulative effects related to these topics.

5.5.18.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the impact analysis for Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Construction Effects

Construction of one additional slant well and 5.5 additional miles of source water pipeline would result in an increase in gasoline and diesel fuel use during construction (and decommissioning) compared to the proposed project. While the transportation and equipment energy use requirements would not be significant relative to the overall sales of transportation fuels in the County, activities could result in wasteful or inefficient use of energy if equipment is not well maintained, if equipment is left to idle when not in use, or if haul trips are not planned efficiently. The potential use of large amounts of fuel or energy in a wasteful or inefficient manner is considered a significant impact. However, with implementation of **Mitigation Measures 4.18-1** and **4.10-1b**, the impact would be reduced to a less-than-significant level. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational Effects

Long-term operation of Alternative 1 would result in approximately three times the electricity consumption to pump source water to the MPWSP Desalination Plant compared to the proposed project, resulting in an overall increase in electrical power demand and less efficient electricity consumption. However, the additional electricity required would not be a large amount compared to the existing energy supplies in the County and would be accommodated by existing local and regional energy supplies. The long-term consumption of fuel required for CalAm staff commute trips to and from the MPWSP Desalination Plant and vehicle trips associated with routine maintenance would be the same as the proposed project. Overall, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts associated with energy and energy conservation during construction and decommissioning would be the same as those described for the proposed project. Impacts would be significant and would have a cumulatively considerable contribution to significant cumulative impacts on the supply and/or availability of fuel sources. However, **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1b** (**Idling Restrictions**) would be implemented to ensure construction activities would be conducted in a fuel-efficient manner. Even if construction were to occur simultaneously with other cumulative projects, the cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies intended to address cumulative energy consumption statewide after implementation of mitigation. Therefore, construction and decommissioning activities would have a significant contribution to a significant cumulative impact on the supply and/or availability of fuel sources; however, the incremental contribution would be reduced to less than significant with implementation of mitigation.

Although operation and maintenance would result in long-term consumption of substantial amounts of electricity, the anticipated increase in electricity consumption relative to baseline conditions for Alternative 1 would represent small percentages of Monterey County's annual usage and PG&E's overall service area usage. In the event that other cumulative projects request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E. For example, the increase in energy required to operate the DeepWater Desal Project's co-located data center (No. 34 in **Table 4.1-2** in Section 4.1) would be substantial; the efficiency of the data center and the associated cooling system is currently unknown and the impact would likely be significant and unavoidable. In addition, some reinforcement of the existing distribution system may be required for the DeepWater Desal Project. However, given the low electricity consumption that would be associated with Alternative 1, and because this energy use would be necessary for the production of desalinated water and therefore would not be unnecessary, wasteful, or inefficient, it would not have a significant contribution to the significant cumulative impact associated with potential unnecessary, wasteful, and/or inefficient use of energy, or with energy supply, either at a local or regional level, during operation and maintenance. Overall, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.18.5 Direct and Indirect Effects of Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a new, screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station on Dolan Road (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for

returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the impact analysis of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Construction Effects

Construction would result in a net increase of pipeline length of 6.5 miles resulting in an increase in gasoline and diesel fuel use during construction and decommissioning compared to the proposed project. While transportation and equipment energy use requirements would not be significant relative to total sales of transportation fuels in the County, construction and decommissioning activities could result in wasteful or inefficient use of energy. However, with implementation of **Mitigation Measures 4.18-1** and **4.10-1b,** the significant impact would be reduced to a less-than-significant level. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational Effects

Long-term operation of Alternative 2 would result in approximately three times the electricity consumption to pump source water to the MPWSP Desalination Plant compared to the proposed project, resulting in an overall increase in electrical power demand and less efficient electricity consumption. However, the additional electricity required would not be a large amount compared to the existing energy supplies in the County and would be accommodated by existing local and regional energy supplies. The long-term consumption of fuel required for CalAm staff commute trips to and from the MPWSP Desalination Plant and vehicle trips associated with routine maintenance would be the same as the proposed project. Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts associated with energy and energy conservation during construction, operation, maintenance, and decommissioning would be the same as those described for the proposed project. For the same reasons described for Alternative 1, Alternative 2 would have a cumulatively considerable contribution to a significant cumulative impact during construction and decommissioning; however, the incremental contribution would be reduced to a level that is less than significant with implementation of mitigation. Operation and maintenance would result in a less than significant contribution to the significant cumulative impact. Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.18.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the impact analysis of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Construction Effects

Construction of a new open water intake and a new outfall in Monterey Bay would require the use of marine construction equipment (e.g., barges) and HDD equipment; large equipment would also be required for the data center and associated cooling system. There would be an overall increase in the use of gasoline and diesel fuel compared to the proposed project. While the overall transportation and equipment energy use requirements would not likely be significant relative to total sales of transportation fuels in the County, construction and decommissioning activities could result in wasteful or inefficient use of energy if equipment is not well maintained, left to idle when not in use, or if haul trips are not planned efficiently resulting in a potentially significant impact. However, Implementation of **Mitigation Measures 4.18-1** and **4.10-1b**, would reduce impacts to a less-than-significant level. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational Effects

Operations and maintenance of the data center and cooling system would require 150 megawatts (MW) of electrical power) resulting in a substantial increase compared to the proposed project, which requires less than 6 MW. This energy demand would be 25 times the net energy demand of the proposed project, and represents approximately half of the County's electricity usage in 2014 (PG&E, 2015). This additional energy load could substantially constrain local and/or regional energy supplies if not adequately addressed by PG&E. Alternative 3 would require its own

230 kilovolt (kV) electrical substation and electrical transmission facilities, including transmission lines, transmission towers, and underground circuits. Given this amount of electricity demand and new electrical infrastructure that would be required, it is assumed that implementation of this alternative would trigger PG&E's "large load process," which is designed to determine how PG&E customers with large energy requirements will be provided electricity.

With regard to electricity consumption, although the desalination plant portion of the alternative would include energy recovery and efficiency systems similar to the proposed project, the project applicant has not provided details on what, if any, energy efficiency measures would be achieved relative to the data center and cooling system. In addition, the electricity used would be less efficient given the longer distance to pump product water to CalAm's Monterey District service area compared the proposed project. Due to this uncertainty and the large amount of electrical demand that would be required relative to the existing demand in the County, it is assumed that the electricity-related impact would be significant and unavoidable. Therefore, Alternative 3 would have an ***increased impact conclusion*** compared to the proposed project, and impacts would be significant and unavoidable.

The long-term consumption of fuel that would be required for employee commute trips to and from the project site and vehicle trips associated with routine maintenance under Alternative 3 would also be substantially greater compared to the proposed project due the additional employees and facilities to maintain (see description of operational staffing and facilities maintenance in Section 5.4.5.3). Although substantially greater, Alternative 3 would not result in the inefficient or wasteful use of fuel and it would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts associated with energy and energy conservation during construction and decommissioning would be the same as those described for the proposed project. Alternative 3 would have a cumulatively considerable contribution to a significant cumulative impact on the supply and/or availability of fuel sources during construction and decommissioning; however, the incremental contribution would be reduced to less than significant with implementation of **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1b** (**Idling Restrictions**) to ensure construction activities would be conducted in a fuel-efficient manner.

Operation and maintenance under Alternative 3 would result in long-term consumption of substantial amounts of electricity, which would represent a large amount of Monterey County's annual usage (e.g., electrical assumption under Alternative 3 would be equal to approximately half of all electricity consumed in Monterey County in 2014), and when combined with the energy demands of other cumulative projects, such as the Pure Water Monterey GWR Project (No. 59 in **Table 4.1-2** in Section 4.1), could substantially constrain local and/or regional energy supplies if not adequately addressed by PG&E. The project applicant has not provided details on what, if any, feasible mitigation could be implemented to reduce the contribution of Alternative 3 to below a significant level. Therefore, Alternative 3 would have a significant contribution to a significant and unavoidable cumulative impact associated with the unnecessary, wasteful, or

inefficient use of energy, or with energy supply, either at a local or regional level, during operation. Overall, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

5.5.18.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the impact analysis of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Construction Effects

Construction of Alternative 4 would require the use of marine construction equipment (e.g., barges) and HDD equipment for the new open-water intake and new outfall, and there would be an increase in gasoline and diesel fuel use compared to the proposed project resulting in a potentially significant impact. Implementation of **Mitigation Measures 4.18-1** and **4.10-1b** would reduce the significant impact to a less-than-significant level. Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Operational Effects

Long-term operations of the People's Project would produce approximately 25 percent more product water that would require an approximately 25 percent increase in energy demand compared to the proposed project. In addition, the electricity used would be less efficient given the longer distance to pump product water to CalAm's Monterey District service area compared the proposed project. However, the additional electricity required would not be a large amount of energy compared to the energy supplies in the County and would be accommodated by the local and regional energy supplies. The long-term consumption of fuel required for worker commute trips and vehicle trips associated with routine maintenance would be the same as the proposed project. Overall, Alternative 4 would have the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Cumulative impacts associated with energy and energy conservation during construction and decommissioning would be the same as those described for the proposed project. Alternative 4 would have a significant contribution to a significant cumulative impact on the supply and/or availability of fuel sources during construction and decommissioning; however, the incremental contribution would be reduced to less than significant with implementation of **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1b** (**Idling Restrictions**) to ensure construction activities would be conducted in a fuel-efficient manner.

Although operation would result in long-term consumption of substantial amounts of electricity, the anticipated increase in electricity consumption for Alternative 4 would represent small percentages of Monterey County's annual usage and PG&E's overall service area usage. In the event that other cumulative projects, such as the DeepWater Desal Project (No. 34 in **Table 4.1-2** in Section 4.1) and GWR Project (No. 59), request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E. For example, the increase in energy required to operate the DeepWater Desal co-located data center would be significant; the efficiency of the data center and the associated cooling system is currently unknown and the impact would likely be significant and unavoidable. In addition, some reinforcement of the existing distribution system may also be required for the DeepWater Desal Project, but this would not substantially constrain local or regional energy supplies. For the same reasons described for Alternative 1, Alternative 4 would not have a considerable contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation and maintenance. Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.18.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Effects

The facilities that would be constructed under Alternative 5a would be the same as those constructed under the proposed project, but there would be three fewer slant wells than under the proposed project. There would be an overall decrease in gasoline and fuel use during construction under Alternative 5a compared to the proposed action. With implementation of **Mitigation Measures 4.18-1** and **4.10-1b,** the significant impact would be reduced to a less-than-significant level. Therefore, Alternative 5a would have the ***same impact conclusion*** as the proposed project,

less than significant with mitigation. Alternative 5b would locate the slant wells at the Potrero Road parking lot, which would include construction of a 5.5 mile longer Source Water Pipeline. There would be an overall increase in gasoline and fuel use during construction of Alternative 5b compared to the proposed project and Alternative 5a. With implementation of **Mitigation Measures 4.18-1** and **4.10-1b** impacts would be reduced to less-than-significant levels. Therefore, Alternative 5b would have the ***same impact conclusion*** as the proposed project and Alternative 5a, less than significant with mitigation.

Operational Effects

As described above, Alternatives 5a and 5b would have a decreased desalinated plant capacity; therefore, the total operational electricity demand would be reduced compared to the proposed desalination plant; approximately 3.7 MW, which is equivalent to approximately 63 percent of that for the proposed project. Due to the increased length of the source water pipeline for Alternative 5b from Potrero Road to the Nashua Road/Highway 1 intersection, Alternative 5b would result in more than three times the energy demand to pump source water to the MPWSP Desalination Plant compared to proposed project. However, the overall energy demand associated with Alternatives 5a and 5b would be less than the proposed project given the lower source water volume required. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

Because Alternative 5 alone would not meet the project objectives and must be paired with the approved GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) in order to do so, for informational purposes, this analysis provides the "subtotal" of the Alternative 5 impacts in combination with the impacts of the GWR Project. Similar to the proposed project, operation of Alternative 5 and the GWR Project would result in long-term consumption of electricity. The anticipated increase in electricity consumption would represent small percentages of Monterey County's annual usage and PG&E's overall service area usage. For example, the increase in energy required to operate the GWR Project (No. 59 in **Table 4.1-2** in Section 4.1) would be approximately 1.6 MW. When Alternative 5 is combined with the GWR Project, the total net increase in energy consumption would be approximately 5.3 MW. The energy efficiency of the structures and wells that would be associated with the GWR Project would be relatively high (PPWS, 2016). Given the low electricity consumption that would be associated with Alternative 5 combined with the GWR Project, and because this energy use would be necessary for the production of desalinated and recycled water and therefore would not be unnecessary, wasteful, or inefficient, these projects would not have a significant contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation and maintenance. This combined impact would have the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Impacts of Full Cumulative Scenario

Cumulative impacts associated with energy and energy conservation during construction and decommissioning would be similar to those described for the proposed project. Alternatives 5a and 5b would have a significant contribution to a significant cumulative impact on the supply and/or availability of fuel sources during construction and decommissioning; however, the incremental contribution would be reduced to less than significant with implementation of **Mitigation Measures 4.18-1** (**Construction Equipment and Vehicle Efficiency Plan**) and **4.10-1b** (**Idling Restrictions**) to ensure construction and decommissioning activities would be conducted in a fuel-efficient manner.

The overall anticipated increase in electricity consumption for projects in the cumulative scenario would represent small percentages of Monterey County's annual usage and PG&E's overall service area usage. For example, the net increase in energy required to operate the DeepWater Desal Project (No. 34) co-located data center would be approximately 150 MW. When Alternative 5, the GWR Project, and the DeepWater Desal Project are combined, the total net increase in energy consumption would be approximately 155 MW. The energy efficiency of the DeepWater Desal Project's data center and the associated cooling system is currently unknown and the cumulative impact would likely be significant and unavoidable. However, given the low electricity consumption that would be associated with Alternative 5 and the GWR Project, and because this energy use would be necessary for the production of desalinated water and therefore would not be unnecessary, wasteful, or inefficient, these projects would have a less than significant contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation and maintenance. Overall, Alternative 5 would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

5.5.18.9 References

Pacific Gas and Electric Company (PG&E), 2015. PG&E 2015 Corporate Responsibility and Sustainability Report. Available online at: http://www.pgecorp.com/corp_responsibility/reports/2015/. Accessed June 28, 2016.

Partners for Pure Water Solutions (PPWS), 2016. Monterey Regional Water Pollution Control Agency in partnership with Monterey Peninsula Water Management District. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, January, 2016. Pages 4.7-14 and 4.7-15.

5.5.19 Population and Housing

5.5.19.1 Setting/Affected Environment

The environmental setting/affected environment for the analysis of population and housing effects of the alternatives would be similar to that described for the MPWSP in Section 4.19, Population and Housing. The setting for the analysis of the direct growth inducing impacts of the alternatives is the same as the proposed project—the three county region consisting of Monterey, San Benito, and Santa Cruz counties. Indirect growth inducement is discussed below in Section 5.5.21. As described for the proposed MPWSP, there are no federal, state, or local regulations governing population and housing that would apply to the alternatives. Components of alternatives different from the proposed project and north of the Nashua Road/Highway 1 intersection would be located in unincorporated Monterey County, including the unincorporated community of Moss Landing.

5.5.19.2 Direct and Indirect Effects of Proposed Project (Slant Wells at CEMEX)

As described in detail in Chapter 3, Description of the Proposed Project, the proposed project (see **Figure 3-2**) would include construction of a desalination plant on 25 acres along Charles Benson Road northeast of the City of Marina that would include nine new subsurface slant wells at the CEMEX active mining area, and conversion of the existing test slant well to a permanent well. The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system, pump stations, storage tanks, and about 21 miles of new water conveyance pipelines. No construction or placement of facilities on the seafloor would occur.

The following paragraphs briefly summarize the impacts of the proposed project with respect to population and housing. The detailed impact analysis of the proposed project is provided in Section 4.19.

Impact 4.19-1: Induce substantial population growth directly during project construction.

The number of construction workers needed would vary, from 90 to 345, over the 24-month construction period. Concurrent construction of project components is expected to require from 300 to 345 workers during the peak four months of construction. Construction employment during the peak period (345 workers) represents 7 percent of the construction jobs in Monterey County in 2015 and 4 percent of the construction jobs in the three-county region comprising Monterey, Santa Cruz, and San Benito Counties in 2015. Given that MPWSP construction jobs would represent a minor percentage of the current local and regional construction employment levels, MPWSP construction is not expected to create employment opportunities substantially greater than would normally be available to construction workers in the area. Consequently, construction of the MPWSP would not induce population growth by attracting a substantial number of workers from outside the region to relocate to the area, and therefore would not create demand for additional housing or other facilities and services associated with growth.

The proposed project does not involve any housing construction and would not induce growth directly by constructing housing that would attract people to the area. Therefore, the proposed project would not directly induce a substantial increase in the local population and the direct growth-inducing impact of the proposed project would be less than significant.

Impact 4.19-2: Induce substantial population growth directly during project operations.

During MPWSP operations, approximately 25 to 30 facility operators and support personnel would operate the MPWSP Desalination Plant. All other proposed facilities would be operated remotely using Supervisory Control and Data Acquisition systems, with periodic visits by existing CalAm personnel. Conservatively assuming that the regional labor force could not meet the operational workforce requirements, up to 30 new employees relocating to the area would represent a 0.01 percent increase in workers residing in Monterey County (i.e., 0.01 percent of the labor force) in 2015. This incremental increase would not constitute substantial population growth in the region. Similarly, compared to the projected rate of growth of the county's labor force, an increase of 30 new employees would be minor. The county's labor force is projected to increase by 5,600 workers between 2010 and 2015; 30 new employees would represent 0.5 percent of this projected increase. Therefore, operation of the proposed project would not directly induce a substantial increase in the local population and the direct growth-inducing impact of the proposed project would be less than significant.

Impact 4.14-C: Cumulative impacts related to population and housing.

Because of the limited duration of construction jobs and the size of the regional construction workforce, there would be no significant cumulative impact on population and housing from construction of cumulative projects. Even if cumulative construction projects were to lead to population and housing effects by attracting some workers to move to the area, such moves would likely be temporary. In any event, the contribution of the MPWSP would be less than significant because of the relatively small number of construction workers required and the short duration of the construction period.

Because the population and housing that could be induced by operation of cumulative projects is expected to be consistent with growth anticipated in the counties' general plan documents, the cumulative impact during project operations would be less than significant. The MPWSP's operational workforce demands would be nominal: 25 to 30 people. Even in the unlikely event that the population and housing induced by operation of cumulative projects was significant, in no event would the proposed project make a significant contribution to any such effect.

5.5.19.3 Direct and Indirect Effects of No Project Alternative

The No Project Alternative would have no direct or indirect effects related to population or housing. It would not displace housing or people, because no facilities would be constructed, and would not induce workers or others to relocate from outside the area, because it would not provide jobs or housing. Because the No Project Alternative would have no direct or indirect impacts on population or housing, it could not contribute to cumulative effects related to these topics.

5.5.19.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the additional 5.5 miles of source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**).

Construction Impacts

The direct growth-inducing impact of construction of Alternative 1 would be the same as the proposed project. Construction of the source water pipeline would take somewhat longer to build than the proposed MPWSP source water pipeline, due to the greater distance between the intake location and the desalination plant. However, as under the MPWSP, it is expected that construction workers would be drawn from the local and regional labor pool and the direct growth inducing impact would be less than significant. Therefore, Alternative 1 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

The direct growth-inducing impact would be same as the proposed project because Alternative 1 would have the same workforce requirements. As described for the proposed project, existing plant workers would be retrained to operate the desalination plant or operators would be drawn from the local and regional labor pool. Components unique to this alternative would mostly be located underground and would not displace people or housing. Therefore, Alternative 1 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 1 would have no impact related to the displacement of housing units or people, it would not cause or contribute to a cumulative impact associated with the displacement of housing or people that would necessitate the construction of replacement housing.

The geographic scope for the analysis of direct cumulative growth-inducing impacts during construction and operation of Alternative 1 is the three-county region consisting of Monterey, San Benito and Santa Cruz Counties. As described in the cumualtive impact analysis for the MPWSP, the cumulative analysis takes a projections-based approach based on the projected buildout of the general plans of the three counties.

Similar to the MPWSP, because of the temporary nature of construction jobs and the size of the regional construction workforce, it is expected that the construction workforce in Monterey, San Benito, and Santa Cruz Counties would meet labor demands associated with construction of

Alternative 1 and the cumulative projects. Therefore, there would be no significant cumulative impact on population and housing from construction of cumulative projects. Even if cumulative construction projects were to lead to population and housing effects by attracting some workers to move to the area from outside the region, such moves, and associated effects, would likely be temporary. Similar to the MPWSP, the contribution of Alternative 1 would not in any event be significant because of the small number of construction workers required and the short duration of the construction period. Therefore, the contribution of Alternative 1 construction would be less than significant.

As described for the MPWSP, workers in the region are expected to meet labor demands associated with operation of Alternative 1 and the cumulative projects due to the size of the regional work force, current unemployment rates in Monterey, San Benito, and Santa Cruz counties, and the size of the currently unemployed workforce. Similar to the proposed MPWSP, even if the population and housing effects induced by operation of cumulative projects were significant, Alternative 1 would not have a cumulatively significant contribution to any such effect due to the small operational workforce it would require.

5.5.19.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to Castroville Community Services District would not be implemented. The open water intake system and the additional 6.5 miles of source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**).

Construction Impacts

For the same reasons stated above for Alternative 1, the direct growth-inducing impact of Alternative 2 construction would be of the same as the proposed project. Although this alternative may involve some workers with different construction skills, it is expected that, like the proposed project, workers having the requisite skills would be drawn from the local and regional labor pool, and impacts would be less than significant. Therefore, Alternative 2 would result in the same ***impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

For the same reasons stated above for Alternative 1, the direct growth-inducing impact of Alternative 2 operations and facility siting would be the same as the proposed project. Components unique to this alternative, including the source water pipeline, intake system, and intake pump station, would be located underground, underwater, or in a previously disturbed industrial area and would not displace people or housing. Therefore, Alternative 2 would result in the same ***impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 2 would have a less than significant impact related to the displacement of housing units or people it would not cause or contribute to a cumulative impact associated with the displacement of housing or people that would necessitate the construction of replacement housing.

For the same reasons stated above for Alternative 1, Alternative 2 would not have a significant contribution to a cumulative impact related to population and housing.

5.5.19.6 Direct and Indirect Effects of Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The pipelines for the intake and discharge systems would be installed using HDD. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**).

Construction Impacts

The direct growth-inducing impact of Alternative 3 construction would be greater than the proposed project because it would involve considerably more construction. Further, this alternative would be designed to provide desalinated product water to other areas besides the

Monterey Peninsula, potentially including the city of Salinas and other areas in northern Monterey County and Santa Cruz County, and would, therefore, also include construction of product water pipelines to those areas. This alternative would require specialized construction skills different from those of the proposed project.

Although construction of this alternative would take longer than the proposed project and would involve a larger construction workforce, the substantial pool of construction workers in Monterey County and the three-county region would meet the demand for construction labor and the direct growth inducing impact of Alternative 3 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

The direct growth-inducing impact of Alternative 3 operations would be greater than the proposed project because operations would require a substantially larger workforce due to the proposed data center. Alternative 3 components would be located underground, underwater, or within existing industrial areas and would have no impact related to the displacement of people or housing. According to information provided by the project proponent, the data center would require 20 regular employees for each shift, with three shifts per day, seven days per week, and that contracted staff and client visitors could add up to 20 additional people during any 8-hour shift, 10 of which are assumed to be contracted staff, bringing the total number of regular and contract employees to 30 each shift, or 90 employees per day. Assuming a five-day, 40-hour work week, staffing requirements would equal 90 full time employees during the work week and 36 full-time-equivalent employees for weekend shifts.[11] Thus, operation of the data center would require about 126 full-time-equivalent employees per week, and staffing needs for data center and desalination plant operations combined would total about 144 permanent workers, substantially greater than the 25 to 30 needed for the proposed project. As discussed under Impact 4.19-C in Section 4.19, Population and Housing, the three counties in the region have a substantial labor force and recent unemployment rates that exceeded the state and national average, suggesting the availability of workers to fill new jobs. The existing labor force would, therefore, be expected to meet a substantial portion of the labor demand associated with Alternative 3 operations. In addition, the Association of Monterey Bay Area Governments (AMBAG) projects that up to 64,000 jobs will be added in the three county region between 2010 and 2035. Therefore, the jobs provided by Alternative 3 would not exceed job growth anticipated for the region and while Alternative 3 would have an increased potential for direct growth inducing impacts it would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 3 would have no impact related to the displacement of housing units or people it would not cause or contribute to a cumulative impact associated with the displacement of housing or people that would necessitate the construction of replacement housing.

[11] This estimate of full-time-equivalent staff is based on 90 employees working 16 hours per week compared to a full time 40-hour work week.

For the same reasons stated above for Alternative 1, Alternative 3 would not have a significant contribution to a cumulative impact related to the construction workforce in Monterey, San Benito, and Santa Cruz Counties.

Similar to the MPWSP, it is expected that workers in the region would largely meet labor demand associated with operation of Alternative 3 and the cumulative projects, due to the size of the regional work force, current unemployment rates in Monterey, San Benito, and Santa Cruz counties, and the size of the currently unemployed workforce. Although this alternative would have a substantially larger operational workforce than the MPWSP, the number of jobs it would provide is less than 1 percent of the jobs AMBAG projects will be added in Monterey County between 2010 and 2020. Therefore, even if the population and housing induced by operation of cumulative projects were significant, Alternative 3 would not have a significant contribution to such an effect because of the small number of jobs it would provide relative to the unemployed labor force and anticipated job growth in the county. Therefore, the impact would be less than significant.

5.5.19.7 Direct and Indirect Effects of Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water that originated from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**).

Construction Impacts

For the same reasons as Alternative 3, the direct growth-inducing impact of Alternative 4 construction would be similar to that of the proposed project, with a much larger construction footprint. Construction of this alternative may take somewhat longer, involve a somewhat larger workforce, and include some workers with different construction skills. However, similar to the proposed project, it is expected that demand for construction labor would substantially be met by workers drawn from the local and regional labor pool, and the direct growth inducing impact would be less than significant. Therefore, Alternative 4 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

The direct growth-inducing impact of Alternative 4 operations and facility siting would be similar to that of the proposed project because Alternative 4 would have similar workforce requirements that would be drawn from the local and regional labor pool, and impacts would be less than significant. Alternative 4 components, including the intake system, intake pump station, desalination plant, and product water pipeline, would be located underground, under water, or within existing industrial areas, and would not displace people or housing and there would be no impact. Therefore, Alternative 4 would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 4 would have no impact related to the displacement of housing units or people it would not cause or contribute to a cumulative impact associated with the displacement of housing or people that would necessitate the construction of replacement housing.

For the same reasons stated above for Alternative 1, Alternative 4 would not have a significant contribution to a significant cumulative impact related to population and housing.

5.5.19.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Construction Impacts

The direct growth-inducing impact of Alternative 5a and 5b construction would be similar to that of the proposed project and Alternative 1, respectively. The construction period for the intake slant wells would be shorter than under the MPWSP because fewer wells would be constructed. The construction period for the smaller desalination plant may also be somewhat shorter, although this difference is expected to be minor because both the 9.6-mgd and 6.4-mgd plants would require the same basic components. As under the proposed project, it is expected that construction workers would be drawn from the local and regional labor pool, and therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Operational and Facility Siting Impacts

Workforce requirements for operation of Alternative 5a and 5b would be similar to those of the proposed project and Alternative 1, respectively; a small number of additional workers would be

needed for operating the desalination plant. Similar to the proposed project, it is likely that existing plant operators would be retrained to operate the 6.4-mgd desalination facility, or operators would be drawn from the local and regional labor pool and the direct growth inducing impact would be less than significant. Like the proposed project, this alternative would have no impacts related to the displacement of housing or people because the desalination plant and other facilities would be sited at the same locations as the proposed project facilities, and would not displace housing or people. Therefore, Alternatives 5a and 5b would result in the ***same impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

Because Alternative 5a and 5b would have no impact related to the displacement of housing units or people it would not cause or contribute to a cumulative impact associated with the displacement of housing or people that would necessitate the construction of replacement housing.

For the same reasons stated above for Alternative 1, Alternative 5 would not have a significant contribution to a significant cumulative impact related to population and housing. Considered in combination with the impacts of the GWR Project (No. 59 in **Table 4.1-2** in Section 4.1), the construction and operational workforces would not be substantial in relation to the regional work force and current unemployment rates, and would not result in a significant contribution to a significant cumulative effect.

5.5.20 Socioeconomics and Environmental Justice

As described in Section 4.20, Socioeconomics and Environmental Justice, under NEPA, a federal lead agency must consider social and economic effects if they are related to a proposed project's natural or physical effects. Consequently, federal agencies must analyze a proposed project's economic and social impacts resulting from any natural or physical effects on the environment. Furthermore, Executive Order (EO) 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations.

As also described in Section 4.20, a CEQA Lead Agency may use information about the economic or social impacts of a project to determine the significance of physical changes caused by the project, but the economic or social effects of a project are not treated as significant effects on the environment. Additionally, CEQA does not use the term "environmental justice" or require the evaluation of impacts on minority or low-income communities in the way required by EO 12898. The ways in which disproportionate environmental burdens (e.g., on sensitive receptors) are addressed in this EIR/EIS are described in Section 4.20. Consistent with that discussion, significance determinations in this section do not apply to the CEQA analysis. Rather, the conclusions in this section are relevant only to the NEPA analysis of the proposed project and alternatives.

5.5.20.1 Setting/Affected Environment

Introduction

The socioeconomics and environmental justice setting/affected environment for alternatives would be similar to that described for the proposed project in Section 4.20, Socioeconomics and Environmental Justice. As is the case for the proposed project, each of the alternatives requires the evaluation of impacts on socioeconomic factors including regional employment and economics and specific effects on regionally important sectors like tourism, education, and research; and on environmental justice, which considers disproportionate environmental or human health impacts on minority and low-income communities. For all alternatives, potentially affected communities include the same as identified for the proposed project: Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, Seaside, Castroville, and Marina. This alternatives analysis describes one additional community: Moss Landing. Socioeconomic effects are by nature regionally influential. While the socioeconomic setting herein is presented on a community-level basis within Monterey County, it should be noted that residual impacts have the potential to occur in other nearby counties as well, such as San Benito and Santa Cruz. With the exception of Moss Landing, descriptions of the environmental setting and regulatory framework for all of the aforementioned communities are provided in Section 4.20 of this EIR/EIS.[12] The environmental setting relevant to Moss Landing is described below.

[12] Some information, including values pertaining to populations by category for regional places such as Monterey County and the State of California, is repeated from Section 4.20. This information is cited in Section 4.20.

Socioeconomics

Employment

Key employment data include the number of employable residents (i.e., the available labor force) and the number of job opportunities (i.e., employment) within a community. **Table 5.5-14** shows labor force and unemployment data for Moss Landing Census Designated Place (CDP), Monterey County, and the State of California (as cited in Section 4.20).

TABLE 5.5-14
LABOR FORCE AND UNEMPLOYMENT RATE FOR MOSS LANDING
(2015 ANNUAL AVERAGE)

Jurisdiction	Labor Force[a]	Unemployment Rate[b]
Moss Landing CDP[c]	200	23.4%
Monterey County	221,400	8.1%
State of California	19,100,900	5.4%

NOTES:
[a] EDD provides rounded labor force numbers, but calculates the unemployment rate before rounding.
[b] Not seasonally adjusted.
[c] Since Moss Landing is unincorporated, data shown are for Moss Landing CDP.

SOURCE: EDD, 2016

The Association of Monterey Bay Area Governments (AMBAG) does not provide data or estimates for unincorporated Moss Landing, and no other recent source of the estimated number of jobs in Moss Landing was identified. There are numerous marine research, industrial, recreational, retail, hospitality, and service industry employers in Moss Landing.

Regionally Important Economic Sectors

The Monterey County Board of Supervisors has adopted four economic "pillars" as potential opportunities for the County Economic Opportunity Committee to facilitate economic and employment growth: agriculture, tourism, education, and research (Monterey County, 2016). These sectors are relevant to the analysis on a regional basis (Monterey County), and are discussed in that capacity in Section 4.20.1.1. For more information about these sectors, please refer to that discussion.

Environmental Justice

Minority Populations

The methodology for identifying minority populations is explained in Section 4.20.1.2. The affected environment for this environmental justice analysis consists of the areas in Monterey County that would be affected by the alternatives. For this analysis, a city-level assessment was performed to identify potential minority and/or low-income populations qualifying as communities of concern. **Table 5.5-15** presents the minority population and percentage for the Moss Landing CDP, which is bordered by Jetty Road, Potrero Road, and Highway 1. Elkhorn Slough is located within the northern area of the community.

TABLE 5.5-15
MINORITY POPULATION OF MOSS LANDING (2010-2014)

Jurisdiction	Total Population	Minority Population[a]	Minority Population Percentage
Moss Landing CDP	200	163	81.5%

NOTES:
[a] Includes all individuals other than non-Hispanic white.

SOURCE: U.S. Census Bureau, 2014a

For the reasons described in Section 4.20.1.2, because Moss Landing CDP has a minority population greater than 50 percent, it is considered to be a community of concern for environmental justice. Note that because this information is derived from the 2010-2014 American Community Survey, and due to the small population size in Moss Landing, the small sample sizes on which survey results are based result in a large margin of error. The 2010 Decennial Census indicates that the minority population in Moss Landing in 2010 was just 32.4 percent (U.S. Census Bureau, 2010a). However, for consistency with the most recent available information used in Section 4.20, and as a conservative approach to identifying potential minority populations, Moss Landing is assumed to have a minority population greater than 50 percent for purposes of this analysis.

Low-Income Populations

This analysis uses two methods for identifying communities of concern related to income levels, based on two sets of guidelines: CEQ guidance and California Regional Water Management Guidelines. Both of these methods are described in detail in Section 4.20.1.2. **Table 5.5-16** presents the median household incomes and the percentages of residents with household incomes below the poverty level for Moss Landing. Based on the threshold described in Section 4.20.1.2, a community with 17.3 percent or greater of individuals with family incomes below the federal poverty threshold would be identified as a low-income population for the purposes of this analysis. Moss Landing has an estimated 12.5 percent of individuals with family incomes below the federal poverty threshold, and is therefore not considered a low-income population based on this measurement.

TABLE 5.5-16
INCOME CHARACTERISTICS FOR MOSS LANDING (2010-2014)

Location	Median Household Income	Individuals with Family Income Below Poverty Level
Moss Landing CDP	$30,500	12.5%

SOURCE: U.S. Census Bureau, 2014b.

As shown in **Table 4.20-4** in Section 4.20, the State of California's median household income as reported by the 2010-2014 American Community Survey was $61,489. Therefore, based on the threshold described in Section 4.20.1.2, communities within potentially affected areas of Monterey County with a median income of less than $49,191 would be considered disadvantaged

communities. **Table 5.5-16** shows that as reported by the 2010-2014 American Community Survey, Moss Landing had a median income of less than $49,191. Therefore, Moss Landing is considered a "disadvantaged community" for purposes of this analysis. As noted above in the minority population discussion, the small sample sizes on which the American Community Survey results for Moss Landing are based result in a large margin of error. The Decennial Census does not report household income; however, past American Community Surveys have reported median household income for Moss Landing as high as $87,000 (U.S. Census Bureau, 2010b). For consistency with the most recent available information used in Section 4.20, and as a conservative approach to identifying potential minority populations, Moss Landing is assumed to be a disadvantaged community for purposes of this analysis.

Regulatory Framework

For Federal, State, and Local Regulations relevant to the community of Moss Landing, see Sections 4.20.2.1 through 4.20.2.3.

5.5.20.2 Direct and Indirect Effects of the Proposed Project -- Slant Wells at CEMEX

Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.

MPWSP construction activities and spending would result in temporary new local employment opportunities and increased spending on construction materials, equipment, and services. The proposed project would result in a direct, minor, beneficial economic impact on the Monterey County economy. Secondary economic effects could also result from subsequent "re-spending" by construction companies and materials suppliers that occurs when these companies spend their earnings from the projects at other businesses (i.e., a multiplier effect), and re-spending by employees of those companies.

Construction of the proposed project would not have adverse effects on the tourism, research, and education industries in Monterey County. Access for tourists to businesses or recreation may be temporarily impacted by pipeline construction, but implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), would reduce potentially significant impacts to a less-than-significant level.

The rate increase associated with the proposed project could represent an adverse economic impact on the spending power of some ratepayers in Monterey District, but would not be large enough to constitute a significant adverse effect on overall employment or business activity in Monterey County.

Operation of the proposed project would not affect access to tourism, education and research industries. Tourism relies on the recreation, retail and travel sectors, and would not be impacted by the proposed project. Overall, the impacts of operation would be less than significant.

Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.

Low-income and minority populations include all or portions of Sand City, Seaside, Castroville, Monterey (downtown), and Marina. Although several minority and low-income communities would experience higher emissions than would other communities (due to the amount of construction contributing to the estimate of maximum daily emissions near each community), emissions from construction would not result in substantial adverse health effects because they would be temporary and would not exceed applicable thresholds. Therefore, the project would not result in a disproportionately high and adverse impact on minority and/or low-income communities, and the impact would be less than significant. Additionally, implementation of **Mitigation Measures 4.10-1a** through **4.10-1d** would reduce project construction emissions further.

Combined operational emissions near minority and low-income populations would not exceed any of the thresholds derived from applicable air quality plans; therefore, operational emissions would not be expected to adversely affect the communities' health. In addition, the proposed project would result in higher water rates for most ratepayers in the district served by the project, including low-income populations in Sand City, Seaside, and downtown Monterey. Such increases could have an adverse impact on low-income communities which could be disproportionately high, and thus significant. However, CalAm's low-income assistance and water conservation assistance programs would reduce the burden of increased prices on low-income households in the Monterey District to the extent practicable. In addition, California Public Utility Commission oversight includes provisions for implementing the lowest possible rate for service consistent with reliable and safe service levels for residential and small commercial customers, in particular. Therefore, this impact would be less than significant.

CCSD serves Castroville, a minority and low-income community outside of CalAm's Monterey District. The proposed project would provide a minor beneficial effect for this community since the CCSD would receive higher quality water via the Castroville Pipeline than the current supply from groundwater pumping in the Salinas Valley Groundwater Basin.

Impact 4.20-C: Cumulative impacts related to socioeconomics and environmental justice.

The proposed project would have a net positive contribution to cumulative impacts related to economic and employment effects on communities benefitting from proposed project construction and operation. The proposed project's contribution to cumulative impacts related to localized emissions during construction and operation would be less than significant. The proposed project would not contribute to a cumulative impact related to long-term increases in water rates for ratepayers.

5.5.20.3 Direct and Indirect Effects of the No Project Alternative

Under the No Project Alternative, it would not be possible to meet the proposed project objectives, and reliance on existing and planned water conservation and recycling programs would continue. Because no new facilities would be constructed but the test slant well would be decommissioned, short-term construction impacts (including construction air quality effects) on

the health of environmental justice communities identified in Section 4.20 would be minimal. This alternative would not provide the local and regional economic benefits of project construction. No temporary new local employment opportunities or increased spending on construction materials, equipment, and services would occur. The State Revolving Fund debt and public financing would not be implemented under the No Project Alternative and, therefore, any short-term economic benefit potentially offered by low-cost financing would not occur. Employment, important economic sectors, and minority and low-income communities would not experience adverse short-term construction-related impacts.

Regarding long-term impacts, the lack of water supply would adversely affect the region's economic vitality. The reduction of available water supply by almost 40 percent could lead to water shortages throughout the CalAm Monterey District service area, impacting all economic sectors, including the County's "four pillars" – agriculture, tourism, education, and research, by substantially reducing the reliability of water resources and water infrastructure.

As described in Section 5.4.2, it is assumed that the limited amount of available supplies under the No Project Alternative would trigger Stage 3 Conservation Rates, and possibly Stage 4 Rationing Measures, under MPWMD's 2016 Monterey Peninsula Water Conservation and Rationing Plan (Conservation and Rationing Plan) (MPWMD, 2016). The subsections below describe the economic impacts of each stage of conservation and rationing.

Stage 3, Conservation Rates

Within CalAm's Monterey District, two conservation water rate increases would occur, as described in the Conservation and Rationing Plan. Under Level 1 Conservation Rates, a 25 percent surcharge would be implemented on existing rates for a minimum of 3 months. If Stage 3 has not been lifted after 3 months, Level 2 Conservation Rates would increase the surcharge to 40 percent. These surcharges would not apply to Tier 1 Residential water use, the first tier in the water rate structure. However, for residences using more than their Tier 1 amount, and for all businesses, these surcharges would increase monthly water costs while Stage 3 Conservation Rates are in place, potentially resulting in adverse economic impacts as customers would have less available for spending on other types of purchases. Additionally, these surcharges could disproportionately affect low-income populations within the Monterey District (i.e., Sand City, Seaside, and downtown Monterey) because the increase in water costs as a result of the surcharges may be disproportionately high relative to their incomes compared to non-low-income populations.

Stage 4, Rationing Measures

Stage 4 would take effect if Stage 3 is deemed unsuccessful after 8 months, or if directed by a governmental or regulatory agency. Under Stage 4, mandatory reductions resulting in water rationing and additional prohibitions would be implemented. Residential rations would consist of incremental allowances based on persons per household, and additional allowances could only be granted through completion and approval of an application. Non-residential water rations would also be implemented if residential water rationing does not achieve measurable results as expected after a period of 6 months. Additional rationing measures could include prohibition of non-essential water uses, a moratorium on accepting water permit applications, no new temporary

or permanent potable water service, suspension of annexations to CalAm's service area, ending the use of portable water meters or hydrant water meters, restrictions on draining and refilling of swimming pools, and restrictions on watering and irrigating.

Under Stage 4, the regional economy would experience adverse economic impacts in important sectors such as agriculture, tourism and hospitality, education, and research. While businesses that require water in the course of their business practice, such as laundromats or nurseries, would be exempt from non-residential rationing, non-exempt businesses in several economic sectors would experience the adverse effects of rationing. Restaurants, hotels, and other establishments in the tourism and hospitality industry would be required to cut back on landscaping and change their amenities to accommodate restrictions. Manufacturing activities, commercial farms, and research facilities depend on water for operations and maintenance. The restrictions on new connections would slow or halt economic development as new residences, commercial projects, or industrial facilities could not procure water sources and therefore would not be permitted or built. This would result in a loss in employment opportunities and in commercial property values.

Also at Stage 4, all non-exempt residential customers would experience enforced water rationing. This could adversely affect residential property values in the Monterey District, resulting in economic loss to current residents. While no formal economic modeling has been conducted to quantify these economic effects, stakeholders have recognized the economic and public health implications of the water supply shortage under the No Project Alternative. As quoted in the CDO, the Monterey County Hospitality Association contends that "A marked substantial reduction in the quantity of water …would, in all likelihood, affect the number of visitors that can be served by the hospitality industry and the economy of the area" (SWRCB, 2009). The MPWMD echoes the same sentiment in a 2009 letter that states that imposing a moratorium (as included under Stage 4, Rationing Measures) "would force further economic stagnation upon the region, and can result in harm to the health and safety of the community" (MPWMD, 2009). Impacts of Stage 3 conservation and Stage 4 rationing measures on the rate of employment, total income, or business activity in Monterey County, as well as on low-income populations, would be significant, and no feasible mitigation is available to reduce these impacts to less than significant. Therefore, socioeconomic and environmental justice impacts of the No Project Alternative would be significant and unavoidable.

In summary, with respect to reductions in the rate of employment, total income, or business activity in Monterey County, the No Project Alternative would result in an ***increased impact conclusion*** compared to the project as a result of implementation of Stage 3 conservation and Stage 4 rationing measures; significant and unavoidable. With respect to disproportionately high and adverse effects on low-income or minority populations, the No Project Alternative would avoid construction impacts on these populations, but would nonetheless result in an ***increased impact conclusion*** compared to the project as a result of implementation of Stage 3 conservation and Stage 4 rationing measures and their potential to cause disproportionately high and adverse economic effects on low-income populations; significant and unavoidable.

As described in Section 5.4. 2, the GWR Project (No. 59 in **Table 4.1-2**) would supply some water to CalAm to serve the Monterey District, but would not supply enough to avoid the need

for above-described conservation and rationing measures. In addition to the significant and unavoidable impact the No Project Alternative would cause with respect to reductions in the rate of employment, total income, or business activity in Monterey County, the GWR Project would cause rates to increase in the Monterey District, resulting in a potentially significant cumulative economic impact.

5.5.20.4 Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road

Alternative 1 would supply water to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using the same type of subsurface intake system as the proposed project, but at a different location (described in Section 5.4.3). The desalination plant, brine discharge pipeline, Castroville Pipeline, Pipeline to CSIP Pond, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. The location of the slant wells at Potrero Road and the longer source water pipeline are the components unique to Alternative 1 (see **Figure 5.4-1**). Therefore, the analysis of socioeconomic and environmental justice impacts of Alternative 1 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 1.

Socioeconomics

Compared to the proposed project, the type and intensity of Alternative 1 socioeconomic impacts would be the same. In the community of Moss Landing, where the intake facilities would be constructed at Potrero Road, some localized re-spending effects could occur if temporary construction workers spend some of their earnings near the Potrero Road site (e.g., on lunches, gasoline, etc.). Like the proposed project, construction of Alternative 1 would have a direct, minor, beneficial economic impact on the Monterey County economy and potentially in nearby counties such as San Benito and Santa Cruz counties.

For the same reasons described in Section 4.20.5.1, construction of Alternative 1 components that are the same as the proposed project would not have adverse effects on the tourism, research, and education industries in Monterey County. Potentially significant impacts related to disrupted access to local businesses would be similar to those described for the proposed project and would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**).

No offshore construction is proposed and construction of the Alternative 1 components would not interfere with any research or tourism activities being conducted along the coast. No monitoring activities were identified as occurring close enough to proposed construction for these activities to be affected (SIMoN, 2016). No impacts on educational facilities would occur.

Operation and maintenance of Alternative 1 would result in the same minimal impacts on socioeconomics as the proposed project, as described in Section 4.20. The same long-term increase in future water prices for water consumers described in Section 4.20.5.1 would occur.

Overall, Alternative 1 would result in the ***same impact conclusion*** as the proposed project with respect to impacts on the rate of employment ant total income and business activity in Monterey County, less than significant with mitigation.

Environmental Justice

Impacts from the components that are common with the proposed project would be identical to those described in Section 4.20.5.2. Health effects resulting from decreased air quality from construction would be location-specific. As a result of the different location of the slant wells and source water pipeline, construction emissions associated with these components would occur in Moss Landing, which is identified as a minority population and disadvantaged community. However, construction emissions would be reduced in Marina, which is also an identified minority and low-income population, because only the new Desalinated Water Pipeline and a smaller portion of the alternative source water pipeline would be constructed near Marina. As described in Section 4.20.5.2, the emissions from these components would not result in substantial adverse health effects because they would be temporary and would not exceed applicable thresholds. Therefore, because construction of Alternative 1 components would not result in substantial adverse effects, this alternative would not result in a disproportionately high and adverse impact on minority and/or low-income communities, and the impact of Alternative 1 construction would be less than significant. Additionally, implementation of **Mitigation Measures 4.10-1a** through **4.10-1d** would reduce project construction emissions further; however, the impact would be less than significant regardless.

During operation the same long-term increase in future water prices for water consumers described in Section 4.20.5.1 would occur. Castroville, a disadvantaged community, would experience minor beneficial effects from Alternative 1 in the same way it would under the proposed project, as described in Section 4.20.5.1.

Overall, Alternative 1 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope for the cumulative impact analysis of socioeconomics is the same as that described for the proposed project, plus the additional community of Moss Landing. The contributions of Alternative 1 to cumulative socioeconomic impacts also would be similar to those of the proposed project described in Impact 4.20-C. No communities in the vicinity of Alternative 1 would experience negative socioeconomic impacts resulting from construction. Access for consumers to some businesses may be temporarily affected, which may result in a significant impact on business activity, but implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), would minimize the influence of such effects on the tourism industry, reducing them to a less-than-significant level, and no other projects in the cumulative scenario are likely to overlap in time and location with these potential disruptions. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to socioeconomics, less than significant with mitigation.

The geographic scope for the cumulative impact analysis of environmental justice includes the minority and low-income populations identified in **Tables 4.20-4** and **4.20-5** (i.e., Seaside, Marina, Castroville, and Sand City, and one census tract in downtown Monterey), plus the additional community of Moss Landing, identified as a minority population and disadvantaged community. The contributions of Alternative 1 to cumulative environmental justice impacts would be similar to those identified in Impact 4.20-C for the proposed project, except that Alternative 1 would result in less construction in and near Marina, reducing project-specific localized air pollution near that community, but would instead move construction of the subsurface slant wells and source water pipeline near the Moss Landing community. When combined with other construction projects listed in **Table 4.1-2** in Section 4.1, including one additional project that may have the potential to result in overlapping air quality impacts – the DeepWater Desal Project (No. 34) – the cumulative localized emissions could be increased compared to Alternative 1 alone. Although cumulative impacts could be significant if other projects resulted in emissions that exceeded significance thresholds, the localized emissions of Alternative 1 components would not be significant. Therefore, for the same reasons described in the air quality analysis in Section 4.10.6, the contribution of Alternative 1 to cumulative impacts at these locations would be less than significant. With regard to operational effects, such emissions would be negligible. Alternative 1 would have the same potential contribution to rate increases in CalAm's Monterey District, and the cumulative scenario affecting rates would be identical to that described for the proposed project. Therefore, Alternative 1 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to environmental justice, less than significant.

5.5.20.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing

Alternative 2 would supply seawater to the proposed 9.6 mgd desalination plant located at the Charles Benson Road site using a screened open-water intake system consisting of an intake structure located offshore in MBNMS and southwest of the Moss Landing Harbor entrance, a subsurface intake pipeline, and an intake pump station (described in Section 5.4.4). The desalination plant, brine discharge pipeline, new Desalinated Water Pipeline, new Transmission Main, ASR components, Highway 68 interconnection improvements, and the Carmel Valley Pump Station would be identical to the proposed project described in Chapter 3, Description of the Proposed Project. Because the open water intake would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the Castroville Pipeline, the Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The open water intake system in Moss Landing and the longer source water pipeline are the components unique to Alternative 2 (see **Figure 5.4-2**). Therefore, the analysis of socioeconomic and environmental justice impacts of Alternative 2 focuses primarily on the locations for the intake system and source water pipelines that are different from the proposed project; however, impact conclusions are made for the whole of Alternative 2.

Socioeconomics

The type and intensity of Alternative 2 socioeconomic impacts would be similar to the proposed project, except for in the community of Moss Landing where the intake facilities would be constructed, where some localized re-spending effects could occur if temporary construction workers spend some of their earnings near the Potrero Road site (e.g., on lunches, gasoline, etc.). Like the proposed project, construction of Alternative 2 would have a direct, minor, beneficial economic impact on the Monterey County economy and potentially in nearby counties such as San Benito and Santa Cruz counties.

For the same reasons described in Section 4.20.5.1, construction of Alternative 2 would not have adverse effects on the tourism, research, and education industries in Monterey County. Potentially significant impacts related to disrupted access to local businesses would be similar to those described for the proposed project and would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**).

Offshore construction of the open-water intake facility would not interfere with any research activities being conducted along the coast. No impacts on educational facilities would occur.

Operation and maintenance of Alternative 2 would result in the same minimal impacts on socioeconomics as the proposed project, as described in Section 4.20. The same long-term increase in future water prices for water consumers described in Section 4.20.5.1 would occur.

Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project with respect to impacts on the rate of employment ant total income and business activity in Monterey County, less than significant with mitigation.

Environmental Justice

Health effects resulting from decreased air quality from construction would be location-specific. Impacts from the components that are common with the proposed project would be identical to those described in Section 4.20.5.2. As a result of the different location of the intake and source water pipeline, construction emissions associated with these components would occur in Moss Landing, which is identified as a minority population and disadvantaged community. However, construction emissions would be reduced in Marina, which is also an identified minority and low-income population, because only the new Desalinated Water Pipeline and a smaller portion of the alternative source water pipeline would be constructed near Marina. Additionally, emissions would be reduced near Castroville, a disadvantaged community. Emissions from Alternative 2 components would not result in substantial adverse health effects because they would be temporary and would not exceed applicable thresholds. Therefore, because construction of Alternative 2 components would not result in substantial adverse effects, this alternative would not result in a disproportionately high and adverse impact on minority and/or low-income communities, and the impact of Alternative 2 construction would be less than significant. Additionally, implementation of **Mitigation Measures 4.10-1a** through **4.10-1d** would reduce project construction emissions further; however, the impact would be less than significant regardless.

During operation, a long-term increase in future water prices for water consumers would occur; however, the extent of the increase is not yet known. Castroville, a disadvantaged community, would not experience the minor benefit related to improved water quality from Alternative 2 in the same way it would under the proposed project, as described in Section 4.20.5.1, because Alternative 2 would not return water to the CCSD.

Overall, Alternative 2 would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

The geographic scope for the cumulative impact analysis of socioeconomics is the same as that described for the proposed project, plus the additional community of Moss Landing. The contributions of Alternative 2 to cumulative socioeconomic impacts also would be similar to those of the proposed project described in Impact 4.20-C. No communities in the vicinity of Alternative 2 would experience negative socioeconomic impacts resulting from construction. Access for consumers to some businesses may be temporarily affected, which may result in a significant impact on business activity, but implementation of **Mitigation Measure 4.9-1**, Traffic Control and Safety Assurance Plan, would minimize the influence of such effects on the tourism industry, reducing them to a less-than-significant level, and no other projects in the cumulative scenario are likely to overlap in time and location with these potential disruptions. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to socioeconomics, less than significant with mitigation.

The geographic scope for the cumulative impact analysis of environmental justice includes the minority and low-income populations identified in **Tables 4.20-4** and **4.20-5** (i.e., Seaside, Marina, Castroville, and Sand City, and one census tract in downtown Monterey), plus the additional community of Moss Landing, identified as a minority population and disadvantaged community. The contributions of Alternative 2 to cumulative environmental justice impacts would be similar to those identified in Impact 4.20-C for the proposed project, except that Alternative 2 would result in less construction in and near Marina and Castroville, reducing project-specific localized air pollution near those communities, but would result in more construction near the Moss Landing community as a result of the open water intake and alternative source water pipeline construction. When combined with other construction projects listed in **Table 4.1-2** in Section 4.1, including two additional projects that may have the potential to result in overlapping air quality impacts – the DeepWater Desal Project (No. 34) and the specific construction projects in the Moss Landing Community Plan (No. 37) – the cumulative localized emissions could be increased compared to Alternative 2 alone. Although cumulative impacts could be significant if other projects resulted in emissions that exceeded significance thresholds, the localized emissions of Alternative 2 components would not be significant. Therefore, for the same reasons described in the air quality analysis in Section 4.10.6, the contribution of Alternative 2 to cumulative impacts at these locations would be less than significant. With regard to operational effects, such emissions would be negligible. Alternative 2 would have the same potential contribution to rate increases in CalAm's Monterey District, and the cumulative scenario affecting rates would be identical to that described for the proposed

project. Therefore, Alternative 2 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to environmental justice, less than significant.

5.5.20.6 Direct and Indirect Effects of Project Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)

Alternative 3 includes the construction and operation of a screened open ocean intake system and a brine discharge system located on the seafloor in Monterey Bay within MBNMS, subsurface pipelines connecting to these intake and discharge systems, a seawater desalination facility and co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services. The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline). Several components would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-3**, ASR 5 and 6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant and data center, open water intake system, brine discharge system, and the additional 31.5 miles of desalinated water pipeline are the components unique to Alternative 3 (see **Figure 5.4-3**). Therefore, the analysis of socioeconomic and environmental justice impacts of Alternative 3 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 3.

Socioeconomics

The type of socioeconomic impacts under Alternative 3 would be similar to the proposed project, except that most construction would occur in the community of Moss Landing. Construction would result in the same types of re-spending effects in Moss Landing as described for the proposed project, though increased because a larger workforce would be present in Moss Landing during construction of Alternative 3. Like the proposed project, construction of Alternative 3 would have a direct, minor, beneficial economic impact on the Monterey County economy and potentially in nearby counties such as San Benito and Santa Cruz counties.

For the same reasons described in Section 4.20.5.1, construction of Alternative 3 would not have adverse effects on the tourism, research, and education industries in Monterey County. Potentially significant impacts related to disrupted access to local businesses would be similar to those described for the proposed project and would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**).

Offshore construction of the open ocean intake facility would not interfere with any research activities being conducted along the coast. No impacts on educational facilities would occur.

Operation and maintenance of Alternative 3 would result in the same types of minimal impacts on socioeconomics as the proposed project, as described in Section 4.20, though impacts related to operation and maintenance of the desalination plant would occur closer to Moss Landing. Approximately the same long-term increase in future water prices for water consumers described in Section 4.20.5.1 would occur, with the potential for some variance based on the cost to CalAm to procure water from the Alternative 3 desalination plant. Future water prices for water consumers have not yet been determined for this alternative and will be evaluated in the EIR/EIS being compiled for the DeepWater Desal Project.

Overall, Alternative 3 would result in the ***same impact conclusion*** as the proposed project with respect to impacts on the rate of employment ant total income and business activity in Monterey County, less than significant with mitigation.

Environmental Justice

Health effects resulting from decreased air quality from construction would be location-specific. Impacts from the components that are common with the proposed project would be identical to those described in Section 4.20.5.2. Emissions would be reduced near Marina and Castroville. However, construction emissions associated with the desalination plant, data center, intake and discharge systems, and related facilities would be greater than the emissions related to the proposed project desalination plant due to the increased number of concurrent construction efforts in the same general location, and these facilities would be located near Moss Landing, an identified minority population and disadvantaged community. As described in Section 5.5.10.6, it is not currently known how construction of these facilities would proceed; however, if the data center and/or cooling system were constructed concurrently with the desalination facility, the combined daily emissions of these facilities near Moss Landing would exceed the MBUAPCD threshold for PM_{10} emissions. Unlike the proposed project, this impact would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, the Alternative 3 construction-related impact would be significant and unavoidable, even with mitigation.

Operation and maintenance of Alternative 3 could result in a significant health risk associated with testing and exercising the emergency generators. This impact would occur near Moss Landing, and thus could have a disproportionately high and adverse impact on this community if the health risk were significant. However, as described in Section 5.5.10.6, the associated impact would not be significant if the generators were sited on the north side of the property away from the nearest residences. To ensure that the operational health risk impact would be reduced to a less-than-significant level, implementation of **Mitigation Measure ALT 3-AQ** in Section 5.5.10.6 would be required. Therefore, operation of Alternative 3 would result in an increased level of impact on sensitive receptors compared to the proposed project and would be less than significant with mitigation.

Castroville, a disadvantaged community, would not experience the minor benefit related to improved water quality from Alternative 3 in the same way it would under the proposed project, as described in Section 4.20.5.1, because Alternative 3 would not return water to the Castroville Community Services District.

Overall, Alternative 3 would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Cumulative Analysis

The geographic scope for the cumulative impact analysis of socioeconomics is the same as that described for the proposed project, plus the additional community of Moss Landing. The contributions of Alternative 3 to cumulative socioeconomic impacts also would be similar to those of the proposed project described in Impact 4.20-C. No communities in the vicinity of Alternative 3 would experience negative socioeconomic impacts resulting from construction. Access for consumers to some businesses may be temporarily affected, which may result in a significant impact on business activity, but implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**), would minimize the influence of such effects on the tourism industry, reducing them to a less-than-significant level, and no other projects in the cumulative scenario are likely to overlap in time and location with these potential disruptions. Therefore, Alternative 3 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to socioeconomics, less than significant with mitigation.

The geographic scope for the cumulative impact analysis of environmental justice includes the minority and low-income populations identified in **Tables 4.20-4** and **4.20-5** (i.e., Seaside, Marina, Castroville, and Sand City, and one census tract in downtown Monterey), plus the additional community of Moss Landing, identified as a minority population and disadvantaged community. The contributions of the components common to the proposed project and Alternative 3 (i.e., the pipelines south of the "Connection to CalAm" point, the ASR system, and the Carmel Valley Pump Station) to cumulative environmental justice impacts would be similarly minimal compared to those identified in Impact 4.20-C for the proposed project. Alternative 3 would result in less construction in and near Marina and Castroville, reducing but not eliminating localized air pollution near those communities. However, Alternative 3 would result substantial construction activity near the Moss Landing community as a result of construction of the desalination plant, data center, substation, intake and discharge systems, and related facilities in that location. As described above, this impact would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. When combined with other construction projects listed in **Table 4.1-2** in Section 4.1, including one additional project that may have the potential to result in overlapping air quality impacts – the Moss Landing Community Plan (No. 37) – the cumulative localized emissions could be increased compared to Alternative 3 alone. If overlapping construction were to occur, Alternative 3 would result in a significant contribution to a significant cumulative impact. This would be an ***increased level of impact*** compared to the proposed project, significant and unavoidable, even with mitigation.

5.5.20.7 Direct and Indirect Effects of Project Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)

Alternative 4 includes the construction and operation of an open ocean intake, a brine discharge system and pipelines, and supporting ballast rock located on the seafloor in Monterey Bay within MBNMS, as well as a 12 mgd desalination plant and associated facilities to provide 13,400 afy of water supply to meet the current and future needs of the Monterey Peninsula. Several components

would be identical to the proposed project: the new Transmission Main, new desalinated water pipeline south of the "Connection to CalAm" Point on **Figure 5.4-4**, ASR-5 and -6 wells and ASR pipeline, Highway 68 interconnection improvements, and Carmel Valley Pump Station would be as described in Chapter 3, Description of the Proposed Project. Because this alternative would have an open water intake that would eliminate the need for returning source water drawn from the Salinas Valley Groundwater Basin, the proposed project Castroville Pipeline, Pipeline to CSIP Pond, and operational components related to delivering water to CCSD would not be implemented. The desalination plant, open water intake system, brine discharge system, and the additional 6.5 miles of desalinated water pipeline are the components unique to Alternative 4 (see **Figure 5.4-4**). Therefore, the analysis of socioeconomic and environmental justice impacts of Alternative 4 focuses primarily on these components; however, impact conclusions are made for the whole of Alternative 4.

Socioeconomics

The type of socioeconomic impacts under Alternative 4 would be similar to the proposed project, except that most construction would occur in the community of Moss Landing. Construction would result in the same types of re-spending effects in Moss Landing as described for the proposed project, though increased because a larger workforce would be present in Moss Landing during construction of Alternative 4. Like the proposed project, construction of Alternative 4 would have a direct, minor, beneficial economic impact on the Monterey County economy and potentially in nearby counties such as San Benito and Santa Cruz counties.

For the same reasons described in Section 4.20.5.1, construction of Alternative 4 components that are the same as the proposed project would not have adverse effects on the tourism, research, and education industries in Monterey County. Potentially significant impacts related to disrupted access to local businesses would be similar to those described for the proposed project and would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.9-1** (**Traffic Control and Safety Assurance Plan**).

Offshore construction of the open-water intake facility would not interfere with any research activities being conducted along the coast. No impacts on educational facilities would occur.

Operation and maintenance of Alternative 4 would result in the same types of minimal impacts on socioeconomics as the proposed project, as described in Section 4.20, though impacts related to operation and maintenance of the desalination plant would occur closer to Moss Landing. Approximately the same long-term increase in future water prices for water consumers described in Section 4.20.5.1 would occur, with the potential for some variance based on the cost to CalAm to procure water from the Alternative 4 desalination plant. Future water prices for water consumers have not yet been determined for this alternative.

Overall, Alternative 4 would result in the ***same impact conclusion*** as the proposed project with respect to impacts on the rate of employment ant total income and business activity in Monterey County, less than significant with mitigation.

Environmental Justice

Health effects resulting from decreased air quality from construction would be location-specific. Impacts from the components that are common with the proposed project would be identical to those described in Section 4.20.5.2. Emissions would be reduced near Marina and Castroville. However, construction emissions associated with the desalination plant and intake and discharge facilities would be located near Moss Landing, an identified minority population and disadvantaged community. Due to the concentration of these facilities near Moss Landing, maximum daily emissions from construction near Moss Landing may exceed the state and/or federal standard for ozone, NO_2, and/or PM_{10}. This impact with respect to the ozone and NO_2 standards would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. With respect to the PM_{10} standards, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measures 4.10-1a** through **4.10-1d**. Therefore, construction of Alternative 4 could result in an increased level of impact compared to the proposed project, because the construction-related impact near a minority population and disadvantaged community may be significant and unavoidable, even with mitigation.

During operation, a long-term increase in future water prices for water consumers would occur; however, the extent of the increase is not yet known. Castroville, a disadvantaged community, would not experience the minor benefit related to improved water quality from Alternative 4 in the same way it would under the proposed project, as described in Section 4.20.5.1, because Alternative 4 would not return water to the CCSD.

Overall, Alternative 4 would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Cumulative Analysis

The geographic scope for the cumulative impact analysis of socioeconomics is the same as that described for the proposed project, plus the additional community of Moss Landing. The contributions of Alternative 4 to cumulative socioeconomic impacts also would be similar to those of the proposed project described in Impact 4.20-C. No communities in the vicinity of Alternative 4 would experience negative socioeconomic impacts resulting from construction. Access for consumers to some businesses may be temporarily affected, which may result in a significant impact on business activity and/or recreational access for tourists, but implementation of **Mitigation Measures 4.9-1**, would minimize the influence of such effects on the tourism industry, reducing them to a less-than-significant level, and no other projects in the cumulative scenario are likely to overlap in time and location with these potential disruptions. Therefore, Alternative 4 would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to socioeconomics, less than significant with mitigation.

The geographic scope for the cumulative impact analysis of environmental justice includes the minority and low-income populations identified in **Tables 4.20-4** and **4.20-5** (i.e., Seaside, Marina, Castroville, and Sand City, and one census tract in downtown Monterey), plus the additional community of Moss Landing, identified as a minority population and disadvantaged community. The contributions of the components common to the proposed project and

Alternative 4 (i.e., the pipelines south of the "Connection to CalAm" point, the ASR system, and the Carmel Valley Pump Station) to cumulative environmental justice impacts would be similarly minimal as compared to those identified in Impact 4.20-C for the proposed project. Alternative 4 would result in less construction in and near Marina and Castroville, reducing but not eliminating localized air pollution near those communities. However, Alternative 4 would result substantial construction activity near the Moss Landing community as a result of construction of the desalination plant, intake and discharge systems, and related facilities in that location. As described above, the impact associated with emissions of NOx would be significant and unavoidable even with implementation of **Mitigation Measures 4.10-1a** and **4.10-1b**. When combined with other construction projects listed in **Table 4.1-2** in Section 4.1, including two additional projects that may have the potential to result in overlapping air quality impacts – the DeepWater Desal Project (No. 34) and the Moss Landing Community Plan (No. 37) – the cumulative localized emissions could be increased compared to Alternative 4 alone. If overlapping construction were to occur, Alternative 4 would result in a significant contribution to a significant cumulative impact. This would be an ***increased level of impact*** compared to the proposed project, significant and unavoidable, even with mitigation.

5.5.20.8 Direct and Indirect Effects of Project Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)

Alternative 5a would include the intake system at the CEMEX site (the same location as the proposed project), but would include only seven subsurface slant wells (the converted test well and six new wells) and the same source water pipeline as the proposed project. Alternative 5b would include seven new wells at the western end of Potrero Road (the same location as Alternative 1) and the same source water pipeline as Alternative 1. Both Alternatives 5a and 5b would include a reduced-capacity desalination plant (6.4 mgd), and all other components would be the same as the proposed project.

Socioeconomics

The impacts of Alternatives 5a and 5b would be similar to those described for the proposed project and Alternative 1, respectively, though the economic and employment benefits would be reduced in proportion to the reduced size of the desalination plant and reduced number of subsurface slant wells. This would result in a decreased potential for beneficial socioeconomic effects because construction-related benefits would last an incrementally shorter period of time. With implementation of applicable mitigation for components common with the proposed project or Alternative 1 that may temporarily disrupt local businesses, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

Environmental Justice

The impacts of Alternatives 5a and 5b would be similar to those described for the proposed project and Alternative 1, respectively, though the air pollution-related adverse impacts on minority and low-income populations would be reduced in proportion to the reduced size of the desalination plant and reduced number of subsurface slant wells. This would result in a decreased potential for disproportionately high and adverse effects because some construction activities

would be reduced in duration; however, because they would not increase emissions compared to the less-than-significant local emissions under the proposed project or Alternative 1, Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project, less than significant.

Cumulative Analysis

Combined Impacts with GWR Project

For the same reasons described for the proposed project and Alternative 1, Alternatives 5a and 5b would result in minimal beneficial contributions to cumulative economic and employment effects. However, as described above, the magnitude of impacts of Alternatives 5a and 5b would be reduced compared to the proposed project and Alternative 1, respectively. The addition of the GWR Project (No. 59) described in **Table 4.1-2** in Section 4.1 to the cumulative scenario for Alternative 5 would have a minimal effect on overall cumulative impacts. Combined, the GWR Project and Alternative 5 would have an increased beneficial contribution to cumulative economic and employment effects as a result of the construction of two separate projects. Similarly, the combination of these projects would increase adverse contributions to air pollution-related cumulative impacts on minority and low-income populations during construction compared to Alternative 5 alone. These contributions to overall cumulative impacts would be temporary. The combination of Alternative 5 and the GWR Project may result in greater long-term future rate increases for CalAm ratepayers due to the increased overall cost of these projects in combination.

Impacts of Full Cumulative Scenario

As stated above, the addition of the GWR project – the only other project reasonably foreseeable in the Alternative 5 cumulative scenario compared to that of the proposed project or Alternative 1 – would have a minimal effect on socioeconomic and environmental justice impacts. Therefore, the cumulative impacts under Alternatives 5a and 5b, and the contributions of Alternatives 5a and 5b, would be similar to those described for the proposed project and Alternative 1, respectively. Alternatives 5a and 5b would result in the ***same impact conclusion*** as the proposed project for cumulative effects related to socioeconomics (less than significant with mitigation) and environmental justice (less than significant).

5.5.20.9 References

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U.S. Census Bureau, 2014a. DP05 ACS Demographic and Housing Estimates; 2010-2014 American Community Survey 5-Year Estimates; selected geographies.

U.S. Census Bureau, 2014b. DP03 Selected Economic Characteristics; 2010-2014 American Community Survey 5-Year Estimates; selected geographies.

5.5.21 Growth Inducement

This section describes the potential for the provision of water supply to indirectly induce growth: would implementation of the proposed project or alternatives directly or indirectly cause economic or population growth or residential construction? The potential for direct and/or indirect impacts on population and housing, including the potential to result in the need for additional workforce to support construction and operations is addressed in Section 4.19 for the proposed project and Section 5.5.19 for alternatives. The topic of indirect growth inducement related to the proposed project is fully addressed in Section 6.3 and summarized below.

5.5.21.1 Setting/Affected Environment

This section evaluates the indirect growth inducing impacts of the water supply that would be provided by the alternatives. As discussed in Section 6.3, a water supply project – such as the MPWSP and the "project" alternatives considered here – would be considered growth inducing if it removed water supply limitations as an obstacle to growth. Refer to Section 5.5.18, Population and Housing, for analysis of the alternatives' direct growth inducing impacts. Since an alternative would only supply water to customers once the alternative was operational, there would be no indirect growth inducing impacts during the construction phase. Therefore, construction phase impacts are not considered further in this section.

The environmental setting/affected environment for Alternatives 1, 2, 4, and 5 consists of the areas that would be served by the alternatives– CalAm's Monterey District service area (Monterey District); Alternative 3 would also serve other areas of Monterey County as well as Santa Cruz County.

5.5.21.2 Indirect Growth Inducing Effects of The Proposed Project

To determine the MPWSP's potential to indirectly induce growth, the proposed project was evaluated for its potential to stimulate additional housing development and the need for services as a result of increasing available water supply and providing associated infrastructure improvements. As described in Chapter 2, Water Demand, Supplies, and Water Rights, CalAm proposes that the MPWSP provide, along with other supply sources, sufficient water supply to:

- meet existing annual service area demand;
- serve development that uses existing water entitlements held in the Pebble Beach-Del Monte Forest area;
- develop vacant legal lots of record; and
- support increased water consumption at local restaurants and lodging when tourism increases under improved economic conditions.

Table 5.5-17 summarizes the water demand CalAm proposes to meet with the MPWSP, along with existing and other planned water supply sources. The estimate of existing annual system demand, 12,270 afy, is based on demand in 2010.[13]

TABLE 5.5-17
MPWSP DEMAND ASSUMPTIONS

Demand Component	Annual Demand (acre-feet)
Existing Annual System Demand	12,270
Pebble Beach Water Entitlements	325
Hospitality Industry Rebound Economic Recovery	500
Legal Lots of Record	1,180
Total	**14,275**

SOURCE: RBF Consulting, 2013; Svindland, 2016.

Along with existing and other planned water supply sources, the MPWSP would provide up to 16,294 afy during the 25-year Seaside Groundwater Basin replenishment period; an additional 700 afy of Seaside Groundwater Basin supply would be available to the CalAm service area at the end of the replenishment period.[14] Of this 16,294 afy, 12,595[15] afy would serve existing annual service area demand and existing Pebble Beach water entitlements, and another 1,680 afy is proposed to meet anticipated future demand. This includes an estimated 250 afy associated with the local hospitality industry, absent new development, assuming increased economic activity. Thus, 12,845 afy would be used to meet demand associated with existing land uses and water entitlements and 1,430 afy would support new development.

Table 5.5-18 provides a breakdown of demand associated with existing and anticipated land uses assumed for the MPWSP. **Table 5.5-19** shows water supplies that would be available with the MPWSP, compared with the service area demands shown in **Table 5.5-18**, as well as two estimates of the SVGB return water obligation associated with operating the proposed 9.6-mgd desalination plant. **Table 5.5-19** illustrates available and surplus supply (or deficit) during the Seaside Groundwater Basin replenishment period, assuming a 6 percent or 12 percent return water obligation. As shown, under either of these return water scenarios, the available supply would meet demand associated with existing land uses and water entitlements (12,845 afy), with a surplus of 209 or 1,829 afy depending on the return water obligation.

[13] Although demand in 2010 is slightly less than the current 10-year average demand (12,351 afy) CalAm assumes this is the appropriate level of demand for planning purposes to ensure the proposed action is sized appropriately to meet peak demands as required by state regulations; see Section 2.3 in Chapter 2 for more information.

[14] For the first 25 years of MPWSP operation, CalAm would provide in-lieu replenishment of the Seaside Groundwater Basin in repayment of groundwater CalAm has pumped from the basin in excess of CalAm's adjudicated right, as discussed in Chapter 2, Section 2.2.4. Replenishment would occur at a rate of 700 afy. During the replenishment period, available supply from the Seaside Groundwater Basin would be limited to 774 afy; at the end of the replenishment period, available supply would equal CalAm's adjudicated right of 1,474 afy.

[15] Existing annual service area demand now includes the 325 afy Pebble Beach entitlement, and 325 afy was therefore, removed from the anticipated future demand.

TABLE 5.5-18
EXISTING AND ANTICIPATED DEMAND
(ACRE-FEET PER YEAR)

Demand Component	MPWSP Demand Assumptions	Demand Associated with Existing Land Uses and Water Entitlements	Demand Associated with Anticipated Development
Existing Annual System Demand	12,270	12,270	-
Pebble Beach Water Entitlements	325	325	
Hospitality Industry Rebound Economic Recovery	500	250[a]	250
Legal Lots of Record	1,180		1,180
Total	**14,275**	**12,845**	**1,430**

NOTES:
[a] A comparison of commercial sector demand prepared for this analysis suggests that demand by the hospitality industry under improved economic conditions may be lower than identified by CalAm; refer to text discussion for more information.

SOURCE: Table 6.3-3.

TABLE 5.5-19
WATER SUPPLIES AND DEMANDS DURING SEASIDE GROUNDWATER BASIN REPLENISHMENT PERIOD, 9.6-MGD DESALINATION PLANT WITH SVGB RETURN
(ACRE-FEET PER YEAR)

Supplies and Demands	Existing Demand [a]		Existing and Anticipated Demand	
	6% SVGB Return	12% SVGB Return	6% SVGB Return	12% SVGB Return
Total Supplies[a]	**16,294**	**16,294**	**16,294**	**16,294**
Service Area Demand (Existing and Anticipated)	12,845	12,845	14,275	14,275
Supply Available for Other Use (Total Supplies Minus Service Area Demand)	3,449	3,449	2,019	2,019
SVGB Return (6% and 12%)	1,620	3,240	1,620	3,240
Surplus or (Deficit)	**1,829**	**209**	**399**	**(1,220)**

NOTES: mgd = million gallons per day; Seaside GW Basin = Seaside Groundwater Basin; SVGB = Salinas Valley Groundwater Basin

[a] Includes 325 afy for Pebble Beach water entitlements.
[b] Water supply sources include: Carmel River (3,376 afy), Seaside Groundwater Basin (774 afy), Aquifer Storage and Recovery Project (1,300 afy), Sand City Coastal Desalination Plant (94 afy), and the proposed MPWSP Desalination Plant (10,750 afy), as shown in Table 2-4 of Chapter 2.

SOURCE: Table 2-4, Table 6.3-4.

The 1,430 afy of MPWSP supply that would serve anticipated development, shown in **Table 5.5-18**, is about 40 percent of 3,526 afy, the 2006 estimate of future demand as revised based on updated information and about half of 2,820 afy, the 2006 estimate of future demand as updated and reduced by an additional 20 percent.

The MPWSP would not directly contribute to the creation of additional housing or jobs within the area it serves as it is limited to the construction and operation of water supply facilities and infrastructure. But the proposed project would indirectly support growth by removing some water

supply limitations as an obstacle to growth, thereby enabling a degree of growth under the approved general plans within the area served by the MPWSP.

The cities and county in the area served by the proposed project have the authority to approve or deny development projects and to impose mitigation to address significant environmental impacts associated with development projects within their respective jurisdictions. In addition, numerous federal, state, regional, and local agencies are specifically charged with protecting environmental resources, and ensuring that planned development occurs in a sustainable manner. Together, these agencies exercise the authority to reduce the effects of development on the environment. Some unavoidable impacts would still, however, be expected to occur.

Cumulative Analysis

The geographic scope for the cumulative analysis of indirect growth inducement consists of the CalAm Monterey District service area jurisdictions and other areas of Monterey County that could experience similar indirect growth inducement. The baseline environmental setting against which the MPWSP is being analyzed includes the effects of existing, operational water supply projects identified in Table 4.1-2 such as the Seaside Groundwater Basin Aquifer Storage and Recovery projects (Nos. 29 and 30), and Sand City Coastal Desalination Plant (No. 6), which are assumed in water supply planning undertaken for the proposed project (as discussed in Chapter 2, Section 2.4 and shown in Table 2-4). The CalAm Slant Test Well at CEMEX (No. 47) is assumed to be used for production of the proposed MPWSP supply.

Several of the planned future cumulative projects identified in Table 4.1-2 would provide new sources of potable water supply in Monterey County. Growth induced by one or more of these cumulative water supply projects in combination with the proposed project would result in secondary effects of growth in Monterey County that are similar to, but would likely be more severe and widespread than, those summarized above in Table 6.3-9; these impacts include increased traffic, noise, and air pollution and loss of open space and biological resources.

Other water projects listed in Table 4.1-2, would either provide non-potable recycled water supply or enhance groundwater recharge. Projects providing recycled water could offset demand for potable supply that is currently used for non-potable uses, thereby making that potable supply available for other uses including growth. Projects capturing and diverting stormwater runoff to enhance groundwater recharge would primarily improve surface water quality and help stop seawater intrusion, but may overtime increase the availability of groundwater supply. These projects could contribute to the growth-inducing impacts of the cumulative potable supply projects described above by increasing the availability of existing potable supplies and groundwater.

5.5.21.3 Indirect Growth Inducing Effects of No Project Alternative

The No Project Alternative would deliver less water than the proposed project, would not be able to reliably serve existing customers, and therefore, would have no indirect growth inducing effects associated with the provision of water supply and it would not achieve the benefits of the proposed project in terms of providing minor amounts of additional water to accommodate some growth. The No Project Alternative water supplies of 11,314 afy, through September 2018, would

be reduced by 1,000 af annually to 6,380 afy by January 2022. This supply could not serve the baseline demand of 12,595 afy – or 11,335 afy, assuming ongoing implementation of conservation programs reduced demand to this amount by 2021 – and the implementation of Stage 3 Conservation Measures and Stage 4 Rationing would be required.

5.5.21.4 Indirect Growth Inducing Effects of Alternative 1 – Slant Wells at Potrero Road)

Operational Impacts

The indirect growth-inducing impact of Alternative 1 would be similar to that of the proposed project, although slightly decreased because source water pumped under this alternative is expected to include more groundwater that originated from inland aquifers than the proposed project, requiring a higher percentage of water to be returned to the SVGB. Therefore, less desalinated product water likely would be available to support growth. With CalAm's other supply sources, water supplies would total 16,294 afy, shown in **Table 5.5-20**, the same as for the proposed project (shown in **Table 6.3-4** in Section 6.3, Growth Inducement, of Chapter 6, Other Considerations). After meeting existing service area demand and entitlements of 12,845 afy and an assumed 6 percent SVGB return water obligation,[16] 1,829 afy would be available for other uses during the 25-year Seaside Groundwater Basin (SGB) replenishment period.

Although the precise amount of the return water obligation is not currently known, this analysis assumes that Alternative 1, like the MPWSP, would provide enough supply to meet the level of service area demand that CalAm proposes to meet, 14,275 afy. The surplus shown in **Table 5.5-20** indicates that Alternative 1 would have some operational flexibility needed to meet the *peak demands* that would be associated with the anticipated average annual demand, including about 1,430 afy of water for anticipated future development – that is, water for growth. As discussed in Section 6.3.5.3, this level of growth is consistent with the growth planned for in the adopted land use plans of service area jurisdictions. The environmental consequences of planned growth have been addressed in adopted local land use plans and their associated CEQA documents, as well as in other, project-specific documentation, as discussed in Section 6.3.6. Some of the identified indirect effects of this growth would be significant and unavoidable while other effects would be significant but can be mitigated.

Assuming a 6 percent SVGB return water obligation, this alternative would not provide enough supply to meet the estimated 3,526 afy of additional service area demand associated with general plan buildout (discussed in Section 2.5.3 of Chapter 2 and shown in **Table 2-5**). Following the conclusion of the Seaside Groundwater Basin replenishment period, an additional 700 afy of supply would be available to meet additional demands; however, it would still not meet projected future demands in the CalAm service area. This additional supply could provide CalAm added operational flexibility or could be used to serve a degree of additional growth still within the levels of approved general plans.

[16] The 6 percent return water obligation assumed here is an example of what the return obligation could be. The SVGB return water obligation will be based on observed values of the source water. Groundwater modeling performed for this EIR/EIS simulated scenarios with 0, 3, 6, and 12 percent of the source water extracted via subsurface slant wells being returned to the SVGB (see Section 4.4, Groundwater Resources).

TABLE 5.5-20
ALTERNATIVE 1 – SLANT WELLS AT POTRERO ROAD WATER SUPPLIES AND DEMANDS DURING SGB REPLENISHMENT PERIOD: TWO FUTURE DEMAND SCENARIOS (ACRE-FEET PER YEAR)

	Supply Compared to MPWSP-Anticipated Demands	Supply Compared to Updated MPWMD Estimate of Future Supply Needs
Existing/Other CalAm Supplies[a]	5,544	5,544
Supply provided by Alternative 1	10,750	10,750
Total Supplies	**16,294**	**16,294**
Minus Existing Service Area Demand (Table 6.3-3)	12,845	12,845
Minus SVGB Return Obligation (Assuming 6% Return Obligation)[b]	1,620	1,620
Supply Available for Other Use (Supplies Minus Existing Demand and Return Obligation)	**1,829**	**1,829**
Minus Future Demands: Two Scenarios	1,430[c]	3,526[d]
Surplus or (Deficit)	**399**	**(1,697)**

NOTES: SGB = Seaside Groundwater Basin; SVGB = Salinas Valley Groundwater Basin; afy = acre feet per year

[a] Existing/Other CalAm supplies consist of 3,376 afy from the Carmel River, 774 afy from the Seaside Groundwater Basin, 1,300 afy from the Aquifer Storage and Recovery Project, 94 afy from the Sand City Coastal Desalination Plant. At the end of the 25-year Seaside Groundwater Basin replenishment period CalAm's supply from that the groundwater basin will increase by 700 afy to 1,474 afy.
[b] The SVGB return water obligation will be based on the observed amount of fresh water component in the source water. The percentage of return water required for pumping at the Potrero Road site (this alternative) is expected to be higher than the percentage of return water that would be required for pumping at the CEMEX site (the MPWSP).
[c] Demand associated from anticipated development CalAm proposes to meet with the MPWSP (see Section 6.3.5.1 and Table 6.3-3).
[d] MPWMD's 2006 estimate of future water supply needs updated by more recent information (see Section 6.3.5.3 and Table 6.3-8).

SOURCE: Table 2-4, Table 6.3-3, Table 6.3-8.

While the above analysis discloses the indirect growth inducing impact of Alternative 1 associated with a 6 percent SVGB return water obligation, the analysis in Section 5.5.4.3, which describes the impacts of Alternative 1 on groundwater resources, suggests that a higher return water percentage would be necessary under Alternative 1. In the event that the return water obligation is determined to be 12 percent (the highest return value simulated), after meeting existing demand and entitlements only 209 afy would be available for other uses, which would not meet either future demand scenario and, therefore, Alternative 1 would not fully meet the project objective/need for water, some of which was to support limited growth (e.g., legal lots of record). The indirect growth inducing impact of this alternative assuming a 12 percent SVGB return would result in a ***reduced impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

The geographic scope for the cumulative analysis of indirect growth inducement impacts of Alternative 1 is Monterey and Santa Cruz Counties. The cumulative impact would be similar to that described for the MPWSP in Section 6.3.7. Of the planned sources of new potable water supply for Monterey County and other areas identified in **Table 4.1-2**, the DeepWater Desal Project (No. 34) could combine with Alternative 1 to have cumulative growth inducing impacts in

the areas that would be served by these projects. If both projects were approved, Alternative 1 would supply water to the CalAm service area, as described under operational impacts above, and the entire 25,000 afy produced by the DeepWater Desal Project would be provided to the city of Salinas in Monterey County and to areas of Santa Cruz County.

In addition, the RUWAP Desalination Element (No. 31 in **Table 4.1-2** in Section 4.1) would serve the Marina Coast Water District's Ord Community with approximately 1,000 afy of potable supply. Through an agreement with FORA and the MRWPCA, an additional 1,400 afy of potable supply from the Pure Water Delivery and Supply Project (No. 35) would meet the build-out needs of the Ord Community, which is contiguous with CalAm's service area. The Granite Ridge Water Supply Project (No. 33) would increase water supply availability for the area of northern Monterey County that it would serve. The Interlake Tunnel Project (No. 24) would reduce the amount of water spilled at Nacimiento Dam by allowing water from Nacimiento Reservoir to be stored at San Antonio Reservoir for later use. This project would enhance flood control, provide environmental benefits, and offset groundwater pumping. However, because this project would provide groundwater recharge, this analysis assumes it could indirectly augment supply available for groundwater users, including municipal supply that could serve additional growth. Although the primary purpose of the Salinas Valley Water Project Phase II (No. 1) is to combat seawater intrusion by providing a new source of surface water to offset groundwater consumption, the availability of a reliable surface water supply provided by this project could induce growth by removing supply reliability limitations as an obstacle to urban development.

Growth induced by these cumulative water supply projects in combination with Alternative 1 would result in secondary effects of growth that are similar to, but would likely be more widespread in Monterey and Santa Cruz Counties than those summarized in **Table 6.3-9** in Section 6.3 for the CalAm service area only. These impacts include increased traffic, noise, and air pollution and loss of open space and biological resources.

Other water projects listed in **Table 4.1-2**, including the RUWAP Recycled Water Project (No. 35), West Broadway Stormwater Retention Project (No. 41), Del Monte Boulevard Dry Weather Diversion Project (No. 44), Pacific Grove Local Water Project (No. 22), Pacific Grove Recycled Water Project (No. 23), and Monterey Pacific Grove Area of Special Biological Significance (ASBS) Stormwater Management Project (No. 45), would either provide non-potable recycled water supply or enhance groundwater recharge. As described for the MPWSP, projects providing recycled water could offset demand for potable supply that is currently used for non-potable uses, thereby making that potable supply available for other uses, including growth. Projects capturing and diverting stormwater runoff to enhance groundwater recharge would primarily improve surface water quality and help stop seawater intrusion, but may overtime increase the availability of groundwater supply. These projects would eliminate an impediment to growth; some of the impacts of that growth were determined by the general plan EIRs to be significant and unavoidable and could contribute to the growth inducing impacts of Alternative 1 and the DeepWater Desal project by increasing the availability of existing potable supplies and groundwater. Because Alternative 1 would have a significant and unavoidable impact, it would have a significant contribution to significant and unavoidable cumulative impacts of indirect growth inducement.

5.5.21.5 Indirect Growth Inducing Effects of Alternative 2 – Open Water Intake at Moss Landing

Operational Impacts

The indirect growth-inducing impact of Alternative 2 would be similar to, but greater than, that of the proposed project because this alternative would produce the same amount of desalinated product water and no desalinated water would need to be returned to the SVGB. As under the MPWSP, with CalAm's other supply sources, water supplies would total 16,294 afy, shown in **Table 5.5-21**.

TABLE 5.5-21
ALTERNATIVE 2 – OPEN OCEAN INTAKE AT MOSS LANDING WATER SUPPLIES AND DEMANDS DURING SGB REPLENISHMENT PERIOD: TWO FUTURE DEMAND SCENARIOS (ACRE-FEET PER YEAR)

	Supply Compared to MPWSP-Anticipated Demands	Supply Compared to Updated MPWMD Estimate of Future Supply Needs
Existing/Other CalAm Supplies[a]	5,544	5,544
Supply provided by Alternative 2	10,750	10,750
Total Supplies	**16,294**	**16,294**
Minus Existing Service Area Demand (Table 6.3-3)	12,845	12,845
Supply Available for Other Use (Supplies Minus Existing Demand)	**3,449**	**3,449**
Minus Future Demands: Two Scenarios	1,430[b]	3,526[c]
Surplus or (Deficit)	**2,019**	**(77)**

NOTES: SGB = Seaside Groundwater Basin; afy = acre feet per year

[a] Existing/Other CalAm supplies consist of 3,376 afy from the Carmel River, 774 afy from the Seaside Groundwater Basin, 1,300 afy from the Aquifer Storage and Recovery Project, 94 afy from the Sand City Coastal Desalination Plant. At the end of the 25-year Seaside Groundwater Basin replenishment period CalAm's supply from that the groundwater basin will increase by 700 afy to 1,474 afy.
[b] Demand associated from anticipated development CalAm proposes to meet with the MPWSP (see Section 6.3.5.1 and Table 6.3-3).
[c] MPWMD's 2006 estimate of future water supply needs updated by more recent information (see Section 6.3.5.3 and Table 6.3-8).

SOURCE: Table 2-4, Table 6.3-3, Table 6.3-8.

After meeting existing service area demand and entitlements of 12,845 afy, 3,449 afy would be available to support growth in the CalAm service area during the 25-year Seaside Groundwater Basin replenishment period. This is substantially more than the 1,430 afy of anticipated future development demand CalAm proposes to meet with the MPWSP and similar to the estimated 3,526 afy of additional service area demand associated with general plan buildout (discussed in Section 2.5.3 of Chapter 2 and shown in **Table 2-5**). While this alternative appears to almost meet projected future general plan demands, water use does not occur at an average rate throughout the year (as discussed in Section 2.3.2), and it is unlikely this alternative could provide the operational flexibility to meet the peak demands associated with general plan buildout.

In any event, the growth inducing impact of Alternative 2 would be greater than the proposed project because Alternative 2 would remove water supply limitations as an obstacle to growth to a greater extent than would the MPWSP. The environmental consequences of planned growth that would be supported by this alternative have been addressed in the adopted land use plans and

associated CEQA documents of service area jurisdictions, as discussed in Section 6.3.6. Some of the identified indirect effects of this growth would be significant and unavoidable while other effects would be significant but can be mitigated.

Following the conclusion of the Seaside Groundwater Basin replenishment period, an additional 700 afy of supply will be available to meet demands in the CalAm service area. This additional supply could provide CalAm added operational flexibility to meet peak demands or it could be used to serve a degree of additional growth.

The greater indirect growth inducing impact of this alternative would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Cumulative Analysis

The cumulative scenario for Alternative 2 would be the same as described above for Alternative 1. The contribution of Alternative 2 to significant and unavoidable cumulative impacts of indirect growth inducement would be significant and would be increased compared to the proposed project and Alternative 1 as a result of the greater amount of water available for growth under Alternative 2, as shown in **Table 5.5-21**.

5.5.21.6 Indirect Growth Inducing Effects of Alternative 3 – Monterey Bay Regional Water Project (DeepWater Desal)

Operational Impacts

The indirect growth-inducing impact of Alternative 3 would be greater than that of the proposed project because this alternative would produce about 14,000 afy more desalinated water. Assuming CalAm purchased 10,750 afy (9.6 mgd) from DeepWater Desal for use in the CalAm service area, CalAm supplies would total 16,294 afy, as shown in **Table 5.5-22**. Because no desalinated water would need to be returned to the SVGB, more water would be available to the service area; after meeting existing demand and entitlements of 12,845 afy, 3,449 afy would be available under Alternative 3 to support growth in the CalAm service area during the 25-year Seaside Groundwater Basin Replenishment period. This is substantially more than the 1,430 afy of anticipated future demand CalAm proposes to meet with the MPWSP and similar to the estimated 3,526 afy of service area demand associated with general plan buildout (discussed in Section 2.5.3 of Chapter 2 and shown in **Table 2-5**).

Assuming CalAm purchased 10,750 afy for use in the CalAm service area, the remaining 14,250 afy produced by Alternative 3 would be available for other areas of Monterey and Santa Cruz Counties. Other areas that may be served by this alternative include the city of Salinas, the unincorporated community of Castroville, other areas of northern Monterey County, and areas of Santa Cruz County.

Therefore, the indirect growth-inducing impact of Alternative 3 would be greater than the MPWSP because this alternative would remove water supply limitations as an obstacle to growth in a much larger area of the region as well as within CalAm's service area. The environmental consequences

TABLE 5.5-22
ALTERNATIVE 3 – DEEPWATER DESAL WATER SUPPLIES AND DEMANDS DURING SGB REPLENISHMENT PERIOD: TWO FUTURE DEMAND SCENARIOS (ACRE-FEET PER YEAR)

Supplies/Demands	Supply Compared to MPWSP-Anticipated Demands	Supply Compared to Updated MPWMD Estimate of Future Supply Needs
Existing/Other CalAm Supplies[a]	5,544	5,544
Alternative 3 Water Provided to CalAm Service Area/Purchased From DeepWater Desal Project[b]	10,750	10,750
Total Supplies to CalAm Service Area	**16,294**	**16,294**
Minus Existing Service Area Demand (Table 6.3-3)	12,845	12,845
CalAm Service Area Supply Available for Other Use (Supplies Minus Existing Demand)	**3,449**	**3,449**
Minus Future Service Area Demands: Two Scenarios	1,430 [c]	3,526 [d]
Surplus or (Deficit) within CalAm Service Area	**2,019**	**(77)**
Supply Available for Other Areas[e]	**14,250**	**14,250**

NOTES: SGB = Seaside Groundwater Basin; mgd = million gallons per day; afy = acre feet per year

[a] Existing/Other CalAm supplies consist of 3,376 afy from the Carmel River, 774 afy from the Seaside Groundwater Basin, 1,300 afy from the Aquifer Storage and Recovery Project, 94 afy from the Sand City Coastal Desalination Plant. At the end of the 25-year Seaside Groundwater Basin replenishment period CalAm's supply from that the groundwater basin will increase by 700 afy to 1,474 afy.

[b] Supply to the CalAm Service area assumes DeepWater Desal LLC would provide, and CalAm would purchase, 9.6 mgd, or 10,750 afy of desalinated water from the DeepWater Desal Project.

[c] Demand associated from anticipated development CalAm proposes to meet with the MPWSP (see Section 6.3.5.1 and Table 6.3-3).

[d] MPWMD's 2006 estimate of future water supply needs updated by more recent information (see Section 6.3.5.3 and Table 6.3-8).

[e] The DeepWater Desal Project would produce 25,000 afy of desalinated product water. After delivering 9.6 mgd (10,750 afy) 14,250 afy would be available to other areas of Monterey and Santa Cruz Counties.

SOURCE: Table 2-4, Table 6.3-3, Table 6.3-8.

of planned growth in the CalAm service area that would be supported by this alternative have been addressed in the adopted land use plans and associated CEQA documents of service area jurisdictions, as discussed in Section 6.3.6 (discussed in Section 6.3.6). Some of the identified indirect effects of this growth would be significant and unavoidable while other effects would be significant but can be mitigated.

Because information is not currently available about how much and where the remaining 14,250 afy of water produced by this alternative may be used, whether for replacement supplies or for growth, the consistency of this supply with planned growth in areas that would receive it cannot be definitively assessed. But because of the amount of water that would be available, impacts would likely be significant and unavoidable. The separate EIR/EIS that is being prepared for the DeepWater Desal project will provide more detailed analysis on this topic.

Following the conclusion of the Seaside Groundwater Basin replenishment period, another 700 afy of supply would be available to the CalAm service area. This additional supply could provide CalAm greater operational flexibility, could be used to serve a degree of additional growth, or could prompt CalAm to reduce the amount of water it purchases from DeepWater Desal, in which case more desalinated product water from DeepWater Desal would be available to other areas.

Therefore, the indirect growth inducing impact of this alternative would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

Cumulative Analysis

The geographic scope for the cumulative analysis of indirect growth inducement impacts of Alternative 3 is Monterey and Santa Cruz Counties. Of the planned sources of new potable water supply for Monterey County identified in **Table 4.1-2**, the GWR Project (No. 59) could combine with Alternative 3 to have cumulative growth inducing impacts in the areas that would be served by these projects. If both projects were approved, it is assumed that Alternative 3 would supply water to the CalAm service area equivalent to the production of a 6.4 mgd plant, or about 7,170 afy, supplementing the water that would be supplied by the GWR project, and the remaining 17,830 afy produced by Alternative 3 would be provided to the city of Salinas, the unincorporated community of Castroville, other areas of Monterey County and areas of Santa Cruz County.

In addition, the other projects in the cumulative scenario, described above for Alternative 1, could induce growth by removing supply reliability limitations as an obstacle to urban development. Growth induced by these cumulative water supply projects in combination with Alternative 3 would result in secondary effects of growth in Monterey and Santa Cruz Counties that are similar to, but would likely be more severe and widespread than, those summarized in **Table 6.3-9**. These impacts include increased traffic, noise, and air pollution and loss of open space and biological resources.

The overall cumulative impact would be significant and unavoidable. While the total amount of water available for growth would be reduced under the Alternative 3 cumulative scenario compared to the proposed project scenario (because only the Alternative 3 desalination plant would be built, compared to building it and the proposed project), the contribution of Alternative 3 to significant and unavoidable cumulative impacts of indirect growth inducement would be significant and increased compared to the proposed project and Alternatives 1 and 2 as a result of the greater amount of water available for growth under Alternative 3, as shown in **Table 5.5-22**.

5.5.21.7 Indirect Growth Inducing Effects of Alternative 4 – People's Moss Landing Desalination Project

Operational Impacts

The indirect growth-inducing impact of Alternative 4 would be greater than that of the proposed project because this alternative would provide substantially more water. Based on the 13,400 afy the People's Moss Landing Project proposes to deliver from its proposed 12 mgd desalination plant, supplies under this alternative would total 18,944 afy, as shown in **Table 5.5-23**. This is substantially more than the proposed project's 16,294 afy, and because no desalinated water would need to be returned to the SVGB, the entire supply would be available for use. After meeting existing demand and entitlements of 12,845 afy in the CalAm Monterey District service area, 6,099 afy would be available to support growth in the region during the Seaside Groundwater Basin Replenishment period. This is more than three times the amount that would be available under the proposed project (1,829 afy), assuming a 6 percent return water obligation, and would be almost

twice the 3,526 afy estimate of future Monterey District service area demand under general plan buildout (discussed in Section 2.5.3 of Chapter 2 and shown in **Table 2-5**). This alternative would provide substantially more water than needed to meet demand associated with General Plan buildout in the CalAm service area, based on currently available information.[17] Although surplus supply could be delivered to other users in the region, the growth that could be supported in the Monterey District service area by this alternative would be beyond the level evaluated in adopted land use plans and would likely have impacts related to increased density (such as increased traffic and noise) or the development of new land areas (such as loss of open space, wildlife habitat, and agricultural land), potentially resulting in impacts that are more severe than those identified in the EIRs of adopted land use plans and plan elements. The separate EIR/EIS that is being prepared for the People's Project will provide more detailed information on this topic.

TABLE 5.5-23
ALTERNATIVE 4 – PEOPLE'S PROJECT WATER SUPPLIES AND DEMANDS DURING SGB REPLENISHMENT PERIOD: TWO FUTURE DEMAND SCENARIOS (ACRE-FEET PER YEAR)

Supplies/Demands	Supply Compared to MPWSP-Anticipated Demands	Supply Compared to Updated MPWMD Estimate of Future Supply Needs
Existing/Other CalAm Supplies[a]	5,544	5,544
Alternative 4 Water Provided to CalAm Service Area/Purchased From People's Project [b]	13,400	13,400
Total Supplies	**18,944**	**18,944**
Minus Existing Service Area Demand (Table 6.3-3)	12,845	12,845
Supply Available for Other Use (Supplies Minus Existing Demand)	**6,099**	**6,099**
Minus Future Demands: Two Scenarios	1,430[c]	3,526[d]
Surplus or (Deficit)	**4,669**	**2,573**

NOTES: SGB = Seaside Groundwater Basin; mgd = million gallons per day; afy = acre feet per year

[a] Existing/Other CalAm supplies consist of 3,376 afy from the Carmel River, 774 afy from the Seaside Groundwater Basin, 1,300 afy from the Aquifer Storage and Recovery Project, 94 afy from the Sand City Coastal Desalination Plant. At the end of the 25-year Seaside Groundwater Basin replenishment period CalAm's supply from that the groundwater basin will increase by 700 afy to 1,474 afy.
[b] Supply assumes the People's Project would provide, and CalAm would purchase, 12 mgd, or 13,400 afy of desalinated water from the People's Project.
[c] Demand associated from anticipated development proposed to be met by the MPWSP (see Section 6.3.5.1 and Table 6.3-3).
[d] MPWMD's 2006 estimate of future water supply needs updated by more recent information (see Section 6.3.5.3 and Table 6.3-8).

SOURCE: Table 2-4, Table 6.3-3, Table 6.3-8.

Following the conclusion of the Seaside Groundwater Basin replenishment period, an additional 700 afy of supply would be available, which would support an even greater degree of growth beyond that anticipated in jurisdictions' general plans.

Therefore, the indirect growth inducing impact of this alternative would result in an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable.

[17] As discussed in more detail in Section 2.5.3.4, General Plan Buildout, of Chapter 2, the future demand estimate assumed in this analysis, 3,526 afy, is based on MPWMD's 2006 estimate of future water supply needs as updated by more recent information.

Cumulative Analysis

The cumulative scenario for Alternative 4 would be the same as described above for Alternative 1. Of the planned sources of new potable water supply identified in **Table 4.1-2**, the DeepWater Desal Project (No. 34) could combine with Alternative 4 to have cumulative growth inducing impacts in the areas that would be served by these projects. If both projects were approved, Alternative 4 would supply water to the CalAm service area, as described under operational impacts above, and the entire 25,000 afy produced by the DeepWater Desal Project would be provided to the city of Salinas and other areas in Monterey and Santa Cruz Counties. The contribution of Alternative 4 to significant and unavoidable cumulative impacts of indirect growth inducement in the CalAm Service District would be significant and would be increased compared to the proposed project or Alternatives 1 through 3 as a result of the greater amount of water available for growth as shown in **Table 5.5-23** and would be cumulatively considerable and the same as the proposed project for the other areas of Monterey and Santa Cruz counties.

5.5.21.8 Indirect Growth Inducing Effects of Alternatives 5a and 5b

Operational Impacts

The indirect growth-inducing impact of both Alternative 5a and 5b would be less than that of the proposed project because neither alternative would provide enough water to support growth. Neither Alternative 5a nor 5b would provide enough supply to meet both existing demand and the SVGB return water obligation associated with operation of the subsurface slant wells. Supplies provided by Alternatives 5a and 5b with CalAm's other supplies would total 12,711 afy during the 25-year Seaside Groundwater Basin replenishment period, as shown in **Table 5.5-24**. This amount is less than existing service area demands and entitlements of 12,845 afy, and is unlikely to provide the operational flexibility needed to meet peak demands that would be associated with an annual average demand of 12,711 afy. After meeting existing demands and entitlements to the extent feasible, no supply would be available for other uses or for the 6 percent return water obligation assumed in considering the project alternatives.[18] Furthermore, as described for Alternative 1, modeling analysis of pumping at the Potrero Road site suggests that a higher return water percentage would be necessary under Alternative 5b; perhaps closer to 12 percent. Under Alternative 5b, using a 12 percent assumption for the return water obligation, the deficit in available return water would be that much greater than the 6 percent obligation assumed for Alternative 5a (2,084 afy rather than 1,042 afy). Considering that neither alternative is expected to provide enough supply to meet existing demands or the SVGB return water obligation associated with operation of the subsurface slant wells, neither alternative would provide water to support future growth. They would therefore not remove water supply limitations as an obstacle growth and would not be growth inducing. Following the conclusion of the Seaside Groundwater Basin replenishment period, another 700 afy of supply would be available to the CalAm service area. This additional supply could provide CalAm greater operational flexibility to meet peak demands and to meet some of its return water obligation.

[18] As stated in Chapter 2, the SVGB return water obligation will be based on the amount of fresh water in the source water. In order to consider the effect of the return water for this EIR/EIS, groundwater modeling simulated scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources).

TABLE 5.5-24
ALTERNATIVE 5 – REDUCED DESALINATION PLANT WATER SUPPLIES AND DEMAND DURING SGB REPLENISHMENT PERIOD: TWO FUTURE DEMAND SCENARIOS (ACRE-FEET PER YEAR)

Supplies/Demands	Supply Compared to MPWSP-Anticipated Demands	Supply Compared to Updated MPWMD Estimate of Future Supply Needs
Existing/Other CalAm Supplies[a]	5,544	5,544
6.4-MGD Desalination Plant Production[b]	7,167	7,167
Total Supplies	**12,711**	**12,711**
Minus Existing Service Area Demand (Table 6.3-3)	12,845	12,845
Minus SVGB Return Obligation (Assuming 6% Return Obligation)[c]	1,042	1,042
Supply Available for Other Use or (Deficit) (Supplies Minus Existing Demand and Return Obligation)	**(1,176)**	**(1,176)**
Minus Future Demands: Two Scenarios (Tables 6.3-3 and 6.3-8)	1,430[d]	3,526[e]
Surplus or (Deficit)	(2,606)	(4,702)

NOTES: SGB = Seaside Groundwater Basin; SVGB = Salinas Valley Groundwater Basin mgd = million gallons per day

[a] Existing/Other CalAm supplies consist of 3,376 afy from the Carmel River, 774 afy from the Seaside Groundwater Basin, 1,300 afy from the Aquifer Storage and Recovery Project, 94 afy from the Sand City Coastal Desalination Plant. At the end of the 25-year Seaside Groundwater Basin replenishment period CalAm's supply from that the groundwater basin would increase by 700 afy to 1,474 afy.
[b] Assumed annual supply is based on a 6.4-mgd desalination plant operating at full capacity.
[c] Alternative 5 includes two alternatives – Alternative 5a and Alternative 5b. Both consist of a 6.4-mgd desalination plant. Source water for Alternative 5a would be from slant wells at the CEMEX site. Source water for Alternative 5b would be from slant wells at the Potrero Road site. The SVGB return water obligation will be based on the amount of the fresh water component of the source water. The return water estimate shown here is based on a 6 percent return water obligation as an example. The 6 percent return water obligation is assumed for Alternative 5a. The percentage of return water required for pumping at the Potrero Road site (Alternative 5b) is expected to be higher than for pumping at the CEMEX site (Alternative 5a).
[d] Demand associated from anticipated development CalAm proposes to meet with the MPWSP (see Section 6.3.5.1 and Table 6.3-3).
[e] MPWMD's 2006 estimate of future water supply needs updated by more recent information (see Section 6.3.5.3 and Table 6.3-8).

SOURCE: Table 2-4, Table 6.3-3; Table 6.3-8.

Neither Alternative 5a nor 5b would fully meet current demands and entitlements and therefore would not provide water to support growth. The indirect growth inducing impact of Alternative 5 would result in a ***reduced impact conclusion*** compared to the proposed project, less than significant.

Cumulative Analysis

The geographic scope for the cumulative analysis of indirect growth inducement impacts of Alternatives 5a and 5b is Monterey and Santa Cruz Counties. The cumulative impact would be similar to that described for the MPWSP. Of the planned sources of new potable water supply for Monterey County and other areas identified in **Table 4.1-2**, the GWR Project (No. 59) and DeepWater Desal (No. 34) could combine with Alternative 5 to have cumulative growth inducing impacts in the areas that would be served by these projects. If the three projects were approved, CalAm would purchase 3,500 afy of GWR Project water to supplement the water produced by Alternative 5. Together, water supplies from Alternative 5 and the GWR Project, with CalAm's other sources, would total 16,211 afy. This is slightly less than the MPWSP alone would provide,

but the total volume of SVGB return water obligation under Alternatives 5a and 5b would be smaller compared to the proposed project and Alternative 1, respectively, due to the reduced pumping volume of the smaller desalination plant. Under the cumulative scenario, the GWR Project would provide water to the CalAm service area, and the entire 25,000 afy produced by the DeepWater Desal project would be provided to the city of Salinas in Monterey County and to areas of Santa Cruz County.

In addition, the other projects in the cumulative scenario, described above for Alternative 1, could induce growth by removing supply reliability limitations as an obstacle to urban development. Growth induced by these cumulative water supply projects in combination with Alternative 5 would result in secondary effects of growth that are similar to, but would likely be more widespread in Monterey and Santa Cruz Counties than those summarized in **Table 6.3-9**. These impacts include increased traffic, noise, and air pollution and loss of open space and biological resources.

After meeting existing service area demand and entitlements of 12,845 afy, Alternative 5a, in combination with the water purchase agreement with the GWR Project, would result in 2,324 afy available for other use. This is more than the 1,430 afy of anticipated future demand CalAm proposes to meet with the MPWSP, and therefore is assumed to provide substantial flexibility to meet associated peak demands; available supply would not be enough to meet the estimated 3,526 afy of service area demand associated with general plan buildout. Alternative 5b in combination with the GWR Project, assuming a 12 percent SVGB return water obligation, would result in 1,282 afy available for other use. Given that this is slightly less than the future demand CalAm proposes to meet with the MPWSP, Alternative 5b with the GWR project is also assumed to provide less flexibility to meet peak demands, and also would not provide enough supply to meet the estimated service area demand associated with general plan buildout. Both Alternatives 5a and 5b combined with GWR Project water could support a degree of growth that would result in potentially significant impacts. The overall cumulative impact would be significant and unavoidable. The contribution of Alternative 5a and 5b to significant and unavoidable cumulative impacts of indirect growth inducement would be significant and would be similar to the proposed project as a result of the total amount of water available for growth under Alternative 5a and 5b in combination with the GWR Project.

5.5.21.9 References

RBF Consulting, 2013. Memorandum from Paul Findley to Richard Svindland, California American Water, Subject Recommended Capacity for the Monterey Peninsula Water Supply Project (MPWSP) Desalination Plant, January 7, 2013.

Svindland, Richard C., 2016. Supplemental Testimony of Richard C. Svindland; ERRATA, Before the Public Utilities Commission of the State of California, Application No. 12-04-019 (Filed April 23, 2012), April 14, 2016, plus Attachment 1, Demand Scenarios.

5.6 Environmentally Superior/Environmentally Preferred Alternative and NOAA-Preferred Alternative

This section presents a summary comparison of the overall potential environmental impacts of the proposed project and alternatives in order to identify an environmentally superior alternative under CEQA and an environmentally preferred alternative under NEPA, and the NOAA-preferred alternative. Environmental advantages and disadvantages of each alternative are discussed. Section 5.5 addresses the individual impacts associated with each alternative by topic and by individual impact. The alternatives, as described in Chapter 3 (Description of Proposed Project) and Section 5.4, are the proposed project, no project/no action, Alternative 1 (Slant Wells at Potrero Road), Alternative 2 (Open-Water Intake at Moss Landing), Alternative 3 (Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)), Alternative 4 (People's Moss Landing Water Desalination Project (People's Project)), Alternative 5a (Reduced Project 6.4-mgd Desalination Plant - Intake Slant Wells at CEMEX), and Alternative 5b (Reduced Project 6.4-mgd Desalination Plant - Intake Slant Wells at Potrero Road).

The analysis of alternatives presented in this section and Section 5.5, taken together with the analysis of the proposed project in Chapter 4, provide a basis to identify the environmentally superior alternative under CEQA (CEQA Guidelines Section 15126.6) and the environmentally preferred alternative under NEPA (40 CFR 1502.14(e)). Although NEPA CEQ regulations (40 CFR §1505.2) require the identification of the "environmentally preferable" alternative for the Record of Decision (ROD), this Final EIR/EIS identifies the environmentally preferred alternative for informational purposes. In this document, the environmentally superior/ environmentally preferred alternative is the alternative identified as meeting most of the basic project objectives, similar to satisfying the primary purpose and need, and resulting in the fewest or least severe combination of significant environmental impacts. CEQA Guidelines Section 15126.6 provides that if the No Project Alternative is the environmentally superior alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Here, the No Project Alternative may technically qualify as the environmentally superior/ environmentally preferred alternative because it would involve the least amount of impact on the existing physical environment. However, it would not meet most of the basic project objectives; it would have considerable economic and socioeconomic consequences (e.g., severe water conservation measures), and could result in different impacts than the proposed project or other alternatives given the failure of the No Project Alternative to supply sufficient water for customers within the CalAm service area. For this reason, the discussion below focuses on selecting another environmentally superior/environmentally preferred alternative from among the alternatives (including the proposed MPWSP) presented in this EIR/EIS.

It is important to recognize that the selection of the environmentally superior/environmentally preferred alternative is not always a straight-forward and formulaic exercise. In some cases, including here, no alternative stands out from the others as eliminating all significant and unavoidable, long-term environmental effects. There are environmental tradeoffs among the alternatives and even within resource issue areas or topics, making it difficult to summarize the

net effect of the alternatives. As such, considerable weighing among the severity of impacts of the alternatives and professional judgment as to the relative importance of topical impact areas is necessary. Such judgment, while based on reasoning grounded in the scientific study that comprises the EIR/EIS, can be subjective. This means that, although this EIR/EIS identifies an environmentally superior/environmentally preferred alternative, the CPUC and MBNMS decision-makers could ultimately come to a different conclusion as to which alternative is the environmentally superior alternative based on applying different weights to various impact areas. For example, one primary area of concern for MBNMS is marine biological resources and potential impacts on these resources from brine discharge and impingement/entrainment. However, in this Final EIR/EIS, MBNMS and CPUC have both identified the same alternative as the environmentally superior/environmentally preferred alternative, and MBNMS has determined that the environmentally preferred alternative is also the NOAA-preferred alternative under NEPA, as discussed in Section 5.6.2, below.

5.6.1 Summary and Comparison of Impacts of Alternatives

While most of the alternatives have impacts that are similar to the proposed MPWSP for most of the topical areas identified in Sections 5.5, there are several impacts that are unique to certain alternatives, or the impacts are more or less severe than the proposed MPWSP, that factor heavily into the selection of the environmentally superior/environmentally preferred alternative. **Table 5.6-1** presents the impact conclusion for each impact statement, for every topical area evaluated, for the proposed project and for all alternatives, and provides a relative impact severity for each alternative (increased, decreased, or same) compared to the proposed project. **Table 5.6-1** also allows for a comparison of the proposed project and other action alternatives to the No Action Alternative; beneficial impacts are highlighted in green.

5.6.1.1 Overview and Assumptions

The alternatives evaluated in this EIR/EIS would produce different quantities of water and are placed into three categories: (a) those that would produce more water than CalAm needs to meet the project objectives/purpose and need (Alternatives 3 and 4); (b) those that would produce less water (Alternatives 5a and 5b), and; (c) those that would produce the same water as the proposed project (Alternatives 1 and 2). The alternatives that provide more water than the proposed project have been sized by their proponents to serve regional needs and that is acknowledged in the comparisons. The alternatives that are smaller than the proposed project would not completely meet the project purpose and need for water, but would reduce the severity of impacts commensurate with their smaller capacities. Since the GWR project EIR was certified and approved by the MRWPCA in October 2015, and the CPUC in September 2016 authorized CalAm to purchase 3,500 afy of the GWR supply for extraction from the Seaside Groundwater Basin, GWR is assumed in the No Action alternative and analyzed as a cumulative project with several of the alternatives, including the 6.4 mgd desalination plant in Alternatives 5a and 5b. While CalAm is seeking approval of the 9.6 mgd project (proposed project), CalAm proposes to move forward with a 6.4 mgd desalination plant (Alternative 5a and 5b) if the GWR project is successfully implemented. In case the GWR project faces hurdles that would impair its ability to supply the additional 3,500 afy of water for CalAm's customers in a timely manner, CalAm also

seeks contingency approval for the 9.6 mgd desalination plant. Therefore, in order to make a meaningful comparison, the methodology of choosing the environmentally superior, or preferred alternative, includes the following:

1. The combination of Alternative 5a or 5b with the already-approved GWR project would size these alternatives to meet the purpose and need, and the cumulative environmental effects of the 6.4 mgd desalination plant in combination with the impacts of the GWR project are considered in the comparison, and;

2. Identifying two environmentally superior/environmentally preferred alternatives; one without, and one with the GWR Project.

5.6.1.2 Proposed Project (9.6 mgd MPWSP) Significant Impacts

To provide a basis for comparison, the proposed project would result in the following significant and unavoidable impacts in the issue areas of terrestrial biology, transportation, air quality, noise, and growth-inducement[1]:

- Disturbance within the CEMEX mining facility in areas that are designated as "primary habitat" under the City of Marina Local Coastal Program (LCP), and construction and operation of portions of the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, in vegetation communities within the coastal zone designated as primary habitat, would be in conflict with the City of Marina's LCP Land Use Plan (LUP) policies, and; significant contribution to cumulatively inconsistencies with the City of Marina LCPLUP policies.

- Significant cumulative construction impacts on traffic and transportation, given the size of the MPWSP, along with the number of cumulative projects and uncertainty regarding overlap in project construction timing.

- Short-term construction emissions in excess of MBUAPCD significance thresholds for ozone and NO_2 standards on sensitive receptors; associated conflict with the intent of the 2012 Air Quality Management Plan due to these short-term exceedances; and cumulatively considerable contribution to construction emissions.

- Project-specific and cumulative nighttime noise impacts on sensitive receptors from the installation of the Castroville Optional Alignment and drilling and development of the ASR-5 and ASR-6 Wells.

- Indirect growth inducement by removing, to some extent, water supply limitations as an obstacle to growth in CalAm's Monterey District service area. The environmental consequences of this planned growth have been addressed in adopted local plans and the associated CEQA review as well as in other, project-specific, documentation. Some of the identified indirect effects of this growth are significant and unavoidable; others are significant but can be mitigated.

- Cumulatively significant contribution to secondary growth effects in Monterey County including increased traffic, noise, and air pollution and loss of open space and biological resources.

[1] Proposed project impacts from greenhouse gas emissions are no longer considered in this chapter because the impact determination in Section 4.11, Greenhouse Gas Emissions, has been reduced to less than significant with mitigation due to CalAm's commitment to the GHG Reduction Plan.

Alternative 5a, which is a reduced-size project with components at the same locations as the proposed project, would result in the same impacts listed above for the proposed project. However, the severity of impacts would be slightly reduced due to the smaller project size.

None of the alternatives would avoid all of the above-listed significant unavoidable impacts of the proposed project and several alternatives would result in additional significant impacts, as noted below. There were varying degrees of significance in impacts on terrestrial biological resources due to the differences in locations of alternative components. And while the physical impacts on terrestrial biological resources could be mitigated to less than significant, the inconsistency with Marina's LCPLUP policy would remain significant and unavoidable. All of the action alternatives would result in significant and unavoidable construction noise and air quality impacts, including from temporary cumulatively considerable contributions to health effects on sensitive receptors, similar to the proposed project and in some cases, more severe than the proposed project.

5.6.1.3 Key Impact Differences Between Alternatives

The following discussion summarizes key differences in the significant environmental impacts among the alternatives and the proposed project, including consideration of resource impacts that are of particular importance to MBNMS.

Three of the alternatives would use screened, open water intakes, which would reduce or avoid several proposed project impacts but result in new significant impacts. These alternatives would have similar or increased impacts compared to the proposed project with regard to air quality, greenhouse gas (GHG) emissions, traffic, and noise. The key differences in impacts pertaining to open water intakes included in Alternative 2 (Open-Water Intake at Moss Landing), Alternative 3 (DeepWater Desal Project), and Alternative 4 (People's Project), compared to the proposed project include:

- The construction of a new open water intakes would require the use of barges and other activities in the waters of MBNMS, including the placement of ballast rock on the seafloor, and could result in temporary and permanent direct and indirect effects on marine habitat and associated marine biological resources, as well as historical resources (i.e., shipwrecks) in Monterey Bay, resulting in significant and unavoidable impacts.
- The construction and operation of new intake facilities, located within a ravine of the Monterey Submarine Canyon, could result in temporary and permanent direct and indirect effects due to unstable slopes and the potential for landslides on the seafloor as well as alteration of the seafloor and oceanic processes such as sediment transport, resulting in potentially significant impacts.
- Operation of screened open-water intakes would result in long-term direct and indirect effects on marine biological resources within MBNMS in Monterey Bay as a result of impingement and entrainment, resulting in a significant and unavoidable impact.
- Operation of these open water intake alternatives would avoid less than significant direct or indirect effects on groundwater resources because of the absence of slant well pumping for source water.

The following impacts are unique to Alternative 3 (DeepWater Desal Project) and Alternative 4 (People's Project):

- Due to the proximity of live-aboard boats in Moss Landing Harbor, construction activities would result in exposure of more sensitive receptors to substantial pollutant concentrations from construction equipment emissions, resulting in a significant and unavoidable impact.
- Alternatives 3 and 4 would have potentially significant and unavoidable impacts related to PM_{10} emissions, which could result in significant and unavoidable environmental justice impacts.
- Operation of a new, brine-only outfall (no co-mingling with wastewater or other diluent flows) could result in long-term direct and indirect effects on water quality related to increased levels of salinity and concentrations of certain constituents, resulting in a significant and unavoidable impact.
- Each of these alternatives would produce more desalinated water than the proposed MPWSP, resulting in more water being available that would remove an impediment to growth in the three-county region resulting in a significant and unavoidable impact:
  - Alternative 3 (DeepWater Desal) would produce 22 mgd
  - Alternative 4 (People's Project) would produce 12 mgd

The following impacts are unique to Alternative 3 (DeepWater Desal Project):

- Operation of the co-located data center and emergency generators would result in substantial total net operation GHG emissions resulting in a significant and unavoidable impact.
- Operation of the co-located data center would require the use of substantial quantities of energy that would constrain local or regional supplies and require additional capacity, resulting in a significant and unavoidable impact.
- Operation of emergency generators would use large amounts of fuel in a manner that would be unnecessary and wasteful, resulting in a significant and unavoidable impact.

The following impacts are unique to Alternative 4 (People's Project):

- Construction of the desalination plant could impact (currently unsurveyed) historical resources, resulting in a significant and unavoidable impact.
- Operation and siting of the intake pumping facilities on top of the existing caisson at the existing shoreline could result in long-term direct effects on coastal erosion and scour processes that could expose adjacent properties to coastal flooding and a change in sediment transport, resulting in potentially significant impacts.
- Operation and siting of the desalination plant facilities within a 100-year flood zone could cause long-term direct effects related to redirection of flood flows, resulting in a significant and unavoidable impact.
- Operation and siting of the intake pumping facilities on top of the existing caisson would result in impacts on the visual quality of the shoreline in Moss Landing and interrupt views of MBNMS resources, resulting in potentially significant impacts.

The following impact would be unique to slant well pumping at Potrero Road (Alternative 1 and 5b):

- Operation of the slant wells at Potrero Road for a 6.4 mgd desalination plant (Alternative 5b) would lower groundwater levels in the Dune Sands/Perched-A aquifer in the Moss Landing area; operation of the wells for a 9.6 mgd desalination plant (Alternative 1) would additionally lower groundwater levels in the 180- and 400-Foot Aquifers, thereby capturing groundwater that would have otherwise flowed into Elkhorn Slough. The direct and indirect permanent effects on marine and terrestrial biological resources at Elkhorn Slough from the lowering of groundwater levels would result in significant and unavoidable impacts.

5.6.2 Determination of Environmentally Superior/ Environmentally Preferred and NOAA-Preferred Alternative

Based on current information, Alternatives 3 and 4 would each produce more water than the proposed MPWSP and while they would each meet most of the project objectives and purpose and need, these alternatives would not generally reduce or avoid the potential significant environmental impacts of the proposed MPWSP. Both alternatives would have a greater impact on the seafloor and generally on marine biological resources within MBNMS than the proposed project as a result of new screened open water intake and outfall structures, and Alternative 3 would use substantially more energy (because of the co-located data center) that would result in increased air quality and GHG impacts. In addition, the water that these alternatives would produce would exceed CalAm's needs, and would be available for use in the region. That use is unknown and could eliminate an impediment to growth which would result in additional impacts. For these reasons, neither Alternative 3 nor Alternative 4 is the environmentally superior/environmentally preferred alternative.

The proposed project, Alternative 1 (Slant Wells at Potrero Road), and Alternative 2 (Open Water Intake at Moss Landing) would each provide 9.6 mgd of desalinated water and each would meet the project objectives and purpose and need. Alternative 2 would have greater impacts on the seafloor than the proposed project or Alternative 1, as a result of the construction of a new intake, and operation of an open water intake would result in long-term marine biological impacts from impingement and entrainment. The operational impacts would be mitigable, but the proposed project and Alternative 1 would avoid the impacts by using subsurface intakes. The impacts of the subsurface intakes at Potrero Road (Alternative 1), however, would have a greater impact on groundwater levels in the Dune Sands, 180- and 400-Foot Aquifers, resulting in greater impacts on marine and terrestrial biological resources at Elkhorn Slough than pumping at CEMEX (proposed project). Therefore, neither Alternative 1 nor Alternative 5b would offer overall environmental advantages over the proposed project or reduced-size alternative (Alternative 5a).

Alternative 5b (Reduced Desal with Slant Wells at Potrero Road) would have similar but reduced groundwater level impacts at Elkhorn Slough in the Dune Sands Aquifer compared to Alternative 1. Although it would avoid impacts on marine and terrestrial biological resources at the proposed CEMEX site, the impacts on Elkhorn Slough biological resources were determined to be of

greater magnitude. Therefore, Alternative 5b would not offer overall environmental advantages over the proposed project or Alternative 5a.

The proposed project would offer the following environmental advantages over other alternatives of the same or larger size (Alternatives 1, 2, 3, and 4):

- Use of an existing outfall and co-mingling of brine with wastewater;
- No construction on the seafloor;
- Meets Ocean Plan Water Quality objectives for salinity within a very short distance;
- Avoids impingement and entrainment of marine organisms associated with an open water intake;
- Less than significant impacts on groundwater resources, surface water resources and marine biological resources; and
- Consistency with the Ocean Plan and MBNMS Desalination Guidelines.

While the proposed project would cause significant and unavoidable construction impacts on air quality and cumulative traffic during construction, the construction impacts would be temporary. While the proposed slant wells at CEMEX would be inconsistent with the City of Marina's LCPLUP policy (and thereby would therefore also result in a significant and unavoidable cumulative impact on terrestrial biological resources when considered with the test slant well at the CEMEX site), Coastal Act Section 30260 encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned. Therefore, the proposed project would be the environmentally superior/environmentally preferred alternative that meets the project objectives and purpose and need without the GWR Project.

Alternative 5a would result in similar environmental advantages (see above) and would result in a reduced severity of some of the potential impacts of the proposed project (smaller footprint, less energy, reduced impacts on groundwater levels). But, as a standalone project, it would not meet the project objectives or purpose and need in terms of providing adequate water supply in the CalAm Monterey District Service Area. Assuming that the GWR Project is implemented and producing water, the combination of Alternative 5a and GWR would meet the project objectives. The cumulative effects of Alternative 5a and GWR may be greater for some of the construction-related impacts (air quality, traffic, noise), and some of the footprint-related impacts (all of the GWR facility footprints plus the footprint of Alternative 5a) and some impacts would remain the same (inconsistency with City of Marina LCPLUP policy). However, some of the operational impacts would be reduced compared to the proposed project because the 3,500 afy provided by the GWR Project would require less energy than producing it by desalination, resulting in reduced impacts on air quality. The reduced capacity desalination plant would require less source water from the slant wells, resulting in a reduction in the severity of impacts on groundwater levels, and the GWR Project would provide additional irrigation supplies to CSIP that would benefit the groundwater basin. For these reasons, assuming that the GWR Project is fully funded and successfully implemented so as to meet its purposes, Alternative 5a would be the

environmentally superior alternative under CEQA, the environmentally preferred alternative under NEPA and the NOAA-preferred alternative.

Given a choice between the proposed MPWSP and Alternative 5a paired with the GWR Project, this EIR/EIS identifies Alternative 5a as the environmentally superior/environmentally preferred and NOAA-preferred alternative. While it is true that implementing Alternative 5a and the GWR Project would result in a larger facility footprint than the proposed project alone, the pairing of Alternative 5a and the GWR Project would result in reduced operational energy use and reduced impact on air quality compared to the proposed project. Not only would the combination of Alternative 5a and the GWR Project result in reduced effects on groundwater levels influenced by fewer slant wells and less volume of pumping, the GWR Project would provide water to the CSIP growers that would benefit the groundwater basin. In addition, Alternative 5a paired with the GWR Project would be consistent with the 2016 California Action Plan seeking integrated water supply solutions, the Governor's drought proclamations, the CPUC Water Action Plan goal of promoting water infrastructure investment, and the Ocean Plan and MBNMS Desalination Guidelines.

TABLE 5.6-1
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.2: Geology, Soils, and Seismicity							
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↓**
Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically-induced groundshaking.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-4: Exposure of people or structures to substantial adverse effects related to seismically-induced ground failure, including liquefaction, lateral spreading, or settlement.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.	**NI**	**NI ↓**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**
Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems.	**LS**	**NI ↓**	**LS =**	**LS ↓**	**LS ↓**	**LS ↓**	**LS =**
Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.	**LSM**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**SU ↑**	**5a: LSM = 5b: NI ↓**
Impact 4.2.11: Degrades the physical structure of any geologic resource or alters any oceanographic process, such as sediment transport, that is measurably different from pre-existing conditions.	**NI**	**NI ↓**	**NI =**	**SU ↑**	**SU ↑**	**SU ↑**	**NI =**
Impact 4.2-C: Cumulative impacts related to Geology, Soils, and Seismicity.	**LSM**	**NI ↓**	**LSM =**	**SU ↑**	**LSM =**	**SU ↑**	**LSM =**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.3: Surface Water Hydrology and Water Quality							
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	LS	LS↓	LS ↑	LS ↑	SU ↑	SU ↑	LS ↓
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development.	LSM	NI ↓	LSM ↑	LSM =	LSM ↑	LSM ↓	LSM ↓
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	LS	NI ↓	LS ↑	LS =	LS ↑	LS ↓	5a: LS = 5b: LS ↑
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM	NI ↓	LSM =	LSM =	LSM ↑	SU ↑	LSM =
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM	NI ↓	LSM =	LSM =	LSM ↑	SU ↑	LSM =
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR -5 and ASR-6 Wells.	LS	NI ↓	LS =	LS ↑	LS ↑	LS ↑	LS ↓
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff.	LS	NI ↓	LS ↓	LS ↓	LS ↑	LS ↓	LS =
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded.	LS	NI ↓	LS ↑	LS ↓	LS ↑	LS ↓	LS ↓
Impact 4.3-9: Impedance or redirection of flood flows due to the siting of project facilities in a 100-year flood hazard area.	LS	NI ↓	LS ↓	LS =	LS ↓	SU ↑	5a: LS = 5b: LS ↓
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	LS	NI ↓	LS ↓	LS =	LS ↓	SU ↑	LS =
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	LS	NI ↓	LS ↓	LS =	LS ↓	SU ↑	LS =
Impact 4.3-C: Cumulative impacts related to Surface Water Hydrology and Water Quality.	LSM	NI ↓	LSM =	LSM =	LSM ↑	SU ↑	LSM =

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.4: Groundwater Resources							
Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.	**NI**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**	**NI =**
Impact 4.4-2: Violate any water quality standards or otherwise degrade groundwater quality during construction.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS ↑**	**LS ↑**	**LS =**
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS ↓ 5b: LS =**
Impact 4.4-4: Violate any water quality standards or otherwise degrade groundwater quality during operations.	**LSM**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LSM = 5b: LS ↓**
Impact 4.4-C: Cumulative impacts related to Groundwater Resources.	**LS**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**5a: LS = 5b NI ↓**
Section 4.5: Marine Resources							
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction	**LS**	**NI ↓**	**LS ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**LS ↓**
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.	**LS**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: LS = 5b: SU ↑**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.5: Marine Resources (cont.)							
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS =**	**LS =**	**LS ↓**
Impact 4.5 6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS =**	**LS =**	**LS ↓**
Impact 4.5-C: Cumulative impacts on Marine Resources.	**LS**	**NI ↓**	**LS =**	**SU ↑**	**NI ↓**	**SU ↑**	**LS ↓**
Section 4.6: Terrestrial Biological Resources							
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly or through habitat modification, during construction.	**LSM**	**LSM↓**	**LSM =**	**LSM ↓**	**LSM ↑**	**LSM =**	**LSM =**
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM ↓**	**SU ↑**	**LSM =**	**LSM =**
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the State during construction.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance with local tree ordinances.	**SU**	**NI ↓**	**SU ↓**	**SU =**	**SU =**	**SU =**	**SU =**
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	**LSM**	**↓**	**LSM =**	**LSM ↓**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations	**LSM**	**↓**	**SU ↑**	**LSM ↓**	**LSM =**	**LSM =**	**5a: LSM = 5b: SU ↑**
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the State during project operations.	**LSM**	**NI ↓**	**LSM =**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	**LSM**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**NI ↓**	**5a: LSM = 5b: NI ↓**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.6: Terrestrial Biological Resources (cont.)							
Impact 4.6-10: Conflict with the provisions of an adopted Habitat Conservation Plans, natural community conservation plans or other approved local, regional, or state habitat conservation plan.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.6-C: Cumulative impacts related to Terrestrial Biological Resources.	**SU**	**LS ↓**	**SU =**	**SU =**	**LSM ↓**	**SU =**	**SU ↑**
Section 4.7: Hazards and Hazardous Materials							
Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.	**LSM**	**LSM ↓**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.7-3: Project facilities would be located on a known hazardous materials site.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LS ↑**	**LS ↑**	**LS =**
Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of schools during construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.7-5: Increase risk of wildland fires during construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.7-C: Cumulative impacts related to Hazards and Hazardous Materials.	**LSM**	**LS ↓**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Section 4.8: Land Use, Land Use Planning, and Recreation							
Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation that were adopted for the purpose of mitigating an environmental effect.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.8-C: Cumulative impacts related to Land Use, Land Use Planning, and Recreation.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.9: Traffic and Transportation							
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-4: Impaired emergency access during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-7: Parking interference during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM =**	**LSM =**	**LSM =**	**5a: LSM = 5b: LSM ↑**
Impact 4.9-8: Long-term traffic increases on regional and local roadways during project operations and maintenance.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.9-C: Cumulative impacts related to Traffic and Transportation.	**SU**	**NI ↓**	**SU =**	**SU =**	**SU =**	**SU =**	**SU =**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.10: Air Quality							
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	**SU**	**LSM ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**	**SU =**
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**	**SU =**
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *Coccidioides immitis* (Valley Fever) spores or create objectionable odors affecting a substantial number of people during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**SU ↑**	**SU ↑**	**LS =**
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LSM ↑**	**LS ↑**	**LS ↓**
Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	**LS**	**NI ↓**	**LS =**	**LS ↑**	**LSM ↑**	**LS ↑**	**LS ↓**
Impact 4.10-C: Cumulative impacts related to Air Quality.	**SU**	**LS ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**SU =**
Section 4.11: Greenhouse Gas Emissions							
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	**LSM**	**LSM ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**LSM ↓**
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**LSM ↓**
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**LSM ↓**
Impact 4.11-C: Cumulative impacts related to Greenhouse Gas Emissions.	**LSM**	**LS ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**LSM ↓**
Section 4.12: Noise and Vibration							
Impact 4.12-1: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: SU = 5b: SU ↑**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.12: Noise and Vibration (cont.)							
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.12-3: Exposure of people to or generation of excessive groundborne vibration during construction.	**LSM**	**NI ↓**	**LSM ↓**	**LSM ↓**	**LSM ↓**	**LSM ↓**	**5a: LSM = 5b: LSM ↓**
Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM =**	**5a: LSM = 5b: LSM ↓**
Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.12-6: Expose people to or generate operational noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operation.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LSM ↑**	**LS =**
Impact 4.12-C: Cumulative impacts related to Noise and Vibration.	**SU**	**NI ↓**	**SU ↑**	**SU ↑**	**SU ↑**	**SU ↑**	**5a: SU = 5b: SU ↑**
Section 4.13: Public Services and Utilities							
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.13-3 Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**LS ↓**	**LS =**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.13: Public Services and Utilities (cont.)							
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LS ↓**	**LS ↓**	**LSM =**
Impact 4.13-5: Increased corrosion of the MRWPCA outfall and diffuser as a result of brine discharge associated with project operations.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**NI ↓**	**NI ↓**	**LSM =**
Impact 4.13-C: Cumulative impacts related to Public Services and Utilities.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↓**	**LSM ↓**	**LSM =**
Section 4.14: Aesthetic Resources							
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LSM ↑**	**LS =**
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LSM**	**NI ↓**	**LSM =**	**LSM ↓**	**LSM ↓**	**LSM =**	**LSM =**
Impact 4.14-4: Permanent new sources of light or glare.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**LSM ↑**	**LSM =**
Impact 4.14-C: Cumulative impacts related to Aesthetic Resources.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Section 4.15: Cultural and Paleontological Resources							
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	**NI**	**NI =**	**NI =**	**NI =**	**NI =**	**SU ↑**	**NI =**
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	**LSM**	**LSM ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**5a: LS = 5b: LS ↑**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.15: Cultural and Paleontological Resources (cont.)							
Impact 4.15-4: Disturbance any human remains, including those interred outside of formal cemeteries, during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM = 5b: LSM ↑**
Impact 4.15-C: Cumulative impacts related to Cultural and Paleontological Resources.	**LS**	**LS ↓**	**LS =**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM =**
Section 4.16: Agricultural Resources							
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**NI ↓**	**LSM =**
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**NI ↓**	**LS =**
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS ↑**	**NI ↓**	**LS =**
Impact 4.16-C: Cumulative impacts related to Agricultural Resources.	**LSM**	**NI ↓**	**LSM =**	**LSM =**	**LSM ↑**	**NI ↓**	**LSM =**
Section 4.17: Mineral Resources							
Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state or result in the loss of a locally-recognized important mineral resource recovery site.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS = 5b: LS ↓**
Impact 4.17-C: Cumulative impacts related to Mineral Resources.	**LS**	**NI ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**LS ↓**	**5a: LS = 5b: LS ↓**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Section 4.18: Energy Conservation							
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**LSM ↑**	**5a: LSM ↓ 5b: LSM ↑**
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↑**	**LS ↓**
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.	**LS**	**NI ↓**	**LS ↑**	**LS ↑**	**SU ↑**	**LS ↑**	**LS ↓**
Impact 4.18-C: Cumulative impacts related to Energy Resources.	**LSM**	**NI ↓**	**LSM ↑**	**LSM ↑**	**SU ↑**	**LSM ↑**	**5a: LSM ↓ 5b: LSM ↓**
Section 4.19: Population and Housing							
Impact 4.19-1: Induce substantial population growth directly during project construction.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.19-2: Induce substantial population growth directly during project operations.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Impact 4.19-C: Cumulative impacts related to Population and Housing.	**LS**	**NI ↓**	**LS =**	**LS =**	**LS =**	**LS =**	**LS =**
Section 4.20 Socioeconomics and Environmental Justice							
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.	**LSM**	**SU ↑**	**LSM =**	**LSM =**	**LSM =**	**LSM =**	**LSM =**
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.	**LS**	**SU ↑**	**LS =**	**LS ↓**	**SU ↑**	**SU ↑**	**LS ↓**
Impact 4.20-C: Cumulative impacts related to Socioeconomics and/or Environmental Justice.	**LSM**	**SU ↑**	**LSM =**	**LSM =**	**SU ↑**	**SU ↑**	**LSM ↓**

TABLE 5.6-1 (Continued)
ALTERNATIVES IMPACT SUMMARY

Impact	Proposed Project 10 Slant Wells at CEMEX	No Action	Alt. 1: Slant Wells at Potrero Road	Alt. 2: Open Water Intake at Moss Landing	Alt. 3: Deep Water Desal	Alt. 4: People's Project	Alt. 5: Reduced Size Desal
Growth Inducement							
Impact 6.3-1: Secondary effects of planned growth.	**SU**	**NI** ↓	**LS** ↓	**SU** ↑	**SU** ↑	**SU** ↑	**LS** ↓
Impact 6.3-C: Cumulative impacts related to growth inducement.	**SU**	**NI** ↓	**SU** ↑	**SU** ↑	**SU** ↑	**SU** ↑	**SU** =

NOTES:

↑ Increased severity of impact ↓ Decreased severity of impact = Same severity of impact

NI – No Impact
LS = Less than Significant impact, no mitigation proposed
LSM = Less than Significant impact with Mitigation
SU = Significant and Unavoidable impact, even with implementation of mitigation
= Beneficial Impact

CHAPTER 6
Other Considerations

Sections	Tables
6.1 Significant and Unavoidable Environmental Effects	6.3-1 MPWSP Demand Assumptions
6.2 Significant Irreversible Changes and Short-Term versus Long-Term Uses	6.3-2 Monterey District Commercial Sector Water Consumption Water Years 2003 Through 2015
6.3 Growth-Inducing Impacts	6.3-3 Existing and Anticipated Demand
6.4 Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines	6.3-4 Water Supplies and Demands During Seaside Groundwater Basin Replenishment Period, 9.6-mgd Desalination Plant with SVGB Return
	6.3-5 Range of Flow Volumes Accommodated by Pipeline Segment
	6.3-6 Service Area and Monterey County Growth Trends 1990-2010 Population and Housing
	6.3-7 AMBAG Population, Housing, and Employment Projections
	6.3-8 Future Water Demand and Available Supplies: Two Return Water Scenarios
	6.3-9 Significant Impacts Associated with Planned Growth in the Project Area
	6.3-10 Agencies with the Authority to Implement or Require Implementation of Measures to Avoid or Mitigate Growth-Related Impacts
	6.4-1 Assessment of Project Conformity with Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary

This chapter addresses other considerations required by CEQA and NEPA, including the potential for the proposed project to have unavoidable significant impacts; the irreversible or irretrievable commitment of resources; the relationship between short-term uses of the project and long-term productivity; growth-inducing effects of the project; and project consistency with MBNMS Desalination Guidelines.

6.1 Significant and Unavoidable Environmental Effects

Section 15126.2(b) of the CEQA Guidelines requires that an EIR identify significant environmental effects that cannot be avoided by the proposed project, including those that can be mitigated, but not to a less-than-significant level. CEQ Regulations 40 CFR Section 1502.16 states that the EIS environmental analysis shall include any adverse environmental effects which cannot be avoided should the proposal be implemented. The analysis in Chapter 4 identifies all adverse impacts associated with the proposed project/proposed action and those impacts that

cannot be avoided. The analysis in Chapter 4 determined that the proposed project would result in impacts related to noise, air quality, terrestrial biological resources, and cumulative traffic impacts that, even with implementation of mitigation measures, would remain significant and unavoidable. These impacts are summarized below:

- Nighttime noise impacts on residential receptors during installation of the Castroville Pipeline Optional Alignment 1 and during drilling and development of the ASR-5 and ASR-6 Wells would remain significant and unavoidable, even with implementation of mitigation measures. See Section 4.12, Noise and Vibration, for additional information on this impact.

- Nighttime construction could contribute to a significant unavoidable cumulative impact. In the absence of detailed information regarding cumulative project construction equipment and exact construction phase timing, a quantitative assessment of cumulative nighttime noise impact cannot be reasonably estimated. However, it is conservatively assumed that the potential exists for residual (post-mitigation) MPWSP pipeline construction noise to combine with that of one or more of five cumulative projects in Table 4.1-2 (Nos. 31, 35, 38, 45, and 51) to cause nighttime noise levels to exceed the sleep interference threshold. As a result, temporary cumulative increases in nighttime construction noise could result in a significant cumulative nighttime noise impact. No additional mitigation within the scope of this EIR/EIS is available to further reduce this potential impact. Therefore, MPWSP nighttime construction noise could have a significant contribution to a significant cumulative effect. See Section 4.12, Noise and Vibration, for additional information on this impact.

- Short-term air emissions associated with construction of the proposed project could contribute to an exceedance of state and/or federal standards for ozone and NO_x, which could increase the susceptibility of sensitive individuals to respiratory infections and is a significant impact. Such exceedances in ozone would also be inconsistent with the Monterey Bay United Air Pollution Control District's 2012 Air Quality Management Plan (AQMP). Implementation of mitigation measures would not reduce project-related NO_x emissions (a precursor to ozone) to a level below the significance threshold, therefore resulting in significant and unavoidable impacts with regard to violations of air quality standards and compliance with the AQMP. See Section 4.10, Air Quality, for additional information on these impacts.

- Project construction NO_x emissions, in combination with cumulative project emissions, would violate ambient air quality standards and conflict with implementation of the applicable air quality plan, even with implementation of mitigation measures**.** The proposed project's incremental contribution to the cumulative impact would be significant. No further feasible mitigation measures are available to reduce the project's contribution to cumulative impacts.

- Several proposed facilities would occur in areas that may qualify as Primary and Secondary Habitat according to the City of Marina Local Coastal Land Use Plan (LCLUP). These facilities, which include the subsurface slant wells, and portions of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the staging area at Beach Road, would be inconsistent with the City of Marina's LCLUP Policy 25 that prohibits development in Primary Habitat that is not protective of and dependent upon that habitat. The LCLUP states, "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas (City of Marina, 1982)." Implementation of mitigation

measures would reduce impacts on special-status species habitat. However, given that project facilities proposed for such habitats are not resource-dependent, and because the LCLUP policy provides no exception to the requirements that development within such habitats be resource-dependent, potential conflicts with this policy would remain unresolved. The effect would be significant and unavoidable. See Section 4.6, Terrestrial Biological Resources, for additional information.

- As described above, construction of some of the proposed components would be inconsistent with the City of Marina LCLUP Policy 25. The test slant well at the CEMEX site is a cumulative project that is within the geographic scope of this analysis. The test slant well was also determined to be inconsistent with the City of Marina LCLUP. Implementation of the proposed project would have a significant contribution to the cumulative impact related to inconsistencies with the City of Marina LCLUP. No mitigation measures are available that would reduce this impact to less than significant. See Section 4.6, Terrestrial Biological Resources, for additional information.

- Given the size of the MPWSP, along with the number of cumulative projects and uncertainty regarding cumulative project construction timing, the MPWSP transportation impacts could contribute substantially to cumulative local and regional traffic and roadway capacity disruptions, a cumulatively significant impact. Implementation of Mitigation Measure 4.9-C (Construction Traffic Coordination Plan), could reduce cumulative impacts, however there is no guarantee that local agencies would participate in such coordination efforts. Therefore, the project's incremental contribution to potential significant cumulative effects would be significant, even with implementation of mitigation measures. See Section 4.9, Traffic and Transportation, for additional information.

- The proposed project would indirectly support growth by removing some water supply limitations as an obstacle to growth, thereby enabling a degree of growth under the approved general plans within the area served by the MPWSP. The project's effect would be significant and unavoidable and its contribution to cumulative indirect growth-inducement would also be significant and unavoidable. See Section 6.3, Growth-Inducing Impacts, for additional information.

6.2 Significant Irreversible Changes and Short-Term versus Long-Term Uses

In accordance with CEQA Section 21100(b)(2)(B), CEQA Guidelines Sections 15126(c) and 15126.2(c), and CEQ Regulations 40 CFR Section 1502.16, the purpose of this section is to identify significant irreversible environmental changes and commitments of resources that would be caused by implementation of the proposed project. In addition, NEPA (40 CFR §1502.16) requires an EIS to include analysis of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity.

6.2.1 Irreversible Changes

A resource commitment is considered irreversible when primary or secondary impacts from its use limit future use options. Irreversible commitment applies primarily to nonrenewable resources, such as minerals or cultural resources, and to those resources that are renewable only over long time spans, such as soil productivity. A resource commitment is considered

irretrievable when the use or consumption of the resource is neither renewable nor recoverable for use by future generations. Irretrievable commitment applies to the loss of production, harvest, or natural resources. The proposed project would involve two types of resources: (1) general industrial resources including fuels and construction materials; and (2) project-specific resources such as land, biotic and cultural resources at the project facility sites. This section identifies any resources that would be lost permanently as a result of undertaking the project.

Implementation of the proposed project would result in a significant irreversible commitment of natural resources during construction and operation through the use of fossil fuels, energy and materials such as concrete, steel, and plastics.

During the life of the project, the land used for the facilities would be committed to the project. Project components, including the slant wells, desalination plant, ASR-5 and 6 Wells, and Carmel Valley Pump Station, would permanently occupy approximately 30 acres of land, via physical siting and security fencing. This land could be used for other purposes in the future; however, the baseline condition of the land would either be irretrievable or renewable in an undeterminable timeframe. Siting of the slant wells would displace sensitive dune habitat and designated mineral resources; the desalination plant would displace non-native grassland; the ASR-5 and 6 Wells could displace central maritime chaparral plant communities, including special-status species; and the Carmel Valley Pump Station site could displace non-native grassland with coastal live oak woodland fringe.

Accidents, such as the release of hazardous materials, could trigger irreversible environmental damage. As discussed in Section 4.7, Hazards and Hazards Materials, construction and operation of the proposed project would involve limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, solvents, paints, and other chemicals. An accidental spill of any of these substances could affect water and/or groundwater quality and, if a spill were to occur of significant quantity, the release could pose a hazard to construction workers, the public, and the environment. Improper storage, use, handling, or accidental spilling of such materials could result in a hazard to the public or the environment. However, compliance with the various regulations regarding the safe transport, use, and storage of hazardous materials (see Section 4.7.2, Regulatory Framework) as well as the National Pollutant Discharge Elimination System General Construction Permit requirements would ensure that public health and safety risks are maintained at acceptable levels. Therefore, significant irreversible changes from accidental releases are not anticipated.

6.2.2 Short-Term versus Long-Term Uses

This section compares the short- and long-term environmental effects of the project. Short-term impacts would result from constructing the various project components. These actions would result in temporary adverse impacts related to soils, air quality, terrestrial biology, water quality, noise, hazardous materials, traffic and transportation, aesthetics, agriculture, energy consumption, and the daily influx of construction workers. The siting and operation of various project components could result in long-term adverse impacts related to terrestrial biological resources, greenhouse gas emissions and the indirect effects of induced growth. All of these short-term and long-term impacts are addressed in Chapter 4 and feasible mitigation measures are identified that

would result in a reduction of many impacts to a less than significant level. On balance, impacts would not substantially affect the maintenance and enhancement of long-term environmental productivity, nor pose long-term risks to health or safety.

6.3 Growth-Inducing Impacts

6.3.1 Introduction

This section addresses the indirect growth inducement potential of the proposed MPWSP. Refer to Section 4.19, Population and Housing, for an analysis of the MPWSP's potential direct effects on growth[1]. Direct and indirect growth-inducing effects of the alternatives are addressed in Section 5.5. This section describes the relationship between land use planning and water supply; identifies the regulatory framework for the analysis; describes the assumptions used in the analysis; and discloses the MPWSP's potential to induce growth indirectly. The study area for this analysis consists of the area that would be served by the proposed project – CalAm's Monterey District service area (Monterey District)– which encompasses most of the Monterey Peninsula, and Monterey County. In particular, the MPWSP would provide water supply to customers served by the Monterey District main distribution system and three small satellite water systems, the Ryan Ranch, Hidden Hills, and Bishop systems. The main distribution system serves the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and most of the City of Seaside; the Monterey Peninsula Airport District; and the unincorporated county areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. The analysis also evaluates the proposed delivery of Salinas Valley Groundwater Basin Return Water to the community of Castroville.

Growth can be induced in several ways, such as through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through the establishment of policies or other precedents that directly or indirectly encourage additional growth. In general, a project may foster spatial, economic, or population growth in a geographic area if the project removes an impediment to growth (for example, the establishment of an essential public service, the provision of new access to an area; a change in zoning or general plan amendment approval); or economic expansion or growth occurs in an area in response to the project (for example, changes in revenue base, employment expansion, etc.).

Assessing the MPWSP's potential to indirectly induce growth means determining whether the project would indirectly support economic expansion, population growth, or residential construction, and if so, determining the magnitude and nature of the potential environmental effects of that growth.

The objectives of the MPWSP include development of water supply to enable CalAm to replace Carmel River and Seaside Groundwater Basin supplies that are currently diverted and pumped in excess of CalAm's legal rights; development of a reliable water supply for its Monterey District

[1] "Direct effects" of a proposed project are "caused by the [action or project] and occur at the same time and place," while "indirect or secondary effects" are "caused by" the action or project and are "later in time or farther removed in distance, but are still reasonably foreseeable." (CEQA Guidelines § 15358(a))

service area; and provision of sufficient water supply to serve existing vacant lots of record and accommodate tourism demand under recovered economic conditions. Water supply is one of the primary public services needed to support urban development. A water service deficiency could constrain future development, particularly if coupled with policies that constrain growth relative to water supply. Adequate water supply would play a role in supporting additional growth in CalAm's service area, but it would not be the single impetus behind such growth. Other factors that influence new development and population growth on the Monterey Peninsula include economic factors such as employment opportunities; the availability of adequate infrastructure like public schools, roadways, and sewer service; local land use policies in the affected communities; and constraints on the use of areas like floodplains and sensitive habitats.

6.3.2 Relationship between Land Use Planning and Water Supply

There is a connection between land use planning and water supply. In California, cities and counties have primary authority over land use while water suppliers, through laws and agreements, are expected – and usually required – to provide water service if water supply is available. In the areas served by CalAm, it is the responsibility of the cities or Monterey County to approve or deny development proposals. In addition, on the Monterey Peninsula, the MPWMD is responsible for allocating water to the jurisdictions within its boundary (which includes the CalAm service area), issuing water permits, and approving new water distribution systems or expansions. Therefore, when deciding whether to approve or deny development projects, including whether water would be available to serve the projects, the jurisdictions within the MPWMD's boundary take into account the MPWMD's allocation and distribution determinations and permits. Numerous laws ensure that water supply planning and land use planning proceed in an orderly fashion. The laws and agencies described below provide the regulatory and planning context in which water agencies, cities, and counties work together and produce key documents (e.g., general plans and regional projections) used in this analysis.

6.3.2.1 Regional Planning and Local Planning

AMBAG

The Association of Monterey Bay Area Governments (AMBAG) is the key regional agency involved in forecasting growth in Monterey County. Although AMBAG can forecast growth, it does not have authority to approve or deny land use plans or development projects. AMBAG is a Joint Powers Authority that serves as the federally-designated Metropolitan Planning Organization and Council of Governments for Monterey, Santa Cruz and San Benito Counties. It is governed by a Board of Directors made up of elected officials from each city and county in the region. AMBAG undertakes metropolitan-level transportation planning on behalf of the region; manages the region's transportation demand model; and prepares regional housing, population and employment forecasts that are used in a variety of regional plans (AMBAG, 2013). AMBAG's regional growth forecast, which it produces approximately every five years, supports regional planning efforts such as the Metropolitan Transportation Plan, and may be used by city and county governments in support of local planning efforts such as the development of general

plans and project review. The 2004 and 2008 forecasts describe how the existing water and sewer infrastructure constrains growth (AMBAG, 2004, 2008). AMBAG adopted a different methodology for its current (2014) forecast, which emphasizes employment growth as the primary driver of long-term population change at a regional scale. The 2014 forecast includes population, housing, and employment projections out to the year 2035 (AMBAG, 2014a). While AMBAG does not have authority to approve or deny land use plans, it does direct regional growth decisions by setting state-mandated fair-share regional housing allocations in Monterey and Santa Cruz Counties and their respective cities.[2]

General Plan Requirements

Under state law,[3] each city and county must adopt a comprehensive, long-term general plan for the physical development of the jurisdiction. The general plan is a statement of development policies, and must include land use, circulation, housing, conservation, open space, noise, and safety elements. The land use element designates the general distribution, location, and extent of land uses, and includes a statement of the standards of population density and building intensity recommended for lands covered by the plan. The city or county must prepare the water section of the conservation element in coordination with any countywide water agency and with all district and city agencies that have developed, served, controlled, managed, or conserved water of any type for any purpose in the county or city for which the general plan is prepared. Coordination among relevant agencies is required to include the discussion and evaluation of any water supply and demand information contained in any applicable urban water management plan, current capital improvement program, and related supply and demand information that has been submitted to the city or county by a water agency.[4]

6.3.2.2 Coordination of Land Use Planning and Water Supply

Urban Water Management Planning Act

The Urban Water Management Planning Act[5] requires every urban water supplier to prepare an urban water management plan (UWMP) for the purpose of "actively pursu[ing] the efficient use of available supplies."[6] In preparing the UWMP, the water supplier must coordinate with other appropriate agencies, including other water suppliers that share a common source, water management agencies, and relevant public agencies. When a city or county proposes to adopt or substantially amend a general plan, the water agency must provide the planning agency with the current version of the adopted UWMP, the current version of the water agency's capital improvement program or plan, and other information about the system's sources of water supply. The Urban Water Management Planning Act requires urban water suppliers, as part of their long-range planning activities, to make every effort to ensure the appropriate level of reliability in their

2 San Benito County is responsible for setting the fair share regional housing allocation for the cities and unincorporated area in that county.
3 California Government Code § 65300 *et seq.*
4 California Government Code § 65302(d)(1).
5 California Water Code §10610 *et seq.*
6 California Water Code §10610.4(c).

water service sufficient to meet the needs of their various categories of customers during normal, dry, and multiple dry water years.[7]

Senate Bills (SB) 610 and 221

SB 610[8] and SB 221[9] were companion legislative measures that took effect in January 2002. They require increased efforts to identify and assess the reliability of anticipated water supplies, and require increased levels of communication between municipal planning authorities and local water suppliers.

- **SB 610** requires that the CEQA documents for most large projects[10] (including those that generate water demand greater than an equivalent of 500 dwelling units or increase service connections by 10 percent) include a water supply assessment. A water supply assessment must address whether existing water supplies will suffice to serve the proposed project and other planned development over a 20-year period in average, dry, and multiple-dry year conditions, and must set forth a plan for finding additional supplies necessary to serve the proposed project. Cities and counties can approve projects notwithstanding identified water supply shortfalls if they address those shortfalls in their findings.
- **SB 221** applies when cities and counties approve new tentative subdivision maps. When they do so, the cities and counties must impose a condition on the developers, requiring them to provide a detailed, written verification from the applicable water supplier that sufficient water supply will be available to serve the proposed subdivision. Without that verification, the cities and counties cannot approve the final subdivision map. SB 221 applies to projects similar in size to those addressed in SB 610.

Senate Bill 7 of the Seventh Extraordinary Session (Senate Bill 7)

Enacted in November 2009, Senate Bill 7[11] requires all water suppliers in the State to increase the efficiency of water use. Urban water suppliers like CalAm must reduce per capita water consumption 20 percent by 2020, and must set and achieve interim targets by 2015.

State Policies Encouraging Compact and Sustainable Development

In addition to the laws promoting coordinated land use and water supply planning, several recent laws have been adopted that seek to refocus planning efforts to reduce sprawl, preserve farmland, increase the viability of public transportation, and reduce the emission of greenhouse gases. These efforts promote compact and sustainable development, which allows for the more efficient provision of public services and reduces the consumption of resources, including water. One of the cornerstones of sustainable development is efficient water use. This includes water

7 California Water Code §10610.2(a)(4)
8 Codified at California Water Code §§ 10631, 10656, 10910, 10911, 10912, and 10915, and California Public Resources Code § 21151.9.
9 Codified at California Government Code §§ 65867.5, 66455.3, and 66473.7, and California Business and Professions Code § 11010.
10 Large projects include residential developments with more than 500 units; retail uses with more than 500,000 square feet of floor space; office buildings with more than 250,000 square feet of floor space; hotels or motels with more than 500 rooms; industrial uses occupying more than 40 acres or having more than 650,000 square feet of floor area; and mixed-use projects that include any use or combination as large as the above uses.
11 Codified at California Water Code §§ 10608 and 10800-10853.

conservation and efficiency measures such as using recycled water, installing water efficient fixtures, and putting in drought-tolerant landscaping.

- **Assembly Bill (AB) 32,**[12] the Global Warming Solutions Act of 2006, was adopted with the goal of reducing greenhouse gas emissions to 1990 levels by the year 2020. Under the Act, the California Air Resources Board (CARB) adopted a scoping plan that identifies measures to reduce the energy requirements of significant greenhouse gas sources, including those associated with providing reliable water supplies. These measures include increasing water use efficiency, recycling water, and improving water system energy efficiency. CARB updated the Scoping Plan CARB in May 2014.

- **SB 375,**[13] adopted in 2008, requires each of the state's MPOs to coordinate land use and transportation planning, and to develop a "Sustainable Communities Strategy" to reduce sprawl, and to reduce greenhouse gas emissions from automobiles and light trucks. AMBAG, the MPO for the three-county region, adopted its combined Metropolitan Transportation Plan/Sustainable Communities Strategy, which is advisory, in June 2014.

- **SB 732,**[14] adopted in 2008, establishes the Strategic Growth Council, a cabinet-level committee that coordinates the activities of State agencies to improve air and water quality, protect natural resources, and assist in the planning of sustainable communities.

- **AB 857,**[15] signed into law in 2002, establishes three planning priorities for the State: promoting infill development, protecting natural resources, and encouraging efficient development patterns. These priorities are to be incorporated into the Governor's Environmental Goals and Policy Report,[16] which provides a 20- to 30-year overview of State growth and development and guides the commitment of State resources in agency plans and infrastructure projects.

- The **Regional Blueprint Planning Program** is a grant program operated by the California Department of Transportation that provides assistance to COGs in developing long-range plans with the intent of supporting greater transit use, encouraging more efficient land use, improving air quality, and protecting natural resources. AMBAG released its blueprint, *Envisioning the Monterey Bay Area: A Blueprint for Sustainable Growth and Smart Infrastructure,* in June 2011.

6.3.2.3 Water Supply Management and Planning: Monterey Peninsula Water Management District

The MPWMD was established by state statute in 1978[17] to provide integrated management of all water resources for the Monterey Peninsula. In doing so, the MPWMD must ensure that the quantity of water use does not harm public trust resources, and that all water use is reasonable and beneficial. The MPWMD manages surface and groundwater resources within its jurisdictional boundary. Its functions include:

12 Codified at California Health and Safety Code § 38500 *et seq*.
13 Codified by amending California Government Code §§ 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, and 65588; amending California Public Resources Code § 21061.3; adding Government Code §§ 14522.1, 14522.2 and 65080.01; and adding Public Resources Code §§ 21159.28 and 21155 *et seq*.
14 Codified at California Public Resources Code §§ 75076, 75077, 75100 *et seq.,* and 75120 *et seq.*
15 Codified at California Government Code § 65041.1.
16 Required in California Government Code § 65041.
17 West's California Water Code, Appendix Chapters 118-1 to 118-901.

- augmenting the water supply through integrated management of surface water and groundwater resources;
- promoting water conservation;
- promoting water reuse and reclamation of stormwater and wastewater; and
- fostering scenic values, environmental qualities, native vegetation, fish and wildlife, and recreation on the Monterey Peninsula and in the Carmel River basin.

The MPWMD's responsibilities also include:

- computer modeling of water resources systems;
- hydrologic monitoring;
- issuing water permits for new connections and remodels;
- allocating water to jurisdictions and tracking its use;
- developing, implementing, and enforcing water efficiency programs and ordinances;
- determining when water supply emergencies exist and then imposing and enforcing rationing programs; and
- approving new water distribution systems and expansions.

The MPWMD includes the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, as well as the Monterey Peninsula Airport District and portions of unincorporated Monterey County (see Figure 3-1 in Chapter 3). Its boundary encompasses CalAm's Monterey District as well as other territory east of Carmel Valley Village and in the Ord Community. MPWMD is governed by a seven-member Board of Directors: five directors are elected from voter divisions; one is a member of the County Board of Supervisors; and one is an elected official or chief executive officer appointed by a committee consisting of the mayors from jurisdictions within the District boundaries.

6.3.3 Regulatory Framework

NEPA requires that an EIS discuss the direct and indirect effects of a proposed action. The potential for growth-inducing effects are indirect effects (40 CFR 1508.8). Specifically:

> Effects include:
>
> > Indirect effects, which are caused by the action and are later in time or farther removed in distance [than direct effects], but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

The CEQA Guidelines require that an EIR evaluate the growth-inducing impacts of a proposed project (Section 15126.2(d)). The EIR should:

> Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to

> population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.[18]

Economic growth refers to the extent to which a project could cause increased activity in the local or regional economy.

Growth that is induced by a project may be consistent with adopted local or regional land use plans. In that case, a formal CEQA/NEPA review would have identified and evaluated the indirect, or secondary, effects of that planned growth and, if necessary, mitigation would have been adopted to address these effects. If a project would have growth inducement potential that is not consistent with the land use plans and growth management plans and policies for the area affected (e.g., growth beyond that reflected in adopted plans and policies), then additional adverse secondary effects of growth beyond those previously evaluated could occur. Regional and local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, utilities, wastewater, and solid waste service. This urban development may have environmental impacts, as identified in CEQA documents prepared for adoption of local land use plans. A project that would induce “disorderly” growth that conflicts with regional and local planning could indirectly cause additional adverse environmental impacts and impacts on other public services. Thus, it is important to assess the degree to which the growth associated with a project would be consistent with regional and local planning.

6.3.4 Approach to Analysis

Based on the CEQA and NEPA discussions above, assessing the growth-inducement potential of the MPWSP involves answering the question: Would implementation of the proposed project directly or indirectly cause economic or population growth or residential construction? As indicated above, a project can have a direct or indirect growth inducement potential, or both. This chapter addresses the proposed project's indirect effects; the potential direct effects are addressed in Section 4.19, Population and Housing.

To determine the MPWSP's potential to indirectly induce growth, the proposed project was evaluated for its potential to stimulate additional housing development and the need for services as a result of increasing available water supply and providing associated infrastructure improvements. The following steps were taken to investigate the MPWSP’s growth inducement potential and to characterize the secondary effects on the environment resulting from such growth.

- **Describe the Relationship Between Land Use Planning and Water Supply.** Section 6.3.2 provides an overview of water supply and land use planning requirements in

[18] The CEQA Guidelines define indirect effects the same as NEPA, above, except that the Guidelines refer to “indirect or secondary” effects (Section 15358(a)(2)).

California to provide the reader with an understanding of the rules that govern decisions about water, land use, and growth.

- **Identify Changes in Water Supply and Characterize Growth-Inducement Potential of the Proposed Project.** Section 6.3.5 analyzes the impact of growth-inducement. It describes the water supply that the MPWSP would provide, and characterizes the proposed project's potential to support or foster growth within the service area. The section describes recent growth trends reflected in census data; presents population and housing forecasts prepared by AMBAG; and provides an overview of growth anticipated in the general plans of the jurisdictions served by the MPWSP. To evaluate the proposed project's consistency with growth anticipated by these local planning agencies, the analysis compares project supply that would be available to meet future demand with an analysis of future water needs prepared by the MPWMD in collaboration with service area jurisdictions.

  While Castroville is not in CalAm's service area, the analysis also considers the growth-inducement potential of delivering Salinas Valley Groundwater Basin return water as desalinated supply, to the Castroville Community Services District (see Section 6.3.5.4).

- **Characterize the Indirect or Secondary Effects of Planned Growth.** When the jurisdictions adopt general or specific plans, they must first perform CEQA review. Those CEQA documents have evaluated the environmental effects of planned growth. To characterize and disclose the impacts of planned growth, including the cumulative impacts of such growth, the EIRs prepared for the general plans of jurisdictions served by the proposed project are summarized in Section 6.3.6.

6.3.5 Growth-Inducement Potential

6.3.5.1 Proposed MPWSP Water Service Capacity

As described in Chapter 2, Water Demand, Supplies, and Water Rights, CalAm proposes that the MPWSP provide, along with other supply sources, sufficient water supply to:

- meet existing service area demand;
- serve development that uses existing water entitlements held in the Pebble Beach-Del Monte Forest area;
- develop vacant legal lots of record; and
- support increased water consumption at local restaurants and lodging when tourism increases under improved economic conditions.

Table 6.3-1 summarizes the water demand CalAm proposes to meet with the MPWSP, along with existing and other planned water supply sources. Of the total annual demand of 14,275 af, the estimate of existing annual system demand, 12,270 afy, is based on demand in 2010.[19] CalAm's existing demand also includes 325 afy associated with existing Pebble Beach water entitlements, as discussed below. Other demand proposed to be served by the MPWSP totals 1,680 acre-feet per year (afy). The proposed water supplies for each of these demand components are analyzed below to determine whether they would have growth-inducement effects.

[19] Although demand in 2010 is slightly less than the current 10-year average demand (12,351 afy) CalAm assumes this is the appropriate level of demand for planning purposes to ensure the proposed action is sized appropriately to meet peak demands as required by state regulations; see Section 2.3 in Chapter 2 for more information.

TABLE 6.3-1
MPWSP DEMAND ASSUMPTIONS

Demand Component	Annual Demand (acre-feet)
Existing Annual System Demand	12,270
Pebble Beach Water Entitlements	325
Hospitality Industry Rebound Economic Recovery	500
Legal Lots of Record	1,180
Total	**14,275**

SOURCE: RBF Consulting, 2013; Svindland, 2016.

Components of Water Demand to be Served by the MPWSP

Existing System Demand

Annual demand

CalAm's estimate of existing system annual demand is based on recent demand data for the areas of CalAm's Monterey District that would be served by the project: the main distribution system and the Ryan Ranch, Hidden Hills, and Bishop satellite systems, and is presented in Section 2.3.1.1. As discussed above in Section 6.3.3, a proposed project would induce growth if it would directly or indirectly foster economic or population growth, including by removing an obstacle to growth (such as a constraint on water supply) in the surrounding environment. The portion of MPWSP water used to satisfy existing annual demand would replace current withdrawals from the Carmel River and Seaside Groundwater Basin in excess of CalAm's legal rights. The portion of MPWSP supply used to meet average and peak demands of existing customers (see Section 2.3.1.2) would not be available to serve economic or population growth. Therefore, this portion of the MPWSP supply would not be growth-inducing under CEQA and NEPA because it would not remove water supply limitations as an obstacle to additional growth.

Pebble Beach Entitlements

As described in Chapter 2, Water Demand, Supplies and Water Rights, Section 2.3.1.3, the MPWMD granted water entitlements totaling 380 afy to the fiscal sponsors that underwrote development of the Carmel Area Wastewater District/Pebble Beach Community Services District (CAWD/PBCSD) wastewater reclamation project. The reclamation project now provides all of the irrigation water used on golf courses and some open space areas in the Del Monte Forest, and MPWMD estimates that it saves approximately 1,000 afy of potable water (Stoldt, 2011). In 2013, when CalAm prepared the estimate of demand associated with these entitlements, approximately 325 afy of the entitlements were unassigned. Since then, MPWMD has issued additional water permits and the remaining unassigned Pebble Beach entitlements now stand at about 304 afy (MPWMD, 2016a). Because the recently issued permits may not immediately translate to water connections or water use that is reflected in existing demand data, 325 afy is a reasonable estimate of demand associated with these entitlements.

The remaining entitlements represent an existing commitment by MPWMD to issue water permits to entitlement-holders and, as stated by the SWRCB in the CDO (SWRCB, 2016), the total entitlements represent less water than historically had been diverted from the Carmel River to serve areas now served by the wastewater project. Given that the Pebble Beach entitlements represent an existing commitment by MPWMD and duty to serve by CalAm whether or not the MPWSP is implemented, water supply limitations are not considered an obstacle to the development of the Del Monte Forest properties associated with these entitlements. Therefore, the Pebble Beach water entitlements are considered part of CalAm's existing demand and project water supply used to serve these entitlements would not be growth-inducing under CEQA or NEPA.

Other Service Area Demand

Hospitality Industry Rebound

Since the 2008 recession, the Monterey Peninsula hospitality industry, which includes hotels, restaurants and other visitor-serving businesses, has experienced lower occupancy rates – and therefore lower water use – than it had before the recession (Svindland, 2013). With the recession over, the industry expects to rebound. Industry representatives are concerned that basing the estimate of existing demand on water use in recent years will understate water needs at existing businesses during a more robust economy. CalAm estimates that a tourism rebound will increase annual demand by about 500 afy and the rebound will be evenly distributed between May and September, which is the high tourist season (RBF Consulting, 2013). CalAm based this estimate on its review of past water use by commercial sector customers (Svindland, 2013) and "recent discussions in the region" (RBF Consulting, 2013). As described in Chapter 2, Water Demand, Supplies, and Water Rights, Section 2.3.3, the MPWMD performed several comparisons of recent commercial sector water demand with earlier levels of demand, considering the years 1998 through 2011, and determined that recent demand was 194,236, or 440 afy lower than in previous years, depending on the years compared and the methodology used (refer to Chapter 2, Section 2.3.2.1 for more information).

This analysis performed several additional comparisons of commercial sector water consumption, based on annual CalAm consumption reports that the MPWMD provided for water years[20] 2003 through 2015 (MPWMD, 2008, 2013a, 2016b). **Table 6.3-2** summarizes commercial sector consumption data from these reports; the data reflect consumption in CalAm's Monterey District main distribution system and the Ryan Ranch, Hidden Hills and Bishop satellite systems. As the table shows, over this 13-year period, annual commercial sector consumption declined in all but two years; therefore, comparing the earliest years in the period with the most recent years yields the most pronounced differences. For example, consumption in 2003 was 980 af higher than in 2015. Average annual consumption for the four years before the recession (water years 2004 through 2007) was 233 af higher than average annual consumption for the four years after the recession started (2008 through 2011) and average annual consumption for the five years before the recession (water years 2003 through 2007) was 289 af higher than for the average of the five years after it started (2008 through 2012). Considering all 13 years shown, average annual consumption for the five years prior to the recession was 434 af higher than average annual

[20] A water year runs from October 1 through September 30 and is named for the year in which it ends.

consumption for the eight years since (water years 2008 through 2015), which included four drought years. Consumption in the last year before the recession (water year 2007) was higher than the year before and any year since. Since the region was experiencing a serious drought during the last four years of the 13-year record shown in Table 6.3-2, at least some of the reductions in demand shown in these years may reflect short term behavioral water conservation practices that may not be sustained during normal rainfall years.

TABLE 6.3-2
MONTEREY DISTRICT COMMERCIAL SECTOR WATER CONSUMPTION
WATER YEARS[a] 2003 THROUGH 2015

2003-2009		2010-2015	
Water Year[a]	Consumption (acre-feet)[b]	Water Year[a]	Consumption (acre-feet)[b]
2003	3,284	2010	2,857
2004	3,320	2011	2,839
2005	3,108	2012	2,770
2006	3,093	2013	2,731
2007	3,125	2014	2,498
2008	3,097	2015	2,304
2009	2,920		
Annual Average 2003-2009	3,135	Annual Average 2010-2015	2,667

NOTES:
[a] A water year runs from October 1 through September 30 and is named for the year in which it ends.
[b] Consumption shown is for the CalAm's Monterey County District excluding the Ambler, Ralph Lane, Chualar, and Toro satellite systems, which would not be served by the proposed project.

SOURCE: MPWMD, 2008; 2013a, 2016b.

MPWMD's water conservation programs have continued over this period, and have permanently reduced some consumption through, for example, the replacement of less efficient water fixtures with more efficient ones or the replacement of more water-intensive landscaping with drought-tolerant landscaping. Thus, the years just prior to the recession should better indicate the increases in commercial sector demand that could result from economic recovery and a rebound of tourism in the area than do the earlier years. MPWMD's analysis of occupancy levels and commercial sector water consumption indicated that, based on four hospitality-industry businesses in Monterey and one in downtown Carmel, occupancy levels in 2011 were about 7 percent lower than the average occupancy levels for the years 1998 to 2001. Based on this difference, and on commercial sector water consumption data, MPWMD calculated that a 7 percent increase in the average annual commercial water demand for years 2009 to 2011 would increase annual demand by about 194 af. The greatest difference MPWMD found in its analysis, which compared average commercial water use for water years 2009 through 2011 with water use in the year 2000, was 440 afy; commercial water use was 3,207 af in the year 2000, which is higher than most years shown in Table 6.3-2. Of the comparisons presented above, the greatest differences are in the comparisons that include more distant pre-recession years or include post-recession years influenced by the recent drought.

Given the permanent reductions in water consumption achieved by the ongoing conservation programs and the fact that the recent severe drought was not a factor constraining water use in the year CalAm used to represent existing annual water demand, the less extreme pre-and post-recession differences found in the above comparisons seem more likely indicators of the increased commercial sector water use that could occur in a fully recovered post-drought economy than do the more extreme differences. Therefore, based on the above considerations, increases in demand at area restaurants, lodging, and other commercial businesses from a rebounding economy may more likely be on the order of 200 or 300 afy, rather than CalAm's estimate of 500 afy.

A recent study of the economic impacts of travel in California suggests that the tourism in Monterey County may have largely returned to pre-2008 levels (Dean Runyon Associates, Inc., 2016). For example, by 2013, the California transient occupancy tax, which had decreased in the years following 2008, had surpassed 2007 levels for all but one of the Peninsula cities listed. By 2014, all of the listed Peninsula cities showed higher occupancy tax receipts than in 2008. While the increases in tax receipts reflect any increases in hotel room rates that have occurred over this period, it is assumed that the increase in occupancy tax receipts also reflect increased occupancy rates since 2008. Thus, it seems that Monterey County's hospitality industry has experienced a substantial rebound. However, because the last four years were also drought years, the water demand shown in Table 6.3-2 may be somewhat lower than what could be expected during normal rainfall years. Therefore, demand associated with hospitality industry rebound on the order of 200 to 300 afy remains a reasonable estimate for purposes of this analysis.

This rebound in demand is assumed to occur due to increased occupancy rates without any expansion in physical capacity. Because no development or expansion of physical capacity would cause those demand increases, water supply provided to meet such increases would not be considered growth-inducing under CEQA or NEPA.

To the extent that businesses were to expand, or to the extent that increased tourism in the area were to cause new businesses to open, that new development would only be possible if water supply were available. Water supply serving new or expanded businesses would remove water supply limitations as a constraint to such development and therefore would induce growth. Based on the analysis above, a portion of 500 afy capacity proposed to meet demand for the existing hospitality industry may exceed the need for this purpose. This analysis assumes that the excess water service capacity provided by the project would be available to support future growth; that would therefore be considered growth-inducing. According to the analysis above, even with economic recovery, between 200 and 300 afy of the project capacity earmarked for hospitality industry rebound may be available to serve additional growth in the service area. For simplicity's sake, this analysis assumes that about 250 afy of supply designated for rebound of the hospitality industry would likely be used for this purpose and 250 afy would be available for new development. How this surplus could be allocated is discussed below under "Assumptions Regarding Allocation and Use of MPWSP Water Service Capacity."

Vacant Legal Lots of Record

The proposed project would provide 1,181 afy of water to serve the development of vacant legal lots of record in the service area. This estimate is apparently based on an estimate presented in

CalAm's 2006 UWMP, which cited a 2001 MPWMD estimate of demand associated with vacant buildable lots of record (CalAm, 2006).[21] However, as described in Chapter 2, Water Demand, Supplies, and Water Rights, Section 2.3.2.2, the MPWMD no longer considers this a valid estimate. The most recent demand assessment prepared for MPWMD specifically on lots of record was a 2002 estimate that identified demand of 1,211 afy for lots of record in the incorporated cities of the service area. The District never adopted this estimate because it did not include demand associated with vacant lots on improved parcels in the unincorporated County areas (Stoldt, 2013). While MPWMD testified in 2013 that CalAm's estimate of 1,181 afy may therefore underestimate demand associated with lots of record (Stoldt, 2013), in 2017 MPWMD observed that development has occurred since those estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). MPWMD's most recent estimate of future service area demand, prepared in collaboration with service area jurisdictions, was completed in 2006. In that estimate, the MPWMD did not evaluate demand associated with lots of record *per se,* although it included demand associated with new residential and non-residential development under general plan buildout, which would include developable lots within the respective jurisdictions. Water supply that would serve currently vacant lots of record would remove water supply limitations as an obstacle to the development of these lots and would induce growth under CEQA and NEPA. As discussed below in Section 6.3.5.3, this would not be growth beyond the level anticipated in adopted General Plans.

According to the MPWMD's methodology for calculating demand, and according to its water permit system, new demand can also be generated at developed lots of record by, for example, adding bathrooms and fixtures. For this analysis, absent the addition of new dwelling units or similar intensification of use at a given lot, supply that would meet demand associated with remodels or fixture additions at developed lots would not be considered to be removing an obstacle to new development and therefore would not be growth-inducing. In any event, because this analysis assumes that MPWSP would provide 1,181 afy that could support new development at currently vacant lots of record, this component of demand would be growth-inducing.

Assumptions Regarding Allocation and Use of MPWSP Water Service Capacity

As noted in Section 2.5.4 and above in Section 6.3.2.3, MPWMD is responsible for allocating water to the jurisdictions within its boundary. MPWMD has not prepared an allocation program for the water that the MPWSP would provide. MPWMD will start updating its water allocation program's EIR once construction has started on an identified water supply project (MPWMD, 2015). Separate from CalAm's current MPWSP application, MPWMD plans to collaborate with CalAm and the service area jurisdictions to address the allocation of water from the MPWSP. In the meantime, absent a new allocation for the MPWSP water, this analysis assumes that the MPWMD's allocation of water provided by the project would be similar to the District's current and past allocation programs. That is, for purposes of this EIR/EIS, it is assumed that supply provided by the proposed project would be used to meet existing demand within the CalAm

[21] The 2006 UWMP refers to a 2001analysis by the MPWMD that "projected an additional California American Water demand of 1,181 afy, based on a review of vacant legal buildable lots of record" (CalAm, 2006). Note that this is not CalAm's currently adopted UWMP; CalAm's current UWMP (WSC, 2012) does not include an estimate of demand associated with vacant lots of record.

service area, and that water service capacity beyond that would be allocated to the jurisdictions in general proportion to an estimate – which the MPWMD has not yet developed – of their future water supply needs. Once the water is allocated to the jurisdictions, each city and the County (for the unincorporated areas) would have the responsibility and discretion to approve or deny proposed development projects for which water was available, consistent with the jurisdiction's role as the primary land use authority (discussed in Section 6.3.2 above) and applicable land use plans, policies, regulations and laws. For example, this analysis recognizes that supply based on an estimate of demand associated with lots of record may not exclusively serve development of existing vacant lots; some portion of it could, for example, support development of lots created after the preparation of this EIR/EIS or the approval of this project, depending on the jurisdiction's internal allocation system and assuming water service capacity were available.

Similarly, because at present there is no guarantee that the 500 afy proposed to meet demand associated with hospitality industry rebound would be reserved for that use, this analysis assumes that either the MPWMD or the local jurisdictions could elect not to set aside 500 afy exclusively for use by existing businesses. Therefore, some portion of this 500 afy could actually serve new development within the service area.

As discussed in Section 2.5.4, MPWMD recently confirmed that the future allocation process has not yet been defined; refer to Section 2.5.4 regarding options MPWMD would consider regarding the allocation or reservation of MPWSP water, once the MPWSP was approved and it is clear that the project would be constructed. These considerations do not change the allocation assumptions described above for this analysis.

Conclusion: MPWSP Water Service Capacity

Along with existing and other planned water supply sources, the MPWSP would provide up to 16,294 afy during the 25-year Seaside Groundwater Basin replenishment period; an additional 700 afy of Seaside Groundwater Basin supply would be available to the CalAm service area at the end of the replenishment period.[22] Of this, 12,845 afy would serve existing service area demand and water entitlements, and another 1,680 afy is proposed to meet anticipated future demand. This includes an estimated 250 afy associated with the local hospitality industry, absent new development, assuming increased economic activity. Thus, 12,845 afy would be used to meet existing demand, water entitlements, and demand of existing business customers, and 1,430 afy would support additional development. **Table 6.3-3** provides a breakdown of demand associated with existing and anticipated land uses assumed for the MPWSP. **Table 6.3-4** shows water supplies that would be available with the MPWSP, compared with the service area demands shown in Table 6.3-3, as well as two estimates of the SVGB return water obligation associated with operating the proposed 9.6-mgd desalination plant. As discussed in Chapter 2, the SVGB return water obligation will be based on the amount of fresh water component in the source water. In order to consider the effect of the return water for this EIR/EIS, groundwater modeling

[22] For the first 25 years of MPWSP operation, CalAm would provide in-lieu replenishment of the Seaside Groundwater Basin in repayment of groundwater CalAm has pumped from the basin in excess of CalAm's adjudicated right, as discussed in Chapter 2, Section 2.2.4. Replenishment would occur at a rate of 700 afy. During the replenishment period, available supply from the Seaside Groundwater Basin would be limited to 774 afy; at the end of the replenishment period, available supply would equal CalAm's adjudicated right of 1,474 afy.

simulated scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources).

TABLE 6.3-3
EXISTING AND ANTICIPATED DEMAND
(acre-feet per year)

Demand Component	MPWSP Demand Assumptions	Demand Associated with Existing Land Uses and Water Entitlements	Demand Associated with Anticipated Development
Existing Annual System Demand	12,270	12,270	-
Pebble Beach Water Entitlements	325	325	-
Hospitality Industry Bounce-Back	500	250[a]	250
Legal Lots of Record	1,180		1,180
Total	**14,275**	**12,845**	**1,430**

NOTES:

[a] A comparison of commercial sector demand prepared for this analysis suggests that demand by the hospitality industry under improved economic conditions may be lower than identified by CalAm; refer to text discussion for more information.

SOURCE: Table 6.3-1.

TABLE 6.3-4
WATER SUPPLIES AND DEMANDS DURING SEASIDE GROUNDWATER BASIN REPLENISHMENT PERIOD, 9.6-MGD DESALINATION PLANT WITH SVGB RETURN
(acre-feet per year)

	Existing Demand[a]		Existing and Anticipated Demand	
Supplies and Demands	6% SVGB Return	12% SVGB Return	6% SVGB Return	12% SVGB Return
Total Supplies[b]	**16,294**	**16,294**	**16,294**	**16,294**
Service Area Demand (Existing and Anticipated)	12,845	12,845	14,275	14,275
Supply Available for Other Use (Total Supplies Minus Service Area Demand)	3,449	3,449	2,019	2,019
SVGB Return (6% and 12%)	1,620	3,240	1,620	3,240
Surplus or (Deficit)	**1,829**	**209**	**399**	**(1,220)**

NOTES: mgd = million gallons per day; Seaside GW Basin = Seaside Groundwater Basin; SVGB = Salinas Valley Groundwater Basin

[a] Includes 325 afy for Pebble Beach water entitlements.

[b] Water supply sources include: Carmel River (3,376 afy), Seaside Groundwater Basin (774 afy), Aquifer Storage and Recovery Project (1,300 afy), Sand City Coastal Desalination Plant (94 afy), and the proposed MPWSP Desalination Plant (10,750 afy), as shown in Table 2-4 of Chapter 2.

SOURCE: Table 2-4, Table 6.3-3.

Table 6.3-4 illustrates available and surplus supply (or deficit) during the Seaside Groundwater Basin replenishment period, assuming a 6 percent or 12 percent return water obligation. As shown, under either of these return water scenarios, the available supply would meet existing service area demand and water entitlements and demand associated with the existing hospitality industry (12,845 afy), with a surplus of 209 or 1,8292 afy depending on the return water obligation. The table also compares available supply with the total 14,275 afy demand that the MPWSP is proposed to meet. Assuming a 6 percent SVGB return water obligation, there would be enough water to meet existing and anticipated demand. But assuming a 12 percent return water obligation, supplies would not be able to fully meet anticipated demand. Total projected demand associated with development of the Pebble Beach entitlements and lots of record would not occur immediately, however; rather, it is expected to occur gradually over time. At the end of the Seaside Groundwater Basin replenishment period an additional 700 afy of Seaside Groundwater Basin supply would be available to the CalAm service area.

Supply not used to meet existing demand, water entitlements, demand of existing business customers under more robust economic conditions, or the SVGB return water obligation would be available to support new development. New development might include development of existing vacant lots of record. Water supply capacity to serve new development would remove water supply limitations as an obstacle to such development and would be considered growth-inducing under CEQA and NEPA.

6.3.5.2 MPWSP Infrastructure Capacity

Pipeline Capacity

CalAm sized the proposed project pipelines to accommodate a range of flow volumes, including flows associated with the proposed 9.6-mgd MPWSP desalination plant, or with a 6.4-mgd desalination plant – the size of the plant that would be built if CalAm were able to purchase water from the Pure Water Monterey Groundwater Replenishment (GWR) project. The 6.4-mgd desalination plant is evaluated in Chapter 5, Alternatives, and described in Sections 5.4.7 and 5.4.8. Consistent with standard engineering practice, pipeline sizing takes into account the need to meet peak demands, since water demand fluctuates daily, monthly and seasonally over the course of a year. Refer to Chapter 2, Water Demand, Supplies, and Water Rights, Section 2.3.2, for more information regarding consideration of peak demands. **Table 6.3-5** shows the flow capacity of the proposed service area pipeline segments and the flows that would be generated by the 6.4- and 9.6-mgd plants. The table also shows that all pipelines would have the capacity to accommodate flows generated by a somewhat larger-capacity plant.

Added pumping pressure enables pipelines of a given size to accommodate the higher flows. For example, in the normal course of business, the estimated operating pressure needed to pump flows from a 9.6-mgd plant would be 132 pounds per square inch (psi) at the plant. The plant itself would comprise seven modules – six in operation plus one on standby – each of which independently produces 1.6 mgd. While CalAm does not propose to regularly run all seven modules, it might have to do so in an emergency (Svindland 2014). Running all seven modules would produce a total of 11.2 mgd: 9.6 plus 1.6. To pump that additional 1.6 mgd would require an operating pressure of 136 psi.

TABLE 6.3-5
RANGE OF FLOW VOLUMES ACCOMMODATED BY PIPELINE SEGMENT

Pipeline Segment	Pipeline Capacity (Flow Volumes Accommodated) (mgd)	Flow per Pipeline Segment for 6.4-mgd Plant[a] (mgd)	Flow per Pipeline Segment for 9.6-mgd Plant[b] (mgd)	Flow per Pipeline Segment for 11.2-mgd Plant[c] (mgd)	Flow per Pipeline Segment for 12.8-mgd Plant[d] (mgd)
Source Water Pipeline	16-30	16	24	28	30
Brine Discharge Pipeline	12-20	10	14	17	18
Salinas Valley Return Pipeline	2-4	2	3	3	4
Desalinated Water Pipeline	6-13	6	10	11	13
Transmission Main	6-13	6	10	11	13
ASR Pipeline	15	15	15	15	15

NOTES:

[a] Flow that would be generated by four 1.6-mgd reverse osmosis modules; i.e., operation of the 6.4-mgd plant not including its 1.6-mgd standby module.

[b] Flow that would be generated by six 1.6-mgd reverse osmosis modules; i.e., operation of the 9.6-mgd plant not including its 1.6-mgd standby module.

[c] Flow that would be generated by seven 1.6-mgd reverse osmosis modules; i.e., concurrent operation of all six modules of a 9.6-mgd plant and its 1.6-mgd standby module.

[d] Flow that would be generated by eight 1.6-mgd reverse-osmosis modules. While this size plant is not proposed, this column shows that all pipeline segments would have capacity, with increased pumping pressure, to accommodate flows from a 12.8-mgd plant.

SOURCE: Svindland, 2014.

The smaller 6.4-mgd plant that would be built in conjunction with purchase of GWR water would have four working modules plus one on standby; each, again, would produce 1.6 mgd. To pump flows under normal conditions, the smaller plant would require an operating pressure of 128 psi at the plant, and an additional 2 psi to pump the 8.0 mgd produced by all five units.

CalAm's initial basis for pipeline sizing assumed seven 1.6-mgd modules operating concurrently for the 9.6-mgd plant, and five 1.6-mgd modules operating concurrently for the 6.4-mgd plant. As **Table 6.3-5** shows, all of the pipeline segments would have the capacity to accommodate flows associated with a 12.8 mgd plant, which is somewhat higher than flows that would be generated by a 9.6-mgd plant plus its standby module. CalAm has noted that the lower end of the range of flows would have lower overall energy requirements (e.g., if the smaller plant were constructed) and that the pipelines' capacity to accommodate the higher end of the flows would delay the possible need for future, disruptive, pipeline expansion projects (Svindland, 2014).

Sizing the pipelines to accommodate flows beyond that needed to serve the proposed project would remove constrained pipeline capacity as an obstacle to future growth and therefore would induce growth. Additional water supply would be required to generate the higher future flows that the MPWSP pipelines could accommodate. Expanding the desalination plant to increase its production capacity beyond 9.6 mgd would require additional CEQA review and approval by the CPUC and, if more source wells were needed, NEPA review and approval by the MBNMS. In addition, before CalAm could increase production capacity, the MPWMD would need to review the proposed increase under CEQA and issue a permit under its Rule 22; CalAm would likely require other permits as well.

According to a proposed Settlement Agreement between CalAm and other parties relating to CalAm's MPWSP application, MPWMD intends to collaborate with the Monterey Peninsula Regional Water Authority, Monterey County, and CalAm to determine an accurate estimate of the added water supply capacity needed to meet the General Plan buildout projections for communities served by CalAm (CalAm et al., 2013). That process has not yet begun, however, and we cannot predict its results. Depending on the results, the proposed pipelines would accommodate some or all of the added water supply needs identified in this process. Growth anticipated in jurisdictions' General Plans is summarized below in Section 6.3.5.3 and the effects of growth under General Plan buildout that would be induced by pipeline capacity, and the added water supply the pipelines could accommodate, are evaluated in Section 6.3.6.

Permitted Desalination Plant Capacity

If CalAm does purchase water from the GWR project, it could reduce the size of its MPWSP Desalination Plant. Because the GWR project's timing and cost were uncertain when CalAm submitted its application for the MPWSP, CalAm proposes a 9.6-mgd desalination plant (proposed project), but also seeks authorization to reduce the size of the desalination plant to 6.4 mgd (Alternative 5a) and purchase water from the MRWPCA and MPWMD. The MRWPCA certified the Final EIR for the GWR project and approved the project in October 2015 and adopted an Addendum in October 2017. The CPUC authorized CalAm's entry into a water purchase agreement in September 2016. However, while the CPUC has authorized CalAm's entry into a water purchase agreement, given the possibility that the GWR project could run into financing or permitting obstructions, CalAm continues to seek approval of the 9.6-mgd desalination plant in the event that the GWR project is not developed. CalAm is not proposing a 9.6-mgd desalination plant plus the GWR water purchase and this analysis does not consider the growth inducement potential of such a combination. Refer to Chapter 5, Alternatives, for more information about the 6.4-mgd desalination plant (Alternatives 5a and 5b) and to Chapter 4, Section 4.1, Overview, for more information on the GWR project and how it is considered in this EIR/EIS.

6.3.5.3 Growth Trends and Planning Agency Projections

In evaluating the potential environmental effects of growth, a key consideration is whether the growth induced or supported by a project would be planned growth – i.e., growth that is anticipated in the adopted planning documents of the jurisdictions served by that project. This section presents census data indicating recent growth trends in service area jurisdictions, the projections of future growth prepared by the regional planning agency, and growth trends and planned development anticipated in the general plans of service area jurisdictions, and compares water supply that would be provided by the MPWSP and potentially available to serve future development with estimates of water supply needed for general plan buildout.

Service Area Growth Trends 1990-2010

Table 6.3-6 shows population and housing data from the U.S. census for the years 1990, 2000, and 2010. Except for Sand City, population in all of the cities in the service area declined between 1990 and 2000; population in the service area cities as a whole decreased by about 9 percent. The decrease in population slowed between 2000 and 2010, decreasing by 3 percent for the cities as a whole. Sand City's population increased in both decades, by 36 percent (69 new residents)

TABLE 6.3-6
SERVICE AREA AND MONTEREY COUNTY GROWTH TRENDS 1990-2010
POPULATION AND HOUSING

	Population							Housing Units						
Jurisdiction	**1990 Census**	**2000 Census**	**2010 Census**	**Change 1990-2000**	**Percent Change 1990-2000**	**Change 2000-2010**	**Percent Change 2000-2010**	**1990 Census**	**2000 Census**	**2010 Census**	**Change 1990-2000**	**Percent Change 1990-2000**	**Change 2000-2010**	**Percent Change 2000-2010**
Carmel-by-the-Sea	4,241	4,081	3,722	-160	-3.8%	-359	-8.8%	3,325	3,334	3,417	9	0.3%	83	2.5%
Del Rey Oaks	1,661	1,650	1,624	-11	-0.7%	-26	-1.6%	733	727	741	-6	-0.8%	14	1.9%
Monterey (city)	31,954	29,696	27,810	-2,258	-7.1%	-1,886	-6.4%	13,497	13,383	13,584	-114	-0.8%	201	1.5%
Pacific Grove	16,117	15,522	15,041	-595	-3.7%	-481	-3.1%	7,916	8,032	8,169	116	1.5%	137	1.7%
Sand City	192	261	334	69	35.9%	73	28.0%	86	87	145	1	1.2%	58	66.7%
Seaside	38,826	33,097	33,025	-5,729	-14.8%	-72	-0.2%	11,214	11,005	10,872	-209	-1.9%	-133	-1.2%
Subtotal: Cities	***92,991***	***84,307***	***81,556***	***-8,684***	**-9.3%**	***-2,751***	**-3.3%**	***36,771***	***36,568***	***36,928***	***-203***	**-0.6%**	***360***	**1.0%**
Unincorporated Monterey County[a]	100,461	101,414	100,213	953	0.9%	-1,201	-1.2%	34,342	37,139	38,296	2,797	8.1%	1,157	3.1%
Monterey County (Total)	355,660	401,762	415,057	46,102	13.0%	13,295	3.3%	121,224	131,708	137,910	10,484	8.6%	6,202	4.7%

NOTES:

[a] Data are for the entire unincorporated county.

SOURCE: California Department of Finance, 2007; 2013.

between 1990 and 2000 and 28 percent (73 new residents) between 2000 and 2010. The total number of housing units in service area cities decreased by 0.6 percent between 1990 and 2000 and increased by 1 percent between 2000 and 2010. Information shown for the unincorporated county is for the entire county, not just the part in CalAm's service area. Population in unincorporated Monterey County stayed about the same over these two decades, increasing by about 1 percent between 1990 and 2000 and decreasing by about 1 percent between 2000 and 2010, while the number of housing units increased.

AMBAG Projections

In 2014, AMBAG adopted its current forecast of population, housing and employment, and its Metropolitan Transportation Plan/Sustainable Communities Strategy for the region. **Table 6.3-7** shows the growth forecast to the year 2035 for the cities in the CalAm service area and unincorporated Monterey County. Unlike AMBAG's previous forecast, which it adopted in 2008, the current forecast takes into account the 2010 census, the Sustainable Communities Strategy requirements of SB 375, and the effects of the economic downturn that occurred between 2008 and 2012. Development of the forecasts involved substantial input and feedback from the jurisdictions in the AMBAG region (AMBAG, 2014a). Although population, housing, and jobs in the service area cities and in unincorporated Monterey County were lower in 2010 than had been projected in AMBAG's 2008 forecast, AMBAG now projects faster population and housing growth rates in the service area cities over the 2010-2035 planning period compared to the previous forecast. As **Table 6.3-7** shows, the population of each service area city is projected to increase over the 2010-2035 projection period, although Carmel is projected to lose population between 2010 and 2020 before beginning to grow again. In terms of percentage increase, Sand City is projected to grow the fastest although, because of its small size, its net population increase over the 25-year projection period is smaller than that of several other service area cities. Seaside is projected to have the largest net increase in population over the projection period. Overall, the population of service area cities is projected to increase by 21 percent between 2010 and 2035. Housing stock in the cities is projected to grow at a slower pace, increasing by 12 percent over the projection period. Employment in service area cities as a whole is projected to grow faster than population, with the number of jobs increasing by almost 30 percent by 2035. Projections shown in **Table 6.3-7** for unincorporated Monterey County are for the entire unincorporated area, much of which is outside CalAm's service area. Population in the unincorporated areas of the county is projected to grow by 4 percent over the projection period, while the number of housing units is projected to increase by 2 percent, and the number of jobs is projected to increase by 9 percent.

Growth Trends and Projections in Jurisdiction Land Use Planning Documents

As discussed above in Section 6.3.5.1, the MPWSP would provide more water than needed to meet existing demand and demand associated with existing businesses. In other words, there would be water to serve additional development – water for growth. The land use plans of the jurisdictions served by CalAm establish land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate public services and infrastructure. A project that would induce growth that was inconsistent with those plans and policies could result in adverse environmental impacts not previously addressed in the CEQA review of those plans. Therefore, the general plans of jurisdictions that would be served by the MPWSP were reviewed.

TABLE 6.3-7
AMBAG POPULATION, HOUSING, AND EMPLOYMENT PROJECTIONS

Jurisdiction	2010	2020	2025	2030	2035	Percent Change 2010–2035
POPULATION						
Cities – CalAm Service Area						
Carmel	3,722	3,541	3,661	3,789	3,917	5%
Del Rey Oaks	1,624	1,889	2,345	2,806	3,468	114%
Monterey	27,810	28,004	28,839	29,743	30,647	10%
Pacific Grove	15,041	15,394	15,914	16,472	17,030	13%
Sand City	334	1,048	1,198	1,414	1,550	364%
Seaside	33,025	36,120	40,260	41,308	42,256	28%
Total - CalAm Cities	**81,556**	**85,996**	**92,271**	**94,533**	**98,868**	**21%**
Unincorporated County[a]	100,213	102,847	103,147	104,028	104,304	4%
Monterey County (Total)	415,057	447,516	463,884	479,487	495,086	19%
HOUSING UNITS	**2010**	**2020**	**2025**	**2030**	**2035**	
Cities – CalAm Service Area						
Carmel	3, 417	3,417	3,417	3,417	3,418	0%
Del Rey Oaks	741	898	1,035	1,246	1,521	105%
Monterey	13,584	13,665	13,695	13,750	14,001	3%
Pacific Grove	8,169	8,169	8,169	8,274	8,478	4%
Sand City	145	439	496	586	629	334%
Seaside	11,335	12,556	12,907	13,311	13,664	21%
Total - CalAm Cities	**37,391**	**39,144**	**39,719**	**40,584**	**41,711**	**12%**
Unincorporated County[a]	38,971	39,337	39,633	39,730	39,735	2%
Monterey County (Total)	139,048	147,106	150,260	154,585	157,992	14%
EMPLOYMENT (JOBS)						
Cities – CalAm Service Area						
Carmel	2,282	2,645	2,716	2,793	2,875	26%
Del Rey Oaks	414	640	602	592	573	38%
Monterey	26,934	31,249	32512	33,597	34,828	29%
Pacific Grove	8,792	10,161	10,499	10827	11,194	27%
Sand City	1,561	1,839	1,873	1,908	2,500	60%
Seaside	7,790	8,828	9,092	9,344	9,628	24%
Total - CalAm Cities	**47,773**	**55,362**	**57,294**	**59,061**	**61,597**	**29%**
Unincorporated County[a]	58,071	62,998	63,795	63,955	63,443	9%
Monterey County (Total)	182,000	205,977	211,218	216,486	222,137	22%

NOTES:

[a] Projections are for all unincorporated areas of Monterey County.

SOURCE: AMBAG, 2014a.

This section briefly summarizes expected growth in service area jurisdictions contained in the jurisdictions' general plans and related planning documents. The summaries include the jurisdictions' housing need allocation identified through the Regional Housing Need Allocation (RHNA) process, since that represents potential residential growth planned for in the jurisdictions' general plan housing elements. To the extent the general plans describe the jurisdiction's approach to allocating its water supply (from the allocation administered by MPWMD), that information is noted.[23] The summaries include estimates of current and projected population and housing to the extent this information is provided.

According to the general plans, except for the former Fort Ord lands that several cities have annexed,[24] most jurisdictions in the service area are largely built out, and infill development and intensification of land uses is a means of accommodating additional growth. All of the jurisdictions cite limited water supply as a key factor limiting planned development within their boundaries. Most of the general plans were adopted before the start of the 2008 economic recession and therefore do not reflect or anticipate its effects. The general plan housing elements were adopted more recently, between 2010 and 2016.

City of Carmel-by-the-Sea

- The City of Carmel-by-the-Sea adopted its General Plan, in 2003 and adopted its 2015-2023 Housing Element in December 2015 (City of Carmel, 2003, 2015a).
- Citing the U.S. Census and California Department of Finance, the Housing Element states that the city's population decreased by 11.6 percent between 1990 and 2015, and that there was a net increase of 83 housing units between 2000 and 2015.
- Noting that AMBAG's Regional Housing Need Allocation for 2014 to 2023 identified a housing need in Carmel of 31 additional housing units, the Housing Element identifies the capacity to accommodate a total of 164 additional residential units.
- The Housing Element identifies the lack of water as the primary infrastructure constraint to the development of housing in Carmel, and states that the lack of an available water supply continues to limit growth in Carmel and throughout the Monterey Peninsula region. The City allocates its share of Monterey Peninsula water supply based on policies in the General Plan's Land Use and Community Character and Housing Elements, which affirm the City's commitment to housing. Residential uses have high priority and the largest water allocation. Existing subdivided lots zoned for housing are first in line for limited water resources, except when this would preclude development of essential public services, recreational uses or facilities, or visitor-serving uses consistent with the Coastal Act. The City limits new subdivisions of land until existing subdivided lots have a secure water supply, and endorses the concept of distributing the limited water resources across many properties to prevent any single project from consuming a disproportionate share of available water, and to maximize the number of units that can be built or approved.
- According to the Housing Element, the City is close to expending its water allocation from MPWMD: the City has about 3.251 af of available water, of which about 1.67 af are in the

[23] CalAm has not proposed how the jurisdictions should allocate MPWSP water to serve vacant lots of record, for example, nor does the MPWMD dictate to the jurisdictions how they must manage the water allocated to them. To the extent the general plans included information on how the jurisdiction currently allocates its water supply, such information may provide insight on how the jurisdiction would allocate its MPWSP supply.

[24] The former Fort Ord lands are served by another water provider, Marina Coast Water District, not CalAm; therefore development planned for these lands is not a focus of this analysis.

City's reserves. The City supports efforts by the MPWMD and other agencies to expand the water supply, and it has a representative on both the MPWMD Technical Advisory Committee and the Policy Advisory Committee. Housing Element Program 3-5.6 b, Water Conservation, recognizes the need to conserve and manage the City's water resources to accommodate regional housing need. The City's Municipal Code includes specific requirements for water conservation in existing and new developments. New development projects and existing structures needing a building permit for substantial proposed construction must meet the City's water conservation requirements. The Housing Element noted that several projects were under discussion as options for providing a new water supply for the Monterey Peninsula in response to SWRCB Orders 95-10 and 2009-0060, and that a more immediate supply may be available to the city from the amendment of the Eastwood Trust water rights license. This supply is described in Chapter 2, Section 2.4.6.2, Malpaso Water Company, LLC.

City of Del Rey Oaks

- The City of Del Rey Oaks General Plan was adopted in 1997 and has a planning period of approximately 20 years (City of Del Rey Oaks, 1997a). A draft update of the Housing Element was prepared in August 2006 but not adopted. The California Department of Housing and Community Development indicates that the City has not submitted a housing element for the 2015-2023 planning period to the department for certification (California Department of Housing and Community Development, 2016).

- The General Plan estimates that the City had a population of 1,692 in 1996, and provided about 321 jobs in the City's commercial and institutional sectors. The 2010 census indicates the city had a population of 1,624 in 2010; AMBAG's 2014 forecast estimates that the city had 414 jobs in 2010.

- Buildout under the General Plan of the part of the city served by CalAm – that is, the area within the city limits before the former Fort Ord land was annexed – would result in five additional residential units, and the development of 43,500 gross square feet of retail/commercial land uses and a 205-room hotel. General Plan policies call for expanded and new revenue-generating businesses on visitor-serving and commercially zoned parcels in the City, development of commercial uses at the City's Highway 68/218 entrance, intensification of existing development, and the annexation of former Fort Ord land to provide additional sites for economic development.

- Buildout under the General Plan of the part of the city served by another water provider (i.e., the former Fort Ord land that was annexed to the city and is served by water provided via the Fort Ord Reuse Authority [FORA] and the Marina Coast Water District [MCWD]), includes development of a conference center, hotel, golf course, retail shops, a fitness center, office park, and corporate office center.

- AMBAG's Regional Housing Need Allocation for the 2014-2025 period states that Del Rey Oaks needs 27 additional housing units.[25]

- The General Plan indicates that the City had about 5.8 af of water for new land uses remaining in its allocation from MPWMD as of June 1995, but according to MPWMD's November 2013 monthly allocation report, Del Rey Oaks has no water remaining in its allocation (MPWMD, 2013b.)

[25] This housing need allocation is substantially lower than the 150 units identified for Del Rey Oaks in the previous regional housing need allocation. AMBAG's RHNA for 2007-2014 did not explain the relatively high number of units allocated to Del Rey Oaks for that period.

- The General Plan identifies water as a paramount concern for all of the jurisdictions on the Monterey Peninsula, and states that setbacks in providing additional supply, along with SWCRB's requirement that CalAm decrease withdrawals from the Carmel River, have magnified concern about the availability of water to support growth. General Plan policies call for the City to develop a water allocation program to prioritize water connections; work with the appropriate water management districts to encourage water conservation, retrofitting, education, reclamation, and reuse; consider water usage and conservation in all land use decisions; adopt and enforce a water conservation ordinance; and condition development plan approval on verification of available water service for projects.

City of Monterey

- The City of Monterey General Plan was adopted in 2005 and includes amendments through March 2016, including incorporation of the action program of the City's 2016 housing element. The City of Monterey Housing Element 2015-2023 was adopted March 16, 2016 (City of Monterey, 2016a, 2016b).

- The General Plan EIR (City of Monterey, 2004) projected that the city would have a population of about 34,660 residents at buildout, which is a 14 percent increase from the city's population in 2003 of about 30,350. As shown in **Table 6.3-7**, the 2010 census indicates that the City's population that year was 27,810; the California Department of Finance estimates that the City's population in 2015 was 28,576.

- The Housing Element states that the city is almost entirely built out and that future residential development is expected to occur through infill development – that is, through the recycling of existing sites and a limited amount of vacant land.

- AMBAG's Regional Housing Need Allocation for 2014-2023 states that Monterey needs 650 additional units. According to the City of Monterey 2015-2023 Housing Element, the City had issued permits or entitlements for 113 units since January 2015, so it needs 537 more. The Housing Element identifies a total capacity to develop 715 units based on an inventory of vacant and underutilized sites.

- The lack of available water is a primary obstacle to meeting General Plan goals; therefore, it is the goal of the City of Monterey and the General Plan to obtain a long-term, sustainable water supply. Among other things, the City is evaluating water supply options outside the present MPWMD framework (City of Monterey 2016a). The Housing Element states that all of the City's water allocation from the MPWMD has been allocated to projects. (City of Monterey, 2016b).

Presidio of Monterey

- The Presidio of Monterey is an active installation of the U.S. Department of the Army. While it is located within the Monterey city limits, the City does not govern it. Water used at the Presidio is part of MPWMD's overall allocation to the City. In 2013, the Army completed an EIS for the Presidio's Real Property Master Plan (U.S. Army, 2013a, 2013b), which replaces the 1983 Presidio of Monterey Master Plan.

- The Master Plan proposes short-range and long-range project building renovations or upgrades to be implemented over a 20-year planning horizon. The short-range project consists of Phase I of a multi-phase barracks complex project at the Presidio. The long-range projects include access control point upgrades, classroom renovations, and demolition and construction of three barracks complex projects and several instructional buildings. The EIS evaluated the environmental consequences of the short-range project at

a project level of detail and the long-range projects were evaluated at a programmatic level. As the long-range projects move forward, they may need additional NEPA review.

- The Master Plan alternative selected for implementation locates most improvements within the Presidio, with some support facilities at the Ord Military Community site in the former Fort Ord military base. The EIS and Record of Decision for the EIS (U.S. Army, 2013a, 2013b) conclude that, over the Master Plan's 20-year planning horizon, the long-range projects would increase water demand at the Presidio by an estimated 34 afy. Water for the short-range project would be provided through the Presidio's existing permit. To meet demand for the long-range projects, the EIS identifies a total of 36.9 afy from water currently used at outdated barracks that are scheduled to be demolished as part of the long-range projects, and from water credits that the Presidio has from the MPWMD. While the EIS concludes that both action alternatives of the overall Master Plan development project would have a less than significant impact with respect to water supply, it notes that future developments concerning the Cease and Desist Order and the March 2011 moratorium on water service connections could affect water supply in the Monterey Region; the EIS therefore identifies mitigation measures to reduce future water demand. Measures include conserving more water, implementing best management practices at all new facilities, and installing rainwater collection systems and purple piping (in anticipation of the availability of future recycled water supply) in all new buildings. The EIS states that the Army could also consider additional measures to ensure long term water supply at the Presidio and Ord Military Community, like contracting with current water providers for additional water along with the development of future regional water supply projects.

City of Pacific Grove

- The City of Pacific Grove adopted its General Plan in 1994, and adopted its Housing Element 2015-2023 in March, 2016 (City of Pacific Grove, 1994, 2016).

- The Housing Element states that the city has experienced a small decline in population over the past 25 years, from 16,177 in 1990 to 15,388 in 2015. The size and composition of the city's housing stock changed very little over that period, with a net increase of about 270 units. The City is almost fully built-out, with very little vacant land available for new housing development. By the 1980s, the City had recognized that further growth would occur only as infill development on vacant lots and through the intensification of existing development.[26] The 1994 General Plan estimates that a maximum of 5,431 additional residential units could be built within the city limits. Most units would be accommodated through the intensification of existing development, including almost 3,500 secondary units attached to existing single family homes. Vacant lots could accommodate a total of 105 new single-family or multi-family units. Notwithstanding this estimate, the General Plan notes that in the 10 years preceding its publication, only 42 secondary units had been built, and that this actual rate of development suggested that, apart from water supply constraints, new secondary units would be added slowly and would not number in the thousands. Past trends suggested that the other identified residential capacity also would be developed slowly. The General Plan projected that commercially-zoned vacant parcels could accommodate an estimated 270,000 square feet of commercial development, and that more than 1 million square feet of commercial development could theoretically be added by intensifying existing uses.

- AMBAG's Regional Housing Need Allocation for 2014-2023 states that Pacific Grove needs 115 additional housing units. The City's 2016 Housing Element identifies a realistic

[26] The General Plan did not contemplate the City annexing any unincorporated land except for a three-acre parcel (the Mission Linen parcel) on unincorporated county land entirely surrounded by city lands.

potential for 148 new units to be built on vacant parcels and a total potential for 210 new units to be built on vacant and underutilized sites and sites with second unit potential.

- The Housing Element identifies the lack of available water as the greatest constraint on the production of new housing in Pacific Grove, stating that lack of water supply has resulted in very little new housing construction for over a decade. It is the City's policy to continue working aggressively with MPWMD and other Monterey Peninsula cities to find long-term solutions to the water problem, to increase the water available for residential uses, and to provide for drought protection. The City is working on projects to reduce the use of potable water where feasible, such as at the city's golf course and cemetery, consistent with Housing Element Program 3.1. In 1994, when it prepared the General Plan, the City had less than 8 af of its water allocation remaining. In 2008, the City had 5 af left, and the City Council distributed most of that 5 af, which enabled construction of more than 50 residential and non-residential projects. Most of the City's allocation has been distributed and the City has established a new water wait list. As of July 2015, 12 single family dwellings were on the wait list. The Housing Element states that without a new water allocation, the City will be unable to permit any new housing construction, except for the few properties that have sufficient onsite water credits for second units.

- The 2016 Housing Element notes that although additional water supply needed to meet demand associated with buildout of the 1994 General Plan was previously estimated to be 1,264 afy, this estimate was based in part on the maximum potential for second units and that long-term demand is now expected to be less. In testimony provided to the CPUC on the MPWSP, a City representative revised the future demand estimate the City had provided MPWMD in 2006, from 1,264 afy to 500 afy (as shown in **Table 2-5** of Chapter 2).

Sand City

- The Sand City General Plan: 2002-2017 was adopted in 2002 and the City of Sand City Housing Element Update 2009-2014 was adopted in 2010 (City of Sand City, 2002, 2010).

- Describing the city's historic growth rates, the General Plan states that the city's population reached 600 in the 1960s, but then declined as industrial and commercial land uses displaced housing. Between 1970 and 2000, the city's population fluctuated, ranging from a low of 182 in 1980 to a high of 261 in 2000. As shown in Table 6.3-5, the city continued to grow over the past decade, to a population of 334 in 2010.) Due to the city's commercial and industrial land uses, its daytime population of employees and shoppers increased to almost 10,000 (LAFCO of Monterey County, 2011).

- The 2002 General Plan projects a buildout population of 1,295, and points out that this city-generated estimate is lower than the population of approximately 1,800 that had been forecasted in AMBAG 's then-current 1997 forecast. AMBAG, in turn, had based its forecast in part on the city's 1984 General Plan. The 2010 Housing Element cites AMBAG's 2008 forecast projecting that the city's population would grow dramatically between 2010 and 2015 (from 447 to 1,498) and would not change further between 2015 and 2035. The Housing Element confirms that population growth beyond what AMBAG had projected for 2015 was unlikely due to the city's small size. As shown in Table 6.3-6, AMBAG's most recent forecast also projects substantial growth for the city, especially between 2010 and 2020, and now projects that the city will reach the earlier population estimate of about 1,500 residents between 2030 and 2035. The 2002 General Plan focuses on achieving a vision for the community that includes economic diversification; active redevelopment; enhanced community appearance and image; organized and well-planned growth; elimination of land use conflicts; and cohesive residential neighborhoods.

- AMBAG's Regional Housing Need Allocation for 2007-2014 identified a housing need in Sand City of 120 additional units.[27] According to the City's 2010 Housing Element, 31 units had been built between January 2007 and February 2009, and an inventory of vacant and underutilized sites identified the capacity to accommodate a total of 277 additional units on those sites. The City expects that 60 additional units will be produced by the end of 2014 (City of Sand City, 2010).

- The General Plan states that the critical shortage of water on the Monterey Peninsula limits the availability of water for new development, and that this condition is expected to continue until either a long-term source of water is developed for the region or until Sand City develops a desalination facility as its own water supply. As of 2001, Sand City had allocated essentially all of its available water to specific development parcels. Since the General Plan was prepared, Sand City completed construction of a 300 afy desalination plant, which is operated by CalAm. While water from the desalination plant is delivered to the CalAm system, Sand City is entitled to 206 afy to support its future development: MPWMD Ordinance 132, in consideration for the delivery of 300 afy of potable water from this plant to the CalAm system, establishes a water entitlement of 206 afy from the CalAm system for Sand City, separate from the city's current water allocation; the ordinance indicates that the remaining 94 afy is permanently added to the broader CalAm's system.

Seaside

- Seaside adopted its General Plan in 2004, and adopted its General Plan Housing Element in 2011 (City of Seaside, 2004a, 2011a).

- According to the General Plan, the city will have a total of about 12,300 dwelling units, 19,800 square feet of non-residential development, and a population of about 43,000 at buildout of the General Plan, assuming the average levels of development allowed under the plan. While the General Plan's estimate does not indicate how much of this overall development is existing development and how much represents expected future growth, a comparison of the buildout estimates for housing and population with 2010 census data for Seaside indicates that under General Plan buildout the city expects to add almost 1,500 new housing units and 10,000 new residents. The General Plan identifies the need for more employment opportunities and tax-generating land uses to improve the overall quality of life in the City, and includes policies to encourage regional commercial and visitor-serving commercial development, community-serving retail development, fuller use of underutilized properties, development that helps increase the City's ratio of jobs to housing, and provision of a variety of housing types that complement employment opportunities in the community.

- AMBAG's Regional Housing Need Allocation for 2007-2014 states that Seaside needs 589 additional units.[28] The City's 2011 Housing Element says that the City can accommodate 1,113 additional units on vacant and underutilized residential and mixed use properties.

- The 2011 Housing Element states that lack of adequate water supply is one of the three primary environmental constraints to the development of housing in Seaside. The other constraints are environmental hazards on former Fort Ord lands and significant biological resources in the eastern portion of the city. General Plan policies call for cooperating with regional and local water providers to ensure that adequate water supply is available to meet

[27] AMBAG's RHNA for the 2014-2023 period (AMBAG, 2014b), which the next version of jurisdictions' Housing Elements will cover, identified a housing need in Sand City of 55 units.

[28] AMBAG's RHNA for the 2014-2023 period (AMBAG, 2014b), which the next version of jurisdictions' Housing Elements will cover, identified a housing need in Seaside of 393units.

the needs of existing development and future growth; encouraging the production and use of recycled water; protecting and enhancing local and regional groundwater and surface water resources; eliminating long-term groundwater overdraft as soon as feasible; and reviewing development proposals to ensure that adequate water supply, treatment, and distribution capacity is available to meet the needs of the proposed development.

- For the part of the city served by CalAm, which is the area that had been within the City boundaries before the City annexed the former Fort Ord lands to the north and east,[29] the portion of MPWMD's allocation that the City's had allotted for residential use has been exhausted and the City has established a waiting list pending the allocation of future supply. Part of the allocation the City had reserved for economic development in mixed use projects is still available. In a comment on the 2015 MPWSP DEIR, the City stated that a water supply assessment prepared in 2008 for the West Broadway Urban Village Specific Plan determined that water credits for the commercial areas and residential units that were being redeveloped would supply some but not all of the water needed for the specific plan, and that a net increase of 80 afy was estimated above exiting water use to accommodate full buildout of the specific plan (City of Seaside, 2015). This information refines the estimated demand for general plan buildout that was provided to MPWMD in 2006 (shown as "Future Supply Needs (2006 Estimate)" in Table 6.3-7). Therefore, Seaside's estimate of future water supply needs, shown in Table 6.3-7 and in Table 2-6 in Chapter 2, increased by 80 afy. Water for former Fort Ord lands annexed to the city is provided via the FORA and MCWD, not CalAm.[30]

Monterey County

The facts and figures presented in this section pertain to the County as a whole (or the unincorporated County as a whole, as noted), although CalAm does not serve the whole County.

- The *2010 Monterey County General Plan* (Monterey County, 2010a) was adopted in October 2010 and the *County of Monterey 2015-2023 Housing Element* (Monterey County, 2016) was adopted in January 2016. The General Plan has a 2030 planning horizon, while the EIR prepared for the General Plan (Monterey County, 2010b, 2010c) considers conditions under the plan in 2030 and under plan buildout, estimated to occur in 2092.

- The County's population increased from 247,450 in 1970 to an estimated population of 425,756 in 2014. The decade with the fastest growth was 1980-1990, during which the population increased by 22 percent. Data from the 2010 census indicate that the County's population increased by 3 percent between 2000 and 2010. The California Department of Finance's estimate of county population in 2014 (presented in the Housing Element) represents a 2.5 percent increase from 2010. The proportion of the county's population living in unincorporated areas has gradually decreased, from 29 percent in 1980 to 24 percent in 2010.

[29] The part of the city that had been within the city limits prior to the annexation of former Fort Ord lands, which is also the part of the city within the jurisdiction of the MPWMD, is variously referred to in the general plan as the southwestern portion of the city, southwest Seaside, the central core of the city, and Seaside proper. Part of this central core of the city is also served by the City-operated Seaside Municipal System, which operates three groundwater wells that serve the Del Monte Heights neighborhood.

[30] Seaside was allocated 748 af of the FORA's total supply to serve the Fort Ord annexation lands in North Seaside. The City does not expect this allocation to increase in the near future, and the General Plan identifies the use of recycled water for golf courses and other non-potable uses in North Seaside as the best option for expanding the availability of the North Seaside allocation for economic development and residential uses.

- Growth assumptions for the General Plan's 2030 planning horizon are based on AMBAG's 2004 population growth forecast, which projected that the county would grow from an estimated population of 464,847 in 2010 to 602,731 in 2030, a 30 percent increase. AMBAG projected that the population in unincorporated county areas would grow from 105,485 in 2010[31] to 135,375 in 2030, a 28 percent increase. The General Plan EIR notes that, in allocating the projected growth within the County, AMBAG considered growth trends and the availability of water among other factors. The Monterey Peninsula was projected to accommodate much lower levels of growth than the Salinas Valley due to the peninsula's greater water constraints.

- AMBAG's Regional Housing Need Allocation for 2014-2023 states that the unincorporated Monterey County needs 1,551 additional housing units. The 2016 Housing Element indicates that, since January 1, 2014, 185 units had been built, and another 2,955 units had been approved. Because those units do not completely meet the RHNA targets for affordable units, however, the County still needs 208 units of very low, low, and moderate income housing. The County determined that the remaining allocation of 208 very low, low, and moderate income units could fit within areas covered by adopted community and area plans including the Castroville Community Plan, the North County Land Use Plan, the Central Salinas Area Plan, (Chualar, King City, and San Lucas Areas) and the South County Area Plan (Bradley and San Ardo areas).

- According to the General Plan EIR, implementing the plan would increase water demand over the planning period. When the EIR was published, although CalAm's Coastal Water Project was forecasted to meet the then-current demand on the Monterey Peninsula, the General Plan EIR anticipated that new or expanded water supply facilities and new or expanded water entitlements would be needed to meet future demand on the peninsula. The General Plan prohibits new development that requires a discretionary permit, and that will use water, unless there is proof that a long-term, sustainable water supply is available to serve the development. The General Plan also requires that tentative subdivision maps be denied until the applicant provides evidence of a long-term sustainable water supply for all of the proposed lots. To ensure the accuracy and consistency of water supply evaluations, the Monterey County Health Department must coordinate with the MCWRA to develop guidelines and procedures for conducting water supply assessments and determining water availability. Other policies call for the County to work with all of the agencies responsible for managing existing and new water resources. As a mitigation measure, the General Plan EIR added a General Policy stating that the County will participate in regional coalitions to identify and support a variety of new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Monterey Peninsula and the Seaside basin. According to this new policy, the County's general objective is to complete the cooperative planning of these water supply alternatives within five years of adoption of the General Plan and to implement the selected alternatives within five years of that. The County recognizes, though, that timing will depend on the dynamics of the regional group. Other General Plan policies encourage the use of gray water and cisterns for commercial and multi-family residential landscaping; the use of recycled water as a potable water offset; and the establishment of ordinances that identify conservation measures to reduce demand for agricultural water and potable water.

- The Greater Monterey Peninsula Area Plan encourages development projects to get their water from public utilities or mutual water companies. If this is not possible, the County

[31] 2010 census data indicate that the County's population in 2010 was 415,057, somewhat lower than the 2004 forecast anticipated; according to the census the population of the unincorporated county in 2010 was 100,213.

should consider the cumulative effects of the development's water use on wildlife, fish, and plant communities, and the supply available to existing users.

- The Carmel Valley Master Plan requires that pumping from the Carmel River aquifer be managed consistent with the Carmel River Management Program and that all beneficial uses of the total water resources of the Carmel River and its tributaries be considered in planning decisions. Other policies support water projects designed to address future growth in the Carmel Valley and encourage the establishment of regulations limiting development in Carmel Valley to vacant lots of record and already-approved projects, unless additional water supplies are identified.

Monterey Peninsula Airport District

- The Monterey Peninsula Airport District is developing a new master plan, a process that is expected to take two years. A draft plan has been prepared, but CEQA documentation has not been completed and the new plan has not been adopted. Until a new master plan is adopted, the Airport District's 1992 Monterey Peninsula Airport Master Plan Update Final Report (Master Plan) (Monterey Peninsula Airport District, 1992) is the applicable land use planning document for airport development activities (Johnston, 2013).

- The goals of the 1992 Master Plan are to address airport requirements over a 20-year planning period. 2010 is the horizon year for specific aspects of the plan including projected airport activity and facility requirements. Based on anticipated changes in the fleet mix and projected growth in the number of passengers, annual operations (take-offs and landings), and general aviation aircraft based at the airport, the Master Plan was intended to meet the identified need for additional terminal areas, general aviation hangars, and aviation fuel storage, an expanded fire station, a larger maintenance building, and vehicle access improvements. The Master Plan includes three concepts each for the terminal area, the west end of the airport, and the northside of the airport, and recommends adoption of one of them, called "Concept C", for each of the three components. Each of the concepts would increase the area for the terminal ramp, the size of the terminal building, the number of parking places, the number of hangars, and the amount of space available for fixed-base operators, other tenants, and airport support facilities.

- Master Plan Appendix B, Utilities Inventory and Pavement Plan, reviews water service to the airport. The review states that past cases before the CPUC that concerned the adequacy of the water supply system for the Monterey Peninsula may restrict CalAm from serving new territory until additional supplies are assured, or until additional impounding reservoirs are built. The discussion concludes, however, that the airport lies completely within the water company's existing service area, that service to the airport property is long-standing, that airport water use is not excessive, and that curtailment of water for use by the Airport is not expected.

- In a discussion of past studies related to the airport, the Master Plan states that the environmental document for the 1983 Airport and Runway Development Program concluded that development of the northside industrial area would require water service that was not currently allocated to the Airport District, and that the District would need to work with MPWMD to resolve the issue to the extent possible. The Master Plan also discusses a 1987 EIR for the Comprehensive Land Use Plan for the Monterey Peninsula Airport which identified water resources as an area of controversy (Monterey Peninsula Airport District, 1992).

Comparison of Proposed Water Supply Capacity with MPWMD Estimate of Future Supply Needs

The project supply components that would provide water for future development (e.g., water for lots of record) do not directly compare to the levels of growth planned for and described in the jurisdictions' general plans. To relate the portion of MPWSP supply that would support future development to the growth anticipated in jurisdictions' adopted general plans, the MPWSP supply is compared with the estimate of future water supply needs that the MPWMD prepared in 2006 (MPWMD, 2006).[32]

The 2006 MPWMD estimate was a comprehensive assessment of long term water needs of customers in CalAm's Monterey District main distribution system based on information obtained from the service area jurisdictions. It included demand associated with expected remodels within the jurisdictions, and with anticipated development of single-family and multi-family residences, secondary units, and non-residential development expected to occur under buildout of each jurisdiction's general plan. The MPWMD translated the growth estimate provided by the jurisdictions into water demand using water use factors for different land use categories. The estimate also included repayment of any water credits owed to property owners for implementing water-saving retrofits, and a 20 percent contingency to address unforeseen water requirements. Based on this assessment, the estimated future water supply needs to support growth anticipated in the general plans of the jurisdictions in the CalAm service area totaled 4,545 afy.[33] The 2009 EIR prepared for CalAm's proposed Coastal Water Project evaluated in detail whether the growth assumptions underlying MPWMD's 2006 demand estimate were consistent with growth anticipated in the jurisdictions' general plans, and confirmed that, overall, the MPWMD's estimate of future demand was consistent with growth under the general plans.[34] That analysis is included in **Appendix J1** for reference.

Since the 2006 estimate was prepared, the future water needs of four jurisdictions have been revised, reducing the total estimate of future water needs from 4,545 to 3,526 afy. The new Monterey County General Plan, adopted in 2010, is the basis for one of the revisions; the City of Pacific Grove provided another revision, reducing its original 2006 estimate of future demand in testimony that the City provided regarding the MPWSP; the City of Seaside provided a revision that increased its estimate of future water demand; and the water entitlement that Sand City has from construction of its 300-afy desalination plant would cover roughly half of Sand City's 2006

[32] As noted in Section 2.5.3.4 of Chapter 2, Water Demand, Supplies, and Water Rights, the MPWMD plans to collaborate with CalAm and the service area jurisdictions to evaluate the added water supply capacity needed to meet general plan buildout projections. Given that this new MPWMD process has not yet started and that most of the general plans considered in the 2006 evaluation are still in effect, this EIR uses the 2006 MPWMD analysis, adjusted as noted below, as the basis for comparison.

[33] Because the jurisdictions' general plans were prepared in different years and covered different planning periods, MPWMD did not characterize its estimate of future demand as accommodating growth over a given period of time or to a given year. The estimate was intended, however, to accommodate growth reasonably expected by each jurisdiction consistent with its adopted general plan.

[34] The analysis determined that with a few exceptions, the estimates of residential growth were consistent with estimates contained in the general plans or general plan housing elements. Estimates of non-residential development were more difficult to compare because of substantial differences in the levels of detail in information submitted by jurisdictions to the MPWMD compared with information included in the general plans; to the extent the development potential could be compared, the estimates were determined to be consistent.

estimated future demand. Refer to the discussion of general plan buildout in Chapter 2, Water Demand, Supplies, and Water Rights, Section 2.5.3.4, for more information on the revised estimates.

California Water Code Section 10608 requires water suppliers to reduce per capita water consumption 20 percent by 2020, relative to baseline demand calculated under Department of Water Resources guidelines. According to CalAm's 2010 UWMP, current per capita consumption in CalAm's Monterey District is already below its 20 percent reduction target (WSC, 2012). Nevertheless, conservatively assuming that the Water Code 20 percent reduction target could apply to the water use assumptions MPWMD used in its 2006 estimate, the revised estimate of future water needs discussed above, reduced by an additional 20 percent, would be 2,820 afy. **Table 6.3-8** shows these estimates of future water supply needs.

TABLE 6.3-8
FUTURE WATER DEMAND AND AVAILABLE SUPPLIES: TWO RETURN WATER SCENARIOS
(acre-feet per year)

Future Demands and Supplies	Jurisdiction Total
Future Supply Needs (2006 Estimate)	4,545
Future Supply Needs (Revised)[a]	3,526
Future Supply Needs (Revised and Reduced by 20%)[b]	2,820
MPWSP Supply for Future Development[c] Assuming 6% SVGB Return	1,829
MPWSP Supply for Future Development[c] Assuming 12% SVGB Return	209
MPWSP Supply for Future Development[c] as % of Future Supply Needs (Revised)[d]	6 to 52%
MPWSP Supply for Future Development[c] as % of Future Supply Needs (Revised and Reduced)[d]	7 to 65%

NOTES: SVGB = Salinas Valley Groundwater Basin

[a] Future supply needs revised based on changes in future demand estimates in four service area jurisdictions (discussed in more detail in Section 2.5.3.4 of Chapter 2).

[b] Estimated future supply needs reduced by an additional 20 percent should water reduction requirements of Water Code Section 10608 apply. CalAm's Monterey District 2010 UWMP indicates that the service area has already met its 20 percent reduction target.

[c] Supply available for future development consists of MPWSP supply and CalAm's other supplies, shown in Table 2-4 of Chapter 2, minus existing demand and minus estimated SVGB return water obligations shown in Table 6.3-4.

[d] Lower percentage of supply available to meet future development needs assumes 12 percent SVGB return water obligation; higher percentage assumes 6 percent SVGB return water obligation

SOURCES: Table 2-4, Table 2-5, Table 6.3-4.

As discussed in Section 6.3.5.1 and shown in Table 6.3-4, during the 25-year Seaside Groundwater Basin replenishment period, the portion of the water supply provided by the MPWSP and other supply sources that would be available for future development – including the future development assumed for the MPWSP shown in Table 6.3-3 – would range from 1,829 afy to 209 afy after meeting estimated SVGB return water obligations of 6 percent to 12 percent, respectively. Assuming a 6 percent SVGB return water obligation, the 1,829 afy of supply that would be available to meet future needs would represent 52 percent of 3,526 afy, the 2006 estimate of future water supply needs as revised based on updated information. This 1,829 afy of available supply would represent 65 percent of 2,820 afy, the 2006 estimate of future demand as updated and reduced by an additional 20 percent. Thus, assuming a 6 percent SVGB return water obligation, available supply would meet a half to two-thirds the estimated future water supply needs of the

service area. Assuming a 12 percent SVGB return water obligation, during the Seaside Groundwater Basin Replenishment period, the 209 afy of supply that would be available to meet future needs would represent 6 percent of 3,526 afy and 7 percent of 2,820 afy, the two updates of MPWMD's 2006 estimate of future water supply needs discussed above. Thus, based on the updates of future demands and these return water assumptions, the portion of the water supply provided by the MPWSP that would be available to support future development would supply from less than 10 percent to 65 percent of the water demand associated with planned growth, depending primarily on the return water obligation. Table 6.3-8 summarizes these estimates.

The 1,430 afy of MPWSP supply that is proposed for anticipated development, shown in Table 6.3-3, is about 40 percent of 3,526 afy, the 2006 estimate of future demand as revised based on updated information and about half of 2,820 afy, the 2006 estimate of future demand as updated and reduced by an additional 20 percent.

As discussed above in this section, MPWMD's 2006 estimate of future water supply needs was generally consistent with the level of growth planned for in the adopted general plans of service area jurisdictions. The MPWSP would provide less water for growth than the 2006 estimate of future water supply needs as revised based on updated information (3,526 afy, or 2,820 afy if further reduced by 20 percent). The smaller MPWSP supply that would be available to support future development would similarly be consistent with the service area's planned growth.

6.3.5.4 Delivery of SVGB Return Water to Castroville

Delivery of SVGB Return Water to Castroville Community Services District

The community of Castroville, located north of the desalination plant and outside of CalAm's service area, would receive Salinas Valley Groundwater Basin (SVGB) return water (see **Section 2.5.1** in **Chapter 2**, **Water Demand**, **Supplies**, **and Water Rights**, and **Section 3.2.3.9** in **Chapter 3**, **Description of the Proposed Project**. The water would flow to the Castroville Community Services District (CCSD) for domestic use in lieu of groundwater pumping. The SVGB return water supply would only be used to replace, or offset, CCSD's current use of groundwater (approximately 800 afy), under the terms of the Return Water Settlement Agreement (CalAm et al., 2016b). Thus, the water provided by the desalination plant would not remove water supply constraints as an obstacle to additional development in the Castroville area and therefore would not induce growth. The pipeline that would be built to convey the desalinated product water to the CCSD system would be sized to accommodate the 800 afy volume of return water. Although increased pumping pressure can increase a pipeline's capacity, as discussed above in Section 6.3.5.2, the use of the pipeline to the CCSD would be limited to providing return water to offset CCSD's current groundwater use. Therefore, pipeline capacity is not anticipated to expand in the future, and building this pipeline would not remove an obstacle to growth in the Castroville area.

Delivery of SVGB Return Water to the Castroville Seawater Intrusion Project

Under the proposed project, the MPWSP would deliver the first 800 afy of SVGB return water to the CCSD and deliver the remaining return water to the Castroville Seawater Intrusion Project

(CSIP). The CSIP provides recycled water to farmers in the Castroville area to irrigate crops, thereby enabling reduced pumping of seawater-tainted groundwater. SVGB return water in excess of that needed for the CCSD would supplement the recycled water currently available to CSIP from the Monterey Regional Water Pollution Control Agency. Return water provided to the CSIP would be used to offset groundwater use for agricultural production; it would not contribute to domestic water supply and therefore would not be growth-inducing.

6.3.6 Secondary Effects of Growth

Impact 6.3-1: Secondary effects of planned growth.

The MPWSP would support a degree of planned growth in the jurisdictions served by the proposed project. In general, development planned and approved through the general plan process in the CalAm service area would have environmental impacts. The environmental consequences of this planned growth have been largely addressed in local plans and the associated CEQA review as well as in other, project-specific documentation. Some of the identified indirect effects of growth are significant and unavoidable; others are significant but can be mitigated.

Although most of the general plan EIRs reviewed for this EIR/EIS were prepared prior to the passage of the California Global Warming Solutions Act of 2006, and do not include assessments of impacts of greenhouse gas emissions, it is expected that planned growth in the area could contribute to significant and unavoidable increases in greenhouse gas emissions (e.g., from increased fossil fuel use for transportation and construction, increased industrial and commercial activities, residential energy use, operation of power plants, and oil refining).

The following environmental documents for city and county general plans and general plan elements were reviewed in order to identify the significant impacts associated with planned growth in the area:

- City of Carmel-by-the-Sea, 2015b. *Addendum to Initial Study/Negative Declaration, City of Carmel-by-the-Sea 2015-2023 Housing Element and Related Zoning Amendments,* November 18, 2015. (Addendum to *City of Carmel-by-the-Sea 2007-2014 Housing Element Public Review Draft Initial Study / Mitigated Negative Declaration,* April 2010.)
- City of Del Rey Oaks, 1997b. *Final Environmental Impact Report for the General Plan Update Project,* May 16, 1997.
- City of Monterey, 2004. *City of Monterey General Plan Update Draft Environmental Impact Report* and *Final Environmental Impact Report, State Clearinghouse No. 2003081011,* October 11, 2004.
- City of Sand City, 2001. *Expanded Environmental Impact Study and Proposed Negative Declaration, General Plan Update 2001-2016,* October 12, 2001.
- City of Sand City, 2009. *Sand City 2009 Housing Element Initial Study and Negative Declaration,* December 16, 2009.
- City of Seaside, 2004b. *Final Seaside General Plan EIR,* January 2004.

- City of Seaside, 2010. *Public Review Draft Initial Study/Proposed Negative Declaration for the of Seaside Local Coastal Program,* August 2010.
- City of Seaside, 2011b. *Public Review Draft Initial Study/Proposed Negative Declaration: City of Seaside Housing Element Update 2009-2014,* September 2010, adopted by the Seaside City Council January 27, 2011.
- Monterey County, 2010b, 2010c. *Monterey County General Plan Final Environmental Impact Report, SCH No. 2007121001*, March 2010, and *Revised Supplemental Materials to the Final EIR (October 15, 2010)*, October 2010.
- Monterey County Resource Management Agency, 2010. *Initial Study: Housing Element 2009-2014*, April 19, 2010.
- U.S. Department of the Army, 2013a. *Final Environmental Impact Statement, Real Property Master Plan, Presidio of Monterey, California*, February 2013.

Copies of these documents are available for review at the respective city and county planning departments.

Table 6.3-9 summarizes the environmental effects associated with planned growth in the project area, as identified in the general plan EIRs for the jurisdictions in the CalAm service area. Because the table reflects the determinations of multiple jurisdictions, some impacts are listed as both significant and unavoidable and significant but mitigable, reflecting differences among the jurisdictions in the service area. In addition, one EIR evaluates general plan impacts over two time periods: the planning horizon for the plan and buildout. As a result, some impacts were identified as significant and unavoidable, and significant but mitigable, depending on the timeframe. Under CEQA Guidelines Section 15130, the EIRs prepared for the jurisdictions' general plans evaluate the potential for development under the respective plans to contribute to cumulative impacts on the environment; significant cumulative impacts identified in the general plan EIRs are also shown in the table. **Appendix J2**, **Table J2-1** presents a more detailed summary of the growth impacts and mitigation measures identified in the EIRs for general plans in the CalAm service area. These environmental impacts are the indirect effects of growth that would be supported in part by the proposed project.

6.3.6.1 MPWSP Role in Addressing the Indirect Effects of Growth

Two jurisdictions in the area served by the proposed project – the City of Seaside and Monterey County – identified demand for, or impacts related to, water supply, including groundwater supply, as significant and unavoidable impacts of planned growth; other service area jurisdictions identify similar significant but mitigable impacts. In general, these impacts identify insufficient supply to meet demands associated with development that is planned for in the jurisdictions' general plans. Some EIRs address impacts associated with supply limitations, such as the potential risk of over-pumping groundwater resources and seawater intrusion, and many acknowledge the limitations on current supply sources imposed by SWRCB Order 95-10. With respect to the impacts of potential over-pumping of the Seaside Groundwater Basin and the associated threat of seawater intrusion, the MPWSP is sized to enable CalAm to "repay" to the groundwater basin, over a 25-year period, the amount of water it has pumped in excess of its

TABLE 6.3-9
SIGNIFICANT IMPACTS ASSOCIATED WITH PLANNED GROWTH IN THE PROJECT AREA

Significant and Unavoidable Impacts

- Degradation of visual character or quality of the area and surroundings
- Substantial new sources of light and glare
- Cumulative impacts on aesthetics, light and glare
- Conversion of farmland to non-agricultural use and cumulative loss of farmland
- Construction-related air quality impacts
- Net change in ozone precursor and particulate matter emissions
- Cumulative air quality impacts
- Effects on special status species
- Effects on riparian habitat and other sensitive natural communities
- Cumulative impacts on biological resources
- Potential effects on archaeological, paleontological, or historic resources
- Cumulative exposure to wildland fire hazard
- Increased demand for water supply and/or water storage, treatment, and conveyance facilities and associated secondary effects[a]
- Substantial depletion of groundwater supply[b]
- Increased demand on groundwater in areas experiencing or susceptible to saltwater intrusion[b]
- Cumulative impacts on surface and groundwater quality[c]
- Cumulative indirect impacts of water supply projects[a]
- Increased flood hazard and impacts from flooding
- Increases in cumulative traffic noise
- Induced population growth
- Effects on adjacent land uses of operation of new or expanded schools
- Local and regional traffic impacts
- Impacts of cumulative development on traffic
- Demand for water resources that exceed available water supply[d]
- Cumulative impacts on water supply[d]
- Contribution to cumulative greenhouse gas emissions and global climate change

Significant but Mitigable Impacts

- Adverse effects on scenic vistas
- Adverse effects on scenic or historic resources within a state scenic highway
- Degradation of visual character or quality of the area and surroundings
- Construction-related air quality impacts
- Transportation-related air quality impacts
- Exposure to increased diesel exhaust
- Emission of objectionable odors
- Effects on special-status species
- Effects on riparian habitat and other sensitive natural communities
- Effects on federally protected wetlands
- Conflicts with local policies or ordinances protecting biological resources
- Effects on a variety of biological resources
- Interference with migratory patterns or wildlife corridors
- Potential effects on migratory birds and raptors
- Introduction of exotic species
- Potential effects on archaeological, paleontological, or historic resources
- Exposure of new development to potential seismic or geologic hazards
- Creation of or exposure of new development to hazards related to soil erosion or expansive soils
- Exposure of new development to tsunami or seiche hazards

TABLE 6.3-9 (Continued)
SIGNIFICANT IMPACTS ASSOCIATED WITH PLANNED GROWTH IN THE PROJECT AREA

Significant but Mitigable Impacts (cont.)

- Potential exposure of people and development, including schools, to hazardous materials releases
- Increased risk of hazardous materials releases
- Safety hazards from development near airports
- Increased flood hazard and impacts from flooding
- Exposure of structures to increased risk of wildland fires
- Cumulative wildfire hazard exposure
- Impacts on water quality, including groundwater quality[c]
- Impacts on hydrology and surface water
- Substantial depletion of groundwater supplies[b]
- Increased demand on groundwater in areas experiencing or susceptible to saltwater intrusion[b]
- Inconsistency with zoning code
- Conflicts between incompatible land uses
- Impacts on open space areas
- Exposure of existing and new sensitive land uses to increased noise
- Increases in construction, traffic, stationary, and/or airport noise
- Potential conflicts between new development and existing or expanded recreational uses
- Effects of park construction and degradation of parks or recreational facilities
- Demand for new or expanded parks and recreational facilities
- Increased demand for law enforcement and/or fire protection services
- Effects of school construction to accommodate new development
- Local and regional traffic impacts
- Decreased parking capacity
- Increased demand for transportation alternatives
- Demand for water resources that exceed available water supply[d]
- Require construction of new water supply and treatment facilities[e]
- Increased demand for additional sewer or stormwater drainage infrastructure
- Increased demand for and Impacts of new or expanded public utilities and facilities
- Exposure of property and persons to otherwise avoidable physical harm due to climate change

NOTES:

[a] While the County General Plan EIR impact analysis identifies the impacts of providing additional water supply as *secondary* or indirect effects, Chapter 4 of this EIR/EIS evaluates the *direct* effects of constructing and operating the MPWSP in addition to the indirect effects of growth described in this chapter.

[b] The MPWSP is intended to provide sufficient supply for CalAm to reduce pumping from the Seaside Groundwater Basin to no more than CalAm's adjudicated right, and to "repay," over a 25-year period, the amount of water CalAm has pumped in excess of its adjudicated right since the adjudication, while meeting the water demands shown in Table 6.3-1.

[c] The effects of the proposed project on surface water and groundwater quality, including cumulative effects, are evaluated in Sections 4.3 and 4.4, respectively, of Chapter 4 of this EIR/EIS. As stated above in Note b, the proposed project would help eliminate the need for over-pumping of the Seaside Groundwater Basin in order to meet current demand, thereby helping to mitigate impacts on groundwater quality caused by seawater intrusion.

[d] The MPWSP would provide sufficient supply to enable CalAm to comply with the SWRCB Order 95-10 and Cease and Desist Order and the Seaside Groundwater Basin Adjudication while meeting current water demands and a degree of additional demands, as shown in Table 6.3-1 and discussed in this chapter. The MPWSP is not sized, however, to meet anticipated water demand under full buildout of the service area jurisdictions' general plans.

[e] This impact was identified in the Mitigated Negative Declaration prepared for the Sand City General Plan; since then, after completing required CEQA review Sand City constructed a desalination plant that is providing the City and the CalAm service area new source of water supply. The impacts of constructing the MPWSP are evaluated in this EIR.

SOURCES: City of Del Rey Oaks, 1997b; City of Monterey, 2004; City of Sand City, 2001; City of Seaside, 2004b; Monterey County, 2010b, 2010c; U.S. Army, 2013a.

adjudicated right since the groundwater basin was adjudicated. (Refer to Section 2.2.4 in Chapter 2, Water Demand, Supply, and Water Rights, for more information.) The supply to be provided by the MPWSP would thus help address the potential impacts of over-pumping the Seaside Groundwater Basin. The MPWSP would provide some water beyond that needed to meet existing demand (discussed above in Section 6.3.5.1) but not the full amount identified in MPWMD's 2006 assessment of future supply need, as adjusted by more recent information (discussed above in Section 6.3.5.3). The MPWSP would thus help address impacts related to a supply that does not meet current and projected future water supply needs within the service area jurisdictions. The MPWSP is not expected to fully meet projected future demands, however. With respect to the physical effects of providing additional water supply – that is, building and operating the proposed infrastructure – this EIR/EIS evaluates the potential impacts of the MPWSP and identifies mitigation measures to reduce those impacts to the extent feasible.

6.3.6.2 Authority to Mitigate Effects of Growth

CalAm, the CPUC, and MBNMS do not have the authority to make land use decisions or to approve growth. As described in Section 6.3.2, the authority to regulate growth, and by extension to mitigate the environmental effects of growth, resides primarily with land use planning agencies. **Table 6.3-10** identifies the agencies with the authority to implement measures to avoid or mitigate the environmental impacts of growth in the area served by the proposed project;[35] the agencies generally fall into two categories, as discussed below.

- Agencies with primary authority over land use planning and CEQA lead agency status for approval of land use plans, permits and other approvals.
- Agencies responsible for stewardship of environmental resources.

Implementation of Environmental Protection Measures by Land Use Planning Agencies

Cities and counties (for unincorporated areas) have the greatest authority over land use decisions within their jurisdictions, through implementation of their general plans, locally adopted ordinances and regulations to manage growth, and development approval processes. Some ordinances and policies adopted at the local level (e.g., ordinances establishing urban growth limit lines, protecting natural resources such as riparian habitat, or establishing resource conservation easements) are intended to avoid or reduce environmental impacts.

In their capacities as lead agencies under CEQA (California Public Resources Code Section 21002 and Section 21067), cities and counties also have the authority and responsibility to evaluate the environmental impacts that would result from the implementation of plans and individual development projects within their jurisdictions, and to adopt measures to mitigate any significant adverse impacts. Cities and counties must identify mitigation measures in the CEQA documents for these plans and projects, must adopt feasible measures within their authority, and must adopt programs to monitor and report on their implementation, as conditions of approval.

[35] While MBNMS does not have authority to make land use decisions, NOAA does have authority to mitigate impacts on biological resources through Section 7 and Section 10 consultation requirements, as shown in Table 6.3-9.

TABLE 6.3-10
AGENCIES WITH THE AUTHORITY TO IMPLEMENT OR REQUIRE IMPLEMENTATION OF MEASURES TO AVOID OR MITIGATE GROWTH-RELATED IMPACTS

Agency	Authority
Planning Agencies	
Cities within the Area Served by Project	***Planning and Enforcement.*** Responsible for planning, land use, and environmental protection of the area within the city's jurisdictional boundaries and adoption of the general plan governing this area. Responsible for enforcing city environmental policies through zoning and building codes and ordinances.
	CEQA. Cities typically act as the lead agency for CEQA compliance for development projects in incorporated areas; as such they bear responsibility for adopting measures to mitigate the project's significant direct and indirect impacts on the environment and programs to ensure that mitigation measures are successfully implemented.
Monterey County	***Planning and Enforcement.*** Responsible for planning, land use, and environmental protection of unincorporated areas and adoption of the general plan governing unincorporated county lands. Responsible for enforcing County environmental policies through zoning and building codes and ordinances.
	CEQA. Counties typically act as the lead agency for CEQA compliance for development projects in unincorporated areas; as such they bear responsibility for adopting measures to mitigate the project's significant direct and indirect impacts on the environment and programs to ensure that mitigation measures are successfully implemented.
Local Agency Formation Commission	Empowered to approve or disapprove all proposals to incorporate cities, to form special districts, or to annex territories to cities or special districts. Also empowered to guide growth of governmental service responsibilities.
California Coastal Commission	Issues Coastal Development Permits for development in the Coastal Zone, except where the local jurisdiction has an approved Local Coastal Program. Retains coastal development permit authority over development on the immediate shoreline, tidelands, submerged lands, and certain public trust lands, and over major public works projects.
U.S. Environmental Protection Agency	Responsible for writing regulations and setting national standards to implement a variety of federal environmental protection and human health laws. In California, EPA has delegated much of the authority to enforce the Clean Air Act, Clean Water Act and Drinking Water Quality Act to state agencies, but it retains some oversight. EPA also comments on the environmental review of projects by participating in the NEPA process.
Water Resources	
State Water Resources Control Board (SWRCB)[a]	Shares responsibility with the regional water quality control boards (RWQCBs) to protect and restore water quality; approves regional basin plans; provides support to regional boards; and administers surface water rights. Develops water quality control plans and polices where water quality issues cross regional boundaries or have statewide application.
Central Coast RWQCB	Shares responsibility with SWRCB to protect and restore water quality. Formulates and adopts water quality control plans. Implements portions of the Clean Water Act when EPA and SWRCB delegate authority, as is the case with issuance of NPDES permits for waste discharge, reclamation, and storm water drainage.
California Department of Public Health	Responsible for ensuring the purity and potability of domestic water supplies. Assists the SWRCB and the RWQCBs in setting quality standards.
Monterey Peninsula Water Management District	Responsible for managing water resources on the Monterey Peninsula. Allocates water to jurisdictions; issues permits for new or expanded water distribution systems and water connections; and adopts water conservation ordinances.
Air Resources	
California Air Resources Board[a]	Responsible for adopting and enforcing standards, rules, and regulations for the control of air pollution from mobile sources throughout the state. Also responsible for developing plans and regional reduction targets for greenhouse gas emissions.
Monterey Bay Unified Air Pollution Control District	Adopts and enforces local regulations governing stationary sources of air pollutants within the North Central Coast Air Basin. Issues Authority to Construct Permits and Permits to Operate. Provides compliance inspections of facilities and monitors regional air quality. Develops Clean Air Plans in compliance with the Clean Air Act.

TABLE 6.3-10 (Continued)
AGENCIES WITH THE AUTHORITY TO IMPLEMENT OR REQUIRE IMPLEMENTATION OF MEASURES TO AVOID OR MITIGATE GROWTH-RELATED IMPACTS

Agency	Authority
Biological Resources	
National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of National Marine Sanctuaries	Under NOAA's National Marine Sanctuary Program requirements, authorization by the Monterey Bay National Marine Sanctuary's superintendent is required for any permit, lease, license, approval, or other authorization issued or granted by a federal, state, or local agency for prohibited activities within the sanctuary.
National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries)	Requires consultation under Section 7 or Section 10 of the Endangered Species Act for projects that could impact endangered or threatened species under the purview of NOAA Fisheries. Prepares biological opinions on the status of species in specific areas and potential effects of proposed projects. Approves reasonable and prudent measures to reduce impacts and establishes Habitat Conservation Plans.
U.S. Fish and Wildlife Service (USFWS)	Requires consultation under Section 7 or Section 10 of the Endangered Species Act for projects which could impact endangered or threatened species. Prepares biological opinions on the status of species in specific areas and potential effects of proposed projects. Approves reasonable and prudent measures to reduce impacts and establishes Habitat Conservation Plans.
U.S. Army Corps of Engineers	Issues permits to dredge or place fill in waters of the United States, including wetlands, under the Clean Water Act. Required to consult with USFWS and NMFS regarding compliance with the federal Endangered Species Act.
California Department of Fish and Wildlife	Issues Stream Bed Alteration Agreements for projects potentially impacting waterways. If specific criteria are met, issues incidental take permits for projects that would take species listed the California Endangered Species Act. Under the Natural Community Conservation Planning Act, provides oversight for the development of regional Natural Community Conservation Plans, which aim to balance ecosystem protection and land use.

NOTE:

[a] These agencies fall under the umbrella of the California Environmental Protection Agency.

SOURCE: ESA

Implementation of Environmental Protection Measures by Resource Management Agencies

Federal, state, and regional resource-specific agencies are responsible for ensuring that impacts to specific resource categories are mitigated through the regulatory processes summarized in **Table 6.3-10**. Through their permitting authority, these agencies mitigate the impacts of proposed land uses and enforce the provisions of adopted resource protection plans (e.g., water basin plans and air basin plans). For example, the Central Coast Regional Water Quality Control Board identifies specific requirements and water quality standards for facilities by issuing waste discharge requirements, and the Monterey Bay Unified Air Pollution Control District addresses the effects of pollutant emissions by issuing permits to build and operate stationary sources of air emissions.

Conclusion

Significant and Unavoidable. The MPWSP would not directly contribute to the creation of additional housing or jobs within the area it would serve, as it is limited construction and operation of water supply facilities and infrastructure. But the proposed project would indirectly support growth by removing some water supply limitations as an obstacle to growth, thereby enabling a degree of growth under the approved general plans within the area served by the MPWSP.

The cities and county in the area served by the proposed project have the authority to approve or deny development projects and to impose mitigation to address significant environmental impacts associated with development projects within their respective jurisdictions. In addition, numerous federal, state, regional, and local agencies are specifically charged with protecting environmental resources, and ensuring that planned development occurs in a sustainable manner. Together, these agencies exercise the authority to reduce the effects of development on the environment. Some unavoidable impacts would still, however, be expected to occur.

6.3.7 Growth Inducement Potential of Cumulative Water Supply Projects

This section considers the indirect growth inducement potential of the cumulative projects identified in **Table 4.1-2**. The geographic scope for the cumulative analysis of indirect growth inducement consists of the CalAm service area jurisdictions and other areas of Monterey County that could experience similar indirect growth inducement. The baseline environmental setting against which the MPWSP is being analyzed includes the effects of existing, operational water supply projects identified in Table 4.1-2 such as the Seaside Groundwater Basin Aquifer Storage and Recovery projects (Nos. 29 and 30), and Sand City Coastal Desalination Plant (No. 6), which are assumed in water supply planning undertaken for the proposed project (as discussed in Chapter 2, Section 2.4 and shown in Table 2-4). The CalAm Slant Test Well at CEMEX (No. 47) is assumed to be used for production of the proposed MPWSP supply.

Several of the planned future cumulative projects identified in Table 4.1-2 would provide new sources of potable water supply in Monterey County. The Monterey Bay Regional Water Project (DeepWater Desal) (No. 34) would provide water to the City of Salinas as well as parts of Santa Cruz County. If both the MPWSP and DeepWater Desal were approved, water from DeepWater Desal could be used to support growth in other nearby areas such as northern Monterey County. The RUWAP Desalination Element (No. 31) would serve the Marina Coast Water District's Ord Community with approximately 1,000 afy of potable supply. Through an agreement with FORA and the MRWPCA, an additional 1,400 afy of potable supply from the Pure Water Delivery and Supply Project (RUWAP #35 in Table 4.1-2) would meet the build-out needs of the Ord Community (which is contiguous with CalAm's service area). The Granite Ridge Water Supply Project would increase water supply availability for the area of northern Monterey County that it would serve. The Interlake Tunnel project would reduce the amount of water spilled at Nacimiento Dam by allowing water from Nacimiento Reservoir to be stored at San Antonio Reservoir for later use. This project would enhance flood control, provide environmental benefits, and offset groundwater pumping. Because this project would provide groundwater recharge, this analysis assumes it could indirectly augment supply available for groundwater users, including municipal supply that could serve additional growth. Although the primary purpose of the Salinas Valley Water Project Phase II (No. 1) is to combat seawater intrusion by providing a new source of surface water to offset groundwater consumption, the availability of a reliable surface water supply provided by this project could induce growth by removing supply reliability limitations as an obstacle to urban development.

Growth induced by one or more of these cumulative water supply projects in combination with the proposed project would result in secondary effects of growth in Monterey County that are

similar to, but would likely be more severe and widespread than, those summarized above in Table 6.3-9; these impacts include increased traffic, noise, and air pollution and loss of open space and biological resources.

Other water projects listed in Table 4.1-2, including the RUWAP Recycled Water Project (No. 35), West Broadway Stormwater Retention Project (41), Del Monte Boulevard Dry Weather Diversion project (44), Pacific Grove Local Water Project (No. 22), Pacific Grove Recycled Water Project (No. 23), and Monterey Pacific Grove Area of Special Biological Significance (ASBS) Stormwater Management Project (No. 45) would either provide non-potable recycled water supply or enhance groundwater recharge. Projects providing recycled water could offset demand for potable supply that is currently used for non-potable uses, thereby making that potable supply available for other uses including growth. Projects capturing and diverting stormwater runoff to enhance groundwater recharge would primarily improve surface water quality and help stop seawater intrusion, but may overtime increase the availability of groundwater supply. These projects could contribute to the growth-inducing impacts of the cumulative potable supply projects described above by increasing the availability of existing potable supplies and groundwater.

As stated in Table 4.1-2, because the Peoples' Project would serve the same customers as the MPWSP, it is not reasonably foreseeable as a cumulative project but instead is considered an alternative to the MPWSP. The Pure Water Monterey Groundwater Replenishment (GWR) Project is not a cumulative project in the context of the proposed project or any alternative that includes a 9.6-mgd desalination plant built and operated by CalAm, because if the GWR is implemented, CalAm would not need to construct a 9.6-mgd desalination plant. The GWR Project is a cumulative project in the context of Alternatives 5a and 5b, which evaluate a 6.4-mgd desalination plant. The cumulative growth inducement of implementing the GWR and Alternative 5a or 5b and the other water supply projects discussed here would be similar to the cumulative growth inducement of the proposed project because water supply available to the CalAm service area with implementation of the GWR project plus Alternative 5a or 5b would be similar to the supply provided by the proposed project.

6.4 Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines

In 2010, MBNMS, in collaboration with the California Coastal Commission, California Central Coast Regional Water Quality Control Board, and NOAA Fisheries, published Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary, which was a strategy in the desalination action plan included in the 2008 MBNMS Final Management Plan (described in Section 4.5, Marine Biological Resources) (MBNMS, 2010). These non-regulatory guidelines were developed to help ensure that any future desalination plants in the sanctuary would be sited, designed, and operated in a manner that results in minimal impacts on the marine environment. They address numerous issues associated with desalination including site selection, construction and operational impacts, monitoring and reporting, plant discharges, and intake systems.

General provisions in the Guidelines outline the desired approach for developing desalination projects, demonstrating project need, designing alternatives, and complying with NEPA, including the following:

- Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project. This should include an evaluation of other potential desalination locations and alternatives, as well as other forms of water supply;
- Desalination should only be considered when other preferable alternatives for meeting water needs, such as increased conservation and wastewater recycling are maximized or otherwise determined not feasible, and it is clear that desalination is a necessary component of the region's water supply portfolio;
- Project proponent should provide a complete evaluation of the need for a desalination plant. This should include a background of the water supply situation and discussion and evaluation of alternatives that have been considered to obtain the necessary volume of water; including the potential to use other economically and environmentally preferable alternatives including increased conservation, brackish water desalination, and wastewater recycling to meet some or all of the water needs of a proposed project; and
- Desalination plant proponents should provide a thorough analysis of the potential impacts on the coastal ecosystem for the proposed desalination plant and all project alternatives and plans to mitigate any potential impacts, or recover any resources that may be disturbed during construction.

The scope of this EIR/EIS analysis complies with the above Guideline provisions outlining the required elements of impact analysis. The key guidelines with specific recommendations that are relevant to the proposed project and alternatives are listed in **Table 6.4-1**, along with summaries of the proposed project and alternatives' consistency with each guideline. Potential inconsistencies associated with the alternatives are also addressed in individual issue area analyses in Section 5.5. The Guidelines are not applicable to the No Project Alternative and therefore, this alternative is not included in the table.

TABLE 6.4-1
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines Regarding Cumulative Impacts (Sec. D.3, p. 5)		
Desalination plants should be designed, sited, and operated to avoid or minimize cumulative impacts. The project proponent should provide a detailed analysis on the potential cumulative effects of the proposed discharges in combination with other existing and future point sources of pollution (i.e., wastewater discharges, power plant cooling water, and other desalination plants) as well as non-point sources of pollution (i.e., large rivers and outfalls) and other seawater intakes. Where it is feasible to combine the desalination discharge with another discharge, the project proponent should compare the likely effects of the combined discharges with the two separate discharges.	**Proposed Project - Consistent**. The proposed project would utilize the existing MRWPCA treated effluent discharge pipeline, outfall, and diffuser to discharge brine into MBNMS. The dense brine discharge would be released alone during the irrigation season, and blended with varying volumes of secondary treated wastewater during the winter months. Cumulative impacts of the brine-only and combined discharges are fully analyzed in Chapter 4 of this EIR/EIS. Impacts on MBNMS resources from the brine-only and cumulative discharges would be less than significant with implementation of the proposed mitigation. The proposed project would not contribute to a cumulatively significant impact. **Alts. 1 and 2 – Consistent.** Same discharge as proposed project. **Alt. 3 – Potentially Inconsistent.** The discharge would not be combined with existing discharges.[36] **Alt. 4 – Potentially Inconsistent.** The discharge would not be combined with existing discharges. **Alt. 5a/5b – Consistent.** Same combined discharge as proposed project and less discharge due to smaller project.	• Overview, Section 4.1 • Surface Water Hydrology and Water Quality, Sections 4.3.5 and 4.3.6 • Marine Biological Resources, Section 4.5.5 • Alternatives Analysis Section 5.5.3 and 5.5.5 • Appendices D1, D2 and D3 (brine plume and water quality modeling)
Guidelines for Entrainment and Impingement (Sec. D.3, p. 6)		
All desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. Project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods. Other options for consideration should include, but may not be limited to: vertical and radial beach wells, horizontal directionally drilled (HDD) and slant-drilled wells, seabed filtration systems and other structures beneath the sea floor. Where feasible and beneficial, subsurface intakes should be used. It must be ensured however, that they will not cause saltwater intrusion to aquifers, negatively impact coastal wetlands that may be connected to the same aquifer being used by the intake, and they must address the likelihood of increased coastal erosion in the future. Subsurface intakes have the potential to minimize or eliminate impingement and entrainment impacts and improve the performance and efficiency of a desalination project by providing a certain level of pretreatment.	**Proposed Project - Consistent**. The proposed project would utilize subsurface intakes that penetrate the sea floor of MBNMS and avoid impingement and entrainment of marine biological resources. The proposed project would have a less than significant impact on groundwater supply and recharge, and subsurface intakes would facilitate the reduction of seawater intrusion in the long term. In addition, proposed slant wells would be located inland of the modeled anticipated inland extent of coastal retreat, but the rate of retreat may vary due to unforeseen changes in climate change. Therefore, the slant wells could become located on the beach within the project lifetime, a significant impact that would be reduced to a less than significant impact with Mitigation Measure 4.2-9 (Slant Well Abandonment Plan). **Alt. 1 – Potentially Inconsistent.** Subsurface intakes would be used similar to the proposed project, but coastal wetlands may be affected by groundwater drawdown.	• Description of the Proposed Project, Section 3.2.1 • Geology and Soils, Section 4.2.5 • Groundwater Resources, Section 4.4.5 • Marine Biological Resources, Section 4.5.5 • Alternatives Analysis, Section 5.3, 5.5.4 and 5.5.5 • Appendices C1 (Sea Level Rise) and C2 (Coastal Erosion) • Appendix E2 (North Marina Groundwater Model)

[36] The proponent of this alternative is investigating the feasibility of combining discharge with the Moss Landing Power Plant, but the current proposed project is a standalone new discharge pipeline. Should a combined discharge be determined feasible, that option would be evaluated in the DeepWater Desal project CEQA/NEPA document.

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Entrainment and Impingement (Sec. D.3, p. 6) (cont.)		
	Alts. 2, 3, and 4 – Potentially Inconsistent. Open water intake would cause impingement and entrainment. **Alt. 5a – Consistent.** Similar to proposed project. **Alt. 5b – Potentially Inconsistent.** Drawdown effects similar to Alternative 1.	
Any impacts on essential fish habitat (EFH) and the biota it supports that cannot be avoided through project design or operations will require mitigation, as per NMFS' regulatory requirements. The necessary level of mitigation is to be determined through the use of a biologically based model, such as the habitat production foregone method, in order to account for all "non-use" impacts on affected biota. Mitigation projects should attempt to directly offset the impacted species or habitat (in-place, in-kind mitigation) although NOAA will work with the project proponent to identify appropriate mitigation if this is not possible.	**Proposed Project - Not Applicable**. Essential Fish Habitat is not present in the project study area. The proposed project does not include any construction activities on the sea floor; operation of the proposed slant wells and discharge of brine into MBNMS would not affect EFH. **Alt. 1 – Potentially Inconsistent.** Effects on Elkhorn Slough resources are identified as significant and unavoidable and no feasible mitigation has been identified. **Alts. 2, 3, and 4 – Not Applicable.** The location is not within EFH. **Alt. 5a – Not Applicable.** The location is not within EFH, same as the proposed project. **Alt. 5b –** Same as Alternative 1.	• Marine Biological Resources, Section 4.5.5 • Alternatives Analysis Section 5.5.5
Guidelines for Brine Discharge (Sec. D.3, pp. 6-7)		
All desalination plants should be designed to minimize impacts from the discharge. Project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges. The proponent should evaluate the use of measures to minimize the impacts from desalination plant discharges including discharging to an area with greater circulation or at a greater depth, increasing in the number of diffusers, increasing the velocity while minimizing the volume at each outlet, diluting the brine with seawater or another discharge, or use of a subsurface discharge structure.	**Proposed Project - Consistent**. The proposed project would utilize the existing MRWPCA outfall and diffuser in MBNMS to discharge brine from the desalination process. Brine would generally be discharged alone during the irrigation season, and combined with intermittent flows of treated wastewater in the non-irrigation season. Brine discharge modeling evaluated salinity and water quality impacts on receiving waters for six flow scenarios. Impacts were determined to be less than significant with implementation of Mitigation Measures 4.3-4 (Operational Discharge Monitoring Analysis, Reporting, and Compliance) and 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives). **Alts. 1 and 2 – Consistent.** Same as proposed project. **Alts. 3 and 4 – Potentially Inconsistent.** The discharge would not be combined with existing discharges. **Alt. 5a/b – Consistent.** Same as proposed project.	• Surface Water Hydrology and Water Quality, Section 4.3.5 • Alternatives Analysis Section 5.5.3. • Appendices D1, D2 and D3 (brine plume and water quality modeling)

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Brine Discharge (Sec. D.3, pp. 6-7) (cont.)		
The project proponent should provide a detailed evaluation of the projected short-term and long-term impacts of the brine plume on marine organisms based on a variety of operational scenarios and oceanographic conditions: ● Brine plume modeling should address different types of seasonal ocean circulation patterns, including consideration of "worst case scenarios." ● Modeling results should be included, to illustrate how the plume will behave during variable oceanographic conditions. The plume model should estimate salinity concentrations at the discharge point, as well as where and when it would reach ambient ocean concentrations. The extent, location, and duration of the plume where the salinity is 10% above ambient salinity should also be provided. ● Information should be provided on the physical and chemical parameters of the brine plume including salinity, temperature, metal concentrations, pH, and oxygen levels. These water quality characteristics of the discharge should conform to California Ocean Plan requirements and should be as close to ambient conditions of the receiving water as feasible.	**Proposed Project - Consistent**. Brine plume dilution modeling was conducted for six flow scenarios, assuming no current at the sea floor and ignoring orbital velocities from waves. Additional dilution modeling was conducted for the Final EIR/EIS. Brine plume effects were evaluated for salinity levels in the pipe, adjacent to the diffuser, within the zone of initial dilution (ZID), along the sea floor to the edge of the brine mixing zone (BMZ) (+100 meters from the diffuser) and beyond. Input to the brine plume model included temperature and salinity levels within the ambient water column for three ocean circulation patterns, which encompass the range of seasonal patterns typical of this area. Brine plume effects on physical and chemical parameters, including salinity, temperature, metal concentrations, pH, and dissolved oxygen, and all constituents regulated under the Ocean Plan are addressed in Impact 4.3-4 and Impact 4.3-5. Mitigation Measures 4.3-4 (Operational Discharge Monitoring Analysis, Reporting, and Compliance) and 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives) would reduce impacts on receiving waters to a less than significant impact, thus the project conforms to Ocean Plan requirements. **Alts. 1 and 2 – Consistent.** Same discharge as proposed project. **Alt. 3 – Consistent.** Concentrations of the discharges would be more than proposed project, but would conform to Ocean Plan requirements. **Alt. 4 – Potentially Inconsistent.** Brine plume modeling has not been conducted to support claim that diffuser will be effective in meeting Ocean Plan requirements. **Alt. 5a/5b – Consistent.** Same as the proposed project. Brine discharge would be slightly less volume than the proposed project, but overall findings and mitigation measures are the same as identified above.	● Surface Water Hydrology and WQ, Section 4.3.5 ● Marine Biological Resources, Section 4.5.5 ● Alternatives analysis, Section 5.5.3 and 5.5.5. ● Appendices D1, D2 and D3 (brine plume and water quality modeling)
A continuous monitoring program should be implemented to verify the actual extent of the brine plume, when deemed necessary (see Monitoring section below) and to determine if the plume is impacting EFH, critical habitat, or sanctuary resources. If it is, then mitigation for the EFH impact will be required.	**Proposed Project - Consistent**. To ensure that operational discharges are in compliance with the Ocean Plan, CalAm shall implement Mitigation Measure 4.3-4 (Operational Discharge Monitoring Analysis, Reporting, and Compliance), which requires a Monitoring and Reporting Plan that includes specific water quality monitoring protocols and frequencies to assess baseline conditions and track Project compliance. Continuous monitoring is required one year prior to commencement of operational discharges and for a minimum of five years after operational discharges commence. EFH is not present within the study area. **All Alternatives – Consistent.** The same monitoring mitigation measure identified for the proposed project would apply to all alternatives.	● Surface Water Hydrology and WQ, Sections 4.3.5 ● Alternatives Analysis Section 5.5.3

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Energy Use and Greenhouse Gas Emissions (Sec. D.3, p. 7)		
The project proponent should provide estimates of a facility's projected annual electricity use and the greenhouse gas emissions resulting from that use. Applicants should also identify measures available to reduce electricity use and related emissions (e.g., energy efficient pumps, low resistance pipes, use of sustainable electricity sources, etc.) and to mitigate for all remaining emissions (e.g., purchase of offsets and/or credits that are consistent with the policies and guidelines of the California Global Warming Solutions Act of 2006 (AB 32), etc.).	**Proposed Project - Consistent**. Section 4.11, Greenhouse Gas Emissions, provides estimates of the proposed project's anticipated total operational emissions, including those from indirect emissions, exhaust emissions, brine degassing emissions, annual electricity demand, and disturbance of carbon sequestration. The analysis provides the net increase in electrical power demand, and greenhouse gas emissions for CO_2, N_20, CH_4, and CO_2e. The proposed project includes numerous energy conservation measures, including energy recovery using pressure-exchanger technology, which is expected to substantially reduce overall energy consumption during the reverse osmosis process. GHG emission impacts would be less than significant with these energy saving measures and implementation of Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan) that would require employment of additional energy conservation technologies and would ensure that operational energy use requirements result in net zero GHG emissions through renewable energy procurement and/or purchase of offsets. **All Alternatives – Consistent.** The alternatives analysis evaluates electricity use and associated greenhouse gas emissions for each alternative and identifies mitigation measures for alternatives.	• Project Description, Chapter 3 • Greenhouse Gas Emissions, Section 4.11.5 • Energy Conservation, Section 4.18 • Alternatives Analysis, Section 5.5.11 and 5.5.18
Guidance for Co-location with Power Plant (Sec. D.3, p. 7)		
Desalination plants proposing to co-locate with power plant once-through cooling systems should include an assessment, during the environmental documentation phase, of the impacts that would occur when the power plant cooling system does not operate, along with an analysis of alternative intake and outfall structures that would avoid or minimize these impacts.	**Proposed Project – Not applicable**. The proposed project is not co-located with a power plant. **All Alternatives – Not applicable**. None of the alternatives would be co-located with a power plant once through cooling system.	Not applicable
Guidance for Co-location with Sewage Treatment Facilities (Sec. D.3, p.8)		
In consideration of recent interest by many municipalities regarding water recycling projects, the project proponent should evaluate the continued availability and reliability of that discharge in the future due to the potential for additional wastewater recycling projects. Additionally, where treated wastewater is available for recycling, proponents should determine the feasibility of using it as the source water to be desalinated for use in groundwater recharge – i.e., indirect potable reuse.	**Proposed Project - Consistent**. MRWPCA certified the Final EIR and approved the Groundwater Replenishment Project (GWR) in October 2015. In September 2016, the CPUC authorized CalAm to purchase 3,500 afy of purified recycled water from the MRWPCA and MPWMD. If the GWR Project is successful at developing water, CalAm would build a reduced-size desalination project (6.4-mgd) (Alternative 5a) and utilize the GWR Project, which would advance treat a variety of water sources including wastewater, stormwater, food industry processing water, and impaired surface waters of the State.	• Water Demand and Supplies, Section 2.4.5, Groundwater Replenishment • Overview, Section 4.1, Table 4.1-2, Cumulative Project #59 • Alternatives, Sections 5.4.7 and 5.4.8 Reduced Project Desalination Plant

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidance for Co-location with Sewage Treatment Facilities (Sec. D.3, p.8) (cont.)		
	Alts. 1, 2, 3, 4 – Consistent. Since the GWR project is separate from the proposed project, it is assumed that other alternatives may be able to use resources resulting from this recycled water project. **Alt. 5a/5b – Consistent.** Same as the proposed project.	
The project proponent should provide a thorough analysis of the potential impacts on marine organisms resulting from the combined properties of the discharge, as well as how the addition of brine effluent would affect the dispersal/dilution of the wastewater effluent.	**Proposed Project - Consistent**. Impacts on marine organisms from the brine-only discharge, and a discharge of brine combined with treated wastewater effluent, are analyzed in Impacts 4.5-4, 4.5-5, and 4.5-6; proposed project impacts on marine biological resources would be less than significant. Brine plume modeling included analysis of the effects of the brine on wastewater effluent dispersal/dilution. **All Alternatives – Consistent.** Impacts on marine organisms from brine discharge associated with alternatives are analyzed and disclosed in Chapter 5 of the EIS/EIR. Chapter 5 also provides impact conclusions for each alternative.	• Surface Water Hydrology and WQ, Section 4.3.5 • Marine Biological Resources, Section 4.5.5 • Alternatives Section 5.5.5 • Appendices D1, D2 and D3 (brine plume and water quality modeling)
The project proponent should evaluate diurnal fluctuations in wastewater discharge operations. When modeling for dilution of the brine plume, it is crucial to include a "worst case scenario" analysis of the dilution properties of the combined wastewater effluent and brine plume, during lowest expected flow rates for the treated wastewater effluent. The project proponent should include an assessment of the impacts that would occur from brine discharge if the wastewater discharge were to cease.	**Proposed Project - Consistent**. Brine modeling evaluated and the EIR/EIS presents the impacts from six operational scenarios ranging from baseline wastewater-only discharges to "worst case" brine-only discharges. The brine-only discharge would exceed 2ppt for a very small area above the sea floor, and it would be less than 2 ppt above ambient at the edge of the ZID, the point at which the plume contacts the sea floor (less than 30 feet from the point of discharge). **Alts. 1 and 2 – Consistent.** Same as the proposed project. **Alts. 3 and 4 – Not Applicable.** Combined discharge is not proposed. **Alt. 5a/5b – Consistent.** Same as the proposed project, but less discharge volume.	• Surface Water Hydrology and WQ, Section 4.3.5 • Marine Biological Resources, Section 4.5.5 • Alternatives Analysis Section 5.5.3 and 5.5.5 • Appendices D1, D2 and D3 (brine plume and water quality modeling)
Guidelines for Use of Chemicals for Treatment and Cleaning (Sec. D.3, p. 8)		
The project proponent should provide a complete list of all chemicals that may be used for the desalination facilities, as well as the quantities of chemicals and how these will be stored and disposed. They should also include an evaluation of the potential for these chemicals to cause impacts on local marine organisms. This should also include a detailed spill prevention and response plan for chemicals stored at the project site.	**Proposed Project - Consistent**. A list of chemicals and their proposed annual usage in the desalination process is presented for the proposed project in Table 3-3 and Table 4.7-5 and includes standard treatment chemicals such as Sodium Hypochlorite, Sodium Bisulfite, Carbon Dioxide, Lime, Sodium Hydroxide, and Zinc Orthophosphate. Information regarding storage and disposal is in Impact 4.7-6. The desalination plant would be located approximately 1.75 miles from the MBNMS and chemical usage and storage at the desalination plant would not cause impacts on local marine organisms. CalAm would be required to implement the project in accordance with all applicable laws and regulations governing hazardous materials storage, handling, and	• Description of the Proposed Project, Section 3.2.2.4 • Hazards and Hazardous Materials, Section 4.7.5.2 • Alternatives Section 5.5.7

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Use of Chemicals for Treatment and Cleaning (Sec. D.3, p. 8) (cont.)		
	disposal. Chemicals used in the pretreatment process will be disposed of as sludge in a sanitary landfill. Spent cleaning solutions and waste effluent for the RO System would be discharged into a collection sump, chemically neutralized, then pumped into tank trucks and transported offsite for disposal. Spill prevention measures and a response plan would be included in the SWPPP and the Hazardous Materials Business Plan. **All Alternatives – Consistent.** The use of chemicals would be similar to the proposed project and chemical use is evaluated in the Alternatives Chapter 5. All alternatives will be required to prepare spill prevention and response plans.	
The project proponent should evaluate the feasibility of using alternative pretreatment techniques such as ozone pretreatment, subsurface intakes, and membrane filtration, aimed at reducing the use of chemicals.	**Proposed Project - Consistent**. The proposed project would use pretreatment techniques including subsurface intakes, pressure filters or multimedia gravity filters, backwash supply and filtered water equalization tanks, backwash settling basins with decanting system, cartridge filters, filtered water pumps, and backwash supply pumps. **Alt. 1 – Consistent.** Same as the proposed project. **Alts. 2, 3, and 4 – Potentially Inconsistent.** Open water intake. **Alt. 5a/5b – Consistent.** Same as the proposed project.	• Description of the Proposed Project, Chapter 3 • Alternatives description, Section 5.4
Guidelines for other Environmental and Socioeconomic Impacts (Sec. D.3, p.9)		
Desalination plants should be designed and operated to minimize impacts on recreational and commercial activities that occur within MBNMS. The project proponent should provide a thorough evaluation of the potential impacts on recreation, public access and safety, including but not limited to potential impacts on SCUBA divers, kayakers, recreational boaters, and commercial and recreational fishermen.	**Proposed Project - Consistent**. The MPWSP Desalination Plant itself would not be located within MBNMS; slant wells from onshore locations would extend into the submerged lands of MBNMS. The proposed project is consistent with regional and local plans and policies designed to promote and protect public safety and recreational opportunities. No construction or operational activities proposed by the MPWSP would impact divers, kayakers, boaters or fishermen. Public access to Fort Ord Dunes State Park could be temporarily disrupted during pipeline construction, but mitigation would ensure continued vehicular, pedestrian and bicyclist access; lateral access would not be affected. **Alt. 1 – Consistent.** Similar to the proposed project, but construction at the Potrero Road parking lot would temporarily limit vertical beach access. Alternative access routes are available and mitigation measures are identified to ensure continued access. Lateral beach access would not be affected. **Alt. 2 – Consistent.** Same as the proposed project. **Alt. 3 – Potentially consistent.** Offshore construction may affect recreational and commercial activities in MBNMS; however, the effects would be short-term.	• Land Use, Land Use Planning, and Recreation, Section 4.8 • Table 4.8-2 Applicable Regional and Local Land Use Plans and Policies Relevant to Land Use and Recreation • Alternatives Section 5.5.8

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for other Environmental and Socioeconomic Impacts (Sec. D.3, p.9) (cont.)		
	Alt. 4 – Potentially consistent. Offshore construction may affect recreational and commercial activities in MBNMS and onshore construction at the caisson may preclude beach access. The effects would be short-term. **Alt. 5a – Consistent.** Same as the proposed project. **Alt. 5b – Consistent.** Same as Alternative 1.	
Desalination plants should not interfere with vertical or lateral public access to the shoreline or to coastal waters.	**Proposed Project - Consistent**. (See previous row) Construction of the proposed new Transmission Main would temporarily close 1 of 3 entrances to Fort Ord Dunes State Park. Implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan), would provide continued safe access. The subsurface slant wells would be set back from the beach at a distance that would not preclude public access on the beach. No other proposed components would interfere with vertical or lateral public access to the shoreline or coastal waters. **All Alternatives.** Same as previous row regarding public access and recreation.	• Land Use, Land Use Planning, and Recreation, Section 4.8 • Traffic and Transportation, Section 4.9 • Alternatives Section 5.5.8 and 5.5.9
Desalination plants in MBNMS should not contribute to coastal retreat and should not be designed to anticipate the possibility of installing coastal armoring at any time in the future to protect the plant or its infrastructure from the effects of coastal erosion, wave action, or sea level rise.	**Proposed Project - Consistent**. The only proposed component that could become vulnerable to coastal retreat during the project lifetime is the existing test slant well. CalAm would implement Mitigation Measure 4.2-10 (Slant Well Abandonment Plan), which would require annual monitoring of the rate of coastal retreat and abandonment of the facility when necessary. CalAm would remove the susceptible facility prior to its exposure or potential contribution to coastal retreat. No coastal armoring is planned to protect the subsurface slant wells. **Alt. 1 – Consistent.** The slant wells would be located inland of the modeled future coastal erosion and would not be subject to coastal erosion or contribute to coastal retreat. **Alt. 2 – Consistent.** No facilities are proposed within an area subject to coastal erosion or retreat. Pipelines would be 100 feet below the surface where crossing the coastline. **Alt. 3 – Consistent.** Same as Alternative 2. **Alt. 4 – Potentially Inconsistent.** Continued use and improvements of the existing Caisson in the shore zone may be subject to coastal erosion and could necessitate armoring. **Alt. 5a – Consistent.** Same as the proposed project. **Alt. 5b – Consistent.** Same as Alternative 1.	• Geology and Soils, Impact 4.2-10 • Alternatives Section 5.5.2 • Appendix C2, Analysis of Historic and Future Coastal Erosion with Sea Level Rise.

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for other Environmental and Socioeconomic Impacts (Sec. D.3, p.9) (cont.)		
Desalination plants should be designed to minimize visual impacts on coastal resources.	**Proposed Project - Consistent**. The MPWSP Desalination Plant would minimize coastal visual impacts on resources because of its inland location. The subsurface slant wells and associated facilities at CEMEX would be located in an area with moderate aesthetic resource value. The site's dune topography and vegetation would substantially limit views of the slant well sites from locations outside of the CEMEX property, including from the beach and from Hwy 1. Views from the beach would be nearer and longer in duration compared to roadside views, but the above ground facilities would not appear dominant relative to surrounding features and would not obstruct coastal views. As a result, these facilities would minimize visual impacts on coastal resources. Furthermore, mitigation has been identified to reduce impacts on coastal views. **Alt. 1 – Consistent.** Similar to the proposed project. **Alt. 2 – Consistent.** No facilities are planned in the shore area. The intake pump station would be on Dolan Road in an industrial area. The desalination plant site is the same as the proposed project. **Alt. 3 – Consistent.** No facilities are planned in the shore area and the desalination plant site is inland of the coastal area. **Alt. 4 – Potentially Inconsistent.** The Sandholdt Road pump house structure would be visible within the coastal area and would affect scenic coastal views. Mitigation has been identified to reduce the impact to less than significant, but visual resources may still be affected. **Alt. 5a – Consistent**. Same as the proposed project. **Alt. 5b – Consistent.** Same as Alternative 1.	• Aesthetic Resources, Section 4.14.5 • Alternatives Analysis Section 5.5.14
The project proponent should provide an analysis of the potential population growth-inducing impacts of the desalination project. This should be compared for consistency with projected development patterns in relevant planning documents such as Local Coastal Programs and the County's General Plan. NOAA recommends that the freshwater production capacity of all desalination projects be consistent with established local government land use policies in county and city general plans and local coastal programs.	**Proposed Project - Consistent**. The proposed project is sized to provide existing customers with a reliable water supply, accounting for peak month demand; to accommodate tourism demand under a recovered economy; to provide supplies for vacant legal lots of record; and for Pebble Beach Entitlements. The direct effects on population and housing were determined to be less than significant. The indirect growth inducement potential of the MPWSP was evaluated in conjunction with population and housing forecasts prepared by the Association of Monterey Bay Area Governments and with projections from local General Plans or specific plans. While the MPWSP would provide sufficient supply to enable CalAm to comply with the SWRCB Order 95-10 and the Seaside Groundwater Basin Adjudication (see Table 6.3-1), it would provide some water for growth. The indirect impacts of that growth were identified in the EIRs prepared for the general and specific plans that guide that growth. **Alts. 1 and 2 – Consistent.** Same as the proposed project.	• Population and Housing, Section 4.19 • Alternatives Section 5.5.19 • Growth-Inducing Impacts, Section 6.3 • Alternatives Section 5.5.21 • Secondary Effects of Growth, Appendix J2

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for other Environmental and Socioeconomic Impacts (Sec. D.3, p.9) (cont.)		
	Alt. 3 – Potentially Inconsistent. The substantially larger size of this alternative would allow more growth than the proposed project and it is not certain that this growth would be consistent with land use policies and general plan growth projections. **Alt. 4 – Potentially Inconsistent.** The slightly larger size of this alternative would allow more growth than the proposed project and it is not certain that this growth would be consistent with land use policies and general plan growth projections. **Alt. 5a/5b – Consistent**. Same as the proposed project.	
Guidelines for Plant Site Selection and Structural and Engineering Considerations (Sec. D.3, pp. 9-10)		
Desalination plant intakes should be sited to avoid sensitive habitats. For open-water intakes, areas of high biological productivity, such as upwelling centers or kelp forests or other dense beds of submerged aquatic vegetation should be avoided, since the entrainment and impingement impacts of a desalination plant are in large part dictated by the biological productivity in the vicinity of that intake.	**Proposed Project - Consistent for MBNMS Resources; Inconsistent for Onshore Resources**. The proposed project would include subsurface intakes under the MBNMS seafloor that avoid impingement and entrainment impacts. No construction is planned on the seafloor surface. Onshore, the proposed project would use subsurface slant wells at the CEMEX sand mining property. A thorough intake alternatives analysis identified the proposed location to minimize impacts. The wellheads would be located on the inland side of the dunes; sensitive communities and critical habitat within or adjacent to the project construction area could be temporarily (9 acres) or permanently (1 acre) impacted during construction. Slant well construction would occur outside of western snowy plover critical habitat. However, conversion of the test slant well to a permanent well and construction of aboveground facilities could indirectly impact the primary constituent elements of this critical habitat if worker foot traffic extends beyond the designated construction work area, if trash and debris is left behind following construction, or if invasive plant species are introduced or spread at the site. Implementation of mitigation measures would reduce impacts on sensitive natural communities and critical habitat resulting from slant well construction to a less-than-significant level. **Alt. 1 – Inconsistent.** The slant well location at the Potrero Road parking lot would not affect any sensitive habitat, but drawdown effects on Elkhorn Slough could affect sensitive species. **Alts. 2 and 3 – Inconsistent.** Construction and operation of a new open water intake system would impact marine biological resources. **Alt. 4 – Inconsistent.** Construction and operation of an extended open water intake system would impact marine biological resources. **Alt. 5a –** Same as the proposed project. **Alt. 5b – Inconsistent.** Same as Alternative 1.	• Description of the Proposed Project, Chapter 3 • Marine Biological Resources Section 4.5 • Terrestrial Biological Resources, Impact 4.6-2 • Alternatives Development and Screening Process, Chapter 5.3 • Alternatives Analysis Sections 5.5.5 and 5.5.6

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Plant Site Selection and Structural and Engineering Considerations (Sec. D.3, pp. 9-10) (cont.)		
Desalination plant discharges should not be located in or near ecologically sensitive areas, including Areas of Special Biological Significance as designated by the State Water Resources Control Board, EFH Habitat Areas of Particular Concern as designated by the Pacific Fishery Management Council, and Marine Protected Areas designated under the Marine Life Protection Act. These areas include: Elkhorn and Pescadero Sloughs, James V. Fitzgerald Marine Reserve, Año Nuevo, Pacific Grove Marine Gardens, Edward F. Ricketts, Carmel Bay, Point Lobos, Point Sur and Big Creek State Marine Conservation Areas and Marine Reserves, Julia Pfeiffer Burns Underwater Park, and the Ocean Area Surrounding the Mouth of Salmon Creek.	**Proposed Project - Consistent**. The MPWSP Desalination Plant discharges would not be located in or near ecologically sensitive areas. Furthermore, discharges would be combined with existing wastewater discharges. **All Alternatives – Consistent.** Same as proposed project.	• Description of the Proposed Project, Chapter 3 • Marine Biological Resources, Figure 4.5-5 Sanctuary Ecologically Significant Areas Designated in MBNMS • Alternatives Analysis Section 5.5.5
Areas with limited water circulation such as enclosed bays or estuaries, which can "trap" the brine discharge, should be avoided, as should EFH HAPC, such as rocky substrate and kelp forests, due to their high biological productivity. As a general rule, the stronger the hydrodynamic force, the better dilution is achieved due to faster dispersal from the natural mixing action of the ocean. Desalination plant discharges should be designed and sited to minimize impacts on marine biological resources of the sanctuary.	**Proposed Project - Consistent**. The proposed project would utilize the existing MRWPCA ocean outfall in Monterey Bay, within MBNMS. The location is on a shelf with a 1 percent slope towards the Monterey Submarine Canyon; it is not enclosed, not an estuary, and the only hard substrate is the ballast rock supporting the outfall pipe. There are no kelp beds nearby. **All Alternatives – Consistent.** Same as proposed project.	• Marine Biological Resources, Section 4.5, Figure 4.5-1 Identified Subtidal Habitats in Study Area • Alternatives Analysis Section 5.5.5
The project proponent should provide complete plans, which include detailed information on: location, depth, engineering, and configuration of intake and outfall pipes; sizing and configuration of seabed structures; proposed depth and distance from shore of the intake and discharge points; local bathymetry; and dilution zones for each discharge pipeline alternative. The pipeline placement and configuration of intake and discharge structures should be designed as to avoid sensitive biological areas in the sanctuary.	**Proposed Project - Consistent**. The proposed project would utilize an existing outfall and diffuser, and would use subsurface intakes; no proposed intake component would be constructed or placed on the surface of the sea floor. Local bathymetry and dilution zones are provided. **Alt. 1 – Consistent.** Same as the proposed project. **Alt. 2 – Inconsistent.** Construction and operation of a new open water intake system would impact marine biological resources. **Alt. 3 – Inconsistent.** Construction and operation of a new open water intake system and discharge pipeline would impact marine biological resources. **Alt. 4 – Inconsistent.** Construction and operation of an extended open water intake system and discharge pipeline would impact marine biological resources. **Alt. 5a/5b – Consistent.** Same as the proposed project.	• Description of the Proposed Project, Chapter 3, Table 3-1, Sections 3.2.1 and 3.2.2.5, Figure 3-3a MPWSP Seawater Intake System, Figure 3-3b Illustrative Cross-Sectional View of Subsurface Slant Wells • Geology and Soils, Section 4.2, Figure 4.2-7 Representative Profile at Test Slant Well, Figure 4.2-8 Representative Profile at Proposed Slant Wells • Surface Hydrology and WQ, Section 4.3, Figure 4.3-7 Brine Mixing Zone (BMZ) and Diffuser Overview • Marine Biological Resources, Section 4.5, Figure 4.5-1 Identified Subtidal Habitats in Study Area, Figure 4.5-4 Essential Fish Habitat Designated in MBNMS under Federal Regulations, Figure 4.5-5 Sanctuary Ecologically Significant Areas Designated in MBNMS, Figure 4.5-6 Marine Protected Areas along the California Coast • Alternatives Analysis Section 5.5.5 • Appendix D1, Brine Modeling

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Plant Site Selection and Structural and Engineering Considerations (Sec. D.3, pp. 9-10) (cont.)		
The project proponent should provide an analysis of the potential for co-location of desalination plants to make use of existing infrastructure.	**Proposed Project - Consistent**. The proposed desalination plant would be located adjacent to the MRWPCA and would use the existing outfall pipeline and diffuser. **Alts. 1 and 2 – Consistent.** Same as the proposed project. **Alt. 3 – Inconsistent.** The project would not be co-located. However, the proponent of this alternative is investigating the feasibility of combining discharge with the Moss Landing Power Plant. **Alt. 4 – Partially Consistent.** The project would rehabilitate existing intake and discharge pipeline systems. **Alt. 5a/5b – Consistent.** Same as the proposed project.	• Description of the Proposed Project, Chapter 3.
Guidelines for Desalination Plant Construction Phase (Sec. D.3, pp. 10-12)		
The project proponent should identify and provide a complete explanation of potential impacts from the construction process to the marine and coastal environment. They should also provide an evaluation of marine historical or archaeological resources that could be disturbed, and plans to mitigate any potential impacts, or recover any resources that may be disturbed during construction.	**Proposed Project - Not applicable**. The proposed desalination plant would be located approximately 1.75 miles from the coast and would not impact marine or coastal resources during the construction phase, nor would any marine historical/archaeological resources be affected. **Alts. 1, 2, and 5a/5b – Not applicable.** Same as proposed project. **Alts 3 and 4 –** Desalination plant construction impacts on the marine and coastal environment and on marine historical and archaeological resources are evaluated for each alternative in Section 5.5. Marine Biological Resources, and 5.14 Cultural and Paleontological Resources, and impacts are noted above in consistency determinations regarding intake and discharge pipelines. None of the alternative locations for the desalination plants would affect marine or coastal resources, as they are sited inland.	• Description of the Proposed Project, Chapter 3. • Alternatives Analysis Section 5.5.15
All proposed projects should provide a stormwater pollution prevention plan (SWPPP). Stormwater runoff from the site should be managed to prevent any discharge of silt or chemical contaminants to the ocean or any other surface water body. The SWRCB General Construction Storm Water Permit for Construction Activities (General Permit) is required by the Central Coast Water Board for all construction activities that disturb at least one acre of soil, including grading and stockpiling. Local jurisdictions may require additional construction permits and SWPPPs at lower disturbance thresholds. In the case of any accidental spills or construction-related impacts on marine biological resources, MBNMS and NMFS management should be notified immediately and mitigation plans developed.	**Proposed Project - Consistent**. Construction of the proposed project would be conducted under a General Construction Permit, which is implemented and enforced by the Central Coast RWQCB and requires project operators to prepare a SWPPP. The proposed project would include a Hazardous Materials Business plan (HMBP) that is required by the Hazardous Materials Release Response Plans and Inventory Act of 1985 for businesses and construction contractors that use and store hazardous materials. The HMBP includes information on hazardous material handling and storage, including containment, site layout, and emergency response and notification procedures (including MBNMS and NMFS) in the event of a spill or release. **All Alternatives – Consistent**. Alternatives would be subject to the same requirements as the proposed project.	• Surface Water Hydrology and Water Quality, Section 4.3.5 • Hazards and Hazardous Materials, Section 4.7.5 • Alternatives Analysis Section 5.5.3 and 5.5.7

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Desalination Plant Construction Phase (Sec. D.3, pp. 10-12) (cont.)		
Best Management Practices should be developed and adhered to in order to avoid or minimize impacts on the marine environment during the construction phase of a desalination project. This should include the use of materials and practices that minimize disturbances to the environment to the maximum extent practicable.	**Proposed Project - Consistent**. All construction activities associated with the proposed project would occur several hundred feet inland of MHW and potential impacts on the marine environment within MBNMS would be less than significant, or no impact. **Alt. 1 – Consistent.** Same as the proposed project. **Alts. 2, 3, and 4 – Potentially Inconsistent.** Offshore construction would be required and disturbance to the marine environment would occur. **Alt. 5a/5b – Consistent.** Same as the proposed project.	• Surface Water Hydrology and Water Quality, Section 4.3.5 • Marine Biological Resources, Section 4.5.5 • Alternatives Analysis Section 5.5.3 and 5.5.5
The plant construction phase should include techniques and plans to avoid impacts on maritime heritage resources of the MBNMS. This includes submerged cultural and archeological resources including shipwrecks.	**Proposed Project - Consistent**. The proposed project would not be located near any MBNMS maritime heritage resources. The existing MRWPCA outfall would be used for the discharge of brine; no new construction activities would occur on the sea floor or in a MBNMS maritime heritage resource area. **Alt. 1 – Consistent.** Same as the proposed project. **Alts. 2, 3, and 4 – Consistent.** Although shipwrecks may be present in the offshore construction area, pre-construction marine surveys would be required to determine presence and to avoid such resources. **Alt. 5a/5b – Consistent.** Same as the proposed project.	• Description of the Proposed Project, Chapter 3 • Cultural and Paleontological Resources, Section 4.15.5 • Alternatives Analysis Section 5.5.15
Project proponents should adhere to specific conditions for all construction activities occurring on the beach. See bulleted list on page 11 of MBNMS Guidelines.	**Proposed Project - Consistent**. All construction activities associated with the proposed project would occur at a minimum of several feet inland of MHW; construction materials and equipment would be delivered by existing access roads, no fill material would be discharged into waters of MBNMS. A list of anticipated required permits and approvals is presented in Chapter 3. Many of these would include specific conditions for work on or near the beach. All project construction activities would comply with specific conditions of any and all authorizations, regardless of construction location. **Alt. 1 – Consistent.** Similar to the proposed project, but construction at Potrero Road may require specific conditions. **Alts. 2 and 3 – Not Applicable.** No beach construction. **Alt. 4 – Potentially Inconsistent.** Beach construction would be required for the intake pipeline and modification of the existing caisson. **Alt. 5a – Consistent.** Same as the proposed project. **Alt. 5b – Consistent.** Same as Alternative 1.	• Description of the Proposed Project, Chapter 3. • Surface Water Hydrology and Water Quality, Section 4.3.5

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Guidelines for Desalination Plant Construction Phase (Sec. D.3, pp. 10-12) (cont.)		
Mitigation should be provided for the loss of EFH from the placement of the intake structure, delivery pipeline, and outfall structure.	**Proposed Project - Not Applicable**. The marine biological resources study area for the proposed project does not include EFH and does not include the placement of any new structure in MBNMS. The proposed project would not affect EFH. **Alt. 1 – Potentially Inconsistent.** No feasible mitigation has been identified for indirect drawdown effects on Elkhorn Slough resources. **Alts. 2, 3, and 4 – Not Applicable.** The intake and outfall pipelines are not within EFH. **Alt. 5a – Consistent.** Same as the proposed project. **Alt. 5b –** Same as Alternative 1.	● Marine Biological Resources, Section 4.5, Figure 4.5-4 Essential Fish Habitat Designated in MBNMS under Federal Regulations ● Alternatives Analysis Section 5.5.5
Monitoring (Sec. D.4, pp.12-13)		
The project proponent should develop an ongoing monitoring program to evaluate the extent of impacts from the plant's intake and discharge operations on marine biological resources. The monitoring program should focus on: a) developing a statistically acceptable baseline for the project area, b) monitoring source water for potential contaminants that may require additional treatment, c) monitoring the effluent prior to discharge to ensure it is in compliance with the California Ocean Plan d) monitoring the effects of the effluent on marine organisms within the plume, after the discharge begins, e) monitoring the impingement and entrainment effects on marine organisms, if applicable, and f) monitoring any required mitigation for unavoidable impacts to make sure the mitigation is performing as intended. The proposed monitoring system should be carried out for at least three years, with an evaluation report and cumulative impact evaluation generated each year. After the third year, the RWQCB and the MBNMS.	**Proposed Project - Consistent**. Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) applies to the proposed project operational discharges to ensure compliance with Ocean Plan requirements, and includes the following protocols, which are consistent with the guidelines: ● To establish baseline conditions, continuously record water quality parameters of salinity and dissolved oxygen at one hour intervals at several locations in the receiving waters of the Monterey Bay for one year prior to commencement of operational discharges (consistent with a.). ● Continue WQ monitoring for a minimum of five years once operational discharges have commenced to confirm compliance with Ocean Plan receiving water quality limitations. ● Assess changes to the benthic community composition within the Zone of Initial Dilution (ZID) through the collection of visual observation data for the first 3 years with assessment to continue an additional 2 years (consistent with d.) ● Prepare annual reports of analyses and summaries and send to RWQCB and MBNMS, and make publicly available via project website. Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives) would require CalAm to perform extensive water quality assessment prior to implementation of the proposed project as well as during operation of the facility to ensure compliance with MRWPCA NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551) and includes the following protocols:	● Surface Water Hydrology and Water Quality, Section 4.3.5 ● Alternatives Analysis Section 5.5.3

TABLE 6.4-1 (Continued)
ASSESSMENT OF PROJECT CONFORMITY WITH GUIDELINES FOR DESALINATION PLANTS IN MONTEREY BAY NATIONAL MARINE SANCTUARY

Summary of NOAA Desalination Guidelines	Summary of MPWSP Conformity with Guidelines	Section of EIR/EIS Containing Additional Information
Monitoring (Sec. D.4, pp.12-13) (cont.)		
	• Quantify projected final design discharge volumes by month. • Collect samples of source waters and operational discharges and analyze for constituents listed in Table 1 of Ocean Plan. (Consistent with b. and c.) • Demonstrate compliance for the full range of regulated water quality constituents specified in the Ocean Plan and NPDES water quality requirements in the context of minimum initial dilution values at the edge of the ZID. • If results do not meet NPDES water quality requirements and Ocean Plan limitations, then MPWSP operational discharges shall not be released as proposed and would be subject to additional design features, engineering solutions, and/or operational measures to bring water quality constituents into conformance. • Additional design features and operational measures include additional pretreatment or source water, treatment of discharge, retrofitting the existing outfall to increase dilution, and flow augmentation. • The intakes would be subsurface; no impingement and entrainment effects would result. (Consistent with e.) Mitigation would be monitored in accordance with the Mitigation Monitoring and Reporting Program. (Consistent with f.) **All Alternatives – Consistent.** Monitoring programs would be required for any alternative approved by MBNMS, consistent with the provisions in this guideline.	

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CHAPTER 7
Report Preparation

7.1 Coordination and Consultations

Monterey Bay National Marine Sanctuary (MBNMS) has coordinated and consulted with several agencies during the National Environmental Policy Act (NEPA) process for the proposed project to meet the requirements of other federal laws. Summaries are provided below of the current status of consultations with the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (for marine species) and the Magnuson-Stevens Fishery Conservation and Management Act for Essential Fish Habitat (EFH); with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act (for terrestrial species); and with the State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act (NHPA). In addition, MBNMS has invited the U.S. Army (Presidio of Monterey) and the U.S. Army Corps of Engineers to be Cooperating Agencies under NEPA. See Appendix O, Agency Coordination and Consultation for documents related to consultation undertaken by MBNMS.

7.1.1 Endangered Species Act Section 7

Endangered Species Act Section 7(a)(1) directs federal agencies to use their authority to carry out programs for the conservation of threatened and endangered species. Federal agencies also must consult with NMFS under Section 7(a)(2) of the Act on activities that may affect a listed species (16 U.S.C. §1531 et seq.). These interagency Section 7 consultations are intended to assist federal agencies in fulfilling their duty to ensure that federal actions do not jeopardize the continued existence of a species or destroy or adversely modify critical habitat. In the event that NMFS determines that a proposed action would jeopardize a species or adversely modify critical habitat (81 Fed. Reg. 7214), it would suggest Reasonable and Prudent Alternatives to the proposed action.

For the proposed project, MBNMS is consulting with NMFS and USFWS as part of the Endangered Species Act Section 7 consultation process. MBNMS notified NMFS and USFWS regarding the proposed federal action in its August 26, 2015 Notice of Intent (NOI) to prepare an EIS for the proposed project (80 FR 51787, August 26, 2015) and is providing additional information about potential impacts of the proposed project addressed in this EIR/EIS. In June 2017, MBNMS prepared a Biological Assessment that provides specific information about potential impacts of the proposed project on federally listed species and designated critical habitat pursuant to the ESA, and on essential fish habitat (EFH) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801–1884). See Chapter 3, Project Description, Section 4.5, Marine Biological Resources and 4.6, Terrestrial Biological Resources.

On April 20, 2016, staff from USFWS, CDFW, MBNMS, AECOM (as a representative of CalAm, the applicant), and other consultants held a project coordination meeting.

On July 25, 2017, MBNMS sent an electronic request to USFWS to initiate consultation on the proposed project, including a copy of a Biological Assessment (BA) that describes the proposed action and evaluates the potential effects of the proposed project on listed and proposed species and designated and proposed critical habitat and makes a determination as to whether any such species or habitat are likely to be adversely affected by the project. On September 22, 2017, USFWS responded via letter with a request for additional information not found in the BA. Four more submittals were sent to USFWS responding to additional requests for information on October 13, November 13, and December 1, 2017, and February 20, 2018. MBNMS is awaiting a Biological Opinion from USFWS regarding the proposed project and its effects on subject listed species and designated critical habitats under Section 7(a)(2) of the Federal Endangered Species Act.

7.1.2 Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801–1884) establishes Essential Fish Habitat (EFH) provisions to identify and protect important habitats of federally managed marine and anadromous fish species. The Act defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. §1802(10); 50 CFR 600.10). Federal agencies that fund, permit, or undertake activities that may adversely affect EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond to NMFS' recommendations (16 U.S.C. §1855). Federal agencies consult with NMFS under the Magnuson-Stevens Act as part of other existing interagency coordination processes to review proposed projects and other actions that may affect marine resource habitat.

On June 30, 2017, MBNMS sent an electronic request to NMFS to initiate consultation on the proposed project, including a copy of a Biological Assessment (BA) that describes the proposed action and evaluates the potential effects of the proposed project on EFH. Staff from NMFS, MBNMS, and their consultant had a conference call on August 9, 2017, to discuss proposed project components related to groundwater sources for the slant wells. The consultant provided additional information on August 30 and September 17, 2017, at which time NMFS determined the information was sufficient to initiate consultation. On October 23, 2017, NMFS issued a letter to MBNMS that determined the brine discharge resulting from the proposed action would adversely affect EFH by establishing mixing zones with salinity levels up to 2.0 ppt greater than ambient ocean conditions within 100 meters (328 feet) from the diffuser discharge area. However, various minimization measures to avoid or minimize impacts on federally managed fisheries will be employed. NMFS has no practical conservation recommendations to provide, in addition to what is already provided, that would further avoid or mitigate these impacts. NMFS concurred with MBNMS' conclusion that there would be no adverse effects for various life stages of fish species managed within the following Fishery Management Plans (FMP) under the Magnuson-Stevens Fishery Conservation and Management Act:

- Pacific Groundfish FMP;
- Coastal Pelagic Species FMP;
- Pacific Coast Salmon FMP, and;
- West Coast Fisheries for Highly Migratory Species FMP.

7.1.3 National Historic Preservation Act Section 106 Consultation

Federal agencies must demonstrate compliance with the National Historic Preservation Act (NHPA) (16 U.S.C. §470 et seq.). NHPA Section 106 requires a federal agency with jurisdiction over a project to take into account the effect of the proposed federal action on historic properties included on, or eligible for inclusion on, the National Register of Historic Places (16 U.S.C. §470f). Federal agencies also must provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. Under NHPA Section 106, the MBNMS consults with Indian tribes as part of its responsibilities to identify, evaluate, and resolve adverse effects to historic properties affected by the Sanctuary's undertakings.

Implementation of the proposed project also requires local and state agencies to demonstrate compliance with the California Environmental Quality Act (CEQA), for which specific guidance regarding cultural resources is presented in Appendix K of the CEQA Guidelines. Local agencies may use the NHPA process to demonstrate compliance with those CEQA requirements. Analysis of impacts in this document and implementation of the mitigation measures in Section 4.15, Cultural and Paleontological Resources, provide evidence of MBNMS's compliance with Section 106 of the NHPA and NEPA as well as the California Public Utilities Commission's compliance with CEQA with respect to cultural resources. The basic steps in the Section 106 process are described in Section 4.15, Cultural and Paleontological Resources. For the proposed project, MBNMS contacted the Native American Heritage Commission (NAHC) and requested a search of the Sacred Lands File. The search identified no results, and the NAHC recommended MBNMS contact the tribes. MBNMS sent letters to those tribes on the provided contact list on June 24, 2016 (including members from the Esselen Tribe of Monterey County, Costanoan Rumsen Carmel Tribe, Ohlone/Costanoan Esselen Nation, Amah Mutsun Tribal Band, and Indian Canyon Mutsun Band). In response to the MBNMS letter, Irene Zwierlein from the Amah Mutsun Tribal Band of Mission San Juan Bautista requested additional information including whether a records search had been completed and the name of the consulting archaeologist. On behalf of MBNMS, Environmental Science Associates responded by email.

MBNMS completed follow up phone calls on March 16, 2017. MBNMS spoke with the Tribal Council Woman of the Ohlone/Costanoan Esselen Nation who requested that the letters and project location maps be resent. MBNMS also spoke with the Chairperson of the Amah Mutsun Tribal Band who was interested in project components north of the Salinas River.

Environmental Science Associates prepared a Cultural Resources Report that was included in a March 28, 2017 letter to the California State Historic Preservation Officer (SHPO) requesting concurrence on Section 106 compliance and a finding of "no adverse effect to historic properties"

for the MPWSP. The request included a description of the project location, the project objectives and need, a project description, a description of the methodology employed for the identification of historic properties, a definition of the area of potential effect (APE), the results of the record searches, a description of the field surveys and Native American consultations that were conducted for the proposed project, as well as a determination of effects. In a letter dated May 3, 2017, following review by the Office of Historic Preservation staff, the SHPO found no objections to the APE as defined by MBNMS (pursuant to 36 CFR 800.4(a)(1)), found MBNMS has documented a reasonable and good faith effort to identify historic properties within the APE (pursuant to 36 CFR 800.4(b)), and pursuant to 36 CFR 800.5(b) concurred with MBNMS that the proposed undertaking will result in no adverse effect to historic properties.

7.1.4 Coastal Zone Management Act Federal Consistency Review

The federal consistency requirement set forth in Section 307 of the Coastal Zone Management Act (CZMA) requires that activities approved or funded by the federal government that affect any land or water use or natural resource of a state's coastal zone, must be consistent with the enforceable policies of the state's federally approved coastal management program.

Under Section 307 of the CZMA (16 U.S.C. §1456), activities that may affect coastal uses or resources that are undertaken by federal agencies, require a federal license or permit, or receive federal funding must be consistent with a State's federally approved coastal management program. California's federally approved coastal management program consists of the California Coastal Act, the McAteer-Petris Act, and the Suisun Marsh Protection Act. The California Coastal Commission implements the California Coastal Act and the federal consistency provisions of the CZMA for activities affecting coastal resources outside of San Francisco Bay. Subpart D of the federal consistency regulations governs consistency review for activities requiring a federal license or permit. This section requires the applicant to conduct any required consistency review with the state coastal commission, and provide the Federal permitting agency with a consistency certification.

The Coastal Commission considers an application for a coastal development permit to cover the requirement for an applicant submitting a consistency certification to the Coastal Commission if the activity is located in state waters. Typically, the Coastal Commission will provide its response (concurrence, conditional concurrence, or objection) in its staff report for the coastal development permit.

CalAm is currently in discussions with the California Coastal Commission. In addition, a preliminary assessment of project consistency with the enforceable policies of the California Coastal Commission's coastal management program is provided in some of the resource sections within Chapter 4 to facilitate the analysis of potential impacts in these resource areas. The California Coastal Commission will make the final decision as to whether the proposed project is fully consistent.

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Public Services and Utilities	Hilary Finck
Aesthetics	Eli Davidian
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CHAPTER 8
Comments and Responses on the Draft EIR/EIS

8.1 Introduction

On January 13, 2017, the CPUC and MBNMS (the CEQA and NEPA lead agencies, respectively, sometimes jointly referred to as the Lead Agencies) published and distributed the Notice of Availability (NOA) of the Draft EIR/EIS for the MPWSP, soliciting both written and oral comments on the Draft EIR/EIS by local, state, and federal agencies and by interested organizations and individuals for a 45-day public comment period starting January 13 and ending February 27, 2017. At the request of several agencies and members of the public, the Lead Agencies extended the comment period by an additional 30 days, and written comments on the Draft EIR/EIS were accepted through March 29, 2017. The Lead Agencies held a public hearing for the receipt of oral and written comments on the Draft EIR/EIS on February 16, 2017. The Lead Agencies received approximately 82 comment letters, plus 2 form letter submissions, sent through mail, hand-delivery, or email, as well as approximately 18 oral comments made to staff at the public hearing. On November 9, 2017, subsequent to the close of the Draft EIR/EIS comment period, Marina Coast Water District submitted additional comments to the Lead Agencies.

This chapter includes all written and oral comments received during the public comment period on the Draft EIR/EIS, and provides responses to all comments that address issues relevant to the EIR/EIS. Although several written comments were received late, they are responded to in this Final EIR/EIS.

This chapter fully complies with CEQA and NEPA provisions regarding response to Draft EIR/EIS comments. CEQA Guidelines Section 15088 requires lead agencies to evaluate comments on environmental issues and prepare a written response. According to Guidelines Section 15088(c), the "written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice."

40 CFR1503.4 establishes the following requirements for response to comments in a Final EIS:

(a) An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:

(1) Modify alternatives including the proposed action.

(2) Develop and evaluate alternatives not previously given serious consideration by the agency.

(3) Supplement, improve, or modify its analyses.

(4) Make factual corrections.

(5) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

(b) All substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), should be attached to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement.

8.1.1 Responses to Comments Methodology and Organization

Responses to comments provided in this chapter address environmental issues raised during the review period. Responses are provided for each comment in the following sections. They are intended to provide clarification and refinement of information presented in the Draft EIR/EIS and, in some cases, to correct or update information in the Draft EIR/EIS. The text of the Draft EIR/EIS has been revised as appropriate in response to comments and to reflect new or updated information, and the revised text has been incorporated into the Final EIR/EIS in Chapters 1 through 7. Some of the text modifications are noted in Master Responses or individual responses to comments where necessary to discuss specific changes that have been made. Many places, the Master Responses or individual responses note that changes have been made to the text in Chapters 1 through 7, but the text of such changes is not set forth in the responses themselves.

8.1.1.1 Master Responses

Numerous comments on the Draft EIR/EIS raised common concerns or questions that are most appropriately answered or clarified in one comprehensive or “master” response. The Lead Agencies have provided Master Responses to address common concerns in Section 8.2. Individual comments related to these topics are referred to the pertinent Master Response. The Master Response topics include the following:

Master Response 1: EIR/EIS Authorship

Master Response 2: Source Water Components and Definitions

Master Response 3: Water Rights

Master Response 4: The Agency Act and Return Water

Master Response 5: The Role of the Hydrogeologic Working Group and its Relationship to EIR/EIS

Master Response 6: The Sustainable Groundwater Management Act

Master Response 7: The Deeper Aquifers of the Salinas Valley Groundwater Basin

Master Response 8: Project Source Water and Seawater Intrusion

Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM)

Master Response 10: Environmental Baseline under CEQA and NEPA

Master Response 11: CalAm Test Slant Well

Master Response 12: The North Marina Groundwater Model (v. 2016)

Master Response 13: Demand (Project Need) and Growth

Master Response 14: CEMEX Settlement Agreement

Master Response 15: Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario

8.1.1.2 Individual Responses

The Draft EIR/EIS comment letters, the public hearing transcript, and detailed responses to each comment are included in Sections 8.3 through 8.9, which organize comments and responses by category (Federal, State, and Local Agencies, Organizations, Individuals, Form Letters, and oral comments received at the public hearing). Within each category, letters are listed alphabetically. The comment letters appear first within each category, followed by a comprehensive set of responses. Comments have been delineated and numbered consecutively within each comment letter. Each individual comment is marked in the margin with the number of the comment and correlative response. Attachments to the Draft EIR/EIS comment letters and other supporting contents from the Draft EIR/EIS comment letters (e.g. resumes, product sheets, repeat form letters, etc.) are included in Appendix M. Where an individual comment is addressed by information in one or more Master Responses, the response refers to the Master Response(s). Where an individual comment is addressed by another individual response, the reader is referred to such other response to avoid duplication.

8.1.2 List of Commenters

Table 8-1 lists all agencies, organizations and individuals who provided written or oral comments on the Draft EIR/EIS. The table is organized by category (federal, state, and local agencies, organizations, individuals, and oral comments) and the section number where the comment and responses are located in Chapter 8.

TABLE 8-1
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Federal Agencies	
8.3.1	Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)
8.3.2	Department of the Army, U.S. Army Installation Management Command (USARMY)
8.3.3	Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)
8.3.4	United States Army Corps of Engineers (USACE)
8.3.5	United States Environmental Protection Agency (USEPA)
State Agencies	
8.4.1	California Coastal Commission (CCC)
8.4.2	California Department of Fish and Wildlife (CDFW)
8.4.3	California Department of Parks and Recreation (CA Parks)
8.4.4	California State Lands Commission (CSLC)
8.4.5	State Water Resources Control Board (SWRCB)
Local Agencies	
8.5.1	City of Marina
8.5.2	Marina Coast Water District (MCWD)
8.5.3	Monterey Bay Air Resources District (MBARD)
8.5.4	Monterey County Resource Management Agency (MCRMA)
8.5.5	Monterey County Water Resources Agency (MCWRA)
8.5.6	Monterey Peninsula Regional Water Authority (MPRWA)
8.5.7	Monterey Peninsula Water Management District (MPWMD)
8.5.8	Monterey Regional Waste Management District (MRWMD)
8.5.9	Monterey Regional Water Pollution Control Agency (MRWPCA)
Organizations	
8.6.1	Ag Land Trust (ALT)
8.6.2	California Unions for Reliable Energy (CURE)
8.6.3	California-American Water Company (CalAm)
8.6.4	Carmel River Steelhead Association (CRSA)
8.6.5	Carmel River Watershed Conservancy (CRWC)
8.6.6	CEMEX
8.6.7	Citizens for Just Water (CJW)
8.6.8	Coalition of Peninsula Businesses (CPB)
8.6.9	Deep Water Desal, LLC (DWD)
8.6.10	Ecological Rights Foundation (ERF), the Center for Biological Diversity (CDB), and Our Children's Earth Foundation (OCEF)
8.6.11	Fort Ord Rec Users (FORU)
8.6.12	Just Water (JW)
8.6.13	Land Watch Monterey County (LWMC)
8.6.14	Pebble Beach Company (PBC)
8.6.15	Point Blue Conservation Science
8.6.16	Public Trust Alliance (PTA)
8.6.17	Public Water Now (PWN)
8.6.18	Salinas Valley Water Coalition (SVWC) and Monterey County Farm Bureau (MCFB)
8.6.19	Surfrider Foundation
8.6.20	Water Ratepayers Association of the Monterey Peninsula (WRAMP)

TABLE 8-1 (Continued)
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Individuals	
8.7.1	Michael Baer
8.7.2	David Beech
8.7.3	Kathy Biala
8.7.4	William Bourcier
8.7.5	David Brown
8.7.6	Charles Cech
8.7.7	Bob Coble
8.7.8	Margaret-Anne Coppernoll
8.7.9	Herbert Cortez
8.7.10	Bruce Delgado
8.7.11	Myrleen Fisher
8.7.12	David Gorman
8.7.13	Jane Haines
8.7.14	Juli Hofmann
8.7.15	Clifton Herrmann
8.7.16	Thomas Moore
8.7.17	Hebard Olsen
8.7.18	Larry Parrish
8.7.19	Paula Pelot
8.7.20	Carol Reeb
8.7.21	Dick Rotter
8.7.22	Nancy Selfridge
8.7.23	Jan Shriner
8.7.24	Roy Thomas
Form Letters	
8.8.1	Form Letter 1 Commenters: Abbey, Linda; Anderson, Flora; Armstrong, Robert; Azama, Henry; Baer, Michael; Baker, Pamela; Barish, Gale; Barish, David; Baxter, Ron; Bayer, Nina; Bean, Beverly; Beech, David; Billig, Melanie; Billig, Charles; Book, David; Bradford, John; Braqq, B; Bricker, Marshall; Broffey, Bill; Brook-Kothlow, Jennifer; Brown, Judy; Brumm, Virdette; Burnis, James; Byrd, William; Canepa, Allan; Cardinalli, Sal; Cardinalli, Lynette; Cech, Charles; Chrislock, Melodie; Christensen, Sharon; Chudilowsky, Mishka; Cleyet, B.; Cline, Kay; Coble, Robert; Comstock, Katharine; Crompton, Michelle; Diesh, Andrew; Donnelly, Jean; Dunn, Phillip; Dziedzic, Mary Jane; Eastman, Patricia; Eckles, M.; Edwards, Phyllis; Emery, James; Epel, David; Epel, Lois; Evans, Robert; Feldman, Heidi; Fisher, Myrleen; Foley, Michael; Gabri, Suzie; Gray, Natalie; Haddad, Martha; Happ, Pamela; Harris, Patricia; Harris, Tamara; Harris, William; Hess, Anne; Holston, Christina; Hood, Barbara; Houston, Gladys; Jameson, Marge Ann; Jennings, Tammy; Johnson, David; Johnson, Karen; Johnson, Lynn; Jones, Jennifer; Jones, Shirmaine; Karas, Judith; Karnes, Gary; Kolisch, Christine; Kostakos, Shirley Bee; Lehman, Judith; Lernoud, Mabel; Lim, Yuensan; Locke, Karin; Malek, Safwat; Malek, Maha; Malek, Allyson; Markus, Katalin; Martin, Roland; Mason, Marilyn; Matterson, Betty; Maupin, Ellen; Moroh, Marsha; Myers, Roberta; Newman, Michael; Nolte, Glen; Norton, Richard; Oblander, CJ; Ogden, Karl; Ogden, Maria; Olsen, Hebard; Parkman, R.; Parrish, Larry; Parrish, Larry; Pearse, Vicki; Pearse, John; Pomeroy, Laura; Presser, Daniel; Reynolds, Stuart; Rigney, Hansi; Roden, Patricia; Rotter, Dick; Schwoerke, F.L.; Seese, Nancy; Selfridge, Nancy; Setinek, Carol; Shih, Sylvia; Silverman, S. Chavez; Smith, Ruth; Stephan, Gail; Stephan, Robert; Stephan, Ruth; Stern, Jeanette; Stevenson, Raymond; Stillwell, Richard; Stollorz, Carol; Stube, MaryAnne; Swartley, Bernice; Tharpe, Peggy; Trinkle, Heidi; Ushakoff, Walt; Venza, Patricia; Wanderman, Ken; Wanless, John; Warren, Richard; Warren, Barbara; Watson, Marquis; Weidemann, Stephen; Weidemann, Shannon; Weigle, Bill; Wellman, Phil; Wilhelm, Douglas; Williams, Vicki; Winfield, Robin; Wood, Kristen; Woods, Izabelle; Yaghowbian, Lynn; Yateman, DeAnna; Zamzow, Heidi; Zurkan, R.M.

TABLE 8-1 (Continued)
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Form Letters (cont.)	
8.8.2	Form Letter 2 Commenters: Abulencia, Rolondo; Aguirre, Luis A.; Argueza, Gloria; Aulencia, Thelma; Auria, Justin; Auria, Fannie; Auria, Louis; Auria, Claudine; Auria, Louis; Auria, Lino; Baer, Michael; Ball, Chelsea; Barrett, Esther; Beck, Susan; Bertone, Michael Allen; Bhatti, Robina; Biala, Henry; Biala, Kathy; Billingsky, Elizabeth; Blanton, Cheyenne; Blanton, Laura; Blanton, William J.; Blanton, Colleen; Bowers, Dwayne; Boyle, Clinton J.; Bradshaw, Patti; Britzman, Tom; Brown, Wendell; Bucharelli, Molly; Cameron, Kris; Carley, Patrick; Cavalier, Betty; Chalfant, Ashley; Clark, Peter R.; Coble, Robert W.; Collier, R.; Collins, Darrell; Conley, Luana; Copperell, M.A.; Cortez, Herbert; Cowan, James; Cowan, James A.; Cullers, Julia; Dagdigian, James; Daus, Margaret; Deering, Marc; Deerling, Kathleen; Delano, Devan; Dimaggio, Tom; Dingess, John F.; Doherty, Ed; Doherty, Eugene & Margaret; Echart, Mark; Ehle, Joshua; Eisenhauer, Mark. D.; Eugenio, R.M.; Falkovskaia, Elena; Fearnside, Janet; Fearnside, Doug; Fisher, Myrteen; Franklin, Derrick; Galatina, Joshua; Gastelum, Bailey; Gill, Linda; Goltz, Tyanne A.; Goltz Sr., Dennis; Gomes, Dela A.; Gomes, Edmond; Gomes, Monda; Graham, John; Graham, Cynthia; Grantham, Michael; Green Jr., Bernard; Greenbaum, William A.; Hainullau, Igor; Hammond, Kelly; Harry, Evan; Hauge, Meheen; Hauge, Evan; Haye, Wesley; Hearndon, Kim Ann; Heller, Leon & Patricia; Herdon, Kim Ann; Hochuli, Steffanie; Hoffman, Juli; Ibrahim, Danyal; Jablonski, Judy; Jablonski, Gaely; James, Young Cha; Janamillo, Lorenzo; Jason, Grantham; Jessen, Phaedra; Johnson, Gainell; Johnson, Brian; Johnson, Sara; Jones, Rhonda J.; Juncd, Maxamina; Juskiewicz, Jerzy; Keim, Edgar; Keim, Candice; Kim, Sun; Kittlitz, Megan; Kittutz, Danna; Klein, Candice; Klein, Edgar; Knauf, Thomas; Knauf, Tim; Kneeland, Will; Kollerer, Therese; Kopp, John & Cheryl; LaMountain, Moira; Lebda, Terry E.; Leken, Joel; Lidyoff, M.; Lomboy, Edward S.; Lynn, Sean; Maguire, Lisa; Mantgubet, Ernie; Manuel, Paul; Manuel, Amanda; Mar, Betty; Martinez, Ashley; Mast, Michael L.; Matta, Carleen; McCallon, Kevin; McCallon, Rebecca; Meachum, Catherine & Ed; Morrison, Agnes K.; Nader, Angie; Naidu, Latchmi Radha; Nakagawa, Jeanne; Neptune, Diana; Neptune, James; Nohr, Judy; Nohr, Fred; Nolan, B.; Nolan, Nancy; O'Connell, Linda M.; O'Dell, Janice; O'Dell, Harry E.; Ontiveros, Daniel; Oxley, Dustin; Paez, Elias; Parish, Larry; Pellegrini, Michael A.; Pellegrini, Yong L.; Pendleton, Chrystal; Pineda, Jose; Pooler, Johanna; Potter, Fred H.; Powell, Curtis; Powell, Tug S.; Quick, Timothy; Quidley, Rudy & Virginia; Raymer, Duane J.; Rebecca, McCallon; Riddle, Steve; Ridler, Darlena; Righello, Charles; Righello, Mary; Roberts, Carol; Sachs, Edward T.; Sak, Pendleton; Santella, Ray; Sedarous, Magda; Sheppard, Adala K.; Shriner, Janet; Shrum, Nam Y.; Silva-Santella, Grace; Simmons, Brian; Simmons, Melva; Sixberry, Mali; Smith, Jennifer; Smith, James L.; Smith, Kerry T.; Smith, Linda D.; Souix, Cheryl; Stahl, John; Steel, Brandi; Sturges, Mary J.; Svetlik, Barbara; Sweet, Debbie; Swix, Cheryl; Tantilla, Laura Simon; Tenves, Oscar; Thomas, Susan; Torres, Oscar; Tu, Vivian; Upshau, Marilyn; Valdez, Val; Valdez, Paul; Valencia, Joe; Villagrath, Michael; Voltierra, Patricia; Walton, Audra; Ware, D.M. and Linda; Warner, Un Cha; Warner, Charles; Weston, River; Wickins, Alfrieda; Wilkinson, Charles D.; Williams, Virginia; Woodson, Karen; Wustrack, Nora
Public Hearing Comments	
8.9	Cursio, Gary; Coppernoll, Margaret Ann; Tilley, John; Billingsley, Elisabeth; Biala, Harvey; Biala, Kathy; Olsen, Hebard; McMahon, Tom; Mounteer, Peter; Leneve, Brian; Poskoff, Rene; Hansen, Jody; Baer, Michael; Shriner, Jan; Cortez, Herbert; Hofmann, Juli; Riley, George

8.2 Master Responses

8.2.1 Master Response 1: EIR/EIS Authorship

COMMENTS ADDRESSED IN MASTER RESPONSE 1

Ag Land Trust	Kathy Biala
California Unions for Reliable Energy (CURE)	Margaret-Anne Coppernoll
Citizens for Just Water	Juli Hofmann
Ford Ord Rec Users	

Several comments received on the Draft EIR/EIS appear to refer to CalAm as the author of the EIR/EIS, or represent that CalAm provided the analysis contained therein. For example, commenters assert that "CalAm erroneously represents," or that "CalAm states," or that "CalAm concludes" when referencing the EIR/EIS. This Master Response has been prepared to clarify that this EIR/EIS was prepared by the California Public Utilities Commission (CPUC) as the CEQA Lead Agency, by NOAA's Monterey Bay National Marine Sanctuary (MBNMS) as the NEPA Lead Agency, and by independent consultants under contract with these agencies, and not by CalAm, the project applicant.

CEQA Guidelines Section 15051(b) explains that if the proposed project is to be carried out by a non-governmental person or entity (like CalAm), the lead agency shall be the public agency with the greatest responsibility for supervising or approving the project as a whole. Under NEPA, the role of a federal lead agency is similar to the lead agency role under CEQA. See 40 CFR 1501.5. As explained in EIR/EIS Executive Summary Section ES.1, this EIR/EIS was prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.), the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3, §15000 et seq.), NEPA (42 U.S.C. §4321 et seq.,) and the NEPA implementing regulations (40 CFR Parts 1500-1508).

The analyses and conclusions in the EIR/EIS were prepared by the consultants on behalf of the Lead Agencies and were independently evaluated, reviewed, and revised by Lead Agency staff. See EIR/EIS Section 7.2 for a list that identifies consulting firms and individuals and their specific roles in the preparation of the EIR/EIS. Use of contractors is expressly approved under the NEPA regulations (40 CFR 1506.5). The analyses and conclusions in the EIR/EIS reflect the independent judgment of the Lead Agencies, and therefore, the CPUC and MBNMS are responsible for the scope, content, adequacy, and objectivity of the EIR/EIS.

8.2.2 Master Response 2: Source Water Components and Definitions

COMMENTERS ADDRESSED IN MASTER RESPONSE 2

City of Marina	David Beech
Marina Coast Water District	Kathy Biala
Monterey Peninsula Regional Water Authority	Margaret-Anne Coppernoll
Ag Land Trust	Myrleen Fisher
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Form Letter 2
Public Water Now	Public Meeting Verbal Comments
Water Ratepayers Association of the Monterey Peninsula	

Commenters have questioned the specifics of how the EIR/EIS uses key terms associated with and comprising the source water for the proposed desalination plant. This Master Response clarifies those definitions. The definitions also have been consolidated in Section 3.1, the introduction to the project description, to assist the reader.

To begin with, groundwater and ocean water can be described in simple geographic, locational terms as follows:

Groundwater: water located beneath the earth's surface

Ocean water: water located above the seafloor

In the context of the proposed MPWSP and for purposes of this EIR/EIS, of most importance is the chemical composition of any affected water. The reason for this is that the water chemistry indicates where the water came from (i.e., whether it started as groundwater or ocean water) and how usable it is for domestic and other purposes. The source water components are defined and used in the EIR/EIS as follows:

Fresh water: water that originated in a groundwater basin through precipitation or rivers and streams; in the context of the MPWSP, fresh water is water that originated within the Salinas Valley Groundwater Basin, identified as containing total dissolved solids (TDS) concentrations of less than 500 milligrams per liter (mg/L), consistent with the secondary drinking water standards established by the SWRCB in Title 22 California Code of Regulations, section 64449, as recommended levels of TDS.[1] TDS is the quantity of dissolved materials in a water sample and is used to quantify the amount of salts in a sample (it is a test for salinity).

Seawater: water that originated in the ocean, identified as containing 33,500 mg/L of TDS, which represents current salinity levels in Monterey Bay.

[1] "Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance." 22 Cal.Code Regs. 64449(d)(1).

Brackish water: water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L.

Source water (also referred to as feed water): water that would be drawn into the proposed project slant wells and conveyed to the desalination facility. This water would be a combination of brackish groundwater representing the ambient conditions in the water-bearing sediments of the Dune Sand and 180-FTE Aquifers at the coast, and the seawater that is drawn in through the aquifer sediments to recharge the capture zone. The capture zone is the localized region that would contribute source water to the slant wells. (See Master Response 8, Source Water and Seawater Intrusion.)

The categories of fresh water, seawater, brackish water, and source water are consistent with the SWRCB's *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*, included as EIR/EIS Appendix B2, which states on page 35 that "CalAm's proposed MPWSP would pump seawater, brackish water, and possibly a fresh water component."

8.2.3 Master Response 3: Water Rights

COMMENTS ADDRESSED IN MASTER RESPONSE 3

City of Marina	Kathy Biala
Marina Coast Water District	David Brown
Ag Land Trust	Bob Coble
California American Water Company	Margaret-Anne Coppernoll
CEMEX	Myrleen Fisher
Citizens for Just Water	David Gorman
Fort Ord Rec Users	Jane Haines
Just Water	Juli Hofmann
Land Watch Monterey County	Thomas Moore
Public Trust Alliance	Hebard Olsen
Public Water Now	Nancy Selfridge
Salinas Valley Water Coalition and Monterey County Farm Bureau	Form Letters 1 & 2
Water Ratepayers Association of the Monterey Peninsula	Public Meeting Verbal Comments
Michael Baer	

This Master Response addresses comments concerning the likelihood that CalAm would possess water rights to support the proposed project. While the topic of water rights is a legal issue, a fact-based analysis is key to the ultimate legal conclusion of whether, under the developed water doctrine, CalAm could have appropriative rights to the portion of project source water that would be drawn into the slant wells from the Salinas Valley Groundwater Basin (SVGB or Basin). The EIR/EIS explored in detail the law and the pertinent facts as they have been amassed to date in Section 2.6, Water Rights, concluding that the Lead Agencies could determine that there is a sufficient likelihood of CalAm having rights to water for the project for the purpose of determining project feasibility. Many comments on the EIR/EIS addressed such subjects as the water rights legal framework, the facts to support the conclusions reached in EIR/EIS Section 2.6, and the conclusions as to whether the project would cause harm or injury to Basin water users. Given the wide variety of comments on water rights, the comments are summarized throughout this Master Response as to particular topics for ease of organization and clarity. In addition to this Master Response, also see Final EIR/EIS Section 2.6, Water Rights, which has been updated and refined in further response to comments on the topic. For a full understanding, this Master Response should also be read in conjunction with Final EIR/EIS Section 4.4, Groundwater Resources, and Master Responses 2, Source Water Components and Definitions; 4, The Agency Act and Return Water; 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin; and 8, Project Source Water and Seawater Intrusion.

8.2.3.1 Purpose of EIR/EIS Water Rights Section

The water rights analysis in the EIR/EIS provides the Lead Agencies and members of the public with data upon which to assess the likelihood that CalAm will possess water rights because, if it appeared more likely that CalAm would not have such rights, then the project may be deemed infeasible. The function of the EIR/EIS analysis of water rights is not to definitively decide whether there are water rights to support the project, nor would a decision to approve the project function as a binding decision on CalAm's water rights. As stated in the Draft EIR/EIS on page 2-30:

> If the proposed project is approved and any dispute arises as to whether or not CalAm possesses legal water rights, such dispute likely would be resolved through court action. Naturally, however, if CalAm does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove infeasible. This section examines whether, based upon the evidence currently available, the CPUC could conclude that there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible.

Numerous commenters state that CalAm would be unable to meet its burden of proof to establish water rights for the project in a court of law, and several commenters (opining both that CalAm does and does not have sufficient water rights) have included lengthy legal analyses on the water rights topic. In developing this Master Response and other responses to comments, as well as in refining EIR/EIS Section 2.6, the Lead Agencies have reviewed and considered all authorities cited. At the same time, the level of detail and certainty for a feasibility analysis within an EIR/EIS is not the same as the more exacting level of detail, proof and legal arguments that would pertain in a court challenge on water rights. In an EIR/EIS, there is room for disagreement among experts, with the Final EIR/EIS still concluding that the project can be deemed feasible for current purposes on a water rights basis due to substantial evidence that CalAm will possess rights to the water that would supply the desalination plant.

Some commenters urge that CalAm should have a burden of proof now to establish by a preponderance of the evidence that it will possess water rights sufficient to make the project feasible. Other commenters ask what standard applies to the question within the EIR/EIS as to whether CalAm will possess water rights for the project, and seek identification of the criteria that the Lead Agencies will use to determine whether the project is feasible as to water rights. The criteria for the feasibility analysis are set forth within EIR/EIS Section 2.6. The standard of review that the decision-making bodies would apply to the conclusion of the Final EIR/EIS on this project feasibility matter is whether substantial evidence in the record supports the water rights findings. This standard of review may be different than a standard of review in any judicial challenge to the water rights of CalAm to support the project.

8.2.3.2 Sequence of Approvals Vis-à-vis Water Rights

Numerous commenters express concern that the MPWSP project review and consideration process is proceeding without CalAm having secured water rights for the project, urging that water rights should first be established before the Lead Agencies consider approval of the project.

This position may reflect a misunderstanding of the nature of an appropriative right to "developed water" under water rights law. As explained in Draft EIR/EIS Section 2.6, on page 2-29, "no government agency will formally grant water rights to CalAm for the project." There is no state or local agency with authority to approve CalAm's water rights for the MPWSP. As stated on page 35 of the State Water Resources Control Board (SWRCB) report on water rights for the MPWSP (EIR/EIS Appendix B2, referred to as the "Report"), "No permit is required by the State Water Board to acquire or utilize appropriative groundwater rights." The rights to pump and use groundwater in California in a non-adjudicated basin (such as the SVGB) are established by actual diversion, pumping and use, and are governed by a long line of court cases. In the event that one or more parties believe that the extraction and use of groundwater by another party is inconsistent with the law, the concerned parties may initiate a civil action against the extracting party to contest the right of that party to take and use groundwater. As applied here, someone could bring a legal action against CalAm challenging the right of CalAm to use SVGB groundwater incidentally withdrawn by the slant wells for the desalination project. The substance of CalAm's legal claim to water rights is addressed in EIR/EIS Section 2.6, and in this Master Response in Section 8.2.3.4, below. Since under the legal construct, an appropriative right to developed water is a right that exists based upon the facts at hand, and need not be formally established in advance, there is no possibility for the Lead Agencies to insist that CalAm obtain or perfect water rights prior to project approval.

Commenters point out that the uncertainty concerning project water rights could inhibit MPWSP construction or operation, and possibly even make the project infeasible in the end. It is true that a water rights judicial challenge, if one were to ensue, could indeed impair the ability of the project to move forward and timely meet the project objectives. It would at this juncture be speculative for the Lead Agencies to forecast whether such a judicial challenge would be filed, when it would occur, whether an injunction would be issued to halt project progress, how long resolution of it would take and what the outcome may be of such an action. Any development project, and certainly any complex project such as the MPWSP, is subject to myriad legal hurdles on the permitting and judicial fronts. It is precisely because the Lead Agencies understand that water rights is a topic of considerable interest for the MPWSP that the EIR/EIS includes a robust discussion of water rights in an effort to ascertain whether it appears likely based on the evidence in the record that CalAm will have water rights such that the project can be deemed feasible. The fact that someone could challenge CalAm's water rights (and the possible effects of such a challenge) does not in and of itself make the project infeasible; however, it is a factor that can be considered by the decision-makers in determining whether the project is viable, cost effective, and can be timely implemented.

Commenters have asked what would happen if a court were later to determine that CalAm did not have legal rights to the Basin water withdrawn by the project slant wells, and whether CalAm or the Lead Agencies would bear liability if it turns out the SVGB is harmed. If it were later determined that CalAm did not possess legal rights to some portion of the water for the MPWSP, the MPWSP would have to be somehow redesigned or relocated to accommodate the specific ruling. As made clear above, the Lead Agencies are not formally deciding in the EIR/EIS or through their approval processes, nor do they have jurisdiction to do so, that CalAm possesses water rights for the project. Thus, if a court were to determine that CalAm did not enjoy such

rights, the Lead Agencies would not be involved in such proceeding and would not bear any liability for the outcome. It is not the place of the EIR/EIS to opine as to any liability that CalAm may or may not bear in such a circumstance. Note, however, that CalAm has proposed a mitigation measure (Mitigation Measure 4.4-3, set forth in Draft EIR/EIS Section 4.4.5.2 at page 4.4-74, and also discussed in EIR/EIS Section 2.6) whereby CalAm would take steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs) if the MPWSP is demonstrated to adversely affect existing neighboring active wells.

8.2.3.3 Authority and Expertise of SWRCB to Opine on Water Rights

As explained in EIR/EIS Section 2.6 and in Section 8.2.3.2 of this Master Response, in response to a written request from the CPUC for expert assistance in gauging CalAm's rights to water for the project supply, the SWRCB prepared a report concerning the legal framework applicable to and the factual basis needed for CalAm to possess water rights for the project. Some commenters have questioned the authority and expertise of the SWRCB to prepare the Report. The Report on page 58-59 (EIR/EIS Appendix B2) addresses this critique, in response to a similar comment on the draft Report, as follows:

> The State Water Board is the state agency with primary responsibility for the regulatory and adjudicatory functions of the state in the field of water resources. (Wat. Code, § 174.) The water right permitting and licensing system administered by the State Water Board is limited to diversions from surface water channels and subterranean streams flowing through known and definite channels. (See *id.*, § 1200.) But the State Water Board has other authority that applies to all waters of the state, surface or underground. This includes the State Water Board's water quality planning authority, which extends to any activity or factor affecting water quality, including water diversions. (*Id.* §§ 13050 subds. (e) & (i).), 13140 et seq., 13240 et seq.; see 44 Ops. Cal. Atty. Gen. 126, 128 (1964).)
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> The State Water Board has broad powers to exchange information with other state agencies concerning water rights and water quality, and more specific authority to evaluate the need for water-quality-related investigations. (Wat. Code, §§ 187, 13163, subd. (b).) The State Water Board also has authority to conduct or participate in proceedings to promote the full beneficial use of waters of the state and prevent the waste or unreasonable use of water. (*Id.*, § 275.) This authority includes participation in proceedings before other executive, legislative, or judicial agencies, including the [California Public Utilities] Commission. (*Ibid.*) And the State Water Board's authority to promote the full beneficial use of water and prevent waste or unreasonable use applies [to] all waters the state, including percolating groundwater. (See, e.g., SWRCG Decision 1474 (1977.)
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> The Water Code includes procedures for court references to the State Water Board, under which the State Water Board prepares a report on water right issues before the court. (Wat. Code, §§ 2000 et seq., 2075 et seq.; see *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 451 [these procedures are designed to enable courts . . . "to make use of the experience and expert knowledge of the board."]; *San Diego Gas & Electric Co. v. Superior Court* (1996) 13 Cal.4th 893, 914-15 [the Commission has broad authority including judicial powers].)

> Thus, it is well within the State Water Board's authority and consistent with the execution of its statutory responsibilities to report to the [California Public Utilities] Commission on matters related to rights to diversion and use of water, including diversions of percolating groundwater. The conclusions and recommendations in this Report are not binding on the [California Public Utilities] Commission, but provide a means for the [California Public Utilities] Commission to make use of the knowledge and expertise of the State Water Board.

8.2.3.4 Description of Supply Water

Numerous commenters questioned the following statement in the Draft EIR/EIS at 2-30:

> The proposed project (MPWSP) and Alternative 5a are designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean.

Commenters pointed out that some of the screens through which project supply water would be pulled into the slant wells lie under coastal land along the ocean, rather than being located under the ocean itself. In recognition of this fact, the pertinent language has been altered as follows:

> The proposed project (MPWSP) and Alternative 5a are designed to take supply water via underground slant wells that would draw water from aquifers that extend underneath Monterey Bay, and at this location, would eventually be recharged primarily by seawater.

8.2.3.5 Water Rights Analysis and Conclusions

Legal Framework

As a threshold matter, consistent with CEQA and NEPA directives and norms, the EIR/EIS (including Section 2.6) presumes that CalAm would implement the project in full conformance with laws, regulations, contracts and other legal constraints. As explained in EIR/EIS Section 2.6, and based on the SWRCB Report, CalAm would not need to secure any particular right to the seawater that would enter the slant wells for the project. As to the portion of the source water that would originate from the Basin, CalAm would need an appropriative groundwater right to retrieve and use that water. The Report outlines the factual circumstances that would need to exist in order for CalAm to possess such water right: so long as no legal user of water is harmed as a result, CalAm could withdraw for the project water that would otherwise be unused. CalAm would have rights to that water because it would be classified as "developed water" (sometimes also referred to as "salvaged water"), meaning that the new potable water would not have existed absent CalAm's efforts and actions. EIR/EIS Section 2.6 delves into the application of available facts to these criteria, concluding it is likely that CalAm would have water rights for any portion of the supply water that originated from the Basin because: (a) the water that originated from the Basin that would enter the desalination system is not currently being put to beneficial use, and; (b) the project would not injure existing legal water users per the factors outlined in the Report.

It is important to note that an appropriative groundwater right cannot and does not exist unless and until water is actually pumped and used. "To constitute a valid appropriation, three elements must always exist: (1) the intent to appropriate water and apply it to a beneficial use; (2) the

actual diversion . . . from a groundwater basin; and (3) the application of water to a beneficial use within a reasonable time." Turlock Irr. Dist. v. Zanker,140 Cal.App. 4th 1047, 1054 (2006). This means that CalAm will not actually possess water rights to the incidental water that originated in the Basin until the project is underway, and also means that those who may desire to use that water in the future through appropriation do not currently possess rights to use water in any greater amount or different manner other than their current actions.

The subsections of this Master Response below further address comments received on the water rights analysis and conclusions.

Quality of Basin Water

Some commenters question or seek proof that any water withdrawn from the Basin by the slant wells is in fact unusable to legal water users. As explained in Master Response 2, Source Water Components and Definitions, four basic types of water are pertinent to the project. The first, seawater originating from the ocean, is not at issue for water rights purposes. The second type, fresh water, is water that originated in the SVGB and has a total dissolved solids (TDS) concentration under 500 milligrams per Liter (mg/L). The third type of water is brackish water, a mix of seawater and fresh water resulting from decades of inland seawater intrusion. The fourth is source water, which is water that is drawn into the slant wells and is a combination of ambient highly brackish groundwater in the Dunes Sand and 180-Foot Equivalent Aquifers and the seawater that would recharge the slant well capture zone. The proposed slant wells at CEMEX would extract source water. As explained in EIR/EIS Section 4.4.1, the Dune Sand and 180-FTE Aquifers along the coast are hydraulically connected to the Pacific Ocean and seawater within the 180-Foot Aquifer has intruded to a maximum of approximately 8 miles inland as inferred from chloride concentrations greater than 500 mg/L as reported by the Monterey County Water Resources Agency (MCWRA). The source water that could be drawn into the supply wells is thus of very little use for irrigation or for drinking. It is thus reasonable to conclude that the water that would be drawn into the wells, including the brackish water originating in the Dune Sand and 180-Foot Equivalent Aquifers, is unusable water in its current form. Because the source water is unusable at present, it is not foreseeable that such water has potential reasonable beneficial uses. The only way for such water to become usable in any meaningful quality and quantity would be for such water to be desalinated in the same or a similar manner to the proposed project (see Section 8.2.3.7, below, for discussion of that possibility). Furthermore, as discussed in EIR/EIS Section 2.6, and further below, evidence indicates that any existing legal users of the brackish water would not be injured by the project.

The physical effects of the slant wells withdrawing the source water were projected using a calibrated groundwater model, as explained in EIR/EIS Section 4.4.4.2. See also Master Response 12, North Marina Groundwater Model (v.2016). Slant wells would initially extract the water that exists in the surrounding sediments (ambient brackish groundwater). As pumping continues, the wells would extract increasing proportions of infiltrating recharge from the ocean. The steady ocean recharge would gradually replace the ambient groundwater within the capture zone, and move within the capture zone toward the wells, but would not advance beyond the capture zone. For more information on these technical aspects of the project, see Master

Responses 8, Project Source Water and Seawater Intrusion. Given the inland groundwater gradient and the localized extent of the capture zone, the geographic extent within which water quality would be affected, would be a limited area confined to the coast and slightly inland (see Figures 8.2.8-5 and 8.2.6-4).

Commenters have questioned the conclusions of the water rights analysis in light of the sentence in Draft EIR/EIS Section 2.6 on page 2-34, that states that the groundwater modeling "cannot project the amount of Basin water that is expected to be drawn into the wells." It is true that the North Marina Groundwater Model cannot predict water quality, and is designed to show changes in water levels. The precise amount of fresh water (as a component of brackish water) that would be withdrawn by the slant wells is not a deciding factor as to whether CalAm would possess rights to the Basin water withdrawn. The SWRCB Report itself, at page 36, acknowledges that "the State Water Board is unable to estimate what percentage or proportion of water extracted from the Basin landward of the proposed well location could be attributed to fresh water sources." Yet the Report concludes at page 38, even with such uncertainty, that CalAm could possess rights to use Basin water for the project so long as "no other legal user of water is injured in the process." Thus, the question at hand is one of injury to existing legal water users. The modeled assessment of the drawdown effects of the project on aquifer levels appear sufficient for assessing injury without knowing how much of the withdrawn brackish water would consist of ocean water and how much would comprise fresh water. In any event, however, the Hydrogeologic Working Group has completed a work product that does help answer this query (EIR/EIS Appendix E3) and it is addressed in detail in Master Response 4, The Agency Act and Return Water.

Surplus Water

Commenters state that the brackish water drawn into the project slant wells would not automatically or necessarily be classified as surplus water in the water rights rubric. One argument is that such degraded water can still be used for "minor irrigation and dust control" and could be used by another possible desalination plant in the future. To the contrary, it does appear that such water can be properly characterized as surplus water. As the SWRCB Report states on page 35, "[B]ecause groundwater in the Basin is in a condition of overdraft, the only way to show there is surplus water available for export to non-overlying parcels is for a user to develop a new water source." The analysis and conclusion of EIR/EIS Section 2.6 are centered on exploring whether CalAm would have a right to Basin water on the basis of developing the water supply. As also stated in the Report (in footnote 65 on page 47), "Water that is currently unusable, both due to its location in the Basin and corresponding quality, could be rendered useable if desalinated and would thus be surplus to current water supplies in the Basin." Any water that is currently used for minor irrigation and dust control could continue to be so used and would not constitute surplus water. Section 4.4, Groundwater Resources, together with Section 2.6, Water Rights, indicate that the project would not harm such existing legal water users. Any possible future desalination plant does not currently possess appropriative groundwater rights because such plant has not already created a new water supply out of unusable surplus water, so it need not be considered in the pertinent water rights equation (but see the Effects on Marina Coast Water District subsection of this Master Response below).

Commenters criticize the water rights analysis for considering the usability of the brackish water that would make up a portion of the source water; they maintain that the Agency Act and County Ordinance 3709 do not differentiate between groundwater (no matter its quality) and "usable groundwater." However, the water rights evaluation is based upon the SWRCB Report, which does focus upon the quality (or usability, as discussed above) of the water withdrawn. The consistency of the project with the Agency Act and County Ordinance 3709 is a separate topic addressed in Master Response 4, The Agency Act and Return Water. Some commenters opine that the term "incidentally extracted useable groundwater" as used on page 40 of the Report in the Agency Act consistency discussion is different than the term "fresh water" (that may be contained within project source water) used in the EIR/EIS. However, the Report does repeatedly use the term "fresh water" in discussing the water that would be returned to the Basin as part of the project. It seems clear that the Report intended those terms to be interchangeable.

Commenters note that overlying Basin water users have been complying with Ordinance 3709 precluding pumping from the 180-Foot Aquifer and that the lack of use of such water should not classify it as "abandoned" water available for the project. However, EIR/EIS Section 2.6 does not depend on the unusable groundwater being "abandoned" to establish CalAm's rights to the source water. Some commenters further state that overlying users have voluntarily refrained from using groundwater when, in fact, they were precluded by Ordinance 3709 from doing so, and could not have used the water for domestic purposes due to its quality. In any event, the water rights analysis is based on the actual use and quality of any non-seawater withdrawn by the supply wells rather than the intent of overlying users.

Harm or Injury

A critical element of inquiry explored within EIR/EIS Section 2.6, and discussed throughout this Master Response, is harm or injury. As noted, CalAm may possess legal rights (on a developed water basis) to pump and use water that originated from the Basin so long as existing legal water users are protected from harm. Certain commenters claim that there is no substantiation for the conclusion in the water rights analysis that the project will not cause harm. However, as detailed in EIR/EIS Section 2.6, the findings related to harm or injury to groundwater users are based primarily upon the scientific analysis set forth in EIR/EIS Section 4.4, and the validated groundwater modeling that has been conducted for the project (as well as pertinent master responses). Section 2.6 does not merely apply the groundwater resources significance thresholds, but considers and applies each of the elements of possible injury to water rights as specified in the SWRCB Report. That Report was plainly based upon and grounded in legal precedent defining harm or injury.

Commenters stress the need for the water rights analysis to consider the effect of the diminution of water quality in the vicinity of the CEMEX property. EIR/EIS Section 4.4, together with Master Response 8, Project Source Water and Seawater Intrusion, explain that the diminution in water quality in the very local area of the CEMEX property would be of limited extent such as to not affect existing groundwater wells.

Some commenters state that the water rights analysis focuses on individual well owners, but fails to consider potential impacts on the region and its aquifers, alleging that "harm" and injury" are too narrowly defined and that any compensatory actions or mitigation measures should also include other stakeholders, such as MCWD, the City of Marina and the Fort Ord community. As stated in EIR/EIS Section 2.6:

> The [SWRCB] Report specifies three categories of foreseeable injuries that conceivably could be experienced by overlying water users within the area of influence of the MPWSP supply wells: "(1) a reduction in the overall availability of fresh water due to possible incidental extraction by the MWPSP; (2) a reduction in water quality in those wells in a localized area within the capture zone; and, (3) a reduction in groundwater elevations requiring users to expend additional pumping energy to extract water from the Basin." Report at 45.

It is not clear that MCWD or the City of Marina (as entities) have overlying water rights, so the harm inquiry directed by the Report above may not even apply. In any event, EIR/EIS Section 2.6 finds it reasonable to conclude that harm would not accrue to current groundwater users within the area where water levels could decline by 1 to 5 feet as a result of the project. Logically then, water users located more distant from the project slant wells, where water levels would decline by less than 1 foot (if at all), should be protected from harm or injury. Furthermore, EIR/EIS Section 4.4, fully examined more regional issues such as seawater intrusion, depletion of aquifer volume and reduction of groundwater quality, concluding in each respect that the project would not generate a significant environmental effect. While the CEQA/NEPA and water rights inquiries are not identical, the thresholds of significance employed in EIR/EIS Section 4.4 are such that application of them to the change effected by the project would encompass any resulting harm or injury.

In a similar vein, commenters state that taxpayers have invested in the improvement of the SVGB and efforts to ensure a long term, sustainable water supply, and that the proposed project would be adverse to such investments. With a similar response, the EIR/EIS demonstrates that no harm will accrue to the legal users of groundwater within the SVGB.

Waste of Water

At least one commenter linked the analysis of water demand in EIR/EIS Sections 2.1 – 2.5 with the topic of water rights, maintaining that any project supply of water in excess of the water supply needs of current water users would be a prohibited "waste" of groundwater. It is not expected that the project would produce more desalinated water than would be supplied to CalAm current and future customers. Thus, it is expected that no water would be wasted. To the extent that project water may be employed by new users or to support new land uses (such as legal lots of record or growth that has been envisioned by pertinent local general plans), it seems logical to assume that such water use would be a "reasonable and beneficial use" under the California Constitution aimed at preventing waste or unreasonable use of water.

8.2.3.6 Return Water

CalAm proposes as part of the project to return to the Basin the amount of fresh water that is contained within the brackish water withdrawn by the slant wells, by providing desalinated product water to CCSD and CSIP, in-lieu of CCSD and agricultural users pumping an equal amount of groundwater; see EIR/EIS Section 2.5.1. One purpose of the return water is to allay concerns over project compliance with a state law that precludes SVGB water from being removed from the SVGB. See Master Response 4, Agency Act and Return Water. Some commenters maintain that this return water component of the proposed MPWSP is a prerequisite to a conclusion that the project would enjoy water rights. Other commenters opine that water rights would exist without the return water component because the project generates no harm to existing legal water users that needs to be addressed through return water. The purpose of the return water element of the project is not to alleviate or address any environmental effects, and it is true that as to water rights, no harm has been shown to exist that the return must ameliorate. The return water is proposed to be returned to the same groundwater basin from which the fresh water component of the withdrawn brackish water would be derived; as such, the Basin would enjoy the benefits of such fresh water so as to stay in balance from a fresh water perspective. In any event, however, the question of whether the return water element is required to establish water rights is academic since the proposed project does include the return water elements and the project as a whole (rather than its individual parts) is the topic of the EIR/EIS and the water rights conclusions.

Certain commenters maintain that the return water component of the project is needed in order to establish water rights because of the water quality harm they state that the project would generate. The assertion is based on analysis in EIR/EIS Section 4.4 concerning changes in groundwater quality that could occur in the immediate vicinity of the slant wells and within the capture zone. There are no active wells constructed in the Dune Sands and 180-FTE Aquifers within the projected capture zone such that no existing legal water users would suffer harm. Furthermore, as noted above, the project considered as a whole does include the return water component such that the project would appear to be feasible from a water rights standpoint even if the return water element were critical to such conclusion.

8.2.3.7 Effect on Marina Coast Water District

Commenters express concern that the project will impair MCWD's ability to supply water on a long term, economic basis to the City of Marina and to Fort Ord, including through a possible future MCWD desalination plant. Some commenters state that the slant wells fall under the jurisdiction of MCWD, which is a public water agency. Many commenters appear to believe that MCWD owns, controls, or otherwise possesses legal rights to all groundwater within its service territory. This is not the case. To the extent that MCWD is currently appropriating water for its customers' beneficial use, MCWD certainly does possess the appropriative rights to such pumped water. As explained above in this Master Response, appropriative groundwater rights are based upon active use. They cannot be reserved in advance. The SWRCB Report at page 35 refers to "existing uses" and to "[p]otential overlying uses" as being implicated in a water rights analysis to demonstrate surplus water, but not to potential appropriative uses. Therefore, the fact that

MCWD may desire at some point in the future to use groundwater within the same aquifer or general location as does the proposed project, is not a factor that weighs into the current water rights inquiry for the project. Nonetheless, EIR/EIS Section 4.4.6 does contain a cumulative analysis of the combined effects of the MPWSP with a possible MCWD desalination plant. The analysis (which is necessarily of a fairly general, preliminary nature since no such MCWD plant is yet proposed) concludes that operation of both desalination projects would not adversely impact groundwater resources.

Commenters raise concerns that, in light of the dearth of water available to MCWD and its customers, and the needs of such current and future customers for a long term, sustainable water supply, it is illogical or unfair for the project to take any amount of water from the SVGB for the purpose of supplying water to CalAm's customers on the Monterey Peninsula. Such comments do not raise a water rights issue, but do engender a policy consideration that can be factored in and addressed by agencies considering approval of the project. Note that based on EIR/EIS Sections 4.4 and 2.6, and this Master Response, the proposed project would not cause significant impacts on groundwater quantity or quality in the Basin and it appears that the project would not harm current legal groundwater users. As to physical effects on MCWD's water source, please see Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, and Master Response 8, Project Source Water and Seawater Intrusion.

8.2.3.8 Implications of Annexation Agreement

In 1996, the MCWRA, the MCWD, the City of Marina, the owners of Armstrong Ranch, and then owners of the CEMEX property (RMC Lonestar) entered into an Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands ("Annexation Agreement"; MCWRA et al., 1996). The agreement established a framework for management of groundwater from the Basin and included terms and conditions for the annexation of lands (including the CEMEX properties) to MCWRA's benefit assessment zones as a financing mechanism to fund groundwater resource protection and reduction of seawater intrusion and to MCWD for water service.

Several commenters have raised the issue that Paragraph 7.2 of the Annexation Agreement limits CEMEX's (the successor owner of the Lonestar property and party to the Annexation Agreement) withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 acre-feet per year (afy). According to the comments, this same limitation should also apply to CalAm's right to pump groundwater from the CEMEX property. Many of the comments center on the argument that the Annexation Agreement was effective upon execution of the agreement by all parties in 1996, and therefore the limitations and restrictions apply to the proposed project. (Annexation Agreement, paragraph 7.2.)

The commenters are correct that the Annexation Agreement became effective on the date it was executed. It is not clear whether the parties to the Annexation Agreement are currently abiding by the agreement in that certain key objectives behind the agreement have not materialized (such as annexation of territory into MCWD). It does appear, though, that the more supportable position based upon the terms of the Annexation Agreement alone is that the 500 afy limitation on

CEMEX pumping groundwater from its property did also become effective on the effective date of the Annexation Agreement. EIR/EIS Section 2.6.4 has been revised to reflect this information.

Notwithstanding that conclusion, the commenters erroneously focus on the Annexation Agreement as a basis to argue that CalAm is restricted from withdrawing and using more than 500 afy of groundwater for the project. The parties to the Annexation Agreement whose water rights were implicated were all property owners, and the agreement relates to each of their overlying rights and uses of pumped groundwater on their properties. The MCWD 2010 Urban Water Management Plan (section 3.2.1, page 14) confirms that Lonestar's historical water use of 500 afy was an overlying water right and use.

In contrast, CalAm is not an overlying property owner subject to the Annexation Agreement and its right to withdraw and use brackish water from the Basin for the proposed project would be an appropriative right, as discussed extensively above and in EIR/EIS Section 2.6. The law distinguishes between the right to use water under an appropriative right and an overlying right. For instance, "[t]he overlying right . . . is associated with the ownership of land. Overlying rights are special rights to use groundwater under the owner's property. Appropriative rights, on the other hand, are not derived from land ownership but depend upon the actual taking of water." City of Santa Maria v. Adam, 211 Cal.App.4th 266, 278 (2006). A water rights legal treatise emphasizes this point as follows: "Unlike…overlying rights, [an] appropriative right is not dependent upon the ownership of real property. The right to use water under an appropriative right is distinct from the property through which the water flows or the land where the water is ultimately placed to beneficial use." 1 Slater, California Water Law and Policy (2017) § 2.16, at p. 2-102. Under these key distinctions, a non-property owner's right to water that is developed through pumping is an appropriative right. While it is true that the MPWSP would pump some water from the Basin through wells on CEMEX's property, CalAm is not the property owner and therefore does not have an overlying right to the groundwater. Accordingly, the limitations and restrictions in the Annexation Agreement apply only to CEMEX's use of the groundwater and would not apply to the proposed project.

Draft EIR/EIS Section 2.6.4 on page 2-41 stated that CalAm could conceivably employ an injection well on the CEMEX land to offset water pumped from the land so as to meet the requirements of the Annexation Agreement. Commenters have pointed out that such a strategy may not offset the amount of Basin groundwater withdrawn from the CEMEX land, and that such a concept was not studied in the Draft EIR/EIS. The critique is well taken and the language in Final EIR/EIS Section 2.6.4 has been amended to delete the suggestion.

8.2.3.9 Recirculation of Draft EIR/EIS

Certain commenters state that EIR/EIS Section 2.6 should be altered in various respects and then the Draft EIR/EIS should be recirculated for an additional round of public review and comment. In response to comments, some changes have been made to EIR/EIS Section 2.6. However, neither the methodologies employed nor the conclusions reached have changed in any way that implicates a significant environmental impact not identified in the Draft EIR/EIS, a substantially more severe significant environmental effect than indicated, or a new feasible alternative or

mitigation measure. Thus, there is no legal requirement based upon the water rights analysis to recirculate the Draft EIR/EIS.

8.2.3.10 References

MCWRA, MCWD, City of Marina, J.G. Armstrong Family Members, and RMC Lonestar, 1996. Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands. Available at http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Marina%20Coast%20Water%20District/MCWD-MCWRA%202-2A%20annexation%201996.pdf.

8.2.4 Master Response 4: The Agency Act and Return Water

COMMENTERS ADDRESSED IN MASTER RESPONSE 4

City of Marina	Water Ratepayers of the Monterey Peninsula
Marina Coast Water District	Kathy Biala
Monterey Peninsula Regional Water Authority	Margaret-Anne Coppernoll
Monterey Peninsula Water Management District	Juli Hofmann
Citizens for Just Water	Hebard Olsen
Coalition of Peninsula Businesses	Larry Parrish
Fort Ord Rec Users	Form Letter 2
Land Watch Monterey County	Public Meeting Verbal Comments
Public Water Now	

This Master Response addresses comments concerning the proposed project's compliance with the Monterey County Water Resources Agency Act (Agency Act) and aspects of the proposed return water component of the MPWSP, including the allocation of the proposed return water to the Castroville Community Services District (CCSD) and to the Castroville Seawater Intrusion Project (CSIP). This Master Response also addresses comments on the amount of water required to be so allocated (or returned) in order to satisfy the Agency Act and to address project impacts, and discusses the likely percentage of water drawn through the proposed supply wells that would comprise the fresh water component of the source water. See Master Response 2, Source Water Components and Definitions, for definitions of all components of source water.

8.2.4.1 Agency Act Compliance and Location of Return Water

As explained in Draft EIR/EIS Section 2.6.3 on page 2-39, a state law known as the Agency Act created the Monterey County Water Resources Agency (MCWRA or Agency). Section 21 of the Agency Act is titled "Legislative findings; Salinas River groundwater basin extraction and recharge." Section 21 provides in pertinent part:

> The Legislature finds and determines that the Agency is developing a project which will establish a substantial balance between extraction and recharge within the Salinas River Groundwater Basin. For the purpose of preserving that balance, no groundwater from that basin may be exported for any use outside the basin . . .

In order to satisfy the Agency Act, CalAm has proposed that it will calculate annually (based on the total dissolved solids (TDS) concentration of the water being drawn through the slant wells) the percentage of supply water that originated in the Salinas Valley Groundwater Basin (SVGB, which is the same as the Salinas River Groundwater Basin) as fresh water, i.e., the fresh water component of the brackish water drawn by the slant wells. CalAm would then "return" to the SVGB that same amount of water by providing desalinated product water to CCSD and CSIP. As a result, the amount of fresh water that was drawn into the slant wells would be devoted to domestic and agricultural uses in lieu of CCSD and agricultural users pumping and using an equal amount of groundwater within the SVGB. Draft EIR/EIS Section 2.6.3 evaluates the likelihood

that the project would comply with the Agency Act, concluding on page 2-40 that "it appears at least preliminary reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance [prohibiting groundwater extractions at a particular depth] such that those laws would not impair project feasibility."

Commenters expressed concern over the fact that the water returned to the Basin through provision of it to CCSD and to CSIP would be in a different location than the place from which the water was withdrawn. Specifically, commenters question how returning water to Castroville would benefit the water source for MCWD and state that the project would not return pumped groundwater directly to the Basin. Section 21 of the Agency Act pertains quite plainly to the "Salinas River Groundwater Basin" and states that "no water **from that basin** may be exported for any use outside the basin . . ." (emphasis added). The molecules of fresh water that would be drawn by the slant wells would have come from the SVGB. Likewise, CCSD currently pumps groundwater from the SVGB and that would be replaced by desalinated water supplied to CCSD, and agricultural users currently pump groundwater from the SVGB that would be replaced by desalinated water supplied to CSIP. The return water would be used in lieu of pumping groundwater directly from the SVGB. Thus, even though the withdrawal and the return may occur in different areas of the SVGB (roughly 4.5 miles apart), both would be within the same basin that is the subject of Agency Act Section 21. Concerning MCWD specifically, its water source is the SVGB. The relationship of the "Marina Subarea" defined by MCWD to the hydrogeographic unit of the SVGB is discussed in Master Response 6, The Sustainable Groundwater Management Act. The Agency Act concerns itself only with the SVGB as a whole, and does not regulate use of SVGB water based upon any geographic locale or administrative jurisdiction within the overall SVGB.

Furthermore, as discussed in EIR/EIS Section 2.6.3 and included as EIR/EIS Appendix B2, the SWRCB opined on page 40 of its *Final Review of California American Water Company's Monterey Peninsula Water Supply Project* ("Report") that because "the Project as proposed would return any incidentally extracted usable groundwater to the Basin … , it does not appear that the Agency Act or the Ordinance [3709] operate to prohibit the Project." Pages 39 to 40 of the SWRCB Report noted that while the word "export" is not defined in the Agency Act, "limitations on export ordinarily are not interpreted to apply to situations where the conveyance of water to areas outside a watershed or stream system is accompanied by an augmentation of the waters in that area, so there is no net export." The Report specifically stated on page 39 that the return may be through the CSIP (the return to CCSD had not been identified when the Report was drafted), supporting the notion that the return locale need not be within a particular radius of the slant wells so long as it occurs within the SVGB.

Several commenters noted that the SWRCB Report assumed that the screens for the slant wells would be located solely under the ocean, with none being located inland of the mean high tide line. Regardless, the SWRCB's evaluation of Agency Act compliance assumes that the project would withdraw some usable groundwater (i.e., fresh water) from the SVGB. In addition, the EIR/EIS both acknowledges and assumes that some of the water withdrawn by the slant wells would indeed be brackish water containing fresh water molecules subject to the return component

of the project because they originated in the SVGB. The conclusions of the EIR/EIS Section 2.6.3 analysis concerning whether the Agency Act would impair project feasibility need not be altered.

Some commenters asked whether the MCWRA has agreed that the Agency Act does not preclude project viability. It is noteworthy that MCWRA (a party to the CPUC proceeding on the project) agreed to and executed the June 14, 2016, MPWSP Desalination Return Water Settlement Agreement. That Settlement Agreement, the terms of which are incorporated into CalAm's MPWSP proposal, sets forth the return water construct as to how the return water amount would be calculated and the provision of the return water to CCSD and CSIP. The Settlement Agreement does state that CalAm shall comply with the Agency Act and that the agreement does not alter or affect MCWRA's authority under the Agency Act. Nonetheless, the fact that MCWRA is a party to the Return Water Settlement Agreement indicates some level of endorsement by MCWRA of CalAm's plan for Agency Act compliance through the proposed return, as well MCWRA's acknowledgement that Ordinance 3709 would not impair the project.

8.2.4.2 Required Amount of Return Water

Certain commenters maintain that new test well and groundwater monitoring data indicate that the proposed one-to-one return water ratio is insufficient to offset impacts on the Marina Subarea of the SVGB. For a discussion of the Marina Subarea, see Master Response 6, The Sustainable Groundwater Management Act. See Master Response 11, CalAm Test Slant Well, for information on test slant well data, and Master Response 8, Project Source Water and Seawater Intrusion, together with Section 4.4, Groundwater Resources, concerning impacts to groundwater resources. The project envisions returning to the Basin precisely the same amount of desalinated water as the amount of fresh water that is withdrawn (as a component of brackish water) by the slant wells. None of the commenters articulate precisely why a ratio different than one-to-one should be employed, nor do they indicate what ratio would be more appropriate. It is noteworthy that while the fresh water component of the source water (the amount subject to the return proposal) would be mingled with ocean water within the withdrawn brackish water (and could be separated only through the use of a desalination technology), the water returned to the SVGB in lieu of an equal amount of groundwater pumping would be desalinated, and fully potable water.

8.2.4.3 Anticipated versus Actual Amount of Return Water

Certain commenters requested further discussion of the anticipated annual volume of water that would be returned to the SVGB. While a range of annual volume of water to be returned to the SVGB was assumed in order to analyze the anticipated impact of the proposed intake system, the actual volume of return water would be calculated annually using actual water quality data from the production wells, as specified in the 2016 Return Water Settlement Agreement. Both the Settlement Agreement calculation method and the modeling estimation procedures are discussed below.

2016 Settlement Agreement Return Water Calculation Method

The method of calculating the specific volume of annual return water is set forth in Section H of the Settlement Agreement, which states the following:

> The Project's slant intake wells are designed to produce source water for treatment by the selected desalination plant ("Project Source Water Production"). To meet applicable requirements of the Agency Act, CalAm has proposed as part of the Project to make available for delivery to groundwater users overlying the SVGB a volume of water ("Return Water") equal to the percentage of SVGB groundwater in the total Project Source Water Production, as calculated on a water year basis and determined by the Agency.

The formula for calculating the annual volume of return water is described in the Settlement Agreement, Appendix D Base Return Water Obligation Methodology. The equation is as follows:

> (seawater salinity) x (percentage of seawater) + (inland water salinity) x (percentage of Salinas Basin water) = (brackish water salinity)

The formula is aimed at establishing the percentage of the project source water that represents the fresh water component (i.e., inland water per the formula) of the brackish water withdrawn by the slant wells.

The Settlement Agreement establishes as constant values that the measured seawater salinity in Monterey Bay (analyzed as TDS) is 33,500 milligrams per liter (mg/L) and the fresh (i.e., inland) water salinity is 500 mg/L. The brackish water salinity would be measured annually in the source water from the slant wells. Inserting the agreed-upon salinity concentrations:

> 33,500 x percentage of seawater + 500 x percentage of inland water = source water salinity

Since the sum of both percentages must be 100 percent, or 1, the percentage of inland water would be 1 minus the percentage of seawater. Inserting this value:

> 33,500 x percentage of seawater + 500 x (1- percentage of seawater) = source water salinity

Rearranging the equation provides:

> [33,500 x percentage of seawater] + 500 - [500 x percentage of seawater] = source water salinity
>
> or
>
> 33,000 x percentage of seawater = source water salinity - 500

Simplifying the equation provides:

> Percentage of seawater = [source water salinity - 500] / 33,000

The percentage of return water would be 1 minus the percentage of seawater, yielding:

> Percentage of return water = 1 - [(source water salinity - 500) / 33,000]

For example, if the salinity of the source water were measured at 31,076 mg/L, then:

> Percentage of return water = 1 - (31,076 - 500 / 33,000) = 0.074 or 7.4 percent return water

Hydrogeologic Working Group Evaluation of Return Water Estimates

As discussed in Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, referred to as the Technical Group in the 2013 Large Settlement Agreement, was tasked with reaching "…agreement among the Technical Group about the studies, well tests, field work, modeling, monitoring, and other data analyses most appropriate to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SRGB [Salinas River Groundwater Basin] and the water supply available to legal water users thereof ("Hydrogeologic Study")."

Included in the tasks performed by the Hydrogeologic Working Group (HWG) was the evaluation of the methods and procedures used for developing the North Marina Groundwater Model (NMGWM). As described in Section 4.4.4.2, Groundwater Modeling, and Appendix E2, within the area to be modeled (model domain), the input parameters for the model included quantifying the volumes of water entering into the model domain from all sources (e.g., precipitation, seawater intrusion, agricultural return water, and infiltration from streams) and quantifying the volumes of water leaving the model domain (e.g., groundwater flow out of the model domain and agricultural pumping). The volume of return water is also an input parameter to the NMGWM because, although the return water would be extracted from and returned to the same basin, the location of the extraction (the slant wells) would not be the same as the location where the return water would be returned to the basin (CCSD distribution system or CSIP).

As previously discussed, the actual volume of return water would be calculated annually based on the salinity of the source water extracted by the slant wells, and would be expected to vary with time and season. Although the exact volume of return water would not be known prior to initiating the seawater extraction system, the return water volume was expected to be more than 0 percent but less than 12 percent, based on preliminary groundwater model runs and calculations. To account for the variable return water volumes, the 2016 version of the NMGWM (NMGWM^{2016}) was run with pumping scenarios that included representative return water volumes of 0, 3, 6, and 12 percent of the total source water volume. The HWG, as part of its Hydrogeologic Investigations, has since evaluated several approaches to return water estimates and has confirmed that the actual return water volume is expected to fall between 0 to 12 percent, as discussed below.

Return Water Estimates

As required by the 2013 Large Settlement Agreement and defined in the Hydrogeologic Workplan, the HWG was tasked with evaluating the test well study data, and ultimately preparing a report of its findings. The Technical Report prepared by the HWG (HWG, 2017; included in Final EIR/EIS as Appendix E3) includes two return water estimation methods. The first approach involves development of an analytical equation to describe mixing of water within the capture zone;[1] the second approach involves numerical modeling using the existing CEMEX Model. These methodologies are described further below. The Lead Agencies have independently reviewed the two methodologies and agree that the approaches and the input assumptions appear reasonable. The two methods – the Analytical Method and the CEMEX Model – confirm that the

[1] The capture zone is the localized region that would contribute source water to the slant wells. (See Master Response 8, Project Source Water and Seawater Intrusion).

range of 0 to 12 percent return water used in the EIR/EIS and the NMGWM^{2016} was reasonable. The HWG Technical Report (EIR/EIS Appendix E3) presents the calculated percentage of ocean water within the source water, referred to as the Ocean Water Percentage (OWP), in Section 2.2.3 and Appendix G of the report for each of the two methods. Since the OWP includes both the seawater in the source water as well as the seawater within the brackish water withdrawn by the supply wells, and in accordance with the formula in the Settlement Agreement, the return water percentage would be equal to 100 percent (or 1) minus the percentage of ocean water.

Calculation of OWP Using Analytical Method

This approach uses an analytical equation to calculate the percentage of ocean water based on the water and salinity budgets within the capture zone of the proposed slant wells. The water budget represents the steady-state inflows and outflows after equilibrium is reached from project pumping. The results show that equilibrium would be reached several months to a few years after the project pumping begins. The steady-state water inflows to the capture volume are seawater inflow from Monterey Bay and recharge from precipitation on the land surface overlying the capture zone. The steady-state water outflow from the capture zone is the pumping from the project wells.

The analytical method was generally calibrated by using the first 1.6 years (April 2015 through October 2016) of data collected from the test slant well and assumed groundwater gradients that were consistent with those used in the EIR/EIS and specifically within the NMGWM^{2016}. The major conclusions of the analytical method of calculating OWP, for the 6.4 mgd and the 9.6 mgd desalination facility options, are listed below:

- The long-term equilibrium OWP is estimated to range from 96 to 99 percent.
- Based on the range of assumptions considered, the continuous pumping time to reach 90 percent ocean water is estimated to range from about 4 months to 1.7 years.
- Based on the range of assumptions considered, the continuous pumping time to reach 95 percent ocean water is estimated to range from about 6 months to 3.1 years.

Thus, based upon the HWG calculations, the return water percentage is likely to be no more than 10 percent within the first 2 years of project slant well pumping, decreasing to no more than 5 percent within 6 months to roughly 3 years. Longer term, it appears that the return water percentage would be between 1 percent and 4 percent, well within the 0 to 12 percent range studied in the EIR/EIS.

Calculation of OWP Using CEMEX and North Marina

As discussed in Section 2.2.3.2 of the HWG Technical Report, the analytical method discussed above cannot accurately predict salinity in the early months of project pumping (prior to equilibration) because the capture zone is transient (i.e., it starts with a smaller area and increases with time until equilibrium is reached). Therefore, the CEMEX Model (see description in EIR/EIS Section 4.4.4.2, Groundwater Modeling) and NMGWM^{2016} were used to provide data to compare with the results of the analytical method. Use of the models allows for additional detail in the early months of the pumping scenarios since the CEMEX Model can provide transient

water quality data. The results for these early months of project pumping indicate a higher percentage of ocean water in the project source water than that predicted by the analytical method. As pumping continues, however, the results from the CEMEX Model and NMGWM^{2016} are consistent with the long-term pumping results from the analytical method. The analysis predicts that the percentage of ocean water will rise to 90 percent within 90 days of the initiation of full-scale pumping and the percentage of ocean water will reach 95 percent within 5 years.

Based upon calculation of the OWP using the groundwater models, it appears that the return water percentage would be no more than 10 percent within the first year of project pumping and would drop to no more than 5 percent within 5 years of project pumping.

Conclusion

In conclusion, both the analytical method and CEMEX modeling approaches to estimating the percent of return water confirm that the anticipated actual annual volume of return water could be 10 percent in the first few months of project pumping and would be no more than 5 percent within 5 years of project pumping. The 0 to 12 percent range used in the EIR/EIS and the NMGWM^{2016} is consistent with these conclusions, appears conservative, and no edits to the analysis relevant to return water presented in the Draft EIR/EIS are necessary.

8.2.5 Master Response 5: The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS

COMMENTERS ADDRESSED IN MASTER RESPONSE 5

Marina Coast Water District	Charles Cech
Ag Land Trust	Bruce Delgado
Public Water Now	Margaret-Anne Coppernoll
Michael Baer	Jan Shriner
David Beech	Public Meeting Verbal Comments
Kathy Biala	

This Master Response discusses the background that led to the formation of the Hydrogeologic Working Group (HWG), identifies the members and the stakeholders each member represents, describes the roles and activities conducted by the HWG, describes the relationship of HWG work products to the CEQA/NEPA analysis, and discusses alleged conflicts of interest.

8.2.5.1 2013 Settlement Agreement

A Settlement Agreement was reached in 2013 wherein several parties to CPUC Proceeding A.12-04-019 affirmed their belief that, consistent with the Public Utilities Code Section 1002(a), the MPWSP would serve the public convenience and necessity. The 2013 Settlement Agreement was reached between California American Water Company (CalAm) and 10 parties, later expanded to 16 parties.[1] Parties to the 2013 Settlement Agreement represent diverse interests including: ratepayers, environmental groups, business groups, local government governments and government agencies, as well as other key stakeholders on the Monterey Peninsula. The Marina Coast Water District is a party to the proceeding, but is not a party to the 2013 Settlement Agreement. The City of Marina was not a party when the 2013 Settlement Agreement was executed and therefore, did not sign the 2013 Settlement Agreement; the City was granted party status in March 2017. Note that the 2013 Settlement Agreement is actually dated July 31, 2013, although it was submitted into the proceeding on August 6, 2013.

8.2.5.2 Establishment and Role of HWG

The HWG, referred to as the Technical Group in the 2013 Settlement Agreement, was established by the parties to the 2013 Settlement Agreement, and not by the CPUC. Within the Agreement, the parties with diverse interests agreed that CalAm's hydrogeologist and technical team would work with the Salinas Valley Water Coalition's (SVWC) and Monterey County Farm Bureau's

[1] CalAm, City of Pacific Grove, Coalition of Peninsula Businesses, County of Monterey, CPUC Division of Ratepayer Advocates (DRA), LandWatch Monterey County, Monterey County Farm Bureau (MCFB), Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Regional Water Authority (MPRWA), Monterey Peninsula Water Management District (MPWMD), Monterey Regional Water Pollution Control Agency (MRWPCA), Planning and Conservation League Foundation, Salinas Valley Water Coalition (SVWC), Sierra Club, and Surfrider Foundation (collectively, the Parties)

(MCFB) assigned hydrogeologists, and other technical experts designated by CalAm. As stated in Section 5 of the 2013 Settlement Agreement, the purpose of the HWG is:

> …to reach agreement among the Technical Group about the studies, well tests, field work, modeling, monitoring, and other data analyses most appropriate to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SRGB [Salinas River Groundwater Basin] and the water supply available to legal water users thereof ("Hydrogeologic Study"). The 10 Parties agree that the purpose of this Section 5 is intended to avoid litigation regarding the scope of and methodology used to develop the Hydrogeologic Study and the Technical Report.

The Hydrogeologic Study's Work Plan and Technical Report are described further below in Section 8.2.5.4, HWG Activities and are included in EIR/EIS Appendix E3.

8.2.5.3 HWG Members

The HWG is a collaborative body and does not have an executive director, a manager, a chief hydrogeologist, or any other leader; all work is shared and openly peer reviewed by all HWG members. As previously noted, CalAm and the SVWC designated experts to represent their interests. The HWG members and the entities they represent are:

- The SVWC and the MCFB are jointly represented by Tim Durbin and Martin Feeney, as independent consultants.
- CalAm is represented by Peter Leffler (Ludorff and Scalmanini) and Dr. Dennis Williams, assisted by his staff at Geoscience Support Services (Geoscience).

HWG members are paid by the entities they represent.

Additional Participants at HWG Meetings

Other participants attended some or all of the HWG meetings, but not as formal members of the HWG. Independent consultant Barry Keller participated in some meetings on behalf of CEMEX, the property owner of the proposed source water intake site. Rich Svindland and Ian Crooks participated in some HWG meetings as additional representatives for CalAm. These participants were also paid by the entities they represent. MCWD did not have a representative on the HWG because it was not a signatory to the 2013 Settlement Agreement that established it. The City of Marina did not become a party to the proceeding until March 2017. The Monterey County Water Resources Agency (MCWRA) and the Monterey Peninsula Water Management District (MPWMD) were both settling parties and agreed to accept the SVWC and MCFB representation. Representatives from the MCWRA participated in one or two of the HWG meetings that were attended by members of the CEQA/NEPA team. In addition, the CEQA/NEPA team participated in the HWG, as described below.

8.2.5.4 HWG Activities

As previously noted, the parties to the 2013 Settlement Agreement agreed that the CalAm and SVWC/MCFB hydrogeologists and technical teams would develop a joint Work Plan to conduct

the Hydrogeologic Study described in Section 5 of the 2013 Settlement Agreement, for the proposed source water intake site consistent with the study recommendations presented in the State Water Resources Control Board's (SWRCB) July 31, 2013, Final Review of California American Company's Monterey Peninsula Water Supply Project (included as Appendix B2 in the EIR/EIS). The HWG did not consider administrative or political boundaries (e.g., city, county, or agency areas of jurisdiction), water rights issues, legal issues, or financial considerations.

The Work Plan is titled *Monterey Peninsula Water Supply Project, Hydrogeologic Investigation Work Plan* and dated August 2, 2013. The Work Plan was referenced in the Draft EIR/EIS in Section 4.4 Groundwater Resources. Section 5.2 of the 2013 Settlement Agreement also states that, "The Technical Group will review and evaluate the data and results of the Hydrogeologic Study, and will prepare a Technical Report presenting the findings and conclusions of the Technical Group." The HWG prepared the *Draft Monterey Peninsula Water Supply Project Hydrogeologic Investigation, HWG Hydrogeologic Investigation Technical Report*, dated July 27, 2017, which is referenced in and employed in the analysis of EIR/EIS Section 4.4, Groundwater Resources. The 2013 Work Plan as well as the 2017 Technical Report are included in the Final EIR/EIS in Appendix E3.

Although the Work Plan and the Technical Report are published by Geoscience since the Settlement Agreement states (at Section 5.1, pages 9 and 10) that CalAm will implement and carry out the Hydrogeologic Study, the work products (Work Plan and Technical Report) represent the collaborative work of the entire HWG, not merely Geoscience or CalAm.

The HWG developed the Work Plan as a collaborative plan of investigation to assess the hydrogeologic conditions in the project area. The Work Plan provided a phased approach to progressively investigate the hydrogeology and the potential effects of the project on aquifers from the use of subsurface slant wells for obtaining feedwater supply. The Work Plan described the Hydrogeologic Study approach and methodologies, including the purpose, locations, and methodologies for installing exploratory borings and monitoring wells; the purpose and methods for collecting and analyzing soil and groundwater samples; the aquifer testing methodology using the test slant well; the development of the conceptual model of site conditions; and the development of the groundwater models. The Work Plan was updated several times as new information became available. The final Work Plan, cited above, incorporated comments and recommendations by members of the HWG, and covered the investigative steps the HWG agreed were needed to consider the anticipated effects of the project. The final Work Plan became the hydrogeology investigation roadmap and resulted in the implementation of the fieldwork and modeling efforts conducted for the MPWSP.

8.2.5.5 Relationship to CEQA/NEPA Analysis

As described above, the HWG resulted from the 2013 Settlement Agreement with a purpose independent of the EIR/EIS. However, the topics addressed by the HWG overlap with some of the environmental topics and inquiries considered by the EIR/EIS, and the Lead Agencies were able to gain valuable data from the work of the HWG. The CEQA/NEPA team engaged with the HWG to observe the implementation of the Work Plan, to understand the test slant well data, and to take

advantage of the individual and collective knowledge of the HWG members to inform the CEQA/NEPA analysis of groundwater resources. The CEQA/NEPA team members that participated in HWG meetings were Eric Zigas and Michael Burns (Environmental Science Associates), Peter Hudson (Sutro Science), and John Fio and Steve Deveral (HydroFocus). The CEQA/NEPA team members attended 10 monthly meetings with the HWG between December 10, 2015, and January 27, 2017 in order to understand the results of the Hydrogeologic Study.

As the Hydrogeologic Study progressed, at each meeting attended by the CEQA/NEPA team, the HWG discussed the status and preliminary results for various tasks of the Hydrogeologic Study, enabling the CEQA/NEPA team to understand the preliminary and final results, and provided the opportunity to ask questions to clarify understandings and assumptions. Concurrently, the CEQA/NEPA team provided feedback to assist the HWG and the groundwater modelers in understanding the significance criteria to be employed in the EIR/EIS. The CEQA/NEPA team obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions (this is noted in Footnote 34 on Draft EIR/EIS page 2-35). The HWG also reviewed and commented on the portion of the August 19, 2016, Draft North Marina Groundwater Model Technical Memo that was prepared by HydroFocus for the Lead Agencies and presented at the September 1, 2016, public Groundwater Modeling Workshop that was hosted by the CPUC in Carmel.

The primary topics discussed during the meetings attended by the CEQA/NEPA team included the ongoing test slant well monitoring results, characterization of the hydrogeologic baseline, the Monthly Reports prepared pursuant to the Coastal Development Permit Special Condition 11, the CEMEX Modeling being performed by Geoscience for CalAm, and the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) being utilized by HydroFocus for the Lead Agencies. Other topics discussed included: the December 2015 site visit to the Castroville Community Services District, and the Ag Land Trust wells; the approach to modeling sea level rise; scaling issues between the regional Salinas Valley Integrated Ground and Surface Water Model (SVIGSM), the $NMGWM^{2016}$ and the focused CEMEX model; model boundaries and boundary conditions; recharge and infiltration rates; the Seaside Basin divide; and Salinas Valley Return Water estimation methods.

The Lead Agencies prepared the EIR/EIS independent from the HWG, using independent judgment in evaluating the information provided by the HWG to help inform the EIR/EIS. The Lead Agencies considered and incorporated information and data generated by the HWG, as appropriate, into the EIR/EIS after subjecting it to peer review. The EIR/EIS impact analysis conclusions and mitigation measures were not shared or discussed with the HWG prior to January 2017 publication of the Draft EIR/EIS.

8.2.5.6 Potential Conflicts of Interest and Independent Judgment

Several commenters expressed concern that one or more conflicts of interest among the Lead Agencies and their consultants, the Applicant and its consultants, and the HWG may compromise the integrity of the CEQA/NEPA analysis and decision-making process. Three characterizations of potential conflicts of interest have been raised in comments:

1) that Dr. Dennis Williams, the President of Geoscience, holds one or more patents related to slant well technology that CalAm could or might use in the construction of the MPWSP;

2) that Geoscience, while under contract to the CPUC, also had a contractual relationship with CalAm, which raised concerns over the credibility and accuracy of the groundwater modeling, and concerns that the use of the NMGWM^{2016} does not reflect the independent judgment of the Lead Agencies; and

3) that the role of Geoscience, and of Dr. Williams in particular, on the HWG presented a potential or perceived conflict of interest with respect to the HWG work products and HWG input on information sources relied on in the EIR/EIS, and/or that HWG and Geoscience work products were relied on in a way that does not reflect the independent judgment of the Lead Agencies.

Although only the third item is directly related to the HWG itself, this section of Master Response 5 addresses these issues as well as the actions taken by the CPUC in response to these concerns. The second and third items are addressed together, as commenters have raised similar concerns about both Geoscience and the HWG, although they are not the same organization.

Financial Conflict of Interest Related to Patents

Dr. Williams, the President of Geoscience, is a member of the HWG and holds certain patents on slant well technology, specifically, the methodology for constructing the slant well subsurface feedwater supply system. Certain entities contacted the CPUC during the comment period for the 2015 MPWSP Draft EIR, and opined that having Geoscience conduct the project modeling and developing the design of the subsurface intake system using technology for which Dr. Williams holds the patents might constitute a conflict of interest. The opinions were that Dr. Williams would have a vested interest in the MPWSP using his technology and would gain financially by its use. Upon being apprised of the potential for a conflict of interest, a CPUC Administrative Law Judge (ALJ) issued a July 14, 2015, ruling in Proceeding A.12-04-019, requesting data from Geoscience and CalAm about patents held by Geoscience relating to the MPWSP.

Geoscience and CalAm both responded to the ruling in a document dated July 28, 2015 and titled *Response of Geoscience Support Services, Inc. to Administrative Law Judge's Ruling Requesting Data on Ratemaking and Geoscience Patents.* As explained in their responses, both parties maintained that Dr. Williams never intended to seek royalties or payments regarding his patent for slant wells in connection with the prior Coastal Water Project or the MPWSP, and no royalties were paid to Dr. Williams. Nevertheless, to provide the CPUC and CalAm customers with certainty on this issue, CalAm entered into a *Patent License and Non-Assertion Agreement* with Dr. Williams in his personal capacity and as president and owner of Geoscience. The agreement makes clear, as described in the Geoscience Response to Request No. 1f, "that Cal-Am, along with its contractors, the overseeing public entity, and end-users, are fully licensed to use, in connection with the MPWSP and for no additional charge, the technology that Geoscience has provided and is providing to CalAm . . . [P]er the terms and conditions of the Agreement, Geoscience and Dr. Williams have granted a royalty-free, fully paid-up license to make and use the slant well systems and methods . . . [A]lso per the terms and conditions of the Agreement,

Geoscience and Dr. Williams have covenanted not to assert . . . any claim of patent infringement respecting the slant well systems and methods being made and used as part of the MPWSP."

Geoscience Groundwater Model and Independent Review of Geoscience and HWG Work Products and Input

As noted in EIR/EIS Section 1.4.3, to address questions about the accuracy and credibility of the groundwater modeling performed by Geoscience (referred to as NMGWM^{2015}), the CPUC extended the public comment period on the April 2015 Draft EIR, made the groundwater data files available for public review, and employed the Lawrence Berkeley National Laboratory (LBNL) to conduct an independent evaluation of that data. In addition, the CPUC engaged with Monterey Bay National Marine Sanctuary (MBNMS, or Sanctuary) as co-lead agency and prepared an updated EIR/EIS that used an independent groundwater modeling consultant, HydroFocus, that had no prior connection to the MPWSP, as discussed below.

The results of LBNL's independent evaluation are provided in EIR/EIS Appendix E1, Section 2. As described therein, LBNL found that its simulation results matched Geoscience's results, which were presented in Appendix E2 of the April 2015 Draft EIR. LBNL's evaluation reproduced some of the groundwater modeling outputs exactly, while others showed small differences that can be attributed to computer round-off and cancellation errors. LBNL found that there were shortcomings in the Geosciences hydrostratigraphic model and simulation inputs that could potentially change the impact assessments. Chief among these was the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-Foot Equivalent (180-FTE) aquifers from greater than about 2 km east of the proposed extraction site.

Although the LBNL review indicated that the NMGWM^{2015} was correctly run and could be improved with the addition of input on the FO-SVA, in July 2015, the CPUC elected to terminate its relationship with Geoscience and proceed with the understanding that Geoscience's role was limited to being a consultant to CalAm, the Applicant. CalAm submitted the Geosciences model (NMWMG^{2015}) as applicant-provided information to the CPUC. The CPUC subsequently contracted with HydroFocus, a groundwater modeling consultant, to independently review, revise, and continue to develop and use the model for purposes of the revised Draft EIR/EIS. HydroFocus was selected because of its experience; because it had no existing or recent relationship with CalAm, Salinas Valley stakeholders, or any party to the CPUC proceeding; and because it would have no involvement with the design, construction, or operation of the MPWSP. As noted by HydroFocus in Section 1 of EIR/EIS Appendix E2, HydroFocus was charged with reviewing the NMGWM^{2015} to:

- Confirm reported hydraulic properties (horizontal and vertical hydraulic conductivity and specific storage), specified stresses (recharge and pumping), boundary conditions, and model-calculated groundwater levels and fluxes.
- Update the NMGWM^{2015} using new information from borehole, monitoring well, and slant well pumping test data (the update is referred to as the NMGWM^{2016}).
- Evaluate the NMGWM^{2016} by assessing history matching results (October 1979 through September 2011) and slant well pumping test results (April 2015 through January 2016).

- Employ the NMGWM^{2016} to calculate drawdown from proposed slant well pumping.
- Characterize sensitivity of the NMGWM^{2016} results to model assumptions and parameter values.

Revisions made to the NMGWM^{2015} by HydroFocus are described in EIR/EIS Appendix E2 at Section 3.0, specifically in Table 3.1, and were made independent from, but are consistent with, the LBNL recommendations. Thus, the credibility of the original model was confirmed by LBNL's independent review, and subsequently the accuracy of the groundwater modeling was improved as a result of the revisions made by HydroFocus.

The CPUC has properly exercised independent judgment under Public Resources Code section 21082.1(c)(3). A lead agency has the discretion to adopt materials that it chooses, such as those drafted by the applicant or its consultants, so long as the lead agency independently reviews, evaluates, and exercises judgment over that documentation and issues it raises and addresses. (*Friends of La Vina v. County of Los Angeles* (1991) 232 Cal.App.3d 1446; Pub. Resources Code, §21082.1, subd. (c); Cal. Code Regs., tit. 14, §15084, subd. (e).) The lead agency also has the discretion to resolve factual issues and to make policy decisions. As an example, "[i]f the determination of a baseline condition requires choosing between conflicting expert opinions or differing methodologies, it is the function of the agency to make those choices based on all of the evidence." (*Save Our Peninsula Committee v. Monterey County Board* (2001) 87 Cal.App.4th 99, 120; citing *Barthelemy v. Chino Basin Municipal Water District* (1995) 38 Cal.App.4th 1609, 1617.) Even if an entire EIR is initially prepared by the project applicant or a third party (such as the NMGWM^{2015} prepared by Geoscience as CalAm's consultant) and subsequently adopted by the lead agency, that does not mean that the lead agency failed to exercise its independent judgment. (*City of Poway v. City of San Diego* (1984) 155 Cal.App.3d 1037, 1042.)

Under NEPA regulations, materials may also be prepared by the applicant or a third-party contractor as long as the agency independently evaluates the information submitted and the agency is responsible for its accuracy (40 CFR § 1506.5).

Here, the Lead Agencies and their CEQA/NEPA experts relied on HydroFocus' superposition modeling report (Appendix E2); the Lead Agencies independently reviewed the report, and made an independent conclusion in the EIR/EIS about the proposed project's potential impacts on groundwater resources. It is irrelevant that Geoscience prepared the NMGWM^{2015}, or that the HWG reviewed and commented on the August 19, 2016, Draft NMGWM Technical Memo, because the analyses and the conclusions in the EIR/EIS reflect the independent judgment of the Lead Agencies.

8.2.6 Master Response 6: The Sustainable Groundwater Management Act

COMMENTERS ADDRESSED IN MASTER RESPONSE 6

City of Marina	Public Water Now
Marina Coast Water District	Margaret-Anne Coppernoll
Monterey County Water Resources Agency	Just Water

This Master Response addresses comments regarding the Sustainable Groundwater Management Act (SGMA) and about whether the proposed MPWSP would be consistent with the requirements of SGMA. Specifically, commenters requested information on how the MPWSP would avoid causing the undesirable results cited in SGMA, and discussed below. Commenters asked whether SGMA may place restrictions on pumping that would prevent implementation of the MPWSP. Commenters also requested the recent updated groundwater basin designation information in response to SGMA and requested information on which entity would serve as the Groundwater Sustainability Agency (GSA) for which subbasin.

This Master Response, therefore, provides supplemental information that expands on the discussion of groundwater basins and SGMA as presented in the Draft EIR/EIS. However, the information presented in this Master Response does not change the representation of SGMA in EIR/EIS Section 4.4.2.2, nor does it change the impact significance determinations, as explained in Section 8.2.6.3 of this Master Response.

8.2.6.1 Sustainable Groundwater Management Act

As summarized in EIR/EIS Section 4.4.2.2, SGMA became effective January 1, 2015, gives local agencies the authority and obligation to manage groundwater in a sustainable manner, and allows for limited State intervention when necessary to protect groundwater resources. SGMA establishes a definition of sustainable groundwater management, establishes a framework for local agencies to develop plans and implement strategies to sustainably manage groundwater resources, prioritizes basins (ranked as high- and medium-priority) with the greatest problems (i.e., the undesirable results as discussed below), and sets a 20-year timeline for implementation.

SGMA requires the creation of a GSA for medium- and high-priority groundwater basins in accordance with Water Code §10723 et seq. Each GSA is responsible to develop and implement a Groundwater Sustainability Plan (GSP) in accordance with Water Code §10727 et seq. Each GSP is expected to describe how users of groundwater within the basin would manage and use groundwater in a manner that can be sustainably maintained during the planning and implementation horizon without causing undesirable results. SGMA defines undesirable results as follows:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply

- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

Section 8.2.6.3 of this Master Response refers to revisions that have been made in Final EIR/EIS Section 4.4.5.2 (Impacts 4.4-3 and 4.4-4), to document how and why the proposed MPWSP would not conflict with the SGMA-defined undesirable results.

8.2.6.2 Basins and Subbasins

Commenters requested the recent updated groundwater basin designation information in response to SGMA; this discussion is provided in response to those comments.

General Discussion

As discussed in EIR/EIS Section 4.4.1.2, the Salinas River Valley extends from the headwaters around the La Panza Range and Lake Nacimiento northwestward to the Pacific Ocean. The western coastline extent of the Valley extends from Moss Landing and Elkhorn Slough in the north to the City of Monterey in the south; the Valley is underlain by the Salinas Valley Groundwater Basin (SVGB). EIR/EIS Section 4.4.1.1 provides a discussion of groundwater terminology and concepts including basins, basin boundaries, and groundwater divides. The designation and delineation of groundwater basins is the responsibility of the California Department of Water Resources (DWR). The DWR has delineated several basins and subbasins within the Valley.

The designation of groundwater basins has evolved over time as new information has become available. As shown on EIR/EIS Figure 4.4-1, the basin boundaries designated by the DWR in 2012 (colored polygons) differ from the basin boundaries designated by DWR in 1946 (black outlines). Note that the names of the subbasins have also evolved over time. Local agencies such as the Monterey County Water Resources Agency (MCWRA) have used some different basin names and delineations based on their locally available information and understanding of basin boundaries. The proposed source water intake system, for example, would be located in the 180/400 Foot Aquifer Subbasin, the boundaries of which generally coincide with those of the SVGB Pressure Area (or Subbasin) traditionally recognized by MCWRA and DWR. The basin borders are described in EIR/EIS Section 4.4.1.2.

With the implementation of SGMA, DWR reviewed all of the basins statewide and assigned priorities for establishing GSAs and implementing GSPs. Entities desiring to become a GSA must submit an application to the DWR that justifies why they would qualify as a GSA, defines the basin or subbasin over which they propose to develop and implement a GSP, and proposes any

basin boundary changes based on technical data that justifies boundary changes. The DWR then reviews the submittal and either accepts the proposed GSA or rejects the submittal, informing the stakeholders as to the reasons and directing them to resolve the issues. In some cases, multiple entities have submitted proposals to the DWR to become GSAs for the same area or for areas that overlap. The DWR may accept one GSA submittal and reject the other(s), or reject all submittals and direct the stakeholders to resolve their differences. In cases where no entity proposes to become the GSA, the DWR would assign an entity, typically the county, as the GSA. Information on the current status of the formation of GSAs and the boundaries of basins and subbasins is provided by the DWR on its SGMA website at http://water.ca.gov/groundwater/sgm/index.cfm. The website is continually updated as new information becomes available.

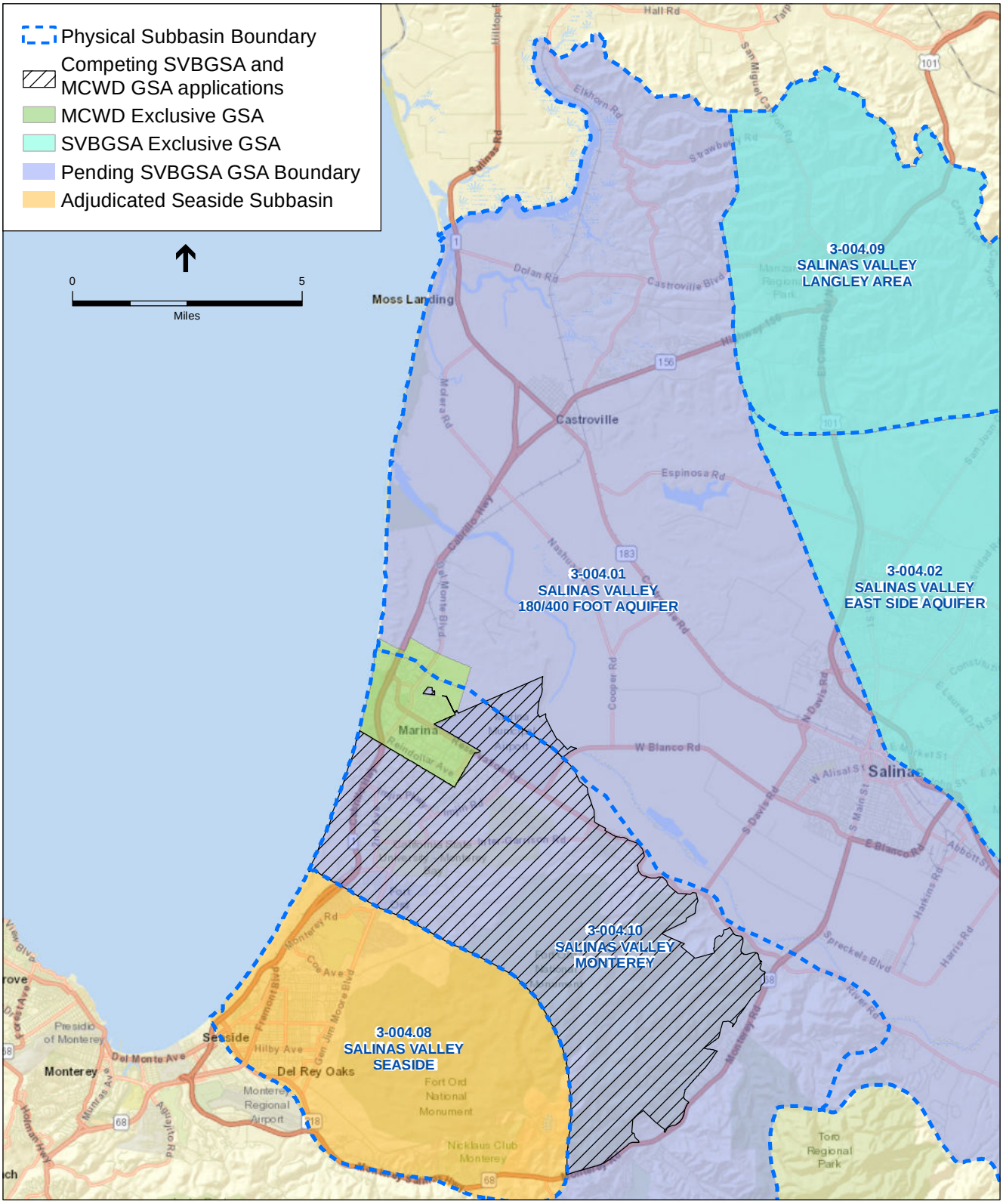
The subbasin assignments may be based on physical conditions (e.g., a groundwater divide within the overall basin), or administrative or jurisdictional boundaries (e.g., the service area of a water district whose boundaries may have no correlation to physical boundaries). It is important to note that the DWR, as authorized under SGMA, will require that each entire basin achieve sustainable groundwater conditions, regardless of how many GSAs or subbasins may exist within a given basin. Consequently, for basins that have multiple GSAs and/or subbasins, the GSAs will need to cooperate with each other to achieve sustainability on a basin-wide basis. As an ongoing process subsequent to the publication of the Draft EIR/EIS, the DWR has revised basin and subbasin boundaries and names, and will continue to do so as GSAs are formed, boundary disputes are resolved, and GSAs are accepted by the DWR.

Salinas Valley Groundwater Basin and Subbasins

Under SGMA, the DWR has identified the entire SVGB (Basin 3-004) as consisting of medium to high priority subbasins. In addition, the Salinas Valley 180/400 Foot Aquifer (Basin 3-004.01), a subbasin within the SVGB where the proposed seawater intake system would be located, is listed as a high priority, critically overdrafted subbasin. The subbasin boundaries and names, and the status of the formation of GSAs within the SVGB as of July 18, 2017, are shown on **Figure 8.2.6-1** and described below. Note that the DWR uses “basin” in its formal names of the subbasins even though these are specifically considered subbasins. Also note in the discussion below, the physical footprints of the basins, the jurisdictional footprint of water provider service areas, and the footprints in the applications for GSAs do not always precisely align; some GSA applications have overlap. Consequently, some of the GSA applications are still pending because the DWR will not approve overlapping GSAs.

Salinas Valley 180/400 Foot Aquifer Basin 3-004.01

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) is a joint powers authority consisting of a variety of local public agencies with water supply, water management, and land use responsibilities. The agencies include Monterey County; MCWRA; the cities of Salinas, Soledad, Gonzales, and King; the Castroville Community Services District (CCSD), and the Monterey Regional Water Pollution Control Agency (MRWPCA). The SVBGSA submitted GSA formation applications for all of the subbasins within the SVGB that are within Monterey County, including the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01, where the source water intake system for the MPWSP would be located. However, the GSA formation decision by



Notes: SVBGSA = Salinas Valley Basin Groundwater Sustainability Agency MCWD = Marina Coast Water District

SOURCE: DWR, 2017

http://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.6-1

DWR SGMA Basin Map

the DWR for the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 is still pending because the Marina Coast Water District (MCWD) submitted an application for Salinas Valley Monterey Basin 3-004.10, discussed below, with a footprint that overlaps a southern portion of the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 that the SVBGSA also applied to manage. MCWD may have done this because the MCWD is the water service provider in the overlapping area.

Salinas Valley Monterey Basin 3-004.10

The Salinas Valley Monterey Basin lies in between the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 to the north (discussed above) and the Seaside Basin 3-004.08 to the south (discussed below). The formation of a GSA for this basin is pending because the SVBGSA and the MCWD each submitted overlapping and conflicting GSA formation requests for most of this basin.

The MCWD is a water agency that provides water supply for: the Central Marina service area, which consists of most of the City of Marina, and; the Ord Community service area, which includes some western portions of the former Ford Ord military base. The DWR has accepted the MCWD as the exclusive GSA within the Central Marina service area, most of which is in the northwestern portion of Salinas Valley Monterey Basin 3-004.10 but extends into a small portion of the Salinas Valley Monterey Basin 3-004.10 to the north, shown as the green area on Figure 8.2.6-1.

The SVBGSA has submitted a GSA formation request to the DWR for all of the Salinas Valley Monterey Basin 3-004.10, except for the above-described MCWD Central Marina service area. However, the MCWD has also submitted a proposal to the DWR to have the MCWD be the GSA for a larger portion of the Salinas Valley Monterey Basin 3-004.10 than merely the area within the MCWD Central Marina service area. The MCWD request includes its Ord Community service area, but also extends further east into areas not served by the MCWD. The DWR GSA formation decision on the diagonal shaded area on Figure 8.2.6-1 is pending.

Seaside Basin 3-004.08

The Seaside Basin 3-004.08, where the proposed ASR wells would be installed and operated, was adjudicated in 2006 in response to overdraft of the subbasin and conflict between groundwater users (*California American Water v. City of Seaside, et al.* (Case No. M66343, California Superior Court, Monterey County). The adjudication defined the safe yield of the subbasin and allocated specific volumes of groundwater pumpage to each of the parties to the adjudication that limits the total volume of groundwater extraction to the safe yield. The implementation of the adjudication results in managing the subbasin's groundwater resources in a sustainable manner similar to the requirements of SGMA. Consequently, the Seaside Basin 3-004.08 will not have a GSA formed and will not be required to prepare and implement a GSP under SGMA.

MCWD Proposed Designation of "Marina Subarea"

MCWD, in its comment letter on the Draft EIR/EIS (see Section 8.5.2), refers to a "Marina Subarea" that includes its service area and the combined area of the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 south of the Salinas River and the northwest portion of the Salinas Valley

Monterey Basin 3-004.10. MCWD states this area would include the area affected by the proposed slant well pumping on the CEMEX property. MCWD acknowledges that this is not a DWR-recognized designation; MCWD has not formally requested such a designation from the DWR but claims, without providing documentation or published references to support the claim, that the hydrogeological conditions justify such a designation for "discussion purposes." However, the hydrogeological conditions as described in Section 4.4, Groundwater Resources, do not justify this designation because there are no known boundary conditions that would justify further subdividing the subbasin. Note that the analysis of impacts of the project are not dependent on which entity manages any particular area nor what the basins are named.

Anticipated Radius of Influence Relative to Subbasins

Based on the modeled maximum radius of influence of groundwater drawdown that could be caused by the operation of the source water intake system, as shown on EIR/EIS Figure 4.4-15 and discussed in Section 8.2.6.3 below, the majority of the affected area would be within the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01. The southern boundary of this basin is a groundwater divide with the Salinas Valley Monterey Basin 3-004.10. As explained in EIR/EIS Section 4.4.1.2, the precise location of a groundwater divide changes over time in response to changes in climate, seasonal rainfall, and pumping of nearby extraction wells. Consequently, the location of the groundwater divide at any given time may not precisely align with the basin boundary as delineated by the DWR. Depending on the actual extent of the radius of influence of the proposed project pumping, the affected area may extend a short distance into the northern portion of the Salinas Valley Monterey Basin 3-004.10 and may extend into the MCWD GSA area. However, regardless of the precise extent of the radius of influence, the impact analyses concluded that there would be no adverse effects on users of groundwater in the subbasins, including in the area of MCWD's GSA, as discussed in Impacts 4.4-3 and 4.4-4 in the EIR/EIS.

8.2.6.3 Project Consistency with SGMA

As noted above, SGMA states that groundwater basins must be managed without resulting in the listed undesirable results. A summary of these analyses to address each undesirable result identified in SGMA has been added to Final EIR/EIS Section 4.4 in Impacts 4.4-3 (groundwater supplies and recharge) and 4.4-4 (groundwater quality) under the subheadings "Consistency with Regulatory Requirements." Based on those discussions, the project would not result in any of the six undesirable results cited in SGMA; therefore, MPWSP would be consistent with SGMA, and SGMA would not restrict the MPWSP's ability to pump groundwater as proposed.

Because adjudicated basins are exempt from SGMA requirements, as noted in Water Code §10720.8, impacts on groundwater resources in the Seaside Basin from operation of the proposed ASR wells are not discussed.

8.2.7 Master Response 7: The Deeper Aquifers of the Salinas Valley Groundwater Basin

COMMENTERS ADDRESSED IN MASTER RESPONSE 7

City of Marina	Just Water
Marina Coast Water District	Hebard Olsen
Monterey Regional Water Pollution Control Agency	Form Letter 2
Ag Land Trust	Public Meeting Verbal Comments
Fort Ord Rec Users	

Several comments on the Draft EIR/EIS suggested that Section 4.4, Groundwater Resources, did not adequately describe or address potential impacts on the "900-Foot (Deep)" Aquifer (see discussion of aquifer name below) and that the lack of analysis represented a flaw in the environmental evaluation of groundwater impacts. In addition, commenters asserted that the computer modeling used to evaluate the groundwater response to the proposed project did not analyze the effects on this aquifer.

Draft EIR/EIS Section 4.4.1.2 described the local and regional hydrogeology; the 400-Foot and 900-Foot Aquifers were presented on Draft EIR/EIS page 4.4-11. This Master Response addresses the inclusion of supplemental information in the Final EIR/EIS that clarifies the deeper aquifer system of the Salinas Valley Groundwater Basin (SVGB).

8.2.7.1 The Deeper Aquifers – Terms, Characteristics, and Production

In response to comments that suggested Draft EIR/EIS Section 4.4 did not adequately describe the "900-Foot (Deep)" Aquifer, this section summarizes the supplemental discussion that has been added to the Final EIR/EIS, which describes the hydrogeology of the deep aquifer zone in the SVGB, the terms used to describe it, and the current use of the aquifer for groundwater production.

Draft EIR/EIS Section 4.4.1.2 described the Pressure Area, a subbasin of the SVGB that has traditionally been recognized by the Monterey County Water Resources Agency (MCWRA) and the California Department of Water Resources (DWR). The Pressure Area is composed of aquifers and aquitards within distinct geologic formations and the characteristics of the aquifers and aquitards were described in the Draft EIR/EIS on pages 4.4-4 through 4.4-12. The Draft EIR/EIS included a discussion of the 900-Foot Aquifer in the subsection titled "400-Foot and 900-Foot Aquifers." EIR/EIS Figure 4.4-2 provides a conceptual model of the coastal aquifers, including the 900-Foot Aquifer. Because the groundwater modeling did not detect a drawdown in the 900-Foot Aquifer (as described in Section 8.2.7.2, below), the description of the 900-Foot Aquifer was minimized in the Draft EIR/EIS consistent with CEQA Guidelines Section 15125, which states, "The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives."

Increasing seawater intrusion over the past 30 years forced groundwater users in the Marina/Castroville area to drill and develop wells below the 400-Foot Aquifer. Starting in 1976,

groundwater users, including the Marina Coast Water District (MCWD), had to drill into the deeper aquifers to find a fresh groundwater supply. However, after implementation of the Castroville Seawater Intrusion Project (CSIP) in 1998, many of the groundwater users in the Castroville area who began receiving recycled water ceased using their deeper aquifer wells.

The terms "900-Foot Aquifer," "1,500-Foot Aquifer," and "Deep Zone" have been used to refer to the deeper aquifer units in the SVGB. However, these are vague definitions because the water-bearing sediments are not necessarily at these arbitrary depths. For the purposes of this EIR/EIS, and to be consistent with current findings regarding the distribution of water-bearing zones below the 400-Foot Aquifer, the term "deeper aquifers" is used to describe these units.

For informational purposes, supplemental text describing the deeper aquifers is presented in Final EIR/EIS Section 4.4.1.2 and, for the reasons just explained, the following EIR/EIS subsections have been renamed and reorganized as follows:

400-Foot ~~900-Foot~~ Aquifer; and,

Deeper Aquifers.

8.2.7.2 Computer Model Response in the Deeper Aquifer

In response to comments that suggested the Draft EIR/EIS did not adequately address potential impacts on the deeper aquifers and that the computer modeling used to evaluate the groundwater response to the proposed project did not analyze the effects on such aquifers, this section describes how the North Marina Groundwater Model, v. 2016 ($NMGWM^{2016}$) interpreted the effects of the proposed project on the deep aquifers and introduces supplemental text included in the Final EIR/EIS that presents its results.

The $NMGWM^{2016}$ is a detailed hydrologic computer model covering approximately 149 square miles and was a primary analytical tool used to evaluate impacts of the proposed project and alternatives on groundwater resources. See EIR/EIS Appendix E2. EIR/EIS Section 4.4.4.2 and Appendix E2 describe the components, model layers, and applications of the $NMGWM^{2016}$ and EIR/EIS Table 4.4-8 presents the correlation of the geologic units, aquifers, and model layers. As shown in Table 4.4-8, and discussed in detail in Appendix E2, the deeper aquifers were represented in the $NMGWM^{2016}$ as Model Layer 8.

As discussed in the EIR/EIS, the $NMGWM^{2016}$ did not indicate drawdown in Model Layer 8 from the proposed MPWSP pumping at CEMEX for either of the CEMEX site options (the proposed project and Alternative 5a with 24.1 mgd and 15.5 mgd pumping, respectively) or either of the Potrero Road options (Alternative 1 and 5b with 24.1 mgd and 15.5 mgd pumping, respectively); see Appendix E2, Figures 5.3a-b, 5.4a-b, 5.9a-b and 5.10a-b. The lack of detected response by the $NMGWM^{2016}$ in the deeper aquifers represented by Model Layer 8 prompted analysts to de-emphasize the deeper aquifers in the groundwater impacts analysis presented in the Draft EIR/EIS. Nonetheless, for informational purposes, supplemental text has been added to Final EIR/EIS Section 4.4.5.2, Impact 4.4-3, under the heading "Results of Impact Analysis – Proposed Project on Nearby Production Wells," to discuss aquifer response to the project in the deeper aquifers. Such additional clarifying text does not change the conclusions in the EIR/EIS.

8.2.8 Master Response 8: Project Source Water and Seawater Intrusion

COMMENTERS ADDRESSED IN MASTER RESPONSE 8

Fort Ord Base Realignment and Closure Field Office	Charles Cech
City of Marina	Bob Coble
Marina Coast Water District	David Gorman
Monterey County Water Resources Agency	Juli Hofmann
Monterey Peninsula Regional Water Authority	Thomas Moore
Citizens for Just Water	Hebard Olsen
Fort Ord Rec Users	Larry Parrish
Just Water	Nancy Selfridge
Salinas Valley Water Coalition and Monterey County Farm Bureau	Jan Shriner
Water Ratepayers Association of the Monterey Peninsula	Form Letter 1
David Beech	Form Letter 2
Kathy Biala	Public Meeting Verbal Comments
David Brown	

This Master Response addresses comments received on the Draft EIR/EIS regarding the origin of the slant well source water and the current seawater intrusion conditions in the Salinas Valley Groundwater Basin (SVGB), underlying the MPWSP area, including portions of the City of Marina. Several commenters maintain that the proposed project would draw fresh groundwater that could otherwise be used for potable groundwater supply from inland portions of the SVGB. Other commenters disagreed with the determination in the EIR/EIS that the groundwater underlying the project area in the Dune Sands and 180-Foot Equivalent (180-FTE) Aquifer is degraded by legacy and ongoing seawater intrusion and thus is not available for potable uses. This Master Response presents hydrogeologic and groundwater chemistry information to supplement and clarify the analyses of the groundwater resources impacts presented in EIR/EIS Section 4.4, Groundwater Resources, but does not change the impact conclusions. Where noted, EIR/EIS Section 4.4, Groundwater Resources, has been updated and refined based on information presented in this Master Response. Regarding the deeper aquifers of the SVGB (i.e., the 900-Foot Aquifer referred to in the Draft EIR/EIS and in comments), see Master Response 7.

8.2.8.1 Cone of Depression and Capture Zone

This subsection provides a brief summary of the difference between drawdown, the cone of depression, and the capture zone; this is a fundamental concept necessary to understand the response and movement of groundwater drawn to the proposed slant wells. These concepts are discussed in EIR/EIS Section 4.4.4, Approach to Analyses, and summarized and clarified in the sections below in response to comments about these concepts.

Drawdown and the Cone of Depression

Drawdown is the observed change in the aquifer water level caused by the extraction of groundwater and is calculated by subtracting the water level measured under pumping conditions from the water level measured without pumping, also referred to as the static water level. The static water level represents baseline conditions. The cone of depression, as described and shown graphically in EIR/EIS Section 4.4.4.2, Groundwater Modeling, is the zone where the drawdown caused by groundwater pumping is observed. Section 4.4.4.2 describes groundwater model terminology. The definition of the cone of depression (see Draft EIR/EIS page 4.4-44) has been revised as follows:

> As water is extracted from a well, it is pulled into the screened section of the slant wells and removed from the subsurface water-bearing unit. Groundwater elevations would decrease around the slant wells in a ~~radial~~distorted ovate fashion ~~resulting in a~~due to the ocean recharge boundary such that the cone of ~~drawdown~~ depression would not be centered at the slant wells. This cone would be the steepest and deepest closest to the well screen and rapidly become flatter and shallower away from the slant wells.

Draft EIR/EIS Figure 4.4-13 depicted this modelled cone of depression, represented by contour lines of equal drawdown, in the 180-Foot Aquifer. This figure has been renumbered 4.4-13a in the Final EIR/EIS, and Figure 4.4-13b has been added to Final EIR/EIS Section 4.4 to show the modelled cone of depression in the Dune Sand Aquifer.

The 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) projects that this drawdown would occur as a result of a slant well extraction rate of 24.1 million gallons per day (mgd). This is considered "worst-case" because it represents the cone of depression in the Dune Sand Aquifer under 2012 sea level conditions and 0 percent return water. Final EIR/EIS Figure 4.4-13a shows the cone of depression for the 180-FTE Aquifer as projected by the $NMGWM^{2016}$. This is also considered the worst-case drawdown condition under the proposed 24.1 mgd pumping scenario. The cones of depression for both the Dune Sand Aquifer and 180-FTE Aquifer are similar: steep contours just offshore along the western extent and flatter to the east, forming a cone of depression that extends inland with drawdown amounts ranging between 1 to 5 feet. As discussed in EIR/EIS Section 4.4.4.2, Groundwater Modeling, the area or radius of pumping influence demarks the extent that water levels would decrease (or be drawn down) by the extraction of groundwater at the slant wells. For purposes of the impact analysis in the EIR/EIS, the extent of the radius of influence was marked by the one-foot drawdown contour of the cone of depression.

Capture Zone

A capture zone refers to the three-dimensional volume of aquifer that contributes the water extracted by the wells. It is a function of drawdown caused by the pumping rate and the gradient (direction and slope) of the groundwater flow. When the pumps in the slant wells are turned on, the wells would initially extract the water that is held in the surrounding sediments (ambient groundwater). As pumping continues, the modeling indicates that the wells would extract increasing proportions of infiltrating recharge from the ocean. The ocean recharge would gradually replace the

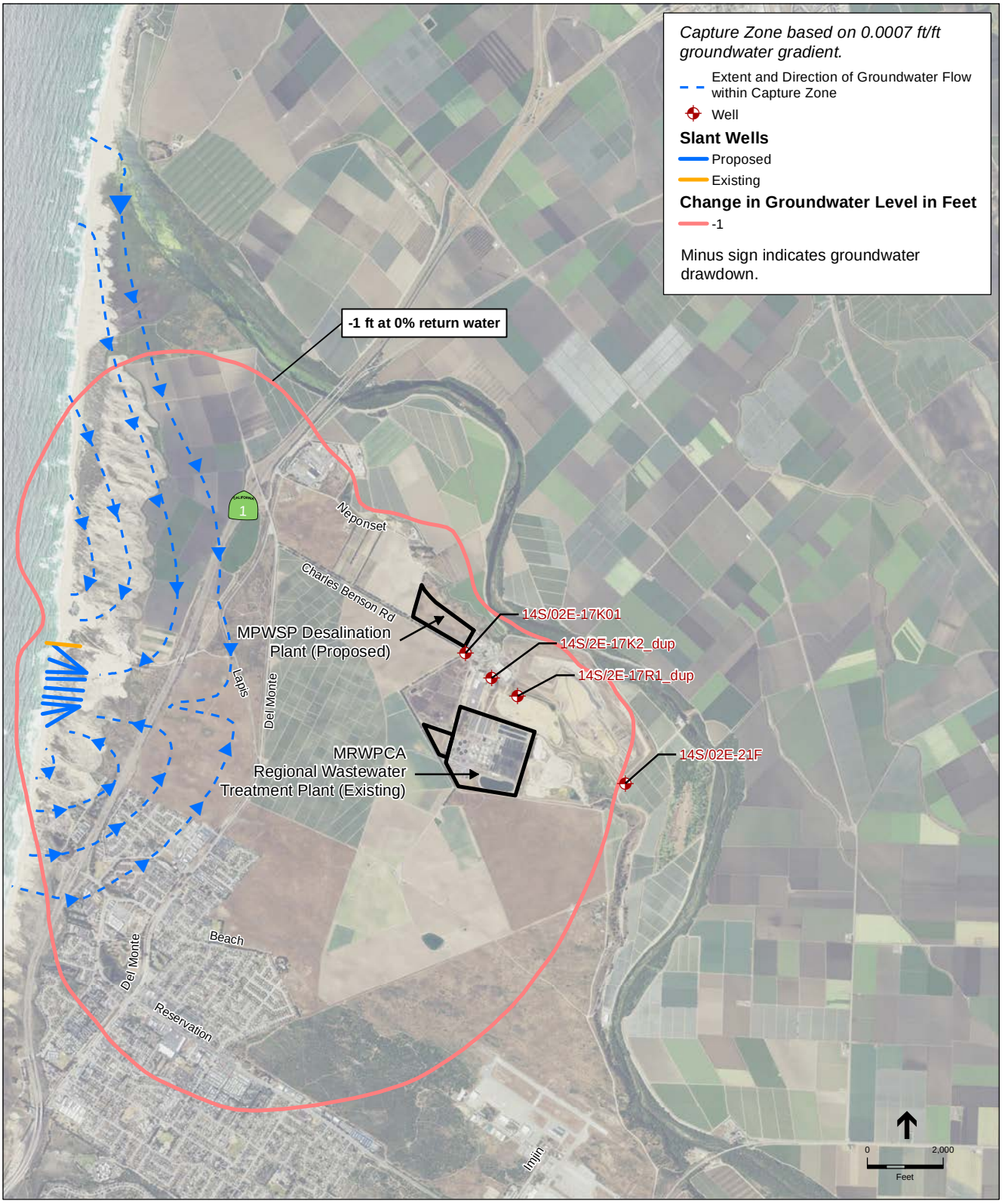
ambient groundwater within the capture zone, and move within the capture zone toward the well, but would not advance beyond the capture zone, as shown in **Figure 8.2.8-1** (Dune Sand) and **Figure 8.2.8-2** (180/180-FTE Aquifer). In the map view provided in these figures, the capture zone is a 2-dimensional surface that delineates the underlying aquifer volume where ocean water replaces ambient groundwater and ultimately becomes the primary source water to the slant wells. Figures 8.2.8-1 and Figure 8.2.8-2 show the map view of the capture zones for the proposed 24.1 mgd pumping scenario at CEMEX under a regional gradient estimated from groundwater measurements, which were developed as discussed below. The term "capture zone" has been clarified in Final EIR/EIS Section 4.4.4.2. To summarize the key differences in terms, the cone of depression is the area in which drawdown of groundwater would occur. However, the water drawn into the project supply wells would not originate from the entirety of the cone of depression, and would be drawn from the capture zone only.

Particle Tracking to Simulate Capture Zones

As described in EIR/EIS Section 4.4.4.2 and Appendix E2, groundwater capture zone boundaries were delineated using NMGWM^{2016} steady-state flow condition[1] results and particle tracking using the MODFLOW computer code post-processer MODPATH. The MODFLOW computer code post-processer MODPATH was employed to simulate groundwater flow paths. MODPATH uses the output from MODFLOW to simulate paths for "particles" of water moving through the modeled groundwater system. In addition to delineating particle paths, MODPATH computes the time-of-travel for the simulated particles to reach their ending locations. Backward tracking shows the movement of groundwater to former points of recharge (for example, the movement of ocean water recharge to a pumping well), and forward tracking shows the movement of groundwater to future points of discharge (for example, the continued inland movement of the interface between intruded saltwater and native groundwater).

NMGWM^{2016} delineated slant well ocean water capture zones under steady-state flow conditions assuming full time operation 24 hours a day, 7 days a week. Forward tracking particles placed in every cell along the coast in model layers representing the Dune Sand Aquifer and the 180-Foot/180 FTE Aquifer displayed path lines that delineate groundwater flow paths to the extraction wells. Backward tracking particles placed evenly within pumping cells provided path lines that delineate recharge that either originates at the ocean bottom or as groundwater beneath the bay bottom. In both scenarios, MODPATH demonstrated that groundwater extracted by the wells would be recharged by ocean water. EIR/EIS Appendix E2 provides additional details on the particle tracking and simulation of capture zone.

[1] Steady state refers to the condition where the magnitude and direction of groundwater flow in a groundwater model domain remains constant; the same amount of water flows into the system as flows out.

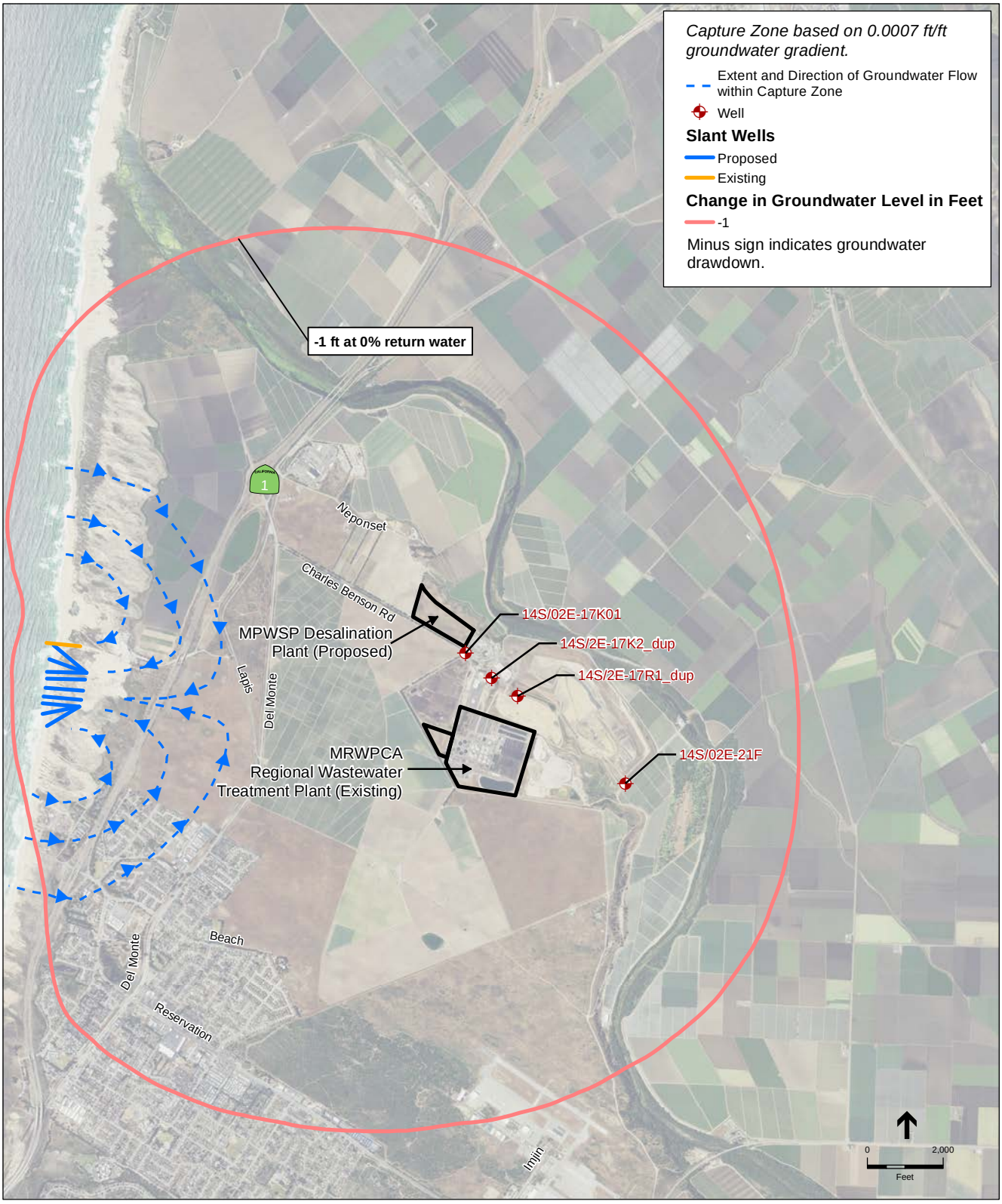


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.8-1

Extent of Capture Zone and -1-Foot Contour of Cone of Depression
Dune Sand Aquifer After 63 years
0% Return Water



SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.8-2

Extent of Capture Zone and -1-Foot Contour of Cone of Depression
180-Foot Aquifer After 63 Years
0% Return Water

Consideration of Groundwater (Hydraulic) Gradients and Capture Zones

As explained in EIR/EIS Section 4.4.4.1, Subsurface Investigations, groundwater under unconfined conditions flows from areas of high groundwater elevation to areas of low groundwater elevation, and groundwater under confined conditions flows from areas of a higher head[2] to areas of lower head. The change in the head over distance is called the hydraulic gradient, and the groundwater flow direction is that which yields a maximum rate of decrease in head (Fetter, 1994). Hydraulic gradients, referred to hereafter as groundwater gradients, are typically shown using contour lines on 2-dimensional groundwater maps.[3] Figures 4.4-6, 4.4-7, and 4.4-8 in EIR/EIS Section 4.4.1.3 show regional groundwater gradients in the SVGB and the MPWSP area. As discussed in EIR/EIS Section 4.4.1.3, the groundwater in both the Dune Sand Aquifer and 180/180-FTE Aquifer flows inland beneath the project area (i.e., from the Monterey Bay east, toward the Salinas Valley) with measured gradients ranging from a minimum of 0.0007 to an average local gradient of 0.0011 (HWG, 2017). The inland gradient is a direct response to the extensive overpumping of the groundwater basin that has resulted in a groundwater depression located on the northeast side of the City of Salinas; see EIR/EIS Section 4.4.1.3.

As discussed in EIR/EIS Section 4.4.4.2 and in Appendix E2, the NMGWM^{2016} was converted to superposition and, as such, initial water levels are considered zero throughout the model area. Consequently, the model does not account for regional background groundwater gradients. However, these regional groundwater gradients significantly influence groundwater-flow paths from the ocean to the proposed project slant wells, and therefore are important to consider when calculating capture zone boundaries. Therefore, to incorporate the regional groundwater gradient across the CEMEX site, the gradient was calculated using the fall 2015 measured background gradient and then the approximate gradient was reproduced in the NMGWM^{2016}. The NMGWM^{2016} simulated the capture zones using the average groundwater gradients of 0.0004, 0.0007, and 0.0011, which are based on averages of measured gradients throughout the entire model domain.[4] However, the hydraulic gradients used in the modeling underestimate the local hydraulic gradients in the project area, since the steepest gradient used in the analysis (0.0011) is more representative of the average local gradient and the 0.0007 gradient better represents the minimum gradient (HWG, 2017). As shown in EIR/EIS Appendix E2, Figure 5.6, the extent of the capture zone is influenced by the groundwater gradient: the steeper the gradient, the smaller the capture zone. So, the smaller of the three capture zones (based on the gradient of 0.0011) projected by the NMGWM^{2016} would likely be more representative of actual project pumping conditions. Capture zones projected for the 15.5 mgd slant well pumping scenario would be smaller than those estimated for the 24.1 mgd scenario because less source water would be drawn to the slant wells. A graphic comparing the extent of capture zones under the 15.5 mgd and 24.1 mgd scenarios is shown in Appendix E2,

2 Head is the fluid potential for flow through an aquifer and is observed by the height of water in a groundwater well.
3 Groundwater gradients are expressed as the ratio of vertical change in head to lateral distance. For example, if groundwater levels decrease 5 feet over a horizontal distance of 10,000 feet, the gradient is expressed as 0.0005 feet per foot or ft/ft. Because it is a ratio, the units are often not included.
4 While the groundwater gradient of 0.0004 was considered for the NMGWM^{2016} in determining the extent of the capture zones, it was determined that 0.0007 was more representative of the minimum gradient based on local conditions.

Figure 5.6. EIR/EIS Appendix E2 and Appendix E3 provide additional details on particle tracking, the development of the capture zones, and the process of simulating groundwater gradients.

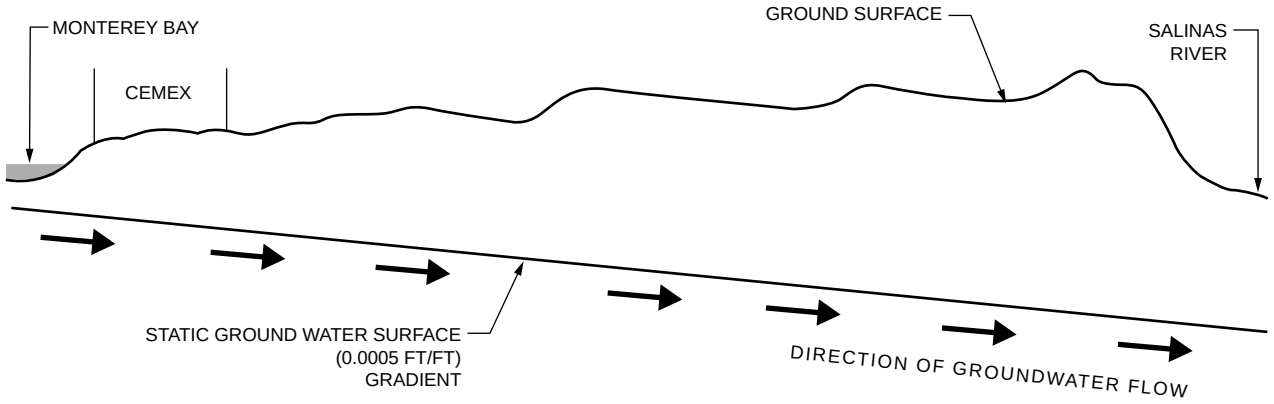
Relationship between Cone of Depression and Capture Zone

The cone of depression that forms from groundwater pumping and the capture zone that provides source water to the slant wells are not the same. **Figure 8.2.8-3** is a cross-sectional schematic that illustrates the relationship between the cone of depression (shown in map view on Figure 4.4-13a) and capture zone (shown in map view on Figure 8.2.8-2) under a "Pre-Project" and "Project" condition. Under the Pre-Project Condition (shown at the top of Figure 8.2.8-3), the groundwater is flowing inland from the coast at a gradient of 0.0005.[5] The Pre-Project Condition represents the groundwater condition without accounting for current well pumping or groundwater recharge. The "Project Condition" represents how the groundwater would respond to project slant well pumping in the 180/180-FTE Aquifer, assuming 2012 sea level and no return water (both conservative assumptions), and is correlative to the map view of the cone of depression shown on EIR/EIS Figure 4.4-13a. It should be noted that the vertical scale is considerably exaggerated in the "Project Condition" to clearly illustrate the relationship between the cone of depression and the capture zone; for reference, the NMGWM^{2016} projected that the maximum drawdown amount under this pumping scenario was about 29 feet at the slant wells. As illustrated in Figure 8.2.8-2, when the slant wells are pumping, water within the capture zone would be drawn into the wells from the surrounding sediments. The groundwater responds by creating a cone of depression, which would be most pronounced near the slant wells. Notice that the drawdown caused by slant well pumping decreases as the cone of depression extends eastward. The inland extent of the capture zone is shown by a vertical dashed line. This point could be described as a groundwater gradient divide: groundwater west of the divide is drawn into the capture zone by the slant wells and thus flows west, while the groundwater to the east of the boundary continues to flow inland unimpeded due to the regional gradient. The fundamental difference between the capture zone, which is supplying the water to the slant wells, and the cone of depression, which forms in response to pumping, is that the groundwater entering the slant wells originates only from within the capture zone, while the regional gradient controls the groundwater flow beyond the capture zone.

While the wells are expected to be operated 24 hours/per day every day as described in EIR/EIS Section 3.2.1.1, EIR/EIS Appendix E2 Section 5.4 examined the effects of ceasing pumping on groundwater basin recovery, in order to consider what would happen when the wells are turned off permanently. Temporary, short-term shut down for maintenance are not considered because at least some wells would be operating during servicing and repair. The effects on groundwater levels and water quality during a temporary shut-down would occur gradually and not be immediately obvious. Figure 5.5 in Appendix E2 shows the model-calculated post project recovery from drawdown due solely to 63 years of proposed project slant well pumping. Hydrographs at various locations show that drawdown would decrease and water levels would return to pre-pumped

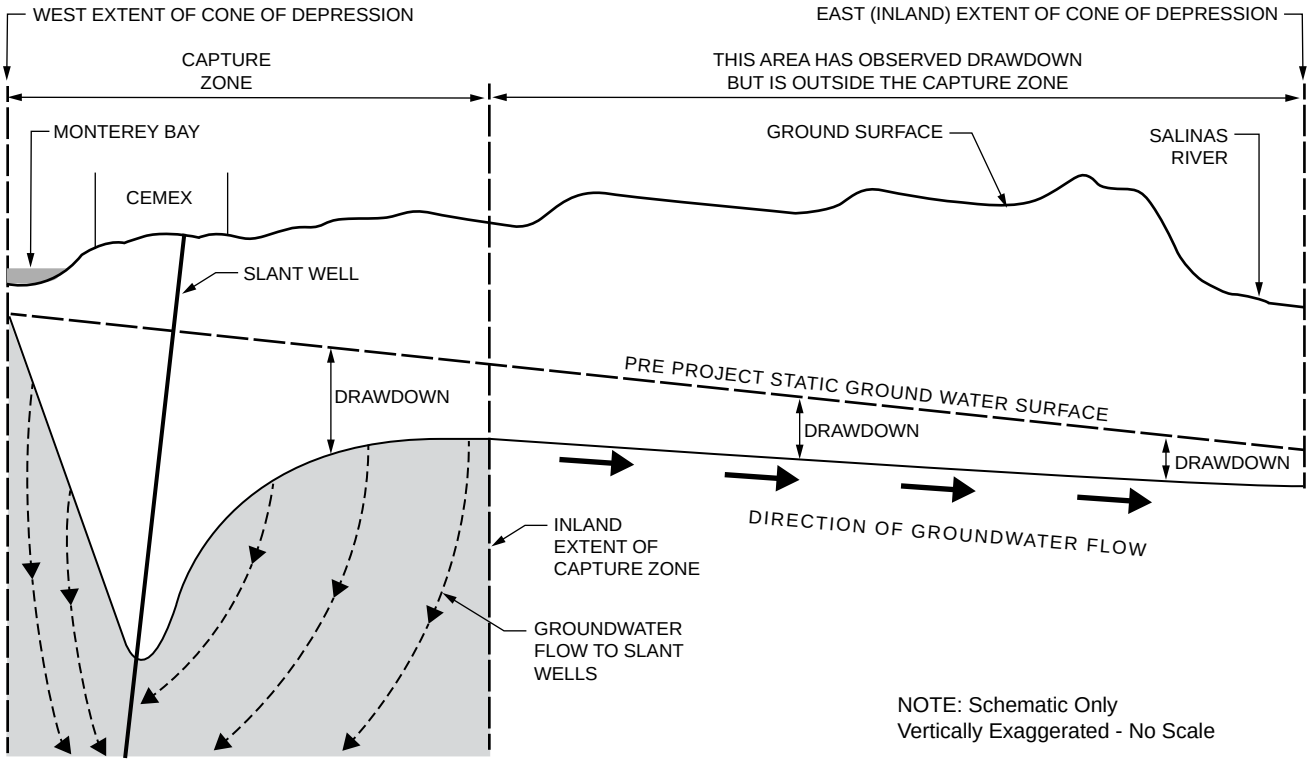
[5] The gradient of 0.0005 was measured using groundwater contours generated from groundwater measurements in the 180/180-FTE aquifer collected in fall 2015 (Geoscience, 2017) and is used in Figure 8.2.8-3 as a representative gradient for the purposes of demonstration.

PRE PROJECT CONDITION



NOTE: Schematic Only
Vertically Exaggerated - No Scale

PROJECT CONDITION



NOTE: Schematic Only
Vertically Exaggerated - No Scale

SOURCE: ESA

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.8-3
Schematic Showing Relationship Between Cone of Depression and Capture Zone

conditions within several years for all but two wells. The modeled water level recovery for monitoring wells MW-5S and MW-7S would be completed within about 20 years due to the depth and location of the wells. Considering that the recovery for surrounding wells is on the order of a few years, the longer recovery for just these two wells is the effect of the relatively low hydraulic conductivity associated with the geologic conditions of Model Layer 2 (Dune Sand Aquifer) in those areas of the model.

8.2.8.2 Groundwater Quality within the Capture Zone

This subsection clarifies the quality of the existing groundwater within the capture zone, defined above, in response to comments expressing disagreement with the finding in the EIR/EIS that the groundwater underlying the project area in the Dune Sands and 180-FTE Aquifer is degraded by legacy and ongoing seawater intrusion, and claiming that water in this location is fresher than described in the EIR/EIS. As discussed in EIR/EIS Section 4.4.1.4 and Impact 4.4-3, the proposed MPWSP pumping would draw source water from a capture zone in the Dune Sand and 180-FTE Aquifers. The groundwater in this area is degraded by seawater and therefore, unusable for potable or irrigation water supply due to its elevated total dissolved solids (TDS) and chloride concentrations. The chemistry of groundwater in this area has been analyzed by the ongoing monitoring program implemented by CalAm and peer-reviewed by the Hydrogeologic Working Group (HWG), as discussed in EIR/EIS Section 4.4.4.1, and separately by the hydrologists and hydrogeologist on the EIR/EIS team. In conjunction with the installation and pumping of the test slant well (see EIR/EIS Section 4.4.4.1 and Master Response 11, CalAm Test Slant Well), CalAm installed nine clustered monitoring wells between December 2014 and August 2015 to monitor groundwater levels and collect representative groundwater quality data from the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. Each monitoring well cluster consists of three individual, separately constructed monitoring wells completed at different depth intervals identified as S (shallow), M (middle), D (deep), where shallow wells are primarily screened in the Dune Sand Aquifer, the middle wells are screened in the 180-FTE Aquifer or 180-Foot Aquifer, and the deep wells are primarily screened in the 400-Foot Aquifer (HWG, 2017). CalAm has conducted regular water level and water quality monitoring and has, since February 2015, produced and posted on its website weekly and monthly test slant well pumping reports. As shown on Figures 4.4-13a and 4.4-13b, MW-1 and MW-3 are located within or proximate to the capture zone and best represent the conditions and quality of slant well source water.

The analysis presented in EIR/EIS Impact 4.4-3 concluded that groundwater extracted by the slant wells would be brackish and originate in the capture zone, which occupies a localized area just inland from the coast underlying the CEMEX property (illustrated by Figures 8.2.8-1 and 8.2.8-2, included in this master response to clarify the extent and direction of groundwater flow within the capture zone). There is no active groundwater pumping by other users from the Dune Sand and/or 180-FTE Aquifers within the capture zone, primarily because of the degraded water quality. **Table 8.2.8-1** summarizes the TDS and chloride concentrations in the CalAm monitoring wells collected by pumping after development of the monitoring wells and prior to the first phase of test slant well pumping (thus representing baseline conditions) and references the California Secondary Maximum Contaminant Level (MCL) (Cal. Code Regs., tit. 22, § 64449) for TDS and chloride, which is 500 mg/L and the 250 mg/L, respectively. The groundwater quality data

provided in Table 8.2.8-1 below supports the conclusion that the water in the Dune Sand Aquifer and 180-FTE aquifer that is available to the slant wells is brackish to near seawater and does not meet California drinking water standards. In addition to the groundwater sample data provided in Table 8.2.8-1, Figures 3-1 and 3-2 in the Baseline Water and Total Dissolved Solids Levels Technical Memorandum illustrates that data logger-collected TDS concentrations in MW-1 and MW-3 consistently recorded between 22,000 mg/L and 33,000 mg/L for the entire groundwater quality baseline monitoring period of 34 days (Geoscience, 2015, see Appendix E3). Long term monitoring of the slant well water quality and the MPWSP monitoring wells near CEMEX site show that the TDS in the groundwater has remained elevated since monitoring began in 2015 (Geoscience, 2018). Brackish water is defined as having a TDS concentration greater than freshwater, but not as much as seawater, which is typically about 33,500 mg/L (see Master Response 2, Source Water Components and Definitions). Therefore, for the purposes of the groundwater resources analysis in the EIR/EIS, brackish water is considered to have a TDS concentration ranging between 500 mg/L to 33,500 mg/L. Concentrations of TDS in surface and groundwater that exceed 3,000 mg/L are considered by the SWRCB (Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water") as an exception to its resolution that, "[a]ll surface and groundwaters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards." The groundwater in the capture zone of the MPWSP slant wells exceeds 3,000 mg/L TDS.

TABLE 8.2.8-1
TOTAL DISSOLVED SOLIDS CONCENTRATIONS IN MPWSP MONITORING WELLS LOCATED WITHIN THE SLANT WELL CAPTURE ZONE

Well Number	Sample Date	Aquifer	Total Dissolved Solids (TDS) (mg/L)	Chloride (mg/L)
			California Drinking Water Standard: 500 mg/L[a]	California Drinking Water Standard: 250 mg/L[a]
MW-1S	2/13/15	Dune Sand	26,600	14,504
MW-1M	2/14/15	180-FTE	30,900	16,037
MW-3S	2/25/15	Dune Sand	23,400	11,680
MW-3M	2/24/15	180-FTE	28,500	14,686
MW-4S	3/7/15	Dune Sand	11,900	5,497
MW-4M	3/6/15	180 FTE	17,900	9,751

NOTES:
[a] California Secondary Maximum Contaminant Level (Cal. Code Regs., tit. 22, § 64449)

SOURCE: Geoscience, 2015

Table 8.2.8-1 shows that chloride concentrations in the wells within the capture zone exceed the MCL for drinking water standard of 250 mg/L, indicating that this groundwater would be intolerable as a drinking water source unless it was desalinated. These chloride levels are also unsuitable for agricultural irrigation. With chloride concentrations over 355 mg/L, the groundwater does not meet the RWQCB Central Coast Basin Plan water quality guidelines for irrigation water. The irrigation water guidelines indicate that chloride concentrations exceeding 355 mg/L chloride could potentially result in severe effects for crops and soils (SWRCB, 2017).

8.2.8.3 Ocean Water Percentage

This subsection describes the estimated percentage of seawater in the slant well source water. The change in ocean water percentage (OWP) describes the projected water quality over time in the MPWSP slant well feedwater. An estimate of the OWP that would contribute to the slant well source water was calculated using an analytical methodology and numerical modeling (HWG, 2017) and the approach was peer reviewed by the EIR/EIS team. The OWP as it relates to return water is addressed in Master Response 4, The Agency Act and Return Water, and the methodology of the OWP calculation is provided in Appendix E3. The analytical methodology used an equation to calculate OWP based on water and salinity budgets for the capture zone volume of the proposed slant wells and the numerical modeling method utilized the CEMEX and NMGWM^{2016} groundwater models. The CEMEX and NMGWM^{2016} models provided better resolution than the analytical method in evaluating the early time interval after slant well pumping begins. Numerical modeling predicted a higher source water OWP during the early time period than the analytical method, but the long-term pumping results are consistent between the analytical and numerical predictions. Results of the analytical/numerical methods indicate that the OWP would range from 88 to 92 percent the first year, increase to 93-97 percent after two years, and exceed 94 percent over the long term. This is consistent with two years of field data from the test slant well that indicated OWP ranging from 92 to 95 percent in the first year and 90 to 92 percent in year 2.[6] These methodologies and results are discussed in Master Response 4 and are described in detail in Appendix E3.

8.2.8.4 Summary of Impact Conclusions

A clear understanding of the difference between the cone of depression and capture zone is paramount to understanding project impacts on groundwater resources presented in EIR/EIS Section 4.4.5. This section reviews the impact conclusions in the EIR/EIS, in response to comments disagreeing with the conclusions presented in Section 4.4.5, and provides further clarification based on the information discussed in the sections above.

Groundwater Supply

EIR/EIS Impact 4.4-3 concludes that the proposed project would not deplete groundwater supplies that would otherwise be available to users in the SVGB. This conclusion was reached because the proposed project would extract groundwater from a localized coastal-adjacent capture zone, which has been verified by water quality testing to contain groundwater with elevated concentration of TDS and chloride from decades of legacy seawater intrusion. The slant wells would initially extract the ambient brackish groundwater and, over time, the source water supplied by capture zone would be replaced by seawater. Given the proposed location of the slant wells, the projected configuration of the capture zone, and the inland regional gradient, groundwater originating from inland regions of the basin would not be drawn into the slant wells. This is because, to reiterate, groundwater would be drawn into the slant wells within the boundaries of a localized capture zone, which would be within the larger cone of depression.

6 The decrease in salinity in Year 2 can be explained by the infiltration of fresh rainwater during an above normal rainfall year and percolation of fresh water during sand washing operations at CEMEX.

While the cone of depression is an expression of the drawdown effects of slant well pumping, it does not demark the area that would contribute to the slant well source water supply.

Groundwater Levels in Neighboring Wells

EIR/EIS Impact 4.4-3 concludes that the project would not negatively impact groundwater levels in nearby production wells. This conclusion is based on the fact that there are no active production wells extracting groundwater from the Dune Sand or 180-FTE Aquifer within the boundaries of the capture zone or cone of depression that would be created by the MPWSP slant well pumping. While the groundwater levels within the capture zone at the CEMEX site could be drawn down by as much as 29 feet at the peak 24.1 mgd scenario, the projected groundwater drawdown elsewhere in the cone of depression would range from 1 to 5 feet, as shown in EIR/EIS Figures 4.4-14, 4.4-15, and 4.4-16. This projected amount of drawdown is not sufficient to lower groundwater in neighboring production wells in the 180-Foot and 400-Foot aquifer below the top of the screen or to expose the well pump. Currently, there are no active production wells drawing supply from the Dune Sand Aquifer. **Table 8.2.8-2** expands on information provided in EIR/EIS Table 4.4-10 to compare the screen interval and the approximate depth to water in select neighboring production wells in the 180-FTE and 400-Foot Aquifers[7]. As is evident from these data, the well screens are considerably deeper than the static water level in the well and, consistent with the conclusion in the EIR/EIS, would accommodate the 1- to 5-foot drawdown that the MPWSP slant well pumping could create without damaging the well and/or exposing well screens or pumps. This is discussed in further detail below.

TABLE 8.2.8-2
REPRESENTATIVE SCREEN INTERVALS AND WATER DEPTHS FOR PRODUCTION WELLS WITHIN VICINITY OF THE PROPOSED MPWSP SLANT WELLS

Well Owner	Well Number/ID	Aquifer	Screen Interval(s) (depth in feet from top of well)	Approximate Depth to Water (feet below ground surface) Fall 2016[a]	Approximate Distance from Groundwater Surface to Top of Well Screen (feet)
Monterey Peninsula Landfill	14S/02E-17K01	180	210 - 250	95.0	115
	14S/02E-21F	180	200 - 261	43.0	157
Bill Baillee/Unknown	14S/02E-17L01	400	244 – 303 328 - 338	111.0	133

NOTES:
[a] Depth to water based on estimates from contours.
MRWPCA = Monterey Regional Water Pollution Control Agency
180 = 180-FTE Aquifer or 180-Foot Aquifer
400 = 400-Foot Aquifer
900 = 900-Foot Aquifer

SOURCE: Geoscience, 2015c; MRWMD, 2003.

[7] These representative wells were selected because adequate well construction details were available to assess screen depth.

The MCWRA compiles annual regional groundwater level data on a quarterly basis for the SVGB including the Pressure 180-Foot Aquifer and Pressure 400-Foot Aquifer[8] and compares the data to a representative dry water year and the 30-year average (MCWRA, 2018). According to MCWRA water level data, the 30-year average (1987 to 2017) groundwater levels in the Pressure 180-Foot Aquifer fluctuate seasonally about 17 feet: from about 22 feet above mean sea level (amsl) in the winter months to 5 feet amsl in the summer. The lowest seasonal average water levels are recorded during drought years where, seasonally, the maximum seasonal fluctuation can be similar to the 30-year average (about 17 feet) but the groundwater levels drop about 7 feet overall, as was the case during the peak of the last drought in 2015 when the groundwater levels reached an annual low of about 6 feet below mean sea level. The groundwater level trends are similar in the pressure 400-Foot Aquifer where the annual seasonal fluctuation is about 20 feet between: 7 feet amsl in the winter months to 17 feet below sea level in the summer. The drought year groundwater level fluctuation was similar to the 30-year average (about 22 feet) but the groundwater levels dropped about 7 feet in the dry water year of 2015.

The MCWRA groundwater level trend data characterizes the average and drought year seasonal fluctuation of groundwater in the Pressure 180- and 400-Foot Aquifer and thus provides a benchmark for analyzing the effect of the MPWSP on the local production wells (see EIR/EIS Table 4.4-10) within the MPWSP area of pumping influence. As shown on Table 8.2.8.2, above, there is over 100 vertical feet of groundwater column between the top of the well screens and the water level in the wells. This provides ample vertical distance to accommodate the seasonal and drought condition groundwater level fluctuation considering that the 30-year average fluctuation is 17 feet in the 180-Foot Aquifer and 20 feet in the 400-Foot Aquifer and dry year groundwater levels decline about 7 feet. Modeling projects that the proposed MPWSP pumping could add between 1 and 5 feet of additional drawdown to the seasonal fluctuation resulting in a maximum effect of about 12 feet of total drawdown during a dry year. While there could be an additional 1 to 5 feet of drawdown from MPWSP pumping, that increment of change would not negatively affect well yield or expose the screens leading to damage to the production well.

However, as discussed in the EIR/EIS Impact 4.4-3, CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not adversely affect groundwater levels in nearby wells within the SVGB. Under Applicant Proposed Measure 4.4-3, CalAm proposes to fund the expansion of the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot or more in the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer. The applicant-proposed measure would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that the project is causing groundwater levels to decline such that neighboring groundwater production wells are damaged or otherwise negatively affected by the proposed pumping, CalAm would arrange for an interim water supply and begin developing a

[8] As discussed in EIR/EIS Chapter 4.4, SVGB Pressure Area (or Subbasin) is traditionally recognized by the MCWRA. The Pressure Area consists of a series of aquifers include the 180-Foot Aquifer and the 400-Foot Aquifer, which underlie the CEMEX site and the area of influence of the proposed MPWSP pumping.

mutually agreed upon course of action to repair or deepen the well, restore groundwater yields by improving well efficiency, provide a long term supply or construct a new well.

Violation of Water Quality Standards

EIR/EIS Impact 4.4-4 concluded that the localized change in groundwater quality in the Dune Sand and 180-FTE Aquifers due to slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation supply available to other basin users. This conclusion is reasonable because, as discussed above, the capture zone that supplies water to the slant wells contains groundwater that was previously degraded by decades of seawater intrusion, and the TDS concentrations of this water -- ranging between brackish and saline -- makes it non-potable or suitable for irrigation supply. The proposed project would not violate water quality standards because slant well pumping would, over time, only replace the existing, highly brackish and saline ambient groundwater within the capture zone with seawater from the Monterey Bay; the project would not degrade an otherwise potable groundwater supply. Furthermore, the proposed project would not interrupt or eliminate a potable groundwater supply because the exchange of ambient brackish water with saline water would only occur within the confines of the coastal-adjacent capture zone and would not extend inland or encroach on areas of the SVGB that rely on fresher groundwater for potable or irrigation supply.

8.2.8.5 References Cited

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8.2.9 Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM)

COMMENTERS ADDRESSED IN MASTER RESPONSE 9

City of Marina	David Gorman
Marina Coast Water District	Jane Haines
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Carol Reeb
Public Water Now	Jan Shriner
Michael Baer	Form Letter 1
Kathy Biala	Form Letter 2
David Brown	Public Meeting Verbal Comments
Margaret-Anne Coppernoll	

Several comments received on the Draft EIR/EIS addressed Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM). Commenters stated that ERT and AEM data should be used to supplement the groundwater modeling and monitoring data that was used in the Draft EIR/EIS to analyze the impacts of the MPWSP on groundwater resources and some comments suggested that ERT should be used instead of the groundwater monitoring to analyze local water quality and seawater intrusion. In addition, certain commenters took issue with how Draft EIR/EIS Section 4.4.1.4 presented, on page 4.4-28, the ERT survey results and the work by Dr. Rosemary Knight.

This master response provides supplemental information and further clarification on ERT and its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. This master response also provides information and preliminary results from the SkyTEM airborne geophysical survey, also referred to as AEM, which was conducted in May 2017 near the city of Marina for Marina Coast Water District (MCWD) by the Stanford University School of Earth Energy and Environmental Sciences. Section 8.2.9.1 of this master response describes ERT technology and other previous geophysical studies conducted along the Monterey Coast and the Salinas Valley, and the application of the technology as a geophysical exploratory tool. Section 8.2.9.2 describes the limitations of ERT surveys as a method to monitor and assess seawater intrusion along the Monterey Coast and inland. Section 8.2.9.3 discusses the use of ERT data in the Draft EIR/EIS analysis of groundwater impacts and in the North Marina Groundwater Model, as well as a discussion of the preliminary results from the May 2017 AEM survey and how such results compare to the data, analysis and conclusions of the EIR/EIS. Section 8.2.9.3 concludes by explaining that CEQA and NEPA do not require a lead agency to conduct every recommended test and perform all recommended research to evaluate the impacts of a proposed project.

8.2.9.1 ERT Technology, Application, and Recent Studies

ERT is a geophysical survey method that measures electrical resistance through a material to create images of subsurface geologic and geochemical features and conditions. As discussed in

EIR/EIS Section 4.4.1.4, electrical resistivity imaging uses a series of sensors (referred to as electrodes) placed along a transect line on the ground surface. A direct electrical current is applied to the sensors and the resulting electrical field is measured along the ground using a second pair of electrodes, referred to as dipoles. The decrease in electrical current detected by the receiving dipoles is recorded and the resistivity is calculated based on the measured voltage, the distance between the electrodes, and the current flowing between electrodes. By varying the unit length, or depth of the dipoles as well as the distance between them, the horizontal and vertical distribution of the subsurface material's electrical properties can be recorded. Using computer processing, the distribution differences can represent a two-dimensional cross-sectional image of the subsurface. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that represent variations in electrical resistivity. In this application, variations in electrical resistivity can be interpreted as variations in the content of seawater, fresh water, or varying intermediate concentrations of brackish water (i.e., water with salinity in between seawater and fresh water). Salty water has low resistance due to the higher concentration of total dissolved solids (TDS) or salinity; fresh water has a higher resistance because of the relatively low concentration of TDS.

ERT is not a new technology and its application as a preliminary geophysical exploration method has been in use for decades. Electrical resistivity survey methods have assisted in groundwater and engineering studies to identify ground failure surfaces, bedrock quality, groundwater quality, saltwater boundaries, and areas of seawater intrusion. In addition to Stanford Professor Dr. Rosemary Knight's recent ERT work along the Monterey Bay coast, at least two other hydrogeologic studies using electrical resistivity geophysics have been conducted in the Salinas Valley. The first resistivity geophysics survey was completed in this area in 1990, and the second study was conducted in 1993 for the Monterey County Water Resources Agency (MCWRA) as part of its Salinas Valley Groundwater Basin Seawater Intrusion Delineation/Monitoring Well Construction Program using Controlled Source Audio-frequency Magnetotellurics (CSAMT), a nonintrusive, ground geophysical survey method for obtaining information about subsurface resistivity.

As mentioned in EIR/EIS Section 4.4.1.4, Dr. Knight, along with Stanford University graduate and post-graduate students and staff, completed two ERT surveys along the beaches of Monterey Bay. The two ERT surveys were conducted along a single transect and generated two-dimensional cross sections of conditions directly beneath the beach; as these surveys were a single transect on the beach, they did not capture subsurface conditions under the ocean, under CEMEX or any further inland. The first study was conducted in 2011-12 and included one 4-mile-long line along the beach from Seaside to Marina (Pidlisecky et al., 2016), ending south of the location of the proposed slant wells. This was a pilot study to: 1) demonstrate the viability of using large-offset ERT to image the distribution of subsurface freshwater and saltwater over a large spatial extent; and 2) gain insight in the distribution and geologic controls of seawater intrusion in the Monterey Bay region.

A second, more extensive ERT survey was conducted along a 25-mile transect along the coast of Monterey Bay in 2014 and 2015 (Goebel et al., 2017), extending from the Santa Cruz Mid-County Basin in the north, through a portion of the Pajaro Valley Groundwater Basin as well as a portion of

the Salinas Valley Groundwater Basin, to the Seaside Basin in the south. However, several coast line stretches, including the beach area fronting the CEMEX sand mining facility, were not surveyed due to access restrictions. The purpose of the 2014-2015 resistivity survey was to map the salinity of groundwater and further delineate the location and extent of seawater intrusion along the coastline. The resistivity sections were further interpreted by comparing the results with well logs, seismic reflection data, geologic reports, hydrologic reports, and land use maps from the region. The study determined that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of about 500 feet in the Seaside Basin Water Master (SBWM) Monitoring Wells SBWM-1 thru SBWM-4, and supported the understanding that the deeper aquifers in the Seaside Basin have not yet been affected by seawater intrusion. Although access limitations prevented placing ERT electrodes on the beach directly in front of the proposed slant well location at CEMEX, the nearby ERT survey results identified the seawater intrusion that is occurring in the 180-Foot Aquifer and 400-Foot Aquifer in the Salinas Valley Groundwater Basin.

In May 2017, Dr. Knight and graduate students conducted a third geophysical study consisting of an airborne geophysics survey of the coastal area of the Salinas Valley Groundwater Basin near Marina, extending inland from the Monterey Bay to Highway 183 and the Armstrong Ranch. A portion of the survey was also conducted off the Monterey Bay coast to capture and correlate resistivity data from the hydrogeology and water quality within the geologic units underlying the Bay. The survey employed a method known as Time Domain Electromagnetics (TEM); SkyTEM, a Denmark-based company, collected the survey data. SkyTEM introduced airborne geophysical surveys for groundwater studies around 2011 and has applied this technology in various applications throughout the world. The SkyTEM antenna, which is suspended from a helicopter at a height of about 150 feet above the ground, generates a primary magnetic field that is directed downward. This creates a secondary magnetic signal that is returned and detected by the receiver. The received signal is then converted to resistivity data and that data is inverted to produce output like that obtained from ERT. The SkyTEM survey, hereafter referred to as Airborne Electromagnetics (AEM), was conducted for MCWD and was designed to provide resistivity data that can be linked to the extent of seawater intrusion at the coast and further inland. Dr. Knight and graduate researcher Ian Gottschalk prepared a report in June 2017 (Gottschalk and Knight, 2017) with the preliminary interpretation of the AEM data acquisition and the initial results of the AEM survey were publicly presented to the Marina City Council on August 8, 2017 and provided to the Lead Agencies by MCWD in November 2017; see Section 8.5.2. The analysis of the AEM survey data relied on subsurface information provided by geophysical borehole logs from CalAm's nine monitoring well clusters installed in 2015 as part of the MPWSP Hydrogeologic Investigations Workplan. Preliminary results of the AEM study are discussed below in Section 8.2.9.2.

8.2.9.2 ERT/AEM Requires Ground-Truthing: Correlation with Actual Subsurface Data

ERT/AEM is a commonly used geophysical method; it can be used as a preliminary exploratory tool to provide data about the subsurface and is useful to identify data gaps and supplemental data needs. It is also useful for identifying preferred locations of monitoring and groundwater production wells. Dr. Knight's 2011 and 2014 ERT surveys demonstrated that there is generally a positive correlation between the ERT outputs and known subsurface geology and water

chemistry. However, as a general understanding, it should be noted that while the salinity of the groundwater in the aquifer materials can change subsurface resistivity measurements in seawater intruded areas, differences in the character of the subsurface geologic materials can also alter the measured resistivity (Goebel et al., 2017). Moreover, ERT/AEM requires correlation and ground-truthing with known data points that describe the geologic, groundwater, and water chemistry. In the case of the 2011 and 2014 ERT surveys, data from the four SBWM monitoring wells, seismic data, induction logging, and lithologic logs were critical to interpretation of ERT data. For the 2014 effort, use of downhole geophysical logs (E- logs) and drillers' reports led Goebel and others to "interpret the lowest resistivities in the inverted resistivity section as corresponding to the presence of saltwater, and the highest resistivities as corresponding to freshwater. Between these two end members, variation in lithology introduces uncertainty in the determination of fluid [groundwater] salinity" (Goebel et al., 2017)

ERT/AEM technology has the potential to augment subsurface data on seawater intrusion and subsurface groundwater conditions, but it cannot be considered a replacement for intrusive methods to evaluate the subsurface and groundwater aquifers (exploratory boreholes, groundwater monitoring wells, down-hole geophysics and modeling) because ERT/AEM has certain limitations. First, any obtained data would require verification and correlation through ground-truthing using groundwater monitoring wells and other subsurface data as control points. Without adequate ground-truthing or control points with actual subsurface lithology and water chemistry data, the ERT data could not be calibrated to actual site conditions.

Second, for each study area, there is a need for complementary data to transform the measured electrical resistivity measurements into relative salinity or TDS concentrations. As electrical resistivity depends on knowing both subsurface lithologic conditions and measured salinity or TDS concentrations of the groundwater, there is no universal salinity/TDS correlation with the specific color schemes displayed as ERT data (Knight, 2017). That correlation would have to be obtained from water testing from wells in the particular location to generate that correlation at that location. In Dr. Knight's 2011 and 2014 single-transect ERT surveys along the Monterey Coast, a review of down-hole E-log data allowed researchers to define a threshold above which resistivity corresponds to entirely freshwater-saturated materials (depicted as very blue in Dr. Knight's ERT studies), and another threshold below which resistivity corresponds to salt-water saturated materials (depicted as very red in Dr. Knight's ERT studies). As discussed in more detail below, the preliminary findings of the 2017 AEM survey show the bulk resistivity of the aquifer sediments combined with the resistivity of the water in those sediments but does not convert those resistivities to represent the actual groundwater quality. The final AEM report, which may provide that correlation, is expected in spring 2018.

Third, the ability of an ERT or AEM survey to identify the varying lithology and water chemistry in the distinct groundwater zones beneath the Salinas Valley area would depend on how the survey is designed and the desired image depth. ERT/AEM resolution decreases with depth and is less able to distinguish subtle changes in subsurface conditions as the depth increases. Therefore, if an ERT/AEM survey is not tailored for a specific shallower depth, it cannot necessarily be relied upon to accurately distinguish smaller zones of saline water from other zones producing water with lower salinity. This would be a concern for ERT/AEM surveys in the area near the city of Marina, for

example, where areal and vertical variations in lithology and, therefore, electrical properties, are numerous and widespread. However, Goebel et al. (2017) was able to show the value of using a combination of ERT data and traditional subsurface data (i.e. data from well bore logs, groundwater levels) to better understand the distribution of seawater intruded groundwater and fresher groundwater on a groundwater basin scale.

The AEM geophysical survey that was conducted in May 2017 will generate some usable data on the extent of groundwater aquifers and provide information as to the relative salinity/TDS concentrations of the water in those aquifers inland of the coast. This AEM technology makes it possible to complete numerous parallel transects efficiently and cost-effectively. It is likely, due to the recent advancements in the AEM technology, that the data will be more representative of the actual conditions than the geophysical studies conducted in the 1990s. However, as with the ERT results, the AEM data must be ground-truthed and correlated with the actual subsurface geology and water chemistry information using well logs, induction logs, and groundwater sampling results as control points. This is especially true for AEM assessments of seawater intrusion and identification of the seawater intrusion front. ERT/AEM data collected in the Monterey Bay area can be interpreted using well data. What can be extracted from the data (i.e., the extent to which lithology versus salinity/TDS can be resolved) depends on the quality of the complementary data. Locally, the verification of the recent AEM survey will include information from the monitoring wells installed by CalAm in the Marina area. The challenges with using AEM survey results to identify seawater intrusion and the seawater intrusion front could include difficulty resolving subtle changes in subsurface resistivity, identifying decreases in resistivity that do not necessarily indicate a decrease in salinity/TDS concentration, and capturing lateral resistivity changes that correlate with geologic conditions rather than water quality.

8.2.9.3 Use of ERT/AEM Results in the Analysis of Groundwater Impacts in the EIR/EIS

The Draft EIR/EIS mentioned Dr. Knight's ERT work along the Monterey Coast (EIR/EIS Section 4.4.1.4) as informational background for the Environmental Setting, and to recognize the current, notable efforts to apply geophysical methodology to the further assessment of seawater intrusion. Some comments assert that the analysis of groundwater in the EIR/EIS is incomplete or flawed because it did not incorporate findings from Dr. Knight's ERT surveys along the Monterey Coast. As explained below, the approach in the Draft EIR/EIS was appropriate, and minor clarifications and updates have been made in Final EIR/EIS Section 4.4.1.4, regarding the use of ERT/AEM data that do not change the conclusions reached in the EIR/EIS related to groundwater impacts.

Use of 2011 and 2014 ERT Survey Results in Draft EIR/EIS

The groundwater analysis did not incorporate findings from Dr. Knight's studies for three key reasons. First, the ERT survey results did not add new significant information that was not already known regarding the extent of seawater intrusion along the Monterey Coast or the hydrogeological conditions in the project area. Dr. Knight's 2011 and 2014 ERT surveys along the Monterey Coast captured only static images of subsurface conditions and water quality directly under the beach at

that time; they did not extend inland and they did not include the CEMEX property where project slant wells are proposed to be located. While they were interesting data from a scientific perspective, especially considering the resolution at depth, they did not provide additional useful information for the analysis of impacts for the MPWSP, primarily because the extent of seawater intrusion conditions at the coast have been confirmed for years through groundwater monitoring. Information regarding subsurface geology, groundwater flow and occurrence, and groundwater chemistry used in the EIR/EIS and for the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) development and validation were obtained from known scientific sources and included some of the same sources that Dr. Knight's team used to verify the ERT survey findings. Furthermore, the ERT results are reported as a cross-section of the groundwater system, and cannot be reliably extrapolated into the $NMGWM^{2016}$ areas that extend substantial distances west and east of the ERT section.

Use of 2011 and 2014 ERT Survey Data for $NMGWM^{2016}$

The data from the 2011 and 2014 ERT surveys did not provide useful supplemental data for input or calibration of the updated $NMGWM^{2016}$. As described in EIR/EIS Section 4.4.4.2, groundwater modeling using the $NMGWM^{2016}$ was the primary tool used to evaluate the response from pumping at the slant wells and to analyze the project impacts on groundwater resources in accordance with CEQA thresholds. The $NMGWM^{2016}$ was employed to calculate the water level decline in response to proposed MPWSP pumping, specifically, to estimate the cone of depression. MPWSP slant well pumping effects on the inland movement of the seawater intrusion front and the characteristics of the capture zone were evaluated using the $NMGWM^{2016}$ and particle tracking with the MODPATH code. The $NMGWM^{2016}$ is a detailed model, the construction of which is thoroughly documented in EIR/EIS Appendix E2. The input data for the models consists of lithologic conditions observed in drilling cores, and other field data. Given the development history, regional focus, calibration, and measured data, the $NMGWM^{2016}$ is the industry standard and best available technology to simulate the groundwater response from the proposed MPWSP pumping and to analyze the environmental impacts under CEQA and NEPA. Groundwater modeling, informed by a reasonable understanding of the local hydrogeologic conditions, which is agreed upon by experts in hydrogeology, provided sufficient information to assess impacts on groundwater in the project area. Master Response 12, The North Marina Groundwater Model (v. 2016), addresses comments about the model.

The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The ERT studies produced a 2-dimensional cross-sectional resistivity map of single transects along the coast that showed estimates of bulk resistivity of geologic materials and pore water at an instant in time. The estimated bulk resistivities did not represent actual groundwater quality and even if they had, the $NMGWM^{2016}$ would not benefit nor would it be improved by ERT groundwater resistivity data because the model did not project changes in groundwater quality. The resistivity estimates provided by the 2011 and 2014 surveys, therefore, would not add relevant information to the calibration or operation of the $NMGWM^{2016}$.

Use of 2017 Preliminary AEM Results in the EIR/EIS

A preliminary interpretation of the May 2017 AEM survey that was conducted for MCWD was prepared in June 2017, publicly presented at a Marina City Council meeting in August 2017, and provided to the Lead Agencies in November 2017; see Section 8.5.2. According to the preliminary report, subsurface areas of low resistivity indicate the presence of saltwater and areas of high resistivity indicate areas that contain fresh groundwater. Based on this, the preliminary interpretation concluded that there is a "sizable isolated lens of freshwater" in the Dune Sand and 180-FTE Aquifer and the presumption of saltwater intrusion in this area appears incorrect. For the purposes of the AEM study, Dr. Knight's team defined an isolated freshwater lens as a water-bearing unit with anomalously low concentrations of TDS in an area otherwise known to be intruded by saltwater (Gottschalk and Knight, 2017).

As discussed above in Section 8.2.9.2, AEM data must be validated using physical data so it provides a consistent interpretation of subsurface conditions. Like ERT, AEM is unable to distinguish between fresh water filled fine-grained sediments and saline water filled sand sediments without the presence of a control point such as a boring or monitoring well (HWG, 2017; see EIR/EIS Appendix E3). Dr. Knight's team requested, received from CalAm, and used geophysical logs of MPWSP monitoring well clusters MW-1, MW-4, and MW-7 as control points in developing its resistivity profiling.[1] These geophysical logs were created when the wells were drilled in the latter part of 2014 and spring 2015. The resistivity shown on the geophysical logs, which Dr. Knight's team relied upon and the AEM survey output represent, is the bulk resistivity of the aquifer sediments (clay, silts clays) combined with the resistivity of the water within the aquifer; this combined resistivity is not the same as the resistivity (or conductivity by inverse) of the groundwater within the aquifer.

As discussed in detail in EIR/EIS Appendix E3, the Hydrogeologic Working Group (HWG) acquired the cross-sectional profile that was developed and presented as preliminary AEM study in August 2017 and overlaid the known hydrostratigraphy on it to show the perched and regional water tables. The overlay shows dark blue areas in the Marina uplands representing the unsaturated zone above the perched water table and a seawater wedge in the 180-Foot Aquifer with lower salinity in the shallow portion and higher salinity water in the lower portion. The 400-Foot Aquifer is shown to be seawater intruded throughout this profile. The observations and interpretations associated with the AEM data profile and HWG's hydrostratigraphic overlay are consistent with the hydrogeologic conceptual model developed by the HWG, confirmed by the Lead Agencies and used in the NMGWM[2016].

As noted above, the resistivity values shown on the geophysical logs of the monitoring wells, which were used to correlate the preliminary AEM survey data, represent bulk resistivity of the aquifer sediments and groundwater and do not represent the resistivity of just the groundwater. For example, when Dr. Knight's preliminary AEM study results show areas of dark blue (high resistivity, low conductivity, indicative of a fresher water source), it represents the combined resistivity of the sediments and the groundwater but does not necessarily mean that there is potable,

[1] Other than these three control points, most of the profiles developed by Dr. Knight's team to illustrate preliminary AEM findings do not show control points such as well logs or water quality sampling points.

freshwater in a particular zone. The only way to use the preliminary AEM survey data to represent the actual quality of the groundwater is to correlate it relative to actual groundwater quality data obtained from the monitoring wells. That is what the HWG did and the results are provided in EIR/EIS Appendix E3. The HWG used the actual groundwater conductivity measurements from a data set that has been compiled from the MPWSP monitoring well network for over 2 years to modify the presentation of Dr. Knight's the preliminary AEM survey findings. The HWG chose to use conductivity measurements taken in May 2017 so they would closely correlate to the time that the Stanford team conducted the AEM survey. In Appendix E3, the HWG presents an example to illustrate the difference between correlating groundwater quality with over two-year-old down-hole geophysical logs, as Dr. Knight's team did in its preliminary AEM findings, versus using actual, current groundwater data obtained from the well to correlate the AEM data, as was done by the HWG. The example considers geophysical log of MW-7. According to the MW-7 geophysical log (see Figure 3-9 in Appendix E-3), the resistivity in monitoring well cluster MW-7 at an elevation of -20 meters (correlative to MW-7S), is 100 ohm-meters (ohm-m), which is equivalent to a conductivity of 100 microsiemens per centimeter (µs/cm) or a TDS of about 68 mg/L. This could be considered fresher water considering the recommended California Secondary Maximum Contaminant Level (MCL) (Cal. Code Regs., tit. 22, § 64449) for TDS in drinking water is only 500 mg/L. However, compared to the actual measured TDS in the monitoring well in May 2017, this estimated TDS concentration is very low and inconsistent with actual groundwater data in and around monitoring well MW-7. Water chemistry monitoring over the past two years at MW-7S has shown that the conductivity of the groundwater near MW-7 is on average 2,160 µs/cm, representing a TDS of about 1,470 mg/L, which far exceeds California's MCL for drinking water. A TDS reading of that magnitude is greater than what was predicted using geophysical log data and shows that the groundwater is far from "fresh", as reported by Dr. Knight's team. This example illustrates how the preliminary AEM results, which have been presented to the public by the MCWD and Dr. Knight's team, do not accurately depict and may exceedingly underestimate the actual TDS concentrations in the groundwater. This finding underscores the need to use caution when relying on the preliminary AEM results to determine the presence or absence of isolated lenses of freshwater in the Dune Sand or 180-Foot aquifer.

As described above, the HWG modified the preliminary AEM resistivity profile to more correctly illustrate the distribution of water quality in the aquifers using the same control points but using known groundwater conductivity measured in the monitoring wells during May 2017 rather than geophysical logs from 2015. The results of the HWG modification of the AEM resistivity profile shows a distribution of groundwater chemistry that is consistent with the findings of the HWG hydrogeologic investigation and generally consistent with the annual salinity mapping for the 180-Foot and 400-Foot Aquifers published by the Monterey County Water Resources Agency. The red and dark red colors on the profile modified by the HWG (HWG, 2017) clearly indicate a two-dimensional view of a seawater intrusion front that is present in the Marina area. The AEM survey provides data to help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area (HWG, 2017).

As described in Master Response 8, Project Source Water and Seawater Intrusion, the MPWSP would capture ambient groundwater from a coastal area that is heavily intruded with seawater

and, as pumping continues in that capture zone, seawater would eventually replace the ambient, intruded groundwater. Both the preliminary AEM survey results released by Dr. Knight's team and the modification of those results by the HWG to depict actual groundwater quality, clearly show the band of highly brackish to saline groundwater along the coast where the MPSWP slant wells would be extracting water. If there are pockets or lenses of fresher groundwater inland and outside of the MPWSP capture zone, it is of minor consequence because while the water located inland from the coast may be less intruded and have lower TDS, it would not be drawn into and would not become source water for the MPWSP slant wells.

CEQA and NEPA Perspective on Use of ERT/AEM in EIR/EIS

Several comments assert the EIR/EIS is deficient since it did not incorporate the ERT survey data or the May 2017 AEM survey data, that the ERT and AEM survey data should be incorporated and the Draft EIR/EIS should be recirculated. The Lead Agencies reviewed the ERT/AEM data and, as noted above, the HWG modification of the AEM resistivity profile shows a distribution of groundwater chemistry that is consistent with the findings of the HWG hydrogeologic investigation and generally consistent with the annual salinity mapping for the 180-Foot and 400-Foot Aquifers published by the Monterey County Water Resources Agency; no changes are required to the Draft EIR/EIS. The Lead Agencies considered this additional technology and while they are required to utilize best available science to make conclusions on the potential environmental harm of a project, the use of every possible technology available to evaluate the impacts of the project is not required. As explained previously, the Lead Agencies used the NMGWM^{2016} for the analysis. This master response demonstrates that the ERT/AEM data (once ground-truthed) and the underlying parameters of the NMGWM^{2016} are consistent; thus, the NMGWM^{2016} is sufficiently credible to be used in evaluating project impacts.[2]

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[2] "CEQA does not require a lead agency to conduct every recommended test and perform all recommended research to evaluate the impacts of a proposed project. The fact that additional studies might be helpful does not mean that they are required." (*Clover Valley Foundation v. City of Rocklin* (2011)197 Cal.App.4th 200, 245, quoting *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1396.) "CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters." (CEQA Guidelines§ 15204, subd. (a).)

The studies on which an EIR/EIS is based need not be irrefutable, nor are analyses deemed inadequate because they could have been better or because there is another study or analysis that may provide more information. (See, *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 795; *Barthelemy v. Chino Basin Mun. Water Dist.* (1995) 38 Cal.App.4th 1609, 1620; *Laurel Heights Improvement Assn v. Regents of University of California* (1988) 47 Cal. 3d 376; *Berkeley Keep Jets Over the Bay Committee v. Board of Port Com'rs* (2001) 91 Cal.App.4th 1344, 1355 - 1356.) The only relevant issue is whether the discussion of environmental impacts relied on in the EIR/EIS reasonably sets forth sufficient information to foster informed public participation and to enable the decision makers to consider the environmental factors necessary to make a reasoned decision, regardless of whether a new methodology is available.

In *Laurel Heights Improvement Assn v. Regents of University of California*, *supra*, 47 Cal. 3d at 409, the final EIR described two environmental sampling studies conducted at the UC San Francisco Parnassus campus in 1984 and 1986, which established that research activities had not resulted in statistically significant increases in the deposition of organic chemicals or radioactive materials in the vicinity of the campus. The Court of Appeal and the project opponent found the studies lacking and concluded the EIR should not have relied on them, but the Supreme Court disagreed. It was irrelevant that the studies might be lacking in certain particulars or that the studies may not have conclusively demonstrated a lack of environmental effect; rather, the relevant issue was whether the studies were sufficiently credible to be considered as part of the total evidence to support the conclusions in the EIR.

8.2.9.4 References

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8.2.10 Master Response 10: Environmental Baseline under CEQA and NEPA

COMMENTERS ADDRESSED IN MASTER RESPONSE 10

City of Marina	Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation
Marina Coast Water District	Point Blue Conservation Science
California Unions for Reliable Energy	Public Water Now
Citizens for Just Water	

This Master Response has been prepared in response to comments asking why the EIR/EIS did not include a separate baseline report and why the baseline of 2012 was selected by the Lead Agencies, as well as claims that the selection and/or characterization of the baseline conditions against which environmental impacts were measured did not comply with CEQA. As is common with most EIRs and EISs, the CEQA and NEPA baseline has been integrated into the EIR/EIS and there was no specific baseline report prepared. As CEQA Guidelines Section 15125 explains, "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." NEPA (40 CFR 1502.15) requires that an "environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives."

Every resource section in EIR/EIS Chapter 4 (and in Section 5.5, Alternatives Impact Analysis) includes a setting/affected environment section and information on field studies conducted to develop the baseline. EIR/EIS Section 4.1.3, Baseline Conditions, explains the baseline:

> The baseline for this EIR/EIS is the existing condition on or about October 5, 2012, updated with new data as appropriate, which is when the CPUC issued a Notice of Preparation (NOP) for the proposed project to local, state, and federal agencies, Native American tribal organizations, and other interested parties. Although the Notice of Intent for the NEPA review contained within this document was issued in 2015, use of the 2012 baseline is appropriate and reasonable because (i) 2012 is a very recent point in time; (ii) the CPUC invested considerable resources amassing 2012 background/baseline data for the April 2015 Draft EIR; and (iii) environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions. The environmental baseline reflects the pre-project environmental conditions to which the potential impacts of the proposed project and all alternatives are compared.
>
> Since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate. This document notes those updates in its discussions of the Setting/Affected Environment for the various resource areas and applies them in the pertinent analyses. For instance, in

> Section 4.6, Terrestrial Biological Resources, updates to survey information for biological resources are described in Section 4.6.1.2, Information Sources and Survey Methodology.

As noted by the Department of Commerce, NOAA Office of National Marine Sanctuaries in its Notice of Intent to Prepare an EIS (80 FR 51787 dated Wednesday, August 26, 2015), "MBNMS has requested CPUC to re-issue the Project EIR as part of a joint draft CEQA/NEPA document." Therefore, the baseline used in this EIR/EIS represents existing conditions at the time the CEQA NOP was issued, updated as appropriate to reflect conditions since the analysis was re-initiated by the introduction of the NEPA Lead Agency.

8.2.11 Master Response 11: CalAm Test Slant Well

COMMENTERS ADDRESSED IN MASTER RESPONSE 11

City of Marina	Bob Coble
Marina Coast Water District	Margaret-Anne Coppernoll
Ag Land Trust	Myrleen Fisher
California Unions for Reliable Energy (CURE)	Jane Haines
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Thomas Moore
Public Water Now	Hebard Olsen
Water Ratepayers Association of the Monterey Peninsula	Nancy Selfridge
Michael Baer	Jan Shriner
David Beech	Form Letters 1 & 2
Kathy Biala	Public Meeting Verbal Comments
Charles Cech	

This Master Response addresses comments and questions about the existing CalAm test slant well, including: clarification of its background and purpose; its permitting and CEQA/NEPA review process; the monitoring wells and pump tests and how these data have been used in this EIR/EIS; and the conversion of the test slant well to a production well. This Master Response also summarizes data concerning other locations within California where slant well technology for desalination plants has been explored, but such technology has not been pursued, and explains why such evolving technology was deemed infeasible in those circumstances, in those locations, and how those conclusions don't necessarily apply to the MPWSP. Supplemental information provided in this Master Response is for clarification and does not change any of the conclusions made in the EIR/EIS.

8.2.11.1 Background

In 2013, CalAm proposed to install and operate a test slant well on the CEMEX site to gather technical data related to the feasibility of a subsurface intake system and to facilitate design and intake siting for the proposed Monterey Peninsula Water Supply Project (MPWSP), as well as to gather information about the potential effects of the proposed project on the groundwater aquifers. As described in Draft EIR/EIS Section 2.6 on page 2-30, the topic of water rights is relevant to the MPWSP in the context of project feasibility. EIR/EIS Section 2.6.1 notes that since the SWRCB is the state agency authorized to exercise adjudicatory and regulatory functions in the areas of water rights, the CPUC asked that the SWRCB issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. In response, the SWRCB prepared its *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*. That July 2013 report is attached to the EIR/EIS as Appendix B2, and as described therein, the SWRCB recommended a series of test boring/wells to assess the hydrogeologic conditions at the CEMEX site, and aquifer testing to determine the pumping effects on both the Dune Sand Aquifer and the underlying 180-Foot Aquifer. As specified in EIR/EIS Appendix B2 Section 8, "Pre-project

conditions should be identified prior to aquifer testing. Aquifer tests should mimic proposed pumping rates." The installation and operation of the test slant well was in response to the SWRCB recommendation to collect the required information, and to inform CalAm's final design of the production wells.

8.2.11.2 Coastal Development Permit and CEQA Review for Test Slant Well

Several comments question the adequacy of the CEQA/NEPA review process conducted for the test slant well, challenge the EIR/EIS representation of the CEQA/NEPA review process for the test slant well, and question whether, or opine that, CEQA/NEPA was avoided completely. A test slant well, even as a temporary exploratory project, requires a Coastal Development Permit (CDP). As noted in the revised footnotes in EIR/EIS Sections 1.4.4 and 3.1, CalAm applied to the City of Marina for a CDP in July 2013, and the City oversaw the preparation of a CEQA Initial Study (IS) and Mitigated Negative Declaration (MND) for the project in 2014 (SWCA, 2014a). The IS/MND indicated that the proposed test slant well project had the potential to result in significant adverse effects on the environment, but that any such effects could be avoided or reduced to a less-than-significant level through project design modifications and development and implementation of feasible mitigation.

On July 10, 2014, the City of Marina Planning Commission declined to adopt the City-prepared IS/MND, and declined to approve or disapprove a CDP for the proposed CalAm test slant well project. CalAm appealed the Planning Commission's decisions to the Marina City Council; on September 4, 2014, the City Council also declined to adopt the IS/MND and denied CalAm's application for development of the test slant well in the coastal zone. CalAm filed a timely appeal with the California Coastal Commission (CCC), pursuant to Coastal Act Section 30603(a)(5), which allows appeals of any development that constitutes a major public works facility.

The CCC considered CalAm's application for a CDP on appeal at its November 2014 meeting, and issued Coastal Development Permit #A-3-MRA-14-0050, dated December 8, 2014, to CalAm for the test slant well.

As noted in the October 31, 2014 Staff Report (CCC, 2014), the CCC approvals of CDP applications are to be consistent with any applicable requirements of CEQA. CEQA Guidelines Section 21080.5(d)(2)(A) prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. The CCC identified and adopted 17 special conditions necessary to avoid, minimize, or mitigate the potential for the proposed test slant well to result in significant adverse environmental impacts and found that, within the meaning of CEQA, the proposed project, as conditioned, was adequately mitigated and consistent with CEQA.

8.2.11.3 MBNMS Authorizations and NEPA Review for Test Slant Well

On June 25, 2013, CalAm submitted a Request for Authorization to MBNMS for the issuance of two separate authorizations for the test slant well project: (1) authorization of the CDP issued by

the CCC to allow CalAm's proposed drilling into the submerged lands of MBNMS; and (2) authorization of a National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Coast Regional Water Quality Control Board to allow CalAm's proposed discharge of water into MBNMS. See EIR/EIS Sections 1.4.4 and 3.1. MBNMS oversaw the preparation of an Environmental Assessment (EA) for the test slant well project, in compliance with NEPA, and a Final EA was published in September 2014 (SWCA, 2014b). MBNMS authorized the CDP on December 9, 2014 and the NPDES permit on January 6, 2015.

8.2.11.4 Monitoring Wells

One of the special conditions of the CDP, Special Condition 11 ("Protection of Nearby Wells"), required CalAm to install monitoring devices in a minimum of four wells on the CEMEX site within 2,000 feet of the test well, and one or more offsite wells, to record water and salinity levels within the wells. Between December 2014 and April 2015, CalAm constructed the test slant well and five monitoring well clusters (MW-1, MW-3, MW-4, MW-5, and MW-6) with each cluster consisting of three, 4-inch diameter monitoring wells completed at different depth intervals corresponding to the Dune Sands, 180-Foot, and 400-Foot Aquifers (Shallow – MW-4S, Medium – MW-4M, and Deep – MW-4D, respectively), meeting this Special Condition 11 requirement for monitoring wells.

Special Condition 11 also required that prior to commencement of pumping of the test slant well, the Hydrogeologic Working Group (HWG; see also Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5) establish baseline water levels and Total Dissolved Solids (TDS) levels in those monitoring wells and provide these levels to the Executive Director of the CCC. Data monitoring began on February 19, 2015, and five monitoring reports were prepared prior to starting the pump test. An April 15, 2015 report titled *Baseline Water and Total Dissolved Solids Levels* was prepared in compliance with this provision of Special Condition 11, and included the results of Monitoring Report Nos. 1 through 5. That Baseline Report is referenced in EIR/EIS Section 4.4, Groundwater Resources, as Geoscience, 2015b. As confirmed in that report, groundwater level measurements and groundwater quality samples were collected from the test slant well and all monitoring wells, (Monitoring Reports Nos. 1 through 4) prior to the initiation of test well pumping.

8.2.11.5 The Long-Term Pump Test

Test slant well pumping was performed in two phases: a step-drawdown and 5-day constant rate pump test[1] immediately following construction and development of the test slant well, followed by the long-term pump test. The long-term[2] pump test commenced on April 22, 2015. Special Condition 11 required CalAm to stop pumping the test slant well if water levels were to drop more than 1.5 feet, or if TDS were to levels increase more than 2,000 parts per million from pre-pump test conditions. After 44 days of pumping (June 5, 2015), the test slant well was shut

1 In a step-drawdown test, the discharge rate in the pumping well is increased from an initially low constant rate to a progressively higher constant rate, whereas a 5-day constant rate test would use the same rate for 5 days.

2 The HWG Work Plan (Geoscience, 2013) makes reference to long-term as being 18 months (540 days) with the purpose of determining if there are seasonal or annual variations in source water quality due to potential changes in precipitation or upstream groundwater production.

off in compliance with Special Condition 11 because water levels were approaching the maximum allowable water level decrease. In a June 2015 memo to the CCC (HWG, 2015), the HWG provided the CCC with two analyses of groundwater elevations and TDS trends in the compliance monitoring wells, and demonstrated the influence of regional pumping.

In July 2015, the Executive Director of the CCC (Dr. Charles F. Lester) informed CalAm that the water level decrease appeared to be caused in part by the pump test and acknowledged that based on the data, several influences other than pumping of the test slant well were also responsible for the decrease in water levels (CCC, 2015). CalAm was required to submit an application for an amendment to the CDP, and the CCC recommended to CalAm that the HWG develop a proposed amendment to Special Condition 11 that better incorporated the local and regional trends in water levels and salinity.

Collection of data from the monitoring wells continued during the approximate 144-day test slant well shutdown period, and weekly reports of changes in groundwater levels and salinity during the test slant well outage continued to be prepared and posted online[3]; water levels continued to decrease in some of the monitoring wells while the test well was not pumping.

Revisions were made to Special Condition 11 of the CDP. Specifically, these revisions (CDP Amendment A-3-MRA-14-0050-A1 dated October 13, 2015) state:

- The HWG shall review weekly monitoring data and prepare a monthly report that shall be submitted to the Executive Director [of the CCC] documenting the regional/background groundwater elevation trends and TDS level trends.
- If data collected during the pump test from MW-4S or MW-4M exhibit a decrease in groundwater levels that exceed 1.5 feet ***from regional groundwater elevation trends***, or if TDS levels increase more than two thousand parts per million ***from regional TDS level trends***, the Permittee shall immediately stop the pump test and inform the Executive Director [of the CCC]. [emphasis added]

Test Well Outages

Following approval of these revisions to Special Condition 11, the long-term pumping of the test slant well resumed on October 27, 2015, and results, including a table of outages, have been made publicly available online[2]. The test slant well experienced numerous short term outages in addition to the 144-day shutdown. Comments on the Draft EIR/EIS questioned the reasons for the outages and requested the disclosure of their frequency. Over the course of the two-year test slant well operations (730 days from April 2015 to April 2017), the test slant well operated for approximately 500 days, and was idle for about 230 days. The largest blocks of idle time occurred during the voluntary shutdown between June 5 and October 27, 2015 (144 days), during the winter storm events in March/April 2016 (60 days) and in December 2016/January 2017 (18 days). All other outages (19 days total) were the result of power interruptions.

3 https://www.watersupplyproject.org/test-well

The following table summarizes the details of the pumping interruptions encountered during the test slant well long-term pump test, through April 2017[4]:

Pump Test Off		Pump Test On		Hours Off	Notes
Date	Time	Date	Time		
		4/22/2015	3:20 PM		Start of long-term pump test
6/5/2015	12:00 PM	10/27/2015	3:03 PM	3,459	Voluntary shutdown: revisions to CDP Special Condition 11
1/19/2016	11:10 AM	1/20/2016	8:51 AM	22	PG&E power interruptions
1/22/2016	11:53 PM	1/24/2016	11:01 AM	35	
1/30/2016	2:50 AM	1/30/2016	11:08 AM	8	
1/31/2016	3:29 PM	2/1/2016	11:20 AM	20	
2/12/2016	2:43 AM	2/12/2016	10:51 AM	8	
3/1/2016	8:30 AM	3/2/2016	1:40 PM	29	Discharge line repairs from winter storm event
3/4/2016	10:10 AM	5/2/2016	1:22 PM	1,419	
5/17/2016	11:59 PM	5/18/2016	2:35 PM	15	PG&E power interruptions
5/25/2016	1:28 PM	5/25/2016	5:21 PM	4	
6/3/2016	7:45 AM	6/3/2016	9:08 AM	1	
7/8/2016	6:12 AM	7/8/2016	7:17 AM	1	
7/14/2016	10:21 AM	7/14/2016	11:36 AM	1	
8/13/2016	11:32 AM	8/16/2016	7:29 PM	80	
10/3/2016	7:55 PM	10/5/2016	6:23 PM	46	
12/24/2016	9:18 AM	1/11/2017	9:23 AM	432	PG&E power interruption & discharge line repair
1/20/2017	7:42 PM	1/25/2017	2:43 PM	115	PG&E power interruptions
2/17/2017	5:43 AM	2/23/2017	9:47 AM	148	
2/23/2017	9:57 AM	2/23/2017	12:13 PM	2	
3/13/2017	2:48 PM	3/13/2017	4:14 PM	1	
3/22/2017	4:54 AM	3/22/2017	9:09 AM	4	
4/10/2017	4:04 PM	4/10/2017	10:32 AM	6	

SOURCE: HWG, Monthly Monitoring Report No. 25, December 2017.

Results of the Long-Term Pump Test

The *MPWSP Test Slant Well Long Term Pumping Monthly Monitoring Report No. 25* (November 1 through November 30, 2017) was published by the HWG on December 13, 2017. Rainfall events recorded from the local Marina, CA station are overlaid on the water level plots for MW-4 (see **Figure 8.2.11-1**), the compliance point for Special Condition 11. The larger precipitation events that took place between mid-October 2016 and late March 2017 likely contributed (through precipitation recharge and/or impacts of precipitation events on basin pumping) to the upward trend of groundwater levels from approximately mid-October 2016 in MW-4S through early March 2017. Overall, the seasonal trend of groundwater elevations at MW-4 from April 2015 through October 2017 are consistent regardless of the test slant well pump being on or off (see Figure 8.2.11-1).

[4] The test slant well continued to operate through November 2017 (an additional operating time of 6 months, or 180-days, or 4,320 hours) and experienced approximately 500 hours of additional outages.

Groundwater elevation and TDS changes in the compliance well (MW-4) showed no measurable impact that can be attributed to test slant well pumping throughout the monitoring record shown in Figure 8.2.11-1. The shallow aquifer (MW-4S) showed distinct seasonal trends from the start of test slant well pumping on April 22, 2015. A downward trend occurred through the summer of 2015 (even though the test slant well was not pumping), a flat trend occurred during the fall of 2015, followed by an upward trend through the winter of 2015/2016 (even though the test slant well was pumping). A downward trend began again in mid-April 2016 just prior to the May 2, 2016 re-start of the test slant well, and continued about halfway through October 2016, albeit with a slightly decreasing slope from late July through October 2016. A seasonal increase in water levels, likely due to onset of rainfall and/or a decline in regional groundwater pumping, began in mid-October 2016 and continued through the early part of March 2017.

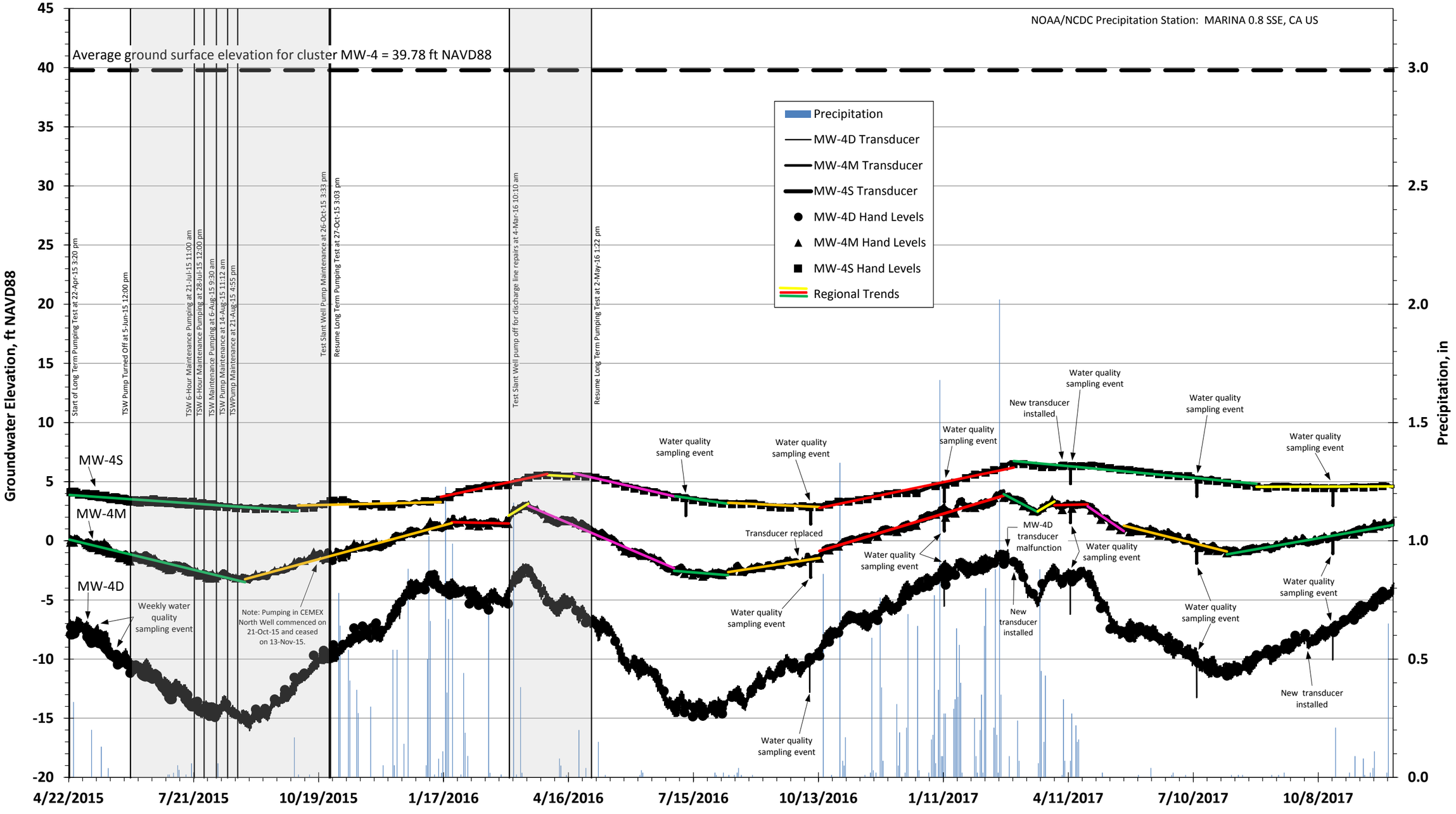
Similar to the shallow aquifer, MW-4M (at medium depth corresponding to the 180-Foot Aquifer) groundwater levels showed a distinct seasonal trend, with decreasing water levels in the spring and summer months and increasing water levels during fall and winter. There was a downward trend from mid-March through early July 2016, corresponding to a period of decreased precipitation and increased regional pumping (the start of irrigation season). The slope of the water level surface appears to have flattened in July 2016, with a slight upward slope beginning in August 2016, and a continued increasing slope through the early part of March 2017, likely as a result of decreased regional pumping (the end of the irrigation season) and the onset of the rainy season.

In summary, groundwater elevations in the Dune Sands Aquifer (MW-4S) and the 180-FTE Aquifer (MW-4M) reflected the effects of increased regional pumping in the summer months during irrigation season, and reduced irrigation pumping in the winter months, especially following rain events.

Based on data collected before and after the 144-day shutdown of test well pumping and subsequent power-related short-term test slant well outages, the HWG concluded and reported to the CCC in Monthly Monitoring Report No. 25 (HWG, 2017) that between April 2015 and November 2017:

- Groundwater levels in MW-4S and MW-4M continued to display regional trends. Therefore, groundwater levels in MW-4S and MW-4M continued to show no influences that can be attributed to test slant well pumping or non-pumping during the period (see Figure 8.2.11-1.) The groundwater elevations in MW-4S and MW-4M continued to decline when the test slant well pump was turned off between June and October 2015, and the groundwater elevations rose and then fell when the test slant well pump was turned off during March and April 2016. See Figure 8.2.11-1.
- TDS concentrations in MW-4S and MW-4M continued to display regional and/or seasonal trends, with water produced by the test slant well ranging from 25,400 mg/l[5] of TDS at start-up in April 2015 (76 percent ocean water salinity) to 31,800 mg/l in November 2016 (95 percent ocean water salinity). See HWG 2017, Table 3.

[5] Seawater generally has a TDS of 33,500 mg/l.



SOURCE: Geoscience, 2017

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Figure 8.2.11-1

Groundwater Elevation in MPWSP MW-4

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Groundwater level changes and TDS changes in the compliance well (MW-4S and MW-4M) continued to indicate no impact from test slant well pumping or non-pumping, and groundwater and TDS levels continued to remain within compliance with CCC permit requirements for the test slant well long-term pump test program.

8.2.11.6 Use of the Test Well Data in the EIR/EIS

The available test slant well pumping and monitoring data was used to assess the reliability of the North Marina Groundwater Model that was used in the EIR/EIS for simulating drawdown from slant well pumping (referred to as NMGWM^{2016}). The measured/observed drawdown was calculated from measured water levels in the monitoring wells during and after cessation of test slant well pumping, and was plotted against the corresponding model-calculated drawdown and recovery. There is generally good agreement between the model-calculated and measured timing of drawdown and recovery. See EIR/EIS Appendix E2, Section 4.2, and Figure 4.6.

The test slant well was also used to collect water quality data, which is shown in Table 3 in each of the Monthly Monitoring Reports, and was used in the EIR/EIS evaluation of the proposed project's conformance with Ocean Plan water quality objectives (see Draft EIR/EIS Section 4.3 on page 4.3-93, and Appendix D3). The salinity in the test slant well was also monitored and varied over time, ranging from 76 percent ocean water salinity at slant well start-up, to 95 percent ocean water salinity in November 2016, as discussed above in Section 8.2.11.5.

8.2.11.7 Conversion of Test Slant Well to Permanent Well

Some commenters on the Draft EIR/EIS question the appropriateness of converting the test slant well into a permanent well without complying with CEQA or NEPA, and because it was proposed and permitted as a "temporary" facility. The conversion of the test slant well to a permanent well is part of the proposed project and is evaluated in the EIR/EIS, as is made clear throughout the document. As stated in EIR/EIS Section 3.2.1.1, upon completion of the aquifer pump testing, CalAm proposes to convert the test slant well into a permanent well and operate it as part of the MPWSP source water intake system. Both the construction of the additional conveyance and treatment facilities needed to convert the test slant well into a permanent well and the long-term operation and maintenance of the converted test slant well are part of the proposed project, and thus evaluated in this EIR/EIS. Further, EIR/EIS Section 3.2 explains that if the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be decommissioned. However, if the proposed subsurface slant wells at CEMEX are ultimately approved as part of the proposed project, CalAm would convert the test slant well into a permanent well and operate it as part of the source water intake system. The conversion and long-term operation of the well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project.

CalAm has always proposed to convert the test slant well into a permanent well if testing at CEMEX was successful and the MPWSP is approved, and has communicated this intention in publicly available documents such as its March 2013 application for test slant well permits to the City of Marina, MBNMS, and the CCC. In those applications, CalAm pointed out that the

temporary test slant well could not be used for the MPWSP without substantial additional infrastructure and associated CEQA, NEPA, and regulatory permitting compliance, which would be addressed as part of a separate CEQA, NEPA, and permitting process for the potential future MPWSP, if and when undertaken (CalAm, 2013). Accordingly, the conversion of the test slant well to a permanent well is part of the proposed project described and analyzed in the EIR/EIS, in compliance with CEQA and NEPA requirements. If the MPWSP is not approved in any form at the CEMEX site, then the test well would be decommissioned consistent with the prior CEQA/NEPA review for, and approval of, the test slant well. The test slant well is currently permitted to operate until February 2019, per a December 2017 Coastal Development Permit amendment.

8.2.11.8 New Technology

Although the test slant well at CEMEX is not the first of its kind, to the best of the Lead Agencies' knowledge, slant well technology has not yet been used for a full-scale desalination project. Several commenters question the feasibility of relying on this new, evolving technology for the MPWSP by citing issues with the Dana Point test slant well, and by citing out of context statements made as part of the Huntington Beach and Santa Barbara subsurface intake feasibility investigations. The discussions below provide background information concerning the other potential desalination projects addressed by commenters, and places the circumstances of those endeavors into their proper context.

Dana Point Test Slant Well

The Municipal Water District of Orange County (MWDOC), in partnership with five participating agencies, investigated the feasibility of slant wells to extract ocean water and a test slant well was constructed at Doheny State Park in Dana Point, CA in 2006. A step drawdown test was performed on March 29, 2006, and a five-day constant rate test was performed from March 31 to April 5, 2006. The well was redeveloped in 2010, and equipped with a submersible pump; a long-term pump test was performed between June 2010 and February 2012. The rate of drawdown measured in the well showed an increase over time, and well efficiency dropped from 95 percent to 52 percent.

Performance issues associated with the Dana Point Test Slant Well are summarized in a technical memo that is referenced in the EIR/EIS as Geoscience 2012, and titled *Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well Doheny Beach, Dana Point, CA.* The loss of well efficiency was expected due to the inability to fully develop[6] the well during construction. Specifically, the Doheny test slant well was completed with a uniform 12-inch diameter casing and well screen, without a larger diameter pump house chamber due to limited funding. As described in Geoscience, 2012, the general rule of thumb for final well development is that the well must be fully developed to pump at a rate of 1.5 times the design rate. In the case of the Doheny test slant well, the well should have been developed up to a rate of approximately 3,000 gallons per minute (gpm); however, during final

6 "Developing a well" describes the act of cleaning out the clay and silt introduced during the drilling process as well as the finer part of the aquifer directly around the well screen prior to putting the well into service.

well development by pumping and surging in 2006, the well was pumped only to a maximum discharge rate of approximately 1,800 gpm because at that time, limitations of the test well pump did not allow pumping at a higher rate. As determined by Geoscience (2012), the consequence of this was that fine-grained formation material that was not properly removed from the near well zone during well development likely migrated toward the well during the long-term pump test, clogging the well screen and near well zone

Since the Doheny test slant well was the first test slant well designed for seawater intake, valuable lessons were learned regarding submersible well pump design, installation, and operation for use as a seawater intake that were applied to CalAm test slant well. For example, because of the pump house casing limitation experienced at the Doheny test slant well and the inability to fully develop the well, the CalAm test slant well at CEMEX was designed to include an 18-inch pump house casing, which can accommodate the placement of large development pumps with capacities over 3,000 gpm, and a 5-inch artificial filter pack was installed around the screens to minimize clogging. To date, the test slant well at CEMEX has not experienced the same issues as the Dana Point slant well.

Huntington Beach Independent Scientific Technical Advisory Panel

After conducting public hearings in late 2013 to determine whether to issue a CDP for the offshore portions of the Poseidon Resources LLC-proposed Huntington Beach Desalination Project (including an open water intake), the CCC and Poseidon agreed in January 2014 to collectively develop independent verification of whether any of several subsurface intake designs would be feasible for the Huntington Beach project, and convened the Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP, or Panel). Several commenters on the MPWSP EIR/EIS suggest that since subsurface intake wells were determined to be technically infeasible at the Huntington Beach site, the technology should also be considered infeasible at the Marina site.

However, the HB ISTAP interpreted its Phase 1 charge to be the evaluation of the technical feasibility of subsurface intake technology to deliver source water for a 100 to 127 mgd desalinated water project (compared to 9.6 mgd for the proposed MPWSP), given the hydrogeologic and oceanographic site conditions at the Huntington Beach site. The HB ISTAP's Phase 1 Final Report (2014) was included as a reference to the Draft EIR/EIS on page 5.3-57. The HB ISTAP Phase 1 Final Report discussed the nine subsurface intake options considered by the Panel and noted in its discussion of well intake systems (HB ISTAP Section 3.3.6) that based on the experience at Dana Point, "the long-term performance of the [slant well] technology has yet to be confirmed." In its evaluation of subsurface intakes for Huntington Beach, the Panel acknowledged (HB ISTAP Section 5.2.5) that "slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw." The Panel concluded in its Chapter 6 (Summary, Conclusions and Recommendations for Phase 2) that "slant wells tapping into the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer."

The HB ISTAP concluded that slant wells would not be technically feasible to supply source water to support a project that would produce 100 to 127 mgd of product water at the Huntington Beach site, given the hydrogeologic and oceanographic conditions at that location. That conclusion is not directly transferable to the Marina location due to different hydrogeologic and oceanographic conditions and since the MPWSP is approximately 1/10th the size of the proposed Huntington Beach project. See also EIR/EIS Appendix E3.

Santa Barbara Subsurface Intake Feasibility Study

Some commenters on the MPWSP Draft EIR/EIS suggest that since the City of Santa Barbara found subsurface intakes to be infeasible for its project, subsurface intakes should be determined to be infeasible in Marina. On September 23, 2014, the City of Santa Barbara City Council directed staff to report back on a plan to evaluate the feasibility of using subsurface intakes as part of recommissioning that city's 10 mgd Charles E. Meyer Desalination Plant which was "mothballed" following the drought in the late 1990s. In January 2015, the Central Coast RWQCB adopted an amendment to the City's WWTP Waste Discharge Requirements that included a condition that the City should report back to the RWQCB with a work plan that would result in a completed subsurface intake feasibility study. Santa Barbara City staff accordingly explored the technical feasibility of six subsurface alternatives through an initial screening process to determine if the existing, permitted, screened open ocean intake at the existing Charles E. Meyer Desalination Plant could be replaced by a subsurface intake system.

The February 2017 Subsurface Desalination Intake Feasibility Study (Carollo, 2017) noted at page 3-19 that "slant wells have been tested for over six years at the Dana Point test site . . . [t]he overall experience with Dana Point was positive . . ." Carollo 2017 states on page 3-21 that "[o]peration of slant wells at the Dana Point and Monterey test sites in California demonstrated that this intake technology was capable of delivering 2,000 to 2,200 gpm of water." Carollo 2017 concludes on page 3-65 that "none of the subsurface intake alternatives considered in this study were determined to be potentially feasible based upon the study objectives" established by the City of Santa Barbara, and concludes specifically about slant wells on page 3-71 that "[t]o achieve the capacity required to meet this study's objectives [with slant wells], 3.5 to 6 miles of beachfront are required . . . only 1.7 miles of beach front is available . . ."

As a result, Santa Barbara chose to retain the existing open water intake, and not employ subsurface intakes because of the lack of any feasible subsurface intake alternative that could produce the full quantity of feed water required for the existing and already-permitted desalination plant within the limited City-owned beach front locations studied, and not because of the technology. Although the Santa Barbara project and the MPWSP are comparable in terms of production capacity, the conclusion that subsurface intakes are infeasible in Santa Barbara is not transferable to the MPWSP because the stratigraphy is different at CEMEX than in Santa Barbara, there is greater depth of sediment in Monterey and a larger beach within which to locate enough wells to meet the project objectives.

8.2.11.9 Slant Well Angle

Commenters have asked why the production wells are proposed to be drilled at a 14 degree angle from horizontal, when the test slant well was drilled at 19 degress from horizontal. The test slant well was planned to be drilled to 1,000 feet long at 19 degrees from horizontal, but due to snowy plover season and the USFWS requirement for construction equipment to be off the beach by the end of February 2015, the driller stopped before reaching the full length. In addition, the test slant well intentionally stopped short of penetrating the Salinas Valley Aquitard (SVA), which is the clay layer separating the 180-FTE Aquifer from the 400-Foot Aquifer. Since CalAm has committed to pumping from the shallower aquifers, the production wells are proposed to be drilled a little "flatter," at 14 degrees from horizonal, in order to gain some additional screen length in the targeted aquifers while staying above the SVA. The EIR/EIS evaluated the slant wells at 14 degrees, described in Draft EIR/EIS Section 3.2.1.1 at page 3-15, and the NMGWM^{2016} appropriately allocated slant well pumping between the Dune Sands Aquifer and the 180-FTE Aquifer, accounting for the proposed 14-degree angle of the production wells.

Regarding maintenance and cleaning of the slant wells (described in EIR/EIS Section 3.4.1), the test slant well has been cleaned using standard well cleaning procedures with no issues. The well cleaning procedures are also described in the Hydrogeologic Investigation Work Plan (Geoscience, 2013) and include swabbing and airlifting the screened interval to dislodge and remove materials collected on the well screen, and aggressively pumping and surging the well until fluids removed are effectively free of sand, sediment, and other material, and have very low turbidity values. Given the similar shallow angles, no maintenance and cleaning issues are expected for the proposed slant wells at 14 degrees. Wells constructed with well screens at 0 degrees (entirely horizontal) have been commonly used for both water supply (e.g., horizontal wells drilled into spring locations to increase the water flow) and groundwater cleanup (e.g., horizontal wells installed under structures to access and remove contaminated groundwater).

8.2.11.10 References

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8.2.12 Master Response 12: The North Marina Groundwater Model (v. 2016)

COMMENTERS ADDRESSED IN MASTER RESPONSE 12

City of Marina	David Brown
Marina Coast Water District	Charles Cech
Ag Land Trust	Juli Hofmann
Coalition of Peninsula Businesses	Hebard Olsen
Fort Ord Rec Users	Nancy Selfridge
Water Ratepayers Association of the Monterey Peninsula	Form Letter 2
Kathy Biala	Public Meeting Verbal Comments

Numerous comments expressed concerns about the purpose of the 2016 version of the North Marina Groundwater Model (referred to herein as NMGWM^{2016}) and its construction, calibration, and reliability. Further, comments questioned the model application using the method of superposition and the relationships between model sensitivity and model reliability. These topics are clarified below in response to these comments. For further reference, see EIR/EIS Section 4.4.4.2, Groundwater Modeling, and Appendix E2, which provide a robust discussion of the NMGWM. Note that Appendix E2 is a complex, scientific technical report appropriately appended to the EIR/EIS while EIR/EIS Section 4.4, Groundwater Resources, explains the processes and assumptions and summarizes the results of the groundwater modeling effort in relatively approachable and understandable terms. Some comments concerning the modeling for the Draft EIR/EIS were submitted by members of the general public, but numerous comments were also submitted by technical consultants and, as such, are detailed and delve into the technical aspects of the groundwater modeling. Because this Master Response addresses topics raised by all such comments, some aspects of this Master Response are necessarily technical and focused on the details of the model parameters, assumptions, processes and results.

8.2.12.1 NMGWM^{2016} Purpose and Approach

Some reviewers commented on the scope of the modeling analysis, the model's results and construction, and the modeling assumptions used. Several comments cited results for individual model layers interchangeably with hydrogeologic nomenclature of Salinas Valley aquifers and aquitards, which obscures interpretation of the relationships between model performance and comparisons to observed data. Other comments questioned the validity of the selected model boundary locations, referring to them as arbitrary and not representing physical conditions, or claiming that the model boundaries were located too close to the pumping wells analyzed with the NMGWM^{2016}. These comments did not acknowledge the telescopic modeling approach, the relationships between the NMGWM^{2016} and regional Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM), and the testing of boundary conditions reported as part of NMGWM^{2016} assessment. In contrast, other comments recognized the relationship between the SVIGSM and NMGWM^{2016} but concluded that discrepancies in model input and results between both models were indicative of NMGWM^{2016} limitations. Finally, there were comments about

$NMGWM^{2016}$ limitations for modeling the influence of spatial variations in groundwater salinity and density. These comments included requests to model groundwater density variations explicitly, and questioned the deployment of "equivalent freshwater head" to approximate the density contrast between "fresh water" and "sea water" in a constant density model. These topics are addressed in detail below.

HydroFocus's Assignment/Scope

HydroFocus, as a subconsultant to the consultant contracted by the Lead Agencies to prepare the EIR/EIS, was assigned to review, update, and if appropriate, re-calibrate the NMGWM for the purpose of estimating water level changes in response to proposed slant well pumping. The result of that effort is referred to as the $NMGWM^{2016}$. HydroFocus's scope of work was not related to the Lawrence Berkeley National Laboratory (LBNL) model evaluation, nor did HydroFocus receive direction from LBNL or have access to the LBNL model evaluation report prior to conducting its review and implementing its update. The LBNL recommendations (see EIR/EIS Appendix E1) and the $NMGWM^{2016}$ are the result of two independent evaluations, and their agreement provides credible evidence for the validity of the updates implemented in the $NMGWM^{2016}$.

The $NMGWM^{2016}$ was employed to calculate the water level decline in response to proposed project pumping (see "Introduction" of Appendix E2) -- specifically, to estimate the cone of depression, defined as the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to 1 foot. The model also provided insight into the change in groundwater flow directions in response to pumping. The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to any mixing of ocean water and groundwater, and therefore model-calculated drawdown is an approximation. However, as discussed below, the influence of variable density on model-calculated drawdown is small, and aquifer property values and the modeled pumping stress have a much greater influence on the drawdown.

Model Grid and Layering

Table 2.1 of Appendix E2 describes what each model layer represents. For example, Model Layer 2 represents the shallow water-bearing sediments referred to as the Dune Sand Aquifer, A-Aquifer, Perched Aquifer, Perched 'A' Aquifer, 35-Foot Aquifer, and -2-Foot Aquifer. Similarly, Model Layer 4 represents the 180-Foot Aquifer, 180-Foot Equivalent Aquifer (180-FTE), Upper and Lower 180-Foot Aquifer, and Pressure 180-Foot Aquifer. The geographic and hydrogeologic characteristics of these water bearing units are not equivalent, and they are represented in the $NMGWM^{2016}$ by different zones, and each zone is assigned a unique value for its water transmitting and storage property values. It would therefore be erroneous to use model results for an entire model layer to make global conclusions regarding one of the property zones. For example, model-calculated water levels at all monitoring wells located in Model Layer 2 cannot effectively evaluate model reliability for the single zone that represents the Dune Sand Aquifer (the Dune Sand Aquifer is represented by one of the 16 parameter zones in Model Layer 2).

Telescopic modeling approach and boundary effects

The NMGWM^{2016} is based on the telescopic mesh refinement approach, where a relatively coarse model grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second smaller model having a relatively fine grid is utilized to represent a subregion of the aquifer (Ward, et al., 1987). Continuity between the two models is maintained using either specified water levels or specified fluxes. For example, in the NMGWM^{2016}, the simulated water levels from the SVIGSM are extrapolated and specified at the NMGWM^{2016} head-dependent flux boundaries. Using this approach, the NMGWM^{2016} boundaries have hydraulic continuity with the physical boundaries of the basin through the SVIGSM, and while there was flexibility in the locations selected for the NMGWM^{2016}, the hydraulic conditions at those boundaries are quantitatively determined by the SVIGSM and therefore are not arbitrary.

The NMGWM^{2016} was employed to calculate the cone of depression for slant well pumping at the CEMEX and Potrero Road sites. Multiple model tests confirmed that the NMGWM^{2016} results are not substantially influenced by the head-dependent flux boundaries. In one test, the cone of depression calculated with the NMGWM^{2016} (24.1 mgd) was shown to be the same as the cone of depression calculated by an extended version of the NMGWM^{2016} (see **Figure 8.2.12-1**). The "Extended Model" is described in Attachment 2 of Appendix E2 "Simple Expanded Test Model," and its northern head-dependent flux boundary is located approximately 5.5 miles north of the NMGWM^{2016} boundary. Hence, two models having different boundary configurations produced the same cone of depression, confirming that the NMGWM^{2016} boundary locations do not reduce model-calculated drawdown. As another test, HydroFocus increased the pumping rate from 24.1 mgd to 27.7 mgd (an increase of 15 percent), and results showed the expected expansion of the cone of depression within the model domain (see **Figure 8.2.12-2**). These results confirm that the NMGWM^{2016} boundaries did not reduce the extent of the cone of depression from pumping at the CEMEX site. The same comparisons for the Potrero Road Site indicated that the cone of depression is modestly influenced by the northern boundary location, but the effect is fairly insignificant for making drawdown comparisons between the CEMEX and Potrero Road Sites (see Attachment 2 of Appendix E2).

Hydrostratigraphic comparison between SVIGSM and NMGWM

The NMGWM^{2016} includes the A-Aquifer and Fort Ord Salinas Valley Aquitard (FO-SVA) in model layers 2 and 3, respectively. These units are not considered in the 2015 version of the NMGWM (referred to herein as NMGWM^{2015}) and in SVIGSM, both of which supported the analysis in the April 2015 MPWSP Draft EIR. Their inclusion in the NMGWM^{2016} is consistent with recommendations made by the LBNL based on its review of the NMGWM^{2015}, but their inclusion was also identified and was implemented independently by HydroFocus. Drawdown due solely to pumping is dependent primarily on the pumping rate and the water transmitting and storage properties of the aquifer (Driscoll, 1986; Bear, 1979). Hence, because the NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area (because it includes the A-Aquifer and FO-SVA), it provides more reliable drawdown results than the NMGWM^{2015} and SVIGSM.

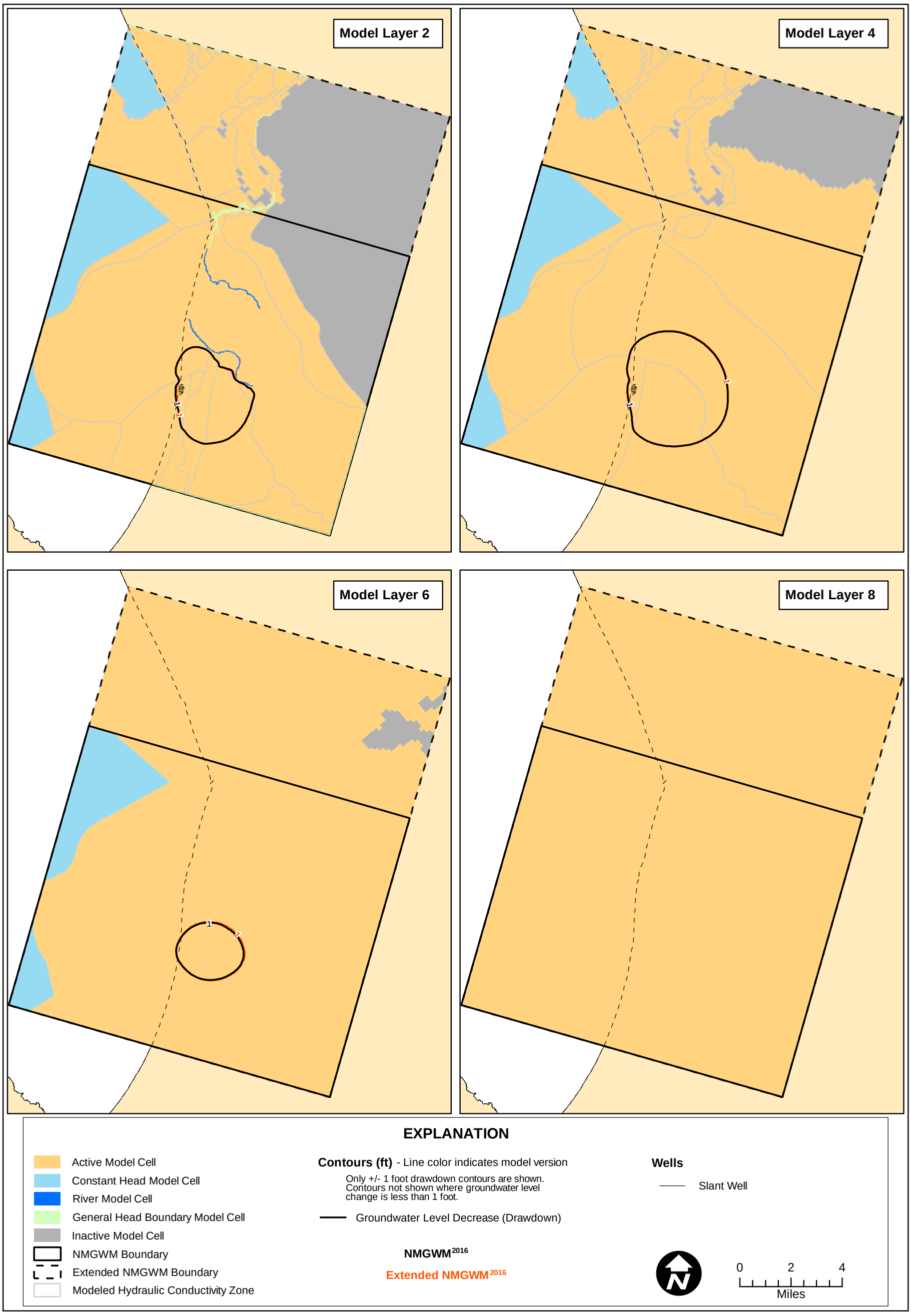
Groundwater Flow in Coastal Aquifers

In coastal aquifers, an interface can exist between groundwater with relatively low total dissolved solids ("fresh") and the saline groundwater influenced by seawater. The concentrations of dissolved constituents influence fluid density, and the resulting spatial variations in concentrations and fluid density within the transition zone can affect groundwater flow paths, the volumetric water balance, and location of the saltwater-freshwater interface. For example, the computer program SEAWAT is a modified version of MODFLOW (the computer program used for the NMGWM^{2016}), and simulates three-dimensional, variable-density, transient ground-water flow using the concept of equivalent freshwater head to solve the variable density flow equation. However, there are no guidelines to determine when it is necessary to employ a program like SEAWAT (Post et al., 2007). Therefore, HydroFocus's approach used the same concept of equivalent freshwater head to represent the density contrast between free-standing ocean water and groundwater, and then assumed that the density variations in the transition zone and resulting uncertainty in model-calculated drawdown was within the range of uncertainty quantified as part of the sensitivity assessment (see Section 8.2.12.4).

Equivalent Freshwater Head

"Equivalent freshwater head" is a common approach used to mimic the water density contrast near ocean boundaries (Senger and Fogg, 1990; Hanson et al., 2014; Payne et al., 2005). The approach increases the water level to account for the greater density of seawater within a constant density model domain. Motz (2004) examined the differences in calculated heads between SEAWAT (variable density flow model) and MODFLOW (constant density flow model) and found that the SEAWAT-calculated water levels were best matched to the MODFLOW-calculated water levels whose initial conditions had the ocean water level specified as equivalent freshwater heads over the full thickness of the aquifer. More recent work by Lu et al. (2015) suggests that submarine groundwater discharge in both confined and unconfined aquifers can be accurately simulated using constant-density flow and a coastal head correction factor. Modeling studies cited by Marina Coast Water District (MCWD) in its letter provided in Section 8.5.2 (Hydrometrics, 2008) similarly increased fresh water levels to account for the density contrast at the coast, and utilized the approach to calculate drawdown and groundwater flow paths from the ocean to coastal pumping wells.

Both the NMGWM^{2015} and NMGWM^{2016} employed equivalent freshwater heads to represent the water density contrast between ocean water and groundwater (Geoscience, 2016). The equivalent heads were assigned to the portions of Model Layer 1 that represent ocean water; the portions of Model Layer 1 that represent the inland basin areas are inactive and have no influence on model calculations. Hence, no horizontal groundwater movement occurs between Model Layer 1 cells representing the ocean and the adjacent Model Layer 1 cells that overlie the inland basin. In the NMGWM^{2015}, Model Layer 1 is 1-foot thick everywhere, whereas in the NMGWM^{2016} the thickness of Model Layer 1 is variable and equal to the thickness of the water column between the ocean surface and the bottom of Monterey Bay. While the Layer 1 thicknesses representing ocean water are different in the two models, the equivalent head values were determined by the assumed TDS concentration of ocean water and the real-world height of the water column above the seafloor. Hence, although the thicknesses of Model Layer 1 are different in the two models, the specified values of the equivalent freshwater heads for corresponding model cells are essentially the same.



SOURCE: HydroFocus, 2017

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.12-1
Extended NMGWM^{2016}

SOURCE: HydroFocus, 2017

Figure 8.2.12-2

Extended NMGWM^{2016} at 27.7 MGD (15% increase)

The use of equivalent freshwater heads had negligible effect on the history matching results and model calibration, and their use, therefore, does not artificially increase the modeled potential for seawater intrusion. HydroFocus confirmed this fact by running the history matching assessment with the NMGWM^{2016} after changing the equivalent freshwater head values everywhere to be equal to mean sea level ("0"), making them equal to the initial constant density water level values in the aquifer. The comparisons between model-calculated and measured water levels for the "with" and "without" equivalent freshwater head model simulations are essentially the same, confirming that there is negligible influence from equivalent freshwater heads on model-calculated inland aquifer water levels (see **Table 8.2.12-1**). Furthermore, the projected drawdown due to proposed slant well pumping was calculated using the method of superposition, and as stated in Section 5.3 of Appendix E2 under the subsection "Initial Heads, Boundary Conditions and Stresses," superposition is implemented by setting the hydraulic gradients along all boundaries to zero. This means "the boundaries representing the ocean and the head-dependent boundaries along the edges of the model domain were set to zero." While the concept of equivalent freshwater heads was utilized during the history matching run, they were not used in any of the runs used to project drawdown and therefore had no influence on model-calculated inland movement of saltwater.

TABLE 8.2.12-1
SUMMARY STATISTICS FOR THE COMPARISON BETWEEN MEASURED AND NMGWM^{2016} CALCULATED WATER LEVELS WHEN CONSTANT HEAD VALUES ARE SET EQUAL TO MEAN SEA LEVEL OR EQUIVALENT FRESHWATER HEADS

Calibration Statistics	Mean Sea Level ("0") (feet)	Equivalent Freshwater Head (feet)
RMSE[a]	10.2	10.3
Mean Model Error[b]	1.5	0.0
Min Model Error[b]	-39.9	-40.2
Max Model Error[b]	55.0	54.9

NOTES:
[a] Root Mean Square Error, which is the standard deviation of the residuals.
[b] Model Error is the model-calculated water level minus the measured water level.

Constant Density Assumption

The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater at the Pacific Ocean boundary of the model and the underlying fresh groundwater in the aquifer. Dissolved constituent concentrations in groundwater can change from the movement of seawater in response to slant well pumping, but the effects of these changes on drawdown were assumed negligible and not simulated by the model. The extent of the cone of depression was, therefore, approximated by assuming that the constituent concentrations and groundwater density remain constant. Because measured dissolved constituent concentrations in groundwater decrease with increasing distance inland from the coast, with or without slant well pumping, the uncertainty introduced by the constant density approximation becomes less significant with increasing distance further inland and ultimately becomes negligible. The constant density assumption was assumed reasonable for reasons summarized below.

For the conditions analyzed in Appendix E2, the pumping stress and water transmitting and storage properties of the aquifer (the "aquifer parameter" values) have a much larger effect on the model-calculated drawdown than variations in constituent concentrations and water density. In other words, the uncertainty in model-calculated drawdown attributed to the constant density assumption is negligible relative to the uncertainty in aquifer parameter values. Appendix E2 at page 26 notes that comparisons between the MODFLOW-calculated water levels (constant density) and calculations using SEAWAT (variable density) differ at most by less than 2 feet. These differences exist nearest the coast where model-calculated drawdown and associated density effects are greatest. Further inland at the extent of the model-calculated drawdown, the constituent concentrations decrease and the differences between MODFLOW- and SEAWAT-calculated water levels diminish and become insignificant. The specified pumping rates, return water volumes, projected sea level, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production all have a greater influence on the extent of model-calculated drawdown than a contrast in dissolved constituent concentrations and groundwater density. The effects of these factors on the uncertainty in the model-calculated cone of depression was rigorously tested and conservatively quantified for the NMGWM^{2016} (see Section 6.0, "Uncertainty," in Appendix E2).

8.2.12.2 Calibration Assessment

Commenters cited the lack of historical monitoring well data in the CEMEX area as limiting NMGWM^{2016} reliability to calculate drawdown in the Dune Sand Aquifer; however, such comments do not acknowledge the other CEMEX area data and associated analyses with the NMGWM^{2016} used to evaluate model performance, including data from the slant well pumping test. Additionally, commenters cited model discrepancies in the Fort Ord Area of the NMGWM^{2016} as an indication of the unreliability of the NMGWM^{2016} to calculate drawdown in the CEMEX area; however, the comparison is inappropriate because of the very different hydrogeologic conditions that exist in the two areas. For example, monitoring well data indicate perched water table conditions in the Fort Ord Area, whereas perched water table conditions do not exist in the CEMEX area. Further, part of the reported model error[1] is contributed by discrepancies with the initial water levels, and these are removed from the drawdown analysis using the method of superposition. There were also comments concerning model calibration and reliability based on reported model error, comparisons between NMGWM^{2015} and NMGWM^{2016} model output, and reported model bias. For example, some comments made conclusions on model reliability based on comparisons between NMGWM^{2015} and NMGWM^{2016} calibration statistics, even though the statistics were determined from two different data sets. One commenter concluded that their analysis and review showed that data falsification occurred ("data tampering"). These comments are all based on methods and interpretations that generally deviate from accepted modeling practice, and the additional discussion below is provided to clarify these issues.

[1] "Model error" refers to the difference between model-calculated results and the corresponding measured values (for example, the difference between model-calculated and measured water levels in monitoring wells). All models approximate real-world conditions and therefore all models include model error. Model calibration and assessment evaluate the significance of the error relative to the intended use of the model.

Absence of Historical Dune Sand Data

The Dune Sand Aquifer is present in the CEMEX area. Water level data for the Dune Sand Aquifer are absent from the October 1979 through September 2011 historical calibration because no historical monitoring well data exists within the model domain for the Dune Sand Aquifer. However, Dune Sand Aquifer monitoring well data collected during test slant well pumping was available and used to adjust aquifer parameter zones and parameter values in Model Layer 2 and Model Layer 4 (see Appendix E2, Section 3.3 "Aquifer Parameter Zones"). Figure 4.6 in Appendix E2 shows generally good agreement between the model-calculated and measured timing of water level drawdown and recovery in Dune Sand Aquifer monitoring wells, and demonstrates that the model can be employed to reliably project water level drawdown in the CEMEX area in response to proposed slant well pumping.

Monitoring well data from six cluster sites located in the "Fort Ord Area" were added to the historical model run to assess model-calculated water levels by the NMGWM^{2016} for areas south of the Salinas River. The shallowest of these monitoring wells are constructed in the A-Aquifer (not the Dune Sand Aquifer). As explained in Section 2.1 of Appendix E2, "The names and characteristics of this upper water-bearing zone are variable throughout the NMGWM. For example, *the Dune Sand Aquifer is present beneath the CEMEX* site and consists of younger and older dune sand geologic units. *The A-Aquifer located beneath the former Fort Ord Area* contains older dune sand deposits and overlies the Fort Ord-Salinas Valley Aquitard (FO-SVA) …These and other shallow aquifers are collectively represented by Model Layer 2" (emphasis added). The additional monitoring well data, therefore, represent conditions in the A-Aquifer beneath the Fort Ord Area – not the Dune Sand Aquifer at the CEMEX site. This distinction is important because the hydrogeologic conditions of the A-Aquifer and Dune Sand Aquifer are different.

The poor agreement between model-calculated and measured water levels reported in Appendix E2 for some Model Layer 2 wells located in the Fort Ord Area is due to deficiencies in prescribed initial water levels – the starting point for the historical model run – and the likelihood of "perched" groundwater conditions (in Appendix E2, see Figure 4.1 and the section "Seasonal Water-Levels and Long-Term Variations"). The discrepancy in the initial water levels is attributed solely to the input from the SVIGSM, and the method of superposition was employed to eliminate any effect these deficient initial water levels would contribute to model calculated drawdown.

Perched Conditions

As explained in Appendix E2, Section 4.1, vertical gradients between Fort Ord Area monitoring wells located in Model Layers 2 and 4 are greater than 1.0 at two sites (MW-BW-01-A and MW-OU2-29-A). Vertical gradients greater than 1.0 indicate the likely presence of an unsaturated interval between water-bearing deposits. Groundwater separated from a deeper water table by an unsaturated interval is considered "perched." The groundwater flow model assumes fully saturated conditions in all model layers, and therefore this unsaturated interval and its influence on vertical groundwater movement are not reproduced by the model. Data indicate that the perched groundwater conditions and corresponding area of poor model performance appears to be limited to the southernmost portions of the Fort Ord Area, beyond the influence of the proposed pumping capture zone, and model performance is notably more acceptable in other parts of the

Fort Ord Area where the observed vertical gradients are less steep. Relatively poor model performance in this localized area, however, does not affect model reliability in the area of interest and the calculated extent of drawdown from proposed project pumping.

Horizontal and vertical hydraulic conductivity specified for the A-Aquifer and FO-SVA in the Fort Ord Area were obtained from previous aquifer test and modeling studies (see Figure 3.3d of Appendix E2). The values selected minimized the difference between measured and model-calculated water levels, and are within the referenced range from previous studies (see Appendix E2, Figure 3.3a and 3.3b). This confirms that the water transmitting properties specified in the model are reasonable, and therefore the model errors in Model Layer 2 are attributed to other factors. Specifically, the model errors in Model Layer 2 are attributed to the large differences between measured and model-calculated water levels in the perched Model Layer 2 wells and the discrepancies in the initial water level conditions inherited from the SVIGSM. The "Model Error" discussion below explains how removing the perched well data substantially reduces the model error statistics, and Section 8.2.12.4 explains how errors due to specified initial water levels are removed from model-calculated drawdown.

Model Error Assessment

All groundwater models solve universally accepted mathematical equations to simulate subsurface water movement in porous media. The solutions are approximations because a model cannot quantify exactly the spatially variable properties that exist in the real world. A reliable groundwater-flow model is one that can produce field-measured water levels and groundwater flow within an acceptable range of error. Error exists because information on the real world system is always incomplete, and the field information that is available has associated errors (for example, measurement error or the assignment of monitoring wells to incorrect aquifers). The most likely sources of error in the $NMGWM^{2016}$ could arise from neglecting potential processes (for example, density effects on groundwater flow) and uncertainty associated with modeled boundary conditions, specified hydraulic conductivity values. Model error is therefore, evaluated to quantify model uncertainty, and the evaluation of $NMGWM^{2016}$ uncertainty is described in Section 4.1 of Appendix E2 "History Matching Assessment." That evaluation clearly states that model error was assessed using six tests widely used and accepted within the groundwater modeling community: "Ultimately the decision of model acceptability is based on the weight of one or more of the test results and their relevance to meeting modeling objectives (in this situation, concluding that the model acceptably projects the magnitude and distribution of the water level change due to coastal slant well pumping)." Several comments suggested that using only one of the six tests could delineate a "good/successful" model from a "bad/failed" model; this is not recommended groundwater modeling practice.

The use of multiple tests provides the means to identify key sources of model uncertainty that are not likely revealed relying solely on any one test. Furthermore, the acceptance or rejection of a model depends not only on the evaluation of model error but also on the intended application for which the model was created (Freyberg, 1988). For example, the model error may be high in the history matching run because recharge and pumping are poorly estimated. However, when the purpose of the model is to calculate water level changes due to a new stress, the reliability of the

model-calculated drawdown will depend primarily on the specified water transmitting and storage properties of the aquifer and not on the background recharge and pumping.

In EIR/EIS Appendix E2, multiple test results are reported that identified model deficiencies associated primarily with the prescribed initial conditions, boundary conditions, and historical recharge and pumping, all of which originated from the SVIGSM. The reliability of the specified aquifer parameters, however, was determined by comparisons between NMGWM^{2016} values and the measured or estimated values for similar materials. These comparisons indicated general agreement with values from previous hydrogeological and model studies (see Section 3.3, "Aquifer Parameter Zones," in Appendix E2). For the EIR/EIS, the "method of superposition" was employed to eliminate the deficiencies introduced by the prescribed initial conditions, boundary conditions, and recharge and pumping, whereas sensitivity tests were employed to quantify the potential uncertainty in the aquifer parameter values, boundary conditions, future project operations (see Appendix E2 Section 5.2 and EIR/EIS Section 4.4.4.2). By running the model and incorporating uncertainty related to 1) sea level rise, 2) return water volumes, 3) slant-well pumping rates, 4) model parameter values (hydraulic conductivity and storage properties), and 5) the relative volumes of groundwater flowing to the slant wells from different aquifers, HydroFocus estimated the potential range in the areal drawdown due to slant well pumping (see the discussion of uncertainty in Appendix E2, Section 6.0).

Comparison of NMGWM^{2016} and NMGWM^{2015}

NMGWM^{2016} has less model error than NMGWM^{2015}. A valid error comparison between two models must use the same wells and water level data, and when the same wells and water level data are used (see **Table 8.2.12-2**), the summary of error statistics confirm that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. For example, Model Layer 2 monitoring wells located south of the Salinas River were added to the NMGWM^{2016}, and when these same wells and their corresponding water level data are added to the NMGWM^{2015} data set, the Model Layer 2 Root Mean Square Error (RMSE, which is the standard deviation of the residuals) is 40.2 feet, which is substantially higher than the RMSE calculated for the NMGWM^{2016} (10.1 feet). The comparisons between the deeper model layers have RMSE values that generally agree and are all within +/- 0.1 feet, indicating both models perform similarly in representing the deeper aquifers.

Model Bias

Bias in groundwater flow models results when model errors (the difference between model-calculated and measured water levels) do not conform to the assumptions of regression analysis (the assumptions that the model errors are independent, have zero mean, have a constant variance and follow a normal distribution) (Ward, et al., 1987). The evaluation of model error for Model Layer 4 (the 180-Foot Aquifer) provided in Appendix E2 showed that the model errors are not independent (the model errors vary with model-calculated values), the mean model error is not zero (the mean model error is equal to 1.4 feet), and visual inspection of the histogram suggests that model errors are not approximated by the normal distribution. These results indicate model bias in Model Layer 4. Further analysis of model errors was conducted by HydroFocus and revealed the cause of this bias, and the modeling approach employed to assess the proposed project was developed to eliminate the effect of this bias on the model results. The results of the model error analyses are discussed below.

TABLE 8.2.12-2
SUMMARY OF ERROR STATISTICS
BETWEEN NMGWM^{2015} AND NMGWM^{2016} USING IDENTICAL WATER LEVEL DATA

	NMGWM^{2015}* (feet) (using NMGWM^{2016} calibration data)					NMGWM^{2016}* (feet)				
	Layer 2	**Layer 4**	**Layer 6**	**Layer 8**	**Entire Model**	**Layer 2**	**Layer 4**	**Layer 6**	**Layer 8**	**Entire Model**
RMSE[a]	40.2	7.3	10.7	11.4	12.8	10.1	7.2	10.7	11.3	10.2
Minimum Error	-63.2	-16.4	-40.2	-38.6	-63.2	-35.2	-15.8	-39.9	-35.4	-39.9
Mean Error	-30.1	1.2	1.7	-1.9	-0.3	-4.9	1.4	2.1	0.4	1.5
Maximum Error	-1.2	32.7	54.9	39.2	54.9	9.2	32.2	55.0	41.2	55.0
Relative Error	62.8%	14.7%	10.2%	14.5%	7.9%	15.7%	14.4%	10.3%	14.4%	6.3%

NOTES:
* Statistics exclude two perched wells MW-BW-01-A and MW-OU2-29-A.
Root Mean Square Error (expressed in feet)

In Appendix E2, Figure 4.3d "Relationships between measured water levels, model-calculated water levels, and water level residuals, Well 02J01, Model Layer 4" shows two graphs. The upper graph shows model-calculated and measured water levels during the time period October 1979 through September 1991 for Well 02J01, which is screened in Model Layer 4 (180-Foot Aquifer). The upper graph also shows the residual (model error) for the same time period. The values and distances (scale) for both vertical axes (y-axes) are the same. Measured water levels are reported relative to mean sea level, which by convention is assigned a value of zero. The model error is also plotted relative to zero, and positive errors indicate model-calculated water levels are greater than measured, and negative errors indicate that model-calculated water levels are lower than measured. The lower graph shows the relationship between model error and model-calculated water level. Close inspection of these two graphs shows the following:

1. The upper graph shows that measured and model-calculated water levels decrease and become more negative over time. The shift from positive to negative water levels indicates that the water levels have decreased from above mean sea level to below mean sea level.

2. The lower graph shows that the model errors are generally large in magnitude and positive when model-calculated water levels are relatively high and above mean sea level. Conversely, the model errors are generally smaller in magnitude and more negative when model-calculated water levels are relatively low and below mean sea levels.

The water level and error plots indicate that model error is not random (the model results for Model Layer 4 are biased). The bias is consistent with the positive correlations shown for Model Layer 4 in Appendix E2 Figure 4.3b and Figure 4.3d (calculated correlation of 0.2). The positive correlation is consistent with the observation that the greatest water levels (the water levels that are the highest above mean sea level) have the greatest model errors and the errors tend to be positive, whereas the lowest water levels (the water levels that tend to be below mean sea level) have relatively smaller model errors that tend to be negative. In other words, the model error is positive (increases) when the water levels are positive, and the error is negative when the water

levels are negative. Hence, the slope of the line in the lower graph of Appendix E2 Figure 4.3d is positive, and shows an increasing relationship between model error and model-calculated water levels.

The model-calculated and measured water levels in Appendix E2 Figure 4.3d rise and fall each year as a result of seasonal changes in recharge and pumping. The seasonal trends in Figure 4.3d are superimposed on the longer, multi-year trends that show water levels generally decline from above sea level to below sea level. Comparisons between the model-calculated and measured water levels reveal that in the early years of the plotted data set, the seasonal model-calculated water level decline begins sooner than the measured seasonal water level decline, and this shift in timing causes relatively large differences between model-calculated and measured water levels (relatively large model error). In the later years of the plotted data set, there is better agreement between the timing of the seasonal water level decline, and as a result the model error is relatively smaller. The net effect of these time-shifts is the cause of the model bias described above.

Appendix E2 Figure 4.3c shows that the same relationship between seasonal model-calculated and measured water levels shown in Figure 4.3c exists in the SVIGSM – the greatest water levels have model errors that tend to be positive, and the lowest water levels have model errors that tend to be negative. The magnitude and timing of groundwater recharge and pumping utilized by the $NMGWM^{2016}$ was obtained from the SVIGSM, and therefore the model bias in the $NMGWM^{2016}$ produced by the seasonal changes in recharge and pumping is inherited from the SVIGSM.

Data Tampering

The documented correlation between model-calibrated water levels and model error described above under “Model Bias” has been erroneously cited in some comments as evidence of data tampering. However, the facts indicate that data tampering has not occurred, and this can be clarified with a discussion about what a groundwater-flow model is, how a groundwater model is constructed, and how a groundwater model is ultimately used.

As described in EIR/EIS Section 4.4.4.2, groundwater models are computer simulations that represent water flow in the environment using mathematical equations. The “model” is a mathematical model, meaning that groundwater flow is simulated by solving a governing mathematical equation that represents the physical processes that occur in a groundwater system. That governing equation is commonly referred to as the three-dimensional partial differential equation of groundwater flow.

MODFLOW is one of many computer codes that numerically solve the governing groundwater flow equation. As noted in EIR/EIS Section 4.4.4.2, since MODFLOW's release, the USGS has released numerous updated versions, and MODFLOW is now the de facto standard code for aquifer simulation. The MODFLOW computer source code is written in FORTRAN programming language, which is compiled to create an executable, which is the engine that actually performs the numerical calculations. The $NMGWM^{2016}$ is an application of MODFLOW, where the MODFLOW executable performs the calculations on the input data sets constructed specifically for the North Marina Area. The output from the MODFLOW executable is model-calculated water levels and groundwater fluxes for the North Marina Area.

Input data to MODFLOW includes the three-dimensional distribution of water storage and transmitting properties of the site-specific aquifers and aquitards in the North Marina Area. The input data also includes site-specific values for groundwater recharge and extractions by pumping wells. Lastly, input data includes specified conditions at the boundaries of the model domain (for example, boundary conditions specified to represent the Pacific Ocean). The water levels measured in wells (observations) are not input data, but rather are utilized to compare against their corresponding model output (model-calculated water levels) for the same time and spatial location. Similar to a "ruler" utilized to quantify the error in the estimated length of an object, measured water levels are compared to model-calculated water levels to quantify model error (the difference between model-calculated and measured water levels). Hence, model input (water storage properties, water transmitting properties, recharge, pumping, and boundary conditions) can be altered to change model output, but changes to measured water levels (observations) have no effect on model output. With this in mind, three facts indicate that data tampering – in this case, modification of the measured or model-calculated water levels employed to calculate model error – has not occurred. They are as follows:

1. The measured data were not altered before running the model. Measured water levels were provided by Monterey County Water Resources Agency (MCWRA), and Section 2.3 of Appendix E2, "Assessment of Model Inputs and Outputs," reports that measured water levels used by the model and reported by MCWRA are the same. Measurement dates used in the model for one well were off and another well was assigned to a different aquifer. Specifically, the water level measurement dates reported by MCWRA for well 14S/3E-6R1 were 11 days off in the $NMGWM^{2015}$ input data set, and well 14S/2E-14L01 was designated as representing Model Layer 6 but identified by MCWRA as representing the 180-Foot Aquifer (Model Layer 4). Neither of these exceptions had any effect on the measured water level values reported.

2. Three independent runs using different MODFLOW executables produced the same output (model-calculated water levels) and confirm that the model-calculated water levels were not modified during the model run. As noted in Table 3.1 of Appendix E2, Geoscience and HydroFocus utilized two different MODFLOW executables. Geoscience employed MODFLOW using the proprietary software "Groundwater Vistas," whereas HydroFocus employed the MODFLOW executable "freely available from the USGS." Section 2 of Appendix E2, "Assessment of Model Inputs and Outputs," states, "We ran the model ($NMGWM^{2015}$) and confirmed the model results [model-calculated water levels] were the same as reported." Furthermore, Appendix E-1, "Lawrence Berkeley National Laboratories Peer Review," describes similar testing and reported "computer simulations carried out by the modeling team can be replicated using the input and executable codes provided to us." This confirms that the FORTRAN computer code for the numerical groundwater-flow model (MODFLOW) was not altered prior to running the executable as a means to "tamper" with the data.

3. Model-calculated water levels were not altered after running MODFLOW. There is no processing of model output after running MODFLOW other than plotting the results using Excel software. The model-calculated water levels in the Excel files match the output from MODFLOW obtained from three independent runs using three different MODFLOW executables.

8.2.12.3 Superposition

The analysis using the NMGWM^{2016} employed the method of superposition. Some commenters interpreted this to mean a new model was developed rather than an application of the model. Other commenters utilized results from their own application of the NMGWM^{2016} and superposition method, and their results were different from those reported in Appendix E2. However, the analysis undertaken by the commenters was flawed, and conclusions based on those results were both unreliable and appeared to demonstrate misunderstanding about the method of superposition. The additional discussion below is provided to clarify the issues.

The NMGWM^{2016} was employed to calculate drawdown in response to pumping. Drawdown due solely to proposed project pumping is dependent primarily on the pumping rate, the water transmitting and storage properties of the aquifer (Driscoll, 1986; Bear, 1979), and any change in groundwater recharge or discharge that would occur solely as a result of that drawdown. For example, if pumping were to cause coastal water levels to decline below sea level, ocean water would percolate into the underlying aquifer and move inland to replace the extracted water. This increase in ocean-water recharge induced by the new pumping would reduce the drawdown relative to that which would have occurred in the absence of the ocean-water recharge.

For the EIR/EIS, the method of superposition was employed to remove the discrepancies introduced by the SVIGSM (initial water levels, boundary conditions, and bias attributed to specified recharge and pumping). Superposition is routinely employed for solving complex problems. It is a modeling approach that is useful in saving time and effort and eliminating uncertainty. The principal advantages and constraints of using superposition are described by Reilly et al. (1987) and summarized below:

1. The effects of a specified stress on the groundwater system can be evaluated even if other stresses in the basin are unknown.
2. The effects of a change in stress on the system can be evaluated even if the original conditions or subsequent period of equilibrium conditions are unknown.
3. The effect of one stress on the system can be isolated from the effects of all other stresses.

The superposition approach does not employ a “new” model; rather, the initial water levels and background recharge and pumping are all set to zero. These inputs are not “predictive variables” in the model, and they have no influence on the projected future drawdown calculated by the model. The approach therefore effectively removes the deficiencies introduced by the SVIGSM (see Section 5.2 of Appendix E2).

In the application of the NMGWM^{2016}, the complex problem is quantifying groundwater level changes and fluxes due to geographically and temporally varying recharge and discharge processes occurring within the Salinas Valley Groundwater Basin. The question asked is “what change in these groundwater levels and fluxes are expected as a result of a new stress – groundwater extraction by the proposed slant wells?” Rather than employ a model to simulate the complex problem (i.e., to quantify the effects of all recharge and discharge processes occurring within the basin), superposition is employed to determine the incremental drawdown due solely to

the proposed groundwater extraction by the slant wells. In other words, superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the project. These changes would be additive to future changes that occur as the net result of all other factors such as climate, background pumping, background recharge, and land use changes, which cannot be predicted with certainty. Accordingly, validating the future drawdown calculated by the superposition modeling approach, which corresponds to validating the change in future water levels due solely to proposed project pumping, is in practical terms less difficult than validating model projections that include the additional complexity of assumed climate, water use, and land use changes, none of which are known with certainty. See Appendix E2, Section 4.2, "Test Slant Well Pumping," for an example where real-world monitoring data is used to compare measured drawdown with the drawdown calculated with the superposition model.

Water Levels

The drawdown from proposed slant well pumping can be isolated using one of two approaches: (1) subtracting the results from two model runs, one run with the new stress and a second run without the stress, or (2) directly using superposition. For example, in its report attached to the MCWD comments, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping from the proposed project (GeoHydros, 2017). To do this, GeoHydros added the proposed slant well pumping to the recharge, pumping, constant head, and head-dependent flow boundary input data from the "History Matching Assessment" described in Appendix E2. The approach is identical to the one described in Attachment 1 to Appendix E2 ("Example Superposition Model"). In Attachment 1, a model of a hypothetical groundwater basin is used to show that drawdown from a new pumping well calculated directly by superposition is identical to the drawdown calculated indirectly by subtracting the results from two model runs (one model run with the new well pumping stress and the second model run without the new well pumping stress). Both approaches employ the theory of superposition, but GeoHydros chose to use the latter approach of subtracting two model runs to isolate the drawdown rather than calculate it directly. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the GeoHydros analysis was not conducted correctly, and the flawed GeoHydros results are therefore different from the results reported in Appendix E2. As explained below, the GeoHydros analysis was flawed because it did not consider changes in the hydraulic interaction between groundwater, the Salinas River, and Tembladero Slough, and the GeoHydros report and results have therefore not been incorporated into the EIR/EIS analysis.

The recharge and pumping model input files from the History Matching Assessment include the historical river losses and gains due to the hydraulic interactions between groundwater, the Salinas River, and Tembladero Slough. GeoHydros used the same recharge and pumping input files for both of its simulations: one simulation that was identical to the History Matching Assessment and an identical simulation but with the addition of proposed slant well pumping. The GeoHydros approach failed to account for the changes in Salinas River and Tembladero Slough gains and losses that occur in response to the new pumping stress introduced by the slant wells, and the drawdown calculated by the GeoHydros approach is therefore greater than reported in Appendix E2. In order to account for the changes in river gains and losses, the NMGWM^{2016}

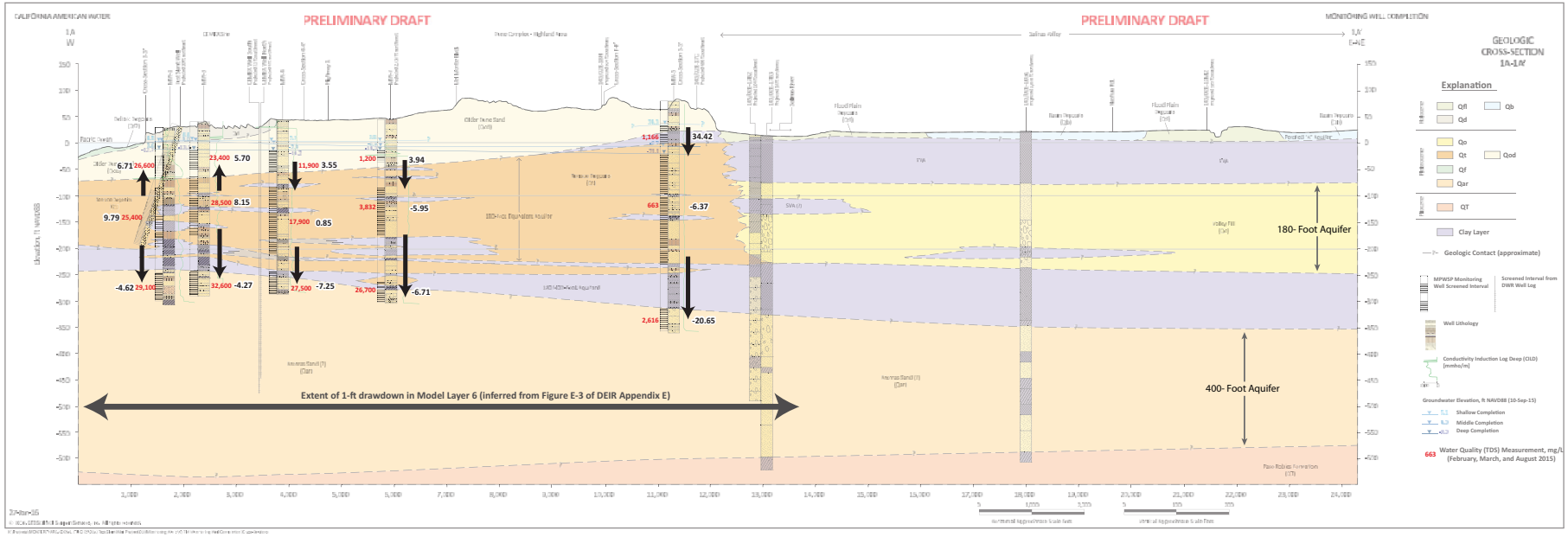
was modified as explained in Section 5.3 of Appendix E2 ("Modifications to the NMGWM^{2016}"). Hence, the GeoHydros results are not credible for assessing the adequacy of the NMGWM^{2016} and the superposition approach.

Water Budget

The method of superposition, whether employed directly using a superposition model as described in Appendix E2, or indirectly by subtracting two model runs as employed by GeoHydros, also provides the change in the volumetric groundwater budget. GeoHydros calculated the change in fluxes between model layers by subtracting the water budgets from the two model runs. Based on the GeoHydros calculations using flawed model results, GeoHydros reported that 756 afy of the water removed by the slant wells would come from "upward flow into the overlying 180-Foot and Dune Sand Aquifers" from the 400-Foot and deeper aquifers. They concluded that the model-calculated gain in the 180-Foot Aquifer represents harm to the deeper aquifers. However, this conclusion comes from an inappropriate interpretation of superposition results that ignore the real-world groundwater conditions beneath the CEMEX site. Further, the conclusion does not consider the poor water quality conditions measured in the 180-Foot Aquifer and existing groundwater overdraft of the deeper aquifers caused by inland pumping.

Superposition calculates the change in the volumetric water budget relative to the real-world groundwater system. A positive water budget change indicates "gain," whereas a negative water budget change indicates "loss." However, a gain is not necessarily indicative of greater "inflow" but can also indicate reduced outflow. Similarly, a loss is not necessarily indicative of greater "outflow" but can also indicate reduced inflow. The volumetric budget changes calculated by superposition and reported by GeoHydros must therefore be applied to real-world groundwater conditions to determine slant well pumping effects on groundwater-flow.

The real-world groundwater conditions beneath the CEMEX site as reported by Geoscience (2016) is illustrated in **Figure 8.2.12-3**, which is a modified cross-section that includes groundwater elevations determined from measured water levels in monitoring wells (corrected to equivalent freshwater heads based on measured TDS concentrations). Groundwater flow directions are inferred from the equivalent freshwater heads, whereby groundwater moves from areas of high equivalent freshwater head to areas of relatively low equivalent freshwater head. The inferred vertical flow directions in Figure 8.2.12-3 indicate that groundwater moves downward from the 180-Foot Aquifer to the 400-Foot Aquifer. Hence, the model-calculated gain in the "180-Foot Aquifer" is actually a reduction of the existing downward flow from the 180-Foot Aquifer to the 400-Foot Aquifer. The water quality data posted on the cross-sections indicate that near the coast and where project pumping induced drawdowns would be the greatest, the measured TDS concentrations in the 180-Foot Aquifer can exceed 28,000 mg/L. Hence, the 756 afy reported by GeoHydros as being removed from the deeper aquifers would actually be a reduction in downward flow of high-TDS groundwater. Reducing the inflow of high-TDS groundwater into the deeper aquifers would provide a water quality benefit. Because the GeoHydros analysis is conceptually consistent with that found in the EIR/EIS, but flawed and therefore quantitatively different from the EIR/EIS analysis as described above under "Water Levels," no revision to the EIR/EIS analysis is warranted in response to the GeoHydros analysis.



Modified from: GEOSCIENCE, 2016. Monterey Peninsula Water Supply Project - Hydrogeologic Investigation, Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update Draft. Prepared for California American Water dated July 15, 2016. Figure 3.

9.79 Equivalent freshwater head calculated from measured TDS concentrations

Inferred vertical groundwater flow component

SOURCE: HydroFocus, 2017

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.12-3

Cross-section Showing Calculated Equivalent Freshwater Heads

8.2.12.4 Sensitivity Analysis

Some comments interpreted model sensitivity as a model limitation, and require clarification about the difference between model calibration and model prediction, as each relate to model sensitivity. In model calibration, the parameter sensitivity analysis identified the hydraulic conductivity and storativity[2] values that most influence the comparison between model-calculated and measured results in the history-matching assessment (parameter calibration sensitivity). The most sensitive calibrated values are usually the most reliable when it can be shown they are comparable to reported values from previous studies. When employing a model to predict future conditions, the parameter sensitivity analysis identifies the hydraulic conductivity and storativity values that have the most influence on the predicted water level changes (parameter prediction sensitivity). Because the proposed pumping is an entirely new stress, the most sensitive prediction parameters are not necessarily the same as the most sensitive calibration parameters (often they are not). The prediction parameter sensitivity results provide little to no information about the reliability of the calibrated parameter values.

Appendix E2 Section 6.0, "Uncertainty," explains that both the predictive sensitivity to assumed project operations and the predictive sensitivity to modeled aquifer parameters were considered. In the case of modeled aquifer parameters, the sensitivity assessment used "…extreme values relative to the calibrated values and values reported by other sources, and therefore using these values essentially bracket the range in possible drawdowns." Extreme values were employed to provide a conservative answer to the question "would the model predictions change so as to change the conclusions regarding proposed slant well operation." Extreme values were employed to rigorously test and conservatively quantify the drawdown calculated by the $NMGWM^{2016}$ as part of a planning assessment, and the results have limited application for assessing the adequacy of the model calibration conducted in the history-matching assessment.

8.2.12.5 References

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[2] Specific storativity is the amount of water taken out or put back into a unit volume of an aquifer when the water level changes.

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8.2.13 Master Response 13: Demand (Project Need) and Growth

COMMENTERS ADDRESSED IN MASTER RESPONSE 13

City of Marina	Public Trust Alliance
Monterey Peninsula Water Management District	Public Water Now
California Unions for Reliable Energy	Surfrider Foundation
Carmel River Steelhead Association	Margaret-Anne Coppernoll
Coalition of Peninsula Businesses	Juli Hofmann
Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation	Carol Reeb
Land Watch Monterey County	Roy Thomas
Pebble Beach Company	

This Master Response addresses comments concerning customer water demand, available water supplies, and growth that could be induced by the proposed MPWSP water supply. Given the wide variety of comments related to water supply and demand, and for clarity: Section 8.2.13.2 addresses comments on demand, Section 8.2.13.3 addresses comments on supplies, and Section 8.2.13.4 addresses comments on growth that would be induced by project water supply and the impacts of that growth. Appendix L: Alternative Supply - Demand Scenarios was prepared in conjunction with this master response to test the possibility of whether the project could be smaller if one considered different supply and demand numbers as suggested in some comments; Section 8.2.13.5 summarizes the results of that inquiry.

EIR/EIS Sections 2.3 through 2.5 provide information on estimated water customer demand, supplies, the basis for those estimates, and supplemental information about water supply and demand and factors affecting them in the area that would be served by the MPWSP. Use of these supply and demand assumptions in the EIR/EIS does not mean that these assumptions will for certain prove true. Forecasting future demand and supply is not an exact science. As stated in EIR/EIS Section 2.5.4, "estimating future water demand necessarily entails the use of assumptions about demand factors that cannot be predicted with absolute certainty." The demand and supply estimates presented in EIR/EIS Sections 2.3 through 2.5 are planning and environmental evaluation tools that are based upon the evidence available from multiple (sometimes conflicting) sources and reasonable assumptions stemming from that evidence. Future supply and/or demand could, in reality, turn out to be higher or lower than estimated. Commenters have expressed that more or less supply is needed and more or less demand should be assumed, and any one of those commenters could end up being correct. The lead agencies do not control demand of service area residents and businesses, which is affected by such things as the economy, trends in use habits, drought, water cost, and more; nor do they control supplies, which are dramatically affected by weather and climate. While the estimates assumed in the EIR/EIS are reasonable based on available data, they are inherently uncertain and cannot be guaranteed. Section 8.2.13.1, below, provides additional discussion of supply and demand in the context of the proposed project and the EIR/EIS analysis.

Note also that evidence concerning supply and demand is being gathered by the CPUC in a process that is separate from, but parallel to, the CEQA and NEPA process. Such evidence will be considered, along with all of the data within the EIR/EIS, to inform and shape the decision on the size of project and the possibility of phasing in the project or alternatives. The Lead Agencies have endeavored to consider and reflect in the EIR/EIS evidence that has been presented in the general CPUC proceeding. It will be up to the decisionmakers to weigh all of the evidence in the record, determine which, if any, option best suits the project purpose and need/satisfies the project objectives, and take appropriate actions based upon findings. This means that the CPUC could decide (for example only) that it is most likely that there will be no further hospitality industry economic recovery such that water need not be supplied for that purpose. So long as substantial evidence supports that ultimate decision, the state permitting agencies may judge the evidence as they see fit.

8.2.13.1 Purpose of the EIR/EIS Demand and Supply Information

NEPA and CEQA analyses typically address potable water demand and supply in the context of evaluating a project's impact on available supply (typically in the utilities section of the impact analysis). In this case, the MPWSP has been proposed to *provide* water supply to the CalAm service area. Given that the MPWSP project objectives and purpose and need are primarily related to supplying water to meet existing and some future water customer needs, supply and demand are fundamentally tied to the ability of the project to satisfy the project need and objectives. Supply and demand are therefore, important to fashioning the requisite range of feasible and reasonable project alternatives. In addition, to the degree that evidence indicates that the project may provide water in an amount that exceeds current demand, the project would be growth-inducing. EIR/EIS Sections 2.3 through 2.5, and Appendix L, provide the Lead Agencies and members of the public with data on water demand and supply in the CalAm service area with which to assess the likelihood that the MPWSP will provide adequate water supply to replace existing Carmel River and Seaside Groundwater Basin (SGB) supplies that were reduced by State Water Board orders and the SGB adjudication. This will allow the provision of an appropriate, acceptable level of supply for the identified additional future customer needs that CalAm proposes to serve.

8.2.13.2 Demand Assumptions

Existing Annual Service Area Demand

Many comments objected to CalAm's estimate of existing annual demand, which is based on service area demand in 2010, stating that the estimate overstates existing demand and ignores the trend of decreasing demand since 2010. The use of 2010 service area demand data to represent existing annual demand is consistent with the California Department of Public Health's California Waterworks Standards,[1] discussed in EIR/EIS Section 2.3.2, Peak Demands. As described in Section 2.3.2, this regulation – and CPUC General Order 103-4 – requires that the water sources of public water systems of the size of CalAm's Monterey District service area have the capacity

1 California Code of Regulations Title 22, Division 4, Chapter 16, Section 64554.

to meet peak demands. Specifically, the regulations require that systems have the capacity to meet maximum (max) day demand and peak hour demand, and specifies that max day demand and peak hour demand are to be determined *based on the most recent ten years of operation* (emphasis added). Peak month demand represents the Monterey District's most critical challenge in meeting peak demand, as elevated demand in the peak month is more sustained, over multiple days, and needs to be considered as a factor in plant sizing (Svindland, 2013b). The trend that shows declining water use is considered. The 2010 service area demand data was used because it provides a higher, more conservative estimate of the local water use to better plan for potential future peak demands and for consistency with California Waterworks Standards and CPUC General Order 103-A. CalAm selected year 2010 to represent peak month demand of existing customers with the explicit expectation that demand would continue to decline, as stated in Draft EIR/EIS Section 2.3.2, and that by 2020, when the desalination plant was expected to be on line, 2010 demand would represent the maximum demand year for this 10-year period, and July 2010 would represent max month demand (Svindland, 2016, as cited in Section 2.3.2).

Comments Urge Lower Demand Number

Some commenters stated that service area demand in 2015 or 2016 was lower than in 2010 and various commenters recommend that demand in one of these years be used to represent service area demand for MPWSP planning; some pointed to the downward trend in water demand shown in EIR/EIS Table 2-2 as evidence that a downward trend in demand would continue. While a generally downward trend in water demand is expected to continue as permanent conservation measures continue to be implemented, demand in recent years has been influenced by two uncommon events: the deepest recession since the Great Depression, recovery from which has been unusually protracted (Federal Reserve Bank of Dallas, 2013); and a severe five-year drought. These events complicate the task of estimating service area demands under more "typical" conditions when the influence of these events is expected to subside.

As described in EIR/EIS Section 2.3, the economic recession that began in late 2007-early 2008 affected the Monterey Peninsula hospitality industry, reducing occupancy levels and visitation rates, and, consequently, reducing water demand at local visitor-serving businesses. The recession was global in scope and commonly recognized as the deepest since the Great Depression, with an unusually weak and prolonged recovery period (Federal Reserve Bank of Dallas, 2013; Fischer, 2014; Russell Sage Foundation et al., 2017). High unemployment and low consumer confidence lingered for years after it was officially declared to be over in mid-2009, with different geographic areas experiencing different rates and degrees of recovery. If lingering effects of the recession continued to depress water demand to some extent in recent years, demand in a fully recovered, robust economy could rebound above 2015 or 2016 demand. The drought was in progress during the last four years shown in Table 2-2 and the governor's declared statewide drought emergency was in effect in the last two years shown. Permanent measures to reduce water use, such as plumbing retrofits and landscaping changes, were implemented during this period. However, it is also likely that many people on the Monterey Peninsula, as throughout the state, made voluntary behavioral changes to reduce their water use during the drought – changes that a water manager cannot count on to be sustained at the same level of commitment in normal rainfall years or when restrictions imposed by the CDO are lifted. Under normal rainfall

conditions and without the CDO restrictions, year-to-year declines cannot be expected to be as dramatic as were achieved during the drought, and service area demand could increase to some degree compared to the later years of the drought. For example, urban water production statewide in May 2017[2] (following a wet winter after five years of severe drought) was somewhat higher than in May 2016 and residential per capita water use in May 2017 was somewhat higher in all hydrologic regions than in May 2016 (SWRCB, 2017). For this reason, it may be unwise to assume that the final years of a severe drought, such as 2015 or 2016, provide a reliable estimate of customer demand in non-drought years. In addition, as discussed above, use of 2010 to estimate peak month demand of existing customers ensures capacity to meet the peak need consistent with state waterworks regulations. The general downward trend in demand is expected to continue for some time and this expectation underlies the assumption that using 2010 demand would be consistent with state waterworks regulations regarding capacity to meet peak demands discussed above. That said, the incremental water use reductions achieved each year by conservation measures and programs cannot be expected to continue at the same rate indefinitely as programs and measures reach market saturation in a given service area, barring currently unforeseen technological breakthroughs. The rate of continuing reductions in water use can, therefore, be expected to slow over time and eventually level off.

Comments Urge Higher Demand Number

Some comments state that the demand estimates in the Draft EIR/EIS were too low, that demand estimates reflect current constraints on water use, and that the project should be sized to allow more "relaxed" conservation. Related comments stated that demand estimates need to reflect non-revenue water use and the need for Salinas Valley Groundwater Basin (SVGB) return water; that it was short-sighted not to size the plant to meet general plan buildout; and that minor changes to the EIR/EIS could address a plant sized to meet general plan buildout demand. While some relaxation in the behavioral changes people made during the drought can be expected, as noted in the discussion of 2015 and 2016 demand above, such changes are not expected to warrant a larger-capacity project. The experience of drought, changing weather patterns, and concern about effects of climate change have increased the recognition of the need for ongoing conservation efforts. For example, Governor Brown's April 2017 Executive Order B-40-17 terminating the January 2014 Drought State of Emergency also calls for "Making Conservation a Way of Life" and retains prohibitions on wasteful water use. MPWMD and CalAm are not expected to abandon or weaken water conservation programs that have been put in place since 1995 or the MPWMD's prohibition on water waste if the MPWSP were implemented. Demand described in the EIR/EIS is system demand (not water customer consumption) and, therefore, accounts for non-revenue water loss. Regarding SVGB return water, see the discussion under "Supply available for other use" below in Section 8.2.13.3 and Master Response 4. Regarding one commenter's opinion that the project should be sized to address general plan buildout, EIR/EIS Chapter 2, Section 2.3, describes the demand the project is proposed to meet, which would include some development under adopted general plans: development of legal lots of record represents development that would be anticipated in general plans. EIR/EIS Table 2.5 (Section 2.5) shows the amount of water

[2] The most recent month reported as of July 2017.

needed to meet future water demand associated with general plan buildout and in Table 6.3-8 (Section 6.3), the EIR/EIS growth inducement analysis compares the amount of project water that could be available for growth with the amount needed for general plan buildout. The amount of water that would be available to serve growth depends on the project's SVGB return water obligation. Note also that CalAm, the Monterey Peninsula Regional Water Authority representing Monterey Peninsula jurisdictions, the Coalition of Peninsula Businesses, and others agreed to the size of the MPWSP desalination plant in a proposed settlement agreement on plant sizing in 2013 (CalAm, et al. 2013).

Other Demands

Pebble Beach Entitlements

Several comments stated that the Draft EIR/EIS failed to adequately scrutinize the amount of water CalAm assumed for the Pebble Beach water entitlements and that existing customer demand does not include water to serve the Pebble Beach water entitlements. Other comments stated that the recycled water project that was the basis for these entitlements enabled the conservation of far more potable water than the amount represented by the entitlements, that CalAm has an obligation to serve the entitlements from whatever sources are currently available, and that the full entitlement amount represents an existing "irrevocable, divisible, binding entitlement to potable water, as a vested property right and interest" for use on and by the benefitted properties and should, therefore, be classified as existing demand. Related comments stated that because the Pebble Beach entitlements must be honored from existing supplies whether or not a new water project is built, water for the entitlements would not be growth inducing. Comments noted that this obligation has been recognized by the State Water Board and in written agreement between CalAm, the Pebble Beach Company and MPWMD, and that the proposed MPWSP would not change the effect of the Pebble Beach entitlements.

Draft EIR/EIS Section 2.3.3.1 explained that the MPWMD granted the Pebble Beach water entitlements to the Pebble Beach Company and two other fiscal sponsors for underwriting the development of a wastewater reclamation project that MPWMD estimates saves approximately 1,000 acre-feet per year (afy) of potable water. The Pebble Beach Company was granted a 380 afy entitlement. Draft EIR/EIS Section 2.3.3.1 also discussed how much of the original 380 afy entitlement had been used and the basis for concluding that 325 afy was a reasonable estimate of the remaining entitlements not reflected in recent system demand. The State Water Board recognizes that the wastewater project reduced demand on the Carmel River by more than the amount of the water entitlements, as some comments noted, and has stated that the 380 afy represented by the water entitlements is available to serve the Del Monte Forest properties when they are developed. The State Water Board also recognizes that during the CDO extension period (extended by Order 2016-0016 to December 31, 2021), increased diversions from the Carmel River by CalAm to satisfy the Pebble Beach entitlements would not be counted as part of CalAm's diversion limit but instead added to the adjusted base against which CalAm's compliance was measured. The properties developed using these entitlements also are not subject to the prohibition on new service connections contained in the State Water Board CDOs (Anton, 1998; SWRCB, 2009; SWRCB 2016). The commenters who questioned the inclusion of the

Pebble Beach entitlements as part of CalAm's service area demand provided no evidence or reason for excluding this legal obligation to serve water. The water entitlements constitute an existing commitment by MPWMD and obligation to serve by CalAm when the properties are developed, and therefore, are considered part of CalAm's existing demand. Therefore, EIR/EIS Section 2.3.1, Existing Service Area Demand, includes a new section, 2.3.1.3, Pebble Beach Entitlements. Compared to the Draft EIR/EIS, the Pebble Beach entitlements have been moved in the Final EIR/EIS from being part of the project water to a baseline condition because these entitlements represent demand that CalAm is obligated to serve whether or not the project is implemented. As such, the project would not remove an obstacle to growth of the properties served by this water entitlement and the project would not be considered to induce the growth of those lands.

Economic Recovery

Some comments asserted that the Draft EIR/EIS failed to adequately scrutinize the amount of water assumed within the proposed project to serve tourism rebound, that this CalAm estimate was inflated and unsupported, and that tourism has rebounded although water demand remains low, while another comment cited previous MPWMD testimony that CalAm's 500 afy estimate was reasonable. CalAm estimated that water demand at local hospitality-related businesses, which had been depressed due to the lingering effects of the recession that began in late 2007-early 2008, could increase by about 500 afy under a more robust, recovered economy. This estimate was included as part of future service area demand that the MPWSP (with other service area supplies) would need to serve. The Draft EIR/EIS growth inducement analysis (Section 6.3) conducted additional review of available commercial sector water consumption data and concluded that some degree of economic recovery had likely occurred and that additional demand at existing businesses under a fully recovered economy may be less than CalAm had estimated – closer to 250 afy than 500 afy. The Draft EIR/EIS described the 2016 economic study of travel impacts mentioned in some comments, which showed that transient occupancy tax receipts in Monterey County declined for several years following 2008, but by 2012 were greater than before the recession. While this study provides evidence that the hospitality industry in the county has recovered to some extent, the study does not support a direct comparison of tax receipts in different years because the tax receipt data were not adjusted for inflation; therefore, increased tax receipts in recent years likely reflect, to some extent, increases in lodging prices that have occurred since 2008, in addition to increased occupancy rates due to a recovering economy. Thus, that single study does not establish that the county's economy has fully recovered.

In response to a comment stating that economic rebound would affect demand in all commercial, industrial, and institutional sectors – not just restaurants and lodging – CalAm water consumption data for the industrial and public authority sectors were reviewed in addition to the commercial sector consumption data discussed in Draft EIR/EIS Section 6.3.5.1 and shown in Table 6.3-2. The data show that demand for the three sectors combined in years after the recession commenced is lower than pre-recession demand by a greater margin than a comparison of the commercial sector alone for the same time periods. For example, a comparison of demand in the four years before the recession started (2004 through 2007) with the four years after (2008 through 2011) shows that average annual commercial sector demand was 230 acre-feet (af) lower

than average annual demand in the four years before the recession started, whereas average annual demand for the three sectors combined was 600 af lower. Non-residential demand since 2012 has continued to decrease, thereby increasing the difference in demand compared to 2007 or other years before 2008, even though the economic study discussed above suggests that the economy had begun to recover, to some extent, by 2012. The lower demand in recent years is assumed to reflect responses to the drought at least as much – likely more – than lingering effects of the recession. Some post-drought rebound in demand is expected to occur, as discussed above under "Comments Urge Lower Demand Numbers," and available evidence has not established that the economy in CalAm's service area has fully recovered. However, non-residential demand in a fully recovered economy is not expected to return to pre-recession demand levels given permanent reductions in water consumption achieved by ongoing conservation programs since 2007. If somewhat more supply were needed for economic recovery than was assumed in the Draft EIR/EIS growth inducement analysis, taking into account economic rebound in the industrial and public authority sectors in addition to the commercial sector, this would not change the Draft EIR/EIS conclusions regarding the project's growth-inducing impact but could reduce somewhat the amount of water assumed to be available for growth.

Legal Lots of Record

Comments stated that the Draft EIR/EIS failed to adequately scrutinize the amount of water that CalAm has assumed is needed as part of the project to serve legal lots that do not now use water; that development has occurred since MPMWD's preliminary reports were prepared in the early 2000s estimating the water needed for these lots; and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed. Draft EIR/EIS Section 6.3.5.1 described the basis for CalAm's estimate of demand associated with vacant legal lots of record and summarized available information about this estimate. This included information on the preliminary studies that had been prepared for MPWMD and MPWMD's testimony during MPWSP proceedings that, based on MPWMD's assessment of available data, CalAm may have underestimated demand associated with lots of record. As the EIR/EIS states, one objection MPWMD had with one of the vacant lot studies (which it had commissioned but did not adopt) was that the demand estimate did not include demand associated with vacant lots on improved parcels in unincorporated areas. EIR/EIS Section 6.3.5.1 has been revised to include updated information from MPWMD (in Draft EIR/EIS comments, summarized above) that some lots have been developed and some vacant lots on improved parcels may never be developed. Due in part to the limited data on this component of project demand, Draft EIR/EIS Section 6.3.5.3 and Table 6.3-8 compared the water supply that would be provided by the project to serve legal lots of record and other new development with the estimate of water supply needed to serve development under adopted general plans in CalAm's service territory, and concluded that the amount of water supply provided by the project was consistent with (and less than) the estimate of water supply that would be needed to support general plan buildout.

Other Approaches to Estimating Future Water Demands

Some comments stated that the Draft EIR/EIS failed to conduct a per capita demand analysis or similar analysis based on water use per dwelling unit to determine the level of growth that would be supported by the proposed project. Estimating demand based on per capita water use is one of

several methods to estimate future water demand. The EIR/EIS compared the water that would be provided for additional development with the estimate of future water needs prepared by MPWMD, as described in Section 6.3.5.3 and shown in Table 6.3-8. The approach MPWMD took in 2006 to estimate future demand involved close consultation with service area jurisdictions and was based on anticipated land use development in the jurisdictions consistent with the respective adopted general plans. The analysis factored in water use based on different types of non-residential land uses, and recognized differences in water use in unincorporated county residences compared to city residences due to larger lot sizes, among other factors. One could reason this approach is no less valid than one based on estimated per capita or per dwelling unit water use, and arguably provides a more nuanced assessment of future water needs accounting for different land use types. The updates to the MPWMD estimates discussed in EIR/EIS Section 2.5.3.4 and shown in detail in EIR/EIS Table 2-5 were provided after the moratorium on new water connections was established in 2009. Therefore, little if any of this projected future demand will have been realized (became actual water use that would be reflected in existing demand) and the MPWMD estimates as revised are assumed to continue to reasonably reflect future water supply needs in CalAm's service area. The estimate of future water demand used in the EIR/EIS is appropriate and adequate because it is based on existing demand (for the substantial portion of the MPWSP that would replace water supplies no longer available to CalAm due to legal decisions discussed in EIR/EIS Section 2.2) and was evaluated with reference to the analysis of future water needs that was prepared by MPWMD.

Summary of Demand Assumption Revisions

For the reasons discussed above, the overall demand of 14,275 afy shown in Draft EIR/EIS Tables 2-3, 6.3-1, and 6.3-3 has not changed. However, the breakdown of identified existing and anticipated future demands shown in Table 6.3-3 has been revised: existing demand has been revised to include the 325 afy associated with existing Pebble Beach water entitlements, thereby increasing the estimate of existing demand from the 12,520 afy shown in the Draft EIR/EIS to 12,845 afy in the Final EIR/EIS. Correspondingly, because demand associated with anticipated future development shown in Table 6.3-3 no longer includes the Pebble Beach entitlements, it has been reduced by 325 afy, from 1,755 afy in the Draft EIR/EIS to 1,430 afy in the Final EIR/EIS.

8.2.13.3 Supply Assumptions

This section responds to comments concerning Draft EIR/EIS assumptions regarding available water supply. As discussed in the EIR/EIS and below, data concerning supply (as with data regarding demand) were derived primarily from estimates provided by CalAm and MPWMD.

ASR System

Several comments stated that the amount of water supply provided by the Aquifer Storage and Recovery (ASR) project assumed in the EIR/EIS was too low – that MPWMD assumed a higher yield from the ASR project and that a yield of 1,920 afy should be assumed rather than 1,300 afy assumed in the EIR/EIS. MPWMD commented that it has recently revised its estimate of the average annual yield from the ASR project. Draft EIR/EIS Section 2.4.3 explained that although the EIR prepared for the Phase I and Phase II ASR projects estimated the combined yield of the two phases would be 1,920 afy, diversions to the ASR system are contingent on maintaining

minimum daily instream flows in the Carmel River. Precipitation and streamflow can vary substantially from year to year; due to these uncertainties and constraints on potential diversions, the estimated long-term average annual ASR system yield of 1,300 afy assumed for the purpose of MPWSP water supply planning was considered reasonable to account for these fluctuations. MPWMD's updated estimate of the ASR project yield indicated that the weighted average yield (accounting for the statistical frequency of different water year types) of the Phase 1 and 2 ASR projects with the recently approved Monterey Pipeline is about 1,600 afy (see response to comment MPWMD-14). While CalAm's 1,300 afy estimate of long term average yield of the ASR project is more conservative than MPWMD's 1,600 afy estimate, CalAm's estimate is not unreasonable given the low yields during drier years – which many expect to be more frequent in the future due to climate change. Draft EIR/EIS Section 2.4.3 reported the substantial variation of Carmel River water available for ASR storage in recent years: "In water year 2011, which was wetter than average, 1,117 af of Carmel River water was injected into the groundwater basin. In water year 2012, 132 af was injected; in 2013, 295 af was injected, in 2014, no Carmel River water was injected, and in 2015, 215 af was injected."

Table 13 Water Rights

One commenter stated that the EIR/EIS should include water supply available under CalAm's Table 13 water rights, that Table 13 water supply should not be excluded on the basis that it is only available in wet years, and that it is not limited to wet years because it can be stored through the ASR system. As discussed in Draft EIR/EIS Section 2.4.6.1, CalAm's Table 13 water rights are subject to river flow criteria and other conditions, and Table 13 water must be used in the Carmel River watershed. That is, water available under this right cannot be diverted to storage in the ASR system, which is outside the Carmel River watershed. While Table 13 water is a useful supplement to CalAm supplies when it is available, it is less reliable than supply available via CalAm's other Carmel River rights because Table 13 water would not be available in dry years. Due to the variability of this supply, it is not appropriate to include it as a reliable element in CalAm's yearly supply portfolio. For example, as stated in Draft EIR/EIS Section 2.4.6.1, CalAm's combined diversions of Carmel River water under CalAm's Table 13 and ASR water rights were less than 300 afy in water year 2015. Regarding the effect of Table 13 water on desalination plant operations, in the proposed sizing settlement agreement signed by CalAm, the Monterey Peninsula Regional Water Authority, MPWMD, and others in 2013, CalAm agreed that if Table 13 water is available, "CalAm shall be able to lower the operating level of the desalination plant or use the Table 13 rights first in the year to allow other existing rights to be used later in the year for emergencies" (CalAm et al., 2013).

Sand City Desalination Plant

One commenter stated that more water is available to CalAm from the Sand City desalination plant than the 94 afy assumed for the project and noted that the description of the No Project Alternative in Draft EIR/EIS Section 5.4.2.3 assumed that 230 afy would be available from the Sand City plant. As discussed in EIR/EIS Section 2.4.4, CalAm's long term supply from the Sand City desalination plant water is 94 afy, and is the amount assumed in EIR/EIS Chapter 2 and Section 6.3. More is available in the near term – until Sand City needs the full 206 afy balance of

the plant's 300 afy production for development in Sand City. The timing and amount of availability of water for CalAm in excess of 94 afy is not under the control of CalAm, but is solely a function of growth in Sand City. To characterize CalAm's supply portfolio under the No Project Alternative when CalAm's unlawful Carmel River diversions end, pursuant to the 2016 CDO, 230 afy was assumed to be available from the Sand City plant. This is a near-term estimate of supply based on the amount assumed in the State Water Board's 2009 CDO for year 2016-2017, the last year for which the 2009 CDO provided a quantified estimate of supply available to CalAm from the Sand City plant.[3] The Final EIR/EIS Section 5.4.3.2 discussion under "Supply Shortages" has been revised to clarify that supply available to CalAm from the Sand City desalination plant under the No Project Alternative would eventually be reduced to 94 afy, as assumed for the MPWSP. Alternative supply and scenarios presented in Appendix L and summarized below in Section 8.2.13.5 include scenarios that assume 230 afy would be provided by the Sand City desalination plant.

GWR Supply

One commenter stated that the Draft EIR/EIS analysis underestimated the supply that would be available to CalAm from the GWR project and that 3,700 afy would be available to CalAm rather than the 3,500 afy assumed in the EIR/EIS. The amount of GWR supply that the EIR/EIS assumes would be available to CalAm is based on GWR project information. MRWPCA staff confirmed in September 2017 that an average of 3,500 afy of GWR water would be provided to CalAm. The GWR project also includes a drought component, which entails banking 200 afy in the groundwater basin for agricultural use during drought periods. That is, of a total of 3,700 acre-feet that would be injected into the groundwater basin each year, on average, 200 afy would be banked and withdrawn when needed during drought periods to provide additional supply to Salinas Valley growers (Imamura, 2017).

At the request of the CPUC, MRWPCA submitted three hypothetical scenarios to expand the GWR Project and produce more than 3,500 acre feet of purified recycled water annually for (CalAm's) Monterey District service area. In its testimony, MRWPCA emphasized that these scenarios are speculative; at this time, MRWPCA has no plans or proposals to expand the PWM Project beyond the current plans for expansion to 5 mgd (million gallons per day). As such, these scenarios are not assessed in this Final EIR/EIS. See Testimony at ohttp://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A1204019/990/197582477.pdf.

Supply for Peak Demands

One commenter suggested that, similar to electric utilities, CalAm's Monterey District would require a "reserve margin," which the commenter defined as "a measure of the amount of electricity imports and in-state generation capacity available over average peak demand conditions" and asserted that the MPWSP project objective "to develop a reliable water supply for the CalAm Monterey District service area, accounting for peak month demand of existing

[3] The 2016 CDO does not quantify an estimate of near term supply available to CalAm from the Sand City plant. The 2016 CDO states that the Sand City desalination plant provides CalAm a minimum of 94 afy and the balance of the plant's capacity not needed for expanded use in Sand City.

customers" is a type of "planning or month-ahead reserve margin requirement" to meet demand of existing customers. Related comments suggested that a reserve margin of 10 percent applied to 2016 annual demand would be adequate to meet system capacity needs. Like any water supplier, CalAm needs adequate capacity to meet peak demands, as a practical matter and as required by state Waterworks Standards discussed above in Section 8.2.13.2 and EIR/EIS Section 2.3.2. Thus, the size of the MPWSP is logically tied to these peak demands. As noted above under "Existing Annual Service Area Demand," peak month demand is the peak demand that challenges system capacity in CalAm's Monterey District, and state Waterworks Standards require the system to have the capacity to meet peak demands considering the most recent ten years of operation. While a commenter suggested that a 10 percent margin should be adequate to meet CalAm's capacity requirements, monthly demand varies by much more than 10 percent. **Table 8.2.13-1** shows the variation in average monthly production demand anticipated for the project in a typical year. "System production demand" includes CalAm service area demand assumed for the proposed project and SVGB return water. The production demand shown is based on a 9.6 mgd desalination plant with an assumed 6 percent SVGB return water obligation. As shown, demand in the peak month, July, is roughly 35 percent greater than average monthly demand for the year overall, and demand in December is roughly 30 percent lower than the average monthly demand for the year. The comments raising the topic of a reserve margin defined it as being an amount "over average peak demand" but did not indicate what the "average peak demand" was assumed to be for the CalAm system. Comments subsequently implied that the reserve margin was an amount above average demand, and failed to demonstrate how the assumed 10 percent reserve margin could meet CalAm's peak demand capacity requirements. Regarding the assumption that 2016 demand accurately represents existing average annual demand, see the discussion of "Comments Urge Lower Demand Numbers" above in Section 8.2.13.2.

"Supply available for other use"

Several comments stated that water supply shown in Draft EIR/EIS Table 2-4 as "available for other uses" is surplus, should be subtracted from the asserted demand for this project, and shows that a smaller desalination plant would be feasible. The water shown in EIR/EIS Table 2-4 as "supply available for other use" is the volume of water available for other uses after service area demand is subtracted from anticipated supplies. Much of this water would be used to meet CalAm's SVGB return water obligation. SVGB return water is discussed in Section 2.5.1 and Section 2.6. See also Table 6.3-4 in Chapter 6, which shows supplies, demands, and two estimates of SVGB return water. Thus, supply shown as available for other use after service area demand is met is not necessarily surplus that would allow for a reduction in the size of the proposed project. Refer to Master Response 4, The Agency Act and Return Water. As discussed under "Conclusion: MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1, there could be surplus supply after meeting the return water obligation – or a deficit – depending on the actual amount of the return water obligation. As that discussion states, supply not needed for other uses would be available to support new development. In addition, as indicated in the notes in Draft EIR/EIS Table 2-4, the estimates of annual water supply provided by desalination plant production show a direct unit conversion of the rated capacity of a 9.6 mgd and a 6.4 mgd plant, and thus reflect operation at 100 percent capacity. This is greater than industrial facilities are typically recommended to operate. If operating the plant at or near full production capacity

TABLE 8.2.13-1
TYPICAL MONTHLY SYSTEM PRODUCTION DEMAND - PROPOSED MPWSP

	January	February	March	April	May	June	July	August	September	October	November	December	Monthly Average
MPWSP System Production Demand (mgd)[a]	10.0	10.2	10.9	11.6	16.4	18.6	19.1	18.8	18.6	14.7	11.7	9.6	14.2
Percent of Average Monthly Demand[b]	70%	72%	77%	82%	116%	131%	134%	132%	131%	103%	83%	68%	100%

NOTES:
mgd = million gallons per day

[a] System production demand includes existing annual service area demand and additional demands the project is proposed to meet (Pebble Beach water entitlements, demand associated with hospitality industry economic recovery, and legal lots of record, shown in Draft EIR/EIS Chapter 2 Table 2-3), and Salinas Valley Groundwater Basin return water assuming a 6 percent return water obligation for a 9.6 mgd desalination plant.

[b] This row compares the typical demand for the month with annual average monthly demand to show the month-to-month variation in system production demand over the course of a year. For example, in July, demand is about 35 percent higher than the annual average (134%-100%), and in December, demand is about 30 percent lower than the annual average (100%-68%).

SOURCE: CalAm, 2016; ESA, 2017.

provided more water than needed to meet service area demand and the return water obligation, the plant could be operated at a lower capacity. As discussed above, the plant is sized to provide the flexibility needed to meet peak month demands.

Supply Provided by the Desalination Plant

One commenter asserted that the Draft EIR/EIS provided insufficient information on how CalAm's multiple water supply sources will be operated together to ensure supplies were optimized and another commenter expressed concern about high operating capacity assumed for the plant. As shown in EIR/EIS Table 3-7, the proposed desalination plant is expected to operate at a relatively constant rate throughout the year. As described in EIR/EIS Section 3.4.2, during wet periods, CalAm would store desalinated water supply in the SGB via the ASR system, and the stored desalinated product water as well as stored Carmel River supplies would typically be extracted during summer months and periods of peak demand. To illustrate how the plant would be operated in conjunction with CalAm's other supplies, **Table 8.2.13-2** shows an example of typical monthly operations for the proposed 9.6 mgd desalination plant assuming a 6 percent SVGB return water obligation.[4] The EIR/EIS assumption that the plant would operate primarily at or near full production capacity (e.g., at 95 to 100 percent most months in the monthly operations table below and at 100 percent capacity in EIR/EIS Tables 2-4 and 6.3-4) is conservative from the perspective of evaluating the environmental impacts of plant operations and indirect effects of water supply the project would provide, but operating at 95 to 100 percent capacity is a higher operating capacity than would likely be considered practical. Most industrial facilities do not operate this close to 100 percent capacity.[5] Should supplies be somewhat greater than demand, or longer-term demand decline due to conservation programs, the plant could be operated at a somewhat lower capacity. Indeed, although MPWMD has not determined the allocation of water that would be provided by the project, MPWMD stated in a comment on the Draft EIR/EIS that it may not allocate all of the water produced by the project. One reason MPWMD may choose not to allocate the full amount that could be produced would be to allow the plant to operate at a lower capacity (see comment MPWMD-21). Absent assurance that the plant would be operated at a lower level, the EIR/EIS analysis assumed that the plant would operate at or near full capacity. The monthly operations shown in Table 8.2.13-2 assume normal rainfall conditions. In dry years, less water may be available from the Carmel River, e.g., for diversion to the ASR system. In extended dry periods, such as the recent drought, even water that may have previously been injected into the ASR system over a period years[6] could be depleted. In such periods, supplies provided by the desalination plant would be even more critical.

4 This table is based on a monthly operations table showing a 7 percent SVGB return water obligation that was prepared by CalAm. The table was revised for this example to show a 6% return obligation, for consistency with the mid-range return obligation percentage considered in EIR/EIS groundwater modeling, by reducing the amount of return water delivered from May to October to CSIP.

5 For example, according to the U.S. Census Bureau's quarterly surveys of plant capacity utilization rate, U.S. domestic manufacturing plants on average used 71 to 73 percent of their full production capacity in 2016, although a few industries operated above 90 to 95 percent in some or all quarters. Reverse osmosis desalination was not listed as a category of industrial facilities in the survey (U.S. Census Bureau, 2017).

6 As noted in the ASR discussion above, it is assumed when CalAm has a replacement supply that enables it to cease unlawful diversions that it will not be required to use stored ASR water in the same year it is injected.

TABLE 8.2.13-2
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH[a]

	MGD												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual[b]
Average Demand	9.5	9.7	10.3	10.9	14.1	16.1	16.7	16.4	16.1	13.0	11.1	9.1	14,300
Salinas Valley Return – Castroville[c]	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.8	0.7	0.5	800
Salinas Valley Return – CSIP[c]	0.0	0.0	0.0	0.0	1.5	1.6	1.6	1.6	1.6	0.9	0.0	0.0	820
Total System Production Demand	**10.0**	**10.2**	**10.9**	**11.6**	**16.4**	**18.6**	**19.1**	**18.8**	**18.6**	**14.7**	**11.7**	**9.6**	**15,920**
Supplies													
Carmel River to Distribution System	5.7	5.7	5.7	5.2	2.2	1.0	1.0	1.0	1.0	1.0	1.0	5.7	3,366
Seaside GW Supply to Distribution System	0.0	0.0	0.0	0.0	1.1	1.2	1.3	1.3	1.1	1.1	1.1	0.0	771
Sand City Desalinated Supplies to Distribution System	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	94
ASR – GWR Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
ASR – Carmel River Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.6	1.6	2.3	2.5	2.5	2.3	1.4	1.0	0.0	1,332
ASR – Desalinated Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.0	2.8	5.0	5.3	4.9	5.1	1.9	0.0	0.0	2,343
MPWSP Desalinated Supplies to Distribution System	3.8	4.0	4.6	5.1	6.3	6.5	6.5	6.6	6.5	7.5	7.9	3.3	6,394
Total Supplies to Distribution System	**9.5**	**9.8**	**10.3**	**10.9**	**14.1**	**16.1**	**16.7**	**16.4**	**16.1**	**13.0**	**11.1**	**9.1**	**14,300**
Total Supplies to Distribution System and SVGB	**10.0**	**10.2**	**10.9**	**11.6**	**16.4**	**18.6**	**19.1**	**18.8**	**18.6**	**14.6**	**11.7**	**9.6**	**15,914**
Difference: Total Supplies minus Total Production Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.1	0.0	0.0	0.0

TABLE 8.2.13-2 (Continued)
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH[a]

	mgd												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual[a]
Supply Provided by MPWSP Desalination Plant													
Desalinated Supplies to Distribution System	3.8	4.0	4.6	5.1	6.3	6.5	6.5	6.6	6.5	7.5	7.9	3.3	6,394
Desalinated Supplies to ASR Injection	5.4	5.0	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.8	2,347
Desalinated Supplies to Salinas Valley Return – Castroville	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.8	0.7	0.5	800
Desalinated Supplies to Salinas Valley Return – CSIP	0.0	0.0	0.0	0.0	1.5	1.6	1.6	1.6	1.6	0.9	0.0	0.0	820
Total Desalinated Supplies	**9.6**	**9.5**	**9.6**	**9.3**	**8.6**	**9.0**	**8.9**	**9.0**	**9.0**	**9.2**	**9.6**	**9.6**	**10,361**
Supply Extracted from Seaside Groundwater Basin via ASR System													
GWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Carmel River	0.0	0.0	0.0	0.6	1.6	2.3	2.5	2.5	2.3	1.4	1.0	0.0	1,332
MPWSP Desalinated Supplies	0.0	0.0	0.0	0.0	2.8	5.0	5.3	4.9	5.1	1.9	0.0	0.0	2,343
Total Extraction	**0.0**	**0.0**	**0.0**	**0.6**	**4.4**	**7.3**	**7.8**	**7.4**	**7.4**	**3.3**	**1.0**	**0.0**	**3,675**

NOTES: MGD = million gallons per day
Components may not sum to the totals shown due to rounding.

[a] Based on MPWSP supply and demand assumptions: average demand of 14,275 afy, 94 afy supply from the Sand City desalination plant, and 1,300 afy from the ASR system.
[b] Annual totals in acre-feet/year are calculated by converting the estimated monthly averages in mgd shown here, provided for information purposes. 1 mgd = 1,120 afy
[c] Assumes a 6 percent Salinas Valley Groundwater Basin return water obligation.

SOURCE: CalAm, 2016; ESA, 2017.

Water Available after Seaside Groundwater Basin Replenishment

For the first 25 years of operations, CalAm would pump 700 afy less than its adjudicated right from the SGB to provide "in-lieu" replenishment of water it has pumped in excess of its adjudicated rights since that basin was adjudicated. At the end of the 25-year period, CalAm would have access to its full 1,474 afy adjudicated right. The additional 700 afy that would then be available to CalAm could be used to offset loss of capacity at Los Padres Reservoir, as stated in comment MPWMD-17; to reduce the operating level of the desalination plant; or to serve additional growth within the CalAm service area, as stated in "Conclusion: MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1. Added to the supply available for future development assuming either 6 or 12 percent SVGB return obligation, shown in Draft EIR/EIS Table 6.3-8, this would still be less than the revised MPWMD estimate of future supply needs. If no water is needed to be returned to the SVGB, supplies with the additional 700 afy from the SGB that would be available for future development would total 4,149 afy. This **would exceed the amount of water needed for growth** under adopted general plans based on the revised MPWMD estimate of future supply needs (3,526 afy) shown in Draft EIR/EIS Table 6.3-8. Supply available for future development would exceed this estimate of future supply needs by 623 afy, which represents 2.3 percent of the source water needed for a 9.6 mgd plant (assumed to be 24.1 mgd, or 26,990 afy). Therefore, if the SVGB return water obligation turned out to be an amount less than 2.3 percent, the amount of water available after the Seaside Basin replenishment period would change the Draft EIR/EIS conclusion regarding the consistency of the project with planned growth and thus the project's growth inducing impact. However, as explained in Master Response 4, Section 8.2.4.3 (see also EIR/EIS Appendix E3), the actual annual volume of return water could be 10 percent in the first few months of project pumping and would be no more than 5 percent within 5 years of project pumping. Therefore, based on current available information, the Draft EIR/EIS conclusion – that the supply provided by the project would be consistent with growth anticipated in jurisdictions' adopted general plans – remains valid.

Summary of Supply Assumptions

For the reasons discussed above, the amount of water supply provided by the project and CalAm's other supply sources shown in Draft EIR/EIS Table 2-4 has not changed. Based on current groundwater investigations, the SVGB return water obligation would be about 5 percent within 5 years and therefore, Draft EIR/EIS conclusion about the consistency of water supply provided by the project with water needed for growth under adopted general plans would not change.

8.2.13.4 Growth Inducement

Water Available for Growth

Comments claimed that demand is overestimated and available supply underestimated, and therefore, the project would provide more water than needed, inducing more growth than identified in the Draft EIR/EIS. Some comments asserted that because demand has been decreasing, the project would result in more water than the analysis assumed for new development, and that the amount of water available for growth would exceed water needed for general plan buildout in the

service area. Related comments asserted that the EIR/EIS approach of looking at growth projections and buildout in general plan EIRs is not appropriate because the general plans and their environmental documents are outdated and baseline conditions have changed. Sections 8.2.13.2 and 8.2.13.3, above, address comments concerning the EIR/EIS demand and supply assumptions and document why they remain reasonable – and, consequently, why the quantity of water assumed to be available to serve additional growth is also reasonable. As discussed in EIR/EIS Section 6.3.2.1, a jurisdiction's general plan is its comprehensive, long-term plan for physical development, including the general distribution, location, and extent of land uses, and recommended standards of population density and building intensity. Consequently, service area jurisdictions' adopted general plans provide an appropriate indication of the development anticipated in CalAm's service area. The comparison in EIR/EIS Table 6.3-8 of water supply available for future development provided by the project and CalAm's other supply sources with future water supply needs is based on the estimate of future water needs prepared by MPWMD in 2006, in consultation with representatives of service area jurisdictions. As described in Section 6.3.5.3, the jurisdictions provided estimates of anticipated development at the time, consistent with their adopted plans. All of the subsequent updates of the 2006 estimates, which are shown in Draft EIR/EIS Table 2-5, were provided since 2009, when the moratorium on new water connections was in effect. Therefore, the MPWMD estimate of future water supply needs, as revised, remains a reasonable point of comparison for growth that would be supported by project water supply. The Draft EIR/EIS analysis confirmed that the project water supply available to support new development would be consistent with that estimate of future water needs and no change has been made to the EIR/EIS.

One commenter asserted that the EIR/EIS assumption that project water not needed to meet existing demand potentially could be used for any purpose was inconsistent with stated project objectives and could lead to the need for another water supply project in the future with the same objectives – serving lots of record, Pebble Beach entitlements, and tourism demand – if the MPWSP water supply was not reserved for the stated project objectives. The commenter stated that the EIR/EIS should include mitigation to limit use of project water to the stated purposes, and if the CPUC does not have authority to impose such mitigation, the EIR/EIS should be revised to identify this as a potentially significant impact. CalAm is responsible for providing water within its service territory. The MPWMD – not CalAm, the CPUC or MBNMS – is responsible for allocating water supply within CalAm's service territory (see EIR/EIS Section 2.5.4), but has not yet prepared an allocation for the proposed MPWSP supply. Note that comment MPWMD-21 presents some options that the MPWMD would consider in the allocation process, including reserving some water for lots of record, economic recovery, and Pebble Beach entitlements. The "impact" suggested by this commenter would flow from the inability of all parties to make water available per the project objectives. This is speculative and also not reasonably foreseeable given that water for Pebble Beach is based on established entitlements, and especially given the MPWMD's comments about allocation. In the absence of definitive information about how MPWMD would allocate the proposed water supply, and given that CalAm and the Lead Agencies cannot dictate how project water is used, the EIR/EIS properly discloses the potential that jurisdictions that are allocated project water would be able to use it for purposes other than those underlying CalAm's project objectives. EIR/EIS Section 6.3.6 identifies the project's growth inducing impact as significant and unavoidable.

Impacts of Growth

Comments regarding growth impacts stated that the Draft EIR/EIS analysis cannot avoid or ignore the impacts of growth induced by the project on the theory that the growth may have been included in the analysis of various general plans; that induced growth would contribute to cumulative GHG emissions and global climate change; and that the impacts of growth induced by cumulative water supply projects were not adequately described or analyzed. Draft EIR/EIS Section 6.3 acknowledges that the project would remove an obstacle to growth by removing, to a degree, water supply limitations in CalAm's service area. The analysis identifies the impacts of growth that the project would support. The impacts of planned growth that would be supported, in part, by the project have been identified in the general plan CEQA documents of service area jurisdictions; as discussed in EIR/EIS Section 6.3.6, some of the identified indirect impacts of growth are significant and unavoidable; others are significant but can be mitigated. These are the impacts to which the project would indirectly contribute by providing water supply, and are the basis for the determination that the project's growth inducing impact would be significant and unavoidable. Section 6.3.6 and Table 6.3-9 summarized the impacts of this growth. Draft EIR/EIS Appendix J2 provided a more detailed summary of the impacts and the mitigation measures identified in the general plan CEQA documents to mitigate the effects of that growth. Table 6.3-9 identified 'contribution to cumulative greenhouse gas emissions and global climate change' as one of the significant unavoidable impacts associated with growth supported by the project. In addition, the EIR/EIS growth inducement analysis states that although some of the general plan CEQA documents of service area jurisdictions were prepared before passage of the California Global Warming Solutions Act of 2006, the project was indeed expected to indirectly contribute to a significant and unavoidable increase in greenhouse gas emissions as a result of growth supported by project water supply; see EIR/EIS Section 6.3.6. The general plans and their respective CEQA documents are not unrelated to the project water supply, as one comment suggested. Project water not needed as Carmel River and SGB replacement supply to meet existing demand would be allocated to jurisdictions or reserved by MPWMD. Decisions relating to project water that is allocated to jurisdictions would be the responsibility of the respective jurisdictions and subject to their land use plans, policies and regulations, chief among which typically is the general plan. Comments to the effect that the analysis "wrote-off" growth-related impacts as an obligation of the municipal planning process may misunderstand Section 6.3.6.2, Authority to Mitigate Effects of Growth. As discussed above, the Draft EIR/EIS identified growth inducement as a significant and unavoidable impact of the proposed project. However, as stated in section 6.3.6.2, the CPUC, MBNMS, and CalAm do not have the authority to approve, deny, or impose mitigation measures upon land uses that may rely on project water for their development. Urban growth typically results in many common impacts – those impacts are described and disclosed for the MPWSP in Section 6.3.6. Multiple water projects in the region would increase growth in the region, as discussed in Draft EIR/EIS Section 6.3.7. The cumulative analysis accurately concludes that the effect of growth induced by cumulative water projects would be to increase the severity of the impacts and expand the area that would be affected by these impacts.

8.2.13.5 Alternative Supply and Demand Assumptions

Questions have been raised as to whether the project may or may not be necessary or could be smaller if one considered different supply and demand numbers that some commenters believe are more reasonable than those used in the Draft EIR/EIS. In order to test out that possibility, Appendix L was prepared for informational purposes only (i.e., without change to the assumptions in the EIR/EIS, as addressed above throughout this Master Response) to consider the results of using different supply and demand numbers. The primary consideration is whether facts exist to support a smaller desalination plant (e.g., having one less reverse osmosis [RO] unit) such that either a smaller plant or a phased plant could be approved for the 9.6 mgd project or the 6.4 mgd Alternative 5a. The results of that sensitivity analysis could inform and affect the ultimate project decision.

The first scenario considered in Appendix L is based on the following demand assumptions:

- Demand in 2013 (rather than 2010), the year before the drought emergency was declared, represented existing annual demand of 11,360 afy rather than 12,270 afy
- The same amount of water would be needed to serve Pebble Beach entitlements as assumed in the EIR/EIS (325 afy)
- Economic recovery of the tourism industry would require half the supply shown in EIR/EIS Table 2-3 for this demand component (250 afy rather than 500 afy)
- Development of lots of record would require half the supply shown in EIR/EIS Table 2-3 for this demand component (590 afy rather than 1,180 afy)

Together these assumptions would thus reduce overall service area demand to 12,521 afy, compared to the 14,275 afy assumed for the project.

These demand assumptions were paired with three different ASR supply assumptions and two different Sand City desalination supply assumptions, shown below, to create six variations of Scenario 1, Scenarios 1a through 1f.

- ASR supply of 0 (during a drought), 1300 afy (as assumed in the EIR/EIS), or 1,600 afy (as currently estimated by MPWMD)
- Sand City desalination plant supply of 94 afy (CalAm's long term supply assumed for the MPWSP) or 230 afy (CalAm's near-term supply assumed for the No Project Alternative)

Under Scenario 1, assuming that the ASR system provided at least as much supply as assumed in the Draft EIR/EIS (i.e., 1,300 or 1,600 afy), the plant size could be reduced by one 1.6 mgd RO unit. This would reduce the plant size from 9.6 to 8.0 mgd for the proposed project or from 6.4 to 4.8 mgd for Alternative 5a. However, in a drought when little or no supply was available from the ASR system, there would be insufficient supply to meet assumed demands if the plants were one RO unit smaller. Based on the above demand and supply assumptions that would allow for elimination of an RO unit, if a unit were *not* eliminated, the amount of supply that could be provided in excess of demand would still be within the amount of water needed for growth under adopted general plans discussed in the Draft EIR/EIS. Therefore, these assumptions would not change the Draft EIR/EIS conclusions about the project's growth inducing impact. Moreover, the

recent severe, five-year drought demonstrated that it is not reasonable to assume that there would never be drought conditions that could deplete ASR reserves and prevent new ASR supplies being diverted from the Carmel River for storage and use. Consequently, changes in plant sizing based on scenarios that assume the availability of adequate ASR supplies would need to be considered carefully.

Scenario 2 considered in Appendix L is based on the following assumptions:

- Demand in 2015 (rather than 2010), well into the recent drought, represented existing annual demand of 9,545 afy rather than 12,270 afy
- The same assumptions regarding the other demand components described above for Scenario 1 (Pebble Beach entitlements = 325 afy, economic recovery demand = 250 afy, and lots of record demand = 250 afy)
- The same assumptions regarding ASR and Sand City supply described above for Scenario 1 (ASR supply = 0, 1,300 afy, or 1,600 afy; Sand City supply = 94 or 230 afy)

These demand and supply assumptions were combined to create six variations, Scenarios 2a through 2f.

Under Scenario 2, the plant size could be reduced by one RO unit even in drought conditions when no water was available from the ASR system. Assuming the availability of ASR system supplies, i.e., non-drought conditions, plant size could be reduced by two RO units – from 9.6 to 6.4 mgd for the proposed project or from 6.4 to 3.2 mgd for Alternative 5a. However, in a drought when little or no supply was available from the ASR system, there would be insufficient supply to meet assumed demands if the plant was two RO units smaller. If the 2015 demand and supply assumptions that include 1,300 or 1,600 afy from the ASR system (i.e., those that allow for elimination of two units) were assumed to be correct, but the proposed plant size was *not* reduced by at least one unit, the amount of supply that could be provided above demand **would exceed the amount of water needed for growth under adopted general plans described in the Draft EIR/EIS. This would change the Draft EIR/EIS conclusion regarding the consistency of the project with planned growth and thus the project's growth inducing impact.** However, as noted above regarding Scenario 1, the recent drought has shown that it is not reasonable to assume there will never be drought conditions that could deplete ASR reserves and eliminate this as a supply source in some years. Given that development under general plan buildout would require adequate supply in all water year types, including droughts, the amount of supply available for additional development when no water was available from the ASR system is therefore, a more reasonable volume with which to compare with the amount of water needed for general plan buildout. When ASR supply is not available, the amount of water that would be provided in excess of demand under Scenario 2 is within the amount of water needed for growth under adopted general plans discussed in the Draft EIR/EIS.

Refer to Appendix L for more information on the alternative supply and demand scenarios that were explored.

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8.2.14 Master Response 14: CEMEX Settlement Agreement

COMMENTERS ADDRESSED IN MASTER RESPONSE 14

City of Marina	CEMEX
Marina Coast Water District	

This Master Response provides an update to the status of the CEMEX sand mining facility, also known as the Lapis #110 Pit, the Lapis Sand Pit, and the Lapis Sand Plant. As explained in EIR/EIS Section 4.17.1.2, the California Coastal Commission (CCC) on March 17, 2016, issued a Notice of Intent (NOI) to Commence a Cease and Desist Order to CEMEX property owners (CCC, 2016). The NOI described past discussions between the CCC and CEMEX regarding CCC staff's allegations of the lack of proper coastal development permits and several other violations of the Coastal Act related to sensitive dune habitat in the vicinity of the active mining operations and coastal access. CEMEX has disputed and continues to dispute the CCC's allegations set forth in the NOI and asserts that it conducts the Lapis sand plant operations lawfully, and between March 2016 and July 2017, engaged in discussions with CCC regarding the cease and desist order proceedings.

Further, following publication of the Draft EIR/EIS, on May 16, 2017, the California State Lands Commission (CLSC) issued a letter to CEMEX concluding that the Lapis Sand Mine engaged in unlawful conversion of state public trust resources and indicated that CEMEX must either immediately submit a lease application or cease dredge pond (mining) operations. On June 6, 2017, the City of Marina passed Resolution No. 2017-57 that authorized the City Attorney to pursue the possibility of a civil action against CEMEX to declare and abate the Lapis Sand Mine as a public nuisance under sections 3479 and 3480 of the California Civil Code pursuant to California Code of Civil Procedure section 731, and to pursue the possibility of commencing action or proceedings for abatement under section 17.60.040 and section 17.25.030 of the Marina Municipal Code.

The following subsections describe the settlement agreement ultimately reached among CEMEX, the CCC, the CSLC, and the City of Marina, the Removal Plan required by that agreement, and the effects of the agreement on the proposed project and the EIR/EIS analysis. Because the settlement agreement was reached after the close of the Draft EIR/EIS comment period, no comments have been received that pertain specifically to this agreement. However, some comments (e.g., MCWD, City of Marina) pertain to ongoing CEMEX mining operations described in the Draft EIR/EIS that now are expected to cease, such as references to the active or retired portions of the mining operation, the availability of on-site habitat mitigation opportunities, or CalAm's access to its permanent easement, or how the mining operation affects coastal erosion. This Master Response therefore provides a consolidated explanation of reasonably foreseeable changes relevant to the proposed project and EIR/EIS associated with the expected change in mining activities.

8.2.14.1 CEMEX and CCC Settlement Agreement

Subsequent to the publication of the Draft EIR/EIS, in July 2017, the CCC, the CSLC, and the City of Marina reached an agreement with CEMEX to end the sand mining operations at the CEMEX site. Among other things, the Consent Settlement Agreement and Cease and Desist Order CCC-17-CD-02 (Settlement Agreement; CCC, 2017) requires that CEMEX stop sand mining on the CEMEX property by December 31, 2020, pursuant to a cessation plan; put a cap on the amount of sand that can be mined until that time; remove dredges, equipment associated with dredges, a pump station, and other facilities from the CEMEX property pursuant to a removal plan; abstain from causing any further changes in intensity of use of the property; undertake reclamation of the property and protect sensitive species on site; and transfer the property to an approved non-profit or governmental entity for conservation at a reduced price, with a deed restriction to protect the access and the habitat at the site in perpetuity. The deed restriction must preserve the open space and habitat values of the property, and must reflect that improvements to provide low-impact passive recreation, public access, and public education; removal activities; and activities to restore native habitat will be consistent with existing easements or other rights of record.

Removal Plan

Section 5.0 of the Settlement Agreement requires CEMEX to prepare and submit to the CCC Executive Director, no later than 90 days following the December 31, 2020 end of the sand mining phase-out period, a Removal Plan that summarizes all measures to be taken in connection with the removal of the physical structures and materials from the site, including erosion control measures to be used during removal activities. The Removal Plan shall describe the equipment to be used, and the schedule to complete removal, consistent with a schedule provided in the Settlement Agreement, with all CEMEX buildings and facilities to be removed by December 31, 2024 and final grading and seeding to occur by December 31, 2025.

CalAm Easement at CEMEX

Section 23.2 of the Settlement Agreement states that, “Notwithstanding anything in this Agreement to the contrary, this Agreement . . . shall not . . . interfere with any existing rights or obligations of California-American Water Company . . . related to the Property, including, but not limited, to the recorded easement and related option in favor of CalAm and does not require the removal of such easement and related option.”

In November 2014, CalAm and CEMEX entered into an “Agreement for Temporary Investigatory Easement, Option for Permanent Easements and Joint Escrow Instructions” (CalAm-CEMEX Agreement). In that easement agreement, CEMEX granted to CalAm an option to purchase permanent easements on, across, and under the property, solely for the purpose of accessing, constructing, installing, operating, and maintaining slant wells and related pipelines and utilities for the desalination facility proposed to be constructed as part of the MPWSP. The permanent easement granted to CalAm would occupy approximately 30 acres of the CEMEX property, situated south of the existing access road. Starting at the point where the existing access road intersects the beach, the trapezoidal-shaped easement area would run south along the front

(ocean-side) of the dunes for about 1,800 feet before turning inland (east) for about 700 feet, then turning north for about 1,500 feet where it would intersect with the existing access road about 800 feet inland from the beach. CalAm would also maintain an additional 30-foot-wide easement along approximately 4,000 feet of the Source Water Pipeline alignment for another approximately 3 acres. See **Figure 8.2.14-1**.

8.2.14.2 Final EIR/EIS Considerations

Impacts of Settlement Agreement on MPWSP Access

As described in EIR/EIS Section 3.4.1, the analysis assumes that CalAm maintenance workers would access the slant wells via the existing CEMEX access road. Access to the CalAm easement across the CEMEX property is provided for in the CalAm-CEMEX Agreement. Section 3(h) of that agreement specifies that CalAm and CEMEX will determine a route for a vehicular access easement across the greater CEMEX property to the CalAm easement (see Figure 8.2.14-1), although CEMEX retained the right to relocate the vehicular access easement at any time so long as CalAm is provided with equivalent access to its easement. If the vehicular access easement is relocated such that the existing access road is no longer used, the new route would still be within the area analyzed as the extent of project disturbance and shown on EIR/EIS Figure 3-3a. Since the Settlement Agreement allows for public access and low-impact passive recreation on the property (Settlement Agreement Sections 6.1, 6.2(D)(3)), the new owners of the property will likely prepare a public access plan. Pursuant to Section 23.2 of the Settlement Agreement and the terms of the CalAm-CEMEX Agreement, the new owners and any public access plan would necessarily respect the access provision of the CalAm-CEMEX Agreement. Therefore, the assumptions regarding ongoing access to the slant well sites for project maintenance have not been changed in the Final EIR/EIS.

Impacts of Settlement Agreement on Coastal Erosion

As explained in the EIR/EIS Coastal Erosion Study (see Appendix C2, and EIR/EIS Section 4.2.4.5), one of the most important variables in the coastal erosion model is the historic erosion trend. Shoreline change data were compiled from a variety of sources and were combined with the Thornton et al., 2006 dune erosion rates, where available (see Appendix C2, Section 2.2) since estimated erosion based on dune crest recession is a more robust estimate of erosion than shoreline change. In this region where beaches have been controlled in part by sand mining, the coastal retreat study assumed there would be no changes to existing sand mining practices. With the closure of the Lapis Sand Plant in 2020 as a result of the Settlement Agreement, ongoing coastal erosion at this location is expected to slow compared to erosion rates that have occurred with sand mining. Therefore, the erosion profiles in the EIR/EIS likely overestimate the rate of future shoreline change. The analyses and conclusions related to coastal erosion in the EIR/EIS have not been revised, and instead have been retained as conservative estimates of potential erosion-related impacts. From a practical standpoint, a slower rate of erosion would mean that the slant wells would be unimpaired and not exposed by coastal erosion for a longer period of time (such that they would not need to be relocated until a later time).

Consideration of Removal Plan and Reclamation Plan Implementation in Cumulative Scenario

EIR/EIS Section 4.17, Mineral Resources, describes the existing mining operations at CEMEX, as well as the Lapis Plant Reclamation Plan that was approved by the State Mining and Geology Board on June 15, 1992. As noted in Section 4.17.1.2, Mining Operations, Phase I revegetation and recontouring measures have been carried out along the slopes of the southern portion of the CEMEX property, while Phase II reclamation plans call for revegetation of the northeastern slope once mining operations have ceased. At the time of publication of the Draft EIR/EIS, the Reclamation Plan anticipated that sand mining could continue until or beyond 2039; therefore, a timeframe for the required reclamation under Phase II was not known. However, as noted in Section 3.4 of the Settlement Agreement, the initiation of reclamation activities consistent with the Reclamation Plan, including restorative grading, revegetation and monitoring, shall begin no later than December 2023.

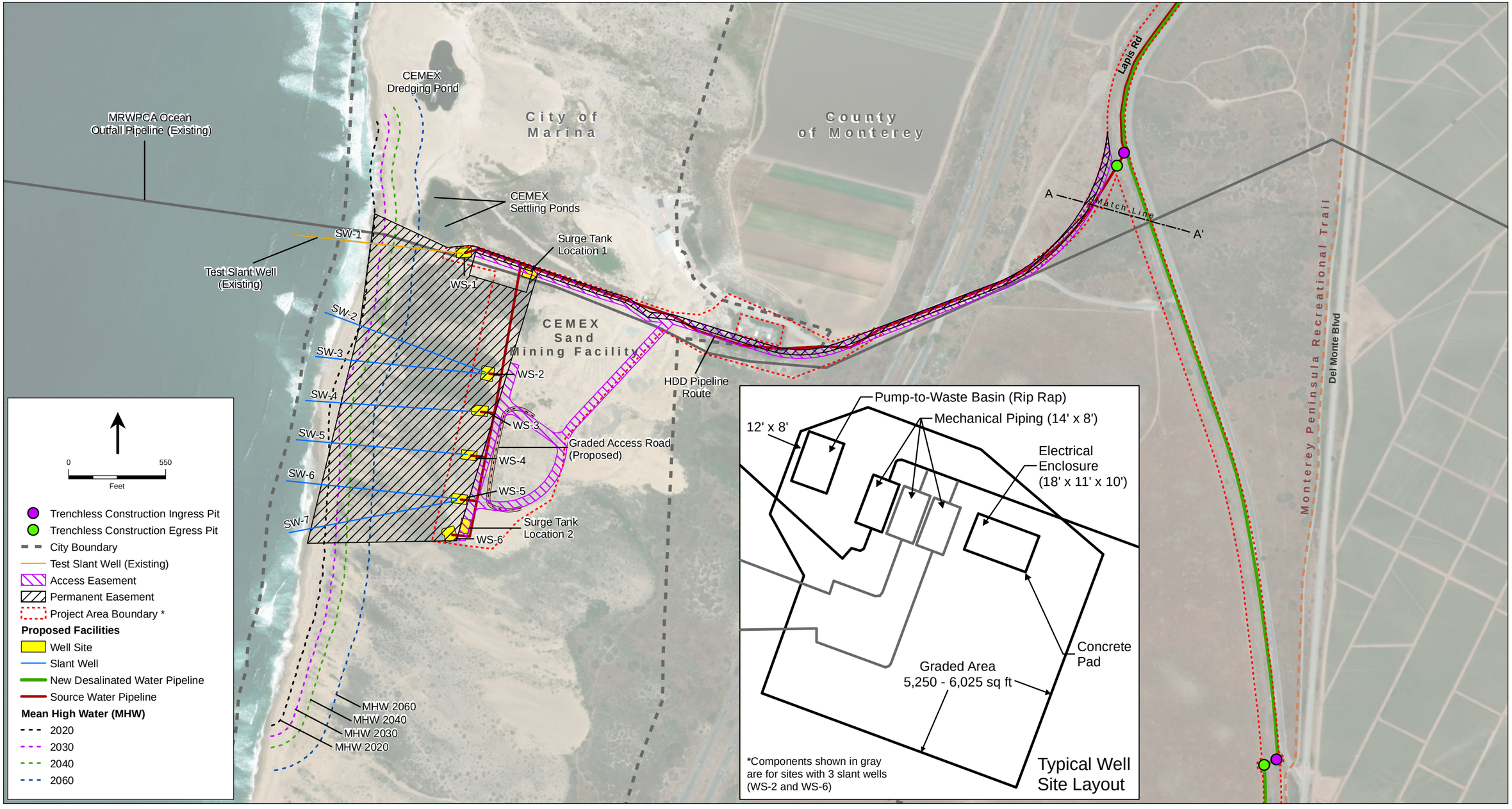
Additionally, the Removal Plan described in Section 8.2.14.1, above, will require the removal of CEMEX structures and facilities by no later than December 2024.

Given this increased certainty regarding the implementation schedule for the Reclamation Plan and the nature and timing of the Removal Plan, both have been added to the list of projects to be analyzed in the EIR/EIS for potential cumulative effects along with the proposed project impacts (see Project No. 63 in Final EIR/EIS Table 4.1-2), and have been incorporated into the analysis of cumulative impacts as appropriate throughout Chapter 4 and Section 5.5 of the Final EIR/EIS. No new significant impacts or substantial changes to previously-identified significant impacts were identified as a result of this addition of the Removal Plan and Reclamation Plan to the cumulative scenario.

8.2.14.3 References

California Coastal Commission (CCC), 2016. Notice of Intent to Commence Cease and Desist Order and Restoration Order Proceedings and Administrative Civil Penalties Proceedings. Letter to Eric Wittman and RMC Pacific Materials, LLC, dba CEMEX. March 17.

California Coastal Commission (CCC), 2017. Consent Settlement Agreement and Cease and Desist Order CCC-17-CD-02. July 13.



NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016; Michael Baker International, 2018

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.14-1

CalAm Easement and Access at CEMEX

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8.2.15 Master Response 15: Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario

COMMENTERS ADDRESSED BY MASTER RESPONSE 15

Marina Coast Water District	David Beech
California Unions for Reliable Energy (CURE)	Margaret-Anne Coppernoll
Deep Water Desal, LLC	Myrleen Fisher
Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation	Juli Hofmann
Public Water Now	Nancy Selfridge
Surfrider Foundation	

The currently proposed Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project) and People's Moss Landing Water Desalination Project (People's Project) are considered in the EIR/EIS as alternatives to the proposed MPWSP. This Master Response provides clarification on these two projects and their status, and also addresses questions (further explained below) on the assumptions used for considering cumulative impacts of these projects. The DeepWater Desal Project (Alternative 3) is described in EIR/EIS Section 5.4.5 and the People's Project (Alternative 4) is described in Section 5.4.6.

8.2.15.1 Monterey Bay Regional Water Project (MBRWP or DeepWater Desal) Status

The status of this project is as follows:

- An NOP/NOI was issued on June 1, 2015, by the California State Lands Commission and the Monterey Bay National Marine Sanctuary (MBNMS), explaining that a joint EIR/EIS would be prepared.
- The joint CEQA/NEPA document has been initiated, and some studies completed, yet it is currently unknown when the Draft EIR/EIS will be published due to outstanding information needs.
- The Applicant is in the process of completing additional studies necessary for the Draft EIR/EIS impact analysis.

8.2.15.2 People's Project Status and Basis for Analysis

Project Status

Several comments indicated that the People's Project appeared to be more feasible than other desalination projects due to the timeline for its approval since it would be utilizing existing infrastructure. The Moss Landing Harbor District is the CEQA lead agency for the People's Project; however, the project has been on hold since 2016 due to outstanding information needed to complete the CEQA analysis. MBNMS is the federal NEPA lead agency for the proposed

People's Project, and since 2015 the project's application to MBNMS has been deemed incomplete. The initial application was filed on October 7, 2015, and was determined by MBNMS to be incomplete on October 27, 2015. At that time, MBNMS notified the applicant of additional information required to complete the application and start the environmental review process. MBNMS also advised the applicant it would be most efficient to move forward with a joint CEQA/NEPA document.

On March 25, 2016, the applicant submitted additional information, including an administrative draft project description for the People's Project. MBNMS notified the applicant in writing on April 25, 2016 that the application was still incomplete. MBNMS provided specific details on what additional information was needed for a complete application and to start the environmental analysis. As of March, 2018, MBNMS has received a revised project description from the applicant and will review the submittal for completeness. Since the application to MBNMS is still incomplete, a Notice of Intent (NOI) to prepare an EIS has not been published, and cannot be published until MBNMS determines the application is complete. If MBNMS determines that sufficient information has been submitted to initiate the NEPA process, it will issue a Notice of Intent to start the EIS scoping process. Additional studies will be required to complete the NEPA document or joint CEQA/NEPA document. Given the current status of the application to MBNMS, no date has been established for completion of a NEPA document.

The People's Project applicant submitted an Administrative Draft EIR to the Moss Landing Harbor District, the CEQA lead agency. After thorough review, the Harbor District determined that the Administrative Draft EIR was not adequate under CEQA; the Harbor District informed the applicant of the document deficiencies and provided details on additional studies and data needed to complete the CEQA process. At this time, (March 2018), the applicant has developed additional project description information for consideration by the Harbor District. However, no date has been established for the completion and publication of the CEQA environmental document.

Basis for Impact Analysis of People's Project and Applicant Contact

Comments suggested that neither the CEQA lead agency for the People's Project (Moss Landing Harbor District) nor the People's Project applicant and counsel were contacted to obtain information for the MPWSP alternatives analysis and that available information was not utilized in the EIR/EIS alternatives analysis. On the contrary, MBNMS contacted the People's Project applicant, the consultant, and legal counsel verbally and in writing in February and March 2016, to request project description information. The MPWSP EIR/EIS preparers worked with MBNMS to obtain this project information from the People's Project applicant since MBNMS is the federal lead agency for the People's Project, DeepWater Desal project, and MPWSP. The EIR/EIS includes the same project description information that was submitted to the Moss Landing Harbor District in 2016. MBNMS requested permission to share project information submitted by the People's Project applicant on March 25, 2016 with the MPWSP EIR/EIS preparers. The People's Project's counsel granted MBNMS permission to share the project description information with the MPWSP EIR/EIS preparers on June 6, 2016. However, the applicant did not grant permission to share the remainder of the Administrative Draft EIR or any supporting studies. The analysis in

the MPWSP Draft EIR/EIS was based on project description information that was shared by the People's Project applicant in June 2016.

One comment noted that solar panels are part of the People's Project. The 2016 Project description information received from the applicant stated that the primary source of electricity for the project would be either direct service from the Moss Landing Power Plant through an agreement with Dynegy, or from Pacific Gas and Electric Company (PG&E) from the existing local electrical grid. Circuits feeding the desalination plant would be provided from an existing 12 kV electrical system through a 460-volt circuit. In the future, the Moss Landing Commercial Park also intends to install a solar photovoltaic (PV) facility of 3.5 MW at the existing site to serve a portion of the project's energy requirements in order to provide a "green and clean" energy source to the project. The project site has sufficient available space outside wetland areas to install such a facility. The solar PV facility would be constructed as a separate project in the future once sufficient details are known, and therefore it is not an integral part of the proposed project at this point in time.

The EIR/EIS analysis did not assume installation/operation of the solar panels as part of the People's Project since: 1) sufficient details were not available for the solar project; 2) the timing of this future project was uncertain; and 3) the applicant stated that the main source of power would not be from the solar field. The applicant was fully informed of the data that was being shared with the EIR/EIS preparers and did not amend or update the project description regarding the solar panel project.

Regarding comments related to the Draft EIR/EIS's lack of cultural resources information at the People's Project plant site, the applicant did not provide information on available cultural resources surveys or studies at the time that MBNMS requested project information from the applicant, and MBNMS has no knowledge of site-specific cultural resource surveys conducted by a qualified cultural resource professional. Given the limited information that was provided to the EIR/EIS preparers, the impact conclusions assumed no cultural resources studies had been conducted, impacts on currently unknown cultural resources would be a potentially significant impact, and mitigation measures were necessary.

8.2.15.3 Cumulative Impact Scenario Related to DeepWater Desal Project and People's Project

Several comments suggested that all three proposed desalination projects in the Monterey area – CalAm's MPWSP, the DeepWater Desal Project, and the People's Project – should be considered in the cumulative impact analysis since commenters suggested that all three might ultimately be built. The Lead Agencies have not implemented this suggestion for the reasons described below.

EIR/EIS Section 4.1.7.2 explains in detail the assumptions used to determine which projects would be considered in conjunction with the proposed project and with each of the alternatives in the cumulative impacts scenario. Projects included in the cumulative impact scenario are listed in EIR/EIS Table 4.1-2.

As stated in EIR/EIS Section 4.1.7, the cumulative impact analysis focuses on the impacts on the environment that result from the incremental impact of the proposed project (or alternative under consideration) when added to other past, present, and reasonably foreseeable future actions. As explained in EIR/EIS Section 5.1.1, under CEQA and NEPA, the EIR/EIS must identify and analyze the impacts of reasonable alternatives that would also meet the purpose and need, and would avoid or minimize adverse environmental impacts of the proposed project. The DeepWater Desal Project and the People's Project are considered in the EIR/EIS as alternatives to the MPWSP because they each are desalination plants being separately proposed to meet, in part, the objectives of the MPWSP (and sometimes other objectives as well). However, as explained below, the DeepWater Desal Project is also considered in the cumulative impacts analysis for the MPWSP because the DeepWater Desal project proponent has indicated that it intends to proceed even if another desalination plant (e.g., the proposed project) is selected to serve CalAm's Monterey Service District. Conversely, the People's Project is not considered in the cumulative analysis with the MPWSP because the MPWSP and People's Project share the same objectives to provide water to CalAm's Monterey District, thus, it is not reasonably foreseeable that the People's Project would proceed if the MPWSP is approved.

Reasonably Foreseeable Projects

The Surfrider Foundation, in its comment letter on the Draft EIR/EIS, claims that unless there is a "binding restriction" prohibiting the development of all three desalination projects, then the EIR/EIS must include all three in the cumulative analysis. There is no "binding restriction," as all three projects must be reviewed on their own merits by the numerous agencies with permit jurisdiction. However, as described in EIR/EIS Section 4.1.7, CEQA and NEPA cumulative impact analysis requirements are based on projects that are reasonably foreseeable or probable to occur. Further, CEQA Guidelines Section 15130(b) specifies that one of two methods must be used to analyze cumulative impacts. For the first method (used for the majority of the analyses in the EIR/EIS), Section 15130(b)(1) defines the list of projects that must be considered as "A list of past, present, and probable future projects producing related or cumulative impacts…" Similarly, NEPA refers to cumulative effects as the "impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions…" (40 CFR 1508.7, NAO 216-6A). The key words here are "probable," or "reasonably foreseeable," which limits the analysis to those projects that are likely to occur. The EIR/EIS analysis is consistent with these provisions, as described in more detail below. See also Master Response 13, Demand (Project Need) and Growth, for a discussion of current and projected water demand in the region.

DeepWater Desal Project

As noted in EIR/EIS Table 4.1-2, the DeepWater Desal Project would provide up to 25,000 afy of potable water supply to participating communities in the Monterey Bay region, potentially including the Monterey Peninsula, Castroville, Salinas, and parts of Santa Cruz County. DeepWater Desal's project business model includes a co-located data center. As proposed by DeepWater Desal, the project would develop supplemental water supplies to serve the customers in CalAm's Monterey District service area. However, if the proposed MPWSP is built,

DeepWater Desal indicates that it can provide water to other areas, as described above. Therefore, the EIR/EIS considers two reasonably foreseeable scenarios that include development of the DeepWater Desal Project:

1. Development of the DeepWater Desal Project as an alternative to the MPWSP, as described in Chapter 5 (serving CalAm's Monterey District service area, as well as other areas). This is Alternative 3 described and analyzed in Chapter 5.

2. Development as a separate project *in addition* to the MPWSP or another alternative that would serve CalAm's Monterey District service area. In this case, the impacts of the DeepWater Desal Project are considered in the cumulative scenario as they relate to the provision of water to Santa Cruz County and the City of Salinas. The DeepWater Desal Project with provision of water to Santa Cruz County and the City of Salinas is a reasonably foreseeable project in the cumulative scenario relevant to the proposed project and Alternatives 1 (slant wells at Potrero Road), 2 (open water intake), 4 (People's Project), and 5a and 5b (reduced-scale projects).

People's Project

As proposed by its applicant, the primary purpose of the People's Project is to develop 12 mgd (13,400 afy) of desalinated water to serve customers in CalAm's Monterey District service area. The NOP for the project states that a small portion (3.3 mgd) of the water may serve north Monterey County: "These demands have not yet been fully verified, but there has been strong interest for the Proposed Project to serve demands in the North Monterey County Area. Through the EIR process these demands will be evaluated in order that the Proposed Project can serve these potential North County demands" (Moss Landing Harbor District, 2015). However, subsequent information received from the applicant indicates that the northern Monterey County service is uncertain.

Since the People's Project and the MPWSP would both serve the same customers in the CalAm Monterey District Service Area, this EIR/EIS assumes the People's Moss Landing Project is an *alternative* to the MPWSP (see Chapter 5). Unlike the DeepWater Desal Project proponent, who has publicly stated its intent to proceed even if the MPWSP is built and whose business model would allow the project to serve its entire output to customers in Santa Cruz County and the City of Salinas, there is no other available information that indicates that the People's Project would be built *in addition* to the proposed MPWSP, based on the People's Project's stated purpose and objectives to meet the exact same demand that is proposed to be met by the MPWSP. Therefore, it is not a reasonably foreseeable project in the cumulative scenario relevant to the MPWSP. Similarly, if the DeepWater Desal Project were developed as an alternative to the MPWSP (i.e., Alternative 3), the People's Project would not be a reasonably foreseeable project in the cumulative scenario, because Alternative 3 assumes that all of the Monterey Peninsula's needs would be met by the DeepWater Desal Project and no demand (and therefore, no market) would remain in the Monterey Peninsula for the People's Project to serve. As noted above, however, if the People's Project were approved to serve the water needs of the Monterey Peninsula, the EIR/EIS cumulative analysis does assume that the DeepWater Desal project would be a cumulative project in that scenario. Furthermore, the California Ocean Plan requires that desalination project applicants document the need for water. The Ocean Plan states that the

regional water board shall require the owner to: "Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with California Water Code Section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan." If any project is approved to serve demand in the Monterey Peninsula, it is unlikely that another project with the intent to serve this same population would be able to provide the necessary documentation of the need for water. Despite this, and in light of DeepWater Desal's stated intention to serve other areas, this EIR/EIS takes a conservative approach and considers DeepWater Desal in the cumulative scenarios as described above.

Therefore, although acknowledged as an alternative to the proposed project (as described in Chapter 5), the People's Project contributions to cumulative impacts are not considered as part of the cumulative scenario relevant to the proposed project or another alternative. If, in the future, the People's Project objectives change, the cumulative impact analysis in the CEQA and/or NEPA documents prepared for the People's Project would be required to assess cumulative effects based on the changed intent of that project.

8.2.15.4 References

Moss Landing Harbor District, 2015. Notice of Preparation, Environmental Impact Report for People's Moss Landing Water Desalination Project. June.

8.3 Federal Agency Comments and Responses

8.3.1 Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)

8.3.2 Department of the Army, US Army Installation Management Command (USARMY)

8.3.3 Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)

8.3.4 United States Army Corps of Engineers (USACE)

8.3.5 United States Environmental Protection Agency (USEPA)

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8.3.1 Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)

DEPARTMENT OF THE ARMY
ARMY BASE REALIGNMENT AND CLOSURE, FORMER FORT ORD
P.O. BOX 5008, BUILDING #4463 GIGLING ROAD
MONTEREY, CA 93944-5008

REPLY TO
ATTENTION OF:

MAR 2 4 2017

Fort Ord BRAC Field Office

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

To Whom It May Concern,

The Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project State Clearinghouse No. 2006101004 identifies the potential for the proposed project to impact the Army's existing groundwater remediation system at Fort Ord Operable Unit Carbon Tetrachloride Plume (OUCTP) (Section 4.4.5.2, page 4.4-77). It identifies mitigation measure 4.4-4 (page 4.4-86) which proposes to conduct groundwater monitoring incorporating the Army's groundwater monitoring data, and if an analysis by CalAm concludes that slant well pumping could affect the OUCTP plumes, then "the project applicant will reimburse the U.S. Army for the necessary additional costs to address changes in the plume flow direction, arrest mitigation of the plumes, and/or to remediate areas of new contamination created by slant well pumping." This mitigation measure is later described as requiring CalAm to prevent expansion of the OUCTP plumes.

FOBRAC-1

The Army's groundwater remediation projects at the former Fort Ord is being conducted under CERCLA. If the proposed project will in any way adversely affect the Army's implementation of CERCLA remedial actions, the project proponent will be considered a potentially responsible party under CERCLA, and its responsibilities would need to be properly identified in consultation with U.S. Environmental Protection Agency. The proposed mitigation measure does not sufficiently address the identified impact.

Portions of the proposed project occurs within the former Fort Ord, over or near the Army's environmental remediation sites under CERCLA. The Army encourages the project proponent to avoid any adverse impacts to the CERCLA actions. We suggest this be noted in Section 4.7.2.1 where CERCLA is described under Regulatory Framework (page 4.7-13).

The draft EIR/EIS also describes that the project would comply with the excavation permit program of the City of Seaside that would address the potential for encountering unexploded ordnance (UXO) while engaging in ground-disturbing activities within the Seaside Munitions Response Area (MRA). The proposed project also involves ground-disturbing activities in other areas of the former Fort Ord, outside of the Seaside MRA. Because of the former Fort Ord's history as a military installation, there is a potential for munitions and

FOBRAC-2

explosives of concern (MEC) (including UXO) to be present. Should any munitions or suspected MEC item be encountered during ground-disturbing or intrusive activity, people engaging in the activity should immediately stop the activity; should not attempt to disturb remove or destroy it; but should immediately notify the local law enforcement agency having jurisdiction on the property so that appropriate explosive ordnance disposal personnel can be dispatched to address the item. This notice of the potential presence of MEC is provided in federal deeds for transferred former Fort Ord properties. In addition, the Army offers munitions recognition and safety training to anyone who requests it. The training is intended to increase the ability to recognize suspicious items and participants will learn the proper procedures when a suspicious item is encountered. The training is available by contacting the U.S. Army Base Realignment and Closure office at 831-393-1284.

FOBRAC-2 cont.

If you have any questions please call me at (831) 242-7920 or email at William.K.Collins.Civ@Mail.Mil.

Sincerely,

William K. Collins

William K. Collins
Base Realignment and Closure
Environmental Coordinator

8.3.2 Department of the Army, US Army Installation Management Command (USARMY)

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, PRESIDIO OF MONTEREY
1759 LEWIS ROAD, SUITE 210
MONTEREY, CA 93944-3223

Office of the Garrison Commander

MAR 24 2017

MBNMS Desalination Project Lead
99 Pacific Ave., Bldg. 455a
Monterey, CA 93940

Dear Ms. Grimmer,

Thank you for the opportunity to comment on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for California American Water's (CalAm's) Monterey Peninsula Water Supply Project (MPWSP).

While the Monterey Bay National Marine Sanctuary (MBNMS) is the lead Federal agency ensuring National Environmental Policy Act (NEPA) compliance for the proposed action, the U.S. Army's (Army's) NEPA implementing regulations under 32 Code of Federal Regulations (CFR) 651.14.h, require the Army to coordinate with the lead agency to ensure all proposed actions which would affect the Army are thoroughly analyzed. Thus, the Army became a cooperating agency on this Draft document as portions of the MPWSP are proposed to be installed and operated on Army property, including portions of the 36-inch new Transfer Main pipeline, the Aquifer Storage and Recovery (ASR) Wells #5 and #6, and associated ASR pipelines, in the Ord Military Community in Seaside, CA. The Army has discretionary approval authority over proposed projects on Army lands and will use the NEPA analysis during decision-making with regard to the proposed action.

This letter provides the Army's enclosed comments on the Draft EIR/EIS under Federal NEPA implementing regulations 40 CFR 1500 et seq. and 32 CFR 651. These comments provide clarifications to the Draft EIR/EIS that the Army believes are necessary to ensure compliance under NEPA.

The POC for this letter is Joelle Lobo at 831-242-7829 or joelle.l.lobo.civ@mail.mil.

Sincerely,

Lawrence T. Brown
Colonel, US Army
Commanding

Chapter 1. Introduction and Background

Section 1.3.1 CalAm's Project Objectives, page 1-5.
Appears that a main objective of the MPWSP is to minimize the take of marine biological matter based on the proposed use of subterranean slant wells as included in the proposed project. Consider including this objective along with the list of primary objects of the project as given in Section 1.3.1. USARMY-1

Section 1.5.4.3 Other Agencies' Consideration of the EIR/EIS and Proposed Project, page 1-17:
The Draft EIR/EIS does not present an option (other than the No Action Alternative) where the proposed project or alternatives would not involve use Army land. Therefore, the Army should be listed as an organization which, due to their discretionary approval authority over land use for some components of CalAm's proposed project, will use the EIR/EIS to make decisions, not merely as an agency with "potential" permitting authority. USARMY-2

Chapter 3. Description of the Proposed Project

Section 3.2.3.5 Terminal Reservoir, page 3-30
The Draft EIR/EIS states the proposed Terminal Reservoir would be located in an undeveloped portion of the former Fort Ord. Please provide clarification as to who has jurisdiction over this portion of land. USARMY-3

Section 3.2.4.1 ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells), page 3-43.
Please include in the Draft EIR/EIS information regarding siting studies and how the proposed ASR #5 and #6 sites were selected.

The following information was provided by CalAm:
"The open areas south of the SM ASR wells is unfavorable for ASR wells compared to the Fitch Park site, due primarily to the geologic structure of the basin. The bedrock and the Santa Margarita Sandstone ([Tsm] the target aquifer for ASR) are rising in elevation in this area due to the Laguna Seca Anticline, which results in a lack of sufficient saturated Tsm thickness to support the planned well injection rates. Also, the area to the east of the SM ASR wells is now within the area of influence of the Pure Water Monterey recycled water injection wells, which precludes this area for potable supply wells due to aquifer residence times required for the recycled water." Additional conversations indicated that the area on the north side of General Jim Moore, across from the proposed ASR wells, encountered land use conflicts when investigated for potential ASR siting.

In addition to including the above please include in the Draft EIR/EIS any other information pertaining to siting and examining alternatives for the proposed ASR wells, i.e. what were the criteria used to determine a successful ASR Well site, what tests were done to determine suitability of the proposed site and what were the results (from USARMY-4

the Fitch Park Monitoring Well No. 1 Summary of Operations Report), and what other sites were considered/examined and what were the results? USARMY-4 cont.

Figure 3-14 Site Plans: ASR-6 and ASR-6 Well, page 3-45.
Please include figures with clearer resolution. Text in the existing figures is difficult to read. USARMY-5

Section 3.3.2.2 ASR Injection/Extraction Wells, page 3-48.
Please include a discussion on the requirement for 24 hour per day construction for the proposed ASR wells, including the reason continuous drilling is required (i.e. based on technology for this type of drilling, based on schedule, etc.). If technology for other-than-24 hour drilling is available, please describe. Please also indicate if permanent access road(s) would be installed to the ASR Wells from General Jim Moore Blvd. USARMY-6

Section 3.3.4.3 Disinfection of Existing and Newly Installed Pipelines, page 3-53.
Use of Army owned stormwater outfall for discharges associated with pipeline construction generated effluent requires explicit permission by the Army. Effluent generated on Army land will generally be discharged to a percolation pond. USARMY-7

Section 3.3.9 Construction Schedule, page 3-55.
Paragraph 3 of this section states, “Installation of pipelines within the city of Seaside, including all or portions of the three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) and the sections of the new Transmission Main would occur only during the day.” The terms of the Army issued permit will require daytime only pipeline construction on Army owned property. USARMY-8

Section 3.4.1 Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges, page 3-56.
Section 3.4.1 states that the MPWSP Desalination Plant would operate 24 hours a day, 365 days per week. Please include a discussion on operational adjustments should demand, available water supply, or overall precipitation change, such that water needs are lowered, recognizing that desalinated water is environmentally and economically costly. Please also include any adjustments to operations in response to future regional power shortages. USARMY-9

Table 3-8 Anticipated Permits and Approvals, page 3-63.
In the second row (labeled, ‘U.S. Army’), please change the second column to the following: "Real property outgrants for construction and operation to CalAm or other entities involved in water augmentation projects (Army Regulation (AR) 405-80, 200-1)". USARMY-10

Chapter 4.3 Surface Water Hydrology and Water Quality

Section 4.3.2.2 State Regulations, NPDES Municipal Stormwater Permit, page 4.3-40
The Presidio of Monterey is a Phase II MS4 – Non-traditional permitee with requirements applicable within the Ord Military Community in Seaside, CA. Stormwater outfall for discharges associated with the pipeline or ASR well construction generated effluent requires explicit permission by the Army. Effluent generated on Army land will generally be discharged to a percolation pond. USARMY-11

Section 4.3.5.1 Construction Impacts
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development, Dewatering Discharges (All Other Project Facilities), page 4.3-63.
Request MS4 Permittees receive analytics for any discharges. USARMY-12

Chapter 4.4 Groundwater

Figure 4.4-7 Groundwater Flow – Seaside Basin Shallow Zone, July/August 2015 and Figure 4.4-8 Groundwater Flow – Seaside Basin Deep Zone, July/August 2015, pages 4.4-17-4.4-18
Please provide a legend to describe the features on these figures. USARMY-13

Section 4.4.1.4 Groundwater Quality, Disinfection Byproducts, page 4.4-27 and Section 4.4.5.2 Operations Impacts and Mitigation Measures, Impact 4.4-4 Violate any groundwater quality standards or otherwise degrade groundwater quality during operations, Addition of Treated Water to the Santa Margarita Aquifer, page 4.4-82

Section 4.4.1.4 states, "The Disinfection Byproducts (DBP) data collected during the 2015 water year indicated that trihalomethanes (THMs) peaked approximately 30 to 90 days after injection and storage, followed by a gradual decline. After approximately 150 to 210 days of storage, THMs had degraded to below the initial injection levels." However, per the "*Draft Summary of Operations Report for the Monterey Peninsula ASR Project, Water Year 2015*", dated June 2016, prepared by Pueblo Water Resources for the Monterey Peninsula Water Management District, Figure 22, it appears that THMs exceed the initial injection level after 210 days for the ASR-3 site. Please include a discussion that considers this data. USARMY-14

Section 4.4.1.4 states, "More importantly, throughout the 2015 water year, THMs were below the MCL of 80 micrograms per liter and haloacetic acids (HAAs) were below the MCL of 60 micrograms per liter." However, per the "*Draft Summary of Operations Report for the Monterey Peninsula ASR Project, Water Year 2015*", dated June 2016, prepared by Pueblo Water Resources for the Monterey Peninsula Water Management District, Figures 21, 22, and 24, it appears that the THMs reached or exceeded the MCL of 80 micrograms per liter. Please include a discussion that considers this data. USARMY-15

In order to better understand fate of DPBs and the resulting chemistry of the groundwater, recommend including a table or graph in the Draft EIR/EIS that shows the relative levels of DPBs in the cited 2015 study (and other studies with available data) as compared to the regulatory limits, including pH levels, and including the rate of decline in concentration of DPBs over the given timeframes and the resulting concentrations, to show if the decline in concentration returns to below injection levels or if elevated concentration conditions exist. The proposed amount of yearly injected desalinated water may be higher than the injected 2015 Carmel River water. Please also include details of the study such as the reason for decline in DPB concentration over time and if this pattern of initial increase and decline in DBP concentration is expected to be consistent for larger amounts of injected DBPs. USARMY-16

Three separate sources of water: desalinated, purified, and river water, are proposed to be injected into the Seaside aquifer, likely at higher than historic volumes. To more clearly understand the cumulative impacts of DBPs and/or other constituents associated with proposed project or alternatives, due to volume and/or source of injected water, please include an estimated (maximum) injection volume from the combined Carmel River, desalinated, and purified waters into the aquifer and associated DBP concentrations. Please include a discussion or information on the expected fate of DBPs for the combined Carmel River, desalinated, and purified water volumes. USARMY-17

Please include a discussion on whether the Seaside aquifer is confined or if aquifer waters have potential to intermix with other waters or emerge into the environment. Please cite any relevant chemical or toxicological studies regarding effect of DBPs on other organisms in the environment. USARMY-18

Additionally, please include a discussion on adaptive management strategies should DBPs in the aquifer or in extracted waters exceed regulated drinking water concentrations. USARMY-19

Chapter 4.6 Terrestrial Biological Resources

Table 4.6-4 Applicable Regional and Local Land use Plans and Policies relevant to Terrestrial Biological Resources, page 4.6-107.
Please include the “Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community, November 2008” to table 4.6-4. The 2008 INRMP, or most current version, would apply to the project components proposed on Army property including portions of the new Transmission Main, ASR wells, and ASR wells pipeline. USARMY-20

Section 4.6.5 Direct and Indirect Effects of the Proposed Project, Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or local tree ordinances, page 4.6-222.
Landscape in the work areas should be restored after work is completed, including the planting of shrubs and trees as additional screening, using the Presidio of Monterey INRMP approved plants. All trees schedule for removal or preservation on Army property, including mitigation for tree removal and protection for tree preservation, shall be done in accordance with the Presidio of Monterey INRMP. USARMY-21

Chapter 4.9 Traffic and Transportation

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-24.
Any proposed work on Army owned property will required a real property outgrant as prescribed by Army Regulation (AR) 405-80. Prior to issuance of an outgrant, the Army will required a detailed briefing by CalAm to ensure all of the Army's interests are addressed in the Traffic Control and Safety Assurance Plan, including POM Fire Station, POM Police Station, housing office, community and youth centers, as well as public works, commercial, safety and other related interests. USARMY-22

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-24.
Terms of the Army issued permit would likely require that access to Army services along General Jim Moore Blvd. are maintained during construction including the POM Fire Station, the Army Air Force Exchange Service (AAFES) Service Station and Mini-Mart, Army Community Services offices and facilities, the Ord Military Community Chapel, and Porter Youth Center. USARMY-23

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-26.
Unreasonable delays in the establish bus schedule as agreed upon with Monterey-Salinas Transit will have a direct impact on the military mission. Prior to commencement of construction, coordination with the Army will be required to ensure bus routes maintain timeliness such that Department of Defense (DoD) personnel traveling from the Ord Military Community family housing arrive on time to their duty stations. USARMY-24

Section 4.9.5.1 Construction Impacts, Impact 4.9-3 Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and area trails, sidewalks and other pathways, during construction, page 4.9-28.
Significant traffic congestion persists at the intersection of General Jim Moore Boulevard and Normandy Road during the peak traffic hours associated with Marshall Elementary School, the Dual Language Academy of the Monterey Peninsula, and the Army's Porter Youth Center. The cumulative pedestrian and vehicular traffic associated with these schools and youth center, converge on the Army owned intersection of USARMY-25

General Jim Moore Boulevard and Normandy Road. To ameliorate potential safety related issues regarding young children and families crossing the intersection during construction, recommend mitigation to construct the New Transmission Main in this area during summer months while schools are in recess, or after school and common business hours. USARMY-25 cont.

Section 4.9.5.1 Construction Impacts, Impact 4.9-4 Impaired emergency access during construction, page 4.9-29.
Presidio of Monterey Emergency Services will require the specific traffic control measures for proposed construction along General Jim Moore Blvd. and the resulting impact to emergency services response times. Terms of the Army issued permit will require a briefing by CalAm to the Army Directorate of Emergency Services on these measures to determine impact on response times and the level of risk to the Ord Military Community and federal employees. USARMY-26

Section 4.9.5.1 Construction Impacts, Impact 4.9-6 Increased wear-and-tear on the designated haul routes, page 4.9-31.
The terms of the Army issued permit will require CalAm coordination with the Army during the development of the Roadway Rehabilitation Program in order to ensure roadway wear and tear, damages, and restoration of Army owned roads are properly addressed. The terms of the Army issued permit will require that roadway wear and tear, damages, and required restoration of Army owned roads associated with the proposed action will be the responsibility of CalAm. USARMY-27

Section 4.9.5.1 Construction Impacts, Impact 4.9-7 Parking interference during construction, staging areas, page 4.9-33.
The Draft EIR/EIS proposes a staging area on Army property at the AAFES Service Station at the north-west corner of General Jim Moore Blvd. and Gigling Rd. Use of a staging area in this location would require a permit from the Army which is unlikely due tenant request and potential for additional traffic hazards. USARMY-28

Chapter 4.12 Noise and Vibration

Section 4.12.5.1 Temporary or Periodic Increases in Ambient Noise Levels, Speech Interference, page 4.12-18.
Please clarify how the threshold “substantial construction noise where the duration of construction noise exceeds two weeks” was derived. It is unclear how the two week timeframe was obtained. USARMY-29

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4.12-21.

The second paragraph of this Section states, "The proposed pipelines and pump station would be constructed during daytime hours to the extent feasible. This analysis assumes that the ASR Recirculation Pipeline, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, Terminal Reservoir, and some portions of the new Desalinated Water Pipeline and the new Transmission Main within the City of Marina would be constructed only during daytime hours (see Mitigation Measure 12.4-4 (Nighttime Construction Restrictions in Marina); however, nighttime construction could be required for all other pipelines to meet the project schedule." This is in contradiction to Section 3.3.9 where it is stated that, "Installation of pipelines within the city of Seaside, including all or portions of the three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) and the sections of the new Transmission Main would occur only during the day."

The terms of the Army issued permit will require daytime only pipeline construction on Army owned property.

USARMY-30

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4-12.29.

Please include a figure showing decibel level impacts associated with ASR wells construction. Please show expected noise levels at increasing distances from the construction sites for both proposed 24 hour drilling and for daytime only construction.

USARMY-31

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4-12.29.

Construction noise is assumed to be attenuated by closed windows. However, the proposed construction for the ASR Wells is estimated to last for approximately 1 year, during which time ambient temperature may significantly vary. The housing in this area does not have central air conditioning. The terms of the Army issued permit will require that CalAm ensure all possible noise controls are implemented and monitored for effectiveness and provide adaptive management strategies should noise exceed threshold values, with residence opening windows as climate dictates.

USARMY-32

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.

The terms of the Army issued permit will require that noise mitigation is based on actual noise levels at the residence (receptor), not based on geographical distance from the construction.

USARMY-33

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.
Terms of the Army issued permit would require the impacted residents have a choice of off-site accommodations to fit their needs.

USARMY-34

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.
The Army's military family housing partner under the Residential Communities Initiative (RCI) recommends that in additional to Mitigation 4.12-1e, individuals displaced from their homes during the 24 hour ASR well construction should be afforded a meal per diem to offset the disruption in daily activities such as access to kitchen for cooking meals. Terms of the Army issued permit would require this stipend with a recommended per diem amount at least equivalent to the General Services Administration (GSA) per diem for the current fiscal year for Monterey County (https://gsa.gov/portal/content/104877)

USARMY-35

Section 4.12.6.2 Operational Impacts and Mitigation Measures, Impact 4.12-5 Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations, page 4.12-51.
The terms of the Army issued permit will require operational noise adjacent to ASR Wells #5 and #6 to remain consistent with the City of Seaside noise standards under Seaside Municipal Code Chapter 17.30.

USARMY-36

Chapter 4.13 Public Services and Utilities

Table 4.13-1 Local utility and public service providers, by jurisdiction, page 4.13-2.
Please add Presidio of Monterey Fire Department and Presidio of Monterey Police Department to the list of service providers in this table. Presidio of Monterey Fire and Police Departments are located on the Ord Military Community in Seaside, CA.

Please change row #4 of the table from "Federal Lands" to "U.S. Army". Pls. change "Note a" to the following: "Project components are proposed for the U.S. Army owned property at the Ord Military Community (OMC) in Seaside, CA."

Please add project components "New Transmission Main" and "ASR Pipelines" to row #4 of the table.

In the table, please indicate the Presidio of Monterey Fire Department responds to U.S. Army lands, City of Monterey, City of Seaside, the California State University of Monterey Bay, and City of Marina. Please indicate that Presidio of Monterey Police Department responds to U.S. Army lands only.

USARMY-37

Section 4.13.1.1 Fire Protection, Law Enforcement, and Emergency Services, page 4.13-3

Under "Fire Protection", please add the following paragraph:
"U.S. Army
The Presidio of Monterey Fire Department serves all Army property on the Ord Military Community and Presidio of Monterey, as well as holding mutual aid agreements with Seaside, Marina, the California State University of Monterey Bay, and the Monterey County Regional Fire District."

Under "Police", please add the following paragraph:
"U.S. Army
The Presidio of Monterey Police Department serves all Army property on the Ord Military Community and Presidio of Monterey"

USARMY-38

Section 4.13.5.1 Construction Impacts, Impact 4.13-1 Disrupt or relocate regional or local utilities during construction, page 4.13-16.

Water Well Construction Permit #09-11644 obtained for the monitoring well drilling near the proposed ASR #5 site included a condition that the well shall be at least 50 feet from any sewer main, line, or lateral. Please be informed that sewer laterals may exist in the direct vicinity of the proposed ASR wells #5 and #6.

USARMY-39

Chapter 4.15 Cultural and Paleontological Resources

Section 4.15.6.1 Construction Impacts, Mitigation Measure 4.15-2b: Inadvertent Discovery of Cultural Resources, page 4.15-49.

Since this mitigation measure applies to all project components, including those proposed on Army land, it must reference compliance actions in accordance with federal law under the National Historic Preservation Act and implementing regulations under 36 Code of Federal Regulations § 800. Please include the following as part of Mitigation Measure 4.15-2b:

"If cultural resources are inadvertently discovered during construction on Army owned property, work shall immediately cease within a 100- foot radius of the find and the Army, Presidio of Monterey, Cultural Resources Manager (CRM) will be contacted to assess the discovery. The CRM will implement procedures set forth in the Presidio's Integrated Cultural Resources Management Plan (ICRMP) and Army Regulation (AR 200-1), which may include completion of consultation under Section 106 of the National Historic Preservation Act (NHPA)(16 USC. 470f; 36 CFR Part 800) prior to resuming construction in the vicinity of the find. CalAm will be responsible for completing any additional archaeological work required to comply with federal regulations."

USARMY-40

Section 4.15.6.1 Construction Impacts, Mitigation Measure 4.15-4: Inadvertent Discovery of Human Remains, page 4.15-51.
Since this mitigation measure applies to all project components, including those proposed on Army land, it must reference compliance actions in accordance with federal law under the Native American Graves Protection and Repatriation Act, Section 3. Please include the following as part of Mitigation Measure 4.15-2b:

"If human remains are encountered during construction on Army owned property, work shall cease within a 100-foot radius of the discovery and immediate notification will be made to the CRM. The CRM will initially evaluate the site to determine if the remains are either Native American in origin or associated with a recent crime scene (i.e., 50 years old or less). If the remains appear recent, the CRM will notify the Army's Criminal Investigation Command who will assume control of the crime scene and custody of the remains. If the remains appear to be Native American in origin, the CRM will notify the Presidio Garrison Commander and the Monterey County Coroner. Upon verification of the CRM's initial assessment, the Coroner will notify the Native American Heritage Commission within 24 hours. If the find includes human remains, the County Coroner and Army point of contact (POC) must be notified. If the remains are determined to be Native American remains, the Native American Heritage Commission shall be notified. The Native American Heritage Commission will appoint a Most Likely Descendant, who will provide recommendations for the disposition of the remains. All activities with regard to the discovery and handling of human remains and cultural resources will comply with applicable requirements of the Integrated Cultural Resource Management Plan (ICRMP)." USARMY-41

Chapter 5 Alternatives Screening and Analysis

Section 5.1.2 Project Objectives and Significant Impacts, page 5.1-3 and Section 5.3.6 Evaluation of Intake, Outfall, and Desalination Plant Options, page 5.3-29
Please include a discussion on why no alternatives to the new Transmission Main, particularly the portions on Army land, were deemed reasonable for further analysis. Please also include a discussion on why the proposed ASR Wells 5 and 6 are only proposed for location in Fitch Park neighborhood. USARMY-42

8.3.3 Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)

John Hunt, Chair
Monterey Bay National Marine Sanctuary
Research Activity Panel

March 28, 2017

MBNMS Desal Project Lead
99 Pacific Ave, Building 455a, Monterey, CA 93940
(Electronic public comment submission via the Federal e-Rulemaking Portal)

Re: Docket #NOAA-NOS-2016-0156
California-American Water Company Monterey Peninsula Water Supply Project (MPWSP)
Public Comment

Dear MBNMS Desal Project Lead,

The Research Activity Panel (RAP) is a working group of the Monterey Bay National Marine Sanctuary Advisory Council. Among the RAP's key objectives is to advise Sanctuary staff on conservation science issues that will influence policy. The RAP has received presentations on the CalAm MPWSP Draft Environmental Impact Statement (DEIS), and members of the RAP have submitted comments to the chair for submission on behalf of the RAP. Please consider our comments on the following topics:

1. The effects of ocean currents in the brine mixing zone (BMZ) model analyses.

2. Impacts to freshwater and brackish water habitats from decreased freshwater flows related to Alternative 5a reliance on the Pure Water Monterey GWR Project.

3. RAP offer to review and participate in the design of monitoring programs developed as part of mitigation measures cited in the DEIS.

4. Documents that should be considered when characterizing habitat in the area affected by brine discharge.

1. Ocean Currents

We wish to express concern over the decision not to include the effects of ocean currents in the brine mixing zone (BMZ) model analyses. As stated in the Appendix D1 Executive Summary, "Zero current speed was assumed for all dilution calculations." Water column currents are mentioned as a mechanism by which the physical mixing of the outfall water will be enhanced (see 4.3-10), but currents can also act as an advective process. In fact, it is likely that the predominant effect of a strong alongshore current would be to coherently transport the brine plume away from the vent sites faster than it would through dispersion and mixing alone. There are several sources that provide information on the water column current velocity patterns in this region of the Monterey Bay shelf. Measurements of water column currents were collected in the southern shelf region of Monterey Bay in 2011 and 2012 by researchers involved in the NSF Benthic Exchange project (grant OCE0961810; cf. Cheriton et al., 2014; Sevadjian et al., 2015). At shelf depths of 55-60 m, near-bed currents of 10 cm/s were common and could reach up to 20 cm/s. Near-bed currents of similar magnitude (~ 5-10 cm/s) have been measured closer to shore, at 20-m sites off of the Pajaro River (Nickols et al., 2012) and the north side of the Monterey Peninsula

MBNMS-RAP-1

(Walters et al., 2012). Currents on the order of 10-20 cm/s could transport water 3 m (~ 10 ft) in approximately 15 to 30 seconds. We also note that the outer shelf current measurements mentioned above were collected during the fall season ('Oceanic' climate, see 4.3-10), and thus likely represent the least energetic seasonal currents. The degree to which these advection dynamics would change the BMZ around the vent sites is unclear, but without currents taken into account, the calculations run by these models do not represent the most conservative or "worst-case" estimates, as argued in the draft (see 5.5-48). Therefore, we recommend that these water column current patterns be taken into consideration in the BMZ calculations and analyses.

MBNMS-RAP-1 cont.

2. Freshwater and Brackish Water Habitats

Coastal estuarine habitat of the lower Salinas Valley (including Elkhorn Slough) is reliant on freshwater inputs from local watersheds to maintain fresh and brackish water conditions. The extraction of additional summer surface water by the Pure Water Monterey GWR Project, used to offset reductions in desalination production of Preferred Alternative 5a, will lead to changes in salinity dynamics (including saltwater intrusion within surface waters) of the Salinas River, Old Salinas River, Moro Cojo, Tembladero and Elkhorn Slough estuaries. A full analysis should be done to compare the incremental benefits achieved from reducing the scale of the desalination project with the potential environmental impacts of extracting approximately 3,500 AFY of Salinas Valley surface water before Alternative 5a is recommended as the "preferable alternative."

See below for Tables 2-12 and 2-13 from DEIS Appendix H: Pure Water Monterey GWR Project, Consolidated Final EIR.

MBNMS-RAP-2

3. Monitoring Design

The DEIS contains a number of statements such as: "The Lead Agencies will prepare a Mitigation, Monitoring, Reporting, and Compliance Program (MMRCP)/ Environmental and Construction Compliance Monitoring Plan (ECCMP) if they approve the proposed project or an alternative analyzed in Chapter 5." The RAP offers to review and/or participate in the design of programs developed to monitor and assess social, physical, chemical or biological effects of the CalAm MPWSP.

MBNMS-RAP-3

4. Additional References for Consideration

Members of the RAP are aware of and have participated in additional studies characterizing the physical, chemical and biological conditions of the marine areas near the brine discharge site. The following documents should be considered when characterizing habitat of the impacted area.

Eittreim, S.L., A.J. Stevenson, L.A. Mayer, J. Oakden, C. Malzone, and R. Kvitek (1997). Multibeam Bathymetry and Acoustic Backscatter Imagery of the Southern Monterey Bay Shelf. http://montereybay.noaa.gov/research/techreports/treittreim1997b.html

Edwards, B.D., J.V. Gardner, and M.D. Medrano (1997). Grain Size, Organic Carbon, and CaCO3 of Surface Sediments from the Southern Monterey Bay Continental Shelf Seafloor. http://montereybay.noaa.gov/research/techreports/tredwards1997.html

MBNMS-RAP-4

Eittreim, S.L., editor (1997). Southern Monterey Bay Continental Shelf Investigations: Former Fort Ord Restricted Zone http://montereybay.noaa.gov/research/techreports/treittreim1997a.html

Eittreim, Stephen L., Kaye Kinoshita, George B. Tate and David A. Cacchione (1997). Rippled Scour Depressions of the Southern Monterey Bay Shelf [abstract]. In: MBNMS (editor). 1997. Facets of Biodiversity. Monterey Bay National Marine Sanctuary Currents Symposium; 1997 March 15; Santa Cruz, CA. p. 24. Abstract text:

> Similar to many other continental shelves of the world, the southeast Monterey Bay inner shelf contains distinct depressions floored with rippled sand in which the dominantly coarse material of the depressed floor moves as bedload. These 1-m-deep features occur in the offshore former Fort Ord region, the site of impingement of very large storm waves from the northwest, and have been ascribed to rip-current and alongshore flow associated with these large waves. Recently-acquired EM-1000 multibeam bathymetric data now show that two types of these features exist on the southeast Monterey Bay shelf: the dominantly shore-parallel type in 10-30m water-depth and the shore-normal type at greater water depths, to 60m. Both types tend to have thin pinch-outs that point offshore. The shore-normal, deep-water type is concentrated in one area that has been called a nodal zone for alongshore sediment transport separating the consistently southerly flow off northern Fort Ord from the variable and northerly flow off southern Fort Ord. The inter-trough areas of the shore-normal troughs are flat featureless plains with small ripples populated with abundant short seapens. No large crecentic dunes exist in the inter-trough areas as is the case on the shelf off north-central California. Repeated measurements show that, whereas the shallow shore parallel troughs are extremely dynamic, with major changes in shape over periods of months, the deep shore-normal trough system shows no change whatsoever, within the accuracies of differential GPS navigation.

MBNMS-RAP-4 cont.

References related to Ocean Currents

Cheriton, O. M., E. E. McPhee-Shaw, W. J. Shaw, T. P. Stanton, J. G. Bellingham, and C. D. Storlazzi (2014), Suspended particulate layers and internal waves over the southern Monterey Bay continental shelf: An important control on shelf mud belts?, J. Geophys. Res. Oceans, 119, 428–444, doi:10.1002/2013JC009360.

Cheriton, O. M., E. E. McPhee-Shaw, C. D. Storlazzi, K. J. Rosenberger, W. J. Shaw, and B. Y. Raanan (2014), Upwelling rebound, ephemeral secondary pycnoclines, and the creation of a near-bottom wave guide over the Monterey Bay continental shelf, Geophys. Res. Lett., 41, 8503–8511, doi:10.1002/2014GL061897.

Nickols KJ, Gaylord B, Largier JL (2012) The coastal boundary layer: predictable current structure decreases alongshore transport and alters scales of dispersal, Mar. Ecol. Prog. Ser. 464:17-35, doi:10.3354/meps09875.

Sevadjian, J. C., E. E. McPhee-Shaw, B. Y. Raanan, O. M. Cheriton, and C. D. Storlazzi (2015), Vertical convergence of resuspended sediment and subducted phytoplankton to a persistent detached layer over the southern shelf of Monterey Bay, California, J. Geophys. Res. Oceans, 120, doi:10.1002/2015JC010785.

Tables from APPENDIX H: Pure Water Monterey GWR Project, Consolidated Final EIR.

Table 2-12
Source Waters Flows: Existing and Assumed Available for Proposed Project (in AFY)

Type of Source Water:	Definitions of "Existing" Flows (in AFY)							Projected future flows in 2017 (AFY)	Proposed Project Maximum Use of Source Water Flows, (AFY) (Note 2)
	2012 (actual)	2013 (actual)	Historical Average Flows (averaging period)						
			2012-13 *(2-yr average)*	2009-13 *(5-yr average)*	2007-13 *(7-yr average)*	2004-13 *(10-yr average)*	All data (see below)		
Excess/Unused Regional Treatment Plant Municipal Effluent (MRWPCA, Regional Treatment Plant flow monitoring data, January 2014)	9,714	4,621	7,183	8,225	8,704	9,457	10,300 (1999-2013)	6,242 (Note 1)	3,000 to more than 5,000
Agricultural Wash Water Flows (Source: City of Salinas and MRWPCA, 2014)	3,058	3,228	3,143	2,676	2,579	NA (Note 3)	2,579 (2007-13)	3,732 (Note 1)	2,579
City of Salinas Urban Runoff to Salinas River (Source: Schaaf & Wheeler, 2015a)	229	19	124	196	165	176	225 (1932-2013)	225	
Reclamation Ditch at Davis Road (Source: Schaaf & Wheeler, 2015b)	6,759	1,965	4,362	7,034	6,374	7,482	7,159 (2003-13)	7,159	1,522
Tembladero Slough at Castroville (Source: Schaaf & Wheeler, 2015b)	9,190	2,610	5,900	9,536	8,531	10,030	9,593 (2003-13)	9,593	1,135
Blanco Drain Diversions (Source: Schaaf & Wheeler, 2014b)	NA (Note 5)	NA (Note 5)	NA (Note 5)	NA	NA	NA	2,620 (2010-12)	2,620 (Note 5)	2,620
Lake El Estero Storage Management Water (Source: Schaaf & Wheeler, 2014a)	65	0	33	66	55	60	87 (1952-2013)	87	87
TOTALS (Note 6)	**22,256**	**10,478**	**16,383**	**21,557**	**20,034**	**NA (Note 4)**	**25,404**	**NA**	**9,311 (Note 6)**

Notes:
1. Projection of flows available in first year of Proposed Project operation 2017 (See **Appendix B rev**).
2. Source: Schaaf & Wheeler/Monterey Peninsula Water Management District, 2015 (see **Appendix B rev**).
3. Flows not available for years prior to 2007.
4. Due to lack of data regarding agricultural wash water prior to 2007 and recent trends, these numbers could not be summed to provide a total of source water flows for this averaging period.
5. Blanco Drain flows calculated based on seasonal pumping records (April to November)
6. The total use of source water would be less than the sum of all source waters due to seasonal nature of the demands and losses due to Salinas Treatment Facility Storage and Recovery. The analysis assumes that new source water that exceeds the amount used by the Proposed Project for recycling would be disposed via the MRWPCA existing ocean outfall. The amount of effluent to be disposed to the MRWPCA ocean outfall would be less with Proposed Project than current conditions as shown in **Appendix B rev**.
NA = Not available.

Table 2-13

Source Water Use Scenarios, including Priority, Seasonality, and Use by Project Phase and Drought Reserve Status

Priority	Source	Seasonal Availability	Usage Period	Projected Use Scenarios by Type of Operational Year (AFY)		
				While Building Drought Reserve	Drought Reserve is Full at 1,000 AFY	During Years when CSIP Uses Drought Reserve
1	Unused Treated Municipal Wastewater	October through March	When available	1,992	1,787	1,503
2	Agricultural Wash Water (See Note 1)	Year-round	Store at Salinas Treatment Facility for summer	2,579	2,579	2,362
3	Salinas Urban Stormwater Runoff (See Note 1)	October through April				
4	Reclamation Ditch at Davis Road	Year-round, higher in October through April	When available	721	721	1,071
5	Blanco Drain Pump Station	Year-round, higher in April through September	When available	1,268	1,020	2,003
6	Tembladero Slough At Castroville	Year-round, higher in October through April	When available	0	0	478
7	Monterey Stormwater at Lake El Estero (See Note 2)	October through April	When available	0	0	0

Notes:
1. The amount of Agricultural Wash Water and Salinas Urban Stormwater Runoff source water use shown in this table are combined because they will be mixed, stored, and diverted to the Regional Treatment Plant together. The ability of the Proposed Project to recycle the full amount available (shown in Table 2-12) would be reduced due to the storage and recovery of these waters at the Salinas Treatment Facility and the associated percolation and evaporation during storage. The storage and recovery component does, however, shift the availability of the supplies to the dry season when there is a greater demand for irrigation water within the CSIP area.
2. Wet season supply from Lake El Estero is not required in these typical scenarios shown; however, there may be conditions during which diversions may occur.
See **Appendix B rev** for detailed monthly source water use projections based on water year type, drought reserve status, and project phase.

We thank the project proponents, lead agencies and consultants for their thorough evaluation of the many facets of this project, and for considering these comments.

Sincerely,

John Hunt
Chair
MBNMS Research Activity Panel

8.3.4 United States Army Corps of Engineers (USACE)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

APR 10 2017

Regulatory Division

SUBJECT: File Number 2013-00111S

Ms. Bridget Hoover
Water Quality Protection Program Director
Monterey Bay National Marine Sanctuary
99 Pacific Street Bldg 455
Monterey, California, 93940

Dear Ms. Hoover:

This letter is written in response to a request for comments on the Draft Environmental Impact Report/Environmental Impact Statement concerning the Monterey Peninsula Water Supply Project. The project would include construction of a desalinization plant with related facilities for seawater intake, water treatment, and desalinated water conveyance and storage. The proposed project area extends approximately 18 miles along the Monterey Bay coast, from the town of Castroville in the north, to the City of Carmel in the south, Monterey County, California. Since the activities included in the project may impact waters of the U.S. (Monterey Bay and its tributaries and adjacent wetlands), the Corps of Engineers will need to review those portions of the project.

All proposed work and/or structures extending bayward or seaward of the line on shore reached by: mean high water (MHW) in tidal waters, or ordinary high water in non-tidal waters designated as navigable waters of the United States, must be authorized by the Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403). Additionally, all work and structures proposed in unfilled portions of the interior of diked areas below former MHW must be authorized under Section 10 of the same statute. USACE-1

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Depending on the nature and extent of project impacts within the Corps of Engineer's jurisdiction, the proposed project may require a standard individual 404 permit from the Corps and would need to comply with the 404(b)(1) Guidelines, which include the following prerequisites:

1) there are no practicable alternatives to the proposed discharge that would have a less adverse effect on the aquatic environment;
2) the proposed discharge would not cause or contribute to a violation of state water quality standards;

3) the proposed discharge would not contribute to significant degradation of waters of the U.S., and
4) the project would implement all appropriate and practicable measures to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

During the process of the 404(b)(1) analysis, the Corps would want the basic project purpose stated clearly to help determine whether the project, to achieve its basic purpose, is water dependent. In this context, a project would be water dependent if it requires access or proximity to or siting within a special aquatic site to fulfill its basic purpose. For reference, see 40 CFR Sec 230.10 -Restrictions on discharge, and in particular, Sec 230.10(a)(3). The alternative analysis presented in Chapter 5 of the EIS does not present enough information about impacts to waters of the U.S. to determine whether the proposed preferred project alternative is the LEDPA. Table 5.3-4 presents several alternatives and it appears that for the intake options, several may have decreased impacts compared with the preferred alternative. The 404(b)(1) alternatives analysis will determine the LEDPA, and when that is provided to the Corps, the applicant will need to demonstrate why some of the other options that may have less fill discharge to waters of the U.S. are either not practicable, would not achieve the basic project purpose, or would have other environmental impacts.

USACE-1 cont.

The Corps of Engineers regulatory program supports the national goal of "no overall net loss" of wetlands. For permitted activities that result in unavoidable losses, the Corps requires replacement wetlands to offset those losses. The U.S. Army Corps of Engineers and U.S. Environmental Protection Agency released a new Compensatory Mitigation Rule on April 10, 2008, to clarify how to provide compensatory mitigation for unavoidable impacts to the nation's wetlands and streams. A copy of this rule can be found on our Headquarters website: http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/mitig_info.aspx The new rule changes where and how mitigation is to be completed, but maintains existing requirements on when mitigation is required. The rule also preserves the requirement for applicants to avoid or minimize impacts to aquatic resources before proposing compensatory mitigation projects to offset permitted impacts.

USACE-2

A jurisdictional survey (delineation) should be provided by the applicant on a scaled topographic map or site plan. When this document is forwarded with the application, the Corps staff will validate and authenticate the limits of Corps jurisdiction. While it is not necessary to confirm all boundary points, the Corps will verify the jurisdictional boundary along one or more transects and may visit random intermediate points. All delineations of wetlands must be conducted in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual*, or appropriate Regional Supplement, and submitted to the District for review and verification. Two Regional Supplements have been approved for use within the boundaries of the San Francisco District: the *Arid West Supplement*, and the *Western Mountains, Valleys and Coast Supplement*. Copies of these documents are available to download on our website: http://www.spn.usace.army.mil/Missions/Regulatory/JurisdictionDeterminations.aspx.

The Corps of Engineers receives thousands of requests each year to perform wetland delineations for potential applicants for permits under Section 404 of the Clean Water Act. Due to limited staff and resources, response time can be several months or longer. To expedite this process, the San Francisco District encourages applicants to use consultants to conduct wetland delineations, especially for large and/or complex areas. The San Francisco District is not authorized to recommend any private consulting services and advises applicants to check references and referrals of prospective consultants before contracting services.

USACE-2 cont.

You may refer any questions on this matter to Frances Malamud-Roam of my Regulatory staff by telephone at 415-503-6792 or by e-mail at Frances.P.Malamud-Roam@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

Sincerely,

for Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Copy Furnished:

CA DFW, Monterey, CA
CA RWQCB, San Luis Obispo, CA

8.3.5 United States Environmental Protection Agency (USEPA)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 2 9 2017

Mr. Paul Michel, Superintendent
National Oceanic and Atmospheric Administration
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455A
Monterey, California 93940

Subject: Draft Environmental Impact Statement/Report for the Monterey Peninsula Water Supply Project, Monterey, California (EIS No. 20170000)

Dear Mr. Michel:

The U.S. Environmental Protection Agency has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA recognizes the water supply challenges that result from the Monterey Bay area's geography and climate. In order to provide a reliable, long-term, and drought-resistant water supply to its customers, California American Water Company has applied to the Monterey National Marine Sanctuary for authorization to operate a seawater intake system, a reverse osmosis desalination plant, and ancillary facilities to serve Monterey county residents and businesses. We commend the Sanctuary for evaluating, in the Draft EIS, several project site locations, sizes, and technologies as alternatives to the Applicant's Proposed Action. The document's evaluation of a reasonable range of alternatives will aid the public and decision-makers in understanding and comparing the environmental impacts of various approaches to meeting the area's water supply needs. We also note that the North Marina Groundwater Model, presented in the Draft EIS, appears conceptually sound and well parametrized. USEPA-1

The Draft EIS identifies Alternative 5a as the Sanctuary's Preferred Alternative. Alternative 5a would authorize the drilling of seven subsurface slant wells, a brine discharge into Sanctuary waters, and a desalination facility and pipelines that would process a maximum of 6.4 million gallons per day. EPA has reviewed the Draft EIS and rated the Preferred Alternative *Lack of Objections (LO)* (see attached "Summary of EPA Rating Definitions"). The remainder of this letter provides EPA's suggestions to assist the Sanctuary in the development of the Final EIS. USEPA-2

Fort Ord Superfund Site

The Department of the Army's groundwater remediation projects at the former Fort Ord are being conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Contamination at the site includes the Operable Unit Carbon Tetrachloride Plume (OUCTP), located two miles from the proposed subsurface seawater intake wells. According to the Draft EIS, if the radius of influence of the proposed slant wells does reach the western portion of the OUCTP A-Aquifer Plume, then the decrease in groundwater elevations could alter the existing groundwater flow direction. This change in flow direction could pull the OUCTP Plume further northwest, spreading the contamination to areas that are not now contaminated above action levels. USEPA-3

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Mitigation Measure 4.4-4 states that "the project applicant will reimburse the U.S. Army for the necessary additional costs to address changes in the plume flow direction, arrest mitigation of the plumes, and/or to remediate areas of new contamination created by slant well pumping." It is unclear exactly what would trigger implementation of Mitigation Measure 4.4-4. EPA suggests that the Sanctuary continue to work with the Army's Fort Ord Base Realignment and Closure office to refine Mitigation Measure 4.4-4 to include appropriate thresholds for action. In addition, it would be helpful to include, with input from the Army, a description of the possible mechanisms through which reimbursement of the Army could be provided, if necessary. EPA also suggests that the Final EIS and Record of Decision include a requirement that the Army be notified, in advance, of any operational changes to the project.

USEPA-3 cont.

The Draft EIS also includes Mitigation Measure 4.4-3, under which groundwater monitoring that incorporates the Army's groundwater monitoring data would be conducted. Specifically, CalAm proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot, plus one mile (p.4.4-68). We encourage CalAm to continue to coordinate with the Army to ensure that placement of future groundwater monitoring wells would be complementary to any groundwater cleanup activities in the Fort Ord Superfund Site.

Energy Conservation

Proposed Mitigation Measure 4.11-1 states that:

> "CalAm shall make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy, including but not necessarily limited to: the use of methane gas from the existing Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site; and installation of solar photovoltaic (PV) panels at or adjacent to the desalination plant."

EPA supports the use of renewable energy; however, we note that neither expansion of the LFGTE facility nor the installation of solar PV panels is included as part of the proposed project. The Draft EIS explains how the CalAm project could connect to the LFGTE facility, but provides no further discussion of PV.

USEPA-4

We suggest that the Sanctuary evaluate the feasibility of incorporating solar PV panels into the project design. If PV panels are found to be feasible, include them in the Description of the Proposed Project in the Final EIS, and include an analysis of the operational energy savings that would result from incorporating solar energy into the project. Alternatively, consider evaluating solar panels separately as a mitigated alternative, consistent with 40 CFR 1502.14(f). One design option would be to install solar panels on buildings and on carports over parking lots, the latter which would also reduce evaporative emissions from vehicles and provide shade in addition to generating electricity.

Wetlands Impacts

The Draft EIS does not distinguish between permanent and temporary impacts. The U.S. Army Corps of Engineers generally states that temporary is no longer than one year and one growing season. In the Draft EIS, all construction impacts are categorized as temporary, even if they may be longer than a year. EPA suggests that the Final EIS clarify the definition of "temporary" relied upon for characterizing

USEPA-5

impacts of the proposed project, and discuss temporary and any permanent impacts to waters of the US accordingly. USEPA-5 cont.

In closing, EPA appreciates the opportunity to review this Draft EIS. When the Final EIS is released for public review, please send one copy to the address above (mail code: ENF-4-2). If you have any questions, please contact me at (415) 972-3521, or contact Stephanie Gordon, the lead reviewer for this project, at 415-972-3098 or gordon.stephanies@epa.gov.

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Section

Enclosure: Summary of EPA Rating Definitions

cc: Bridget Hoover, Water Quality Protection Program Director, Monterey Bay National Marine Sanctuary
William Collins, Fort Ord Base Realignment and Closure Office, Department of the Army
Frances Malamud-Roam, U.S. Army Corps of Engineers
Grant Himebaugh, Central Coast Regional Water Quality Control Board

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment

8.3.1 Responses to Comments from Department of the Army, Fort Ord Base Realignment and Closure Field Office

FOBRAC-1 Mitigation Measure 4.4-4 applies to the proposed MPWSP at 9.6 million gallons per day (mgd) as described in Chapter 3, Project Description. As discussed in Impact 4.4-4 in Section 4.4, Groundwater Resources, the operation of the proposed MPWSP is not anticipated to adversely affect the Fort Ord Operable Unit Carbon Tetrachloride Plumes (OUCTP) plumes. Nonetheless, in an abundance of caution, Mitigation Measure 4.4-4 is proposed to address the possibility that the capture zone of the seawater intake system could extend to and affect the OUCTP plumes. Changes to Mitigation Measure 4.4-4 in response to this comment are discussed further below.

However, it is important to note that Alternative 5a, described in Section 5.4.7, may be selected by the Lead Agencies as the environmentally superior/agency preferred alternative. Under Alternative 5a, the seawater intake system would be operated at a reduced volume of 6.4 mgd, which in turn would result in a reduced capture zone that would not approach the OUCTP plumes, avoiding the potential (though not anticipated) impact of the proposed project.

Mitigation Measure 4.4-4 specifically includes the requirement that CalAm monitor the development of the radius of influence, defined as 1 foot of drawdown. In the event that the radius of influence approaches the OUCTP plumes, the monitoring would enable (and Mitigation Measure 4.4-4 would require) CalAm to respond prior to adverse effects on the OUCTP plumes. As discussed in Impact 4.4-4 in Section 4.4, the operation of the seawater intake system may result in a drawdown of 1 foot close to the northwestern edge of the OUCTP plumes. As explained in Master Response 8, Project Source Water and Seawater Intrusion, this would not necessarily change the flow direction at those locations. More importantly, the capture zone[1] would have a much smaller extent than the radius of influence, defined above. This means that the proposed project would be unlikely to capture any groundwater being treated at the OUCTP plumes. As previously noted, Mitigation Measure 4.4-4 is proposed as a conservative measure in the event that the capture zone extends further than anticipated.

In response to this comment, the following text has been added to the end of the CERCLA subsection in Section 4.7.2.1, Regulatory Framework:

> <u>The cleanup projects being conducted at the former Fort Ord, described above in Section 4.7.1 Setting/Affected Environment, are being conducted under CERCLA. If the MPWSP were to adversely affect the ongoing cleanup</u>

[1] A capture zone is the three-dimensional volume of aquifer that contributes the water extracted by the wells. See Master Response 8, Project Source Water and Seawater Intrusion.

activities, CalAm may be considered a potentially responsible party as defined in CERCLA.

In addition, Mitigation Measure 4.4-4 has been revised as follows:

Mitigation Measure 4.4-4: (Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes).

Prior to the start of MPWSP construction, CalAm ~~the project applicant~~ shall incorporate the future quarterly groundwater elevation monitoring results for the two OUCTP plumes into the well monitoring program described above in **Applicant Proposed Measure 4.4-3** until the two OUCTP plumes have been appropriately remediated and the RWQCB no longer requires remediation activities. Groundwater elevation data shall be obtained from the periodic monitoring reports developed by the U.S. Army and its contractors. The elements of the additions to the groundwater monitoring program proposed under this mitigation measure are described below.

- Using the most recent monitoring reports available through the U.S. Army and its contractors, the groundwater elevations in the A-Aquifer and the Upper 180-Foot Aquifer for wells at and downgradient of the westernmost edge of the two OUCTP plumes shall be incorporated into the well monitoring program described above for **Applicant Proposed Measure 4.4-3**.

- The groundwater elevation results shall be evaluated by CalAm and its consultants on a quarterly basis to assess whether the ~~cone of depression~~ -1 foot drawdown contour from the proposed seawater intake system is approaching ~~or has reached~~ the edge of the two OUCTP plumes. If the analysis concludes that the slant well pumping could intersect or could influence the flow direction of two OUCTP plumes, then CalAm ~~the project applicant~~ shall contact the U.S. Army, the Regional Water Quality Control Board – Central Coast Region, the California Department of Toxic Substance Control, and the USEPA to initiate communications and develop and implement a plan to either stop or decrease the pumping to prevent any impact on the OUCTP plumes. In the unlikely event that an impact does occur, CalAm shall bear ~~reimburse the U.S. Army for~~ the necessary additional costs to address changes in the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by slant well pumping. CalAm shall consider using existing groundwater remediation and monitoring wells that remain on the site to expand the existing treatment systems.

- When the ongoing remediation of the two OUCTP plumes has been completed and the RWQCB authorizes closure of the two OUCTP plumes remediation activities, this mitigation measure shall no longer apply.

FOBRAC-2 The commenter stated that unexploded ordinance (UXO) from the previous military use of the former Fort Ord may be present outside of the City of Seaside,

which administers an excavation permit program that includes the potential to encounter UXO. In Section 4.7.5.1, Impact 4.7-3 includes analysis for encountering UXO and requires compliance with the City of Seaside's Ordnance Remediation District regulations and the environmental protection provisions of the Findings of Suitability for Early Transfer (FOSET) agreement described in Section 4.7.1.1. The components of the proposed MPWSP that are located within the former Fort Ord are all located within the City of Seaside. As discussed in Impact 4.7-3, the only project component within the Seaside Munitions Response Area (MRA) is about 700 feet of the southernmost portion of the new Transmission Main, and construction within this area would therefore be required to comply with the permit. In addition, as explained on Draft EIR/EIS pages 4.7-7 to 4.7-8, investigations for and cleanup of UXO have been completed along General Jim Moore Boulevard where the project components would be located and the construction of the road would also have exposed UXO, if any. The commenter notes that the U.S. Army offers munitions recognition and safety training to anyone who requests it. As discussed in Impact 4.7-3, UXO recognition training is part of the permit requirements. No revisions were made in response to this comment.

8.3.2 Responses to Comments from Department of the Army, U.S. Army Installation Management Command

USARMY-1 The design and operation of the proposed MPWSP subsurface intakes is constrained by policies intended to avoid or minimize adverse environmental impacts outlined in the State Water Resources Control Board's (SWRCB) California Ocean Plan, California Coastal Commission (CCC) policies, and National Oceanic and Atmospheric Administration (NOAA) policy guidelines for desalination facilities. See EIR/EIS Section 5.3.1. The primary objectives of the MPWSP include developing supplies to replace Carmel River and Seaside Basin supplies that are constrained by regulatory and legal decisions. A secondary objective includes locating key project facilities in areas that minimize environmental impacts. See EIR/EIS Section 1.3.1. No change to the EIR/EIS has been made in response to this comment.

USARMY-2 In response to this comment, Section 1.5.4.3, Other Agencies' Consideration of the EIR/EIS and Proposed Project, has been revised as follows:

> On the federal level, agencies with ~~potential~~ reviewing or permitting authority include NOAA Fisheries, the U.S. Army, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service (USFWS).

USARMY-3 The Terminal Reservoir is no longer a proposed project component. Therefore, the description of Terminal Reservoir in Draft EIR/EIS Section 3.2.3.5, and all references and analysis related to the component, have been removed from the EIR/EIS.

USARMY-4 The comment cites information provided by CalAm that describes the constraints on locating the proposed ASR wells in a location other than as proposed because of land use (i.e., Fort Ord ordinance cleanup areas and residential), biological resources in the area, and limitations on the geologic formation. The Lead Agencies reviewed and concur with these limitations. Therefore, the Lead Agencies did not consider other sites for the proposed ASR-5 and ASR-6 wells in the preparation of the Draft EIR/EIS.

Note that the proposed ASR-5 and ASR-6 wells previously were analyzed by the U.S. Army Garrison, Presidio of Monterey, in a Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (U.S. Army, 2010), after CalAm requested a right-of-entry and 50-year land lease with an option for renewals on the two parcels located within the Fitch Park Housing Area that are the current proposed locations of the ASR-5 and ASR-6 wells.[1] As explained in

[1] In the 2010 EA/FONSI, these wells are referred to as "ASR-3 and ASR-4;" however, as shown on Exhibit 2B in U.S. Army, 2010, these are the same sites currently proposed for the ASR-5 and ASR-6 wells as a component of the MPWSP.

the FONSI, that action was then determined to have no adverse impacts (after implementation of avoidance, minimization, and mitigation measures). The EA describes the process of evaluating alternatives to that project, and that CalAm considered several other locations for the ASR wells along the General Jim Moore Boulevard corridor (where existing ASR facilities are located), but did not pursue other locations. No additional discussion of evaluation of alternative sites was provided in the EA.

Final EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, has been revised to include the information provided in this response. See Section 5.2.7, Siting Alternatives for ASR-5 and ASR-6 Wells.

USARMY-5 Figure 3-14 has been replaced with higher-resolution graphics in the Final EIR/EIS.

USARMY-6 Draft EIR/EIS Section 3.3.2.2 describes the continuous 24-hour drilling of the ASR wells to be necessary until final depth is reached and the borehole is stabilized. The EIR/EIS text has been revised to include the explanation that this would prevent the borehole from potentially collapsing in on itself, filling the borehole with the surrounding geologic materials, and/or binding up the drill bit and trapping it in the borehole, as could occur if drilling were paused. The access driveways from General Jim Moore Boulevard are shown in Final EIR/EIS Figure 3-14 and described in Section 3.2.4.1.

USARMY-7 In response to this comment, text in Section 3.3.4.3 has been revised as follows:

> Before connecting existing and new pipelines, CalAm would drain and disinfect the existing pipe segments before putting them into service. Similarly, upon completing construction activities, facility operators would disinfect the newly installed pipelines and pipeline connections before bringing the pipes into service. Effluent produced during the pipeline disinfection process would be discharged to the local stormwater drainage system in accordance with the Central Coast RWQCB *General Waste Discharge Requirements for Discharges with Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001) (RWQCB, 2011), or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., as directed by U.S. Army approvals on Army-owned property). See Impact 4.3-3 in Section 4.3, Surface Water Hydrology and Water Quality, for additional information.

The management of discharges of treated water and disinfectant from existing and newly installed pipelines during construction is discussed in Section 4.3.5.1 under Impact 4.3-3. In response to this comment, text in the first paragraph of this impact has been revised as follows:

> … The treated water generated from the draining of existing pipelines and the effluent generated from disinfection of newly installed pipelines would be discharged to the local storm drainage system or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., to percolation ponds as may be directed by U.S. Army approvals on Army-owned property). …

USARMY-8 Section 3.3.9, Construction Schedule, has been revised to clearly state that any pipelines constructed within U.S. Army-owned property would require daytime construction only.

USARMY-9 See Master Response 13, Demand (Project Need) and Growth, for a detailed discussion of reasonably foreseeable demand scenarios. Should demand, available water supply, or overall precipitation change, such that water needs are lowered, the desalination plant could be operated at a lower level. Indeed, although the Monterey Peninsula Water Management District (MPWMD) has not determined the allocation of water that could be provided by the proposed project, MPWMD stated in a comment on the Draft EIR/EIS (see comment MPWMD-21) that it may not allocate all the water produced by the project; one reason it may choose not to allocate the full amount would be to allow the plant to operate at less than full capacity, depending on the level of customer demand.

While the seawater intake system and desalination plant typically would operate year round, as discussed in EIR/EIS Section 3.4.1, there would be periods over the life of the project when CalAm would need to shut down the MPWSP Desalination Plant for a host of reasons (e.g., mechanical or electrical problems, water quality issues, loss of power, etc.). CalAm would be able to serve customer demand using other sources, including water stored in the ASR system, during such outages. Typical annual variation in rainfall is unlikely to affect the proposed operation of the desalination plant because, as shown in EIR/EIS Table 3-6, during the wet season when surface water is available to serve the Monterey District, desalinated product water would be injected into ASR and stored for later use. The quantity of desalinated product water that could be injected would be determined by the amount of desalinated water not being delivered to customers, and is estimated to be about 2,100 afy, but could vary in any given year. Further, as explained in Section 3.4.4, CalAm is obligated to replenish the Seaside Groundwater Basin on an approximately 25-year schedule, with the actual volume of water replenished during any given year varying but being equal to or greater than 700 afy based on a running 5-year average. Therefore, in the event that increased rainfall and/or decreased demand occur prior to completion of the Seaside Groundwater Basin payback period, CalAm could continue to operate the desalination plant as proposed in order to fulfill this obligation. In the event of a short-term power outage, CalAm would rely on other supply sources and then resume desalination plant operations; see EIR/EIS Section 3.4.1 and Table 3-7.

USARMY-10 The second column (U.S. Army) of the second row (Permit or Approval) of Table 3-8, Anticipated Permits and Approvals, has been revised to read:

> Real property outgrants for construction and operation for non-Army users (Army Regulation (AR) 405-80, 200-1) ~~Land Use (Army Regulation (AR) 405-80, 200-1)~~

USARMY-11 See response to comment USARMY-7.

USARMY-12 As discussed in Draft EIR/EIS Section 4.3.5.1 under Impact 4.3-2, all dewatering discharges related to excavations, well drilling, and well development would occur in compliance with regulatory requirements that are protective of the receiving waters; impacts associated with such discharges were found to be less than significant. To obtain NPDES coverage for construction related discharges, CalAm would be required to test dewatering effluent for possible pollutants and provide results of the water quality analysis to the Central Coast Regional Water Quality Control Board. The Construction General Permit requires all dischargers to electronically file all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting, and other compliance documents required by permit through the State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website where this information is publicly accessible (https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml); no change has been made to the Draft EIR/EIS in response to this comment.

USARMY-13 The legend has been expanded to describe the features on Figures 4.7-7 and 4.4-8.

USARMY-14 The discussion of Disinfection Byproducts in Section 4.4.1.4 has been revised to reflect the cited information about past operation of existing ASR-3:

> After approximately 150 to 210 days of storage, THMs in four out of the five wells monitored had degraded to below the initial injection levels. Although the concentration of THMs in the ASR-3 well had not yet reached the initial injection level as of 210 days, the concentration was exhibiting a continuing downward trend suggesting the initial injection concentration would be reached within about 240 days. HAAs degraded to below reporting limits by 90 to 100 days. More importantly, throughout the 2015 water year, after the initial increase following injection, THMs were below the MCL of 80 micrograms per liter and HAAs were below the MCL of 60 micrograms per liter in all five wells monitored.

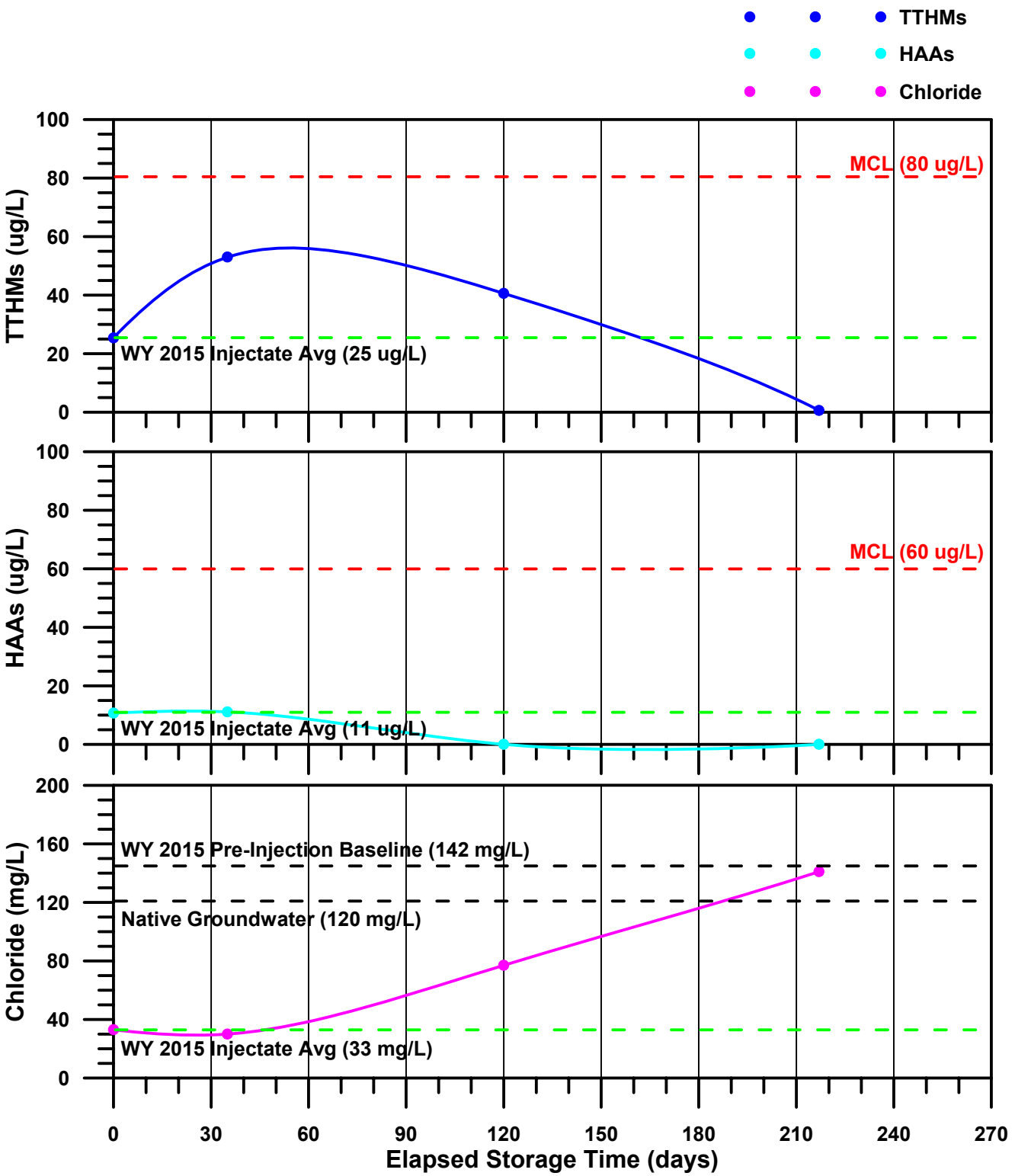
Pueblo Water Resources describes the rates and trends as "approximate" and "typical" because the actual rates and trends for an individual well during any one of the monitoring events vary and may be slightly outside of the typical trends observed since the evaluations began in 2001. Considering that the

concentrations are below MCLs and the trends are always downward back to the initial injection levels, this one outlier is not considered to be significant.

USARMY-15 As explained in the subsection titled Disinfection Byproducts in Section 4.4.1.4 Groundwater Quality, the concentrations of THMs in ASR-3 did initially increase and then decrease over time to below the Maximum Contaminant Level (MCL) or 80 micrograms per liter (mg/L). See the revision in response to comment USARMY-14 for clarification that THMs were below the MCL after the initial increase following injection.

USARMY-16 As discussed in the subsection titled Disinfection Byproducts in Section 4.4.1.4 Groundwater Quality, the concentrations of disinfection byproducts (DBPs) declined over time to below the regulatory action level of their respective MCLs in all wells monitored. Graphs of the concentrations of disinfection byproducts showing the rate of decline compared to the regulatory action level of their respective MCLs are shown on Figures 20 through 24 in Pueblo Water Resources, 2016, cited in Section 4.4. As requested, Figures 20 through 24 from Pueblo Water Resources, 2016, are provided in this Section 8.2.3. The graphs also show that with time, the concentrations of disinfection byproducts continued to decrease to below the initial injectate levels, indicating that elevated concentration conditions do not persist. The Pueblo 2016 report did not present pH values on the listed figures. However, Table 11 of the Pueblo 2016 report states that the 2014 and 2015 injectates had pH measurements of 7.2 and 7.6, both within the MCL for pH of 6.5 to 8.5. As listed in Table 4.4-2 in the Draft EIR/EIS, the injected volumes have varied from 2 to 1,117 acre-feet per year, but the concentrations of disinfection byproducts have always returned to below injectate levels. This pattern of initial increase followed by a decline in DBP concentration is expected independent of the injected volume.

As stated in Pueblo Water Resources, 2016 and Padre Associates, Inc., 2004, cited in Section 4.4, the formation and degradation of DBPs are consistent with other ASR sites with reduced (anaerobic) subsurface conditions. The DBPs are formed when naturally occurring organic and inorganic materials in the water and subsurface materials react with the disinfectants. The DBPs are then degraded through biometabolism by microorganisms indigenous to the groundwater aquifers or adsorbed to the materials of the aquifer matrix. Under the proposed project, the maximum volume of water that could be supplied to the ASR system from the MPWSP desalination plant would be 2,100 acre-feet per year. Given the limitations of Water Rights Permits 20808A and C, the maximum volume of water that could be diverted from the Carmel River system could be 5,326 acre-feet per year (Water Rights Permits 20808A and 20808C) that are subject to instream flow requirements; as noted above, the actual volume has been between 2 and 1,117 acre-feet per year due to the seasonal rainfall limitations and instream flow requirements. Thus, the volume of water that CalAm could inject into the ASR system in a given year could be a maximum of

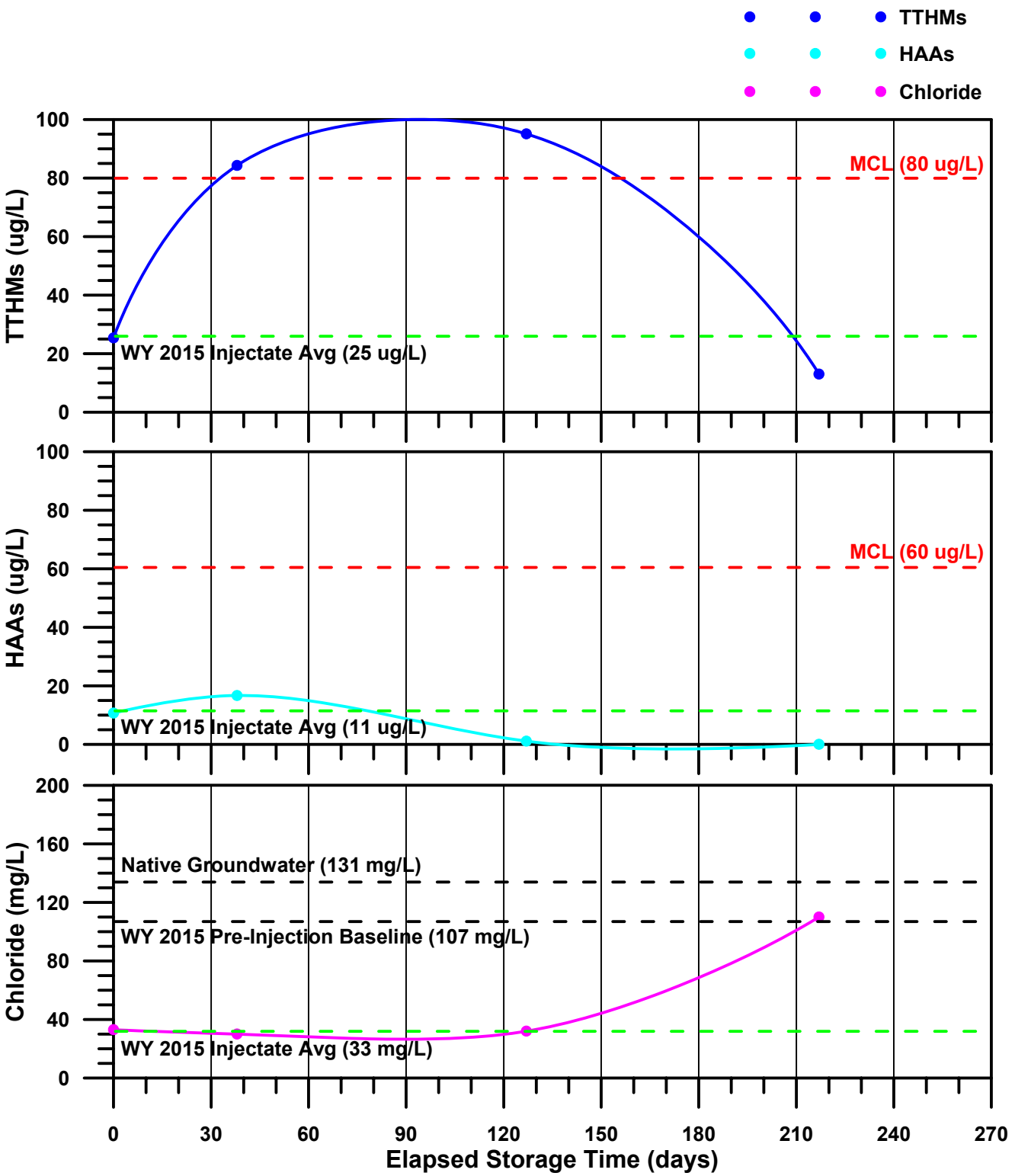


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-1

ASR-1 Disinfection Byproducts Parameters

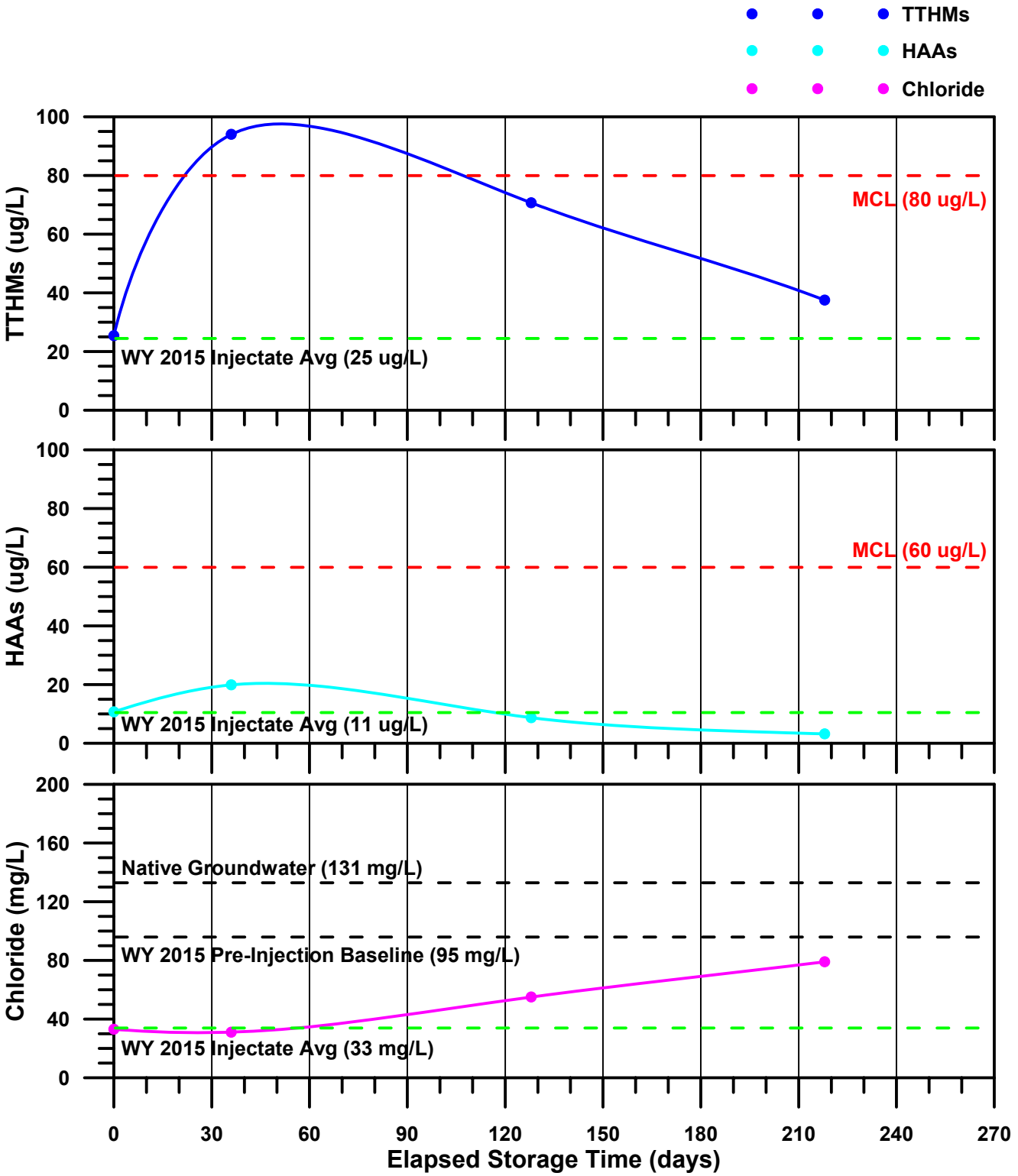


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-2

ASR-2 Disinfection Byproducts Parameters

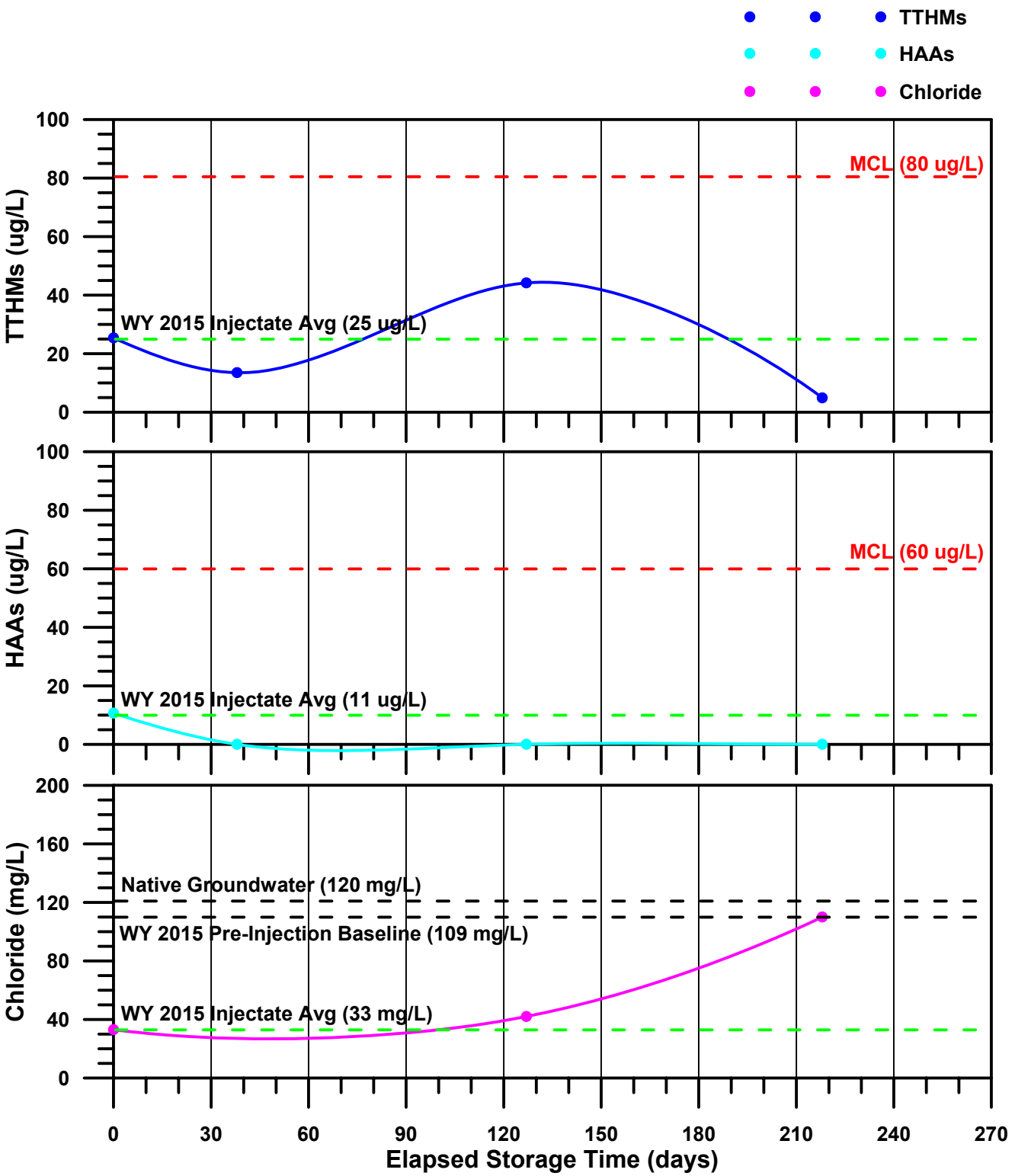


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-3

ASR-3 Disinfection Byproducts Parameters

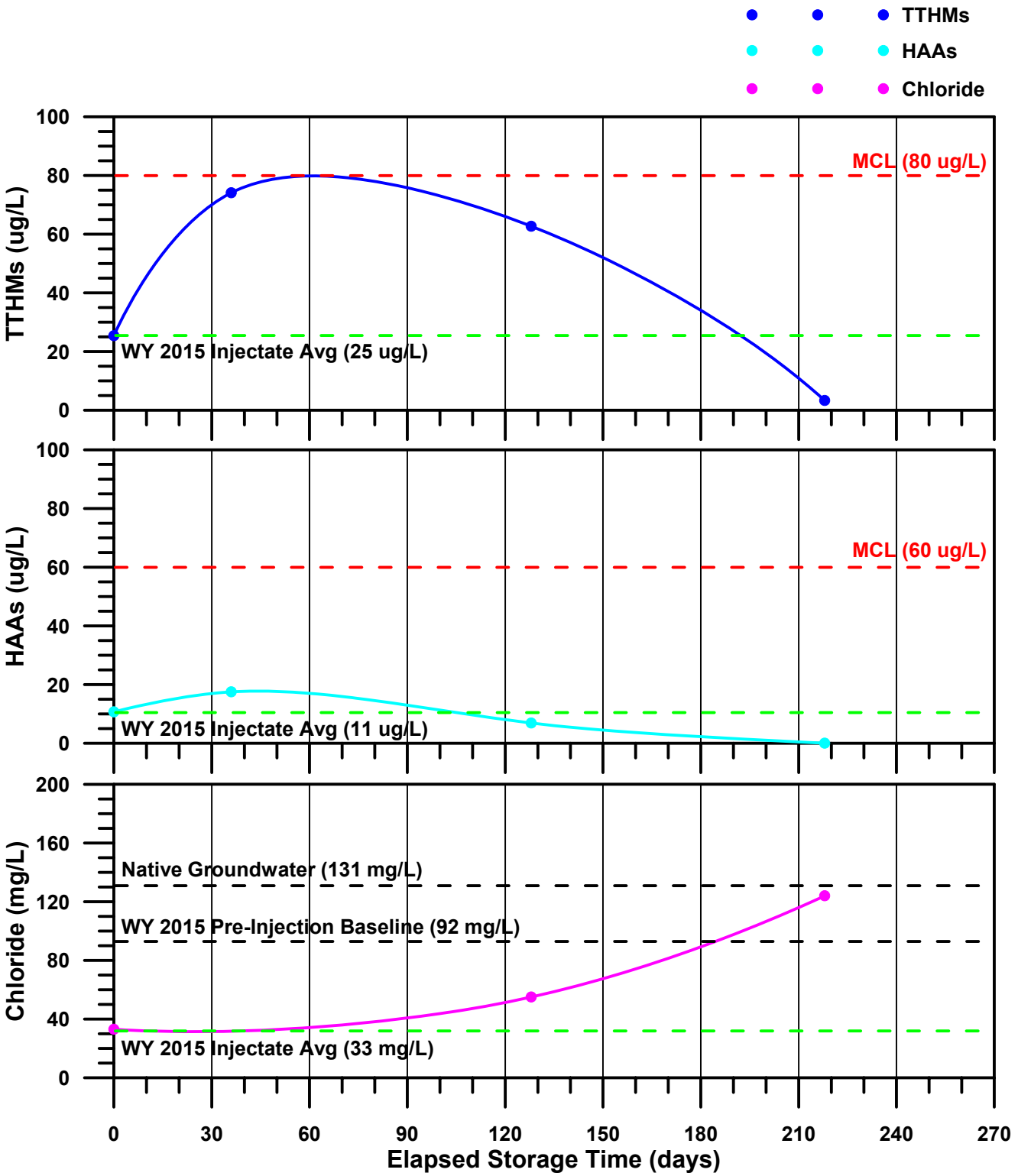


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-4

SM MW-1 Disinfection Byproducts Parameters



SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-5

SMS Deep Disinfection Byproducts Parameters

about 7,426 acre-feet. However, the water from the desalination plant would be advanced treated and would contain less organic material than the water injected from the Carmel River, which in turn would generate a lower concentration of DBPs. As stated above, an initial increase followed by a decline in DBP concentration is expected, independent of the injected volume.

USARMY-17 As explained in response to comment USARMY-16, the volume of water that CalAm could inject into the ASR system in a given year could be a combined maximum of about 7,426 acre-feet from all sources. As explained in Impact 4.4-3 on Draft EIR/EIS page 4.4-68, the volume of treated desalinated water that would be routed to the ASR system for storage would depend on precipitation and the water demands in any given year, but is expected to be about 2,100 acre-feet per year. The MPWMD's 2006 ASR EIR analyzed the impacts on groundwater storage and water levels in the Seaside Groundwater Basin (MPWMD, 2006). The analysis presented a pilot study and a groundwater model to evaluate the impacts on groundwater storage in the SGB through operation of the ASR program. The analysis assumed up to 2,426 acre-feet per year could be injected through the implementation of the ASR program, of which up to 2,003 acre-feet per year would be extracted, consistent with the terms of the water rights permits. The findings of the analysis concluded that injecting excess treated water into the ASR injection/extraction wells was beneficial to groundwater storage within the Seaside Groundwater Basin, so long as extraction did not exceed injection on an annual basis. In addition, as discussed above in response to comment USARMY-16, the fate of the disinfection byproducts would be the same as described in the subsection titled Disinfection Byproducts in Section 4.4.1.4, Groundwater Quality, and the decline in DBP concentrations would be independent of the injected volumes of supply.

USARMY-18 As discussed in Section 4.4.1.2, Local and Regional Hydrogeology, the Santa Margarita Sandstone, the aquifer into which treated water would be injected, is a confined aquifer. At this depth and under these conditions, water would not be able to intermix with groundwater in other aquifers. There would be no organisms within the Santa Margarita Sandstone that could be affected by the disinfection byproducts.

USARMY-19 As discussed in the subsection titled Disinfection Byproducts in Section 4.4.1.4, Groundwater Quality, water injected into the ASR system is monitored to track the degradation rate of the disinfection byproducts. This monitoring program is required by the State Water Resources Control Board under the Division of Water Rights Permit 20808C – Amended Permit for Diversion and Use of Water, which includes rules for the recovery of the stored water (see Section 4.4.2, Regulatory Framework). The Permit requires quantifying the amount of time needed to ensure that, prior to extraction, the concentration of the disinfection byproducts has decreased to below MCLs. As an adaptive management strategy,

the residency time of the treated water in the aquifer is dictated by the degradation rate of the disinfection byproducts and can vary accordingly.

USARMY-20 The Integrated Natural Resource Management Plan (INRMP), Presidio of Monterey and Ord Military Community, has been reviewed and a brief summary added in Final EIR/EIS Section 4.6.2.1, Federal Regulations, in Section 4.6, Terrestrial Biological Resources. Additionally, provisions have been added to mitigation measures where appropriate to acknowledge the applicability of the INRMP to project components within U.S. Army-owned land within the Ord Military Community area. In Mitigation Measure 4.6-1p (Control Measures for Spread of Invasive Plants), item number 7 has been added as follows:

> Within U.S. Army-owned land, control measures for invasive species also shall conform to guidelines in the Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community (e.g., Section 9.2.4, Undesirable Plant Pests).

See also response to comment USARMY-21, below. The Lead Agencies also anticipate that the U.S. Army will require compliance with applicable INRMP policies and guidelines in permits and/or other agreements obtained by CalAm for facilities within U.S. Army-owned land.

Table 4.6-4 in Section 4.6.2.3, Regional and Local Regulations, summarizes the regional and local (i.e., not federal or state) land use plans, policies, and regulations pertaining to inland biological resources that are relevant to the MPWSP and that were adopted for the purpose of avoiding or minimizing an adverse environmental effect, and has not been revised to include the INRMP (a federal land management plan).

USARMY-21 The Draft EIR/EIS includes measures for site restoration and tree replacement in accordance with local policies and ordinances. Mitigation Measure 4.6-1c, which applies to all project components, specifies that all temporarily disturbed areas shall be returned to pre-project conditions or better. Through implementation of Mitigation Measure 4.6-1c, any landscaped areas would be restored after work is complete. Through implementation of Mitigation Measure 4.6-4, CalAm would be required to comply with any local tree policies or ordinances, which may require the replacement of a protected tree depending on the applicable policy or ordinance.

In response to this comment, item 4 has been added to Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances) as follows:

> Tree removal, preservation, or mitigation on Army property shall be in accordance with the Integrated Natural Resource Management Plan Presidio of Monterey and Ord Military Community (November, 2008).

USARMY-22 See response to comment USARMY-10 regarding how Army Regulation 405-80 is now presented in Table 3-8, Anticipated Permits and Approvals. The comment is acknowledged, and it will be the responsibility of CalAm and/or its contractors to secure the necessary permits and comply with the conditions imposed at that time by permitting agencies.

USARMY-23 As described on Draft EIR/EIS page 4.9-27, where feasible and appropriate, project pipelines would be installed so as to avoid construction within vehicle travel lanes and to minimize impacts on roadway capacity and function. For the proposed pipeline along General Jim Moore Boulevard, the impact analysis conservatively assumed that construction could require temporary lane closures, and that the impact related to pipeline installation is considered to be potentially significant. However, the Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1) would include measures to minimize the adverse effects of temporary lanes closures. Regarding access for emergency service providers (such as the POM Fire Station on General Jim Moore Boulevard), as stated on page 4.9-25, the Traffic Control and Safety Assurance Plan would stipulate that access for emergency vehicles would be maintained at all times. Access for the other uses cited in the comment would be maintained, but could be temporarily impeded by project construction. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-24 Temporary disruption to public transit during construction is discussed under Impact 4.9-5. As stated there, pipeline installation activities could temporarily affect public transportation along affected roadways in the project area. However, implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan), which includes measures that would minimize impacts on public transportation during construction, would reduce the impact to a less-than-significant level. Relevant to the comment's concern about DoD personnel commuting by Monterey-Salinas Transit buses, the Traffic Control and Safety Assurance Plan would stipulate that construction truck trips and lane closures would be scheduled to occur outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (which includes traffic flow by buses).

USARMY-25 See response to comment USARMY-24 regarding the Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1) and its stipulation that construction truck trips and lane closures would be scheduled to occur outside of peak traffic hours to minimize adverse impacts on traffic flow (if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications). As stated on Draft EIR/EIS page 4.9-24, the traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project, and shall include, but not necessarily be limited to the elements listed on Draft EIR/EIS pages 4.9-24 to 4.9-26. The following additional element has been added to the list of measures

that could be included in the traffic control and safety assurance plan required by Mitigation Measure 4.9-1:

- Develop a school traffic and pedestrian safety plan to minimize adverse impacts associated with truck trips and lane closures (e.g., in the vicinity of the Marshall Elementary School east of the General Jim Moore Boulevard / Normandy Road intersection).

USARMY-26 See response to comment USARMY-23 regarding emergency access during project construction. Mitigation Measure 4.9-1, Traffic Control and Safety Assurance Plan, requires CalAm and/or its contractors to obtain any necessary road encroachment permits prior to constructing each project component and to comply with the conditions of approval attached to all project permits. This measure has been revised to clarify that a permit from the U.S. Army is among those potentially necessary permits with which CalAm and its contractors must comply. The statement about the process the U.S. Army would undertake during its review of a request by CalAm to work on Army-owned property is acknowledged. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-27 Potential increased wear-and-tear on the designated haul routes used by project construction vehicles is discussed under Impact 4.9-6. As stated there, the degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the roadway. It is acknowledged that some roadways may not have been constructed to support use by heavy construction trucks and vehicles, and project-related increases in construction truck trips could cause excessive wear-and-tear on these roadways, a potentially significant impact. However, implementation of Mitigation Measure 4.9-6 (Roadway Rehabilitation Program), which requires rehabilitation of any roadways damaged following construction, would reduce this impact to a less-than-significant level. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-28 The concern about the proposed use of a portion of the AAFES Service Station parking lot as a construction staging area is noted. The Draft EIR/EIS concluded that project-generated traffic would result in less-than-significant impacts, and it is unclear from the comment what the potential for additional traffic hazards would be. Regardless, the Lead Agencies acknowledge that CalAm's proposed use of staging areas is subject to agreements with property owners and that the U.S. Army may decline to permit the use of this location as a temporary construction staging area. As shown on EIR/EIS Figure 3-8, there are several other proposed staging areas in the vicinity that may be used if the location at the northwest corner of General Jim Moore Boulevard and Gigling Road cannot be permitted.

USARMY-29 The two-week (10 working days) duration is used as a threshold by some local noise ordinances, based upon the premise that construction noise exposure for less than two weeks is more tolerable (e.g., City of Oakland, Noise Ordinance No. 11895; Ventura County, Construction Noise Threshold Criteria and Control Plan). Text has been added to Section 4.12.2.1 to clarify the basis of this threshold. The purpose of this threshold in the EIR/EIS is to assess the significance of temporary or periodic increases over ambient noise levels that may not be found significant if judged solely in comparison to applicable local noise regulations (i.e., those described in Table 4.12-3 in Section 4.12.3.3). CEQA requires that impacts be assessed using both of these criteria (i.e., temporary and permanent noise increases).

USARMY-30 Both discussions cited by the commenter in Chapter 3 and Section 4.12 confirm that construction of the ASR Recirculation Pipeline, ASR Conveyance Pipeline, and ASR Pump-to-Waste Pipeline would occur during daytime hours. However, the discussion on Draft EIR/EIS pages 4.12-21 and 4.12-28 with regard to construction of the New Transmission Main incorrectly identified only those portions of the New Transmission Main within the City of Marina as assumed to occur during daytime hours. The second paragraph on Draft EIR/EIS page 4.12-21 and the last paragraph on page 4.12-28 of the Draft EIR/EIS have been revised to indicate that construction of the New Transmission Main within areas under U.S. Army jurisdiction (i.e., locations within the City of Seaside) also would occur during daytime hours only.

USARMY-31 New figures 4.12-2 through 4.12-5 have been added to Section 4.12 of the Final EIR/EIS. These figures depict the estimated noise contours associated with proposed 24-hour drilling associated with ASR well construction, consistent with those presented for the nearest receptor on page 4.12-29 of the Draft EIR/EIS.

EIR/EIS Table 4.12-8 presents the construction-related noise associated with construction of the New Transmission Main at the closest sensitive receptors. The data provided in that table are sufficient to draw significance conclusions for New Transmission Main construction for the purposes of CEQA and NEPA, and to require mitigation as described in Impact 4.12-1. In addition, as requested in the comment, the table below presents the construction-related noise associated with daytime-only open trench construction of the New Transmission Main at multiple distances, consistent with those presented for the nearest receptor in Table 4.12-8. As shown below, noise levels at residences greater than 180 feet would not exceed the 70 dBA Leq daytime threshold.

Pipeline (Construction Method)	Closest Sensitive Receptor(s)	Distance to Receptor (feet)[a]	Attenuated Construction Equipment Noise Level at Receptor(s) (dBA L_{eq})[a]
New Transmission Main (Open Trench Construction)	Residences (various)	100	74.0
		150	70.5
		180	68.9
		250	66.0
		400	62.0
		500	60.0
		750	56.5

USARMY-32 The predominant noisy activity associated with the construction of the ASR-5 and ASR-6 wells would be the 24-hour drilling for approximately four weeks. Sound-attenuating curtains can be installed surrounding this activity. Given the nighttime drilling activity and the understandable need to occasionally have windows open, Mitigation Measure 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors is identified on page 4.12-34 of the Draft EIR/EIS to address this impact to the extent feasible. However, acknowledging the inconvenience associated with temporary re-location, this impact is identified as significant and unavoidable.

Once drilling is complete, other construction activities would occur only during the daytime and would include concrete work, piping, mechanical and electrical work and installation of a control building. These later activities would involve occasional operation of off-road equipment (e.g., forklift or crane) and intensity would be similar to that of construction of a single family home. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-33 Mitigation Measure 4.12-1e, Offsite Accommodations for Substantially Affected Nighttime Receptors, is revised as indicated below to establish an application mechanism based on sound level as opposed to distance:

Mitigation Measure 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors.

CalAm shall provide temporary hotel accommodations for all residences and any other nighttime sensitive receptors ~~located within 100 feet of a designated construction work area that would~~:

1. <u>That would be</u> exposed to 24-hour <u>project</u> construction activities and
2. Where nighttime construction noise would exceed 60 dBA with windows closed or 35 dBA with windows open, even with implementation of acoustic barriers and/or shielding measures.

The accommodations shall be provided for the duration of 24-hour construction activities. CalAm shall provide accommodations reasonably similar to those of the impacted residents in terms of number of beds and amenities. If identified accommodations do not include typical residential kitchen facilities (e.g., cooktop, oven, full size refrigerator), then CalAm shall provide displaced individuals with a per diem allowance to offset costs of meals for the period of relocation.

See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-34 See text revision identified in response to comment USARMY-33 for additional discussion of appropriate accommodations.

USARMY-35 See text revision identified in response to comment USARMY-33 for additional discussion of proportionate accommodations.

USARMY-36 Mitigation Measure 4.12-5, Stationary-Source Noise Controls, provides a performance standard of 60 CNEL at the property lines of nearby residences and other noise-sensitive receptors. This standard is 5 dBA lower than that codified in Section 17.30.060 of the City of Seaside municipal code so as to address impacts related to permanent increases above those existing without the project (Impact 4.12-5). See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-37 Table 4.13-1 in Section 4.13, Public Services and Utilities, has been revised to incorporate the requests of this comment. Specifically, columns have been added to address the Presidio of Monterey Fire Department and Presidio of Monterey Police Department. Check marks indicate that the Presidio of Monterey Fire Department serves U.S. Army Lands (including the locations of the proposed New Transmission Main and ASR Pipelines), City of Monterey, City of Seaside, and City of Marina. A check mark also has been added to indicate that the Presidio of Monterey Police Department serves U.S. Army Lands. The requested change to table note "a" has been made.

USARMY-38 The following text has been added to Section 4.13.1.1, Fire Protection, Law Enforcement, and Emergency:

Fire Protection

U.S. Army

The Presidio of Monterey Fire Department serves all Army property on the Ord Military Community and Presidio of Monterey, as well as holding mutual aid agreements with Seaside, Marina, the California State University of Monterey Bay, and the Monterey County Regional Fire District.

Police

U.S. Army

The Presidio of Monterey Police Department serves all Army property on the Ord Military Community and Presidio of Monterey.

USARMY-39 The comment's indication that sewer laterals may exist in the vicinity of the proposed ASR-5 Well is noted. Mitigation Measure 4.13-1a in Section 4.13, Public Services and Utilities, requires CalAm or its contractors to locate all underground utility lines, including sewage, prior to excavation and to highlight these lines on construction drawings. Mitigation Measure 4.13-1b requires that CalAm or its contractors coordinate final construction plans, schedule, and specifications with affected utilities. Exhibit 3 in the U.S. Army's Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (2010) for these ASR well sites depicts an existing sewer line that is located more than 50 feet from the proposed locations of the ASR wells. Nonetheless, if additional utilities are present in this vicinity, the proposed mitigation measures will require that CalAm coordinate with the Army and/or any utility provider in this area prior to construction.

USARMY-40 In response to this comment the following text has been added to the end of Mitigation Measure 4.15-2b, Inadvertent Discovery of Cultural Resources:

> If cultural resources are inadvertently discovered during construction on Army-owned property, work shall immediately cease within a 100-foot radius of the find and the Army, Presidio of Monterey, Cultural Resources Manager (CRM) shall be contacted to assess the discovery. For discoveries on Army lands, the CRM will implement procedures set forth in the Presidio's Integrated Cultural Resources Management Plant (ICRMP) and Army Regulation (AR 200-1), which may include completion of consultation under Section 106 of the National Historic Preservation Act (NHPA) prior to resuming construction in the vicinity of the find. CalAm shall be responsible for completing any additional archaeological work required to comply with federal regulations.

USARMY-41 In response to this comment the following text has been added to the end of Mitigation Measure 4.15-4, Inadvertent Discovery of Human Remains:

> If human remains are encountered during construction on Army-owned property, work shall cease within a 100-foot radius of the discovery and the CRM shall be notified immediately. The CRM shall initially evaluate the site to determine if the remains are either Native American in origin or associated with a recent crime scene (i.e., 50 years old or less). If the remains appear recent, the CRM shall notify the Army's Criminal Investigation Command who shall assume control of the crime scene and custody of the remains. If the remains appear to be Native American in origin, the CRM shall notify the Presidio Garrison Commander and

implement procedures set forth in Section 3 of the Native American Graves Protection and Repatriation Act.

USARMY-42 The alignment for the "new" Transmission Main (see EIR/EIS Section 3.2.3.4) was chosen based on the connection point with existing and proposed ASR wells located in the Santa Margarita sandstone aquifer of the Seaside Groundwater Basin and other factors. The location of the Transmission Main was designed based on the most direct route, avoiding sensitive land uses while also meeting engineering standards for flow requirements based on pressure differences due to elevation changes between the ASR wells and the City of Monterey. This alignment was an alternative to the proposed Transmission Main alignment that was evaluated in the April 2015 Draft MPWSP EIR; the current alignment was determined in the April 2015 Draft EIR to be the environmentally preferred alternative; see also EIR/EIS Section 1.4.4, specifically, Item 2(a) and 2(b). Regarding ASR well location alternatives, see response to comment USARMY-4.

References

U.S. Army, 2010. Final Environmental Assessment and Finding of No Significant Impact, Monterey Bay Regional Water Project – Aquifer Storage and Recovery. September.

8.3.3 Responses to Comments from Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel

MBNMS-RAP-1 Consistent with the requirements of the California Ocean Plan, the dilution analyses completed in support of the EIR/EIS impact assessment assumed zero current speed, representing the worst-case condition in terms of dilution. As described in EIR/EIS Section 4.3, the main environmental parameter relevant for dilution and mixing is the receiving water density structure. The comment presents data demonstrating currents in the vicinity of the diffuser to commonly be 5 to 10 centimeters per second (cm/s) and up to 20 cm/s (by citing: grant OCE0961810; cf. Cheriton et al., 2014; Sevadjian et.al., 2015; Nickols et al., 2012; Walters et al, 2012), and claims such currents could act to transport the brine plume away from the discharge structure more rapidly than occurs through dispersion and mixing alone. The comment urges further analysis in order to determine the effects of fast currents, i.e., whether such transport could result in salinities exceeding the Ocean Plan salinity requirement by causing incremental salinities to exceed 2 parts per thousand (ppt) above ambient conditions within or beyond the Brine Mixing Zone (BMZ) boundary.

Additional dilution analyses have been completed since the publication of the Draft EIR/EIS at the request of the Monterey Regional Water Pollution Control Agency (MRWPCA), in part to support NPDES permitting efforts of the Pure Water Monterey Groundwater Replenishment (GWR) Project. The additional dilution modeling was not required for the EIR/EIS analysis, is consistent with the analysis conducted for the Draft EIR/EIS, and does not change the conclusions of the EIR/EIS with respect to dilution-related impacts. A supplemental dilution analysis report was completed by Dr. Phil Roberts and is presented in Appendix D1 of the Final EIR/EIS. As part of the supplemental analyses and as a result of this comment, Roberts assessed the effect of currents on the dilution dynamics of dense, negatively buoyant discharges.

In the supplemental dilution analysis, Roberts simulated the pure brine discharge scenario (worst case condition due to highest density) at current speeds of 0, 5, 10, and 20 cm/s. Because of the orientation of the MRWPCA diffuser, the predominant current direction is expected to be perpendicular to the diffuser axis. The nozzles are perpendicular to the diffuser, so the current direction relative to the individual jets is either counter-flow (jets directly opposing the current), or co-flow (jets in the same direction as the currents). Simulations were run for both conditions and results were presented for the distance from the diffuser that plumes contact the ocean floor (representing the edge of the Zone of Initial Dilution (ZID)), as well as minimum dilution achieved at the edge of the BMZ. All results were compared to the analyses where current speed was assumed to be zero.

Overall, the effect of the currents is to increase dilution compared to the zero current results. The maximum impact distance (edge of the ZID) from the diffuser would occur with co-flowing currents and increase as the current speed increases. In this case, the maximum impact distance, or edge of the ZID, for currents of 20 cm/s is 27 feet (8.2 meters) with a minimum dilution of 78:1 as compared to 10 feet if zero current is assumed with a minimum dilution of 16:1. Clearly, even with the maximum current assumed, the edge of the ZID (27 feet or 8.2 meters) is much less than the distance to the edge of the BMZ (328 feet or 100 meters). Additionally, although the edge of the ZID is farther from the diffuser compared to the zero current case, the resulting salinities are substantially lower as greater dilution is achieved. It is therefore concluded that assuming zero current is indeed conservative and represents a "worst-case" scenario, and the Ocean Plan regulations would, therefore, be met for all anticipated currents. For a more detailed description of assessment methodology, model assumptions, and detailed results, see the Roberts report presented in Final EIR/EIS Appendix D1.

MBNMS-RAP-2 An EIR for the Pure Water Monterey GWR Project has been prepared and certified, and the project has been approved (see EIR/EIS Section 1.1, and Project No. 59 in Table 4.1-2) by the Monterey Regional Water Pollution Control Agency. That project is independent from the MPWSP, not the subject of this EIR/EIS, and not subject to modification or other decisions based on this EIR/EIS.

The cumulative impact analysis of Alternative 5a presented in each resource section of EIR/EIS Chapter 5.5 includes consideration of the GWR Project (see summary below and Section 5.5 for discussion of cumulative impacts associated with Alternative 5a). Also, the analysis has been structured to facilitate a comparison of impacts – direct, indirect, and cumulative – across the proposed alternatives. As noted in Section 5.6, Environmentally Superior Alternative/ NOAA-Preferred Alternative, because the GWR Project already has been approved and is not subject to any decisions based on this EIR/EIS, "the methodology of choosing the environmentally superior, or agency-preferred alternative, includes … Identifying two environmentally superior/agency-preferred alternatives; one without, and one with the GWR Project" (Draft EIR/EIS pages 5.6-2 and 5.6-3).

The GWR Final EIR concludes that the GWR Project would not result in a significant impact relating to altered salinity dynamics in local lagoon/estuary systems. The GWR Project diversions, including all proposed surface water, urban runoff, and wastewater diversions, were found to not have a significant adverse impact on brackish tidal and wetland habitat in the downstream portions of the watershed. This includes the Salinas River estuary, Old Salinas River channel, Tembladero Slough, Elkhorn Slough, and Moro Cojo Slough

during project operations (as documented on pages 4.5-97 through 4.5-105 and 4.11-71 through 4.11-73 of the Draft GWR EIR, as modified in the Final GWR EIR). Further, the combined GWR diversions from both Salinas River and Tembladero Slough/Reclamation Ditch were determined to result in a less-than significant impact on fisheries and aquatic habitat from the reduction in flows to the downstream coastal sloughs in the area (e.g., Elkhorn Slough), and Moro Cojo Slough.

Changes in salinity dynamics of the Salinas River, Tembladero Slough, Old Salinas River, and Elkhorn Slough estuaries were quantified as part of the environmental assessment presented in the GWR Final EIR. The GWR Project would not divert any flows from the Moro Cojo Slough and would not change the amount of flow into or out of the Moro Cojo Slough (MRWPCA and MPWMD, 2016, page 4.5-107); therefore, Moro Cojo Slough was not assessed and no cumulative impacts on Moro Cojo slough related to salinity dynamics could result from implementation of Alternative 5a.

As stated in the GWR Final EIR with respect to impacts on the Salinas River estuary, "Due to the very small percentage change in total [Salinas River] Lagoon inflows due to the Proposed Project (less than 1%), no measurable salinity changes to the [Salinas River] Lagoon would occur." (MRWPCA and MPWMD, 2016, page 4.5-104)

With respect to GWR project-specific impacts on Tembladero Slough and the Old Salinas River, the GWR Final EIR states:

> There is a potential for increases in salinity near the water surface, and/or longer periods of salinity accumulation in the Tembladero Slough and the OSR [Old Salinas River] Channel before seasonal flushing by winter runoff. …the Proposed [GWR] Project would have a less-than-significant impact on the water quality because the salinity changes would be within the range of salinities that are currently found in these water bodies every year. Species and habitats relying upon the OSR and Tembladero Slough waters have demonstrated their tolerance for high salinity waters. In particular much higher salinity levels (above 15 ppt) are seen during prolonged dry periods, such as late summer and fall of 2013 through 2015. (MRWPCA and MPWMD, 2016, page 4.5-105)

Finally, with respect to GWR project-specific impacts on Elkhorn Slough, the GWR Final EIR states:

> The analysis . . . shows that the Proposed Project would cause less than 0.8% salinity increase at Elkhorn Slough and 0.8% would occur only in a peak event using conservative assumptions such as drought conditions with low tidal influence. On a daily, weekly and monthly average, the Proposed [GWR] Project would cause changes of even less than that amount (i.e., an undetectable change given the wide variations of salinity

> in the slough caused by the tidal cycle each day). Salinity levels (including measurements of electroconductivity and total dissolved solids concentrations), are used as the primary indicator of the relative amounts of freshwater versus saline ocean water in a water body. Thus, the Proposed Project would not result in an adverse impact on the biological resources or other beneficial uses within the Elkhorn Slough. (MRWPCA and MPWMD, 2016, page 4.5-107)

With respect to potential cumulative impacts on salinity dynamics from reduced surface water flow volumes resulting from operation of Alternative 5a in combination with the GWR Project, the MPWSP EIR/EIS acknowledges that Alternative 5a slant well pumping could remove brackish groundwater from the Salinas River recharge system. As discussed in detail in Section 4.4.5 (see Draft EIR/EIS page 4.4-70), when a river gains groundwater from an aquifer, it is called a gaining stream; when it loses groundwater to the aquifer, it is called a losing stream. In the case of the MPWSP, the portion of the Salinas River within the area of influence from the slant well pumping is a gaining stream. Consequently, the slant well pumping could draw in groundwater that would otherwise discharge to the river. In this manner, Alternative 5a would remove groundwater from the Salinas River recharge system and reduce annual river flow volume by 0.11 percent (as compared to 0.16 percent for the MPWSP). However, Alternative 5a (or the proposed project) would not directly pull surface water from the Salinas River; it would intercept groundwater from the seawater-intruded Dune Sands Aquifer that would otherwise have flowed to the River. This magnitude of groundwater diversion from the Salinas River would be a minor, if not unmeasurable, reduction in surface water flows. As described in EIR/EIS Section 5.5.6.8, under the heading "Combined Impacts with GWR Project," the combined reduction in Salinas River flows resulting from Alternative 5a (0.11 percent) and the GWR Project (1 percent) would be a combined cumulative reduction of 1.11 percent of average annual flow.[1] Consistent with the findings of the GWR Final EIR, presented above, this reduction in annual flow would not result in any measurable salinity changes. The same conclusion is applied to Tembladero Slough, where the removal of 47 afy (as compared to 65 afy for the proposed project) of brackish groundwater discharge would not constitute a recognizable loss in surface flow, nor any measurable salinity change, for that system (see Draft EIR/EIS pages 4.6-236 and 5.5-161). Overall, the reduction of surface water attributable to slant well pumping under Alternative 5a would not result in a substantial reduction of surface flows in the Salinas River or Tembladero Slough and, due to the brackish quality, would not measurably

[1] The Draft EIR/EIS stated that the GWR Project would result in a 2 percent reduction in Salinas River Flows (page 5.5-162). The GWR Final EIR states that a 1 percent reduction would occur (MRWPCA and MPWMD, 2016, page 4.5-98). Section 5.5.6.8 in the Final EIR/EIS has been revised to reflect a combined cumulative reduction of 1.11 percent, rather than 2.11 percent.

alter the salinity dynamics of these estuary systems, even when considered in combination with diversions under the GWR Project. Alternative 5a would not affect surface flows in Elkhorn Slough and thus would not contribute to, or combine with, potential effects of GWR on the hydrology or water quality (relevant to salinity dynamics) of Elkhorn Slough.

A full analysis comparing the environmental advantages and benefits of implementing Alternative 5a is presented in detail in EIR/EIS Section 5.6.2 (summarized here). Alternative 5a (in combination with the already approved GWR project) would result in numerous environmental advantages as compared to other alternatives. The EIR/EIS acknowledges in Section 5.6.2 that, as a standalone project, Alternative 5a would not meet the project objectives or purpose and need in terms of providing adequate water supply to the CalAm Service District, but that the combination of Alternative 5a and with the approved GWR would meet project objectives. The cumulative effects of Alternative 5a and GWR may be greater for some of the construction-related impacts (such as air quality, traffic, and noise), and some of the footprint-related impacts (all of the GWR facility footprints plus the footprint of Alternative 5a). However, some of the operational impacts would be reduced compared to the proposed project because the 3,500 afy provided by the GWR Project would require less energy than producing it by desalination, resulting in reduced impacts on GHG and air quality. The reduced capacity desalination plant would require less source water from the slant wells, resulting in a reduction in the severity of the less than significant impacts on groundwater levels, and the GWR project would provide additional irrigation supplies to CSIP that would benefit the groundwater basin. Further, the GWR project would result in benefits relating to water quality, including reducing overall pollutants discharged to Monterey Bay (such as nitrogen), reducing pollutant loads in Clean Water Act 303(d)-listed impaired waters (Salinas River and Monterey Bay), and improving dry season flows and lagoon/estuary system water quality (Monterey One Water, 2017). For these reasons, Alternative 5a was determined to be the environmentally superior/NOAA-preferred alternative.

MBNMS-RAP-3 The Lead Agencies acknowledge and appreciate the Research Activity Panel's offer to review the Mitigation Monitoring, Reporting, and Compliance Plan (MMRCP) and/or Environmental and Construction Compliance Monitoring Plan (ECCMP) (see EIR/EIS Section 4.1.6). These plans will be prepared prior to Lead Agency decisions on the project or an alternative.

MBNMS-RAP-4 The recommendation to consider the scientific information contained in a series of additional scientific studies in the project area that were conducted in 1997 as part of the Fort Ord decommissioning effort is acknowledged. The Lead Agencies have considered these documents, and although the information on marine habitats, their composition, chemistry, and associated marine biota

contained in these studies does not alter the Lead Agencies' understanding or characterization of the Marine Biological Resources baseline in the EIR/EIS, the text describing Benthic (seafloor) Habitats on Draft EIR/EIS page 4.5-8 has been clarified as follows:

> The soft substrate habitat in the study area has been characterized as a flat featureless plain with a gently sloping sandy seafloor (Eittreim et al., 1997). This soft substrate habitat consists primarily of deltaic deposits from the Salinas River and other unclassified soft substrate. Physical processes, such as waves and currents, sort the sediment particles roughly by grain size so that there are onshore-offshore gradients in the fineness of sediments, with coarser sand deposits closer to shore grading to muddy areas farther offshore (Edwards et al., 1997). The sea floor habitat located within the high-energy surf zone is characterized by coarse, mobile sands and contains a limited range and abundance of species commonly including flatfish, rays, shrimp, crabs, sand dollars, amphipods, clams, and large polychaete worms (Edwards et al., 1997). […]

References

Monterey Regional Water Pollution Control Agency and Monterey Peninsula Water Management District (MRWPCA and MPWMD), 2016. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, Volume IV, Exhibit B. http://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf.

Monterey One Water, 2017. Overview of Pure Water Monterey, Ocean Plan Compliance, and Proposed NPDES Permitting Approach, Presentation to MBNMS and RWQCB, August 23.

8.3.4 Responses to Comments from United States Army Corps of Engineers

USACE-1 In Section 4.6.2, Regulatory Framework, the Draft EIR/EIS described that wetlands and other waters receive protection under Section 404 of the Clean Water Act and that Section 10 of the Rivers and Harbors Act governs certain activities in navigable waters. The Draft EIR/EIS also specified that the U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. Certain activities that could interfere with navigation may require a Section 10 permit and the discharge of dredge or fill into waters of the U.S. may require a Section 404 permit. Potential project construction and operational impacts on wetlands or waters regulated by the USACE are described in Impact 4.6-3 and Impact 4.6-8, respectively. Several project components have potential to impact waters of the U.S., including potential direct impacts from the new Desalinated Water Pipeline, Castroville Pipeline, and Ryan Ranch-Bishop Interconnection Improvements. Some other project components, including the subsurface slant wells and Source Water Pipeline, would have potential for indirect impacts resulting from construction, such as soil erosion or the inadvertent discharge of toxic construction chemicals resulting in polluted runoff to waters of the U.S. Mitigation measures are proposed under Impacts 4.6-3 and 4.6-8 to address these potential impacts. The type of USACE permit (Nationwide, Individual, or other) would be determined during the permitting process, which is separate from the CEQA/NEPA analysis, and is dependent upon the extent of impacts within USACE jurisdiction. A wetland delineation report has been prepared since publication of the Draft EIR/EIS. It is referenced in Section 4.6 of the Final EIR/EIS as AECOM, 2017, and it was transmitted by CalAm to the USACE on November 7, 2017, with a request for a Preliminary Jurisdictional Determination, but it has not yet been verified by the USACE or other permitting agencies. Since the wetland delineation report concludes that the proposed project could impact less than 0.5 acre of jurisdictional waters of the U.S., it is anticipated the proposed project would qualify for a Nationwide Permit 12 (Utility Line Activity), and an individual permit would not be necessary. If that is the case, a 404(b)(1) alternatives analysis to identify the Least Environmentally Damaging Practicable Alternative (LEDPA) would not be required.

The EIR/EIS analyzes impacts on waters of the U.S. consistent with the requirements of CEQA and NEPA, as described in Section 5.1.1, Alternatives Analysis – CEQA/NEPA Requirements. The alternatives analysis in the Draft EIR/EIS provides adequate information for compliance with CEQA and NEPA guidelines. Table 5.3-4, which is referenced in the comment, presents a preliminary evaluation of intake options for purposes of screening alternatives; this table is not intended to provide detailed impact analysis but provides documentation of the full range of alternatives initially considered. Alternatives carried forward for full analysis are described in Section 5.4 and evaluated, in detail, in Section 5.5. Sections 5.5.6.3 through 5.5.6.8 provide detailed discussions of the impacts of alternatives carried forward for

analysis on biological resources, including waters of the U.S. Please note that the level of detail required for permitting under Clean Water Act Section 404(b)(1) will be developed as part of the permitting process. If an Individual Permit is required, then CalAm would submit an application that complies with the 404(b)(1) Guidelines.

USACE-2 Mitigation Measure 4.6-3 requires that the project be designed to avoid and/or minimize impacts on jurisdictional waters. Where disturbance to jurisdictional waters cannot be avoided, then compensation shall be provided. See response to comment Marina-79, in Section 8.5.1, which describes revisions to this mitigation measure. The revised measure requires that any temporarily impacted jurisdictional waters be returned to pre-construction conditions or better and that compensation for permanent impacts shall be provided at a 2:1 or greater ratio. Providing compensatory mitigation for loss of jurisdictional waters at a ratio of at least 2:1 would ensure consistency with the USACE's program, which supports the national goal of "no overall net loss" of wetlands, and with the USACE's requirement to replace wetlands to offset unavoidable losses.

As described on page 4.6-35 of the Draft EIR/EIS, wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC were mapped in the project's study area during field surveys conducted in support of the project. As described in response to comment USACE-1, a wetland delineation report, based on some of these field surveys and conducted in accordance with USACE guidance, has been prepared since publication of the Draft EIR/EIS. It was transmitted by CalAm to the USACE on November 7, 2017, with a request for a Preliminary Jurisdictional Determination, but it has not yet been verified by the USACE or other permitting agencies.

8.3.5 Responses to Comments from United States Environmental Protection Agency

USEPA-1 The Lead Agencies acknowledge the USEPA's opinion regarding the adequacy of the evaluation of alternatives and of the North Marina Groundwater Model presented in the Draft EIR/EIS.

USEPA-2 The Lead Agencies acknowledge the USEPA's rating of the preferred alternative as "Lack of Objections."

USEPA-3 Mitigation Measure 4.4-4 has been revised to clarify that CalAm would contact the U.S. Army, USEPA, and other agencies in the event that the extent of 1 foot of drawdown approaches the Fort Ord plumes. The corrective actions would be discussed with these agencies and may include changing the operations of the MPWSP and/or reactivating and/or expanding the existing wells and treatment systems in the former Fort Ord area. A drawdown of 1 foot or less would be unlikely to significantly affect groundwater flow directions again because of the much larger seasonal fluctuations in the Salinas Valley.

Please see clarifications made to Mitigation Measure 4.4-4 regarding CalAm's actions if slant well pumping could intersect or could influence the flow direction of two OUCTP plumes, in response to comment FOBRAC-1 in Section 8.3.1.

USEPA-4 In response to this and other comments on the Draft EIR/EIS, the quoted text in the comment has been deleted from Mitigation Measure 4.11-1 and the measure has been revised as shown below. The proposed Monterey Regional Waste Management District landfill-gas-to-energy (LFGTE) facility Phased Capacity Improvements Project is not part of the proposed project, but is analyzed as a project in the cumulative scenario (see project No. 58 in EIR/EIS Table 4.1-2, Cumulative Projects).

The revised Mitigation Measure 4.11-1 continues to provide that on-site solar photovoltaic (PV) panels may be used to satisfy the net zero operational GHG emissions requirement. In response to this comment, a subsection entitled "Secondary Impacts of Mitigation Measure 4.11-1" has been added to Final EIR/EIS Section 4.11 to address the potential impacts of on-site PV panels. Because it is not yet known which option or options would be implemented (e.g., because the feasibility of the LFGTE project, being evaluated independent of the proposed project, has not yet been determined but may make the use of on-site PV unnecessary or not cost-effective), this option is evaluated at a programmatic level based on a conceptual description of a potential on-site PV installation.

Mitigation Measure 4.11-1: GHG Emissions Reductions Plan.

(a) ***Energy Conservation Technologies.*** CalAm shall have a qualified professional <u>(a licensed mechanical engineer or other appropriately</u>

certified professional approved by the CPUC) prepare and submit a GHG Emissions Reduction Plan (Plan) to the CPUC ~~and the Sanctuary~~ for approval prior to the start of project construction activities. Once approved by the CPUC ~~and the Sanctuary~~, the Plan shall be implemented. The Plan shall include a detailed description of the carbon footprint for all operational components of the approved project (e.g., slant well pumping, the MPWSP Desalination Plant, transmission of source and product water, ASR system) based on manufacturer energy usage specification data for each piece of equipment and the most current ~~PG&E~~ power system emissions factor for GHG emissions based on the energy portfolio of PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable.

The Plan shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and shall include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible. The carbon footprint estimate for the project shall include consideration of all proposed energy recovery and conservation technologies that will be employed by the project, and shall describe the approximate GHG emissions reductions that will be associated with each technology.

(b) ***Renewable Energy.*** CalAm shall ~~make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy, including but not necessarily limited to: the use of methane gas from the existing Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site; and installation of solar photovoltaic (PV) panels at or adjacent to the desalination plant. The carbon footprint estimate for the project shall include consideration of all renewable energy that would directly be available and used by the project in the form of kilowatt hours per year, and shall describe the approximate GHG emissions reductions that will be associated with the use of the renewable energy.~~ ensure that the approved project's operational electricity use results in net zero GHG emissions. In meeting this net zero GHG emissions requirement, subject to the procedures below, CalAm shall adhere to the following loading order:

(1) Obtain renewable energy from on-site solar photovoltaic (PV) panels and/or the adjacent Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility. If renewable energy from the LFGTE facility is secured, CalAm must demonstrate that the associated criteria pollutant emissions, when combined with the other operational criteria pollutant emissions disclosed in EIR/EIS Table 4.10-7, would not exceed the Monterey Bay Air Resources District significance thresholds.

(2) Procure renewable energy from off-site sources within California via purchases from one or more of the following: (a) PG&E, (b) an Electric Service Provider under Direct Access service, or (c) Monterey Bay Community Power and its successors and assigns.

(3) Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities in California.

(4) Procure and retire Carbon Offsets, in a quantity equal to the GHG emissions attributable to the project's operational electricity use. "Carbon Offset" means an instrument issued by an Approved Registry and shall represent the past reduction or sequestration of one metric ton of CO_2e achieved by any GHG emission reduction project or activity within California. "Approved Registry" means: (i) the Climate Action Reserve, the American Carbon Registry, the Verified Carbon Standard, or the Clean Development Mechanism; or (ii) any other entity approved by the California Air Resources Board to act as an "offset project registry" under the state's Cap-and-Trade Program.

CalAm may meet this net zero GHG emissions requirement via any of the options, or their future equivalents, or any combination of options, or their future equivalents, included in the aforementioned loading order.

Further, CalAm shall progress through the loading order on the basis of the options' physical and economic feasibility, as reasonably determined by CalAm, with low-cost options preferred over high-cost options. In the event that options have equivalent costs, options enumerated earlier in the loading order shall be selected by CalAm over options enumerated later in the loading order. On or before June 1 of each year the approved project is in operation, CalAm shall submit documentation to the CPUC demonstrating that the project's operational electricity use in the immediately preceding calendar year resulted in net zero GHG emissions. Calculation of the GHG emissions attributable to the project's operational electricity use (if any) shall be calculated by CalAm on an annual basis using the most up-to-date emissions coefficient for purchased electricity (if any), as compiled or published by PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable. If the CPUC determines that CalAm failed to achieve net zero GHG emissions for the approved project's operational electricity use for a particular year, then the CPUC shall notify CalAm in writing of the exceedance within 45 days of receipt of the documentation submitted by CalAm under this mitigation measure. The notice shall specify the metric tons of GHG emissions that exceeded the net zero obligation. Within 45 days of receipt of this notice, CalAm shall procure and retire Carbon Offsets in an amount at least equivalent to the exceedance, and will submit documentation to the CPUC demonstrating this procurement and retirement.

USEPA-5 For the purposes of the Draft EIR/EIS analysis, temporarily impacted areas include those areas that would be returned to pre-project conditions following construction and permanently impacted areas include those areas that would be permanently lost following construction. The discussion in Impact 4.6-3 describes any temporary or permanent impacts on wetlands or waters. For example, in the discussion for the New Desalinated Water Pipeline on Draft EIR/EIS page 4.6-212 states, "Riparian woodland and scrub at Locke-Paddon Park and near the intersection of Marina Green Drive and Del Monte Boulevard are potential waters of the U.S./waters of the state. Pipeline installation activities could temporarily impact 0.42 acre of riparian woodland and scrub." As part of the permitting process, CalAm would apply for a Clean Water Act Section 404 permit and/or a Rivers and Harbors Act Section 10 permit from the U.S. Army Corps of Engineers (USACE). The evaluation of impacts as defined by the USACE would be determined during that permitting process, which is separate from this CEQA/NEPA analysis.

In response to this comment, the following change has been made to Impact 4.6-3 on Draft EIR/EIS page 4.6-209:

> Direct impacts on those wetlands could include removal of vegetation, soil, or structures and/or the placement of fill in the wetland/other water, or hydrological modifications (i.e., altering the flow of water in or out of the wetland or water). Temporarily impacted areas include those areas that would be returned to pre-project conditions following construction. Permanently impacted areas include those areas that would be permanently lost following construction.

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8.4 State Agency Comments and Responses

8.4.1 California Coastal Commission (CCC)
8.4.2 California Department of Fish and Wildlife (CDFW)
8.4.3 California Department of Parks and Recreation (CA Parks)
8.4.4 California State Lands Commission (CSLC)
8.4.5 State Water Resources Control Board (SWRCB)

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8.4.1 California Coastal Commission (CCC)

STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
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March 29, 2017

Mary Jo Borak, CEQA Lead
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94018

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue
Building 455a
Monterey, CA 93940

FILED ELECTRONICALLY

RE: Comments on Draft Environmental Impact Report ("DEIR") / Draft Environmental Impact Statement ("DEIS") for proposed Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

Thank you for the opportunity to provide comments on the above-referenced document regarding the proposed Monterey Peninsula Water Supply Project. The proposed project would provide a water supply for the California-American Water Company's ("Cal-Am's") service area in the Monterey Bay area. It would produce drinking water using a seawater desalination facility obtaining source water from slant wells to be constructed along the Monterey Bay shoreline in the City of Marina and would discharge a high-salinity effluent through an existing wastewater outfall being used by the Monterey Regional Water Pollution Control Authority. The produced water would be transported through a distribution system of pipelines and associated infrastructure to be built within several jurisdictions in the Monterey Bay area.

The proposed project will require several permits and approvals, including coastal development permits ("CDPs") from several nearby local jurisdictions and from the Coastal Commission for proposed development within the Commission's retained jurisdiction. Coastal Commission staff is currently coordinating its project review with other state agencies, and we expect to conduct a full review of the project's conformity to relevant Coastal Act policies and requirements upon Cal-Am's submission of its CDP application to the Commission.

We reviewed key sections of this DEIR/DEIS related to issues of conformity to Coastal Act policies and we have just a few brief comments:

- Use of subsurface intakes: We concur with the use of subsurface intakes where feasible as a means to avoid and minimize adverse effects on marine life. We commend the project applicant for selecting a subsurface method for its proposed project. CCC-1

- Environmentally sensitive habitat areas: The document's *Section 4.6 – Terrestrial Biological Resources* identifies the upland area proposed for the project's slant wells as "primary habitat" under the City of Marina's Local Coastal Program designation. This designation applies to areas that provide habitat for rare, endangered, or threatened plant and animal species or habitat that is necessary for the survival of an endangered species. Allowable CCC-2

types of development allowed within these areas are extremely limited and must be designed and sited to minimize habitat impacts. We recommend the Final EIR thoroughly evaluate and consider alternatives that would fully avoid or minimize habitat impacts within areas designated as primary habitat.

CCC-2 cont.

Again, thank you for the opportunity to comment, and please let me know if you have any questions.

Sincerely,

Tom Luster

Tom Luster
Energy, Ocean Resources, and Federal Consistency Division

8.4.2 California Department of Fish and Wildlife (CDFW)

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

February 27, 2017

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Subject: Draft Environmental Impact Report /Environmental Impact Statement (DEIR/EIS) for the CalAm Monterey Peninsula Water Supply Project (MPWSP), State Clearinghouse No. 2006101004

Dear Ms. Borak and Ms. Grimmer:

The Department of Fish and Wildlife (CDFW) is in receipt of the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) for the California-American Water Company (CalAm) Monterey Peninsula Water Supply Project (Project). A past Draft EIR for the Project was issued on April 30, 2015 by the California Public Utilities Commission (CPUC), for which CDFW submitted a comment letter dated June 30, 2015.

The purpose of the proposed Project is to develop up to 9,752 acre-feet per year (afy) of water supplies to meet, in conjunction with other existing sources of supply, a future average annual demand of 15,296 afy in CalAm's Monterey District service area (Monterey District). The Project would be constructed to replace those portions of CalAm's existing supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The proposed Project would produce desalinated water, convey it to the existing CalAm distribution system, and increase the system's use of storage capacity in the Seaside Groundwater Basin. The Project would consist of several components: a seawater intake system; a desalination plant; a brine discharge system; product water conveyance pipelines and storage facilities; and an aquifer storage and recovery (ASR) system. CalAm also proposed a variant to the proposed Project that would combine a

reduced-capacity desalination plant and all other facilities included in the proposed Project, with a water purchase agreement from the Monterey Regional Water Pollution Control Agency's (MRWPCA) proposed Pure Water Monterey Groundwater Replenishment (GWR) project. The Project area extends approximately 14 miles, from the MPWSP Desalination Plant site located in unincorporated Monterey County in the north to the western terminus of the proposed Monterey Pipeline in the City of Pacific Grove, and east approximately eight miles to the unincorporated community of Hidden Hills along Highway 68.

The Project area includes habitat for State and federally listed species, State fully protected species, and State species of special concern including, but not limited to, the following: Federally threatened and State species of special concern Western snowy plover (*Charadrius alexandrines nivosus*), State and federally threatened California tiger salamander (*Ambystoma californiense*), federally threatened and State species of species of special concern California red-legged frog (*Rana draytonii*); the State endangered seaside bird's-beak (*Cordylanthus rigidus var. littoralis*), beach layia (*Layia carnosa*), Tidestrom's lupine (*Lupinus tidestomii*), and Menzies' wallflower (*Erysimum menziesii*); the State threatened Monterey gilia (*Gilia tenuiflora ssp. arenaria*); and the State rare Pacific Grove clover (*Trifolium polyodon*) and Dudley's lousewort (*Pedicularis dudleyi*). Several other State and federally listed species, State fully protected species, and State species of special concern have the potential to occur within the Project as well including sensitive plants, amphibians, marine mammals, and nesting bird species. Additionally, the Project area supports sensitive habitat types such as coastal wetlands, dune scrub, maritime chaparral, Monterey pine forest, and potentially other habitat types which are considered sensitive by CDFW. CDFW-1

As stated in its prior comments regarding the Draft EIR, CDFW has concerns about the Project-related impacts to the sensitive habitats that are adjacent to or within the Project alignment, as well as the associated impacts to species that utilize habitats found in the Project area. Project-related impacts to these special status biological resources should be evaluated and addressed prior to Project implementation, in order to comply with State laws described below.

Department Jurisdiction

Trustee Agency Role: CDFW is a Trustee Agency with the responsibility under the California Environmental Quality Act (CEQA) for commenting on projects that could impact plant and wildlife resources. Pursuant to Fish and Game Code Section 1802, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. As a Trustee Agency for fish and wildlife resources, CDFW is responsible for providing, as available, biological expertise to review and comment on environmental documents and impacts arising from project activities, as those terms are used under CEQA.

Responsible Agency Role: CDFW is a Responsible Agency when a subsequent permit or other type of discretionary approval is required from CDFW, such as an Incidental Take Permit (ITP), pursuant to the California Endangered Species Act (CESA), or a Lake and Streambed Alteration Agreement (LSAA) issued pursuant to Fish and Game Code Sections 1600 *et seq*.

CDFW has regulatory authority over projects that could result in the "take" of any species listed by the State as threatened or endangered, or designated as a candidate for listing, pursuant to Fish and Game Code Section 2081. If the Project could result in the take of any species pursuant to CESA, CDFW may need to issue an ITP for the Project. CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact threatened or endangered species (Sections 21001(c), 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports Statement of Overriding Consideration (SOC).

The CEQA Lead Agency's SOC does not eliminate the Project proponent's obligation to comply with CESA. In other words, compliance with CESA does not automatically occur based on local agency project approvals or CEQA compliance; consultation with CDFW is warranted to ensure that Project implementation does not result in unauthorized take of a State-listed species.

Incidental take authority is required prior to engaging in lawful take of any plant or animal species listed under CESA. Plants listed as threatened or endangered under CESA cannot be addressed by methods described in the Native Plant Protection Act. No direct or indirect disturbance, including translocation, may legally occur to State-listed species prior to the applicant obtaining incidental take authority in the form of an ITP.

Permit Streamlining: Issuance of an LSAA or an ITP by CDFW is considered a "project" (CEQA Guidelines Section15378) and is subject to CEQA. CDFW typically relies on the Lead Agency's CEQA compliance to make its own findings. For the Lead Agency's CEQA document to suffice for permit/agreement issuance, it must commit to fully describing the potential Project-related impacts to stream/riparian resources and listed species, as well as measures to avoid, minimize, and mitigate impacts to these resources. Take of State-listed species must be "fully mitigated" in order to comply with CESA (California Fish and Game Code Section 2081(b)(2)). If the CEQA document issued by the California Public Utilities Commission (CPUC) for this Project does not adequately analyze impacts to resources that require permits issued by CDFW, CDFW may need to act as a Lead CEQA Agency and complete a subsequent CEQA document. This could significantly delay permit issuance and, subsequently, Project implementation. For that reason, it is very important that the EIR reflect suitable and feasible avoidance, minimization, and compensatory mitigation, such that CDFW is able to make findings per CEQA necessary for ITP issuance. In addition, CEQA grants Responsible Agencies authority to require changes in a Project to lessen or avoid

effects of that part of the Project which the Responsible Agency will be called on to approve (CEQA Guidelines Section 15041).

Bird Protection: CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Sections of the Fish and Game Code that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

Biological Information: As required by CEQA, the DEIR/EIS should clearly identify resources on the Project site and their potential to be impacted by the proposed Project; analyze potential impacts as to their significance; and identify measures to reduce all potentially significant impacts to a level of less-than-significant. Impact analysis should be predicated on complete biological surveys. Measures and alternatives that would avoid and minimize potential impacts to resources of concern, as well as on-site conservation measures, should be considered prior to measures and alternatives that would provide for compensatory resources on or off-site.

Specific Biological Resources Comments and Recommendations

Botanical Inventory: There is the potential for sensitive plant species to occur within the Project area. Botanical surveys are recommended to be conducted prior to Project activities and be performed in accordance with guidelines developed by CDFW (DFG, 2009; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline) and the United States Fish and Wildlife Service (USFWS) (USFWS, 2000; https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/Listed_plant_survey_guidelines.PDF)
. Botanical surveys are floristic in nature and must be timed appropriately and cover the entire Project area and may require multiple surveys in order to detect all species which could potentially be present on the property before impact analysis occurs. The above referenced guidelines instruct the use of reference sites to confirm appropriate survey timing, particularly for seasonably variable, often difficult to detect species. CDFW is aware that extensive botanical surveys have been conducted including analysis of reference populations, but would like to reiterate that environmental conditions have not been favorable towards plant species in the last few years during the unprecedented drought, and as a result sensitive plant populations may have not expressed themselves adequately for detection and identification during surveys. CDFW-2

Special Status Plants: As previously mentioned, State-listed plant species that are known to occur within the Project area and may occur within the Project alignment include seaside bird's-beak, Menzies' wallflower, Monterey gilia, beach layia, Pacific Grove clover. and Tidestrom's lupine. Based on botanical surveys, the DEIR/EIS discloses the potential impacts that the Project may have on listed plants and provides measures to mitigate for potential impacts to those plants. Due to the potential for CDFW-3

State-listed plants to occur within the Project alignment, consultation with CDFW is strongly recommended to determine if the Project can avoid take. If take cannot be avoided, acquisition of a State ITP from CDFW prior to Project implementation is warranted to comply with CESA.

For information regarding ITPs please see the following link: http://www.dfg.ca.gov/habcon/cesa/. Included in the ITP would be measures required to avoid and/or minimize direct take of State listed plants on the Project site, as well as measures to fully mitigate the impact of the take. CDFW would like to work with the CPUC, CalAm, and USFWS to identify measures which could be included as conditions of approval prior to CEQA certification.

CDFW-3 cont.

As noted in CDFW's June 30, 2015 letter for the Draft EIR, Mitigation Measure 4.6-1(e) in the DEIR/EIS discusses the restoration and reintroduction of sensitive plants as a result of Project impacts including the development of a Habitat Mitigation and Monitoring Plan (Mitigation Measure 4.6-1n). The reintroduction of sensitive plant species that may be impacted by the Project is typically not recommended for species associated with the sensitive habitats found in the Project area. Rare plants are restricted to a specific micro habitat that is suitable for their establishment and persistence. Reintroducing sensitive plant species outside of their existing habitat may not be successful, and relocation into habitat that is already occupied by these species could ultimately be detrimental to the existing population. No evidence is provided that such measures would be successful. Studies that followed the success or failure of permits issued by CDFW for various plant species have shown that success (including partial success) is less than 15% overall, for all species. Success for annual plant species is even less over the long term. With no information regarding the potential for success of reintroduction and relocation of these sensitive plants, reliance on reintroduction and relocation as the primary measure to mitigate for the impact of the take of the populations on the Project site would not meet ITP issuance criteria to fully mitigate the take of these species and may not be sufficient to reduce the impact to less than significant if the restoration and reintroduction fails. CDFW recommends that the Project be designed to substantially avoid impacts to sensitive plant species, and any residual impacts mitigated by conservation of occupied habitat at a rate of at least 2 to 1 in addition to habitat restoration. CDFW recommends Restoration success criteria include the restored population having greater than the number of individuals of the impacted population(s), in an area greater than or equal to the size of the impacted population(s), for at least 3 consecutive years without irrigation, weeding, or other manipulation of the restoration site.

CDFW-4

State Listed Rare Plants: Section 4.6.2.2 State Regulations of the DEIR/EIS discusses information regarding State rare plants. Previously, State rare plants were similar to fully protected species because CDFW had no method to authorize take. Recent legislation has included take of State rare plant species under the incidental take authority of CDFW, and CDFW now has the mechanism to permit take of State rare plants under CCR Title 14, Section 786.9(b) using the same procedures and under

CDFW-5

the same conditions as take authorizations issued pursuant to Section 2081 of Fish & Game Code (please see CCR Title 14, Section 786.9), effective January 1, 2015 (http://www.fgc.ca.gov/regulations/2014/index.aspx#786_9). If take of the State rare species Pacific Grove clover is proposed as a result of the Project, an ITP from CDFW to authorize take is warranted. In the DEIR/EIS, CDFW also recommends that Pacific Clover be moved from the sub-heading of Other Special-Status Species to the sub-heading Federal or State Listed Species due to its State rare listing.

CDFW-5 cont.

Nesting Birds: The trees, shrubs, and grasses within and in the vicinity of the Project site likely provide nesting habitat for songbirds and raptors. CDFW encourages Project implementation to occur during the non-nesting bird season; however, if ground-disturbing activities must occur during the breeding season (February through mid-September), the Project applicant is responsible for ensuring that implementation of the Project does not result in any violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above. Prior to work commencing, including staging, clearing, and grubbing, CDFW recommends that surveys for active nests be conducted by a qualified wildlife biologist no more than 10 days prior to the start of the Project commencing and that the surveys be conducted in a sufficient area around the work site to identify any nests that are present and to determine their status. A sufficient area means any nest within an area that could potentially be affected by the Project. In addition to direct impacts, such as nest destruction, nests might be affected by noise, vibration, odors, and movement of workers or equipment. CDFW recommends that identified nests be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline, and once work commences, for all nests to be continuously monitored to detect any behavioral changes as a result of the Project. If behavioral changes are observed, CDFW recommends that the work causing that change cease and CDFW consulted for additional avoidance and minimization measures.

CDFW-6

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500 foot no-disturbance buffer around the nests of unlisted raptors until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when the Project area would be concealed from a nest site by topography. Any variance from these buffers is advised to be supported by a qualified wildlife biologist and it is recommended CDFW be notified in advance of implementation of a no-disturbance buffer variance.

Burrowing Owl: The Project site may be occupied by burrowing owls. CDFW recommends following the preconstruction survey methodology developed by the California Burrowing Owl Consortium (CBOC, 1993;

CDFW-7

https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842) if the site contains burrows that could be used by burrowing owls. CDFW recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. The below table can be found from the Burrowing Owl Staff Report (CDFG 2012; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

The Staff Report recommends that foraging habitat be acquired and permanently protected to offset the loss of foraging and burrow habitat. CDFW also recommends replacement of occupied burrows with artificial burrows at a ratio of one burrow collapsed to one artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting a burrowing owl if a biologist knowledgeable with the biology and natural history of the species determines that suitable burrows are a potential limiting factor for burrowing owl. If the Project proposes to evict burrowing owls that may be present, CDFW recommends passive relocation during the non-breeding season. CDFW recommends that the CEQA document prepared for this Project describe methods that would be used to evict owls from burrows, including a monitoring program to ensure that evicted individuals are using a relocation site.

CDFW-7 cont.

California Tiger Salamander (CTS): CTS are known to occur within the Planning Area and may occur within the Project alignment. The DEIR/EIS is advised to clearly disclose the potential impacts that the Project may have on CTS and provide measures to mitigate for all potential impacts to CTS. CDFW recommends that a site assessment and protocol level surveys be conducted for CTS because of known occurrences of CTS in the Project vicinity and aquatic features that may be CTS breeding habitat, identified adjacent to the Project site. CDFW recommends that surveys for this species follow current United States Fish and Wildlife Service (USFWS) protocol methods. Survey guidance can be found at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83915.

CDFW-8

The results of the site assessment and protocol level surveys for CTS can then be utilized to evaluate the potential for impacts to the species which would be analyzed by the CPUC in the CEQA document, as well as to determine the potential for take to occur. If the Project has the potential to result in take of this species, take authorization from CDFW in the form of an ITP, pursuant to Fish and Game Code Section 2081(b),

would be required prior to Project implementation, to comply with Fish and Game Code. In the absence of protocol surveys, the applicant can assume presence of CTS within the Project area and obtain an ITP. Impacts related to the permitted taking of CTS must be minimized and fully mitigated in order for CDFW to issue an ITP.

DEIR/EIS Mitigation Measure 4.6-1o provides avoidance and minimization measures for CTS and California red-legged frog (CRLF). The mitigation measure discusses options to relocate CTS and CRLF if identified during preconstruction surveys or ground disturbing activities. It also discusses installation of exclusion fencing where there is a moderate to high potential for CTS and CRLF to occur as specified in Mitigation Measure 4.6-1c. Please be advised that preconstruction surveys are not an appropriate time to detect presence/absence of CTS for which an ITP may be warranted. Also, handling and relocating CTS and installation of exclusion fencing in occupied CTS habitat without an ITP would be a violation of Fish and Game Code and CESA. If the Project does not complete the above recommended CTS surveys and chooses not to acquire an ITP, CDFW recommends that all small mammal burrows within dispersal distance of a known or potential breeding pond be avoided by a minimum buffer of 50 feet to avoid take of CTS. CDFW-8 cont.

Avoidable Wildlife Impacts from Erosion Control Mesh Products: Due to this Project site's extensive wildlife habitat interface, CDFW requests that erosion control and landscaping specifications allow only natural-fiber, biodegradable meshes and coir rolls. "Photodegradable" and other plastic mesh products have been found to persist in the environment, ensnaring and killing terrestrial wildlife. Reptile and amphibian deaths resulting from the use of plastic mesh products are well-documented. Plastic mesh erosion control products would likely cause unanticipated, avoidable impacts, including the potential take of special status species. CDFW believes requiring the use of biodegradable products would be a feasible mitigation measure to reduce impacts to wildlife species. CDFW-9

USFWS & NOAA Consultation: As stated previously, CDFW recommends consultation with the USFWS prior to any ground disturbance related to this Project due to potential impacts to federally listed species. Take under the Federal Endangered Species Act (FESA) is more stringently defined than under CESA; take under FESA may also include significant habitat modification or degradation that could result in death or injury to a listed species, by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS and NOAA in order to comply with FESA is advised well in advance of Project implementation. CDFW-10

Thank you for the opportunity to comment on the DEIR/EIS. CDFW is available to consult with the CPUC regarding potential effects to fish and wildlife resources, as well as specific measures that would mitigate potential effects of the Project. Depending upon the results of the actual Project site configuration, and other details which should be disclosed in the DEIR/EIS, CDFW may have additional comments and recommendations regarding avoidance, minimization, and mitigation of Project impacts

to habitat and special status species. If you have any questions regarding these comments, please contact Annette Tenneboe, Senior Environmental Scientist (Specialist), at (559) 243-4014, extension 227 or by e-mail at annette.tenneboe@wildlife.ca.gov. If you have specific questions in regards to marine biological resources, please contact Marine Region staff Steve Rienecke, Environmental Scientist, by telephone at (805) 594-6174 or by email at Steven.Rienecke@wildlife.ca.gov.

Sincerely,

Julie A. Vance
Regional Manager

cc: Steve Henry, Field Supervisor
Ventura Fish and Wildlife Office
United States Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003

Amanda Morrison, Central Coast Branch Supervisor
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Department of Fish and Wildlife

8.4.3 California Department of Parks and Recreation (CA Parks)

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION
Lisa Ann L. Mangat, *Director*
MONTEREY DISTRICT
2211 GARDEN ROAD
MONTEREY CA 93940

March 28, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Subject: Monterey Peninsula Water Supply Project EIR Comments

In response to the request for comments on the Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project, California State Parks has prepared the following comments.

1. PRC 5001.65 states commercial exploitation of resources in units of the State Park system is prohibited. Taking of the State Park land for a municipal water system is not appropriate and is not conducive to our mission statement, which is to provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. CA Parks-1

2. Regarding the construction of Transmission Main Pipeline, the EIR states on page 4.8-16 that it will "traverse an approximately .25 band of Fort Ord Dunes State Park lands between Divarty Street/1st Street and the alignments' Highway 1 undercrossing near Lightfighter Drive". Please clarify what a .25 band is and provide more information and detailed maps of these areas that depict the limits of State Park land needed. CA Parks-2

3. Any easements needed will require approval and close coordination with California State Parks. Impacts to park resources shall be repaired and replaced in-kind and any vegetation removed shall be replaced with native plants sourced from the area. CA Parks-3

4. Regarding construction and placement of Transmission Main Pipeline near First Street in Fort Ord, work shall be coordinated with California State Parks as the utilities for the planned Fort Ord Dunes State Park campground will be installed in this area. Construction may also conflict with campground construction and public access at 1st Street construction site. The acquisition of utility easements from our office regarding these activities will be required. Please coordinate well in advance as the easement process can take up to two years to process. Parking lot maintenance and or road agreements may also need to be negotiated. CA Parks-4

5. In the event any Desal appurtenances were to be built within State Park ownership, easement, rights-of-entry (ROE) and lease negotiations shall be prepared and approved well in advance of any work commencing on State Park property. Easements and leases may take up to two years to negotiate and execute. Leases, ROEs and/ or easements may include reimbursements to State Parks for processing these requests, including staff time processing any CEQA compliance or coastal development permits. Lease negotiations, if approved, may include, but not be limited to, assessing revenue fee structures for Desal facilities placed on public lands. Easements, if granted, will need to be appraised using the Department of General Services Appraisal Guidelines and be accompanied by legal descriptions approved by our survey staff. CA Parks-5

6. The following comments pertain to Options in the EIR that occur on State Park property (Intake Option 3 – Subsurface Slant Wells at Potrero Road, Intake Option 4 – Open-Water Intake at Potrero Road, Outfall Option 3 – New Outfall at Potrero Road, Alternative 1 – Slant Wells at Potrero Road, Alternative 5b – Reduced Project 6.4-mgd, Desalination Plant (Intake Slant Wells at Potrero Road).

a. The construction and placement of these facilities in a state beach is not in compliance with the State's Public Resources Code or compatible with our mission statement. If natural resource and recreational public land is condemned for private purposes, approvals, easements and fees shall be negotiated with California State Parks for the use of state lands for the installation of permanent desalinization facilities and associated appurtenances located within State Park lands. CA Parks-6

b. Operation and maintenance of facilities shall not degrade or otherwise compromise coastal sand dune habitat, snowy plover habitat or inhibit public beach access or recreation. Subterranean intake pump vaults and resulting vibrations through the sand column within snowy plover habitat should be studied prior to FEIR certification and project approval to understand what impacts may occur. This activity may trigger a need for an incidental take permit from the US Fish and Wildlife Service. Impacts to Western Snowy Plovers during the construction, operation and maintenance, including impacts from noise and vibration, need to be thoroughly observed and analyzed and the results of any studies made available to State Parks. California State Parks may require compensation for plover monitoring each year during the breeding season for at least 5 years and mitigation of any lost native vegetation at a replacement ratio of 3:1. Improvements such as paving and maintenance to the impacted parking lots may also be required by State Parks. Any utility lines proposed for installation would need to be installed underground so as not to become perches for avian predators. CA Parks-7

c. The proposed alternatives will include municipal scale infrastructure improvements which are not specifically identified. Construction of municipal water processing facilities in the proposed State Park land is not compatible with the local coastal plan CA Parks-8

that protects coastal values or the mission of State Parks. Items such as pumps, electrical service, maintenance facilities, discharge drains for maintenance, equipment housing, underground vaults, vehicle parking, control panels, access manholes, and any above ground features are in conflict with the natural and rural setting in the park. Currently there are no permanent facilities of the type proposed in the park. The parking lot is unpaved and there are no utilities (water, sewer, electrical, or communication) to the site. There are no flush toilets at the site.

CA Parks-8 cont.

d. Another issue is the use of the parking lot for anything other than coastal access. This site is only one of the few coastal access points for the public in this segment of the Monterey coast and State Parks is unlikely to be able to build additional parking due to the sensitive nature of the surrounding lands. Any Desal related appurtenances shall not interfere with public access parking and shall not impinge upon or take coastal dune habitat.

CA Parks-9

e. Visual impacts are also another concern, where the proposed use may involve the need for security fences and lights around fixtures. All areas that are fenced will require landscaping and all lighting will require light shields that do not illuminate adjacent coastal sand dune habitat.

CA Parks-10

f. Water production, noise and vibration impacts, and discharges of any kind are prohibited.

CA Parks-11

If you have any questions regarding these comments, please do not hesitate to contact me at (831) 649-2862 or Stephen.bachman@parks.ca.gov

Sincerely,

Stephen Bachman
Senior Planner Monterey District

8.4.4 California State Lands Commission (CSLC)

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

Established in 1938

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* (916) 574-1810
California Relay Service TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

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February 27, 2017

File Ref: SCH # 2006101004

Mary Jo Borak
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Subject: Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Monterey Peninsula Water Supply Project, Monterey County

Dear Ms. Borak:

The California State Lands Commission (CSLC) staff has reviewed the subject Draft EIR/EIS for the Monterey Peninsula Water Supply Project (Project), which is being prepared by the California Public Utilities Commission (CPUC) and the Monterey Bay National Marine Sanctuary (MBNMS). The CPUC is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), because it is considering issuance of a Certificate of Public Convenience and Necessity to the California American Water Company (CalAm) pursuant to Public Utilities Code section 100. MBNMS is the lead agency under the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.) as portions of the Project fall within its jurisdiction. The CSLC is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC staff previously commented on the Notice of Preparation for the Project in a letter dated November 8, 2012, and the previous Draft EIR, in a letter dated September 30, 2015 (enclosed). In September 2015, the CPUC announced that the Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination with MBNMS.

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has

certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

On December 17, 2014, the CSLC authorized a General Lease – Right-of-Way Use to CalAm for the construction and operation of a temporary exploratory test slant well in Monterey Bay. In order to operate the existing test well as a permanent well, CalAm must obtain a new lease. In addition, the Project includes nine new proposed slant wells which appear to be located on sovereign land within Monterey Bay; construction and operation of these wells would also require a lease. The existing Monterey Regional Water Pollution Control Agency's ocean outfall and diffusers proposed for use as part of this Project are currently authorized under CSLC Lease No. PRC 6091.9. A lease amendment or new lease may be required for CalAm to use the existing outfall. Questions regarding CSLC jurisdiction or leasing requirements should be directed to Cheryl Hudson with the Land Management Division (see contact information below). CSLC-1

Project Description

The Project as proposed by CalAm would be located near the Salinas River along the coast in the southern portion of Monterey Bay, Monterey County. The Draft EIR/EIS identifies Alternative 5a – "Reduced Project 6.4 Million Gallons Per Day Desalination Plant (Intake Slant Wells at CEMEX)" as the Environmentally Superior Alternative. This Alternative would include an agreement to purchase 3,500 acre feet/year of recycled water from the proposed Pure Water Monterey Groundwater Replenishment project, to replace those portions of CalAm's supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The Alternative would achieve the Project's goals and objectives through reduced operational energy use, reduced GHG emissions, and reduced effects on groundwater levels influenced by fewer slant wells and less volume of pumping, compared to the proposed Project.

CSLC staff understands the Project would include the following components:

- A subsurface seawater intake system;
- A desalination plant;

- A brine discharge system;
- Product water conveyance pipelines, one pump station, storage facilities; and
- Improvements to the existing Seaside Groundwater Basin's aquifer storage and recovery system.

Environmental Review

As a responsible agency, the CSLC's exercise of discretion is limited to the portions of the Project that are under the CSLC's jurisdiction (State CEQA Guidelines, § 15096, subd. (d)). As a result, the comments below focus on the construction and operation of the discharge pipeline and slant wells, which are the components of the Project that would be subject to the CSLC's leasing authority. CSLC staff requests that the CPUC consider the following comments on the Project's Draft EIR/EIS.

Greenhouse Gas (GHG)

The portions of the Project under the jurisdiction of the CSLC have not substantially changed since the release of the 2015 EIR. CSLC staff acknowledge that the current EIR/EIS has sufficiently responded to all of staff's previous comments with one exception. Although it is understood that the impacts associated with GHG emissions would remain significant and unavoidable, that impact conclusion is "based on the information currently available." Mitigation Measure (MM) 4.11-1 indicates that the proposed GHG Emissions Reduction Plan would provide feasible measures when completed. For that reason, CSLC staff believes that the lead agencies have not gone far enough to explore feasible mitigation, or to demonstrate that feasible measures are not available. In addition, MM 4.11-1 itself does not contain specific, feasible, enforceable obligations, or formulas containing performance standards that would further mitigate the significant effect of the Project (State CEQA Guidelines, § 15126.4, subd. (a)(2)). Although the assumption is that the preparation of the plan would reduce the carbon footprint of the Project, the measure, as written, does not guarantee this result and may constitute deferred mitigation impermissible under CEQA (State CEQA Guidelines, § 15126.4, subd. (a)(1)(B)). CSLC-2

For example, MM 4.11-1 states in part:

> The Plan shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and shall include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible. (Emphasis added.)

Therefore, if no technologies are found to be feasible, they are not required to be implemented. In addition, the measure states "CalAm shall make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy...." (Emphasis added.)

However, there is no definition of what a "good faith effort" would entail. Additionally, the mitigation measure fails to identify potential impacts of the measure itself, such as the possible "installation of solar photovoltaic panels at or adjacent to the desalination plant," which would also need to be discussed, albeit in less detail than the effects of the Project (State CEQA Guidelines, § 15126.4, subd. (a)(1)(D)). CSLC-2 cont.

CSLC staff requests that MM 4.11-1 be reworded to improve enforceability. The MM should identify specific, feasible energy recovery and conservation technologies that could be used individually, or in combination to reduce net GHG emissions and require the lead agencies to meet targeted reductions.

As noted above, a lease (or leases) would be required from the CSLC for the construction and operation of the proposed slant wells and use of the existing outfall. A more concise and enforceable measure would assist staff in determining whether additional analysis would be required prior to lease approval.

Thank you for the opportunity to comment on the Draft EIR/EIS for the Project. As a responsible and trustee agency, the CSLC will need to rely on the Final EIR/EIS for the issuance of any amended or new lease as specified above, and therefore, we request that you consider our comments prior to certifying the EIR/EIS.

Please send copies of future Project-related documents, including electronic copies of the Approving Resolution, Final EIR/EIS, Mitigation Monitoring and Reporting Program, Notice of Determination, CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available. Please refer questions concerning environmental review to Cynthia Herzog, Senior Environmental Scientist, at (916) 574-1310 or via e-mail at Cynthia.Herzog@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Cheryl Hudson, Public Land Management Specialist, at (916) 574-0732 or via e-mail at Cheryl.Hudson@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

Attachments

cc: Office of Planning and Research
C. Herzog, CSLC
C. Hudson, CSLC
L. Calvo, CSLC

CALIFORNIA Water Boards

EDMUND G. BROWN JR. GOVERNOR

MATTHEW RODRIQUEZ SECRETARY FOR ENVIRONMENTAL PROTECTION

State Water Resources Control Board

March 28, 2017

Mary Jo Borak, CEQA lead
California Public Utilities Commission
c/o Environmental Science Associates
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San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
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Submitted electronically

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT FOR THE CALIFORNIA AMERICAN WATER COMPANY PROPOSED MONTEREY PENINSULA WATER SUPPLY PROJECT (Docket ID: NOAA-NOS-2016-0156)

Dear Ms. Borak and Ms. Grimmer:

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) and State Water Resources Control Board (State Water Board) (collectively Water Boards) have reviewed the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) for the Monterey Peninsula Water Supply Project (MPWSP) proposed by California American Water Company (CalAm). CalAm proposes to construct a facility capable of producing 10,750 acre-feet (9.6 MGD) of potable water per year. The seawater intake system for the MPWSP would consist of 10 subsurface slant wells at the CEMEX sand mining site in the City of Marina and would extract 24.1 million gallons per day of source water through the seafloor. The MPWSP would transport brine from the desalination facility to commingle with wastewater from the Monterey Regional Water Pollution Control Agency, when available, prior to being discharged through the existing Monterey Regional Water Pollution Control Authority's ocean outfall pipeline. The pipeline discharges into the Monterey Bay National Marine Sanctuary and is equipped with multiport diffusers that are oriented horizontally to the seafloor. The diffuser has 171 two-inch-diameter ports: 65 in the 60-inch section and 106 in the 48-inch section. The ports discharge horizontally alternately from both sides of the diffuser at a spacing of 16 feet on each side. The 42 ports closest to shore are presently closed, so there are 129 open ports distributed over a length of approximately 1024 ft. The ports are approximately six inches above the rock ballast and nominally 54 inches above the sea bed.

The Central Coast Water Board is the agency responsible for issuing the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of brine and other wastes from the MPWSP to the Pacific Ocean and for making a determination regarding the MPWSP's consistency with California Water Code section 13142.5, subdivision (b) (Water Code section 13142.5(b)). CalAm submitted a request for a Water Code section 13142.5(b) determination to the Central Coast Water Board on February 10, 2017. The Central Coast Water Board, in consultation with the State Water Board, is currently reviewing this information to determine if it

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is sufficient for performing the analyses required by Chapter III.M of the Water Quality Control Plan for the Ocean Waters of California (Ocean Plan), which provides direction for the regional water boards on how to conduct a Water Code section 13142.5(b) analysis for a seawater desalination facility. Water Boards staff will prepare a recommendation regarding the best available site, design, technology, and mitigation measures feasible for the MPWSP, considering the requirements in Chapter III.M of the Ocean Plan for the Central Coast Water Board to consider in conjunction with the NPDES permit.

Water Boards staff acknowledges that the analysis required in Chapter III.M of the Ocean Plan, including determining consistency with Water Code section 13142.5(b), is separate and distinct from the DEIR/EIS and California Environmental Quality Act (CEQA) process. However, Water Boards staff will rely on analyses and information conducted as part the CEQA process for the Water Code section 13142.5(b) determination to the extent possible. Therefore, Water Boards staff offers the following comments on the DEIR/EIS.

General Comments

CalAm is proposing to use slant wells to withdraw seawater for the MPWSP. Slant wells are a type of subsurface intakes which are the preferred intake technology in the Ocean Plan[1] because they minimize or eliminate intake and mortality of marine life over the operational lifetime of the facility. CalAm's construction and maintenance plan for the slant wells appears to avoid impacts to marine life. Slant wells, constructed from an onshore well-head, will have no mortality to marine life caused by construction of the intake. Additionally, it appears that there would be no construction-related mortality associated with the discharge as the brine will be disposed through the existing Monterey Regional Water Pollution Control Agency ocean outfall pipeline. If it is determined that adjustments to the duckbill nozzles on the existing diffuser are necessary, an estimate of any marine life mortality caused by this construction should be included. SWRCB-1

Brine from the MPWSP would be commingled with wastewater from the MRWPCA when available. During the dry season, when wastewater is unavailable, brine only will be discharged through the MRWPCA multiport diffusers, which is the preferred brine disposal technology if wastewater for commingling is unavailable. The proposed MPWSP appears to comport with the preferred intake and discharge technologies in the Ocean Plan.[2] SWRCB-2

Overall, it appears that the MPWSP has been sited and designed in a manner that would result in minimal impacts to marine life and is consistent with the intent of the Ocean Plan to protect marine life and water quality. This is especially important because the facility's intake and discharge would be within the Monterey Bay National Marine Sanctuary, which contains extensive kelp forests, is a diverse ecosystem, is home to sensitive species, and provides habitats to over 500 species of fish.

Additional Comment on Surface Water Hydrology and Water Quality (Section 4.3 of the DEIR/EIS)

1. Although the MPWSP would use the preferred brine discharge technology of commingling brine with wastewater, the DEIR/EIS should assess any potential discharge-related mortality of all forms of marine life,[2] including any incremental SWRCB-3

[1] Ocean Plan Chapter III.M.2.d.(1)

[2] Ocean Plan Chapter III.M.2.d.(2)

shearing- or salinity-related mortality for both the commingled and brine-only discharge scenarios. The DEIR/EIS should also describe proposed mitigation for any discharge-related mortality for each discharge scenario. SWRCB-3 cont.

2. The DEIR/EIS describes using potential operational measures, including flow augmentation, to ensure that the MPWSP operational discharges meet water quality requirements in the NPDES permit. The Ocean Plan defines flow augmentation as when a facility withdraws additional source water for the specific purpose of diluting brine prior to discharge. Water Boards staff is unclear how Cal Am defines flow augmentation and the potential operational scenarios that are being defined as flow augmentation in the DEIR/EIS. Since CalAm proposes to use subsurface intakes for the MPWSP, it would be exempt from the Ocean Plan's prohibition on flow augmentation as an alternative brine discharge technology.[3] However, the DEIR/EIS should clarify the possible sources of water that may be used for the potential operational measure of flow augmentation as defined in the Ocean Plan. SWRCB-4

Thank you for the opportunity to comment on this draft environmental document. If you have any questions or would like to discuss our comments further, please contact me at Claire.Waggoner@waterboards.ca.gov (916) 341-5582 or Peter von Langen at (805) 549-3688.

Sincerely,

Claire Waggoner and John Robertson

John M. Robertson Digitally signed by John M. Robertson Date: 2017.03.27 16:13:41 -07'00'

Claire Waggoner, Unit Chief
Statewide Policies and Planning
Division of Water Quality
State Water Resources Control Board

John M. Robertson
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[3] Ocean Plan chapter III.M.2.d(2)(d)i.

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8.4.1 Responses to Comments from California Coastal Commission

CCC-1 The Lead Agencies acknowledge the California Coastal Commission's commendation of the project applicant's selection of subsurface intakes in order to avoid and minimize adverse effects on marine life.

CCC-2 Alternatives that would avoid impacts on primary and/or secondary habitats were evaluated in the EIR/EIS. Although Alternative 1 is considered to result in a significant and unavoidable impact with respect to conflict with the North County LCP/LUP, as described on Draft EIR/EIS page 5.5-140, "It is noted that the Alternative 1 subsurface slant well construction would occur within the disturbed parking lot area and would not significantly disrupt habitat in this location; nonetheless, because the subsurface slant wells are not a resource-dependent use, they would conflict with this policy." Thus, Alternative 1 (and for similar reasons, Alternative 5b) would avoid the impacts on primary and/or secondary habitat described for the slant wells under the proposed project since the intake system and source water pipeline would not be located in primary and/or secondary habitat. Additionally, each of the alternatives that include an open-water intake (Alternatives 2, 3, and 4) would avoid the impact on primary and/or secondary habitat associated with the slant wells at CEMEX. However, these alternatives have different and more severe impacts on marine habitats; therefore, there are impact tradeoffs associated with the alternatives.

Impacts on primary habitat would be common to some or all alternatives. Under Alternatives 1, 2, 3, 4, and 5b, the Source Water Pipeline would not impact primary habitat. Under Alternative 5a, the Source Water Pipeline would impact primary habitat similar to the proposed project. The new Desalinated Water Pipeline and new Transmission Main, which are components of all alternatives, would have similar impacts on primary habitat as the proposed project. Therefore, while none of the action alternatives would fully avoid impacts on primary habitat, the Final EIR/EIS does thoroughly evaluate several alternatives that would minimize impacts within primary habitat.

8.4.2 Responses to Comments from California Department of Fish and Wildlife

CDFW-1 The Draft EIR/EIS does not evaluate Dudley's lousewort (*Pedicularis dudleyi*). According to the best available information from the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) as of publication of the Final EIR/EIS, there are no extant or historical populations within approximately 20 miles of the project area (the nearest population is in Big Sur), and therefore no compelling reason to include it as potentially occurring within the project area. Further, the species was not detected during multiple survey dates (see EIR/EIS Section 4.6.1.2, Information Sources and Survey Methodology, for a list of survey dates).

CDFW-2 The Lead Agencies acknowledge CDFW's comment regarding the environmental conditions in the project area in recent years. The Draft EIR/EIS acknowledges that sensitive plant species have potential to occur at the project site, but does not base its impact analysis solely on the results of surveys, but also relies on an evaluation of habitat conditions to determine whether there is potential for a special-status plant to occur within the project boundary. For example, for Hickman's onion, described in Section 4.6.1.8 on page 4.6-51, the Draft EIR/EIS states, "This species has not been observed during project-related botanical surveys, but has potential to occur in grassland or grassland understory of coast live oak woodlands alongside the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites." Additionally, as described in Mitigation Measures 4.6-1e, focused surveys for special-status plants would be conducted in accordance with guidelines established by CDFW prior to commencement of ground disturbing activities to determine the location of any special-status plant species within the project area.

CDFW-3 As described in Table F-1 in Appendix F, beach layia and Tidestrom's lupine have a low potential to occur in the project area. The Draft EIR/EIS analyzes potential impacts on Seaside bird's-beak, Menzies' wallflower, Monterey gilia (described as sand gilia in the Draft EIR/EIS), and Pacific Grove clover as these species have a moderate or higher potential to occur in the project area. The Lead Agencies acknowledge that if take of any of these state-listed species cannot be avoided, CalAm would apply for an Incidental Take Permit (ITP) from CDFW prior to project implementation during the permitting process (see Table 3-8, Anticipated Permits and Approvals). CDFW's specific comments on mitigation measures (which would be adopted at the time of approval of the project or an alternative) are addressed in responses to the following comments.

CDFW-4 Mitigation Measure 4.6-1e does not require reintroduction of sensitive plant species, nor recommend it as the primary measure to mitigate for take of such plants, but states that it may be one option to compensate for temporary or permanent loss of special-status plant occurrences and specifies that "Compensatory measures shall be

determined on a case-by-case basis in consultation with the resource agencies with jurisdiction over those species." The Lead Agencies acknowledge that CDFW, as a resource agency that may have jurisdiction (depending on the species and location of compensatory habitat), would not recommend reintroduction. Subparts 1 and 2 of Mitigation Measure 4.6-1e require the siting of project facilities to avoid permanent and temporary impacts on special-status plants and their required constituent habitat elements to the extent feasible, and to implement measures during construction to avoid take of special-status plants, as requested in the comment.

As recommended in the comment, Mitigation Measure 4.6-1e has been revised to require a minimum 2:1 compensation ratio for permanent impacts and to clarify the options for compensation. The measure has also been revised to clarify the applicable performance standards as recommended in this comment (i.e., that the restored population must have greater than the number of individuals of the impacted population(s), in an area greater than or equal to the size of the impacted population(s), for at least three consecutive years without irrigation, weeding, or other manipulation of the restored site).

See response to comment CDFW-3 regarding the potential need for an ITP.

CDFW-5 In response to this comment, the following text has been added to the discussion of the California Fish and Game Code in Final EIR/EIS Section 4.6.2.2, State Regulations:

> Additionally, as described in CCR Title 14, Section 786.9, CDFW may also permit take of state rare plants under the same conditions as take authorizations issued pursuant to Section 2081 of the Fish and Game Code.

Also in response to this comment, text regarding listed and non-listed species on Draft EIR/EIS page 4.6-4 in Section 4.6.1.1, Definitions, has been revised to acknowledged that listed special-status species refers to those species that are listed as threatened or endangered under FESA and/or CESA or as rare by the California Fish and Game Commission.

Finally, the discussion of Pacific Clover has been moved from the heading "Other Special-Status Species" to "Federal or State Listed Species" in Table 4.6-2 and in Table F-1 in Appendix F in the Final EIR/EIS as recommended in this comment. See response to comment CDFW-3 regarding the potential need for an ITP.

CDFW-6 As encouraged in this comment, Mitigation Measure 4.6-1i describes that if ground-disturbing activities must occur during the breeding season, then CalAm would implement measures to avoid impacts on nesting birds protected under the Migratory Bird Treaty Act or Section 3503 of the Fish and Game Code. Additionally, Mitigation Measure 4.6-1i has been revised to incorporate CDFW's recommendations in this comment, which include behavior monitoring for the first 24 hours prior to any construction related activities and during the project,

consultation with CDFW, and using a 250-foot no disturbance buffer around active nests of non-listed bird species and a 500-foot no disturbance buffer around the nests of non-listed raptors.

CDFW-7 Consistent with this comment, Mitigation Measure 4.6-1h requires that impacts on occupied burrowing owl burrows be avoided by establishing a no ground-disturbing work buffer using buffer distances described in CDFW Staff Report on Burrowing Owl Mitigation. The measure also requires that CalAm implement preconstruction surveys described in the Staff Report on Burrowing Owl, which is more detailed and specific than that required in the California Burrowing Owl Consortium's Burrowing Owl Survey Protocol and Mitigation Guidelines. Also consistent with this comment, regarding compensation, the measure requires that "if burrowing owls are found on-site, compensatory mitigation for loss of breeding and/or wintering habitat shall be implemented onsite or offsite in accordance with Staff Report on Burrowing Owl Mitigation guidance and in consultation with CDFW." The measure addresses the requirements for relocation of owls in subparts 6 through 8, including through the development and implementation of a Burrowing Owl Exclusion Plan that must be approved by CDFW. Mitigation Measure 4.6-1h specifies that the plan must include relocation measures consistent with this comment (i.e., replacement of occupied burrows with artificial burrows at a ratio of 1:1, with passive relocation occurring only during non-breeding season).

CDFW-8 As described in EIR/EIS Section 4.6.1.2, reconnaissance-level field surveys were conducted to determine the potential for special-status species, including the California tiger salamander, to occur within the project area. The EIR/EIS acknowledges that California tiger salamander have potential to occur in the project area in Section 4.6.1.8 and provides a detailed assessment of where this species has potential to occur. The EIR/EIS identifies potential habitat for California tiger salamander as non-native grassland within 1.2 miles of potential breeding ponds and assumes that this species may occur in these areas in the absence of protocol-level surveys. The EIR/EIS provides a comprehensive analysis of the potential direct and indirect (i.e., take) project impacts on California tiger salamander in Section 4.6.5 based on where they have potential to occur. Construction-related impacts and mitigation measures to reduce those impacts to less than significant are described in Impact 4.6-1. There are no potential operational impacts on California tiger salamander. See response to comment CDFW-3 regarding the need for an ITP for construction activities. Because the project, as well as avoidance measures such as installation of exclusion fencing, has potential for take of California tiger salamander, the Lead Agencies anticipate that CalAm would need to obtain an ITP from CDFW prior to project implementation. Take authorization will also be sought from the USFWS.

As described in Mitigation Measure 4.6-1o, California tiger salamander would only be relocated with authorization from USFWS and CDFW (i.e., through Federal and California Endangered Species Act consultation or permits, respectively).

Additionally, Mitigation Measure 4.6-1o has been revised to clarify that installation of exclusion fencing for California tiger salamander also would be subject to such authorization. The measure has also been revised to specify that if take authorization for California tiger salamander is not obtained from CDFW and USFWS, then all small mammal burrows within dispersal distance of a known or potential breeding pond shall be avoided by a minimum buffer of 50 feet.

CDFW-9 In response to this comment, Mitigation Measure 4.6-1c has been revised to incorporate CDFW's recommendations regarding the use of natural-fiber, biodegradable meshes and coir rolls, and to prohibit the use of photodegradable and other plastic mesh erosion control products (see subpart 22).

CDFW-10 As described in 4.6.2.1, Federal Regulations, a federal agency is required to consult with USFWS and NMFS if the proposed project may affect a federal listed species. ONMS has consulted with USFWS and NMFS through Section 7 of the Federal Endangered Species Act, as required.

In response to this comment, the following text from Draft EIR/EIS page 4.6-122 has been revised in Section 4.6.5:

> The following impact analysis evaluates impacts of the proposed project as required by CEQA and NEPA. A Biological Assessment, which would evaluate the project's impacts on federally listed species, would be prepared in support of FESA Section 7 consultation between the ONMS and USFWS <u>and between the ONMS and NMFS</u>.

8.4.3 Responses to Comments from California Department of Parks and Recreation

CA Parks-1 The proposed project does not include the taking of any state park land. However, CalAm would need to seek an easement, right-of-entry, and/or a lease agreement with State Parks for any facility that would encroach upon State Parks property. A sentence has been added in Final EIR/EIS Section 5.4.3.1 to acknowledge this. Accordingly, CalAm would be required to comply with any conditions required as part of the easement, right-of-entry, and/or lease agreement with State Parks for such facility, including conditions described in this letter, such as repaving and maintaining parking lots following disturbance.

CA Parks-2 The text in Draft EIR/EIS Section 4.8.2.2 that describes state regulations, including the Fort Ord Dunes State Parks General Plan on page 4.8-16, has been revised to read:

> "The new Transmission Main . . . would traverse an approximately 0.25-mile-long band . . ."

Draft EIR/EIS Section 3.3.4 explains the width of the disturbance corridor for pipeline construction would vary typically from 50 to 100 feet and trenchless technologies could require wider corridors at entry and exit pits. See Figures 3-6, 3-7, and particularly Figure 3-8.

CA Parks-3 CalAm will need to apply to State Parks for an easement, right-of-entry, and/or a lease agreement. As noted in Draft EIR/EIS Table 4.6-4, the installation of the new Transmission Main in the Fort Ord Dunes State Park would occur within central dune scrub. The potential impacts are addressed in Impact 4.6-2. In response to this and other comments, Mitigation Measure 4.6-2b has been revised to ensure that impacts on central dune scrub (among other plant communities and habitat types) will be restored to previous conditions or better at the end of construction, so that by the fifth year following restoration, native vegetation covers at least 70 percent of the baseline/impact area native vegetation cover, and so that there is no more cover by invasives than the baseline/impact area. Additionally, the Lead Agencies anticipate that conditions of approval of the State Parks easement, right-of-entry, and/or lease agreement may further define specific planting requirements within State Parks lands.

CA Parks-4 The Fort Ord Dunes State Park Campground is recognized as a potential project in Draft EIR/EIS Table 4.1-2 as Project No. 46 that may contribute to cumulative impacts. The cumulative impacts on land use and recreation if the campground and MPWSP are constructed at the same time or sequentially are addressed in Impact 4.8-C in EIR/EIS Section 4.8, Land Use, Land Use Planning, and Recreation.

CalAm will need to apply for an easement from State Parks and is willing to negotiate maintenance and/or road agreements.

CA Parks-5 See response to comment CA Parks-1. Table 3-8 has been revised to include State Parks, as follows.

Agency or Department	Permit or Approval	Discussion
California Department of Parks and Recreation	Easement, right-of-entry (ROE), and/or lease negotiations for 0.25-mile portion of the new Transmission Main that would encroach on Fort Ord Dunes State Park	• State Parks has jurisdiction and management authority over Fort Ord Dunes State Park and any easement, ROE, and/or lease if granted, will need to be appraised using DGS guidelines and be accompanied by State Parks-approved legal descriptions.

CA Parks-6 As discussed on page 5.3-30 of the Draft EIR/EIS, only Intake Option 9 was carried forward into the development of whole alternatives. Likewise, as noted on page 5.3-51 of the Draft EIR/EIS, only the proposed use of the existing (MRWPCA] outfall was carried forward in the development of Alternatives 1 and 5b; therefore, Intake Option 4 and Outfall Option 3 were screened out from further consideration in the EIR/EIS.

Intake Option 3, described in Draft EIR/EIS Section 5.3.3 and evaluated in Section 5.3.6 that may occur on State Parks property, would be located in the parking lot at the end of Potrero Road. Table 5.3-4 considers the impact of this intake option on the Potrero Road parking lot. The alternatives evaluated in the Draft EIR/EIS that include Intake Option 3 are described in Section 5.4.3 (Alternative 1, Slant Wells at Potrero Road) and Section 5.4.8 (Alternative 5b, Reduced Project Slant Wells at Potrero Road). All onshore construction activities and disturbance would occur in the parking lot at the western terminus of Potrero Road, and would not disturb the dunes or active beach area; the electrical control building would be located at the edge of the parking lot. The setting/affected environment at the Potrero Road parking lot is described in Section 5.5.8.1 and impacts of the alternatives on the parking lot and recreational resources are discussed in Sections 5.5.8.4 (Alternative 1), and 5.5.8.8 (Alternative 5b). See response to comment CA Parks-1 regarding the need for an easement, right-of-entry, and/or lease agreement.

CA Parks-7 With respect to coastal dune habitat and snowy plover habitat, the impacts of Alternatives 1 and 5b facilities on these and other sensitive terrestrial biological resources are described in EIR/EIS Section 5.5.6.4 (Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road), and Section 5.5.6.8 (Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a [CEMEX] and 5b [Potrero Road]). The Alternatives 1 and 5b facilities that would be located within State Parks land would be constructed in a parking lot behind the sand dunes and would not directly impact sensitive natural communities or wetlands. Indirect

impacts on coastal sand dune habitat and snowy plover habitat would be reduced to a less-than-significant level with implementation of mitigation measures listed in EIR/EIS Sections 5.5.6.4 and 5.5.6.8 (see Section 4.6, Terrestrial Biological Resources, for the full text of these measures). With regard to impacts from pump vibration, impacts from Alternatives 1 and 5b would be the same as described for the proposed project. Sections 4.6, 5.5.6.4, and 5.5.6.8 of the Final EIR/EIS have been revised to cross-reference the analysis in Section 4.12, Noise and Vibration, which concludes that operation of the slant wells under the proposed project would not produce groundborne vibration. Since there would be no groundborne vibration, there would be no impact from groundborne vibration on western snowy plover. This determination would be the same for Alternative 1 and Alternative 5b.

Although groundborne vibration would not result in incidental take of the western snowy plover, the USFWS will be consulted with reagrding potential impacts from construction and maintenance activities. As part of that permitting process, ONMS is consulting with USFWS through the Section 7 consultation process as necessary for potential impacts on snowy plover. In response to comments on the Draft EIR/EIS and to this ongoing consultation process, Mitigation Measure 4.6-1d (Protective Measures for Western Snowy Plover) has been revised to specify performance standards for the fifth year following restoration of temporarily impacted snowy plover habitat and to require a minimum 3:1 ratio of permanent compensation for permanent loss of western snowy plover habitat (see Final EIR/EIS Section 4.6). These revisions are consistent with the comment's requests.

With respect to paving and maintenance of parking lots and installation of utility lines, see response to comment CA Parks-1.

CA Parks-8 See response to comment CA Parks-6.

CA Parks-9 Impacts of Alternatives 1 and 5b on public coastal access and parking at Potrero Road are discussed in Draft EIR/EIS Sections 5.5.8.4 and 5.5.8.8. Existing access and parking at the Potrero Road parking lot would temporarily be precluded during construction, and parking options for Salinas River State Beach visitors would be limited to two of three existing options (Sandholdt Road lot or Monterey Dunes Way lot). The EIR/EIS includes Mitigation Measures REC-1a and REC-1b, which would require public notice regarding closure and implementation of a plan for maintaining safe beach access during construction. Mitigation Measure REC-1b has been revised to require that CalAm submit the Beach Access Management Plan to State Parks for review and approval prior to construction. Potrero Road parking access would be fully restored following construction.

Impacts of Alternatives 1 and 5b on coastal dune habitat are discussed in Sections 5.5.6.4 and 5.5.6.8. Mitigation Measure 4.6-2b described in response to comment CA Parks-3 would apply to these alternatives.

CA Parks-10 Draft EIR/EIS Section 5.5.14.1 describes the aesthetic setting/affected environment at the Potrero Road parking lot. Impacts of Alternatives 1 and 5b on the visual resources at Potrero Road are discussed in Sections 5.5.14.4 and 5.5.14.8. Permanent structures would not require security fencing and would not be visible from the beach or block coastal views. See Draft EIR/EIS pages 5.5-279 and 5.5-292 for a discussion of nighttime light and glare. Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures), which would require lighting fixtures to be cast downward and shielded to prevent light from spilling onto adjacent offsite uses (including into adjacent offsite habitat) would apply to these alternatives.

CA Parks-11 See responses to comments CA Parks-5 through CA Parks-10. EIR/EIS Section 5.5.12 addresses impacts from noise and vibration and Section 5.5.3 addresses surface water runoff and discharges.

8.4.4 Responses to Comments from California State Lands Commission

CSLC-1 As described in Draft EIR/EIS Section 3.4, the proposed project, including the conversion of the test slant well to a permanent well and use of the existing outfall, could require discretionary permits from federal, state, and local jurisdictions. Table 3-8, Anticipated Permits and Approvals, lists the State Lands Commission requirement for a New Land Use Lease and Amended Land Use Lease for the uses described in the comment, among the many approvals CalAm is expected to pursue prior to project implementation (see Draft EIR/EIS page 3-65).

CSLC-2 In response to this and other comments on the Draft EIR/EIS, the quoted text in the comment has been deleted from Mitigation Measure 4.11-1 and the measure has been revised as shown in response to comment USEPA-4 in Section 8.3.5. Based on these revisions to the mitigation measure, the analysis also has been revised to conclude that, with mitigation, the proposed project's impacts with respect to GHG emissions would be less than significant.

8.4.5 Responses to Comments from State Water Resources Control Board

SWRCB-1 As summarized in the comment and discussed in detail in EIR/EIS Sections 4.3.5 and 4.5.5, the use of slant wells is consistent with the Ocean Plan's preferred technology for desalination plant intakes since they minimize or eliminate marine life mortality during operations over the project life-time. Additionally, construction of the proposed project would avoid and/or minimize impacts associated with marine life mortality and such impacts would be less than significant. Implementation of a retrofit of the existing MRWPCA outfall diffuser to increase the dilution of operational discharges is described under Impact 4.3-5 and Mitigation Measure 4.3-5 in Section 4.3.5. The potential secondary construction-related impacts on marine biological resources from implementing Mitigation Measure 4.3-5 are assessed and described in Section 4.3.5.4. Secondary impacts on benthic organisms and other marine biological resources associated with retrofitting the outfall diffuser with inclined jets would be less than significant.

SWRCB-2 As summarized in the comment and discussed in detail in Sections 4.3.5 and 4.5.5, the proposed project has been sited and designed in a manner that adheres to the requirements of the Ocean Plan regarding the use of multiport diffusers and the comingling brine from the MPWSP with wastewater to protect marine life and water quality within the Monterey Bay National Marine Sanctuary.

SWRCB-3 Two potential sources of mortality of marine organisms associated with discharges of brine were considered in EIR/EIS Section 4.5.5.2: increased salinity and turbulence shear stress. Salinity-related and shear stress-related marine life mortality for brine-only and comingled operational discharges is assessed in detail under Impact 4.5-4. The review of available literature presented in Table 4.5-9 found no reported cases of mortality in experiments that tested organisms at salinities as low as the maxima predicted in the brine discharges at the points of contact with the seafloor. Consequently, the EIR/EIS concluded that no mortality would occur due to the elevated salinities in the brine discharge and no mitigation is necessary.

As described in detail under Impact 4.5-4, the EIR/EIS concluded that for the worst-case brine-only discharge scenario, roughly 0.23 to 0.86 percent of total numbers of plankton flowing over the diffuser could be killed by shear stress, estimated to be roughly 892 million organisms per day or 0.00261 percent of the total area around the edge of Monterey Bay at the depth of 35 meters. As noted in EIR/EIS Appendix D1, the volumes entrained into the proposed brine discharges are much less than are entrained into the existing discharges that only include secondary treated wastewater. This is mainly because the dilution of the treated wastewater is much higher. For the brine-only discharges, the entrainment rates range from 7 to 22 percent of those for the baseline case. Therefore, organism

mortality for the proposed project brine discharges would also be expected to be about 7 to 22 percent of the baseline case. Because the CEQA/NEPA analysis determined that the impacts would be less than significant for discharge related mortality, no mitigation is proposed.

However, while the EIR/EIS does not require mitigation for salinity-related or shear stress-related mortality, the SWRCB might want to impose conditions (mitigation) as part of the permitting process. In order to do so, the area of production foregone (APF) would need to be calculated and it is typically calculated as a percentage of the entrainment losses resulting from the intake analysis. But since the project proposes to utilize subsurface intakes, Empirical Transport Modeling (ETM) was not performed, and Area of Production Foregone (APF) was therefore, not included in that calculation. The APF from the discharge could be estimated by assuming the area between the diffuser port and the edge of the zone of initial dilution (ZID) on both sides of the outfall that exceed 2 ppt above ambient salinity could settle on the seafloor (which model results indicate it would not). That area is calculated to be approximately 2,010 to 7,800 square meters of seafloor (21,635 to 85,800 square feet) or 0.5 to 2 acres. See EIR/EIS Section 4.5.5.2, Impact 4.5-4.

SWRCB-4 The use of additional source water from the intake slant wells is not proposed for flow augmentation to increase the dilution of operational discharges. As described in Mitigation Measure 4.3-5 in Section 4.3.5.2, flow augmentation would be achieved by adding water with densities (i.e., salinity) closer to fresh water. This would decrease the density difference between the operational discharge and the receiving ocean waters and result in increased dilution and mixing. As modeled by Roberts (see EIR/EIS Appendix D1), adding 2.3 to 4.8 million gallons per day (mgd) of freshwater flows, depending on the discharge scenario, could substantially increase minimum dilution at the edge of the ZID, and thus ensure compliance with the water quality objectives defined in the California Ocean Plan. See response to comment MRWPCA-7 in Section 8.5.9 for further discussion regarding the use of Mitigation Measure 4.3-5 flow augmentation to increase the dilution of operational discharges at the outfall diffuser and for further discussion regarding the use of Mitigation Measure 4.3-5 flow augmentation to increase the dilution of operational discharges at the outfall diffuser.

8.5 Local Agency Comments and Responses

8.5.1 City of Marina

City of Marina – Main Letter
City of Marina – Jacobson James & Associates Letter

8.5.2 Marina Coast Water District (MCWD)

MCWD – Main Letter
MCWD – Hopkins Groundwater Consultants (HGC)
MCWD – GeoHydros
MCWD – EKI
MCWD – IntakeWorks
MCWD – Hopkins Groundwater Consultants2 (HGC2)
MCWD – EKI2

8.5.3 Monterey Bay Air Resources District (MBARD)

8.5.4 Monterey County Resource Management Agency (MCRMA)

8.5.5 Monterey County Water Resources Agency (MCWRA)

8.5.6 Monterey Peninsula Regional Water Authority (MPRWA)

8.5.7 Monterey Peninsula Water Management District (MPWMD)

8.5.8 Monterey Regional Waste Management District (MRWMD

8.5.9 Monterey Regional Water Pollution Control Agency (MRWPCA)

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8.5.1 City of Marina (Marina)

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March 29, 2017

Via Hand Delivery (Environmental Science Associates), E-mail Transmission and Federal eRulemaking Portal

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Re: Draft Environmental Impact Report/Environmental Impact Statement
Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

We represent the City of Marina, California ("Marina" or "the City") and hereby provide written comments on Marina's behalf regarding the Draft Environmental Impact Report/Environmental Impact Statement ("Draft EIR/EIS") issued in January 2017 for the Monterey Peninsula Water Supply Project ("Project") proposed by California American Water Company ("CalAm"). Please ensure that these comments are made a part of the administrative record for all state and federal proceedings relating to the Project.

Marina-A

Marina is providing these comments in several different capacities. First, it is a Responsible Agency for the Project under the California Environmental Quality Act ("CEQA") because it will be considering the Coastal Development Permit for the Project in accordance with the California Coastal Act. Cal. Pub. Res. Code §§ 30000, *et seq*. In this capacity, the City will be focusing on the adequacy of the Draft EIR/EIS for this purpose.[1] Second, the City is

[1] The scope of the City's inquiry as a Responsible Agency for a Coastal Development Permit is extremely broad. It includes, but is not limited to, the analysis of potential individual and cumulative impacts to, and mitigation measures for, environmentally sensitive habitat areas; marine/ocean resources and species (including the biological productivity and quality of coastal waters); special land habitat areas and wetlands; archaeological and cultural resources; preventing depletion of groundwater supplies; scenic and visual qualities; erosion and geologic

providing CEQA comments on behalf of its citizens relating to the full range of environmental issues that affect Marina. Third, the City is providing a full set of comments on the adequacy of the Draft EIR/EIS under the National Environmental Policy Act ("NEPA"). The City has organized its comments to track the numbering of sections in the Draft EIR/EIS.

Although the California Public Utilities Commission ("CPUC") and Monterey Bay National Marine Sanctuary ("MBNMS") are being requested to issue permits and/or authorizations for different aspects of the Project, it is important to note that the CPUC and MBNMS each has a legal obligation to assess the full environmental impacts, mitigation measures and alternatives for the entire Project, not just those portions of the Project that are under their respective permitting jurisdiction. Thus, for example, since MBMNS has determined that this is a "major federal action significantly affecting the quality of the human environment" under NEPA, the Project has been federalized for purposes of environmental review, and NEPA review of the entire Project for all federal agencies is mandated.

These written comments are the product of a joint effort by Farella Braun + Martel, Emily Creel and her team at SWCA Environmental Consultants, and City staff. Most of the technical analysis in this letter has been prepared by SWCA and the legal analysis has been provided by Farella.

Marina-A

This letter also transmits to CPUC/MBNMS and relies upon the expert hydrogeologic Memorandum prepared for Marina by Dr. Robert Abrams, a principal hydrogeologist with Jacobson James & Associates, Inc., that is enclosed herewith as Appendix 1. We also enclose two sets of slides that were presented and submitted to the Marina City Council at its meeting on February 7, 2017: (1) Marina Coast Water District presented its "Marina Coast Water District Water Supply Planning Overview" enclosed as Appendix 2; and (2) Stanford Professor Rosemary Knight and two colleagues offered a presentation entitled "The Acquisition of Geophysical Data Along the Monterey Coast" enclosed as Appendix 3.

INTRODUCTION AND SUMMARY

The current Project is the latest in a sequence of proposals by CalAm to develop a desalination plant and associated facilities to supply water to areas that it serves on the Monterey Peninsula. As these proposals have evolved over time and are now focused on a large project located in Marina, the City has become increasingly concerned about the potentially significant and irreversible impacts of the Project on Marina's water supply, water quality, sensitive coastal environment and citizens. Now that the City has had an opportunity to review the Draft EIR/EIS issued in January 2017, it has become clear that the potentially serious, significant and long-term

instability; and public access. Cal. Pub. Res. Code §§ 30116, 30231, 30240, 30251, 30252 and 30253. The City must also examine, for coastal-dependent facilities (if this provision is applicable), whether alternative locations are infeasible or more environmentally damaging, the adverse impacts on public welfare, and ensure that adverse environmental impacts are mitigated to the maximum extent feasible. *Id.* § 30260. The Legislature has further specified that all public agencies administering the Coastal Act must apply environmental justice principles regarding the siting and impacts of projects. *Id.* § 30013; Cal. Gov't Code § 65040.12.

adverse environmental impacts of the Project on the City have not been adequately studied, evaluated or mitigated, and a proper evaluation of the Project alternatives has been undermined by the legal deficiencies in the individual environmental analyses.

Marina is a vibrant, racially diverse community located along the central coast of California. It has special and unique natural resources, including its coastal ecosystems, and values its desirable quality of life. It is officially recognized as a minority community under federal, state and local laws and programs. The City is currently 100 percent dependent for its water supply on groundwater within the Salinas Valley Groundwater Basin. Marina's continued use of and access to this supply is essential to its continued economic vitality.

Marina's comments on the Draft EIR/EIS are set forth in the chapters below. In brief, the Draft EIR/EIS is legally inadequate in many critical subject areas and fails to meet the requirements of CEQA and NEPA. The Draft EIR/EIS also falls far short of meeting the adequacy requirements for the City's use of it as a Responsible Agency. Cal. Code Regs. tit. 14, § 15096 ("CEQA Guidelines"). These shortcomings include the following:

- **Inflated Water Demand:** The Draft EIR/EIS contains a bloated and unsupported water demand "need" for the Project of 10,750 acre-feet per year ("afy"), which by itself exceeds the total water deliveries by CalAm to its customers in each of 2014 and 2015. With the Project, CalAm would have a future water supply of over 16,000 afy, of which only about 9,500 afy is for currently existing demand. The remaining 7,000 afy is for uncertain or unspecified future uses. The Draft EIR/EIS fails to critically analyze and downwardly adjust this "need." CalAm's true "need" for new water is actually much less and could be supplied by other projects. These deficiencies in the Project Objectives and Purpose and Need Statement also improperly skew the environmental impact and alternatives analyses, rendering them legally inadequate. (*See* chapters 1, 2.1-2.5, and 5.)

- **No Water Rights:** It is undisputed that the Project (whose sole purpose is to deliver water to customers) does not have water rights to extract and export the groundwater it admits it will pump from the Salinas Valley Groundwater Basin, which is in a "critical overdraft" condition. Although the Draft EIR/EIS attempts to construct a legal argument that CalAm may be able to establish such water rights in the future and therefore make this a "feasible" project, this is a contrived argument based on an implausible series of future events. Indeed, since there is no "permit" process for CalAm to obtain such rights, any future attempt to extract water and establish rights will certainly be tied up in litigation or other proceedings and very likely will never ripen into actual water rights. This is a "showstopper" issue – the CPUC/MBNMS should not allow the Project to move forward until CalAm can demonstrate that it actually holds rights to extract this groundwater. (*See* chapter 2.6.)

Marina-A

- **SGMA Conflicts:** In 2014, the California Legislature enacted the Sustainable Groundwater Management Act, which adopted a stringent and comprehensive management scheme for California groundwater. The 180/400 Foot Aquifer Subbasin, which the Project would use for groundwater extractions, is one of only 21 California groundwater basins that has been designated as "critically overdrafted" and it is receiving expedited management treatment. The anticipated implementation of this law makes it even less likely that any Project groundwater withdrawals for export can or will occur. The Draft EIR/EIS's failure to analyze this issue is a critical inadequacy. (*See* chapter 2.6.)

- **Direct Legal Prohibitions:** The extraction and/or export of Basin groundwater is directly prohibited by one state law (the Monterey County Water Resources Agency Act), one local ordinance (MCWRA Ordinance No. 3709) and one annexation agreement applicable to the CEMEX Property signed by parties including the City. The Draft EIR/EIS asserts, based on an untested legal argument with no textual support and no analysis, that the Project "would be consistent" with each law and agreement. This unsupported conclusion defies the facts and is legally inadequate under CEQA and NEPA. (*See* chapter 2.6.)

- **Inadequate Project Description:** The Draft EIR/EIS incorrectly and misleadingly identifies the source of the Project's water. The document repeatedly asserts that the source is "seawater from beneath the ocean floor," but the facts reflect that 75-93 percent of the source water will be groundwater in aquifers under land within Marina rather than seawater under MBNMS jurisdiction. The Draft EIR/EIS also fails to disclose or discuss, in either its intake alternative study or its main text, that the proposed slant wells are a risky and unproven technology with no operational track record. Indeed, it appears that no commercial desalination plant in the world uses such wells. The Draft EIR/EIS is inadequate for failing to evaluate in its alternative selection process or disclose to the public the risky and unproven nature of this technology. (*See* chapter 3.0.)

- **Wrong Environmental Baseline:** The Draft EIR/EIS incorrectly chose 2012 environmental conditions as the "baseline" date for environmental analysis. In fact, the environmental baseline should be August 2015 or later for both NEPA and CEQA purposes because that is the time when the Federal Notice of Intent to prepare an EIS was first announced and because of the significant Project changes that have occurred after 2012. (*See* chapter 4.1.)

- **Anticipated Groundwater Impacts:** The best available scientific information indicates that the Project's subsurface slant wells could significantly and adversely diminish the available water supply and water storage in Basin aquifers and cause or exacerbate water quality problems in Basin groundwater. However, instead of acknowledging and addressing these very important issues, the Draft

Marina-A

EIR/EIS erroneously concludes that the extraction of groundwater by the slant wells will have no significant impact on the groundwater basin. These findings lack substantial evidence in the record to support them. (*See* chapter 4.4.)

- **Inadequate Modeling:** As described in Dr. Abrams' technical report, the modeling that the Draft EIR/EIS relies upon to support its "no significance" finding for groundwater impacts is not state-of-the-art and lacks the capability to credibly evaluate the Project's likely range of groundwater impacts. Among other flaws, it fails to analyze impacts to the 900 Foot Aquifer, fails to evaluate the downward vertical migration of seawater into lower aquifers, and fails to incorporate the existing two-dimensional geophysical studies of this coastline by Stanford Professor Rosemary Knight and her colleagues that delineate the pathways between groundwater aquifers and downward seawater migration between them. (*See* chapter 4.4.)

- **Brine Discharge Impacts:** The Draft EIR/EIS fails to adequately assess the environmental impacts from the discharge of 14 million gallons per day of high-salinity brine through an aging outfall diffuser into this diverse and sensitive marine sanctuary environment. These discharges may cause extremely serious impacts, particularly during the six-month period each year when they would not be mixed with the sewage treatment plant effluent. No adequate mitigation measures are proposed for any such impacts. (*See* chapter 4.5.)

- **Coastal Ecosystem Impacts:** The Draft EIR/EIS finds that the Project will have significant impacts on Marina's coastal ecosystem and observes that development of the slant wells, new desalinated water pipeline, transmission main and staging areas would be located in Primary and Secondary Habitat areas (which also constitute Environmentally Sensitive Habitat Areas ("ESHA") under the Coastal Act) where this type of development is directly prohibited (with no exception) by Marina's Local Coastal Plan. However, the Draft EIR/EIS fails to explain credibly how this prohibition will not apply or how it will be reconciled. It proposes only one mitigation measure, which essentially defers to a later time the formulation of a plan for compensatory and other mitigation, which constitutes improper deferral of mitigation under CEQA. (*See* chapter 4.6.)

- **Greenhouse Gas Emissions**: The Draft EIR/EIS concedes that, because of its highly intensive use of electricity for long-term operation, the Project will have significant effects on the environment and climate change and that these impacts are "inconsistent" with climate change laws and an Executive Order by Governor Brown. However, the Draft EIR/EIS fails to propose a legally adequate set of mitigation measures in contravention of CEQA or recent case law decisions. Instead of proposing feasible mitigation, the document immediately jumps to the unjustified conclusion that the impact is "significant and unavoidable," thereby attempting to avoid the requirement to propose mitigation. (*See* chapter 4.11.)

Marina-A

- **Significant Historic Resource Impact:** The Draft EIR/EIS failed to address the Project's impacts to the Lapis Sand Mining Plant (confirmed in June 2014 to be eligible for listing in the National Register) and the Lapis Siding. The document's assertion that no such historic structures are contained within the Project's Area of Potential Effect is untrue and these significant impacts must be addressed and recirculated for public comment in a new Draft EIR/EIS. (*See* chapter 4.15.)

- **Deficient Environmental Justice Analysis:** The NEPA environmental justice analysis and corresponding CEQA analysis as applied to Marina are fatally deficient. In fact, Marina's minority community and its environment will be suffering a wide array of significant adverse environmental impacts, while substantial amounts of its groundwater supply would be exported out of its groundwater basin to customers on the Monterey Peninsula. The Draft EIR/EIS contravenes applicable federal and state law and guidance by concluding that these impacts are less than significant. (*See* chapter 4.20.)

- **Inadequate Alternatives Analysis:** The Draft EIR/EIS alternatives analysis is undermined by its wholesale incorporation of a flawed Project Objective/Purpose and Need Statement, deficient environmental analyses, and inadequate mitigation measures. In fact, an accurate comparison of alternatives is impossible at this point. The Draft EIR/EIS concludes, without substantial evidence, that Alternative 5a (a 6.4 mgd plant at the CEMEX site paired with the Pure Water Monterey Groundwater Replenishment Project) is the environmentally superior/preferred alternative. In fact, a wider set of alternatives should have been selected, including a significantly smaller project that will meet the actual Project "need" and mitigate for significant Project impacts. If a scientifically credible analysis had been performed, several other alternatives, including the Potrero Road alternative, likely would have been designated as the environmentally superior/preferred alternative. (*See* chapter 5.0.)

Marina-A

In view of the key missing information, faulty Project Objective/Purpose and Need statements, inadequate analysis of multiple environmental impacts, deficient mitigation measures, and resulting inability to properly select and evaluate alternatives, this Draft EIR/EIS must be completely redone and recirculated for public review and comment. Each of the four specific criteria for recirculation in CEQA Guidelines § 15088.5(a) is met here, including that "the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1130 (1993); *Mountain Lion Coal. v. Fish and Game Comm'n*, 214 Cal. App. 3d 1043 (1989).

FARELLA BRAUN + MARTEL LLP

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EXECUTIVE SUMMARY

The Draft EIR/EIS's Executive Summary contains a synopsis of the analyses and conclusions from other sections of the Draft EIR/EIS. The City incorporates herein by reference each of its written comments herein regarding those Draft EIR/EIS sections.

The Draft EIR/EIS does not include a Mitigation Monitoring and Reporting Program ("MMRP"). An MMRP identifies the method, timing, and the party responsible for mitigation implementation and verification. The Draft EIR/EIS identified a wide range of potentially significant effects that could occur throughout an extended area and affect numerous agencies, jurisdictions, and other interested parties and established a mitigation program to reduce or avoid significant effects. Many of the significant effects of the Project would occur within the City, yet many of the identified mitigation measures lack sufficient detail to clearly establish the feasibility of implementation and methods in which measures would be implemented. The Draft EIR/EIS should have included the MMRP to provide Responsible Agencies and other interested parties with the opportunity to comment on it. Because of the gravity of the potential effects of the Project, the Draft EIR/EIS should be revised to include the MMRP and be recirculated to allow for Responsible Agency and stakeholder comment.

Marina-1

CHAPTER 1 – INTRODUCTION AND BACKGROUND

CEQA requires that the CPUC prepare an accurate and clearly written statement of the Project's objectives. CEQA Guidelines § 15124(b). This statement is particularly necessary when evaluating mitigation measures and alternatives for the Project. NEPA correspondingly requires that an EIS "specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13. NOAA's NEPA Compliance Manual (2017) makes clear that the "decision maker" (MBNMS here) "must clearly identify the purpose and need for the action," that "the 'need' is the underlying problem that the proposed action addresses," and that "a carefully crafted purpose and need statement can be an effective tool in managing the scope of the NEPA analysis." It is important that the agencies carefully use their own judgment in defining the project objectives and needs, rather than simply adopting the "objective" or "need" statements provided by the applicant.

Marina-2

The Project Objectives in chapter 1.3.1 (page 1-5) of the Draft EIR/EIS do not meet these requirements. They include a series of purported objectives – including "sufficient water supplies to serve existing vacant lots of record," providing water supplies so CalAm can "pay back the Seaside Groundwater Basin" with water for 25 years, and to "provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build out demand" by unspecified future customers – that appear to merely represent a "wish list" of vague objectives to justify building a Project that will provide CalAm with large amounts of additional water that it does not truly need.

Marina-2 cont.

Although the Project seeks to extract Salinas Valley Groundwater Basin water to produce water far beyond its existing water needs, the CPUC and MBNMS are required to scrutinize and apply a more rigorous standard when evaluating and stating the true amount of Project water needs. The failure to do so here has resulted in a request for water that dramatically exceeds the Project's actual needs as detailed in the City's comments on chapters 2.1 – 2.5 herein. This deficiency has resulted in an unnecessarily inflated water demand that is causing a wide array of significant harmful effects. The CPUC and MBNMS should omit these three project objectives and define the true objectives and needs of the Project.

CHAPTERS 2.1 TO 2.5 – WATER DEMAND AND SUPPLIES

The concerns that the City expressed for Draft EIR/EIS chapter 1 herein become particularly important given the information in chapters 2.1 to 2.5. It appears that the Project "water demand" greatly exceeds CalAm's actual needs, which unnecessarily intensifies all of the Project's environmental impacts and undermines the formulation and comparison of Project alternatives.

These chapters disclose that the proposed desalination Project (9.6 mgd size) is expected to produce 10,750 acre-feet per year ("afy") of water for delivery to CalAm customers. This annual amount exceeds CalAm's total water deliveries to its entire network of customers in both 2014 (10,250 afy) and 2015 (9,545 afy). No figures are provided for 2016; these should be added. In addition to this requested annual amount from the Project, CalAm expects to receive a total of between 5,544 and 6,244 afy of additional water every year in the future, primarily from the Carmel River, Seaside Basin and ASR (even after the anticipated litigations and restrictions are imposed), resulting in a total of between 16,294 and 16,911 afy of CalAm water supply each year. *See* Table 2-4.

Marina-3

The Draft EIR/EIS analysis of water demand is legally inadequate under CEQA and NEPA because:

- The Draft EIR/EIS has selected the wrong existing annual water demand figure based on the information provided by CalAm. Table 2-2 reflects that CalAm's annual service area demand has declined consistently over a ten-year period from 14,176 afy in 2006 to 9,545 afy in 2015. This steady decline is the result of many factors including permanent water conservation measures. There is no reason to believe that these annual declines will not continue in the future. Nonetheless,

CalAm has proposed and the CPUC has apparently accepted the ten-year average of these deliveries, or 12,351 afy, as the appropriate "existing demand" number. In fact, this figure is factually unsupported and should be no higher than 9,545 afy.

- CalAm then adds to its "water demand" request a total of 2,005 afy for "rebound of the Monterey Peninsula tourist industry," water for paper "legal lots" that do not now use water, and potential Pebble Beach water entitlements. The Draft EIR/EIS fails to adequately scrutinize these amounts. The tourist industry rebounded strongly already in 2014-15 (*see* Dean Runyon Associates Study, 2016, discussed on page 6-16), yet CalAm had its lowest customer demand in the last ten years in 2014 and 2015. Thus, this "rebound demand" number is simply not credible. The other two components are also not firm demand amounts, but rather are based merely on future speculation.

- Finally, CalAm confirms that the Project will supply it with an extra amount of between 2,019 and 2,719 afy of water each year that it plans to apply to unspecified "other uses." *See* Table 2-4. There is no demand at all for this water. This surplus and unallocated quantity is obviously not part of CalAm's actual "need" for the Project and should therefore also be subtracted from the asserted water demand for this Project.

Marina-3 cont.

In sum, the Draft EIR/EIS analysis of Project water demand is scientifically and legally inadequate. CalAm does not "need" 10,750 afy from the Project or a total of over 16,000 afy of water supply when its existing total service area demand is 9,545 afy and steadily declining. Since by its own calculations, CalAm will receive up to 6,244 afy of water from other sources in future years, its apparent true demand and need from the Project or other water sources is at most in the range of 3,000 afy.

This incorrect water demand analysis also creates serious water rights and water supply issues because of the overdrafted condition of the Basin and the water supply needs of the Basin's current legal users. The California Constitution provides that "the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." Cal. Const. art. X, § 2. Thus, an attempted export of groundwater that is for a purpose in excess of current needs, and particularly for unspecified or projected future needs, is a prohibited "waste" of groundwater, particularly in an overdrafted basin in which this new user would have the lowest priority rights.

Marina-4

This deficient supply/demand analysis forms the basis of the CEQA project objectives and federal "need" statement defines the nature, intensity and scope of the environmental impacts in many important subject areas, ranging from the physical impacts to the sensitive coastal ecosystem, to the major potential impacts to the Basin aquifers, to the volume and impacts of the brine discharge. It also drastically and unreasonably limits the selection of potential CEQA/NEPA alternatives as summarized in our comments for chapter 5 herein.

Moreover, as discussed in the next section, California water law bars any groundwater extractions that would cause potentially far-reaching water supply and water quality impacts to Marina's groundwater basin to supply CalAm with 7,000 afy of water that it does not currently need.

Marina-4 cont.

CHAPTER 2.6 – WATER RIGHTS

A. Introduction

At the outset, we disagree with the legal contention in the Draft EIR/EIS that water rights is not an appropriate topic for a NEPA EIS or CEQA EIR and only needs to be addressed here in the context of Project "feasibility." Although the Draft EIS/EIR acknowledges that an EIR for a "large scale land use development project" should "show a reasonable likelihood that water will be available from an identified source," it attempts to argue that the cases mandating these legal requirements arise in a different context and should not apply to a water supply project itself. *Id.* at 2-13.

In fact, it is absolutely essential that a water supply project demonstrate that it has a firm right to obtain water from an identified source, particularly since the sole purpose of such a project is to procure water for customers. In many cases under CEQA, courts have invalidated EIRs in which the document does not adequately analyze a project's water rights and sources. *See, e.g., Santa Clarita Org. for Planning the Env't v. Cty. of Los Angeles*, 106 Cal. App. 4th 715, 723 (2003) ("Instead of undertaking a serious and detailed analysis of SWP supplies, the EIR does little more than dismiss project opponents' concerns about water supply. Water is too important to receive such cursory treatment."); *Save Our Peninsula Comm. v. Monterey Cty. Bd. of Supervisors*, 87 Cal. App. 4th 99, 131-33 (2001) (the failure to discuss asserted riparian rights required invalidation of the EIR); *Cadiz Land Co. v. Rail Cycle, LP*, 83 Cal. App. 4th 74, 92-93 (2000) (EIR failed to "discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region" and other water supply information was needed because "an informed decision cannot be made as to whether it is worth taking the risk of subjecting a valuable water source to contamination.").

Marina-5

The Draft EIR/EIS fails to appreciate the tremendous public concern regarding the Project's groundwater supply and contamination issues. It is surprising and inadequate that for a project of this size, complexity and expense, the Draft EIR/EIS would dismiss the importance of carefully addressing within the Draft EIR/EIS CalAm's lack of current water rights to appropriate and export water from the Basin. Instead, the authors apparently assume (in contravention of the best scientific information available and legal precedent) that such groundwater rights will be established in the future. However, in so assuming, the Draft EIR/EIS mistakenly ignores the vital public information role that the document must play on this topic. *See Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.*, 47 Cal.3d 376, 392 (1988); *California Oak Found. v. City of Santa Clarita*, 133 Cal. App. 4th 1219, 1237 (2005) ("'To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions of opinions.' This standard is not met in the absence of a forthright

discussion of a significant factor that could affect water supplies. The EIR is devoid of any such discussion.") (quoting *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agric. Ass'n*, 42 Cal. 3d 929, 935 (1986)).

The City of Marina currently obtains 100 percent of its potable water from the Salinas Valley Groundwater Basin ("SVGB" or "Basin"). In addition, many agricultural and other overlying users of water within the City rely on wells that extract water from the Basin. It is undisputed that the Basin has been in an overdraft condition for decades, which means that there currently is no surplus water available. Indeed, the Department of Water Resources recently designated the 180/400 Foot Aquifer as one of only 21 basins in California that are "critically overdrafted" for purposes of California's new Sustainable Groundwater Management Act. Accordingly, this groundwater aquifer is oversubscribed with no surplus water available for export outside the Basin.

The Marina Coast Water District ("MCWD") recently reported that Marina and other cities/areas that it serves have land use plans that reflect robust projected growth rates, with the population of the MCWD service area anticipated to double in the next 15-20 years. (*See* App. 2 herein.) Future landowners of current lots have overlying rights to the Basin groundwater and the City and MCWD also have corresponding overlying and appropriative pumping rights. And as summarized herein, the water that would be extracted by the slant wells is presumed by California law to be groundwater rather than seawater (see comments on Draft EIR/EIS Chapter 4.4). Thus, there is not now and likely will not for the foreseeable future be any groundwater in this Basin available for export.

Marina-5 cont.

It is also important to note that Marina is a recognized minority community under local, state and federal standards (see comments on Draft EIR/EIS chapter 4.20 herein). The City's access to a clean and sufficient water supply is very important to this community and any injury to or interference with this access will cause serious social and economic impacts to the City because of the prohibitive cost of obtaining any replacement water. In short, it appears that any use of groundwater by the Project could cause serious and unmitigatible impacts to Marina's water supply, water rights and groundwater quality.

B. The Project Does Not Now Have And May Not Be Able To Establish In The Future Any SVGB Appropriative Water Right.

It is undisputed that the Project has no existing rights to extract groundwater in the SVGB. It currently has no significant "overlying rights" to groundwater, no prescriptive groundwater rights and no appropriative right to groundwater. Draft EIR/EIS at 2-30 to 2-31. Rather, despite the critical overdraft condition of the Basin, CalAm apparently plans to just build its facilities and start pumping groundwater from the Basin on the theory that it will later be able to establish such appropriative rights.

Marina-6

In a surprising analysis in chapter 2.6, the Draft EIR/EIS takes the unwarranted position that CalAm will have the right to extract groundwater from the Basin. Although the authors and

CPUC disclaim that they are providing a legal opinion regarding such water rights, and assert that they are only looking at the issue from the viewpoint of whether the Project is "feasible," the document then concludes that "there is a sufficient degree of likelihood" that CalAm will have necessary water rights (page 2-30). However, this speculation is based on a faulty reading of the *Final Review of California American Water Company's Monterey Peninsula Water Supply Project,* State Water Resources Control Board, July 31, 2013 ("State Board Report"), enclosed as Appendix B2 to the Draft EIR/EIS.

The Draft EIR/EIS has mischaracterized the findings of the State Board Report. The Report does not find that such water rights exist. In fact, as detailed below, the Report emphasizes the heavy proof burden that CalAm would have to carry to demonstrate that it would not be causing injury to current or future users of the Basin and to establish any water rights in this critically overdrafted basin. Since the Draft EIR/EIS has not accurately summarized the State Board Report, we will briefly do so here.

The State Board Report explains that there are three successive legal hurdles that CalAm would need to overcome to establish water rights. First, because CalAm proposes to "export" water from the Basin to non-overlying parcels in the Monterey region, CalAm would need to demonstrate that "the water is 'surplus' to existing uses or does not exceed the 'safe yield' of the affected basin." *Id.* at 35. However, since the groundwater in the Basin is in a critical overdraft condition, it is undisputed that there is not any "surplus water" available for export to non-overlying parcels. *Id.* Thus, the only conceivable way to export water is by establishing a new water source (discussed further below).

Marina-6 cont.

The second impediment to establishing water rights is that CalAm must demonstrate that the Project "will not harm or cause injury to any other legal user" of the groundwater. This "no injury" rule has been a bedrock principle of California surface water and groundwater law since the 1800s. It is codified in multiple sections of the Water Code with respect to surface waters. *See, e.g.,* Cal. Water Code § 1702 (a change to an appropriative water right requires a finding "that the change will not operate to the injury of any legal user of the water involved"); *id.* § 1706 (changes can be made "if others are not injured by such change"); *id.* § 1727 (a temporary change requires demonstration that it "would not injure any legal user of the water"). *See also State Water Res. Control Bd. Cases*, 136 Cal. App. 4th 674, 736-44 (2006).

A landmark California Supreme Court case applied the "no injury" rule to exports from groundwater basins. *Allen v. Cal. Water and Tel. Co.*, 29 Cal. 2d 466 (1946). This case was an action by overlying and prior appropriative users to enjoin a water company from exporting water from an underground river basin. The plaintiffs alleged that extraction of the large quantity of water which the company proposed to export would leave insufficient water for other users and would impair the water quality (salinity and other components) for domestic and agricultural use. The trial court agreed and found that there was no surplus available for export because all of the water was necessary to meet the "paramount rights" of the overlying users and prior appropriative rights. Moreover, the court found that the water company could not establish that no injury to water quality or water levels would occur. The Supreme Court affirmed these findings although it adopted slight modifications to the injunction.

The *Allen* case illustrates both the extreme difficulties that a proposed water exporter such as CalAm will face in meeting the stringent "no injury" rule and the likelihood of a court injunction barring its plans based on the current situation. According to the State Board Report, to show lack of injury, CalAm would need to demonstrate no injury to legal users in each of the following subject areas: (1) the amount of fresh water it will use, (2) the lack of pumping impacts to the water table level in existing wells, (3) that pumping is not affecting seawater intrusion within the Basin, (4) the plans for return of fresh water to the Basin if CalAm plans to propose a physical solution, and (5) the potential future impacts of changes in the fresh water and seawater on groundwater rights. Moreover, this demonstration must be made not only for existing users, but also for overlying landowners and other appropriators using the Basin who can be reasonably expected to extract groundwater in the future. State Board Report at 55 (the analysis must examine "all present and potential reasonable potential uses," in part because "[p]otential overlying uses are often inherently implicated in determining whether a long-term surplus actually exists").

The third tier of legal tests that CalAm would need to successfully navigate involves a demonstration that it is developing a new source of water. The exporter must demonstrate that "it is extracting groundwater that no Basin user would put to beneficial use" and any source that is considered fresh water "would not be considered developed water." *Id.* at 36-37. Moreover, it must demonstrate that its developed seawater is a new supply to the existing Basin groundwater resources, that "replacement water methods are effective and feasible," and that the Project "can operate without injury to others." *Id.* at 47.

Marina-6 cont.

The State Board Report does not state that CalAm is likely to meet any of these tests or establish water rights. Rather, the most the Report can state is that it "may be possible" for CalAm to establish a right to extract this groundwater. *Id.* at ii. And the Report repeatedly identifies many areas of missing information that prevented it from drawing any definitive conclusions, including whether the aquifers are confined or unconfined, what the actual extent of water use is, specific information about the aquitards, whether gravity or pumping wells will be used (because pumping wells generally have more extensive impacts), key hydrogeological information, and a credible groundwater model that also examines cumulative impacts. *Id.* at i-iii, 5, 21-23, 50-51. Given these and other "significant unknowns," the Board could not provide any definitive conclusions regarding this Project's water rights or its potential effect on water quality.

The Draft EIR/EIS discussion of CalAm's potential water rights in section 2.6 fails to address or resolve these critical data gaps and legal issues. It confuses the concept of "significant impacts" under CEQA with the "no injury" water law rule (which is not based on or equivalent to a significant impacts CEQA test), fails to address the missing technical information identified by the State Board Report, and simply does not analyze the series of legal hurdles that CalAm would need to surmount to establish such rights. It also ignores the fact that, if there is uncertainty regarding whether a type of injury is occurring, this would prevent CalAm's future establishment of a water right because CalAm would have failed to meet its proof burden. Rather, in contravention of over a century of water rights law, the Draft EIR/EIS turns this proof

burden on its head: the Draft EIR/EIS asserts that since it has not found "significant impacts" to a few water supply and quality issues, then CalAm will meet its burden to show that no injury to legal users is present.

It is not surprising that, after creating this faulty analytical framework, the Draft EIR improperly concludes: "it seems reasonable to conclude that the MPSWP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce 'developed water' for beneficial use and under the physical solution doctrine." *Id*. at 2-37. The section also points out that no water right is needed for seawater extraction and states that no permit is needed for groundwater withdrawal (implying that this somehow makes it more likely that the right will exist). These assertions reflect a misunderstanding of water rights procedure and jurisprudence. It is undisputed that the proposed slant wells will extract substantial amounts of groundwater (which the State Board Report asserts could be as high as 762-3250 acre-feet each year), so the seawater point is immaterial. Since no permit system exists for the water right CalAm hopes to establish, CalAm's path to establish such rights will be more difficult and time-consuming than if a permit system was available. Thus, any claim to such water rights likely will be tied up for years in judicial and/or regulatory water rights proceedings, indefinitely delaying the onset of the Project.

In fact, the available hydrogeologic and scientific data strongly indicate that the Project will not be able to surmount the three tiers of legal hurdles for the following reasons:

Marina-6 cont.

- It is undisputed that the Basin is "critically overdrafted" – therefore, no surplus water is available for export.

- Large amounts of groundwater, including some municipal water for the City of Marina, are extracted by current legal users from the 180/400 Foot Aquifers in which CalAm proposes to install its slant wells.

- It appears from scientific studies that there could be injury to water quality in the 180/400 Foot Aquifers and potentially the 900 Foot Aquifer given the communication between these aquifers and other available data.

- The slant wells are a new and unproven technology as described in the comments on chapter 3 herein.

- The groundwater model described in the Draft EIR/EIS does not credibly or sufficiently analyze the impacts of the proposed slant well extractions, thereby failing to demonstrate the lack of injury to legal users.

- The CalAm replacement water proposal recited in the Draft EIR/EIS fails to meet legal requirements. Rather than restoring the groundwater resources in the Basin through injection or other means, it involves delivery of water to a few selected users in the hopes that they will cease pumping groundwater in that amount. It is unworkable and infeasible because it does not restore Basin groundwater

hydrology and supplies, protect a full range of legal users, or contain necessary regulatory controls.

In sum, the Draft EIR/EIS analysis of water rights is inaccurate, legally flawed and factually unsupported and therefore legally inadequate. There are a variety of injuries to present and future legal users of this groundwater that have not been analyzed and, if the technical information is not sufficient to demonstrate that an injury is not occurring, CalAm will not establish any water right. The three tiers of legal criteria that CalAm must navigate to establish an appropriate water right are extremely daunting and must be supported by credible scientific evidence every step of the way. It appears unlikely that CalAm will ever be able to successfully run this legal gauntlet. Although it is theoretically possible (as the State Board Report recognized when it said that it "may be possible" for CalAm to do so), it is highly unlikely that CalAm ever can or will. The absence of any demonstrated water rights is a fundamental Project deficiency that prevents the Project from being "feasible" at the current time within the meaning of applicable law.

Marina-6 cont.

C. The Implementation Of California's New Sustainable Groundwater Management Act Will Likely Prevent Establishment Of Project Water Rights.

The Draft EIR/EIS fails to appreciate or disclose that the State Board Report was written before the enactment and implementation of the Sustainable Groundwater Management Act ("SGMA"), which is the first comprehensive legislation in California history that regulates the extraction and use of groundwater. *See* Cal. Water Code §§ 10720, *et seq*. The adoption of SGMA fundamentally changes the ground rules for the management and use of groundwater and adds an additional important layer of regulation applicable to the Project that was *not* addressed in the State Board Report. Moreover, it is yet further evidence that the Project is unlikely to obtain appropriative groundwater rights to the Basin.

SGMA has established a new regulatory regime for groundwater that is currently being implemented. The general steps in the process consist of classifying the priority of groundwater basins, adopting regulations governing different aspects of the process, forming Groundwater Sustainability Agencies ("GSAs"), and preparing and implementing Groundwater Sustainability Plans ("GSPs"). The baseline condition for purposes of the Act is the condition of a groundwater basin as of January 1, 2015. Cal. Water Code § 10727(b)(4). The Plan prepared by each GSA must ensure that a particular groundwater basin is not subjected to "undesirable effects," which include the following: lowering of groundwater levels; reduction of groundwater storage; seawater intrusion; degraded water quality; land subsidence; and depletions of interconnected surface water. Cal. Water Code § 10721(w). Indeed, the Basin must be managed to "achieve the sustainability goal in the basin within 20 years of the implementation of the plan." *Id*. § 10727(b)(1).

Marina-7

One important cornerstone of SGMA is its commitment to local agency management of groundwater basins. This policy is stated in the first section of the law: "Sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science." Cal. Water Code § 113.

This policy is reflected in several findings by the Legislature, including: "[g]roundwater resources are most effectively managed at the local or regional level" and "[l]ocal and regional agencies need to have the necessary support and authority to manage groundwater sustainably." SGMA is designed to organize and address the many adverse groundwater impacts caused by individual and uncoordinated extractions by private companies, individuals and other entities. The stated intent of the Legislature in enacting the SGMA includes "to enhance local management of groundwater consistent with rights to use or store groundwater…," "to provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater," and "to manage groundwater basins through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner." Cal. Water Code § 10720.1(b), (d) & (h).

The SVGB (from which CalAm hopes to extract groundwater) has been targeted for expedited treatment under SGMA because it is one of only 21 groundwater basins in California (out of hundreds) that is deemed to be critically overdrafted. Given this serious condition, the Basin must have an adopted GSP in place by January 31, 2020. Among other things, the GSP can contain such restrictions as limiting or suspending well extractions, regulating construction of new wells, and establishing groundwater extraction allocations.

Marina-7 cont.

The Draft EIR/EIS attempts to avoid and trivialize the substantial impact of SGMA's new regulatory regime by stating that it does not affect water rights and therefore will not affect the Project. However, this position is inaccurate in two key respects. First, CalAm does not currently have any water rights in the Basin and will not be in any position to attempt to establish them for years. Thus, although it is true that SGMA does not modify "rights or priorities to use or store groundwater" (Cal. Water Code § 10720.5), CalAm does not have any existing rights or priorities. Indeed, SGMA explicitly bars the use of groundwater extraction after January 1, 2015 in high-priority basins (like the SVGB) to establish prescriptive water rights. *Id.* Second, the groundwater extraction limitations and other powers of the GSA for this Basin are highly likely to be implemented quickly for this Basin given its critical overdraft condition and water quality issues.

In sum, the Draft EIR/EIS's attempt to assess the feasibility of the Project from a water rights viewpoint is deficient for its failure to analyze the impact of SGMA's new and comprehensive groundwater legal regime. This legislation will adversely affect CalAm's ability to establish water rights in the first place because it does not have any overlying or prescriptive water rights and must rely on future pumping activity to attempt to establish the rights. Moreover, even if CalAm is able to begin pumping any groundwater from the Basin (which appears unlikely), it is almost certain that the existing groundwater quality and water shortage issues in the Basin will result in imposition by the GSA of strong limitations on the location and volume of CalAm groundwater extractions because it will have the lowest priority of all Basin users.

D. The Project's Plans To Export Water Out Of This Basin Conflict With And Violate The Agency Act And Ordinance No. 3709.

In 1990, the California Legislature adopted the Monterey County Water Resources Agency Act ("Agency Act"). Cal. Water Code App., § 52. Section 21 of the Agency Act states:

> *[n]o groundwater from that basin [Salinas River Groundwater Basin] may be exported for any use outside the basin*, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted, [the Monterey County Water Resources Agency] may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that exportation of groundwater. Cal. Water Code App. § 52-21 (emphasis added).

In 1993, in furtherance of the Agency Act, the Monterey County Water Resources Agency ("MCWRA") adopted Ordinance No. 3709, the "purpose" of which is "to prohibit groundwater extractions from extraction facilities located in the northern Salinas Valley with perforations between zero feet mean sea level and -250 feet as of January 1, 1995, so as to reduce the rate of seawater intrusion and allow recharge to raise groundwater levels." *Id.* § 1.01.02.

Marina-8

Both CEQA and NEPA require conflicts with existing plans and law to be identified and addressed. For example, the Council on Environmental Quality ("CEQ") regulations implementing NEPA contain very specific requirements, directly implicated here, that "statements [EISs] shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, *the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law*." 40 C.F.R. § 1506.2(d) (emphasis added).

It is undisputed that the Project proposes to extract groundwater from the Salinas Valley Groundwater Basin in the geographic area covered by the Agency Act and Ordinance No. 3709 for export to non-overlying users. Although the Draft EIR/EIS appears to argue that some of the extraction locations may be just outside Monterey County boundaries, the Draft EIR/EIS reflects that in fact all or almost all of the screened areas of the proposed slant wells would extract water from within County boundaries. *See* Figure 3-3a. Accordingly, the proposed Project extraction and export plans are directly prohibited by the Agency Act and Ordinance.

Nonetheless, the Draft EIR/EIS states (page 2-40) that it is "at least preliminarily reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility." This conclusion is not based on any specific factual or legal analysis. Rather, it relies solely on a section of the State Board Report which suggests that, because the Project "would return any incidentally extracted usable groundwater to the Basin," there would be no "net effect" in exporting the water, which might provide a legal ground to avoid the water export ban.

This thin analysis is legally inadequate for multiple reasons and does meet the requirements of CEQA and NEPA recited above. First, the State Board has no jurisdiction or special expertise to interpret the Agency Act or Ordinance No. 3709 and would not be accorded any judicial deference for its interpretation. Second, the State Board assumed, when offering these advisory thoughts, that the Project would return any pumped groundwater directly to the Basin itself. However, the Draft EIR/EIS discloses that the Project has changed this plan and now will instead be delivering water to a select group of overlying users and not injecting it back into groundwater. Thus, the factual rationale for the State Board's idea is no longer operative.

Third, neither the Agency Act nor the Ordinance provides any textual support for an argument that a blanket prohibition on export actually means that export is allowed so long as the "net effect" (with return groundwater) is not to take water out. This "net effect" approval focuses only on the total quantity of groundwater in the Basin, not on groundwater quality or other issues. In contrast, the Act has a broad range of groundwater purposes, which include "to increase, and prevent the waste or diminution of the water supply in the agency, including the control of groundwater extractions as required to prevent or deter the loss of usable groundwater through intrusion of seawater" and "to prohibit groundwater exportation" from the Basin. *Id*. § 52-8. Similarly, the Ordinance expresses a wide range of seawater intrusion and groundwater recharge concerns which go far beyond the total amount of water in the Basin, including because "seawater intrusion is most extensive in the Pressure 180 Foot Aquifer and threatens to contaminate lower aquifers which supply drinking water to thousands of Salinas Valley residents" and such intrusion is "in and near these areas."

Marina-8 cont.

In short, the Draft EIR/EIS fails to adequately analyze or reconcile these direct statutory prohibitions on the Project's planned export of Basin groundwater. These are significant legal obstacles which have not been thoroughly assessed and no explicit plan for reconciliation is provided.

E. The Project Is Inconsistent With The CEMEX Property Annexation Agreement.

In 1996, the City entered into an agreement with RMC Lonestar (the owner of what is now sometimes called the CEMEX Property) and other parties entitled *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* ("Annexation Agreement"). The purpose of the Annexation Agreement is to "help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin" and to provide conditions for annexation of the Lonestar and other properties to MCWRA zones. *Id*. § 1.1. One key Annexation Agreement condition is that "[c]ommencing on the effective date of this Agreement and Framework, Lonestar shall limit withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 afy of groundwater." *Id*. § 7.2

Marina-9

This provision, which remains applicable to the CEMEX Property, directly limits groundwater extractions from the property to 500 afy. The effective date of the Annexation Agreement is defined as "Subject to paragraph 4, this Agreement and Framework shall be fully

effective when executed by all of the Parties." All of the Parties executed it in 1996 and it thereby became effective at that time. The reference to paragraph 4 does not change the effective date because that paragraph merely provides that Lonestar (the owner of the CEMEX Property at that time) requests immediate annexation of its land. Accordingly, this extraction limitation is binding on all property users and directly prohibits the annual total groundwater extractions by the Project (and CEMEX, to the extent it extracts groundwater) from exceeding 500 afy. This is an important constraint on the Project because, according to the State Board Report, it seeks to extract up to 3,250 afy of Basin groundwater.

In section 2.6.4 of the Draft EIR/EIS, the CPUC and MBNMS mistakenly conclude that this groundwater withdrawal limitation in the Annexation Agreement "does not apply" to the Project. They assert two bases for this position: (1) that the limitation only applies once the Lonestar Property has been formally annexed; and (2) that if the extraction limitation does go into effect in the future, it would be avoided by using the same "net effect" approach discussed in the previous section. Draft EIR/EIS at 2-42.

The Draft EIR/EIS discussion of this issue is both legally incorrect and legally inadequate. First, there is no textual support for its view that annexation of the CEMEX Property is a precondition to the extraction limitation. The document clearly says that it commences on the "effective date" of the Agreement rather than on the date that the later annexation occurs. This difference is vividly illustrated by the parallel extraction limitation for the Armstrong Property, which states, in part: "Armstrong shall limit potable water withdrawn from the Basin ... to no more than 20 afy when this Agreement and Framework becomes effective, 150 afy *upon annexation* to the Zones, and …" *Id.* § 6.9.1 (emphasis added). As you can see, the drafters carefully distinguished between the effective date and the annexation date and, if they wanted annexation itself to be a precondition to an extraction limitation, they said so. Thus, the document's plain language demonstrates that annexation cannot be read into the Agreement as a precondition to the 500 afy limitation for the CEMEX Property.

Marina-9 cont.

Second, even as the Draft EIR/EIS concedes, formal annexation could occur at a future time, so the extraction limitation would become effective at that time and bar extraction of more than 500 afy of Basin groundwater at the CEMEX Property.

Third, the Draft EIR/EIS erroneously contends that, once the extraction limitation is in place, "operation of the MPWSP could still be feasible" because CalAm "could conceivably construct" an injection well on the CEMEX site to return 500 afy of groundwater or it could use the water return program mentioned above to result in "no net effect" to groundwater. Draft EIR/EIS at 2-42. However, these speculative statements are improper and have no textual or legal support.

If CalAm is going to construct a new injection well on the CEMEX Property to inject water back into the Basin, this new component should have been included in the Project Description. Since it is not now in the Project Description and its potentially significant environmental impacts have not been analyzed in the Draft EIR/EIS, this significant change

would require recirculation of the document. Moreover, since the extraction limit is 500 afy, the amount that would have to be returned via injection well would not be 500 afy; rather, it would be at least in the range of 2,750 afy, which is the amount of groundwater over the 500 afy limit that the Project concedes it will extract from the Basin.

Finally, the unsupported statement on page 2-42 of the Draft EIR/EIS that the return water program would "keep the Basin whole, serving the purpose of the Annexation Agreement" is not correct for the same suite of reasons as mentioned in the Agency Act section. The Annexation Agreement is designed to reduce seawater intrusion, protect groundwater resources and preserve the environment of the Basin. It is simply not credible to assert that water injection at the CEMEX Property or delivery of water to Castroville customers will have all of these positive hydrologic and environmental effects on the Basin.

Marina-9 cont.

Therefore, the 500 afy groundwater extraction limitation in the Annexation Agreement poses a significant and potentially fatal impediment to the Project's groundwater extraction plans. In fact, unless groundwater withdrawals are limited to 500 afy, the Project cannot go forward. If the Project plans to address or mitigate for these impacts as part of a legal argument that it will not be violating the Annexation Agreement, any new facilities, mitigation measures and impacts need to be fully discussed and be included in the comparison of alternatives in a new EIR/EIS that is recirculated for public comment.

CHAPTER 3 – PROJECT DESCRIPTION

It is essential that the project description in an EIR/EIS be accurate, stable and include all elements of a Project. *See, e.g.*, *Dry Creek Citizens Coal. v. Cty. of Tulare*, 70 Cal. App. 4th 20, 26 (1999) (an EIR needs to be "prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences"); *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 192-93 (1977). The Draft EIR/EIS fails to meet these standards in the respects identified below.

A. The Draft EIR/EIS Incorrectly And Misleadingly States The Location And Source Of The Water For The Project.

Marina-10

The Draft EIR/EIS repeatedly and inaccurately asserts that the Project's water source is seawater. Thus, the text of section 3.2.1.1 claims that the Project's slant wells "would draw seawater from beneath the ocean floor." *Id*. at 3-7. The wells that will accomplish the extraction of seawater under the ocean floor "would be drilled from an onshore location and would extend under the seafloor within MBMNS using a 36-inch- to 22-inch-diameter steel casing." *Id*. at 3-15.

However, these descriptions incorrectly describe the location and source of the Project source water. In fact, only a very small percentage of each well extends beneath the ocean floor within the MBNMS (defined as beyond the mean high water line), ranging from 7 percent to 25

percent of the total length, and one well does not extend under the ocean at all. Table 3-3b. Thus, 75-93 percent or more of the water captured by the wells would be withdrawn from groundwater aquifers within the City of Marina, not from areas under MBNMS jurisdiction. Indeed, as the document concedes, the wells are being screened to extract water from the Dune Sand and 180 Foot Aquifers on land, rather than being located and screened to extract seawater from beneath the ocean floor. *Id.* at 3-15. Thus, a true description is that the slant wells are primarily designed to draw groundwater from two aquifers, with a small seawater component.

This is an important distinction that strikes at a fundamental misconception at the heart of the Draft EIR/EIS's description of the Project. This Project is not an ocean water desalination project. Rather, it is specifically targeted to extract groundwater from the 180/400 Foot Aquifers beneath land under Marina's jurisdiction (rather than the MBNMS) that it recharacterizes as "seawater" based on an argument that it is too saline for use by the current legal users. However, both State Board Resolution No. 88-63 (discussed in the chapter 4.4 comments) and the Water Code establish that all underground water not in a defined channel is groundwater. *See, e.g.*, Cal. Water Code § 10721. The quality of this water may be degraded by seawater intrusion, but that does not somehow transform this groundwater in aquifers underlying the City of Marina into ocean water.

Marina-10 cont.

B. The Draft EIR/EIS Fails To Disclose That The Proposed Slant Wells Are A Risky And Unproven Technology With No Operational Track Record.

The description of the proposed subsurface slant wells in section 3.2.1.1 is flawed because it does not disclose to the reader that slant wells are a new and unproven technology whose long-term reliability is unknown.

The Independent Scientific Technical Advisory Panel (ISTAP) appointed by the California Coastal Commission to examine subsurface intake technologies for the potential Huntington Beach seawater desalination plant concluded that slant well technology is unproven and "the long-term performance of the technology has yet to be confirmed." ISTAP, *Phase 1, Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California* (2014). Another 2016 technical study concluded, in connection with assessing intake options for the proposed Santa Barbara desalination facility, that "no full-scale desalination plants exist that employ slant wells for source seawater collection." Carollo, *Subsurface Desalination Intake Feasibility Study, Technical Memorandum No. 1*, at 3-19 (Mar. 2016) ("Carollo Report"). This and other factors led to the choice of an open-water intake rather than a sub-surface intake for the Santa Barbara Plant.

Marina-11

Apart from the CalAm test slant well, the only other known location as of March 2016 where this technology has been field tested is at a Dana Point, California pilot desalination facility. Carollo Report at 3-19. In fact, the Dana Point slant well experience raises important red flags relating to its use for the Project. The Carollo Report states that the system "did not collect only seawater but instead a mix of seawater and fresh water from the alluvial aquifer in

the vicinity of the intake location." *Id*. Moreover, over time, the content of iron and manganese in the source water increased to levels "which would require complex pretreatment to implement at full scale" and the source water had very low dissolved oxygen concentration, which would require reaeration before being sent to the outfall. *Id*. The construction time for the slant well was unusually long, estimated to take approximately one year for a single well and two years for a multiple well program.

Nowhere in the Draft EIR/EIS are these technology, reliability and performance issues for subsurface slant wells discussed. The technical document (App. I2) that discusses the intake options for the Project fails to make any mention that this is a new and unproven technology with no track record at any desalination plant in the world, and it does not allude to any of the performance or environmental issues identified in the Huntington Beach and Santa Barbara intake option studies referenced above. In fact, all of the other intake options except for open water intake were eliminated, without any discussion of technical performance or track record factors, because of the supposedly superior performance and lesser environmental impacts of the slant well option. The failure to address such issues renders the selection of intake alternatives legally inadequate.

Marina-11 cont.

Since the track record, performance and reliability of such an important component of the Project is a critical factor to impact assessment, alternative selection, and feasibility here, the failure to disclose this information in the Project Description and to analyze it sequentially in the environmental impact assessments and alternatives analyses is a significant inadequacy that requires full disclosure and recirculation of a new Draft EIR/EIS.

C. There Are Other Inaccuracies In The Project Description That Need To Be Corrected Or Clarified To Meet CEQA/NEPA Requirements.

The Project Description contained in chapter 3.0 of the Draft EIR/EIS is missing key information and needs clarification of other significant issues. Our comments are organized by reference to the applicable section number or table.

Section 3.1 (Page 3-2, Paragraph 4)

Marina-12

This paragraph fails to state when CalAm constructed the test well. Please clarify when the test well was constructed and how long it has been operational. This section also fails to provide any discussion of the test well pumping results. The test well was approved by the CCC (over the objections of the City) due to CalAm's purported need for a test well to confirm feasibility and inform design of the MPWSP. The Project Description should be revised to disclose and discuss the results of the test well pumping program, including impacts that occurred as anticipated and any that varied from modeled/anticipated effects of the pumping. The ways in which the Project has been modified (if any) to account for the test pumping results should be clearly identified.

Section 3.1 (Table 3-1, Page 3-10)

The Brine Storage and Disposal section generally states that "The brine aeration system would maintain dissolved oxygen concentrations in the brine at acceptable levels." Please clarify what threshold is being employed to determine what the acceptable levels are. Marina-13

In addition, this section describes the location of the slant wells as being in a "retired" mining area of the CEMEX facility. Please describe what is meant by "retired mining area." Have all mining operations ceased? Is future mining prohibited in this area? Marina-14

Table 3-1

Table 3-1 describes the location of the proposed wellheads "along the back (inland) side of the dunes." However, the entire CEMEX Property is comprised of a large dune complex and the slant wells and wellheads would be located in the middle of the dune complex. The Project's location in the middle of this significant dune complex should be accurately stated and the related impact analysis should be revised accordingly. The incorrect location of the wells as being "inland" of the dunes is also repeatedly stated in section 3.2.1.1. Marina-15

Table 3-1 describes the Terminal Reservoir and its intended purpose to store desalinated water and ASR product water. However, there is no new pipeline proposed to convey desalinated water to the Terminal Reservoir location. How would the desalinated water be conveyed to the Terminal Reservoir and, if no new pipelines are proposed, has the capacity of existing infrastructure been analyzed? Marina-16

Figure 3-3a

The graded access road shown in this figure does not connect to any other roadways. How was its location determined and how will access to existing roadways and the proposed graded roadway be maintained during the life of the Project? This component is not mentioned in any other portion of the Project Description. Due to the shifting nature of the dunes, this road will require frequent and routine grading to maintain, resulting in additional long-term disturbance of sensitive dune habitat and resources. Impacts related to long-term maintenance of the road (i.e., disturbance of ESHA, potential take of sensitive plant species, conflicts with mining operations, maintenance trips and emissions) do not appear to be addressed anywhere in the Draft EIR/EIS. They should be addressed in a revised, recirculated Draft EIR/EIS. Maintenance of the road would be required for frequent and regular inspections of the slant wells, much more frequently than the described maintenance of the slant wells every 5 years. The Draft EIR/EIS fails to identify and analyze this increase in the severity of long-term impacts in the dunes. Additional mitigation should be required to reduce and avoid impacts to the greatest extent feasible. Marina-17

Section 3.2.1.2

This section references "well clusters." This reference is unclear and the wells should be described consistently throughout the document. Marina-18

If it is intended that the Draft EIR/EIS provide CEQA/NEPA clearance for the Source Water Pipeline optional alignment, this area should be included in the Project area boundary and associated impacts must be analyzed.

Section 3.2.2

The MPWSP Desalination Plant Site Plan includes a Salinas River Overlook Tour Rest Stop, yet this component is not described in this section. If public tours of the plant are proposed, this proposed use must be described and the impacts associated with the use must be analyzed in the Draft EIR/EIS. Marina-19

Section 3.2.2.5

This section describes temporary storage where brine could be stored for up to 5 hours. This temporary storage appears inadequate. What would trigger the need for temporary storage? Repairs to the outfall could last much longer than 5 hours – where would the brine be stored if temporary storage in excess of 5 hours were necessary? Have water supply issues been addressed in the Draft EIR/EIS in the event of a necessary shutdown of the desalination plant? Marina-20

The last paragraph of this section (page 3-28) states that the outfall diffuser ports vary in height above the sea floor and that the dilution calculations assume they are four feet above the seafloor. Based on the information in this section, it is impossible to determine whether this assumption is appropriate. Identified impacts would be underestimated in any areas in which the ports are less than four feet above the seafloor. The location of the ports should be confirmed so that it can be determined whether or not the dilution analysis is adequate and accurate. This information should be recirculated for public review and comment once accurate information has been provided. Marina-21

Section 3.2.3.3

Figure 3-6 does not appear to match the description provided in this section. The Monterey Peninsula Recreational Trail, as shown, is located east of the Project area boundary. If the New Desalinated Water Pipeline is to be constructed along the west side of the trail (as described), then the identified Project area boundary fails to include the area of disturbance for this component. If this project component is missing in the Draft EIR/EIS analysis, and the surveys, existing condition evaluations, and analysis in the Draft EIR/EIS failed to address impacts in this area, then this component has not been adequately addressed in the Draft EIR/EIS. As shown in Figure 3-6, it appears that the New Desalinated Water Pipeline crosses Marina-22

under the existing railroad tracks near the Lapis Road/Del Monte Boulevard intersection and runs south on the west side of the railroad tracks.

If it is intended that this Draft EIR/EIS provide CEQA/NEPA clearance for the New Desalinated Water Pipeline optional alignment, then this area should be included in the Project area boundary and any associated impacts must be identified and discussed.

Marina-22 cont.

Figures 3-6 through 3-9

The Project area boundary, as reflected in Figures 3-6 through 3-9, does not appear adequate to accommodate necessary access for construction equipment and laydown areas for trenchless construction. The Project area boundary should be revised to conservatively include all areas of potential disturbance and the Draft EIR/EIS analysis should be revised accordingly. If the Project area boundary is adequate to accommodate these construction staging and laydown areas, the Draft EIR/EIS should reflect this more accurately by showing the proposed 50 x 50 foot entry and receiving pits at an accurate scale.

Marina-23

Section 3.2.3.8

This section references potential engineering constraints associated with the proposed Castroville Pipeline connection. What are the constraints? How feasible is the proposed Castroville Pipeline connection? The Draft EIR/EIS should fully describe and disclose the feasibility of this component. If the Castroville Pipeline connection is determined to be infeasible or unlikely to be feasible, the Draft EIR/EIS should disclose why it is being analyzed as part of the proposed Project and the public should have the opportunity to review and comment on whether the return of groundwater from the Salinas Valley Groundwater Basin to the CSIP Pond via the Pipeline to the CSIP pond has been fully analyzed. Engineering constraints and associated engineering design changes could result in additional or more severe environmental impacts which have not been adequately disclosed in the Draft EIR/EIS.

Marina-24

Section 3.3.2.1

This section describes a 6,000 square-foot concrete pad for discharge piping. This pad and those required for each wellhead vault should be shown on all Draft EIR/EIS graphics and quantified in the Project Description and throughout the Draft EIR/EIS, so that the extent of disturbance within the dune complex is accurately and clearly stated.

This section also states that the wellheads would be accessible at grade level upon completion. The Draft EIR/EIS inadequately describes the wellheads (will they be built above grade or subsurface?) and omits analysis of maintenance requirements related to the continuously changing elevation and grade of the dunes in which the wellheads would be placed. What type of “at grade” access is proposed and how will it be maintained through the lifespan of the Project? How will changes in surface grade be monitored and addressed throughout the Project life?

Marina-25

Section 3.3.2.1

This section describes the proposed disposal of drilling spoils generated during the lower portion of slant well drilling by spreading the spoils within the disturbed dune area. This unnecessarily worsens and increases impacts on the sensitive dune habitat where the slant wells would be located. There is no evaluation of what types of spoils material would be generated by drilling to the proposed depths and whether or not disposal of up to 100 cubic yards of drilling spoils within the dune complex would adversely affect sensitive dune habitat or species. The disposal of drilling spoils in the dunes should be considered a permanent impact to sensitive dune habitat (ESHA); identified impacts and necessary mitigation requirements should be revised accordingly in a recirculated Draft EIR/EIS. Marina-26

Section 3.3.6

The Project area boundary surrounding the proposed Terminal Reservoir as shown in Figure 3-9b does not appear to be based solely on construction of the reservoir and the 6 acres of disturbance described in this section. What is proposed in the remainder of this area? Additional activity planned in this area must be described in the Project Description and analyzed in the Draft EIR/EIS. Is there existing infrastructure at this location that would connect to the proposed Terminal Reservoir? How would this reservoir be accessed? These components must be fully identified and described in the Draft EIR/EIS. The graphic should also be revised to reflect the total Project area boundary in this location, as it is impossible to determine the potential extent of disturbance and impacts in surrounding areas not reflected in the Draft EIR/EIS. The Draft EIR/EIS should be recirculated once the total area of disturbance has been identified so the public can determine whether additional sensitive resources exist in the areas not shown in the Draft EIR/EIS and whether additional or more severe environmental impacts would occur. This omission has deprived the public of a meaningful opportunity to comment upon potentially significant adverse effects on the environment and the feasible ways in which to mitigate or avoid those effects. Marina-27

Section 3.3.9

This section describes the well locations as within the "CEMEX active mining area." References to the mining area as "active" or "retired" should be corrected to accurately reflect baseline conditions and should be consistently described throughout the document. Marina-28

Table 3-6

Why are the wet seasons for injection different for Desalinated Project Water and Carmel River Supplies? Marina-29

Section 3.4

This section fails to identify an operational lifespan of the Project. This information is necessary to identify and evaluate the extent and duration of potential impacts of the Project. Marina-30

Section 3.4.1

Again, this section describes the location of the slant wells as "on the back side of the dunes." This statement is inaccurate and misleading. The slant wells would be located in the center of the large dune complex that comprises the CEMEX Property and routine maintenance activities would directly disturb this dune habitat. Marina-31

Section 3.4.2

This section states that "From the Terminal Reservoir, the water would be injected into the northern subbasin of the Seaside Groundwater Basin." Are injection wells proposed at this location? If so, they must be described and analyzed in the Draft EIR/EIS. If not, the description of ASR operations should be revised to accurately reflect proposed ASR operations and locations. Marina-32

Section 3.4.5

This section describes the electrical power demands of the Project, which would require 51,698 million kilowatt hours per year in additional demand – a more than 450 percent increase over existing demand for CalAm's entire water supply system in the Monterey District Service Area. This large expenditure of energy is not adequately analyzed in the Draft EIR/EIS. Has PG&E indicated it could provide this amount of energy? And if the increased demand is proposed to be partially met through a separate renewable power source, that source must be identified and the feasibility of that source must be analyzed in the Draft EIR/EIS. Any renewable power sources to be constructed to facilitate operation of the Project must be included in the project description and analyzed in the Draft EIR/EIS. Failure to include these Project components constitutes improper CEQA/NEPA piecemealing. Marina-33

CHAPTER 4.1 – ENVIRONMENTAL SETTING OVERVIEW

This chapter contains information regarding several important environmental assessment parameters, including the Project "baseline" and the treatment of Project inconsistencies. We have comments on each topic. Marina-34

The Draft EIR/EIS states that the Project environmental "baseline" for purposes of the Draft EIR/EIS is the existing conditions in 2012, which is five years ago. *Id.* at 4.1-8. This baseline is apparently based on the CEQA Guideline which states the existing physical conditions at the time the Notice of Preparation ("NOP") is published "will normally constitute the baseline physical conditions." CEQA Guidelines § 15125(a).

However, the Draft EIR/EIS makes a fundamental error. This is a situation where a more recent baseline must be utilized because the federal government did not join and notice its intent to make this an EIS for federal purposes until August 2015. Federal law mandates that the baseline for NEPA review be the physical condition at the time the EIS is prepared, which is August 2015 at the earliest. The CEQA Guidelines require that an EIS include the alternative of no action. 40 C.F.R. § 1502.14(d). These and other NEPA authorities require that the condition of the environment at the time the EIS is undertaken or the action will be implemented (which can sometimes be at some point in the future) be utilized for the analysis. There is no authority for using a significantly earlier date such as 2012. When a joint EIR/EIS is being drafted, it is sometimes necessary to have two impact analyses, one for CEQA and one for NEPA, so that the proper baseline is established for each. Thus, since the wrong NEPA baseline was chosen, the NEPA impact analyses need to be redone with the correct baseline and recirculated for public review.

Marina-34 cont.

In fact, this does not qualify as a "normal" situation under CEQA either in which a 2012 baseline should be utilized. Although the original Project NOP was issued in 2012, the proposed Project reflected in the new Draft EIR/EIS was substantially modified in March 2016 from the version originally noticed in 2012 and the public was first notified in late 2015 that the environmental document was now a joint EIR/EIS. Moreover, there have been significant environmental developments, technical studies and new information in the last five years that make a 2012 baseline an improper choice. The Draft EIR/EIS is therefore inadequate because it chose the wrong environmental baseline for both NEPA and CEQA purposes.

In addition, the Draft EIR/EIS description of how inconsistencies of the Project are to be treated under NEPA is incomplete and inaccurate. According to the document, NEPA and CEQA require that there be a discussion of "possible conflicts between the proposed project and the objectives of federal, regional, state and local land use plans and policies." *Id.* at 4.1-9. In fact, NEPA also requires an analysis of any inconsistencies with state and local "laws" and requires a reconciliation analysis when such inconsistencies are found:

> To better integrate environmental impact statements into State or local planning processes, statements shall discuss *any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned).* Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law. 40 C.F.R. § 1506.2(d) (emphasis added).

Marina-35

This federal inconsistency and reconciliation analysis requirement is very important because all or at least portions of the Project are inconsistent with, and in fact directly prohibited by, state or local laws and plans which are discussed in more detail in our comments for sections 2.6 and 4.6 herein.

CHAPTER 4.2 – GEOLOGY, SOILS AND SEISMICITY

One major deficiency in this Draft EIR/EIS section is its failure to analyze the Project's potential acceleration or exacerbation of coastal erosion and dune retreat, thereby causing damage to nearby dunes, properties and coastal environment. We agree with the stated threshold of significance and accompanying impact question no. 4.2-10, which ask whether the Project will "accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment." However, the impact section inexplicably fails to address this question.

Instead, the document states that "the primary concern" in this area is whether the natural rate of coastal retreat associated with sea level rise will result in the slant wells and associated facilities becoming uncovered or located on the beach within the Project lifetime. *Id.* at 4.2-68. The analysis of this issue is then carried through and a mitigation measure (discussed below) is adopted to address this impact. Remarkably, however, the document never returns to discuss the major potential impact posed by this question, which is whether the Project slant wells and other facilities located in this coastal strip will accelerate or exacerbate coastal erosion or dune retreat, or otherwise damage nearby beaches and properties. This is an important and appropriate topic for CEQA and NEPA analysis, particularly because it does not address the impact of the environment on the Project – rather, it evaluates the impact of the Project on the ongoing natural processes. The complete failure to address this issue requires a full analysis in a new Draft EIR/EIS that is recirculated for public comment. Marina-36

The second legal infirmity in this section relates to the apparent insufficiency of Mitigation Measure 4.2-9 that is proposed to evaluate the coastal retreat impacts on the Project components that were analyzed in this section. In brief, this measure provides that the rate of coastal retreat will be monitored and the slant wells will be removed from service before they are exposed. However, this measure does not address basic Project questions relating to this measure, including: (1) can the Project operate without one or more slant wells in service; (2) will new slant wells need to be drilled to replace the out-of-service wells and where and how will that be accomplished; and (3) what is the exact procedure for slant well abandonment and replacement? The mitigation measure is incomplete without this information. Marina-37

CHAPTER 4.3 – SURFACE WATER HYDROLOGY AND WATER QUALITY

A. The Description Of Applicable Laws And The Evaluation Criteria Are Inadequate.

The Regulatory Framework (section 4.3.2) mentions that the California Coastal Act contains applicable legal requirements applicable to the Project, but fails to describe in detail any of the specific requirements of the Act, such as all of the Public Resources Code Sections which are identified in footnote 1 of this comment letter. A similar omission is made in the evaluation criteria in section 4.3.3. The criteria are inadequate because they fail to include relevant Coastal Act requirements (e.g., Public Resources Code Section 30231). Marina-38

B. The Analysis Of Alternative Brine Discharge Systems Is Deficient.

The existing MRWPCA ocean outfall was not designed for brine discharge. The outfall has horizontally-oriented discharge ports rather than inclined diffusers, which are preferred for brine disposal and—as the Draft EIR/EIS admits—"increase[] dilution substantially." *See* Draft EIR/EIS at 4.3-105; Southern California Coastal Water Research Project , *Management of Brine Discharges to Coastal Waters: Recommendations of a Science Advisory Panel*, 23-27 (Mar. 2012) ("SCCWRP Report"). Accordingly, use of inclined diffusers should be a required component of the Project, rather than just potential mitigation.

Marina-39

Impacts related to surface water hydrology and water quality generally relate to water intake and brine discharge from structures within or beneath Monterey Bay. Water quality impacts from brine discharge are evaluated based on modeling for the existing MRWPCA ocean outfall pipeline and diffuser, but it appears from the Draft EIR/EIS that no such modeling was performed for alternative brine discharge systems. Modeling and analysis at a comparable level of detail should be provided for each alternative that is evaluated to allow the public to compare the various brine discharge alternatives.

C. Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, And Compliance Is Legally Deficient In Multiple Ways.

First, Mitigation Measure 4.3-4 illegally defers mitigation and lacks adequate performance standards. A Mitigation Monitoring & Reporting Plan must be published and circulated along with Draft EIR/EIS; thus, the Draft EIR/EIS must be re-circulated here once the MMRP is prepared. An opportunity for public comment on the MMRP is essential where so much of the mitigation is deferred and the potential impacts are both extremely uncertain and potentially very significant, particularly considering the unique, protected ecosystem into which the Project plans to discharge 14 million gallons of brine daily—totally undiluted during at least half of each year. Not only does this Mitigation Measure thus illegally defer mitigation, but it also lacks performance standards by which to measure the mitigation.

Marina-40

Second, Mitigation Measure 4.3-4 purports to do things that should have been done as part of assessing the environmental baseline per CEQA's requirements. The Mitigation Measure states, "The Plan shall establish protocols to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge for at least one year prior to commencement of project construction." (page 4.3-69.) But assessing, establishing and monitoring baseline environmental conditions is a mandatory step in CEQA and NEPA analysis, and cannot be deferred until after Project approval. CEQA and NEPA prohibit a lead agency from deferring the analysis of potential impacts by claiming they will monitor those impacts just before the Project is constructed and figure out at that later date if mitigation measures are needed. Moreover, an impacts analysis that is based on an inadequate evaluation of the environmental baseline is necessarily flawed. Thus, not only is Mitigation Measure 4.3-4 itself flawed in that it illegally defers mitigation, but the impacts analysis underlying Impact 4.3-4 is also flawed and must be redone after a proper assessment of the environmental baseline that

Marina-41

includes biological conditions at the discharge location as well as the vicinity of the discharge location. Marina-41 cont.

Third, Mitigation Measure 4.3-4 states monitoring may cease after five years if a certain salinity performance standard is met for a period of 45 days at the end of the five years of monitoring. Does this mean that the standard must be met for any 45-day period during the entire five-years? If not, the measurement for the standard is unclear and must be explained. Also, if the standard is not met at the end of five years, additional mitigation should be required in order to meet the standard, and yet the Mitigation Measure apparently does not require any. Marina-42

D. Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance; and Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives Should Be Applied To All Alternatives.

These mitigation measures address water quality impacts to Monterey Bay through water quality studies before implementing operational discharges, incorporating supplemental water treatment components, and implementing a discharge monitoring and mitigation plan. Both mitigation measures are identified as applying only to operational discharges associated with the Project desalination plant through the existing Monterey Regional Water Pollution Control Agency outfall (i.e., the Project and Alternatives 1, 2, and 5a/5b). On page 5.5-50, the Draft EIR states that the salinity impact to Monterey Bay under Alternative 3 (new outfall at Moss Landing) would be reduced to less than significant (same impact conclusion as the Proposed Project) with the implementation of Mitigation Measure 4.3-4. On page 5.5-56, the Draft EIR states that the salinity impact to Monterey Bay under Alternative 4 (new outfall at Moss Landing) would be significant and unavoidable (increased impact compared with the Proposed Project) and Mitigation Measure 4.3-4 is not mentioned. The narrative descriptions for Mitigation Measures 4.3-4 and 4.3-5 are general enough that it seems they could be applied to any brine discharge system, and therefore any Alternative. The Draft EIR/EIS should apply the mitigation measures consistently to the Project and Alternatives following the assumptions listed for the mitigation measures, and impacts should be determined accordingly. Marina-43

CHAPTER 4.4 – GROUNDWATER RESOURCES

A. The Factual Predicate For The Groundwater Analysis Is Inadequate Because It Fails to Discuss Key Facts And Hydrology Concepts And Thereby Undermines The Discussion Of Project Impacts And Mitigation Measures.

The Draft EIR/EIS is deficient because it fails to mention, discuss and properly analyze important facts and hydrology concepts affecting the Project's impacts on groundwater resources. Marina-44

First, chapter 4.4.2 fails to identify and discuss the application of State Board Resolution No. 88-63, which provides that all "ground waters of the State are considered to be suitable, or potentially suitable for municipal or domestic water supply and should be so designated by the

Regional Boards. . . ." A Regional Board may de-designate this beneficial use, but only if it is demonstrated that the water being de-designated consists of a TDS concentration exceeding 3,000 mg/L (5,000 uS/cm, electrical conductivity). However, unless and until a formal de-designation of this beneficial use occurs for a particular location (which involves a complex Regional and State Board process), all groundwater in an aquifer is presumptively considered suitable for municipal or domestic water supply use under California law. Since none of the aquifers in this Basin have been de-designated for this MUN beneficial use, all groundwater in the SVGB is presumptively groundwater, potentially suitable for the MUN beneficial use, not seawater.

Marina-44 cont.

Second, the Draft EIR/EIS does not clearly define what it means by its use of the term "brackish water" (see, e.g., page 4-4.8) and this confusion leads to analytical deficiencies later in the chapter. The text implies that brackish water cannot be used for domestic, agricultural or industrial purposes, which is not true. For example, the premise of Resolution No. 88-63 is that a legal user such as a water district could extract and treat groundwater to meet MUN uses. A related ambiguity is present in the seawater intrusion charts marked as Figures 4.4-10 and 4.4-11, which are intended to show "seawater intrusion" into the 180/400 Foot Aquifers. However, since the term "seawater" is not defined, it gives the erroneous impression that the entire groundwater area out to the identified limits on the Figures exceeds applicable State Board standards and is supposedly not suitable for any beneficial uses. Moreover, the accompanying text refers to "the leading edge of the inland seawater intrusion front," but again does not define what this means or how it is even relevant to the analysis. The information being gathered by Dr. Rosemary Knight and her colleagues very clearly shows that the extent, degree, and location of seawater intrusion in the areas immediately surrounding the proposed slant well intake system is much more complex than reflected in Figures 4.4-10 and 4.4-11 and the accompanying Draft EIR/EIS analysis (refer to Section E, below).

Marina-45

In fact, the aquifers in this Basin are the proposed water supply source for the Project. The Draft EIR/EIS relies on the conclusion that "the groundwater in the Dune Sand, 180-FTE, and 400-foot Aquifer is therefore unsuitable for potable supply" to support a determination that the Project would have a less than significant impact on groundwater supplies from the SVGB (pages 4.4-59, 60), while also identifying these exact same water resources as the water supply source for the Project. This irreconcilable discrepancy reflects an unpersuasive attempt, as improperly re-stated and supported in the Draft EIR/EIS, to establish a feasible legal right to pump groundwater from the SVGB.

Third, the Draft EIR/EIS is inadequate because it does not clearly state the amount of "groundwater" that it anticipates extracting from the groundwater aquifers. The State Board Report, which was based on a previous version of the Project, states that the CalAm's calculation was that 762 to 3,250 afy of groundwater would be extracted (although this was before the slant wells were moved landward, which will increase the groundwater portion substantially). App. B2 at 29. The Draft EIR uses a 0-12 percent figure for calculating the amount of groundwater as a percentage of total extracted water, but does not state a daily or annual amount. However, assuming that 24 mgd of total water is extracted 365 days per year by the slant wells and using

Marina-46

the 12 percent figure utilized in the Draft EIR/EIS, the "groundwater" extracted supposedly could be 1,152,000 gallons per day and 3,226 acre-feet per year.

However, these groundwater extraction amounts and percentages appear to be vastly understated. The slant wells have been repositioned further inland, so the groundwater component recited by the State Board is significantly higher, probably closer to the 75-93 percent figure recited in our chapter 3 comments. Further, State Board Resolution 88-63 provides that all water pumped from under land (as distinguished from under the ocean) is presumptively groundwater, not seawater. In addition, the 0-12 percent groundwater calculations appear to have been based on a "groundwater" standard linked to a TDS value of 420 mg/L, rather than on use of the 3,000 mg/L potential MUN de-designation standard. If the water actually extracted by the slant well is less than the projected seawater TDS value for the extracted water, the amount of "groundwater" extracted under the Project's calculations could be multiples of the maximum 12 percent value utilized in the Draft EIR/EIS. Marina-46 cont.

In this context, it is also important to point out that, for purposes of the Agency Act, Ordinance No. 3709 and the Annexation Agreement, all extraction and/or export of groundwater is prohibited, regardless of the TDS concentration of the water. Accordingly, the calculations made by the Draft EIR/EIS on what it believes is "groundwater" for purposes of sending return water to the Basin does not alter the fact that all groundwater in this Basin being extracted landward of the mean high tide line, regardless of the amount or percentage of TDS it contains, is groundwater which cannot be extracted and exported pursuant to these laws and agreement. Marina-47

We know that MCWD and other users extract a substantial amount of groundwater from the 180 and 400 Foot Aquifers, and therefore that much of the "brackish" water identified is available to support the applicable domestic, agricultural and industrial beneficial uses. Indeed, Table 4.4-3 reveals that a total of between 103,000 and 130,000 acre feet of water has been extracted from these entire groundwater aquifers each year since 2008. It also apparent from the technical studies that the water in the aquifers within the identified areas contains large areas of higher quality groundwater, so it is neither hydrogeologically nor legally appropriate to state that this water cannot be extracted to support the three designated beneficial uses. Marina-48

Fourth, the Draft EIR/EIS's limited description of Professor Rosemary Knight's work (page 4.4-31) is inadequate and the Draft EIR/EIS failure to discuss and incorporate its findings is unwarranted. These issues are discussed in greater detail in Subsection E herein. Marina-49

Fifth, the brief mention of the applicability and implications of SGMA (page 4.4-37) is incomplete and inadequate. It fails to state that the 180/400 Foot Aquifer has been classified under SGMA as one of only 21 California aquifers that is "critically overdrafted." The Draft EIR/EIS text wrongly claims that SGMA "does not have a direct impact on the MPWSP." It also improperly attempts to trivialize the new groundwater law's impact by summarily concluding without support that "[t]he proposed project would not adversely affect groundwater management in the Basin, because it would not be extracting groundwater that is not presently being used as a potable or an irrigation supply." It then concludes that the Project will have a "positive contribution" to managing groundwater in the Basin. Marina-50

This explanation oversimplifies and reflects a misunderstanding of how SGMA is designed and works, which we have described in out comments to chapter 2.6 above. The legal inadequacies in this portion of the Draft EIR/EIS include:

- It fails to recognize that the "undesirable results" that SGMA is designed to avoid include seawater intrusion, degraded water quality, lowering of groundwater levels and reduction of groundwater storage. In stating that SGMA will not have a direct impact on the Project because it is supposedly not extracting groundwater presently being used applies the wrong benchmark to this situation. The real question is whether the Project may directly or indirectly cause seawater intrusion, degradation of water quality, lower groundwater levels or reduced groundwater storage. If the Project will contribute to any of these conditions (as the current scientific information indicates it likely will), the Project will be directly affected, if not foreclosed, by SGMA. Marina-50 cont.

- In stating (without any support) that the Project may have a positive contribution to groundwater management in this Basin, the Draft EIR/EIS and CalAm appear to attempting to substitute their own private views for the technical decisions on groundwater management by the GSA. This approach expressly contravenes the local agency groundwater management goal of SGMA and is an impermissible judgment by a private outside third party as to "what is right" for the Basin and its users. The Draft EIR/EIS lacks the best available science and the local history and experience to make any such judgment for this Basin. Marina-51

- The application of SGMA could have a dramatic impact on the Project. Management measures will be decided upon by the GSA based on a comprehensive data set. These measures could well include a prohibition on new groundwater extractions in the basin, severe restrictions on such withdrawals and a variety of other measures that could include many measures that prohibit or restrict the Project's hoped-for extraction activities. Marina-52

- It is untrue, and contradictory to other statements in the Draft EIR/EIS, to state that the Project will not extract groundwater that is used as a potable or irrigation water supply. In fact, the Draft EIR admits that the water the Project will pump would consist of between 1 and 12 percent of groundwater from these aquifers (and these withdrawals could be even greater if state-of-the-art models are used). And, as discussed above, all of the water is presumptively groundwater, not seawater, and it is defined as usable for the applicable beneficial uses under State Board standards. Marina-53

- For the reasons set forth in Dr. Abrams' report, the groundwater model on which the Project relies to support this conclusion is too simplistic (and not state-of-the-art) and fails to address the key potential groundwater impacts of the Project. Marina-54

B. The Thresholds Of Significance For Groundwater Impacts Are Inadequate.

Section 4.4.3 of the Draft EIR/EIS delineates thresholds of significance (which it terms "evaluation criteria") to evaluate potential impacts of the Project on groundwater resources. It lists two threshold criteria and then, confusingly, lists nine further "descriptions" to "elaborate on how these criteria are applied." These collective "criteria" reflect several important deficiencies.

First, the first overall threshold of significance targeted to interference with groundwater supplies or recharge is incorrectly formulated because it defines (for no apparent reason) a supply or recharge interference as a "net deficit in aquifer volume." By gerrymandering the interference concept in this manner, it automatically characterizes the Project's projected extractions of groundwater to not qualify as a significant environmental effect because it plans to "return" an equivalent amount of water to selected recipients within the Basin area. However, in so doing, it mistakenly fails to analyze the impacts of its pumping on a range of water availability and recharge issues, particularly since the delivered groundwater will not be reinjected into the aquifer.

Marina-55

Second, although we agree that a threshold of significance should be whether the proposed slant well extractions "degrade groundwater quality," the further interpretation of this criteria on page 4.4-21 to be that it "adversely affected groundwater quality by exacerbating seawater intrusion in the SVGB" dramatically and improperly limits its scope. As discussed in subsection C below, the Draft EIR/EIS attempts to condense this water quality degradation inquiry into a narrow analysis of whether the extractions will move the "seawater/freshwater interface" in the 180/400 Foot Aquifers, which is neither factually appropriate nor a true measure of all potential groundwater quality impacts. The threshold of significance, and all interpretive descriptions, should be whether the slant wells will degrade groundwater quality for any current or future legal user in any of the 180/400/900 Foot Aquifers.

Marina-56

Third, these evaluation criteria are inadequate because they do not address the water rights and SGMA management criteria in this "critically overdrafted" subbasin, and therefore do not provide any factual basis for assessing such environmental impacts when evaluating Project feasibility. Thus, for example, one evaluation criterion should be whether the slant well extractions may cause any short-term or long-term harm to any current or anticipated future legal user of this groundwater basin. Companion criteria should be adopted for each potential groundwater impact issue identified in our comments in section 2.6 herein.

Marina-57

C. The Draft EIR/EIS Fails To Adequately Assess The Project's Groundwater Quality Impacts And Therefore Erroneously Concludes That They Are Less Than Significant.

Marina-58

The preceding discussion of potential groundwater impacts of the Project in the contexts of water rights and SGMA make it clear that the Draft EIR must analyze a full array of environmental impacts from groundwater extraction. For purposes of water rights, the inquiry is whether the Project will cause harm or injury to any current or future legal user of the

groundwater, including water quality impacts, seawater intrusion impacts, water table impacts and the expected impacts over time. *See* section 2.6 herein. Under the comprehensive groundwater management scheme in SGMA, the undesirable results of the Project to groundwater that must be evaluated include lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence and depletions of interconnected surface water. Cal. Water Code § 10721(w).

Unfortunately, the analysis in the Draft EIR/EIS fails to adequately address these issues. It focuses primarily on the question of whether extraction from the wells would affect "drawdown" in nearby wells by lowering the groundwater levels. *Id.* at 4.4-57, *et seq.* It briefly raises the topic of seawater intrusion, but for unexplained reasons confines its discussion to the "location of the seawater/freshwater line," which it mistakenly believes is a surrogate for a discussion of seawater and water quality impacts. *Id.* at 4.4-78. It also refers to several contaminated groundwater plumes that originated at Fort Ord, but proposes a monitoring program which supposedly mitigates these impacts to less than significant levels. *Id.* at 4.4-86.

This limited analysis of groundwater quality impacts is patently insufficient and legally inadequate. It is inappropriate to limit the discussion of seawater intrusion impacts to the location of the "seawater/freshwater interface," because the location of this line does not describe the quality of groundwater within or beyond this line, only that chloride concentrations exceed a certain level at this line. The Draft EIR/EIS appears to make the mistaken assumption that all groundwater seaward of this line is not fit for beneficial uses and, therefore, draws the erroneous conclusion that so long as the progressive horizontal inland migration of that front does not continue, the Project is not causing significant impacts to groundwater quality. In fact, however, the available data (including information generated by Professor Knight discussed herein) demonstrate that there are large areas of good quality water available for beneficial uses seaward of this line, so use of the line in this manner avoids analyzing Project groundwater impacts in any close detail.

Marina-58 cont.

Dr. Abrams shows in his Memorandum (App. 1) that there are MCWD wells in the 900 Foot Aquifer that currently supply drinking water for the City of Marina, both inside and just outside the seawater intrusion line in the 180/400 Foot Aquifer. Moreover, there are overlying users within the City who utilize wells within the seawater intrusion area. One important question, that remains unaddressed by the Draft EIR/EIS, is how the future water quality (including salinity) of these wells will be affected by the pumping of 24 million gallons per day ("mgd") of water by the slant wells. If, as appears entirely likely, the water quality in these wells will be adversely affected by the Project pumping, the MCWD and City water supply will be adversely affected. This potential significant impact is entirely missing from the Draft EIR/EIS analysis.

In short, the "Impact Conclusion for Groundwater Quality" on page 4.4-86 conducted an unreasonably restrictive scope of analysis for potential seawater intrusion impacts both inside and outside the seawater intrusion point it identifies and fails to assess the full range of water quality impacts for legal users of the aquifer. The resulting conclusion that the Project will have

no impacts on groundwater quality is not supported by substantial evidence and cannot stand. Accordingly, a comprehensive water quality impact analysis must be performed and a new Draft EIR/EIS needs to be recirculated to provide the public with an opportunity to review and comment on the analysis.

Marina-58 cont.

D. The Draft EIR/EIS Is Inadequate Because It Completely Fails To Analyze the Potential Impacts Of The Project On Groundwater In The 900 Foot Aquifer.

The 900 Foot Aquifer (sometimes referred to as the Deep Aquifer) is a confined aquifer that lies below the 180/400 Foot Aquifers in and near the City of Marina. This aquifer represents a very important water resource for MCWD and the City and, as shown in Dr. Abrams' Memorandum, there are three MCWD wells in this aquifer seaward of the "seawater intrusion" line in the 180/400 Foot Aquifers and another such well just outside this line in the 180 Foot Aquifer According to Dr. Abrams, the 900 Foot Aquifer consists of a thick sequence of alternating layers of sand-gravel mixtures and clays.

The Draft EIR/EIS essentially ignores any discussion of the nature, function or potential Project impacts with regard to the 900 Foot Aquifer. The document devotes only three uninformative sentences to a description of the hydrogeology of this aquifer. *Id.* at page 4.4-12. The Groundwater Elevation and Flow Direction section (page 4.4-14) does not cover groundwater flow or response to pumping for the 900 Foot Aquifer. Indeed, this section only discusses lateral groundwater flow – it conspicuously fails to include any discussion of vertical groundwater flow in the aquifer system or flow in the 900 Foot Aquifer. The Groundwater Extraction Summary Table No. 4.4-3 does not cover extractions from the 900 Foot Aquifer. And there is no discussion of the 900 Foot Aquifer in the Groundwater Quality section (section 4.4.1.4). Not surprisingly, there is no analysis of potential impacts to this groundwater aquifer in the Project operational impact or mitigation sections.

Marina-59

The Draft EIR/EIS's failure to discuss the potential impacts of the Project on groundwater in the 900 Foot Aquifer is an unexplained and significant omission. In fact, given the importance of the aquifer, the discontinuous nature of the aquitards above it, the hydrogeologic findings in Professor Knight's studies (see Subsection E herein), and the evidence of vertical seawater contamination reflected in the best available hydrogeologic information, the failure to address the potentially important set of groundwater impacts is a significant gap in the environmental analysis and must be addressed in a new, recirculated Draft EIR/EIS.

E. The Draft EIR/EIS Failed To Utilize, Without Explanation, The Important Electrical Resistivity Tomography Studies Prepared By Professor Knight And Her Colleagues.

Marina-60

As described in Dr. Abrams' Memorandum, Stanford University Professor of Geophysics Rosemary Knight, with her colleagues and other researchers, has utilized electrical resistivity tomography ("ERT"), a standard and accepted field test methodology, to characterize seawater intrusion into the subsurface along the Monterey County coastline in the immediate vicinity of

the Project. ERT is a type of geophysical survey that can provide valuable groundwater quality data to "fill in the gaps" that exist when only well datapoints are used. Despite the fact that Professor Knight conducted a coastline study in the immediate vicinity of the Project area that provided a vertical two-dimensional image reflecting the distribution of seawater intrusion at different depths and concentrations in the 180/400 Foot Aquifers, the Draft EIR/EIS failed, without any explanation, to utilize its data and scientific findings.

It is undisputed that the results of Professor Knight's studies were available to the public long before the Draft EIR/EIS was issued, but were not utilized in formulating the Draft EIR/EIS. Indeed, these studies and results were presented to the public in a series of forums, including the following:

- In October 2014, Professor Knight announced that she was planning to use the ERT technology to investigate seawater intrusion into groundwater aquifers along a 24-mile stretch of coastline that includes the proposed CalAm slant well site. The key details relating to this work was made available in permit applications to a variety of public agencies and was publicized in the press.

- On May 26, 2015, at the Hopkins Marine Station in Pacific Grove, Professor Knight and Adam Pidlisecky presented a public lecture entitled "Salt Water Imaging Along the Monterey Coast" in which they discussed their research techniques and results to date regarding saltwater intrusion into groundwater aquifers.

- On November 1, 2016, at the Hopkins Marine Station, Professor Knight and a colleague presented a program entitled "Geophysical Imaging of Saltwater Intrusion Along the Monterey Coast." This lecture covered the geophysical methods and results that they used to create images of the distribution of saltwater and freshwater hundreds of feet into the ground along the coastline area where the Project would be built.

Nonetheless, despite the public availability and widely shared information regarding this research work, it was not carefully analyzed and incorporated into the Draft EIR/EIS. The Draft EIR/EIS (on page 4.3-3) devotes only three sentences to Professor Knight's study. Two sentences attempt to describe briefly what she studied and the third sentence states: "The study found that the electrical resistivity readings positively correlate with measured TDS concentrations to a depth of 500-feet in four area groundwater wells." In short, the Draft EIR/EIS attempts to create the erroneous impression that Professor Knight's study essentially corroborated the findings of the Draft EIR/EIS analyses and essentially ignores, without explanation, all of its findings. Dr. Knight, in a presentation before the Marina City Council on February 7, 2017 (see slide deck attached as App. 3), stated that this statement in the Draft EIR/EIS failed to accurately reflect the extent of uncertainty remaining in the Draft EIR/EIS analysis and the substantial additional information that would be provided through the use of ERT.

Marina-60 cont.

In fact, the work by Professor Knight and her colleagues is directly relevant to the important seawater intrusion and groundwater quality issues that are posed by the Project and which are, at this point, inadequately analyzed in the Draft EIR/EIS. Among other things, as explained more fully in Dr. Abrams' Report, the previously published studies by Professor Knight and her colleagues reflect:

- There are physical gaps in the aquitards separating the 180, 400 and 900 Foot Aquifers that provide pathways that allow migration of contaminants between each of these aquifers. According to Dr. Abrams: "the results show that there are numerous locations where pathways exist for migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system…." In short, these aquifers appear to be in hydraulic communication with each other more than previously believed or as apparently assumed by the Draft EIR/EIS.

- The ERT results delineate the extent of seawater in the 180 and 400 Foot Aquifers at the specific locations along the coast and reflect that "the distribution of seawater intrusion in these aquifers is highly variable horizontally and vertically." Thus, even at the coastline, there are large pockets of low-saline groundwater in the shallower aquifers as well as substantial evidence of seawater migration downward into the deeper aquifers in which many of the City of Marina's water supply wells are located.

Marina-60 cont.

These studies are directly relevant to the groundwater quality issues that are at the heart of potential Project impacts. They undercut the assumptions in the Draft EIR/EIS regarding the vertical and horizontal distribution of seawater impacts and indicate that pathways exist for vertical and horizontal contamination of aquifers at the Project location. Given the inability of the current groundwater modeling relied on by the Draft EIR/EIS to analyze these issues and the complete lack of any analysis of the 900 Foot Aquifer in the document, this information (which was available to the drafters before the Draft EIR/EIS was released) must be utilized to inform the discussion of these potentially significant impacts. Since ERT is a standard and accepted methodology that can feasibly be used to assess the significant groundwater aquifer impacts of the Project, the CPUC and MBNMS must assess this impact. *See Berkeley Keep Jets Over the Bay Comm. v. Bd. of Port Comm'rs*, 91 Cal. App. 4th 1344, 1370 (2001).

In addition, as the CPUC and MBNMS are aware, Professor Knight and her colleagues are in the midst of a new ERT study, using the SkyTEM methodology, that will provide a three-dimensional image of seawater intrusion in the groundwater in a wide area underneath and around the City. This new study (whose field work is scheduled for May 2017) will provide a three-dimensional depiction of the distribution and extent of seawater intrusion in the immediate Project area and will facilitate determining the evaluation of the likelihood of adverse impacts from Project pumping to area groundwater wells in all aquifers. The CPUC and MBNMS should obtain the results of this study and incorporate them into a new Draft EIR/EIS that is recirculated for review and comments by Responsible Agencies (such as Marina) and the public.

F. The Groundwater Modeling Used By The Draft EIR/EIS Is Inadequate To Determine The Potential Harm To The Wells That Serve Marina And Its Citizens.

One critical groundwater impact question is whether the Project may cause harm to current and future legal users of the three groundwater aquifers. As Dr. Abrams describes in his Memorandum, the model that forms the basis of the impact analysis in the Draft EIR/EIS cannot be effectively utilized to address this question. The deficiencies include:

- The model does not analyze the probability of adverse impacts to water used by Deep Aquifer wells.

- The model fails to address the key water rights and/or SGMA "harm" subject areas of water quality, seawater intrusion or water supply limitations at the various wells. Rather, it only addresses drawdown in nearby wells and looks at seawater only in a horizontal, not a vertical, direction. Professor Knight's work demonstrates that there are many locations where seawater appears to move downward where aquitards are absent.

- The model does not include the detailed heterogeneity indicated by the geophysical data which can provide increased certainty regarding the hydrogeologic characterization of these aquifers.

- The site-specific model contains important conceptual flaws that impair its ability to provide a reliable work product.

- Dr. Abrams believes that the parameterization of the model "is too simplified to fully evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from proposed MPWSP pumping" and that this "is especially relevant in light of the newly available information regarding the heterogeneous, vertically-connected nature of the aquifer system, the presence of significant downward vertical hydraulic gradients, and the potential for exacerbated seawater intrusion."

Marina-61

In short, the "superposition" model used as the basis for the groundwater impact analysis in the Draft EIR/EIS fails to meet the requirements and CEQA and NEPA. The model is not a precise and state-of-the-art hydrogeologic conceptual model (as demonstrated by Professor Knight's findings) and it is not well calibrated to evaluate the impact of the Project on a wide range of potential groundwater harms.

G. The Draft EIR/EIS Analysis Fails To Take Into Account The Anticipated Future Impact Of Ongoing Seawater Intrusion Mitigation Efforts On Groundwater Flow Directions.

As explained by Dr. Abrams in his Memorandum, the Monterey County Water Resources Agency has implemented for many years a concerted and successful effort to increase groundwater levels to slow, halt or reverse seawater intrusion. This effort has been significantly financed and supported by Marina citizens and other water customers in these water zones. Dr. Abrams provides the following explanation of the likely outcome of these efforts:

> If these mitigation efforts continue to be successful, as will likely be required under the Sustainable Groundwater Management Act (SGMA), the magnitude of the landward hydraulic gradient will decrease as inland groundwater levels increase, thus the shape of the capture zone and extent of the source area for the proposed slant wells will change substantially.… Thus, the continued success of ongoing seawater-intrusion mitigation projects could potentially strand the MPWSP desalination plant from its source of seawater.… Possible future groundwater conditions such as those described above were not evaluated or discussed in Appendix E2 of the Draft EIR/EIS, even though the goal of MCWRA's ongoing seawater-intrusion control efforts is to increase inland groundwater levels, and such conditions may be considered to be reasonably foreseeable. As such, the Draft EIR/EIS failed to consider that a more substantial fraction of freshwater resources may be captured during feedwater pumping than has been assumed

Marina-62

It is undisputed that the groundwater model described in Appendix E2 of the Draft EIR/EIS that was used for the groundwater analysis assumed that the regional groundwater flow direction at the Project subsurface slant wells was in the landward gradient direction. However, if these significant ongoing mitigation efforts continue to be successful, it is entirely possible that the current groundwater flow direction will reverse and be in exactly the opposite direction from what the groundwater model assumed. Even if groundwater flows do not reverse, flows from the seaward direction could substantially slow or disappear. The implications and results of this change in groundwater flow were not evaluated or discussed in this Appendix or the Draft EIR/EIS itself. As a result, the calculations of the amount of inland groundwater captured by the Plant could be significantly higher and, as Dr. Abrams describes, the continued success of these projects "could potentially strand the MPWSP desalination plant from its source of seawater."

This is a critical factor from both water rights and "injury to legal user" viewpoints. In the water rights arena, the State Board Report was absolutely clear that, to establish future water rights, the Project would need to address its future groundwater impacts, which has not been done adequately here without this analysis. From the viewpoint of a legal user of this Basin's groundwater, the reasonably foreseeable reversal of the landward groundwater flow direction

could mean that most and possibly all of the water pumped by the slant wells would be groundwater from the Basin rather than seawater, regardless of how those concepts are defined.

In sum, the Draft EIR/EIS's failure to discuss and analyze these developments, and to incorporate them into the groundwater modeling effort, makes the groundwater impact analysis legally inadequate.

Marina-62 cont.

CHAPTER 4.5 – MARINE BIOLOGICAL RESOURCES

A. The Draft EIR's Analysis Of Impacts To Marine Resources Is Inadequate.

1. The Project Is Sited In A Unique Marine Ecosystem Protected By Numerous Laws.

The Project is located in a unique ecological area that encompasses both a national marine sanctuary (MBNMS) and a national estuary (Elkhorn Slough National Estuarine Research Reserve). Draft EIR/EIS at 4.5-32. The MBNMS was established for the purposes of research and monitoring, education and outreach, public use and resource protection. It includes a variety of habitats that support highly productive biological communities, including extensive marine life: 34 species of marine mammals, over 180 species of seabirds and shorebirds, at least 525 fish species, four sea turtle species, 31 different invertebrate phyla, and over 450 species of marine algae. It hosts one of the highest levels of marine biodiversity in the world, and includes 27 federally listed threatened and endangered species. *Id*. at Section 4.5.1.

Marina-63

A number of laws protect the area affected by the Project. The National Marine Sanctuaries Act ("NMSA") prohibits a person from destroying, causing the loss of, or injuring any sanctuary resource managed under law or regulations for that sanctuary. The NMSA prohibits discharge of brine effluent. The Magnuson-Stevens Conservation and Management Act ("Magnuson Act") requires all federal agencies to protect areas designated as "Essential Fish Habitat." Monterey Bay is designated as "Essential Fish Habitat" under four Fishery Management Plans. In addition, the Marine Mammal Protection Act and the Federal Endangered Species Act protect numerous species that occur in Monterey Bay and in the Study Area in particular.

The area is also protected by several state laws. The California Endangered Species Act, the Marine Life Protection Act, and the Marine Life Management Act all operate to protect species and fisheries in the Study Area and the vicinity of the Project. In addition, the California Ocean Plan ("Ocean Plan") establishes water quality objectives and beneficial uses for waters of the Pacific Ocean within three miles of the California Coast. The Project is subject to all Ocean Plan water quality objectives, including: marine communities, including vertebrate, invertebrate, and plant species shall not be degraded; waste management systems that discharge into the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community; and waste discharged to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments, or organisms.

Of particular relevance here, MBNMS, in collaboration with the California Coastal Commission ("CCC"), Regional Water Quality Control Board ("RWQCB"), and NOAA Fisheries, published a 2010 report entitled *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* ("MBNMS Guidelines"). The MBNMS Guidelines were developed to help ensure that any future desalination plants in the MBNMS would be sited, designed, and operated in a manner that minimizes impacts on the marine environment. Several guidelines are relevant to minimizing impacts on marine resources, as discussed further below.

Marina-63 cont.

2. The Draft EIR/EIS Fails To Adequately Describe The Baseline.

CEQA requires an adequate description of the existing environmental baseline. CEQA Guidelines § 15125(a). In addition, the Ocean Plan requires an assessment of baseline biological conditions before construction of a new desalination plant. *See* State Water Resources Control Board, *California Ocean Plan*, at M.4(a)(2) (2016). The Draft EIR/EIS fails to meet this basic but essential prerequisite of both CEQA and the Ocean Plan in at least three key ways.

Marina-64

First, the Study Area is too narrowly drawn. In particular, the Study Area for marine biological resources should extend to the Monterey/Seaside/Pacific Grove shorelines. The EIR provides no explanation or rational basis for drawing the boundaries as narrowly as it does. To exclude the area extending from the existing Study Area to the Monterey/Seaside/Pacific Grove shorelines, the EIR must explain why the Project will not have direct or indirect impacts south of the northern limits of Sand City. The northern boundary of the Study Area also appears too limited, and the Draft fails to explain why the Project's impacts will not extend beyond the Salinas River. Furthermore, the Study Area appears to extend from the shoreline outward five miles toward the ocean, but the Draft fails to explain why the Project will not have effects beyond those nearshore waters.

Second, the Study Area must be surveyed to determine exactly what the environmental baseline is. For example, the Study Area should be investigated for cold water seeps. The Draft EIR/EIS states there are no "known" cold water seeps in the area (page 4.5-2), but does not clearly state whether the Study Area was actually surveyed for cold water seeps, and if it was not, why it was not. Even more critical is the dearth of information describing the existing environmental baseline near the point of brine discharge. Given the Project's undeniable significant environmental impact on the water quality and marine resources in the area near the discharge, documentation of the environmental baseline in this area is particularly critical. Yet the Draft EIR/EIS merely contains a general, minimal description of the ecosystem in the area.

Marina-65

Indeed, it appears only extremely limited sampling was conducted, which is inadequate to determine the environmental baseline. For example, the Draft EIR/EIS states that analysis of impacts on plankton near the outfall is based on sampling of small zooplankton conducted on one day in Spring 2016 (pages 4.5-6-7). This sampling is wholly insufficient. Sampling should be conducted multiple times, and throughout the year due to the variability in the marine ecosystem as the Draft EIR/EIS states elsewhere (see, e.g., section 4.5.1.1). Also, the Draft

EIR/EIS does not explain why only small zooplankton were surveyed, and why other plankton (e.g., macro zooplankton, phytoplankton) and other organisms (invertebrates, fish, mammals) were not sampled/surveyed. Inadequate data precludes sufficient analysis of impacts, and renders the whole analysis of the Project's brine discharge impacts on marine resources inadequate.

Furthermore, the Draft EIR/EIS should require monitoring and period surveying of the ecosystem in the vicinity of the outfall so that the impacts of the Project can be determined, measured, and mitigated "to the maximum extent feasible," as required by law. *See, e.g.*, Coastal Act, Cal. Pub. Res. Code § 30260.

The Draft EIR/EIS does contain an opaque reference to rocky habitat that "coincides with the ballast rock that is used to secure the MRWPCA outfall on the seabed." *Id.* at 4.5-9. But it is not entirely clear from the language in the Draft EIR/EIS whether this means that productive, species-rich habitat such as that observed during the 2014 NOAA inspection occurs near the outfall: the language on pages 4.5-9, 4.5-11, and 4.5-28 suggests that it does, but then Figure 4.5-2 does not show any hard substrate habitat near the outfall (page 4.5-10). If Figure 4.5-2 is inaccurate, then the Draft EIR/EIS should be recirculated with a corrected version of Figure 4.5-2 that clearly shows all areas where rocky substrate habitat are found in the Study Area. In addition, assuming it is true that a diverse, rich assemblage of organisms lives at the outfall, then this area should be more closely inspected and surveyed to determine what organisms live there and exactly what species' habitats exist near the outfall. The Draft EIR/EIS must also be revised accordingly to address impacts of the Project on these habitats, and mitigate them per CEQA and other legal requirements (*e.g.*, Cal. Pub. Res. Code § 30260).

Marina-65 cont.

Third, the Draft EIR/EIS is inadequate because it fails to explain the basis for determining several species' potential to occur in the Study Area, and/or provides inconsistent information regarding their potential to occur. As a result, any evaluation of impacts to those species is inadequate in that the Draft EIR/EIS fails to recognize their potential presence in the Study Area and thus fails to address potential impacts and mitigate them. For example:

1) **Stellar sea lion.** Because there is a known breeding population of stellar sea lion in the Project vicinity and known occurrences within the MBNMS, there is no rationale for the "Not Expected" potential for occurrence within the Study Area. The Draft EIR/EIS's conclusion here is unjustified at best, and likely incorrect. Moreover, the analysis is insufficient to the extent that no surveys were conducted to determine the presence (or absence) of this species in the Study Area.

2) **Northern fur seal.** Because this species has been observed within 5 km of the Study Area, the Draft EIR/EIS is inadequate in that it fails to explain the assumptions and evidence that support the Draft EIR/EIS's determination that this species is not expected to occur within the Study Area, and because it fails to address impacts on the species due to an incorrect conclusion about its likelihood of occurring in the Study Area.

Marina-66

3) **Northern elephant seal.** Because the Draft EIR/EIS states that this species is widely distributed in MBNMS waters and rookeries are present north and south of the Study Area, the Draft EIR/EIS's conclusion that this species has a low potential to occur within the Study Area appears incorrect. The Draft EIR/EIS is then inadequate because it fails to address impacts on the species due to an incorrect conclusion about its likelihood of occurring in the Study Area. At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has a low potential to occur within the Study Area.

4) **Guadalupe fur seal.** The Draft EIR/EIS states that this species has been sighted in MBNMS waters and stranded on beaches within the Study Area, and yet concludes that this species has a "Not expected to low" potential to occur within the Study Area. This inconsistency suggests the conclusion is incorrect, and that the species actually has a higher potential to occur in the Study Area, and thus the Draft EIR/EIS should analyze impacts to this species. At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has a "Not expected to low" potential to occur within the Study Area.

5) **Minke whale.** The Draft EIR/EIS states that there have been numerous sightings of Minke whale species in nearshore waters of Monterey Bay, and yet concludes that the potential for this species to occur is only "low-moderate." This incongruity suggests the conclusion regarding the species' likelihood to occur is incorrect, and that the species actually has a higher potential to occur in the Study Area (and thus, that the Draft EIR/EIS should analyze impacts to this species). At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has only a low-to-moderate potential to occur.

6) **Olive Ridley sea turtle and Loggerhead sea turtle.** The Draft EIR/EIS is flawed in that it fails to explain what assumptions or evidence (beyond geographic distribution) support the determinations that these species are not expected to occur (Olive Ridley Sea Turtle) or have a low potential to occur (Loggerhead Sea Turtle) within the Study Area. Consequently, the Draft EIR/EIS may be inadequate for failing to analyze potential impacts to these species.

7) **Leatherback sea turtle**. The Draft EIR/EIS asserts in Table 4.5-4 that this species has low potential to occur in the Study Area, but provides no basis for this conclusion. Indeed, the Draft EIR/EIS states that leatherback sea turtles are "most commonly seen in Monterey Bay from July to October" and that <u>all</u> of Monterey Bay is leatherback sea turtle critical habitat (page 4.5-23), which is strong evidence that this species may be seasonally likely to occur in areas affected by the Project. This point must be discussed and impacts to the leatherback sea turtle and its critical habitat must be addressed and mitigated.

Marina-66 cont.

8) **Chinook Salmon (Central California ESU).** If the Draft EIR/EIS is correct that the current range of Chinook salmon still extends into Monterey Bay, why is the potential to occur within the Study Area determined to be low? Shouldn't it be moderate, similar to Chinook winter run? The Draft EIR/EIS appears to be incorrect here, and flawed for not analyzing impacts to this ESU. At the very least, the basis for this determination regarding low potential to occur must be discussed and explained.

9) **Cowcod.** If juveniles were documented within the Study Area, the "potential to occur" determination should be high rather than moderate. The Draft EIR/EIS must explain what assumptions/evidence support the determination that this species has a moderate potential to occur.

10) **Calico rockfish, copper rockfish, gopher rockfish, grass rockfish, kelp greenling, monkeyface prickleback, olive rockfish, quillback rockfish, California scorpionfish, treefish.** The Draft EIR/EIS fails to explain what assumptions and evidence (beyond geographic distribution) support the occurrence determinations for these species. The Draft EIR/EIS must be revised accordingly.

11) **Kelp rockfish.** The Draft EIR/EIS fails to set forth what assumptions/evidence (beyond geographic distribution) support the high potential for occurrence determination for this species. The Draft EIR/EIS must be revised accordingly.

12) **Mammals.** This section appears to be deficient because it fails to provide a detailed explanation for why the additional mammal species known to occur in Monterey Bay are not likely to occur or rarely occur within the Study Area. General geographic distribution is insufficient supporting evidence for potential to occur.

13) **Turtles.** This discussion states that the potential for these species to occur is "very low," which is inconsistent with the potential occurrence determinations in Table 4.5-2. This inconsistency must be resolved and any analysis contingent on the incorrect information/assumptions must be corrected, revised, and/or developed (as appropriate).

14) **Fish.** The sentence that states "Chinook salmon, depending on the run, is State endangered or threatened, federally endangered or threatened and has a moderate to high potential to occur in the Study Area" is inconsistent with Table 4.5-2, which states Chinook salmon have a low to moderate potential to occur. This inconsistency must be resolved and any analysis reliant on incorrect information/assumptions must be corrected. In addition, this section appears to be missing a discussion for tidewater goby and white shark potential to occur within the Study Area: General information is provided, but a discussion related to the Study Area is not. If tidewater goby occurs seasonally in Elkhorn Slough, why is that species identified as only having a low potential to occur? The Draft EIR/EIS is inadequate unless the assumptions and evidence that support this determination are fully explained.

Marina-66 cont.

3. The Draft EIR/EIS's Analysis Of The Impacts Of The MPWSP's Brine Discharges Is Inadequate And Incorrect.

The MPWSP will produce up to 14 *million* gallons *per day* of high-salinity brine discharge during the desalination process. The Project plans to discharge the brine effluent directly into the federally protected Sanctuary. The brine discharges will result in significant adverse impacts to the environment, but the Draft EIR/EIS's assessment and analysis of such impacts is insufficient. First, the Draft EIR/EIS claims the Project would be consistent with the MLMA (page 4.5-39), despite the admission that it would result in the decimation of 2,010-5,900 square meters of market squid habitat (page 4.5-61). The Draft EIR/EIS attempts to label this impact as less than significant by comparing the amount of lost habitat to the total area of suitable spawning ground on the sea floor south of Monterey Submarine Canyon, but there is no justifiable basis for this comparison. Indeed, tellingly, the Draft EIR/EIS completely omits any explanation of why the proper comparison of area is the entire sea floor south of the Monterey Submarine Canyon. In any case, the elimination of so much suitable spawning habitat is certainly a significant impact that must be mitigated. Marina-67 cont.

Although the Draft EIR/EIS admits the Project will have adverse impacts to squid (which the Draft EIR/EIS wrongly describes as less than significant), the Draft EIR/EIS fails to sufficiently consider and analyze impacts to other species in the same area. Instead of conducting a thorough analysis, the Draft EIR/EIS writes off such impacts by referring to "unanticipated effects" on "benthic and pelagic communities in the vicinity of the discharge" (page 4.5-61). This is an inadequate analysis of one of the Project's most significant effects: the brine discharge. The inadequacy of this analysis is likely a result of the Draft EIR/EIS's incomplete and insufficient description of the environmental baseline (see above), particularly in the area where the brine will be discharged. Without inclusion of information necessary to understand the Project's potential impacts, the EIR is defective. *See Berkeley Keep Jets Over the Bay Comm.*, 91 Cal. App. 4th at 1382-83.

4. The Draft EIR/EIS's Conclusion Regarding Impacts To Essential Fish Habitat Under The Magnuson Act Is Fatally Flawed.

As noted in the Draft EIR/EIS, "*All* of the coastal waters of Central California and Monterey Bay are identified as Essential Fish Habitat for [several fish species]." *Id.* at page 4.5-24 (emphasis added). As such, all federal agencies are *required* to protect these areas under the Magnuson Act. The Draft EIR/EIS summarily states that the Project "would be consistent with the MSA because the construction and operational impacts of the proposed project are not expected to result in any degradation of essential fish habitat within Monterey Bay" (page 4.5-31), but fails to support this with any data or substantive analysis. This clearly violates both CEQA and NEPA, which require that documents' conclusions regarding environmental impacts be based on actual scientific information and that agencies take a "hard look" at potential adverse environmental impacts. Marina-68

5. The Analysis Of Impact 4.5-1 Is Inadequate.

The Draft EIR/EIS must clarify if the ambient underwater noise levels present in the San Francisco study are similar to or substantially different from the ambient underwater noise levels present in the Study Area. The Draft EIR/EIS must also clarify whether the temporary change in noise levels from ambient conditions as a result of Project construction is expected to be consistent. If there is a potential risk for accidental discharge of drilling fluids into the marine environment from the use of drilling additives during drilling of the slant wells, which could constitute a significant impact to marine resources, the Draft EIR/EIS must identify and require any available mitigation to address that potential accidental condition. If no mitigation is required, the Draft EIR/EIS must clarify why mitigation would not be appropriate or feasible to prevent what could be a significant adverse impact to marine resources. Marina-69

Also, the Draft EIR/EIS is unclear as to whether changes in underwater noise levels were measured during construction of the test slant well. If they were, the results of those measurements and any increase in noise should be included in the Draft EIR/EIS and that data should be incorporated into the analysis of impacts to marine biological resources.

CHAPTER 4.6 – TERRESTRIAL BIOLOGICAL RESOURCES

A. The Draft EIR/EIS's Analysis Of The Project's Impacts On Terrestrial Biological Resources Is Inadequate.

1. The Project Has Significant Adverse Impacts On Terrestrial Biological Resources Because It Permits Development Inconsistent With The LCP And The Coastal Act.

The dune habitats in the Project area support several rare and endangered plant and wildlife species. The City's Local Coastal Plan ("LCP") requires any development within protected species' habitat to be evaluated at a project-specific level to determine the presence of "Primary Habitat" and "Secondary Habitat" areas. Primary Habitat includes "habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species" and "all native dune vegetation, where such vegetation is extensive enough to perform the special role of stabilizing Marina's natural sand dune formations." City of Marina, Ca, *Coastal Plan* (1982). Secondary Habitat (or support habitat adjacent to areas of Primary Habitat) must also be identified. Marina-70

The LCP mandates that Primary Habitat be protected and preserved. The City's LCP prohibits development in Primary Habitat that is not protective of and dependent upon that habitat: "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas." *Id.* All development in Secondary Habitat must be sited and designed to prevent significant adverse impacts on the adjacent Primary Habitat areas.

In 2014, SWCA identified Primary and Secondary Habitat in the Project area. Section 4.6.10 inaccurately reflects the location of primary habitat within the CEMEX Property and is inconsistent with the conclusion of the California Coastal Commission in its review of the test slant well. In the staff report for the test slant well California Department of Public Health ("CDP") permit application, the CCC found that although the project is proposed to be located in portions of the CEMEX Property that have been subject to disturbance, the entire area in which the Project would be located is primary habitat and ESHA under the LCP. Therefore, the Draft EIR/EIS is inadequate in that it omits or understates the severity of potentially significant impacts to primary habitat and ESHA.

Despite the CCC's finding in its staff report for the test slant well and the plain language of the City's LCP, the Project proposes to locate several project components in areas classified as Primary and Secondary Habitat. Accordingly, the Project would result in direct impacts to both Primary and Secondary Habitat.

For example, the Project's activities would disturb nesting habitat for the Western snowy plover (federally listed as threatened and also a California species of special concern), host plants for Smith's blue butterfly (federally listed as endangered and protected under the Endangered Species Act ("ESA")), and sandy habitat for the silvery legless lizard (a California species of concern). Project activities would also exacerbate dune erosion and could result in spills of hazardous materials in sensitive habitat areas. Moreover, construction and operation of the subsurface slant wells would permanently disturb up to six acres of central dune scrub and ice plant mats. And the full construction impact area would be disturbed anew every five years when slant well heads would need maintenance. *Id.* at 4.6-235. This would amount to a permanent loss of habitat for the special-status species that have the potential to re-colonize the slant well head area.

Marina-70 cont.

In addition, construction of the Source Water Pipeline, Desalinated Water Pipeline, Transmission Main, and the staging area at Beach Road have the potential to temporarily adversely impact Primary and Secondary Habitat. As the Draft EIR/EIS admits, there is no way to reduce these impacts to a less than significant level. The Draft EIR/EIS proposes compensatory mitigation to reduce the impacts on special-status species habitat, but there are numerous problems with the proposed mitigation measure, as discussed below in our comments relating to chapter 4.8. In sum, the Project is inconsistent with the LCP's habitat protection requirements and cannot be approved as proposed.

Recognizing this irreconcilable conflict, the Draft EIR/EIS suggests that this legal obstacle to the Project may be circumvented because Section 30260 of the Coastal Act "encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned." The CCC relied on this provision in its prior approval of one test well at the CEMEX location. *Id.* at 4.6-224. However, the Project contemplates a vastly greater impact area than was at issue with just one test well, and it is highly unlikely that it would apply to permit the Project when there are alternatives that avoid such fatal flaws. Moreover, operation of the test well has revealed the Project would have several significant adverse impacts not anticipated at the time of approval of the test slant well.

2. The Draft EIR/EIS Fails To Provide An Adequate Description Of The Environmental Baseline.

CEQA requires an adequate description of the existing environmental baseline. CEQA Guidelines § 15125(a). The Draft EIR/EIS fails to meet this fundamental and critical prerequisite to an adequate analysis of impacts to biological resources. The designated Study Area encompasses only a 50-foot buffer around the Project area. The Draft EIR/EIS offers only this explanation of the boundary: "A 50-foot buffer around the project area was established as the survey area to ensure biological resources within the project area and immediate adjacent vicinity were assessed for potential direct and indirect project impacts." But the Study Area must be large enough to enable an accurate assessment of the environmental baseline. A 50-foot buffer is undoubtedly insufficient. For example, noise impacts from construction will travel beyond 50 feet and may adversely and significantly impact special status animal species.

Marina-71

3. The Draft EIR/EIS's Analysis Of The Impacts Of The Subsurface Slant Wells Is Inadequate.

Section 4.6.5.1 reflects an analysis of the old project design, including references to an electrical control panel and electrical control building. The analysis must be revised to account for the current proposed Project design. Once the analysis has been updated to accurately reflect the Project, the Draft EIR/EIS must be recirculated to the public can review and comment on the analysis.

This section also inaccurately describes the location of the slant wells at "the eastern side of the vegetated sand dunes." In fact, the slant wells would be constructed in the middle of the large dune complex that comprises the CEMEX Property. Construction of the slant wells would require increased disturbance and human activity in the center of this highly sensitive dune complex. Per this section, the increased disturbance and human activity could occur year-round during construction. Due to the intrusive type and duration of construction activity, the Project could have indirect long-term effects on the behavior of sensitive species in this area of dunes, particularly Western snowy plover. These impacts are improperly dismissed in the Draft EIR/EIS as "temporary." These impacts must be fully analyzed and disclosed in the Draft EIR/EIS. The potential effects of one year (or more) of excavating, drilling, and other slant well construction activities on sensitive species in the long-term must be evaluated.

Throughout this section and others, the Draft EIR/EIS states that the disturbance area for construction of the well "may overlap" with a portion of the Source Water Pipeline disturbance area. Why has it not been determined whether or not these areas overlap? This information should be readily available and the quantified areas of disturbance must be disclosed.

Marina-72

4. The Draft EIR/EIS's Analysis of Impacts 4.6-1 And 4.6-2 Is Inadequate.

These sections fail to identify and address potential impacts to special status species and sensitive habitats as a result of the proposed disposal of up to 100 cubic yards of drilling spoils within the dune habitat at the CEMEX Property as a result of slant well drilling. This proposed

Marina-73

Project component must be identified in this section and analyzed as a potentially permanent disturbance of sensitive habitat and what extent that disturbance could affect sensitive species in the area of disposal and surrounding areas. Adverse impacts related to the type and quantity of material to be disposed of in the on-site dunes (ESHA) should be clearly identified and mitigated. Once properly accounted for in the Draft EIR/EIS, these new and more severe impacts must be analyzed and the document then recirculated for public review.

Marina-73 cont.

5. The Analysis of Impact 4.6-C Is Inadequate.

The discussion of Impact 4.6-C inadequately analyzes the Project's potential cumulative impacts on native dune habitat and central dune scrub. The analysis incorrectly determines that cumulative impacts would be less than significant with mitigation due to the (1) limited extent and duration of effects at any MPWSP component site, (2) the prevalence of such habitats within the geographic scope of analysis relative to the areas of the MPWSP effect, and (3) the nearby availability of such habitats for use by species displaced during the construction period. The purported evidence of a less than significant cumulative impact in item number (1) fails to account for the permanent and ongoing operation-related disturbance that would occur in sensitive native dune areas at the CEMEX site. Item number (2) fails to reflect that native dune habitat and central dune scrub are limited and finite resources. According to the Western Snowy Plover Recovery Plan (USFWS 2007), the management potential for plovers in the Lonestar Beach subarea is second only to the Salinas River National Wildlife Refuge (Zander 2013).

Marina-74

Therefore, plover habitat comparable to that at the CEMEX (formerly Lonestar) Property may only be located in one other place in Central California: the Salinas River National Wildlife Refuge. The purported "prevalence" of these habitats in the project vicinity, and the nearby availability of such habitats for use by displaced species, both during construction and permanently as a result of Project operations (though not considered in the Draft EIR/EIS) is a gross misstatement. The permanent loss of 6 acres of coastal dune scrub, native dune habitat, and snowy plover habitat is a considerable contribution to cumulative loss of habitat for this species statewide. In fact, it is difficult to imagine a project that would result in greater cumulative impacts to this species. Based on the historic cumulative loss of suitable habitat and decline in species population, the Project's cumulative impacts to Western snowy plover and its habitat should be considered significant and unavoidable.

6. The Analysis of Operational And Siting Impacts Is Inadequate.

Section 4.6.5.2 fails to address the adverse effects that would occur as a result of routine maintenance and grading of the slant well access road. Due to the shifting nature of the dunes, the access road would require regular grading and maintenance. The Draft EIR/EIS fails to identify the level of disturbance necessary to maintain the road to provide access and accommodate routine inspections and site visits at the slant well heads conducted in addition to the 5-year periodic maintenance activities. The evaluation of operational impacts is invalid because it fails to account for potentially significant adverse effects that would result from this activity.

Marina-75

7. The Analysis of Impact 4.6-6 Is Incorrect And Inadequate.

It is unclear why or how the Draft EIR/EIS determined that only 1.6 acres of Smith's blue butterfly habitat would be disturbed during ongoing maintenance activities. Coast buckwheat, host plant for Smith's blue butterfly, occurs throughout the CEMEX Property and has the potential to occur throughout the entire 6 acre area of disturbance. Unless it can be clearly established that the majority of the disturbance area does not provide habitat for Smith's blue butterfly, the Draft EIR/EIS significantly understated the level of impact to Smith's blue butterfly habitat. The Draft EIR/EIS should identify the actual amount of habitat that would be affected; if all six acres of the disturbance area would be affected, the Draft EIR/EIS should be revised to accurate state the level of impact and recirculated to disclose the substantial increase in the severity of this effect.

Marina-76

The discussion of Impact 4.6-6 also fails to explain how and to what extent identified mitigation measures would be applied prior to each five-year slant well maintenance operation. Would a new Hazardous Materials Management Plan ("HMMP") and compensatory mitigation be required each time to minimize impacts related to project disturbance?

B. The Draft EIR/EIS's Mitigation Of The Project's Impacts On Terrestrial Biological Resources Is Inadequate.

1. The Project's Mitigation Measures Are Inadequate Because They Are Not Enforceable.

CEQA mandates that proposed mitigation measures be "fully enforceable." Cal. Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2). Several of the proposed mitigation measures directly contravene this CEQA requirement, thus invalidating each of the Draft EIR/EIS's conclusions regarding the significance of the Project's adverse environmental impacts that rely on any of the mitigation measures suffering from this critical flaw.

First, the Draft EIR/EIS's General Avoidance and Minimization Measure (MM 4.6-1c) states that erosion shall be remedied, but fails to specify what counts as erosion, how the erosion shall be remedied, and fails to set performance standards for determining whether the erosion has in fact been remedied. (page 4.6-166). Perhaps most notably, the language of the mitigation measure limiting erosion that must be remedied to only erosion that has been "detected" without requiring any kind of monitoring for erosion (at all, much less someone qualified to monitor for such impacts), guts any mitigation this measure could have possibly effected. Thus, this mitigation measure is wholly inadequate to minimize erosion impacts to less than significant levels.

Marina-77

Mitigation Measure 4.6-2b suffers from a similar flaw. This measure purports to reduce direct impacts on sensitive natural communities and the special-status species that utilize them. However, it is completely inadequate to do that. The specific measures in MM 4.6-2b are all subject to the significant caveat, "to the extent feasible" (see page 4.6-207), which—as with MM 4.6-1c—essentially guts the mitigation measure. Without any standard for what constitutes

feasibility or non-feasibility, the developer and its contractors are free to completely disregard these mitigation measures by claiming compliance is not feasible. Furthermore, specific elements of this mitigation measure contain even more feasibility qualifiers, such as for salvaging topsoil "to the extent feasible." *Id.* at page 4.6-208. In addition, see, for example, page 4.6-131 (purported avoidance of special-status plants and host plants only "to the extent feasible"); page 4.6-134 (supposedly avoiding impacts on non-nesting birds by limiting construction to the non-nesting season only "when feasible'); page 4.6-137 (similar).

Mitigation Measure 4.6-1j relating to badgers contains the same critical flaw. This measure provides:

> 4. If the biologist determines that any potential dens identified during the preconstruction surveys are inactive, the biologist shall excavate the dens by hand with a shovel to prevent use by badgers during construction.
>
> 5. If active badger dens are found during the course of preconstruction surveys, the following measures shall be taken to avoid and minimize adverse effects on American badger:
>
> a. Relocation shall be prohibited during the badger pupping season (typically February 15 to June 1).
>
> b. Construction activities shall not occur within 50 feet of active badger dens. The Lead Biologist shall contact CDFW immediately if natal badger dens are detected to determine suitable buffers.

Marina-77 cont.

As written, these measures do not provide a reasonable threshold or parameter for the biologist to determine that the den(s) is inactive. The survey would likely be conducted in the daytime, when any badgers are down in the den; therefore, the biologist would not be able to verify the den is inactive before collapsing the den. Accordingly, this measure should be revised to include the use of game cameras on the potentially active den(s) for at least three nights prior to the den(s) being collapsed. Then, only after badgers were not photographed entering or leaving a den for three nights, may that den be collapsed.

In sum, the Draft EIS/EIR's mitigation—and thus the impact conclusions relying on such mitigation—is inadequate under the law. All mitigation measures containing "requirements" that would only be implemented "to the extent feasible," "to the extent possible," or "where practicable" (or similar) must be reassessed to determine the actual extent the measures would be implemented and rewritten accordingly. Only after the level of actual implementation has been determined can a valid analysis be conducted on whether and to what extent significant adverse impacts have been mitigated.

2. Mitigation Of Impacts On Protected Bird Species Is Inadequate.

The Project area includes significant Western snowy plover habitat, such as the CEMEX Property to be disturbed by the proposed slant well construction, operation, and maintenance. *Id.* at 4.6-50, 4.6-129. The Project area also includes "numerous" native birds protected under the MBTA and California Fish & Game Code (4.6-41, 59-62), including habitat of California species of special concern, the tricolored blackbird, the short-eared owl, and the western burrowing owl (4.6-59-60). There is no doubt that the Project has the potential to have a very significant adverse impact on these bird species. *See, e.g.*, 4.6-129-131.

While the Draft EIR/EIS contains mitigation measures purportedly designed to reduce impacts to these species, these mitigation measures are wholly inadequate. First, MM 4.6-1i, Avoidance and Minimization Measures for Nesting Birds, is insufficient to mitigate the Project's impacts on nesting birds. The preconstruction surveys are only required within 14 days of the commencement of construction, leaving two full weeks for birds to start nesting in between the survey time and the start of construction. This mitigation measure must be revised to require surveys to be conducted within no more than 48 hours of the commencement of construction. In addition, the MM should be revised to specify what type of survey methodology is required.

Marina-78

MM 4.6-1h, Avoidance and Minimization Measures for Western Burrowing Owl, is also inadequate as currently proposed. First, as noted for MM 4.6-1i, this MM should be revised measure to require surveys to be conducted within no more than 48 hours of the commencement of construction. Permitting construction to start 14 days after surveys were conducted is not sufficiently protective of the species. Second, the MM currently states that temporarily disturbed habitat shall be restored to pre-construction conditions, "if feasible." But as discussed above, without a clear standard as to what "feasible" means, this mitigation measure is fatally vague and fails to guarantee any *effective* mitigation.

In addition, Mitigation Measure 4.6-6 is inadequate because it fails to make implementation of bird deterrents enforceable, by requiring that such deterrents "should" be used rather than "shall" be used. The use of bird deterrents should be made a requirement, not a suggestion, in order to ensure mitigation is enforceable and will actually reduce adverse impacts to a less than significant level.

3. Mitigation Of Impacts To Sensitive Communities And Their Special-Status Plant And Animal Inhabitants Is Inadequate.

The Draft EIR/EIS identifies potential impacts to sensitive communities and special-status plants and animals that occupy or may occupy the communities. Some of these impacts will require the Project proponent to obtain an Incidental Take Permit under the California Endangered Species Act ("CESA") and an Incidental Take Statement under Section 7 of the Federal Endangered Species Act ("ESA"). The impacts to sensitive communities and special-status resources are expected to vary from permanent loss of habitat and species individuals to temporary disturbance of habitat or species individuals. However, the Draft EIR/EIS does not

Marina-79

quantify the amount of permanent impact or temporary impact to sensitive communities and/or species.

To reduce these impacts to less than significant levels under CEQA, the Draft EIR/EIS heavily relies on the preparation and implementation of a Habitat Mitigation and Monitoring Plan (Mitigation Measure 4.6-1n). Mitigation Measure 4.6-1n requires the Habitat Mitigation and Monitoring Plan ("HMMP") to be reviewed and approved by the permitting agencies. Since the Project is anticipated to result in permanent impacts, the HMMP is supposed to address the need for compensatory mitigation (Item 17 in MM-4.6-1n).

However, because the Draft EIR/EIS does not quantify the anticipated permanent impacts to the sensitive resources, the Draft EIR/EIS cannot verify that the Project proponent has, under its ownership or via other property rights, sufficient lands to implement compensatory mitigation for permanent impacts to sensitive resources at a ratio that is adequate to reduce the impacts to less than significant levels under CEQA. In order for the proposed mitigation to adequately reduce the identified impacts to be less than significant, the Draft EIR/EIS must include the following:

1. Quantification of permanent and temporary impacts to sensitive resources;
2. Ratios for mitigating the estimated impacts;
3. Methods of mitigating the identified impacts (restoration, enhancement, land acquisition, preservation, etc.);
4. Success standards for the proposed mitigation measures and an enforcement mechanism that ensures those standards are met;
5. Contingency measures that will be triggered if the success standards are not achieved; and
6. Identification of available, accessible mitigation lands.

Marina-79 cont.

Due to the size of the Project, magnitude of potential impacts, and the need for an Incidental Take Permit from the California Department of Fish & Wildlife ("CDFW"), it is likely that the HMMP will need to include the acquisition and transfer of habitat management lands. The Draft EIR/EIS is flawed in that it fails to identify whether the Project proponent has the lands required to implement compensatory mitigation. *See, e.g., Kings Cty. Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 727 (1990) (mitigation agreement that called for purchases of replacement groundwater supplies without specifying whether water was available was inadequate measure for mitigating project's effect on groundwater supplies). The Draft EIR/EIS needs to quantify the potential impacts, propose mitigation ratios for the impacts, and identify where and how the impacts will be mitigated in sufficient detail to verify that the Project proponent has the means to implement the HMMP. Without this verification, MM-4.6-1 may not be feasible or adequately mitigate impacts. As a result of the above deficiencies, the Draft EIR/EIS's conclusion that the permanent and temporary impacts to sensitive communities and special-status species are mitigated to less than significant is incorrect and invalid.

This measure also improperly defers mitigation by failing to identify appropriate performance standards that would be included in the HMMP to ensure that any potential impacts would be mitigated to less than significant levels. This contravenes CEQA, which mandates that mitigation not be deferred unless the relevant measure specifies performance standards and further action to carry the project forward is contingent on meeting those specific performance criteria. CEQA Guidelines § 15126.4(a)(1)(B); *Endangered Habitats League, Inc. v. Cty. of Orange*, 131 Cal. App. 4th 777, 794 (2005) (rejecting mitigation measure that did not include any criteria or standards); *Sacramento Old City Ass'n v. City Council*, 229 Cal. App. 3d 1011, 1029 (1991) (mitigation may only be deferred if specific performance criteria are articulated at the time of project approval and the project may not move forward unless it meets them).

Marina-79 cont.

Mitigation Measure 4.6-1 not only defers the preparation of the HMMP, but also defers identification of appropriate performance standards "by which successful completion of mitigation can be assessed in comparison to a relevant baseline . . . and by which remedial actions will be triggered." But if the performance standards are not known, it cannot be determined that they would adequately reduce potentially significant impacts to less than significant levels. Thus, this impact must be properly mitigated or identified as significant and unavoidable. Any added performance standards must be recirculated so they public, interested stakeholders, and Responsible Agencies have the opportunity to comment on the feasible ways to mitigate or avoid the substantial adverse effect.

Many of the impacts identified in this section rely back on Mitigation Measure 4.6-1n to support a less than significant impact determination. Each of these determinations is inadequately supported due to the multiple shortcomings of this measure.

4. Mitigation Measures Involving Capture And Relocation Must Be Revised.

Mitigation Measure 4.6-1o requires capture and relocation of ESA and CESA protected species, but does not clearly state that ESA and CESA issued incidental take permits are necessary prior to capturing these species. The EIR section does identify the need for the applicant to obtain an Incidental Take Permit ("ITP"); however, this requirement is not carried into the mitigation measure. This mitigation measure should be revised to include requirements for the Project to be covered by ITP and to clarify that the implementing biologist must be approved under the ITP.

Marina-80

Similarly, Mitigation Measure 4.6-1g states: "The Lead Biologist shall appoint a qualified biologist possessing a Scientific Collecting Permit issued by CDFW for black legless lizard, silvery legless lizard, and coast horned lizard to conduct preconstruction surveys for legless lizards and coast horned lizards within 24 hours prior to the initiation of ground disturbing activities or vegetation clearing in suitable habitat…" However, possession of a CDFW Scientific Collection Permit does not authorize an individual to capture and/or relocate sensitive species for CEQA compliance. Thus, this measure does not adequately mitigate impacts on these lizard species.

5. Mitigation Measures Must Be Revised To Correct Improper Deferral Of Mitigation.

Numerous measures throughout sections 4.6.5.1 and 4.6.5.2 improperly defer to the discretion of United States Fish & Wildlife Service ("USFWS") and CDFW to define the extent and limits of what would be required as mitigation. These mitigation measures are inadequate because identified minimum performance standards are not defined in a way that would be enforceable by the lead agencies. Minimum performance standards are provided in an exemplary manner, subject to future reduction or removal by CDFW or USFWS. In the absence of enforceable mitigation measures, it cannot be stated that impacts would be reduced to less than significant. These measures should be rewritten to identify the minimum performance standards with certainty that would be met by CalAm and which could not be further reduced through future negotiations with outside regulatory agencies. Until the minimum mitigation possible is identified (i.e., compensatory mitigation ratios of no less 2:1 would be required), it cannot be established whether mitigation would reduce potentially significant impacts to less than significant levels.

Marina-81

6. Mitigation Measure 4.6-1d Is Inadequate.

This measure states that CalAm will identify and secure access rights and other approvals to implement the HMMP. CalAm's ability to secure access rights and necessary approvals may not be feasible, rendering this mitigation potentially infeasible. The Draft EIR/EIS does not provide substantial evidence that suitable, similarly valuable, dune habitat is available for compensatory mitigation in the Project vicinity. Most of the dunes on the Monterey Peninsula have been disturbed or lost due to population growth and development. The dune complex at the CEMEX Property constitutes one of the biggest and best preserved stretches of dune habitat in the entire County and Central California. The Draft EIR/EIS fails to identify the lack of comparable areas suitable for compensatory mitigation as a constraint to implementation of mitigation and improperly concludes that the identified mitigation would reduce potential impacts to a less than significant level. As a result, Mitigation Measure 4.6-1d is flawed and must be redone. *See, e.g., Kings Cty. Farm Bureau*, 221 Cal. App. 3d at 727 (mitigation agreement that called for purchases of replacement groundwater supplies without specifying whether water was available was inadequate measure for mitigating project's effect on groundwater supplies).

Marina-82

This measure requires annual monitoring to ensure restoration is successful but fails to identify appropriate performance standards for "success" or the duration of annual monitoring. Would monitoring in perpetuity be required to ensure the restored area of dunes is forever preserved and protected for the benefit of the sensitive species that rely on this habitat? The failure to identify standards on which the determination of "successful" restoration would be met renders this mitigation measure useless; it is impossible to determine whether restoration activities as required by identified mitigation measures would, in fact, reduce significant impacts resulting from the disturbance and permanent loss of ESHA during project construction. Therefore, this impact should be considered significant and unavoidable. Even the proposed

mitigation ratio of 2:1 is not made mandatory by the measure, which provides that this ratio could always be renegotiated at a later date. CEQA does not allow a lead agency to merely cite to later processes and approvals (i.e., from USFWS) to establish that an impact would be properly mitigated. If USFWS fails to require adequate mitigation and restoration, the impact would be significant and unavoidable. Deferral of mitigation is prohibited where the agency fails to commit itself to specific performance standards. *See POET, LLC v. State Air Res. Bd.*, 218 Cal. App. 4th 681, 688 (2013) (an agency must commit to "specific performance criteria for evaluating the efficacy of the measures implemented"). At the very least, an EIR must identify methods the agencies will consider for mitigating impacts, and indicate the expected outcome. CEB, *Practice Under the California Environmental Quality Act* § 14.12, p. 14-18.

This measure also provides for alternative mitigation through the payment of funds to a mitigation bank. There is no logical reason provided to show why on-site restoration activities should not also be required to mitigate significant impacts on sensitive species and ESHA to the greatest extent feasible. Restoration should be a required and enforceable mitigation requirement in the Draft EIR/EIS regardless of whether in lieu fees are also required. Due to the permanent loss of dune habitat and ESHA at the site that can never be restored, both restoration and payment of in lieu fees should be required.

The Draft EIR/EIS states that this measure would apply to periodic maintenance of the subsurface slant wells but does not provide any explanation of how that would minimize impacts. Would a separate HMMP be prepared prior to every occurrence of 5-year maintenance activities? Would the HMMP consider disturbance associated with maintenance "new" disturbance, subject to the restoration and compensatory mitigation requirements? This creates an even more blatant feasibility concern, as the area of disturbance for routine maintenance (6 acres) would require CalAm to find 12 acres of land (assuming a 2:1 ratio) suitable for compensatory mitigation every 5 years, or approximately 96 acres of dune habitat for restoration and ongoing monitoring into perpetuity over an estimated 40-year Project lifespan. Do the Project proponents have any evidence to support the feasibility of this requirement? If the identified mitigation is infeasible, the impact should be identified as significant and unavoidable. The mere payment of fees for protection of off-site resources would not reduce the impacts to sensitive biological resources and ESHA to less than significant levels.

Numerous additional mitigation measures in this section state that the measure would also apply to periodic maintenance of the subsurface slant wells. The Draft EIR/EIS must explain exactly how those measures would be applied and whether or not CalAm would be required to meet the full extent of every measure prior to each 5-year periodic maintenance period. The Draft EIR/EIS's failure to do so makes it impossible to determine whether impacts resulting from periodic maintenance would in fact be reduced to less than significant. Failure to include this information also deprives the public of a meaningful opportunity to comment upon substantial adverse environmental effects of the Project and feasible ways to mitigate or avoid such effects.

Marina-82 cont.

7. Mitigation Measure 4.6-1e Should Apply More Broadly.

Mitigation Measure 4.6-1e should apply to all Project areas that contain sensitive plan species and/or habitats. The Draft EIR/EIS's failure to include this measure for Project components other than the Terminal Reservoir inadequately mitigates the extent of impacts. Marina-83

CHAPTER 4.7 – HAZARDS AND HAZARDOUS MATERIALS

A. This Section Fails To Properly Analyze Project Inconsistencies With Hazardous Waste Regulations And Describe How They Will Be Resolved.

Many of the consistency determinations throughout chapter 4.7 state that, because contractors would be required to comply with the relevant regulations, the Project would be consistent with those regulations. This reasoning is circular and not useful. There is no attempt to establish that the proper procedures and protocols are in place to ensure the contractor would follow the required regulations and the Project would be consistent with the referenced regulations. There is no evaluation as to whether Project redesign or modifications would be necessary to ensure compliance with a particular regulation, the impacts of which would need to be evaluated in the Draft EIR/EIS.

Section 4.7.2 states that contractors are required to comply with the water main separation regulations in Cal. Code Regs. tit. 22 § 64572, which would make the Project consistent. This is circular and not useful, as described above. In addition, this section states that new water supply lines shall not be within 10 horizontal feet of any parallel pipeline carrying secondary-treated wastewater. The proposed source water pipeline runs parallel in very close proximity to the existing MRWPCA outfall (which conveys treated wastewater) and in at least one location, crosses the outfall. It is physically impossible for the crossing location to comply with Section 64572 regulations and it is unclear whether the remainder of the source water pipeline maintains the required 10-foot minimum distance from the outfall. This issue should be clarified and the proposed means for addressing the inconsistency must be identified and analyzed in the Draft EIR/EIS. Are exceptions to this requirement permitted? Would Project redesign be required to ensure consistency? Marina-84

The analysis of "Chapter 15.56 – Digging and Excavation the Former Fort Ord" in Table 4.7-3 states that the Project would be potentially inconsistent with this policy. Regardless of whether previously unknown contamination may be discovered, there is no reason why the Project should not be required to comply with this policy. The policy requires acquisition of permits prior to disturbance, special standards and procedures prior to digging and excavation, and standard noticing and reporting requirements. The potential for discovery of previously unknown contamination would not create inconsistency with this policy; any potential inconsistency with this policy reflects inadequate mitigation of potential project effects and/or failure to comply with required City of Marina Municipal Code special standards and procedures.

In addition, this table states that the Project would be consistent with City Municipal Code Section 8.12.050, which sets registration and filing requirements for any use that involves hazardous materials for any one time during the year. The Project would require containment of hazardous materials during construction and routine maintenance of the slant wells, resulting in a potential inconsistency with this policy. The analysis seems to assume the requirement only applies to long-term storage of hazardous materials. This section should be rewritten to address short-term storage of hazardous materials and the application of this code section to those uses.

Marina-84 cont.

B. The Draft EIR/EIS Fails To Analyze Project Interference With Adopted Emergency Response Plans.

Section 4.7.3 screens out analysis of the Project's potential to physically interfere with an adopted emergency response plan or emergency evacuation plan. As discussed in section 4.9.6, the Project would result in significant and unavoidable traffic and circulation impacts during Project construction due to increased traffic and transportation network disruptions and potentially concurrent construction of the Project and other foreseeable projects listed in Table 4.1-2. The section states, "concurrent construction of these projects could create traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways. Access to adjacent land uses and streets for both general traffic and emergency vehicles could be disrupted." These identified effects indicate that the Project could physically interfere with an adopted emergency response plan or emergency evacuation plan due to significant and unavoidable traffic impacts.

Marina-85

The Draft EIR/EIS should include a thorough evaluation of this issue, including a discussion of any applicable emergency response and evacuation plans, identification of the evacuation areas included in those plans, discussion of the emergency response and evacuation routes identified in the plans, identification of alternative emergency response and evacuation routes in the event of loss of access due to Project-related impacts (lane closures and/or access restrictions due to increased congestion), and evaluation of identified measures that would be implemented to ensure no significant impacts would occur (if feasible).

C. There Are Other Deficiencies In The Hazardous Waste Impact Analysis.

Section 4.7.4

The approach to this analysis is inadequate in that it only assumes that "[s]ignificant impacts would occur if the location or activities of project components resulted in conflicts with known hazardous materials sites." Project-related conflicts with unknown hazardous materials sites could result in significant, adverse, and in fact, catastrophic, environmental effects. Other significant impacts, not related to any hazardous materials sites (known or unknown) could also occur due to project construction and operation. The approach to this section should be revised and the analysis revised as necessary to account for all potentially significant impact thresholds identified under CEQA.

Marina-86

Section 4.7.5.1

This section inadequately addresses the potential for frac-out during drilling operations. Frac-out is a potential concern when horizontal directional drilling ("HDD") is used, as is proposed in certain locations throughout the Project area. These areas should be evaluated to determine their sensitivity in the event of a frac-out. If sensitive resources (biological, cultural, hydrological) are present in the areas of proposed HDD, the Draft EIR/EIS must identify potential frac-out as a potentially significant impact to these resources and mitigate the impact accordingly. The Draft EIR/EIS does not specify what type of "drilling fluid" would be used during HDD, but even non-toxic materials such as bentonite (a fine clay material commonly used as a drilling lubricant) can adversely affect sensitive resources. Marina-87

Mitigation Measures 4.7-2a and 4.7-2b

These measures are inadequate in that they do not identify appropriate performance standards that would have to be met in order to ensure potential impacts are mitigated to less than significant. For example, Measure 4.7-2a states that maximum exposure limits for known and reasonably foreseeable site chemicals would be summarized, but there is no requirement that the exposure limits meet acceptable public safety thresholds. Measure 4.7-2b does not include any maximum exposure limits and fails to incorporate RWQCB or California EPA human health screening levels; thus, the measure fails to mitigate a potentially significant impact to worker and human health, and also confirms that the Project would be unnecessarily inconsistent with the identified Environmental Screening Levels ("ESLs") and California Human Health Screening Levels ("CHHSLs") discussed in section 4.7.2.2. Marina-88

Mitigation Measure 4.7-2b

Why does this measure not apply to the slant wells? The Draft EIR/EIS does not support a basis for determining that the potential for exposure to hazardous materials is decreased or absent at this location and, therefore, the mitigation is needed at the slant well location. Since the drilling spoils are proposed to be disposed of on-site by percolating and spreading the excavated material across the sensitive dune sands, the potential for impacting sensitive biological resources as a result of hazardous contamination is increased at this location, justifying more stringent mitigation controls. Marina-89

Impact 4.7-3

This impact discussion understates the potential significance of an unanticipated discovery and detonation of unexploded ordnance, a situation which could not only cause extensive damage to the surrounding environment, but that could also be fatal. Despite compliance with all identified regulations (which is the only mitigation identified to minimize this potential impact), there is still a possibility that a Project-related disturbance in the former Fort Ord Seaside MRS could result in the inadvertent detonation of unexploded ordnance ("UXO"). The Draft EIR/EIS should require that all remedial actions to take place within the Marina-90

proposed area of disturbance should be completed prior to any Project-related disturbance. This requirement would reduce the potential for unanticipated discovery of UXOs due to Project construction. Alternatively, this impact should be considered significant and unavoidable and risks associated with disturbance within the Seaside MRS should require the lead agencies to make overriding considerations. Marina-90 cont.

Impact 4.7-5

Impacts under this section related to the potential unanticipated disturbance and detonation of UXOs and resulting potential wildfires that could occur, are similarly understated. Although the potential for the impact to occur is reduced through compliance with existing regulations, the potential is not eliminated and the resulting effect would be severe. The Draft EIR/EIS should identify all feasible mitigation available to avoid and minimize this potential impact, including for example, a requirement that site remediation activities be completed before Project-related disturbance is allowed within the Seaside MRS. Alternatively, this potential impact should be considered significant and unavoidable. Marina-91

Section 4.7.5.2, ASR-5 and ASR-6 Wells, and Terminal Reservoir

This section does not adequately address potential groundwater impacts associated with injection of chlorinated water into groundwater aquifers. The Draft EIR/EIS cites to a single test injection well to support a determination of less than significant impacts that could result from proposed injections; the test injection well showed that by-products increased during the first 60 days of storage before declining slowly over the following 90-150 days (3-5 months). The Draft EIR/EIS should, first and foremost, identify the location of the test injection well; second, discuss the factors that cause the formation of disinfection by-products as a result of injection; and third, provide substantial evidence that supports the assumption that conditions and findings at the test injection well would apply and be consistent with potential effects at the proposed ASR injection locations. The fact that groundwater extracted for drinking water supply would have to meet drinking water requirements does not mitigate potential groundwater contamination impacts related to groundwater injection. Marina-92

Section 4.7.6

This section fails to address potential cumulative effects of the Project related to the physical interference with an adopted emergency response plan or emergency evacuation plan. This issue area must be evaluated in the Draft EIR/EIS, particularly in consideration of the identified significant and unavoidable traffic, access, and congestion-related issues during Project construction. Marina-93

CHAPTER 4.8 – LAND USE, LAND USE PLANNING, AND RECREATION

The City is a Responsible Agency for the Project because it will be considering the Coastal Development Permit for the Project according to its Local Coastal Program as authorized by the California Coastal Act. Cal. Pub. Res. Code §§ 30000, *et seq*. It is absolutely essential Marina-94

that the environmental information contained in the EIR/EIS for the Project be adequate in all respects so that the City can properly exercise its discretionary approval power over the Project. *See* CEQA Guidelines § 15096. Among other things, a full and complete description of the legal authorities relating to this decision must be contained in the document. Unfortunately, this section of the Draft EIR/EIS does not contain a sufficient description of the relevant California Coastal Act provisions (page 4.8-16 to 17) or of the City's Local Coastal Plan (page 4.8-18).

Marina-94 cont.

This chapter concludes that the Project is consistent with the Coastal Act policies and with the City's Local Coastal Plan. However, for the reasons set forth in the comments for chapter 4.6 herein, these conclusions are unsupported and inadequate.

CHAPTER 4.9 – TRAFFIC AND TRANSPORTATION

There are several inadequacies in the Draft EIR/EIS analysis of traffic and transportation that are discussed in this section.

Mitigation Measure 4.9-6

The Draft EIR/EIS should explain why pre-project road conditions have not been evaluated yet and potential necessary rehabilitation measures have not yet been identified. By deferring the roadway evaluation and identification of suitable mitigation, the extent of potential impacts has not been adequately identified and the feasibility of appropriate mitigation is unknown. Necessary mitigation could be determined infeasible and/or could have secondary impacts associated with necessary road rehabilitation improvements that have not been addressed. The existing roadway evaluation should be conducted and this mitigation measure should be revised to identify any necessary road rehabilitation measures and associated secondary impacts prior to finalizing the Final EIR/EIS.

Marina-95

Staging Area (Page 4.9-33) and Mitigation Measure 4.9-7

This discussion states that the proposed staging areas would occupy portions of parking lots (e.g. a lot that serves Cal State Monterey and a Walmart parking lot). Mitigation has been applied that requires the construction contractor to coordinate with the affected jurisdictions (i.e., Cal State Monterey and the cities of Marina and Seaside) to design staging areas to avoid or minimize parking impacts in the publicly used parking lots. This mitigation measure should be revised to require coordination with the affected Walmart store to design staging areas to avoid or minimize parking impacts in the Walmart parking lot.

Marina-96

CHAPTER 4.10 – AIR QUALITY

There are a variety of inadequacies in the air quality impact analysis and associated mitigation that are discussed in this section.

Marina-97

Impact 4.10-1 and Mitigation Measure 4.10-1a

The discussion of mitigated construction emissions of NO_x assume that compliance with Mitigation Measure 4.10-1a would result in equipment emissions that would be equivalent to those that would be associated with engines that comply with Tier 3 engine standards. However, Mitigation Measure 4.10-1a only requires CalAm and/or its construction contractor to make a "good faith effort" to use available construction equipment that meets the highest USEPA-certified tiered emission standards. Therefore, the Project would not be required to use only equipment that meets the Tier 3 standard and construction emissions could be even higher than the stated mitigated quantity of 324 pounds per day, which is already 187 lbs above the daily threshold of 137 lbs (by more than double).

Since the Project would result in construction emissions of NO_x that would constitute a significant and unavoidable impact with mitigation, Mitigation Measure 4.10-1a is inadequate in failing to require the use of construction equipment that meets the Tier 3 engine standards (as opposed to requiring a "good faith effort" to use Tier 3 construction equipment). CEQA requires lead agencies to mitigate potentially significant impacts to the extent feasible. The Draft EIR/EIS should have incorporated or provided clear information showing why the following feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not feasible or otherwise not included as mitigation to reduce construction emissions of NO_x.

Marina-97 cont.

<u>Feasible Mitigation Measures:</u>

- Limit the quantity of equipment.
- Limit the type of equipment.
- Limit the rate and quantity of fuel consumption and/or process throughput.
- Limit the number of hours of operation per day.
- Apply RACT or BACT to stationary sources unregulated by the District.
- Limit the pieces of equipment used at any one time.
- Minimize the use of diesel-powered equipment (i.e., wheeled tractor, wheeled loader, roller) by using gasoline-powered equipment to reduce NO_x emissions.
- Limit the hours of operation for heavy duty equipment.
- Undertake Project during non-zone season (November 1 – April 30).
- Off-site mitigation.

For specific control technologies, the Draft EIR/EIS should refer to and incorporate CAPCOA's BACT Clearinghouse, the South Coast Air Quality Management District's BACT Clearinghouse, or EPA's AP-42 Compilation of Air Pollutant Emission Factors (Volume I). The CEQA lead agency cannot simply identify a significant and unavoidable impact when feasible mitigation options are available. There are numerous mitigation options available for the agency to implement to reduce NO_x emissions, which the Draft EIR/EIS fails to implement to reduce impacts of the MPWSP. These must be identified in the Draft EIR/EIS and the resulting emissions must be quantified to establish whether impacts have been reduced to less than significant. If they have not, then additional mitigation should be required. If minimization of impacts to less than significant is not feasible through implementation of on-site mitigation, then off-site options should be considered.

Marina-97 cont.

Impact 4.10-1 and Mitigation Measure 4.10-1c

In Mitigation Measure 4.10-1c, replanted vegetation should be required to be native, drought-tolerate species.

The Draft EIR/EIS is inadequate in that it fails to incorporate or clarify why the following feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not included as components of the Construction Fugitive Dust Control Plan to reduce construction emissions of PM_{10}.

Marina-98

Feasible Mitigation Measures:

- Prohibit all grading activities during periods of high wind (over 15 mph).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Limit the area under construction at any one time.

Impact 4.10-3; Sensitive Receptor Exposure to *Coccidioides* Spores

The California Department of Public Health identifies Monterey County as having a high rate of Valley Fever: (http://www.cdph.ca.gov/HealthInfo/discond/Documents/EnglishValleyFeverBrochure.pdf). If construction activities that include ground disturbance have the potential to release *coccidiodes immitis* spores and result in the exposure of sensitive receptors (i.e., construction personnel) to these hazardous conditions, this section should include mitigation that requires CalAm or the construction contractor to prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program should identify safety measures to be implemented by construction contractors during construction.

Marina-99

Additionally, this section should specify what any additional measures would be implemented between June 1 and November 30, when Valley Fever rates of infection are the highest, such as additional water or the application of additional soil stabilizer, prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit. The Draft EIR/EIS should fully analyze the potential impacts and risks associated with Valley Fever. Once the necessary analysis has been provided, it should be recirculated to provide the public an opportunity to review and comment on the potential impacts and proposed mitigation measures to reduce those impacts.

Marina-99 cont.

Impact 4.10-C

The reader should refer to Impact 4.10-1 and Mitigation Measure 4.10-1a discussion above. While mitigation may not be available that would reduce the Project's contribution to less than cumulatively considerable, the Draft EIR/EIS must identify and ensure all feasible mitigation measures have been applied to the Project to reduce construction emissions to the greatest extent feasible. Mitigation Measure 4.10-1a is inadequate in that it does not require the use of construction equipment that meets the Tier 3 engine standards (rather than only requiring a good faith effort to use Tier 3 construction equipment). The document should also either incorporate or clarify why the previously listed standard feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not included as mitigation to reduce construction emissions of NO_x and PM_{10}.

Marina-100

There are numerous mitigation options available to reduce significant air quality impacts associated with the Project. Unless it can be shown, and supported by substantial evidence, that available mitigation options are not feasible, the Draft EIR/EIS must incorporate any feasible measures to reduce potentially significant impacts. The Draft EIR/EIS is inadequate in that it fails to properly identify and include feasible mitigation measures to reduce potentially significant project-specific and cumulative impacts on air quality.

CHAPTER 4.11 – GREENHOUSE GAS EMISSIONS

Desalination plants and their associated facilities are well known for their highly intensive use of electricity. This chapter concludes that greenhouse gas emissions from the long-term operation of the Project, primarily due to "indirect emissions from the project's use of electricity, which would be provided by the local PG&E electrical power grid," will be a significant environmental impact. Draft EIR/EIS at 4.11-17. The analysis proposes a single Mitigation Measure (MM 4.11-1) that supposedly addresses this impact, but then concludes that the impact is significant and unavoidable, even with mitigation. However, this approach is legally inadequate.

Marina-101

First, the Draft EIR/EIS fails to suggest an appropriate mitigation measure for this significant impact. An EIR must propose and describe mitigation measures to minimize significant environmental effects. Cal. Pub. Res. Code § 21100(b)(3); CEQA Guidelines,

§ 15126.4(a)(1) ("An EIR shall describe feasible mitigation measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy"). Indeed, due to the importance of reducing greenhouse gas emissions in California, the CEQA Guidelines contain a special section relating to mitigation measures for greenhouse gas emissions. *See* CEQA Guidelines § 15126.4(c).

Neither the Energy Conservation Technologies nor the Renewable Energy components of Mitigation Measure 4.11-1 meets these legal requirements. The Energy Conservation Technologies requirement in 1(a) requires CalAm to have a qualified professional prepare and submit a GHG Emissions Reduction Plan prior to the start of project construction activities, which would include a detailed description of the carbon footprint for all operational components of the approved project (e.g., slant well pumping, the MPWSP Desalination Plant, transmission of source and product water, ASR system) based on manufacturer energy usage specification data for each piece of equipment and the most current PG&E power system emissions factor for GHG emissions. The future Plan would include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the Project, the Plan would clearly explain why such technology is considered to be infeasible.

This Mitigation Measure is effectively deferring the detailed identification of the operational carbon footprint and consideration of energy-efficient technologies. The Draft EIR/EIS should provide the quantitative carbon footprint information, evaluate the feasibility of all possible energy conservation technologies and practices, include implementation of the feasible energy conservation technologies and practices as mitigation, and explain why additional available energy conservation measures are not feasible.

Marina-101 cont.

The Renewable Energy component in section (b) requires CalAm to make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy. However, no concrete commitment is made to achieving that performance standard beyond "good faith efforts." If the performance standard is to ensure at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy, the mitigation measure should include specific steps for achieving that performance standard that will be feasible for this Project to implement and achieve. The Energy section of the Draft EIR/EIS should quantitatively evaluate proposed energy consumption and the effectiveness of proposed mitigation for reducing consumption by at least 20 percent to demonstrate feasibility.

Substantial evidence that a 20 percent reduction would reduce potential impacts to less than significant levels should be provided, particularly in light of recent case law decisions in *Ctr. for Biological Diversity v. Cal. Dept. of Fish & Wildlife*, 62 Cal. 4th 204 (2015) (EIR's finding that greenhouse gas emissions would be less than significant under threshold of significance must be supported by "a reasoned explanation based on substantial evidence"), *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th 173 (2014), *Ukiah Citizens for*

Safety First v. City of Ukiah, 248 Cal. App. 4th 256 (2016), and *Spring Valley Lake Ass'n v. City of Victorville*, 248 Cal. App. 4th 91 (2016). Marina-101 cont.

CHAPTER 4.12 – NOISE AND VIBRATION

This section addresses a variety of deficiencies in the impact analyses and mitigation measures for noise and vibration impacts.

Impact 4.12-1

The impact discussion generally states that "the proposed pipelines and pump station would be constructed during daytime hours to the extent feasible." The Draft EIR/EIS should clarify what the anticipated timeframe of daytime construction operations would be; specify start and stop times. The severity of noise impacts would vary depending on the time of construction; this information is critical to support significance determinations in the Draft EIR/EIS. Marina-102

Pipelines North of Reservation Road

This section states that nighttime construction could be required at certain locations to meet the Project schedule or avoid peak hour traffic impacts. This section concludes that significant impacts would not occur because the maximum noise levels at any one location would be limited to a period of 1 to 3 days and would not exceed the two-consecutive-weeks threshold. However, this impact discussion does not specify how local noise ordinances pertaining to nighttime construction operations would be achieved. Clarity is needed on how the contractor(s) will ensure that nighttime thresholds will not be exceeded, to clearly establish measures are feasible and that impacts would be less than significant. Marina-103

ASR-5 and ASR-6 Wells

This impact discussion concludes that nighttime noise impacts would remain significant and unavoidable even with implementation of mitigation. The Draft EIR/EIS should clarify why construction of ASR-5 and ASR-6 cannot feasibly be restricted to daytime hours when mitigation can feasibly reduce noise levels below the threshold to avoid the significant impact associated with nighttime construction noise. It seems that this impact is avoidable through appropriate modification of the proposed construction schedule. Why is this solution not included as feasible mitigation to reduce the significant impact to be less than significant? Marina-104

Impact Conclusion

Refer to the ASR-5 and ASR-6 comment above. Although CalAm may not want to alter its identified construction schedule, it seems that nighttime noise impacts are avoidable through appropriate modification of the proposed construction schedule. The Draft EIR/EIS should explain why this solution is not included as feasible mitigation to reduce the significant impact to be less than significant, and it should include an analysis of all feasible construction techniques Marina-105

and options for avoiding nighttime construction.

Marina-105 cont.

Mitigation Measure 4.12-1a

This measure is inadequate in that it fails to identify the types of feasible measures that "could be implemented to correct the problem." Would construction activities stop? Would different, quieter construction equipment be brought in to address the issue? Are other measures available that would reduce noise in the event of a complaint? Or would a CalAm representative merely respond to the complaint by saying there's nothing they can do about it? This non-specific mitigation measure does not meet the specificity requirements of CEQA/NEPA and also fails to adequately protect nearby residents. A target response time should be specified for addressing reported noise complaints.

Marina-106

Mitigation Measure 4.12-1c

This measure fails to identify appropriate performance standards that would ensure impacts are reduced to the greatest extent feasible. What if moveable noise screens, noise blankets, or other suitable sound attenuation devices do not reduce noise levels below 60 dBA? What other mitigation measures are available? The Draft EIR/EIS must specify why additional suitable noise control procedures have not been identified and included as mitigation.

The Draft EIR/EIS fails to identify suitable mitigation measures that could further avoid and reduce potentially significant impacts. For example, exhaust mufflers and steel muffling sleeves and similar equipment should be required to the greatest extent feasible. All construction equipment should be "quiet" or "whisperized" type equipment to the greatest extent available. All equipment should be electrically powered rather than gasoline or diesel powered to the extent feasible. Sound barriers should be constructed of materials and in a manner to achieve the highest level of noise reduction. Electric power in lieu of internal combustion engine power should be required. Equipment should be maintained to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines should be required to have properly functioning mufflers. Engine shrouds should be required. Noisy equipment, lay-down and vehicle staging areas should be required to be kept as far away from noise-sensitive site boundaries as possible. Vehicles should not be allowed to idle. Construction crews should be prohibited from playing radios, using amplified sound, or other similar items at the construction site. The noisiest construction activities and haul truck activities should be scheduled during periods of the day that would have the least impact on adjacent sensitive receptors.

Marina-107

Clearly, there is a multitude of additional mitigation that could be applied to the Project to further reduce potentially significant impacts. The Draft EIR/EIS should evaluate all feasible mitigation measures available to reduce potentially significant noise impacts to the greatest extent possible. The current mitigation program is wholly inadequate, and the Draft EIR/EIS appears to fall back on the "significant and unavoidable" impact determination without attempting to implement all feasible mitigation. This is also true for the weak mitigation programs set out in the Air Quality, Greenhouse Gas Emissions, and Energy Consumption

sections of the Draft EIR/EIS. Marina-107 cont.

Mitigation Measure 4.12-1d

This mitigation measure states that "acoustic barriers and/or enclosures shall be used with a goal of reducing noise from well drilling activities to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area." Ultimately, this mitigation measure would not ensure noise from well drilling activities would be reduced to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area: it only requires the use of acoustic barriers and/or enclosures. This mitigation measure should be revised to require monitoring to ensure noise levels are reduced to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area. In the event the "goal of reducing noise from well drilling activities to 60 dBA or less at a distance of 50 feet" is not being met, the Draft EIR/EIS should specify additional mitigation requirements necessary to avoid or reduce the potentially significant impacts (including stopping drilling activities). Marina-108

MPWSP Desalination Plant

This section states that the proposed desalination plant would be potentially inconsistent with the following standard noise protection measures included in the Monterey County General Plan:

- Construction shall occur only during times allowed by ordinance/code unless such limits are waived for public convenience;
- All equipment shall have properly operating mufflers; and
- Laydown yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical. Marina-109

The impact discussion concludes that impacts would be less than significant because mitigation addresses these "policy-driven mitigation measures by prohibiting equipment with unmuffled exhaust and requiring that staging areas and stationary noise sources be located as far from nearby receptors as possible." While mitigation may address the second and third noise protection measures, they do not address the first. As stated on page 4.12-23, "Construction at the MPWSP Desalination Plant site on Charles Benson Road would occur over 24 months construction period and would require 24-hour construction." The Project is inconsistent with the first standard noise protection measures included in the Monterey County General Plan and mitigation has not been included to address this impact; therefore, the impact discussion pertaining to this project component is not adequate.

The Draft EIR/EIS must address this issue and provide suitable mitigation that will ensure consistency with the standard noise protection measures included in the Monterey County General Plan, or revise the impact determination to be significant and unavoidable if the impact

cannot be mitigated. If the impact cannot be mitigated, the Draft EIR/EIS should provide clear substantial evidence that available mitigation is not feasible. Marina-109 cont.

Mitigation Measure 4.12-5

This mitigation measure should be revised to clarify the frequency of monitoring and the reporting protocol for results. Marina-110

Impact 4.12-C

Refer to ASR-5 and ASR-6 and Impact Conclusion comments above. It appears that nighttime noise impacts are avoidable through appropriate modification of the proposed construction schedule or other available mitigation measures and the Draft EIR/EIS is inadequate due to the failure to include additional feasible mitigation for this Project component. Please explain why this solution is not included as feasible mitigation to reduce the significant impact to be less than significant. Marina-111

CHAPTER 4.13 – PUBLIC SERVICES AND UTILITIES

This section addresses inadequacies in the impact analyses and associated mitigation measures for public services.

Impact 4.13-2

Excess spoils and construction debris generated during the construction phase of the Project could be contaminated from previous mining activities and/or construction activities and could require specific disposal methods. The Draft EIR/EIS fails to incorporate mitigation, or clarify why mitigation was not incorporated, which would require spoils to be tested prior to landfill disposal to ensure they meet nonhazardous waste disposal criteria. Marina-112

Impact 4.13-4

Exceed Wastewater Treatment Requirements

The Draft EIR/EIS must specify which ten individual constituents did not have sufficient data to form a compliance determination with the Ocean Plan water quality objectives and are conservatively assumed to exceed Ocean Plan water quality objectives. Additionally, it should clarify why baseline conditions were not already evaluated as part of the Draft EIR/EIS preparation and why this data gathering, Ocean Plan compliance assessment, and potentially necessary design feature and/or operational measure(s) to achieve the required minimum dilution of discharge are incorporated as Mitigation Measure 4.3-5. It seems that project design and impact evaluation included in this Draft EIR/EIS would benefit from the results of the data gathering, especially if the results of the data collection could necessitate a change in project design to achieve compliance with the Ocean Plan water quality objectives. Marina-113

Wastewater Treatment Plant and Outfall Capacity

We understand that the MRWPCA outfall and junction box were damaged substantially during recent storm events and required emergency repair. The Draft EIR/EIS should clarify if and how the results of the Outfall Capacity Evaluation conducted in 2012 by Trussell Technologies are still accurate based on these storm events, current information regarding the potential wave run-up/storm surge/coastal erosion areas at the CEMEX Property, and the recent repair and planned relocation of that infrastructure. The Draft EIR/EIS should disclose how design of the Project has been changed to account for the recent damage (and/or disclose exactly why no siting/design changes could or would be made). Marina-114

The Draft EIR/EIS should confirm if the existing outfall capacity is still 81.2 mgd and if the outfall is still capable of supporting the Project's discharge when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant. Please confirm that the analysis of the outfall capacity of the MRWPCA outfall to service the MPWSP for the life of the Project includes the increase in wastewater flows that would occur as a result of the growth-inducing effects of the Project.

Impact 4.13-5

MRWPCA Ocean Outfall – Offshore Segment and Mitigation Measure 4.13-5a

We are aware that the MRWPCA outfall and junction box were damaged substantially during recent storms and required emergency repair. Please clarify if and how the results of the evaluation of the existing condition of the junction box and offshore outfall segment and potential for increased corrosion due to the addition of brine discharge completed by E2 Consulting Engineering (2015) are still accurate based on current conditions of the existing infrastructure. Considering emergency repairs were required and the physical condition of the infrastructure has been substantially altered since the 2015 evaluation took place, the assessment of existing conditions in this impact discussion no longer seems accurate. Based on the recently compromised structural condition and integrity of these project components, we request that the study prepared by E2 Consulting Engineering in 2015 and this impact discussion be updated to reflect the current conditions of this infrastructure and the impacts that the proposed Project could have on these modified features. The need and applicability of Mitigation Measures 4.13-5a should also be reevaluated based on the new conditions of the infrastructure and revised impacts of the Project, and retained/removed as appropriate. Marina-115

MRWPCA Ocean Outfall – Land Segment and Mitigation Measure 4.13-5b and 4.13.5.4 Secondary Impacts of Mitigation Measure 4.13-5b

The Draft EIR/EIS should clarify why an evaluation of the offshore segment of the outfall was conducted in 2015, but an evaluation of existing conditions of the 13,000-foot-long land segment is planned but has not been conducted yet and has instead been deferred as Marina-116

Mitigation Measure 4.13-5b. The existing condition of part or all of the land segment could be compromised beyond what can be repaired by an epoxy lining, as proposed in Mitigation Measure 4.13-5b. Without proper evaluation, how is the epoxy lining determined to be the appropriate solution for any problematic conditions that may be found? Additionally, without proper evaluation, how can the feasibility of installing 13,000 feet of epoxy lining be determined? An evaluation of existing conditions of the land segment prior to approval of the Project, rather than deferring the evaluation to "prior to operation of the MPWSP Desalination Plan" (as stipulated by Mitigation Measure 4.13-5b) would better inform the need, or lack thereof, for suitable mitigation.

Additionally, the proposed remedy to any problematic conditions found during the assessment of the land segment, the installation of an epoxy lining, could have significant secondary impacts beyond what have been evaluated in section 4.13.5.3. Considering installation of the epoxy lining could last 4 to 6 months, any construction activities or vehicle use required for this task could contribute to project air quality and greenhouse gas emissions, soil erosion, hydrology impacts, traffic impacts, and noise impacts. Additionally, considering the length of the land segment and proposed duration of installation, Mitigation Measure 4.13-5b should clearly specify the timing and frequency of "site surveys" to be completed by qualified biologists. The proposed staging area at Armstrong Ranch should be described in more detail (i.e., location, size, graded, etc.). All potential secondary impacts of the epoxy lining installation need to be thoroughly evaluated, particularly air quality, greenhouse gas emissions, soil erosion, hydrology impacts, traffic impacts, and noise impacts. Additionally, if additional repairs are needed in addition to an epoxy lining, the Draft EIR/EIS must identify what exactly would be required and evaluate any potential impacts associated with these repairs.

Marina-116 cont.

4.13.6.2 Cumulative Impacts during Project Operations

The RUWAP Recycled Water Element cumulative project could reduce the volume of wastewater discharged through the outfall and diffuser during the summer months, while the RUWAP Desalination Element could increase the volume of brine effluent discharged through the outfall and diffuser. Implementation of either project would result in an increase in the proportion of effluent that is composed of brine.

As discussed under Impact 4.13-5, "the salinity of brine is estimated to range between approximately 57 and 58 parts per thousand (ppt), compared to salinity of seawater in Monterey Bay, which ranges from 33.1 to 34.2 ppt. The "brine only" discharges and combined discharges of brine and wastewater effluent would expose submerged metals and concrete in the outfall and diffuser to high salinity water." Please clarify what evidence supports the justification in section 4.13.6.2 that "although the total volume of brine would increase with the Project and RUWAP Desalination Element, the salinity would not be expected to change substantially." Was any modeling or quantification of salinity concentrations performed to support this conclusion?

Marina-117

CHAPTER 4.14 – AESTHETIC RESOURCES

Figure 4.14-1

This figure and this section inappropriately categorize certain areas of the Project area within landscape units that understate the visual quality of the area and understate the associated potential significance of visual impacts. For example, large areas north of Charles Benson Road consist of active agricultural operations with little to no development or use (i.e., intensive row crops and grazing areas). Other sections of the Draft EIR/EIS clearly identify this area as "agricultural land" (refer to, *e.g.*, section 3.2.1.2 of the Project Description). This figure and this section inaccurately refer to this agricultural land as "urban and built up" land, or lands in "surrounding unincorporated areas that are considerably built-up" and "characterized by the predominance of anthropogenic features (i.e., urban development)." Even the site of the proposed desalination plant is identified as "urban and built-up" land, despite being entirely undeveloped and consisting of nothing more than natural vegetation.

The landscape unit classifications used to support the visual analysis fail to accurately identify existing on-site land uses, visual characteristics, and existing levels of development (or lack thereof) within this portion of the Project area. Did the preparer of this section conduct any field work in this area or other areas of the Project? This classification appears to reflect a lack of understanding and familiarity with the Project site. Marina-118

Section 4.14.2.2 states that "Due to the high level of anthropogenic modifications, [the urban and built-up] landscape unit is generally considered to be of low visual quality." This section should be revised to accurately identify and categorize land within landscape units that accurately reflect on-site visual conditions and quality. The categorization of all lands within the city limits of Monterey, Marina, Seaside, and Carmel Valley is clearly inadequate for a visual analysis under CEQA, as lands within these boundaries can have significantly different visual characteristics and qualities. Once the visual setting and baseline conditions have been properly identified, the impact analysis should be revised accordingly to accurately identify the potential impacts of the Project. This substantial change in the Draft EIR/EIS analysis requires recirculation of the Draft EIR/EIS so the public has an opportunity to evaluate the Draft EIR/EIS's evaluation of the Project's potential impacts on existing scenic resources. This is especially critical in areas proximate to the most visible components of the Project (such as the desalination plant, which will be visible from adjacent public roadways and the agricultural areas north of Charles Benson Road – all of which have been inaccurately described as "considerably built-up").

The figure also makes it impossible to distinguish between the different landscape units. The figure should be revised to more clearly distinguish the different units and should use current aerial images as a background, so the reader can determine whether the identified landscape unit actually reflects the existing land use and baseline visual characteristics of the site.

Figure 4.14-2

The acronyms used in this figure are not properly identified. What does "PL" refer to? What is "NM"? What is "TF"? What is "AG"? Why do "Oak Woodland" and "TF Forested Hills" look virtually identical? Why do "PL Urban Builtup Monterey" and "Hillside Residential" look virtually identical? How does the photograph of "Hillside Residential" reflect the description of this unit (i.e., residential housing on large lots, distinguished from the Urban and Built-up landscape unit by the substantially greater distance between dwellings)? Marina-119

Section 4.14.2.3 Subsurface Slant Wells

This section inaccurately describes the baseline visual setting at the CEMEX Property. The large majority of the CEMEX Property is undisturbed dune habitat. The CEMEX property encompasses approximately 400 acres in total. Of those, approximately 104 acres have experienced some disturbance associated with sand mining activities that have occurred at the site since 1906. Currently, approximately 50 acres experience heavy levels of disturbance associated with ongoing mining activities. The remainder of the site consists of undeveloped areas and dune habitat with varying degrees of disturbance (moderate to low). The City's LCLUP describes the area just north of the Project site as the best preserved area of Marina Dune native habitat. The dunes provide a distinct contrast to the pattern of agricultural and urbanized lands in adjacent areas. This area of north Marina is considered the "scenic gateway to the Monterey Peninsula" (City of Marina 1982). Visual quality of this area of dunes should be considered high.

The Draft EIR/EIS fails to recognize the visual sensitivity of this portion of the Project site. Although the small disturbed area of the CEMEX Property that is currently mined provides a somewhat degraded view, the Draft EIR/EIS fails to accurately account for the breadth and extent of the public viewshed at this location, which would largely be comprised of a vast, relatively undisturbed dune complex unlike any others on the Monterey Peninsula. Marina-120

This section describes the site as "devoid of vegetation" and "sparsely vegetated" and also provides a representative photo of the site that shows dune slopes entirely covered by vegetation (*see* Figure 4.14-3a, Photo 1). The information in this section is inconsistent and misleading.

Figure 4.14-3a Photo 1 does not represent the public vantage point from the beach as stated in this section (section 4.14.2.3, first paragraph). Rather, this vantage point is taken from within the privately-owned CEMEX mining area. These private views from within the mining area reflect a higher level of disturbance than is actually visible from surrounding public views. Views from the public beach are dominated by predominantly undisturbed dunes and views of the internal graded CEMEX access road are limited. Public views of this area are inaccurately described in this section. Information regarding the site's visual character, quality, and visibility must be accurately stated in the Draft EIR/EIS. A revised Draft EIR/EIS should be recirculated so the public has an adequate opportunity to review and comment on potentially significant

impacts on this important visual resource. Marina-120 cont.

Section 4.14.2.3 MPWSP Desalination Plant

This section understates the aesthetic resource value of this site due to the inaccurate determination that the site is "urban and built-up" land. Marina-121

Sections 4.14.6.1 and 4.14.6.2

These sections improperly understate the severity of the potential visual impacts of the project due to the improper classification of the CEMEX Property and Project desalination plant location as having low to moderate visual resource value. Marina-122

CHAPTER 4.15 – CULTURAL AND PALEONTOLOGICAL RESOURCES

This chapter fails to identify and address a major impact on historic resources and therefore wrongly concludes that construction of the Project will not have a significant impact on such resources. This omission constitutes significant new information and a significant change in the potential for such impacts, thereby requiring a new analysis and recirculation of a revised Draft EIR/EIS.

This section of the Draft EIR/EIS inaccurately concludes that "No historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are within the direct or indirect APE of all project components. Therefore, no impact on historical resources or historic properties would result from construction of any project facilities." *Id.* at 4.15-45. This determination fails to recognize that the Source Water Pipeline and Well Site 1 are located in the center of the Lapis Sand Mining Plant Historic District. Marina-123

SWCA Environmental Consultants, in conjunction with the City of Marina and Monterey Bay National Marine Sanctuary, evaluated the Lapis Sand Mining Plant for eligibility for listing in the National Register of Historic Places ("NRHC") in connection with the test slant well CDP permit application and concluded that it was eligible for listing as a historic district containing nine contributing built environmental resources (e.g., structure, infrastructure) under criteria A and C, with a period of significance from 1906 to 1960 (SWCA 2014). The appropriate Department of Parks and Recreation ("DPR") forms were prepared and in June 2014 the State Historic Preservation Officer ("SHPO") at the Office of Historic Preservation concurred with SWCA's findings, including the eligibility for listing on the NRHP as a historic district under Criteria A and C with a period of significance from 1906-1960.

In addition to the Draft EIR/EIS's failure to identify the presence of a previously recorded eligible historic district in the direct and indirect APEs, the analysis in this section also fails to address the Project's potential impacts to contributing structures built near environmental resources associated with the district. Construction and maintenance related disturbances could

inadvertently affect contributing historic structures associated with the district, a potentially significant impact. The Draft EIR/EIS failed to identify and address this potentially significant impact.

In addition, as described in the DPR forms prepared by SWCA, the direct APE includes the historically significant Lapis Siding, a single- and double-track rail siding that was constructed circa 1906 to connect the Lapis Sand Mining Plant with the former Southern Pacific Monterey Branch to the east. From its eastern terminus at the eastern boundary of the Lapis Sand Mining Plant, the segment consists of two parallel metal rail lines that merge into one line at a rail switch approximately 135 feet to the west. The segment continues along a general northwesterly course for approximately 285 feet before it becomes covered by sand and dirt. Since its decommission in the late 1980s, the recorded segment has been overgrown by vegetation and partially buried, and as a result no ballast or ties were visible at the time of SWCA's evaluation. Historic topographic maps indicate that the Lapis Siding extended much further west and north than was observed during the course of the 2014 survey and additional segments of the Lapis Siding are visible along the eastern side of the Sorting Plant in current aerial images. Archival research conducted by SWCA was unable to determine if the rails, ties, and/or any associated infrastructure of the larger rail siding were removed. Because of the constantly shifting sand dunes, there is potential that other intact segments may be buried underneath the changing landscape.

Marina-123 cont.

Trenching and construction of the Source Water Pipeline in the area between the visible portion of the Lapis Siding and the Sorting Plant has the potential to damage or destroy buried portions of the resource that remains. The Draft EIR/EIS failed to identify or address this potentially significant impact.

The failure to identify and address potential impacts to the Lapis Sand Mining Plant Historic District, a known historic district eligible for listing in the NRHP, renders the analysis in this section inadequate. The Draft EIR/EIS fails to disclose the presence of this historical resource within the direct and indirect APEs for the Project – a substantial omission, as disclosure would result in a new significant environmental impact. The omission also constitutes significant new information that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the Project and feasible ways to mitigate or avoid such effects. The Draft EIR/EIS failed to determine whether or not the Lapis Siding extends through the area proposed for trenching for construction of the Source Water Pipeline and fails to provide any evidence that construction of the proposed Project would have no impact on historical resources or historical properties associated with implementation of the proposed Project. The Draft EIR/EIS is invalid and must be recirculated once these issues have been properly addressed.

CHAPTER 4.16 – AGRICULTURAL RESOURCES

Marina-124

This section addresses impacts and mitigation measures for agricultural resources.

Section 4.16.1.1 Farmland Mapping and Monitoring Program

Table 4.16-1 shows agricultural conversion between 2010 and 2012; this information is over five years old. The CDC's 2012 to 2014 conversion information should be utilized. The most recent information should be used, particularly in light of recent constraints to agriculture, including the extreme drought conditions that have occurred since 2012 and the constraints to agricultural pumping and groundwater. The more recent conversion data reflects a loss of 146 acres of Prime Farmland in Monterey County between 2012 and 2014; therefore, conversion of Prime Farmland is an issue in the County.

Marina-124 cont.

Section 4.16.4

The Draft EIR/EIS states that agricultural crop production and livestock grazing is the largest industry in Monterey County, and that over 80 percent of the total land designated for agriculture in the County is used for grazing. The conversion of grazing lands in the County, particularly the cumulative conversion as reflected in the FMMP agricultural conversion data (a loss of 2,307 acres between 2010 and 2012, and a loss of 739 acres between 2012 and 2014) should indicate a potentially significant impact to this important County resource. The Draft EIR/EIS fails to provide support for the conclusion that the conversion of grazing land would not be a potentially significant impact under CEQA and why it does not deserve consideration in the Draft EIR/EIS. Although not specifically identified as a threshold under Appendix G of the CEQA Guidelines, given the significance of the resource in Monterey County, the level of impact should be evaluated and the public should be provided an opportunity to comment on the proposed conversion of grazing lands. The Draft EIR/EIS should also account for impacts associated with the gradual conversion of undeveloped, grazing, and/or agricultural lands that historically have provided a buffer from more urbanized uses within the City of Marina and surrounding areas.

Marina-125

Section 4.16.5.1 and 4.16.5.2

These sections fail to identify and analyze the potential for significant impacts associated with changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural uses as a result of Project operation. As described in other sections of this document, operation of the Project could result in increased seawater intrusion, damaging groundwater resources upon which regional agricultural uses rely. The Project could also result in the illegal pumping of groundwater from the Salinas Valley Groundwater Basin, which would deplete the groundwater available for agricultural uses in the Project area. Any adverse effect of the Project on groundwater quality or quantity could disrupt agricultural activities and/or result in the permanent conversion of farmland to non-agricultural uses as a result of Project operation.

Marina-126

The potential for these impacts to occur must be discussed in this section. The scope of this section is inappropriately narrow throughout the analysis, in that it only includes areas within the direct area of disturbance and adjacent parcels. Adverse impacts to groundwater

quantity and quality, as described in these comments, could potentially result in substantially farther-reaching impacts on agricultural uses in the Project area. Marina-126 cont.

Section 4.16.4.2 MPWSP Desalination Plant

This section fails to discuss the potential indirect constraints to agricultural development and use of the remainder of this site for agricultural production as a result of Project construction and operation. Although prime farmland in the northern portion of the site would not be directly impacted, conversion of the parcel to an industrial use could limit and/or prevent any future agricultural uses within prime farmland. Indirect impacts on the future use of this agricultural resource should be evaluated in the Draft EIR/EIS and all feasible mitigation to reduce potential impacts should be identified. This analysis should be recirculated so the public can comment on the potential for fallowing large areas of prime farmland as a result of Project implementation. Marina-127

Impact 4.16.3 MPWSP Desalination Plant

This section relies on the fact that the desalination plant site has been idle for five or more years, yet no information is provided as to why the land was fallowed or whether historically it supported viable agricultural production. The site supports prime farmland – land that has the best combination of physical and chemical characteristics for long-term crop production. Therefore, the site is clearly suitable for agricultural uses. The Draft EIR/EIS should clearly describe the site's agricultural history and provide an explanation for why the site is no longer used for agricultural production. For example, it is currently unclear whether CalAm purchased the site 5 years ago and let it go fallow in order to assert there would be no impact on on-site agricultural uses. This would clearly be an improper baseline upon which to measure the significance of impacts on agricultural resources at the desalination site. If the site has been historically used for active agricultural production, but was fallowed 5 years ago because of the drought or some other constraint, this information should be disclosed. Marina-128

Without any information on the reason the site is idle, the Draft EIR/EIS cannot rely on the fact that it is idle to support a conclusion that no impact on agricultural uses would occur. If the site is idle because of constraints to agricultural use, the Draft EIR/EIS should clearly document and disclose those constraints that make agricultural use of the area infeasible. If the site was not fallowed as a result of constraints, the Draft EIR/EIS should assume the site is viable for agricultural uses and identify a potentially significant impact associated with conversion of valuable agricultural soils to industrial/public facility uses. All feasible mitigation should be identified to reduce the potentially significant impact and the Draft EIR/EIS should be recirculated to provide the public an opportunity to comment on the Project's potential effects on this resource.

CHAPTER 4.18 – ENERGY CONSERVATION

This section addresses the description, impacts and mitigation measures in the energy conservation subject area.

Impact 4.18-2

The Project Description states that the Project would recover energy from the brine stream using pressure-exchange technology, which would lower overall energy consumption during the RO process. However, the Project is still expected to result in a substantial increase in electrical power demand (net increase of 51,698 MWh per year, an over 450 percent increase in CalAm's total energy demand in its Monterey District Service Area). Beyond the pressure-exchange technologies included in the proposed RO process for energy recovery, it does not appear that other energy conservation technologies have been included in the Project Description or considered as feasible mitigation. The Project Description states that CalAm may eventually use renewable energy sources to power the MPWSP Desalination Plant and briefly discusses the consideration of pursuing a landfill-gas-to-energy option. Although included, the possibility of pursuing the landfill-gas-to-energy option is a moot point as it is not considered in this Draft EIR/EIS, not a requirement of project mitigation, and any necessary interconnection improvements would require additional environmental review.

This impact discussion concluded that the impact was less than significant because the use of energy for operation of the Project is necessary to provide a reliable supply of water to meet existing demand for the Monterey District, and concluded that no mitigation was necessary. This conclusion is unwarranted for two reasons. First, as described in our comments on chapters 2.1 to 2.5 herein, the use of this amount of energy for operation of the Project is not necessary to provide a reliable supply of water to meet existing demand for the Monterey District. Second, the Draft EIR/EIS is inadequate in that it fails to evaluate whether the Project's net increase in energy demand itself is unnecessary, wasteful, or inefficient, especially when all feasible energy conservation mitigation options are not being employed. "Under CEQA, an EIR is 'fatally defective' when it fails 'to include a detailed statement setting forth the mitigation measures proposed to reduce wasteful, inefficient, and unnecessary consumption of energy.'" *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th at 209. Therefore, the substantial increase in electrical power demand (net increase of 51,698 MWh per year) and lack of inclusion of all feasible energy conservation technologies/measures (beyond pressure exchange technology) could constitute a potentially significant impact and require additional mitigation.

Marina-129

Pursuant to Appendix B Local Action of the California Air Resources Board 2017 Scoping Plan (January 2017), the following construction and operation mitigation measures should be considered for inclusion by individual projects under CEQA, and implemented if feasible. The Draft EIR/EIS should include an explanation as to why these measures were not evaluated as potential mitigation to avoid or reduce unnecessary consumption of energy and/or why they are not applicable/feasible for the Project:

Construction

1. Enforce idling time restrictions for construction vehicles.
2. Require construction vehicles to operate with the highest tier engines commercially available.

3. Divert and recycle construction and demolition waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible.
4. Minimize tree removal, and mitigate indirect GHG emissions increases that occur due to vegetation removal, loss of sequestration, and soil disturbance.
5. Utilize existing grid power for electric energy rather than operating temporary gasoline/diesel powered generators.
6. Increase use of electric and renewable fuel powered construction equipment and require renewable diesel fuel where commercially available.
7. Require diesel equipment fleets to be lower emitting than any current emission standard.

Operation

1. Comply with lead agency's standards for mitigating transportation impacts under SB 743.
2. Require on-site EV charging capabilities for parking spaces serving the Project to meet jurisdiction-wide EV proliferation goals.
3. Allow for new construction to install fewer on-site parking spaces than required by local municipal building code, if appropriate.
4. Dedicate on-site parking for shared vehicles.
5. Provide adequate, safe, convenient, and secure on-site bicycle parking and storage in multi-family residential projects and in non-residential projects.
6. Provide on- and off-site safety improvements for bike, pedestrian, and transit connections, and/or implement relevant improvements identified in an applicable bicycle and/or pedestrian master plan.
7. Require on-site renewable energy generation.
8. Prohibit wood-burning fireplaces in new development, and require replacement of wood-burning fireplaces for renovations over a certain size developments.
9. Require cool roofs and "cool parking" that promotes cool surface treatment for new parking facilities as well as existing surface lots undergoing resurfacing.
10. Require solar-ready roofs.
11. Require organic collection in new developments.
12. Require low-water landscaping in new developments. Require water efficient landscape maintenance to conserve water and reduce landscape waste.
13. Achieve Zero Net Energy performance targets prior to dates required by CALGreen.
14. Require new construction, including municipal building construction, to achieve third-party green building certifications, such as the GreenPoint Rated program or the LEED rating system.
15. Require the design of bike lanes to connect to the regional bicycle network.
16. Expand urban forestry and green infrastructure in new land development.
17. Require preferential parking spaces for park and ride to incentivize carpooling, vanpooling, commuter bus, electric vehicles, and rail service use.
18. Require a transportation management plan for specific plans which establishes a numeric target for non-SOV travel and overall VMT.

Marina-129 cont.

19. Develop a rideshare program targeting commuters to major employment centers.
20. Require the design of bus stops/shelters/express lanes in new developments to promote the usage of mass-transit.
21. Require gas outlets in residential backyards for use with outdoor cooking appliances such as gas barbeques if natural gas service is available.
22. Require the installation of electrical outlets on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment.
23. Require the design of the electric boxes in new residential unit garages to promote electric vehicle usage.
24. Require electric vehicle charging station (Conductive/inductive) and signage for non-residential developments.
25. Provide electric outlets to promote the use of electric landscape maintenance equipment to the extent feasible on parks and public/quasi-public lands.
26. Require each residential unit to be "solar ready," including installing the appropriate hardware and proper structural engineering.
27. Require the installation of energy conserving appliances such as on-demand tank-less water heaters and whole-house fans.
28. Require each residential and commercial building to equip buildings with energy efficient AC units and heating systems with programmable thermostats/timers.
29. Require large-scale residential developments and commercial buildings to report energy use, and set specific targets for per-capita energy use.
30. Require each residential and commercial building to utilize low flow water fixtures such as low flow toilets and faucets.
31. Require the use of energy-efficient lighting for all street, parking, and area lighting.
32. Require the landscaping design for parking lots to utilize tree cover.
33. Incorporate water retention in the design of parking lots and landscaping.
34. Require the development project to propose an off-site mitigation project which should generate carbon credits equivalent to the anticipated GHG emission reductions. This would be implemented via an approved protocol for carbon credits from California Air Pollution Control Officers Association (CAPCOA), the California Air Resources Board, or other similar entities determined acceptable by the local air district.
35. Require the Project to purchase carbon credits from the CAPCOA GHG Reduction Exchange Program, American Carbon Registry (ACR), Climate Action Reserve (CAR) or other similar carbon credit registry determined to be acceptable by the local air district.
36. Encourage the applicant to consider generating or purchasing local and California-only carbon credits as the preferred mechanism to implement its offsite mitigation measure for GHG emissions and that will facilitate the State's efforts in achieving the GHG emission reduction goal.

Marina-129 cont.

Impact 4.18-3

Impact 4.18-3 states that, based on PG&E's preliminary review of the proposed Project's maximum electrical demand, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed Project. PG&E, 2016c. "PG&E, 2016c" refers to a personal communication between Jose Saldana, Pacific Gas and Electric Group Project Manager with Distribution Services, and Matt Fagundes, Environmental Science Associates Energy Analyst, on September 9, 2016. This statement is vague and uncertain. Due to the very high energy demands of the desalination process, the capacity of PG&E to service the Project should be confirmed and supported by substantial evidence. The EIR/EIS must clarify if a service agreement or will-serve letter has been issued by PG&E to satisfy the proposed Project's maximum demand for electrical power. Marina-130

Impact 4.18-C Cumulative Impacts

Impact 4.18-C states that "During project operation, various energy conservation measures would be implemented (see section 4.18.4) as part of the proposed project to reduce energy waste, ensuring that operational impacts associated with energy use would not be unnecessary, wasteful, or inefficient." Section 4.18.4.2 refers to the aforementioned pressure exchange technologies that would be implemented to recover energy in the RO system, and asserts that the Project would supplement these technologies in the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. This impact discussion concludes that, based on the technologies proposed to be employed, compliance with Title 24 Building Energy Efficiency Standards, and indication by PG&E via personal communication that adequate capacity and infrastructure would be available to support the Project, that cumulative operational impacts would be less than significant. Marina-131

Although the Building Code addresses energy savings for components of new commercial construction, compliance with the Building Code does not, by itself, constitute an adequate assessment of mitigation measures that can be implemented to address the energy impacts during construction and operation of the project. *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th at 209.

Based on the Project's substantial increase in net energy demand, the lack of inclusion of all feasible energy conservation measures (as listed under Impact 4.18-2 above) identified in Appendix B Local Action of the California Air Resources Board 2017 Scoping Plan (January 2017), and reliance on compliance with Title 24 Building Energy Efficiency Standards, the Draft EIR/EIS inadequately analyzed potential impacts related to energy consumption, contrary to the requirements of CEQA and NEPA. This section should be revised to (1) accurately reflect the potential for a significant project-specific and cumulative impact associated with unnecessary energy consumption; (2) include all feasible energy conservation mitigation options into the Project; (3) provide substantial evidence to support any finding that any mitigation options are not feasible for this Project; and (4) provide a conclusion as to whether or not the potentially

significant impact is sufficiently mitigated or significant and unavoidable. This substantial new information and analysis must be recirculated for additional public review and comment.

Marina-131 cont.

CHAPTER 4.20 – SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Both NEPA and CEQA contain strong requirements for the assessment of environmental justice and socioeconomic impacts. Since they address these subjects in slightly different ways, we will discuss them separately below. As described below, the Draft EIR/EIS fails to sufficiently assess or mitigate for socioeconomic and environmental justice impacts.

NEPA requires that in an EIS, federal agencies analyze the disproportionately high adverse impacts of a project on minority and low-income populations. NEPA defines project "effects" to include "economic, social, or health [impacts], whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8. In 1994, President Clinton issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Order, as described on the NOAA Fisheries website, "requires each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low income populations." In 2011, a large group of federal agencies, including the Department of Commerce (the parent agency of MBNMS), signed a Memorandum of Understanding to implement this policy at each signatory agency.

In 1997, the President's Council on Environmental Quality issued an important guidance document that has governed NEPA environmental justice analyses ever since. *Environmental Justice: Guidance Under the National Policy Ac*t (1997). According to the Guidance:

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- A federal agency must consider the "multiple, or cumulative [environmental justice] effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action."
- The agency must "recognize the interrelated cultural, social, occupational, historical or economic factors that may amplify the natural and physical environmental effects of the proposed agency action."
- The federal agency must "analyze how environmental and health effects are distributed within the affected community" and the agency is encouraged to display data visually through a GIS for effective visualization of the distribution of effects.
- The federal agency must utilize an identified disproportionately high and adverse environmental impact "as a factor in determining the environmentally preferable alternative."
- The federal agency "should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or

environmental effect" on a minority population and "carefully consider community views in developing and implementing mitigation strategies."

The Draft EIR/EIS fails to meet these NEPA requirements in multiple respects. It is undisputed, as stated on page 4.20-6 of the Draft EIR/EIS, that Marina qualifies as a minority community.

First, the Draft EIR/EIS fails to properly analyze the environmental justice impacts on the Marina community. It trivializes the impacts at the outset by stating only that Marina "could be" affected by construction activities (page 4.20.1). It then reaches the incorrect conclusion that "no disproportionately high and adverse" impact from facility siting, operation or construction of the Project would occur in any minority community, including Marina. In making this finding, the document fails to establish appropriate threshold standards and fails to sufficiently evaluate the Project's multiple and cumulative impacts in a wide variety of areas.

In fact, Marina is burdened with a major share of the short and long-term environmental impacts of the Project without receiving any corresponding benefit. The Project's slant wells would be sited in Marina's sensitive coastal habitat and would likely accelerate coastal erosion on Marina's beaches. A large number of source water, desalinated water, and return water pipelines would be constructed in Marina. The hypersaline brine discharge will occur through a pipe from Marina's coastline and deposit effluent just offshore of Marina. Most significantly, the groundwater basin that is currently the sole source of Marina's water could be significantly adversely impacted by the Project. In fact, rather than being a "no disproportionate impact" situation as represented by the Draft EIR/EIS, this is a classic example of a minority community being saddled with a wide range of severe environmental impacts from the siting and operation of a Project with all of the benefits going to distant communities.

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The Draft EIR/EIS contains a series of legal errors that have led to this deficient analysis. First, the agencies have not established any credible criteria to determine whether a "disproportionately high and adverse" impact is occurring. Second, the Draft EIR/EIS has misanalyzed the environmental impacts in a variety of ways. Some impacts the Draft EIR/EIS discounted entirely, as in the case of its conclusion that Project groundwater impacts in the City of Marina are less than significant because the City's groundwater is located seaward of the seawater intrusion line (see chapter 4.4 comments herein). It simply ignored other impacts. Third, due to its conclusion that no such significant impacts exist, it failed to adopt any mitigation measures. Fourth, it failed to analyze cumulative impacts in the environmental justice context.

The Draft EIR/EIS magnified these problems by taking a segmented approach to evaluating these impacts. It inexplicably parceled out an analysis of the environmental justice implications of impacts into 19 other sections rather than making a complete analysis in section 4.20. As a result, it never analyzed the composite and cumulative impacts of all of the environmental impacts on the City of Marina. By taking this segmented approach, it never asked or answered the question "What are the high and disproportionate total impacts of the Project on the City?" Had it done a proper analysis, it would have determined that Marina is bearing a

disproportionate brunt of the environmental impacts now and indefinitely into the future, particularly in regard to the potential depletion and contamination of its water supply, the potential destruction of its coastal ecosystem, and the traffic, noise and aesthetic impacts.

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It is clear that environmental justice analysis in the Draft EIR/EIS fails to meet any of the applicable NEPA requirements explained above. First, MBNMS cannot turn a blind eye to the environmental impacts of the land-based impacts of the Project, including the potential depletion and degradation of Marina's groundwater supply, which the Draft EIR/EIS improperly dismisses without evaluation under the assumption that the water CalAm is proposing to pump is unsuitable for municipal or domestic use (while also maintaining this water is an appropriate water source for the municipal and domestic uses proposed to be served by the Project). CEQA's Guidance specifies that it must take into account impacts outside its immediate permitting jurisdiction. Second, the segmented analysis in the Draft EIR/EIS fails to analyze the multiple and cumulative "interrelated" impacts of the Project on Marina. Third, the Draft EIR makes no attempt to identify or quantify spatially the Project impacts on Marina or the other two minority populations – rather, it hides those impacts by blurring them across all communities. Fourth, the Draft EIR/EIS does not take environmental justice impacts into account in selecting the environmentally superior/preferable alternative and fails to adopt a single mitigation measure to reduce their impacts.

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In addition, the Draft EIR/EIS also fails to consider the potential socioeconomic impacts the Project may have on the City. The City currently has a secure affordable water source. As discussed in the comments above, the Project could exacerbate seawater intrusion and other water quality impacts in the groundwater aquifers underlying the City of Marina, thereby resulting in potentially higher costs to treat the City's groundwater or forcing the City to look for a more expensive alternative source of water. The Draft EIR/EIS must consider the economic impacts on the City related to the cost of increased treatment and the potential costs for finding replacement water. Since the Draft EIR/EIS fails to consider the complexity of groundwater conditions seaward of the "seawater/freshwater interface" in the 180/400 Foot Aquifers (which is neither factually appropriate nor a true measure of all potential groundwater quality impacts), the Draft EIR/EIS has failed to specifically consider the potential groundwater impacts to areas of the aquifer specifically underlying the City of Marina. These impacts must be fully analyzed, and the potential additional socioeconomic effects on the City must be disclosed.

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In addition to the failure of the Draft EIR/EIS to accurately identify the high proportion of potential environmental and socioeconomic burdens that would be imposed on Marina as a result of the Project, the City feels that this Project is just one of a string of projects proposed by other jurisdictions on the Monterey Peninsula that impose a disproportionate environmental burden on the community of Marina, including the Monterey Regional Water Pollution Control Agency's facilities (including its wastewater treatment plant), the proposed advanced treatment plant for Pure Water Monterey, the Monterey Peninsula Regional Waste Management District's facilities (including its regional landfill and authorized composting operations), methane and other greenhouse gases from livestock ranching adjacent to Marina residential areas, and emissions from drift of pesticides, fertilizers, and other soil amendments from agricultural

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operations adjacent to or proximate to City of Marina residential areas. These cumulative impacts matter a great deal to residents of and visitors to Marina for health and environmental justice reasons. There are currently frequent complaints from this City's residents of offensive odors apparently coming from north of the City and this is but one example of existing conditions from existing or planned future facilities affecting the City's environment.

The Draft EIR/EIS should describe current conditions of potential nuisances, impactful uses in areas immediately surrounding the City, and unhealthy odors and emissions proximate to the City in the context of environmental justice. The Draft EIR/EIS should disclose the total emission of existing and planned facilities (such as those listed above), and include their individual totals, their cumulative total, and relevant numeric emission standards/metrics/thresholds in an additional table such as a new Table 4.20-7. These emissions should be compared to other areas of the County and other cities on the Monterey Peninsula to meaningfully compare emissions that the City of Marina is subjected to with emissions other areas of the County, particularly those that would benefit from the MPWSP, are subjected to.

Marina-135 cont.

No relevant numeric emission standards/metrics/thresholds are listed in section 4.20 including Table 4.20-6. The Draft EIR/EIS should include a column or columns in Table 4.20-6 for relevant numeric standards/metrics/thresholds.

The City is concerned that the City's discretionary approval authority over actions proposed within the City's limits has been and will be undermined. This has resulted in development within the City limits that (1) provides absolutely no benefit to the community of Marina, (2) has the potential to severely impact Marina resources, and (3) community members have repeatedly and overwhelmingly objected to.

The Project represents a large industrial use with the potential to result in severe irreversible impacts to the City, particularly in regards to potential depletion and contamination of its water supply, the destruction of its coastal ecosystem, and the traffic and noise impacts of the Project, which provides no benefit to the community of Marina. The City residents would be forced to bear a disproportionate brunt of the environmental impacts of the Project now and indefinitely into the future.

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The City wants the lead agencies, as well as the California Coastal Commission, to consider and protect their coastal and groundwater resources with the same level of scrutiny as is enforced on other communities and has been enforced for proposed developments within the City in the past. The City should not be the preferred location for all of the largest industrial uses in Monterey County. Environmental justice issues should require the municipalities and jurisdictions that would benefit from the Project also bear the environmental burden of the Project, including through siting of the proposed slant wells outside of the City's aquifers and coastal areas.

CHAPTER 5.0 – ALTERNATIVES SCREENING AND ANALYSIS

A. Key Legal Requirements

The analysis of alternatives is one of the key components of an environmental review document under both CEQA and NEPA. Indeed, the alternatives and mitigation sections are "[t]he core of an EIR." *Citizens of Goleta Valley v. Bd. of Supervisors*, 52 Cal. 3d 553, 564 (1990). The CEQA Guidelines provide that the EIR must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, ..." CEQA Guidelines § 15126.6(a). Although alternatives should be designed to meet most project objectives, it is not required that an alternative meet all of them. *See, e.g., Mira Mar Mobile Comty. v. City of Oceanside*, 119 Cal. App. 4th 477, 489 (2004) ("alternatives need not satisfy all project objections, they must merely meet 'most' of them"); *Habitat & Watershed Caretakers v. City of Santa Cruz*, 213 Cal. App. 4th 1277, 1304 (2013) (a "limited water" alternative project "could not be eliminated from consideration solely because it would impede to some extent the attainment of the project's objectives").

The California Supreme court has emphasized the importance of a legally adequate alternatives analysis:

> An EIR's discussion of alternatives must contain analysis sufficient to allow informed decision making. [Citation.] [¶] ... [¶] ... Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process.... 'To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions.' [Citations.] An EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.

Laurel Heights Improvement Assn., 47 Cal.3d at 404-05.

NEPA and its implementing regulations also require the development and discussion of alternatives. 40 U.S.C. §§ 4332(2)(C)(iii) and(2)(E); 40 C.F.R. § 1502.10(e). In fact, NEPA requires an exceptionally robust discussion of alternatives, which the regulations describe as "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. Among other things, the regulations prescribe that the document "[r]igorously explore and objectively evaluate all reasonable alternatives" and that this discussion include "reasonable alternatives not within the jurisdiction of the lead agency." *Id*.

B. The Draft EIR/EIS's Failures To Adequately State Project Objectives/Need Or To Adequately Analyze Project Environmental Impacts Fatally Undermine The Alternatives Analysis.

The adequacy of an EIR/EIS alternatives analysis is critically dependent upon a proper statement of project objectives (CEQA) and purpose and need (NEPA), a complete and stable description of the project, an adequate analysis of project impacts, and a full slate of feasible mitigation measures. If any of these components is missing, it is not possible to complete a legally adequate alternatives analysis. Unfortunately, for all of the reasons set forth in other sections of these comments, these legal predicates are missing, which fundamentally impairs the entire alternatives analysis. We will specifically address two examples of these inadequacies below.

1. Project Objectives/Purpose and Need – Water Demand

As set forth in Marina's comments on chapters 2.1-2.5 and 3 herein, the water "demand" for the Project is stated to be 10,750 afy, which is a number that is not supported by substantial evidence and which the CPUC and MBNMS have not properly scrutinized and modified as required by CEQA and NEPA. Although the list of Project Objectives in chapter 1 does not explicitly state this "need" number, it is apparently incorporated from the "water demand" analysis in chapters 2.1 to 2.5 and carried forward into the alternatives analysis. As described above, CalAm's true existing "need" from all water sources is no more than 9,545 afy and the other identified water "needs" are for a few possible future needs plus over 2,000 afy of water for unspecified "other uses." Since CalAm will receive up to 6,244 afy of water from other identified sources each year (even with all of the anticipated Carmel River and Seaside Basin restrictions), its true water "need" from the Project is in the range of 3,000 afy to meet existing demand. Marina-137

As described in the next section, this flawed water demand/need analysis has resulted in an across-the-board elimination of any Project alternative that does not result in a total Project water production number of 10,750 afy. Although the 6.4 mgd desalination plant alternatives in Alternatives 5a and 5b would produce less desalinated water, they are only considered in the context of another 3,500 afy of water from the GWR Project. These two smaller plant alternatives are not being considered without the GWR Project because they do not meet CalAm's asserted "need" for a total of 10,750 afy of water. Thus, the deficient project objectives/need statement has improperly foreclosed consideration of any Project alternative that produces less water.

2. Groundwater Resource Impacts

Another example of how a legally inadequate prior analysis of an issue undermines the alternatives analysis relates to the Project's groundwater impacts. For all of the reasons in Marina's comments to chapter 4.4 herein, the Draft EIR/EIS analysis of Project impacts to the groundwater aquifers are legally inadequate and the resulting conclusion that they are "less than Marina-138

significant" is not supported by substantial evidence in the record. In fact, it appears that there is a high risk of significant impacts to groundwater supply, groundwater quality and groundwater storage as a result of the Project, particularly in the aquifer areas underlying Marina. Thus, these impacts should have been identified as significant and comparatively evaluated across all alternatives.

The critical problem that inevitably occurs in the Draft EIR/EIS when this failure to recognize the significance of the Project's groundwater impacts is carried through to the alternatives analysis is that any discussion of groundwater resource impacts is dropped out of the comparison of alternatives. Thus, alternatives which would have demonstrably less impacts on Marina's groundwater (such as the Potrero Road and ocean water intake alternatives) are not recognized for this advantage – rather, they are incorrectly categorized as having the same "less than significant impact" to groundwater resources that the Project supposedly would. It is remarkable that one of the Project's most significant environmental impacts is thus neutralized and of no consequence in the alternatives selection process.

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C. The Draft EIR/EIS's Screening Of Alternatives Is Fatally Flawed.

The Draft EIR/EIS fully evaluates only six alternatives (treating Alternatives 5a and 5b as separate alternatives) to the Project plus the No Project Alternative. The screening and evaluation process that led to these alternatives is described in chapters 5.2 and 5.3.

The alternative screening process followed in the Draft EIR/EIS basically involved two types of reviews. First, in section 5.2, certain previously identified projects (such as the Coastal Water Project and the MCWRA Interlake Tunnel and Water Supply Project) were rejected on a variety of grounds. Second, in section 5.3, the Draft EIR/EIS utilized a "development, screening and evaluation process" to identify other alternatives. However, for reasons that are not explained, this selection process had an unreasonably narrow scope: it focused only on options for the source water "intake" component. The Appendices that contain this analysis (I1 and I2) only examined these component options and one option of siting the desalination plant on another property.

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1. The Draft EIR/EIS Is Legally Inadequate For Failing To Include A Smaller Project Alternative.

There are many critical deficiencies in this analysis that improperly screened out several alternatives that should have been evaluated, three of which we will discuss here. First and foremost, there is *no* Project alternative (including Alternatives 5a and 5b) which constitutes a Project with a smaller total water "demand" target that aligns with the actual Project water needs. No screening of any kind occurred with regard to a smaller Project that would dramatically lower the type and intensity of the Project's environmental impacts. Instead, the Draft EIR/EIS rejected at the outset the only Project alternative that would produce less than 10,750 afy (the "Pure Water Monterey Groundwater Replenishment Project") because it would only produce

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3,500 afy of water, which is supposedly "about 6,250 afy short" of meeting the Project's supposed need of 10,750 afy of water. Draft EIR/EIS at 5.2-6.

The failure of the Draft EIR/EIS to consider any alternative standalone Project that would generate less than 10,750 afy of water is a critical deficiency in the alternatives analysis, particularly given the wide range of potentially very significant impacts to the groundwater aquifers and sensitive coastal ecosystem caused by such a large Project. The CEQA and NEPA case law is clear that only "most," not "all," of a Project's objectives (CEQA or NEPA) need to be met by an alternative. For example, a court invalidated an EIR alternatives analysis under CEQA because the public agency failed to evaluate any "limited water" alternative because it did not meet the primary project objective of high-density housing – the court ruled that this alternative should have been included because it was a feasible alternative that would avoid some of the Project's significant environmental effects. *Habitat &Watershed Caretakers*, 213 Cal. App. 4th at 1303-04. Similarly, a federal court invalidated a NEPA alternatives analysis for a private landfill project in California because an unduly limited "purpose and need" statement (which the court criticized because the federal agency allowed the private interests to define most of the scope of the proposed project) improperly restricted the scope of the alternatives that were considered in the EIS. *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1061 (9th Cir. 2010).

Marina-140 cont.

Therefore, the failure of the Draft EIR/EIS to include any alternative that would not meet the 10,750 afy water demand request from CalAm (which is not even a figure adequately supported or even identified in the Project Objectives) incorrectly and unreasonably limited the scope of the alternatives analyzed, thereby undermining the legal adequacy of the alternatives analysis.

2. The Intake Option Analysis Omitted Key Technology Considerations.

A second major deficiency in the screening process involved the factors used in the selection of the intake options. The options analysis did not consider a full range of factors because it excluded any consideration of reliability and past success rate (if any) of the intake technology chosen, as discussed in our comments for chapter 3 herein. This complete failure to take into account these fundamental technology considerations – which have played an important role in desalination plant intake analyses conducted for many other California projects – unreasonably skewed the selection of alternatives in favor of the proposed slant well intake option.

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3. No Alternatives Were Selected To Avoid Or Lessen Significant And Unavoidable Impacts.

A third major deficiency in the screening process relates to the failure to propose alternatives to avoid or lessen significant and unavoidable environmental impacts. The CEQA Guidelines specify: "Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code § 21002.1), the

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discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." CEQA Guidelines § 15126.6(b). There is no evidence here that the alternatives chosen are designed to avoid or lessen such impacts.

The Project would result in significant and unavoidable impacts related to air quality and greenhouse gas emissions, and potentially significant impacts related to energy conservation, yet none of the alternatives evaluated in section 5 would reduce impacts associated with these issue areas. Despite the fact that one primary Project objective is to "Minimize energy requirements and greenhouse gas emissions per unit of water delivered" (page 5.1-5), anticipated impacts to air quality, greenhouse gas emissions and energy conservation are either similar or increased compared to the proposed Project for every alternative evaluated in section 5. An alternative should have been developed to reduce impacts related to these impacts. For example, the Landfill-Gas-to-Energy Option (section 4.18.4.3) was not explored further as a potential Alternative project component for consideration by the lead agencies. Instead, it was only briefly discussed as a possibility in section 4.18 and identified as requiring separate environmental review.

Marina-142 cont.

D. The Description Of The Projects Evaluated In Detail Is Legally Deficient.

Chapter 5.4 of the Draft EIR/EIS discusses each of the seven final alternatives (including the No Project Alternative) that it decided to carry through to this level of analysis. Each individual discussion contains a section entitled "Ability to Meet Project Objectives." Several of these alternatives are stated flatly to not meet the Project need for water because they do not meet CalAm's request for a Project that generates 10,750 afy of water. These conclusions are reached for the No Action Alternative (page 5.4-10), the Potrero Road slant well alternative (page 5.4-15) and the reduced size alternatives (5a and 5b) standing on their own (page 5.4-57). However, as explained above, these analyses are inadequate because they are based on a legally deficient statement of Project objectives and needs.

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E. The Alternatives Impact Analyses Are Legally Inadequate.

Section 5.5 of the Draft EIR/EIS attempts to compare the seven alternatives to the Project across each category of environmental impact discussed earlier in the document. However, most of these comparative analyses cannot be done properly because of the inadequacies in the underlying environmental impact discussions. For example, our comments on chapter 4.15 demonstrate that the Project will potentially cause a significant impact to historic resources. The Draft EIR/EIS failed to identify these historic resources and wrongly concluded that no such impact will occur. This deficiency is carried through into this alternatives comparison because the Draft EIR/EIS wrongly concludes that other alternatives which have no impacts on such resources have the same lack of impact as the Project and are therefore equivalent on this parameter. These same types of deficiencies are present in many of the analyses, rendering any meaningful comparison impossible.

Marina-144

One comparative impact discussion bears particular attention. The comparison of alternatives across the groundwater resource parameter are entirely inaccurate because of the range of deficiencies identified in our comments to chapter 4.4. For example, since the Draft EIR/EIS incorrectly concludes, without substantial support in the record, that the Project's potential impacts to groundwater quality and exacerbation of seawater intrusion are supposedly "less than significant" (page 5.5-83), it incorrectly takes the position that Project alternatives that clearly do not pose any risk to groundwater quality or seawater intrusion impacts, including all the open water intake options, are the same as the Project on this parameter because they too will have a less than significant impact on groundwater resources. This approach improperly eliminates any analysis of the relative impacts of the alternative projects on the groundwater aquifers.

Marina-144 cont.

F. The Selection Of The Environmentally Superior/Preferred Alternative Is Legally Inadequate Due To The Accumulated Deficiencies In The Project Description, Impact Analyses, Mitigation Measures And Selection Of Alternatives.

The selection of the environmentally superior alternative (or preferred alternative under NEPA) is based on a comparison of the alternatives based on all the factors discussed above. Where, as here, the Project objectives/needs and individual impact analyses are inadequate, the selection of an environmentally superior alternative cannot be made. For these reasons, the critical deficiencies in the prior analyses makes it impossible to make such a selection and the one made here is legally inadequate.

Nonetheless, chapter 5.6 of the Draft EIR/EIS concludes that Alternative 5a, which includes a 6.4 mgd desalination plant with slant wells at the CEMEX site in Marina, and if and only if combined with 3,500 afy from the GWR project on certain conditions, is the environmentally superior alternative. It is explicitly stated not to be the environmentally superior alternative as a standalone project because it would not generate the total water demand sought by CalAm (page 5.6-7).

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This selection of the environmentally superior alternative is notable for its brevity (only two pages of text). The discussion, which incorporates some of the analyses in prior sections, appears primarily based on which alternatives can produce a total of 9.6 mgd of water. It also substantially downgrades any open ocean intake alternative, such as the open water intake alternative at Moss Landing, because they supposedly will cause "permitting complexities and delay" due to the permits required. However, this new "permit complexity and delay" comparison factor is inconsistent with its approach to the Draft EIR/EIS's analysis of the Project, which faces substantial permitting complexities and delays because the Project lacks any water rights and its planned water extraction is directly prohibited by laws, an ordinance and an annexation agreement. The failure to evaluate all alternatives on a level playing field with regard to permitting complexities and delays further undermines this analysis.

The comparative impact analysis for the Potrero Road Alternative (Alternative 1) is particularly deficient. This alternative involves installing the subsurface slant wells at the Potrero Road site and running the source water pipeline from that location to the desalination plant. In the discussion of the impacts caused by each alternative (page 5.6-5), this alternative is stated to have "significant and unavoidable impacts" because it supposedly captures groundwater that would flow into Elkhorn Slough. However, this conclusion is not supported by substantial evidence. The prior impact discussion on which it is based (page 5.5-86) states only that slant well pumping at this location "may" draw in groundwater that could recharge the Slough, but then adds: "However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM." Marina-146

In short, the groundwater model used for assessing groundwater impacts was unable to make any analysis of whether slant wells at Potrero Road would cause the speculative impacts to Elkhorn Slough. These impacts have no scientific basis and the initial conclusion was they "may" have such an effect, but no verification was attempted or made. Unfortunately, this "may have an impact" conclusion then was improperly translated in the alternative comparison section to be that it "would result in significant and unavoidable impacts." In fact, this "finding," which was the primary reason why Alternative 1 was not chosen as the environmentally superior alternative, lacks substantial evidence in the record and fatally undermines this comparison of alternatives.

It appears that several of the alternatives that are identified – possibly including the Potrero Road alternative and the ocean intake alternatives – would in fact be an environmentally superior alternative if a full and legally adequate set of environmental impact analyses had been prepared. Moreover, if Project alternatives that produced less than 9.6 mgd of water had been evaluated, there is no doubt that they would be environmentally superior to the current designated environmentally superior option because of the lessened size and scope of their environmental impacts. However, these potential alternatives were eliminated based on the agencies' failure to properly scrutinize CalAm's inadequately supported request for a project that generates 10,750 afy of water. Marina-147

In sum, the selection of the environmentally superior alternative (CEQA) and preferred alternative (NEPA) is invalid because the necessary factual and legal analyses that underpin the selection criteria and comparison are legally inadequate. This alternatives analysis must be completely redone and recirculated for public comment in a new Draft EIR/EIS that addresses all of these deficiencies.

CHAPTER 6.0 – OTHER CONSIDERATIONS

This section addresses the description, impacts and mitigation measures relating to the Project's growth-inducing impacts.

Section 6.1

The reader should refer to comments on sections 4.10 (Air Quality), 4.11 (Greenhouse Gas Emissions), and 4.18 (Energy Conservation) regarding impact conclusions and mitigation measures. Marina-148

Section 6.3 Growth-Inducing Impacts

The reader should refer to comments on Sections 2.1 to 2.5. As stated in those comments, the need for the Project appears to be vastly overstated. It is disingenuous to claim that the need for the project is 10,750 afy but the potential for growth inducement is limited to the availability of only an additional supply of 2,005 afy to be provided by the Project. This apparent discrepancy should be resolved. Marina-149

In addition, in the event CalAm ever stops its illegal pumping on the Carmel River and the Seaside Basin, there would potentially be more water supplies available from those currently overdrafted sources for legal users that could further induce growth in Monterey County. The Draft EIR/EIS fails to address these potential growth-inducing impacts and other impacts related to the surplus of water to be supplied to CalAm through implementation of the Project. Marina-150

Section 6.3.6 Secondary Effects of Growth

This section fails to include a discussion pertaining to the potential substantial increase in wastewater generated by indirect growth inducement (residential development enabled by elimination of water restrictions) and need for new or expanded wastewater collection and treatment facilities and associated secondary effects. The capacity of existing infrastructure should be identified and evaluated against the anticipated project-generated demands. Any constraints or impacts should be clearly identified. Marina-151

Table J2-1

This section lacks introductory information that is needed to explain what this information is intended to show. Table J2-1 appears to merely show the impacts of growth as identified in EIRs and MNDs for previously prepared General Plans in the Project area. This table and this Appendix do not provide a project-specific analysis of the secondary effects of growth that would result from implementation of the Project. These impacts must be adequately addressed on a project-specific basis. Referring to the EIRs and MNDs of previously adopted General Plans is inadequate unless it can be shown and supported by substantial evidence that the effects of growth in those General Plans assumes the availability of water supplies that the MPWSP would make available. Otherwise, the MPWSP would further remove a constraint to growth and result in substantially more severe growth inducement and secondary effects of growth than identified in the previous EIRs and MNDs. These issues must be fully disclosed in the Draft EIR/EIS. Marina-152

Further information is needed in this section to describe why some impact determinations in Table J2-1 reflect two levels of significance (i.e., LS/U). The table also fails to reflect the level of significance after implementation of all feasible mitigation measures.

Marina-152 cont.

Impacts on Carmel River

The Draft EIR fails to identify changes that would occur as a result of CalAm's reduced pumping on the Carmel River. Would river flows increase? Would riparian areas and habitat adjacent to the River be impacted? Would downstream areas be affected by increased capacity of the River? Would infrastructure be removed from the Carmel River? What would that entail? What would the environmental effects of decommissioning these existing components be?

Marina-153

CONCLUSION

The City of Marina appreciates the opportunity to provide these comments regarding the Draft EIR/EIS for the Project. Please contact the City, its consultants or Farella if you have any questions.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

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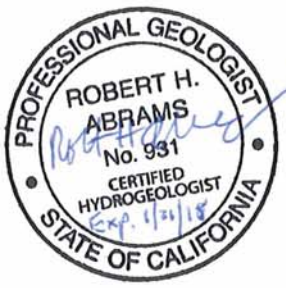
Appendix 1

JACOBSON | JAMES
& associates, inc

MEMORANDUM



Date: March 27, 2017

Prepared By: Robert H. Abrams, PhD, PG, CHg

Reviewed By: Jan Jacobson and Michael Tietze, PG, CEG, CHg

Subject: Comments on behalf of the City of Marina regarding the Draft EIR/EIS Monterey Peninsula Water Supply Project, Monterey County, California

Jacobson James & Associates (JJ&A) has prepared this memorandum to provide technical comments on behalf of the City of Marina regarding the California American Water Company (CalAm) Monterey Peninsula Water Supply Project (MPWSP or Project) Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS), issued on January 13, 2017 by the California Public Utilities Commission and the Monterey Bay National Marine Sanctuary. All comments herein are professional opinions of JJ&A regarding material contained within or relevant to the Draft EIR/EIS.

1.0 INTRODUCTION

The proposed MPWSP includes a desalination plant with ten subsurface, seaward-facing slant wells to produce raw feedwater for the plant (Figure 1). These slant wells would pump up to 24.1 million gallons per day (MGD) of subsurface water from beneath the Monterey Bay coastline. The wells are proposed to be located on the CEMEX sand-mining property in Marina, California. The Draft EIR/EIS assumes that the plant feedwater will consist primarily of seawater that infiltrates through the seabed offshore from the CEMEX property. A test slant well is currently operating on this property. Alternative 5a, which has been designated the California Environmental Quality Act (CEQA) environmentally superior alternative and National Environmental Policy Act (NEPA) preferred alternative, would use seven slant wells on the CEMEX sand-mining property to pump up to 15.5 MGD of subsurface feedwater from beneath the Monterey Bay coastline.

To prepare these comments, JJ&A reviewed the project description and portions of the Draft EIR/EIS relating to groundwater resources, published peer-reviewed scientific research focused on the application of geophysical techniques to evaluate subsurface conditions in and around the Project area, and a video transcript of a presentation to the Marina City Council by geophysics professor Rosemary Knight.[1] JJ&A finds the evaluation of potential impacts to groundwater resources, water

[1] Presented at Marina City Council meeting, February 7, 2017 (https://sites.google.com/site/ampmediacenter/amp-programming/marina-video-on-demand-1).

quality, and water supplies in the Draft EIR/EIS to be incomplete from a technical perspective, leading to the conclusion that potential adverse impacts to groundwater supplies in the City of Marina have not been adequately evaluated. In our opinion, the technical deficiencies identified herein should be addressed and a revised Draft EIR/EIS prepared before certification by the CPUC and MBNMS.

1.1 Comment Organization and Overview

A primary concern for stakeholders in the MPWSP area is the effect of proposed Project pumping on existing and future seawater intrusion in the groundwater aquifers that provide water to the citizens of Marina and others, who rely exclusively or primarily on groundwater for their water supplies. Surface water resources in the region are fully allocated and scarce for all municipal, agricultural, industrial, and domestic water uses; therefore, protection of groundwater resources is imperative. The environmental analysis in the Draft EIR/EIS did not adequately assess the possibility of adverse impacts to groundwater quality and the City of Marina's drinking water supply from exacerbated seawater intrusion and other effects caused by the proposed MPWSP pumping.

JJ&A's findings and conclusions may be grouped into the following five comment areas:

1. Recent and ongoing geophysical investigations in the project vicinity related to seawater intrusion, although briefly mentioned in the Draft EIR/EIS, were not considered in the impact analysis. These studies provide substantive data that are necessary to adequately understand potential water quality impacts to drinking water supplies. As such the Draft EIR/EIS evaluation of potential impacts to groundwater quality and supplies is incomplete and inadequate.
2. Ongoing seawater intrusion control efforts in the area could have a significant effect on the feedwater source area for the proposed slant wells. As a result, a much greater percentage of feedwater may be extracted from inland areas of the local aquifers than has been assumed. The potential for this to occur was not considered in the Draft EIR/EIS.
3. Potential impacts to the 900-Foot Aquifer, a primary water source for the City of Marina, were not evaluated or discussed.
4. Alignments of proposed slant well casings appear to be mostly within the city limits of Marina and not substantially beneath the seafloor, as was assumed in the evaluation included in the Draft EIR/EIS.
5. The groundwater modeling effort conducted for the Draft EIR/EIS is too simplistic and insufficiently designed to adequately evaluate the potential impacts of feedwater pumping on water quality in the 180-Foot, 400-Foot, and 900-Foot aquifers. In addition, the approach used does not consider cumulative impacts and is insufficient for their evaluation.

These comment areas are discussed in detail in Section 2 of this memorandum.

1.2 Background

Using designations defined by the Monterey County Water Resources Agency (MCWRA), the proposed MPWSP is located in the Pressure Subarea of the Salinas Valley Groundwater Basin (SVGB) (Figure 1).[2] Using California Department of Water Resources (DWR) designations, the MPWSP area is located in the 180/400-Foot Aquifer Subbasin of the SVGB.[3] Wells operated by Marina Coast Water District (MCWD) that supply drinking water to the City of Marina are located in the Monterey Subbasin designated by DWR, which is located within the boundary of the Pressure Subarea of the SVGB designated by MCWRA (Figure 1). The MCWD wells are screened in the 180-Foot, 400-Foot, and 900-Foot aquifers.

1.2.1 Local Hydrogeology

A regionally extensive series of clay layers known as the Salinas Valley Aquitard (SVA) is present in the shallow subsurface within the Pressure Subarea of the SVGB. Above the SVA a zone of generally poor-quality groundwater occurs in the shallow or Dune Sand Aquifer. The 180-Foot Aquifer underlies the SVA. Where the SVA is absent, such as in the immediate area of the test slant well and the proposed Project slant wells, the Dune Sand Aquifer directly overlies the 180-Foot Aquifer and 180-Foot Equivalent Aquifer (180-FTE Aquifer).[4]

DWR characterizes the 180-Foot Aquifer as a confined aquifer within the 180/400 Foot Aquifer Subbasin. However, a recent report prepared for the MCWRA characterizes groundwater in this aquifer as predominantly confined, except where the overlying SVA is absent.[5] The Draft EIR/EIS states that the Dune Sand Aquifer and the 180-FTE Aquifer are unconfined at the CEMEX site, because there are no extensive overlying low-permeability clay units at this location. This means that in the MPWSP area, the Dune Sand Aquifer and the 180-FTE Aquifer are likely in direct hydraulic communication.

The 180-Foot Aquifer is separated from the underlying 400-Foot Aquifer by a zone of discontinuous aquifers and aquitards.[3] The primary aquitard separating the 180-Foot Aquifer and 400-Foot Aquifer is a clay layer known as the 180/400-Foot Aquitard, which varies in composition, depth, and thickness (typically 50 to 100 feet thick), and is absent in some areas.[5] The 400-Foot Aquifer, which on average is 200-feet thick,[3] is generally considered to be semi-confined to confined. Where the 180/400-Foot Aquitard is thin or absent, the 180-Foot Aquifer and 400-Foot Aquifer are in direct hydraulic communication.

Variability in the thickness and quality of the 180/400-Foot Aquitard and the existence of possible gaps in the aquitard have been noted. For example, two small "holes" in the aquitard, one under the Salinas River near Blanco and another under the old Salinas River bed near the coast have been documented. Other gaps in the 180/400-Foot Aquitard have been noted near the mouth of the Salinas River and near Fort Ord, as well as several areas between Castroville and the coast, where the aquitard is thin or

[2] http://www.mcwra.co.monterey.ca.us/groundwater_level_monitoring/groundwater_level_monitoring_overview.php
[3] http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/3-04.01.pdf
[4] The 180-Foot Equivalent Aquifer is stratigraphically equivalent and hydraulically connected to the 180-Foot Aquifer, and has similar hydraulic properties, although it is depositionally different than 180-Foot Aquifer.
[5] http://www.mcwra.co.monterey.ca.us/hydrogeologic_reports/documents/State_of_the_SRGBasin_Jan16_2015.pdf

absent.[5] If the SVA is also absent in these same areas, the 400-Foot Aquifer would be unconfined in those areas and in hydraulic communication with the Dune Sand Aquifer. The Draft EIR/EIS states that the 180/400-Foot Aquitard is present beneath the CEMEX site, but also states that the 400-Foot Aquifer at the CEMEX site is within the unconfined Aromas Sand, suggesting that the three uppermost aquifers in this area behave essentially as a single aquifer system.

The 900-Foot Aquifer is present in the lower Salinas Valley. A clay aquitard separates this aquifer from the overlying 400-Foot Aquifer. The 900-Foot Aquifer consists of a thick sequence of alternating layers of sand-gravel mixtures and clays, rather than a distinct aquifer and aquitard.[3] The 900-Foot Aquifer is reported to be confined.

1.2.2 Seawater Intrusion and the Potential for Adverse Impacts

Seawater intrusion has been well-documented in Monterey County since at least the 1940s.[6] For example, the Seaside Subbasin is adjudicated due to overdraft and the threat of seawater intrusion. Various entities, including the MCWRA and its predecessor agency, have studied and evaluated the extent of seawater intrusion and proposed or constructed projects with the goal of limiting, halting, or reversing movement of seawater intrusion further inland.[7]

The extent of seawater intrusion in the 180-Foot and 400-Foot aquifers has been monitored by MCWRA for many years, by measuring various groundwater quality parameters at a designated set of monitoring and other wells. The measurements at these wells are point values, which are used to develop two-dimensional concentration contour maps to assess the lateral extent of seawater intrusion in the principal aquifers by interpolating between these point values. MCWRA publishes maps every two years, showing the position of the seawater intrusion front based on the location of the interpolated 500 mg/L chloride concentration contour line (Figures 2 and 3). These maps show the location of the seawater intrusion front beginning in 1944 in the 180-Foot Aquifer and 1959 in the 400-Foot Aquifer. The most recent maps available at this time show the position of the seawater intrusion front through 2013, based on data from the designated wells. The 2013 data indicate that the seawater intrusion fronts are in approximately the same locations they were in 2011; indicating that seawater intrusion did not advance further inland between 2011 and 2013.

Groundwater quality monitoring at wells provides valuable information about the two-dimensional extent of seawater intrusion in the principal aquifers through time, but must be supported by an adequate understanding of the actual seawater migration pathways in three dimensions to adequately inform aquifer and groundwater resource management decisions and impact analyses. As discussed later in this memorandum, the MCWRA seawater intrusion maps alone do not provide a clear understanding of the actual three-dimensional distribution of groundwater degraded by seawater intrusion, or of the lateral and vertical seawater migration pathways.

[6] http://www.mcwra.co.monterey.ca.us/seawater_intrusion_monitoring/seawater_intrusion_monitoring.php
[7] See for example, http://www.mcwra.co.monterey.ca.us/salinas_river_diversion_fac/salinas_river_diversion_fac.php, http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_I/salinas_valley_water_project_I.php, http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php.

The analysis in the Draft EIR/EIS relies on the MCWRA maps alone, and does not consider data in the third dimension (i.e., variability with depth within and between principal aquifers) from other existing sources that would allow the threat to groundwater wells to be evaluated more adequately. Assessment of the probability of water quality degradation and adverse impacts to the City of Marina's drinking water supply and other groundwater users should be conducted using all of the substantive data available, and by developing models capable of addressing the range of possible future impacts, rather than simplistic interpolations based on monitoring data alone.

Marina-JJ&A-01

Figures 2 and 3 show the locations of wells operated by MCWD that supply drinking water to the City of Marina relative to the documented seawater intrusion fronts. Known gaps in the confining clay layers above and between the 180-Foot and 400-Foot Aquifers, and the fact that the clay layers are absent in some areas potentially leave these water-supply wells vulnerable to seawater intrusion from both vertical and horizontal migration of seawater-intruded groundwater. It should be noted it is not clearly known at this time if vertical pathways exist for groundwater flow from the 400-Foot Aquifer to the 900-Foot Aquifer.

The groundwater resources impact analysis in the Draft EIR/EIS is primarily focused on changes in groundwater levels, or drawdown, caused by proposed Project pumping. Discussion of the potential impacts resulting from exacerbated seawater intrusion is limited in the Draft EIR/EIS, and these impacts are evaluated only in terms of the potential for MPWSP feedwater pumping to change the rate of horizontal inland migration of the seawater intrusion front (as defined by 500 mg/L chloride concentration) based on a simplistic assessment of lateral groundwater flow within the principal aquifers alone. Vertical groundwater flow that will likely be induced between the aquifers by the MPWSP was not adequately evaluated, leading to an incomplete understanding of potential adverse impacts to groundwater quality and wells. In our opinion, it is important to evaluate the potential migration of seawater intrusion that could be caused by MPWSP pumping, and the impact these events could have on groundwater wells in the City of Marina.

Marina-JJ&A-02

2.0 DISCUSSION OF COMMENT AREAS

Section 2 of this memorandum provides detailed discussions of the five comment areas identified by JJ&A, which led to our conclusion that the Draft EIR/EIS does not adequately evaluate the potential for adverse impacts to groundwater resources and supply wells in the City of Marina.

2.1 The Importance and Relevance of Local Geophysical Investigations

Geophysical methods are widely recognized as useful tools to fill critical data gaps between point values when a three-dimensional perspective is required. Addressing these data gaps and developing a more complete conceptual understanding of three-dimensional groundwater flow is a crucial and valuable complement to the seawater-intrusion monitoring data collected at wells in Monterey County, for the purpose of informing groundwater management decisions and impact analyses. Such geophysical surveys are typically validated by utilizing groundwater quality parameters collected in the field at point locations. Stanford University Professor of Geophysics Rosemary Knight and colleagues, as well as many other researchers, have reported extensively on the use of electrical resistivity tomography (ERT) and

Marina-JJ&A-03

other geophysical methods to characterize seawater intrusion in the subsurface.[8] Much of this research has been conducted along the Monterey Bay coastline in Monterey and Santa Cruz counties, near the MPWSP area.

Section 4.4 of the Draft EIR/EIS mentions briefly the use of geophysics and ERT along the coastline of Monterey Bay near the CEMEX site. Page 4.4-31 of the Draft EIR/EIS states that:

> *"Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells."*

Marina-JJ&A-03

As noted above, field data are used for validation purposes, so correlation of the geophysical results with measured values is expected. No other discussion is provided in the Draft EIR/EIS. This brief statement fails to recognize the key importance of recent ERT analyses to inform the impact analysis conducted for the Draft EIR/EIS, and ignores the principal conclusions of those studies. There is no mention in the Draft EIR/EIS that work by Professor Knight's group has added considerable value, advancing the characterization of aquifers, aquitards, and seawater intrusion along the Monterey Bay coastline, by assessing the subsurface *between and beyond* monitoring wells both laterally and vertically. Furthermore, the 4-mile segment mentioned in the Draft EIR/EIS was a precursor to a much larger study that was occurring before and during the preparation of the Draft EIR/EIS. Both of these studies revealed details of the distribution of subsurface seawater impacts that cannot be characterized by a monitoring well network, as described below. The results of these geophysical investigations have greatly improved the characterization of local hydrogeology and seawater intrusion and should have been integral parts of the evaluations conducted for the Draft EIR/EIS.

2.1.1 Existing Geophysical Investigations in the MPWSP Area

Marina-JJ&A-04

Pidlisecky et al. (2016) present results of ERT imaging over a 7-kilometer (4.3 miles) profile of the Monterey Bay coastline, which extended to a depth of approximately 150 meters (490 feet) (Figure 4). The color-coded plot of electrical resistivity across this area in Panel (a) of Figure 5 shows clearly the different resistivities associated with salt water (red) and fresh water (blue) in the principal aquifers. When combined with lithologic interpretations shown on Panels (b) and (c), the resistivity results delineate the aquifers, aquitards, and horizontal and vertical extents and migration pathways of

[8] See, for example, the following peer-reviewed scientific papers and references cited therein:

Goebel, Pidlisecky, and Knight, 2017. Resistivity imaging reveals complex pattern of saltwater intrusion along Monterey coast. Journal of Hydrology (in press).

Herckenrath, Odlum, Nenna, Knight, Aukem, and Bauer-Gottwein, 2013. Calibrating a salt water intrusion model with time-domain electromagnetic data. Groundwater, Vol. 51, No. 3.

Mills, Hoekstra, Blohm, and Evans, 1988. Time domain electromagnetic soundings for mapping sea-water intrusion in Monterey County, California. Ground Water, Vol. 26, No. 6, p. 771-782.

Nenna, Herckenrath, Knight, Odlum, and McPhee, 2013. Case history – Application and evaluation of electromagnetic methods for imaging saltwater intrusion in coastal aquifers: Seaside Groundwater Basin, California. Geophysics, Vol. 78, No.2, p. B77-B87.

Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261.

seawater intrusion along this section of the Monterey County subsurface. The ERT results provide a vertical cross-sectional image of seawater intrusion and migration in the 180-Foot and 400-Foot aquifers at this location.

Two principal conclusions of this work are that the subsurface geology is more highly variable and spatially heterogeneous than was previously understood, including the aquitards between and overlying the aquifers, and that the distribution of seawater intrusion in these aquifers is also highly variable horizontally and vertically. There are numerous locations where pathways exist for migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system, as well as locations where such pathways do not exist and fresh water is present at depth. Pidlisecky et al. (2016) note the constrained nature of the salt water layer on the southern end of the profile suggests the presence of a thin clay aquitard, which impedes downward migration of salt water from the shallow aquifer in that area. On Figure 5, Panel (b) shows the interpreted location of this thin clay aquitard. Moreover, the pathways and deeper occurrence of salt water at other locations exist in part because aquitards are not present at all locations, and downward vertical flow and transport of degraded groundwater has apparently occurred.

This interpretation is corroborated by information in the Draft EIR/EIS that was not considered in the water quality impact analysis. Figure 4.4-3 of the Draft EIR/EIS shows the presence of significant downward vertical hydraulic gradients observed at four monitoring wells in the MPWSP area on September 10, 2015. Because the SVA is largely absent in this area, downward flow of degraded groundwater between the Dune Sand Aquifer and the 180-Foot Aquifer must be occurring. As shown on Figure 4.4-3 of the Draft EIR/EIS, the presence of the 180/400-Foot Aquitard in most of this area is speculative, and it was noted elsewhere in the Draft EIR/EIS that the 400-Foot Aquifer is unconfined in the MPWSP area, indicating that the 180/400-Foot Aquitard and SVA are absent. Thus, downward flow of seawater-intruded groundwater from the 180-Foot Aquifer to the 400-Foot Aquifer is likely to continue and could be exacerbated by the MPWSP.

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Goebel et al. (2017) extend the work of Pidlisecky et al. (2016) to greater depths (280 meters, or 920 feet), and a significantly longer profile that extends 40 kilometers (25 miles) across three groundwater basins (i.e., the Santa Cruz Mid-County, Pajaro Valley, and Salinas Valley groundwater basins) spanning Santa Cruz and Monterey Counties. This additional study was not considered in the Draft EIR/EIS. The findings of this study were also the subject of the presentation noted above, given by Prof. Knight to the Marina City Council on February 7, 2017, and presented in other local venues prior to this date. Several sections of this extended profile were shown during the presentation, which illustrated similar patterns observed in the earlier work, except that these profiles show imaging of salt water intrusion at depths of 920 feet, i.e., significantly deeper than the 180-Foot and 400-Foot aquifers. As with Pidlisecky et al. (2016), the profiles in Goebel et al. (2017) show clearly where pathways exist for potential downward migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system, as well as locations where such pathways do not exist and fresh water is present at depth.

The resistivity image in Goebel et al. (2017) that covers the same region as the profile in Pidlisecky et al. (2016) indicates a vertical flow barrier deeper in the section that has prevented the downward flow of the higher-salinity water (Goebel et al., 2017). Importantly, this vertical flow barrier is not regionally extensive, thus downward vertical flow of seawater-intruded groundwater from shallower to deeper levels of the aquifer system appears to occur and could be exacerbated by project pumping. The presence of salt water down to depths of 920 feet can be seen on the profiles presented to the Marina City Council by Dr. Knight.

Marina-JJ&A-04

Dr. Knight noted during her February 7, 2017 presentation to Marina City Council that her research team was prevented from crossing the CEMEX property for purposes of conducting ERT measurements, which is where the test slant well is located and is also the site of all proposed Project slant wells. As a result, there is a noticeable data gap at one of the locations where such information is likely to be needed the most.

2.1.2 Near-Future Geophysical Investigations in the MPWSP Area

The existing ERT profiles discussed above give vertical profiles of seawater intrusion for specific locations in the groundwater aquifers (i.e., along the Monterey Bay coastline); however, Dr. Knight and her colleagues are undertaking a new ERT study that will give three-dimensional images of seawater intrusion across a wide area in and around the City of Marina and the MPWSP area. This work is scheduled to occur in May 2017, using the SkyTEM methodology.[9]

These new data will provide valuable insight into the hydrogeological heterogeneity and extent/distribution of seawater in the immediate MPWSP area. Moreover, the new data will reduce the uncertainty associated with the current characterization of the subsurface, and will facilitate a more adequate evaluation of the likelihood of adverse impacts from the proposed MPWSP feedwater pumping to groundwater wells that supply drinking water to the City of Marina. Dr. Knight's upcoming project is planned to include detailed groundwater modeling that accounts for hydraulic parameter uncertainty evaluations.

Marina-JJ&A-05

2.2 Effects of Seawater Intrusion Control Efforts on MPWSP Feedwater Source Areas

The transient North Marina Groundwater Model (NMGWM) was used for the Draft EIR/EIS to evaluate the drawdown impacts caused by proposed MPWSP feedwater pumping. As part of the groundwater modeling effort described in Appendix E2 of the Draft EIR/EIS, a capture-zone, or feedwater source-area, analysis for the proposed MPWSP slant wells was conducted using particle tracking, a steady-state version of the NMGWM, and three different average values for the regional background hydraulic gradient. These average gradients were artificially imposed on the groundwater flow model.[10] Each of these three hydraulic gradients were oriented in the same direction and assumed that the regional groundwater flow direction in the MPWSP area is from the subsea portions of the Dune Sand Aquifer

Marina-JJ&A-06

[9] http://skytem.com/geophysical-surveys/

[10] As explained in Appendix E2 of the Draft EIR/EIS, the hydraulic gradients were artificially imposed because in the superposition model used for the forecast scenarios, the initial water levels and boundary conditions were set to zero. Consequently there was no regional background hydraulic gradient in the simulations.

and the 180-Foot Aquifer toward the inland portions of these aquifers, i.e., landward gradients. Under these conditions, feedwater for the desalination plant would largely be drawn from the subsea portions of the aquifers beneath Monterey Bay. However, it is important to note that concerted and successful efforts have been underway for many years, led by the MCWRA and its predecessor agency, to increase groundwater levels in the inland, seawater-intruded areas of the SVGB to slow, halt, or reverse seawater intrusion.[7] If these mitigation efforts continue to be successful, as will likely be required under the Sustainable Groundwater Management Act (SGMA), the magnitude of the landward hydraulic gradient will decrease as inland groundwater levels increase, thus the shape of the capture zone and extent of the source area for the proposed slant wells will change substantially.

Marina-JJ&A-06

A hypothetical capture zone in the presence of a landward regional hydraulic gradient is shown conceptually on Figure 6a (i.e., conceptual in the sense that it is not drawn to scale and not calculated based on specific pumping rates). The capture zone depicted on Figure 6a is an idealized version of the capture zones shown on Figure 5-6 of Appendix E2 of the Draft EIR/EIS. Current groundwater conditions in the SVGB are such that the capture zone for the proposed slant wells would be conceptually similar to Figure 6a, and the source area for the slant wells would predominantly be the subsea portions of the aquifers. This hydraulic gradient direction occurs because inland groundwater elevations are currently below sea level in a substantial portion of the SVGB.

Two conceptual illustrations of possible future changes to the slant-well capture-zones are shown on Figures 6b and 6c. For purposes of understanding the three conceptual illustrations on Figure 6, the only difference between the three is the direction of the regional hydraulic gradient. Furthermore, the illustrated changes in gradient direction from Figure 6a to Figure 6b and Figure 6c are caused only by increases in inland groundwater elevations. Figure 6c shows the orientation of a hypothetical slant-well capture-zone that would occur if inland groundwater levels were to increase above sea level. Any and all changes to inland groundwater elevations would alter the geometry of the source area for the proposed slant wells. Thus, there are an infinite number of capture-zone geometries that could occur between the end-members illustrated in Figures 6a and 6c. Figure 6b shows an intermediate hypothetical case that would occur if inland groundwater elevations increase to exactly sea level. Thus, the continued success of ongoing seawater-intrusion mitigation projects could potentially strand the MPWSP desalination plant from its source of seawater.

Marina-JJ&A-07

Possible future groundwater conditions such as those described above were not evaluated or discussed in Appendix E2 of the Draft EIR/EIS, even though the goal of MCWRA's ongoing seawater-intrusion control efforts is to increase inland groundwater levels, and such conditions may be considered to be reasonably foreseeable. As such, the Draft EIR/EIS failed to consider that a more substantial fraction of freshwater resources may be captured during feedwater pumping than has been assumed.

2.3 Insufficient Evaluation of the 900-Foot Aquifer

Discussion of the 900-Foot Aquifer is limited in the Draft EIR/EIS. The lack of discussion implies to the reader that potential impacts or harm to the 900-Foot Aquifer from proposed MPWSP feedwater pumping were assumed to be negligible; however, this is not clearly stated. The 900-Foot Aquifer is a

Marina-JJ&A-08

significant water resource for the City of Marina and others in the area. Therefore, discussion of the potential implications of the MPWSP project on this resource should be an integral part of the overall evaluation and should be discussed in detail.

Marina-JJ&A-08

The groundwater modeling evaluations conducted for the Draft EIR/EIS do not address potential impacts to the 900-Foot Aquifer from proposed MPWSP pumping. First, the higher-resolution CEMEX area model described in the April 2015 Draft EIR (DEIR) for the MPWSP did not extend deeper than the 400-Foot Aquifer, and in any case was not included for evaluation purposes in the Draft EIR/EIS. The NMGWM described in both the April 2015 DEIR and the current Draft EIR/EIS does not evaluate the 900-Foot Aquifer beyond a cursory level. For instance, aquifer parameters in model layers 5 through 8 (which are used to represent the 400-Foot Aquifer, the 900-Foot Aquifer, and overlying aquitards) are treated as single zones. Gradational hydraulic conductivity values were used for model layers 5 and 6, but there is no explanation of how the gradational patterns were determined. Hydraulic conductivity in model layers 7 and 8 were assigned single values and the spatial distribution of hydraulic conductivity was considered to be homogeneous, even though all available data indicate that the entire thickness of the aquifer system in the MPWSP area is extremely heterogeneous.

Marina-JJ&A-09

Other deficiencies in the evaluation of the 900-Foot Aquifer include the following:

- The potential impacts of downward vertical flow from shallower seawater-contaminated aquifers (identified during the geophysical investigations discussed earlier in this memorandum) were not discussed or evaluated, despite clear evidence that vertical flow is known to occur in the MPWSP area (e.g., in Figures 4.2-3 and 4.4-3 of the Draft EIR/EIS).
- The discussion in the Draft EIR/EIS section on Groundwater Elevations and Flow Directions (Section 4.4.1.3) does not cover groundwater flow or response to pumping with respect to the 900-Foot Aquifer.
- The Direct and Indirect Effects section of the Draft EIR/EIS (Section 4.4.5) does not mention the 900-Foot Aquifer:
    - Evaluation with regard to the effect of groundwater extraction from the shallow aquifers does not include analysis of the impact of changes to groundwater flow and water quality in the 900-Foot Aquifer;
    - There is no discussion of mitigation measures for potentially degrading or reducing the water supply in the 900-Foot Aquifer; and
    - Potential changes in groundwater flow in the 900-Foot Aquifer as a result of injection at the new Aquifer Storage and Recovery (ASR) wells were not discussed and no impact analysis was provided.

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2.4 Alignments of Proposed Slant Wells Not Substantially Beneath the Seafloor

In the Draft EIR/EIS, the proposed MPWSP slant wells are described as being components of the seawater intake system for the desalination plant and as being beneath the seafloor of Monterey Bay, which implies that the slant wells will be extracting seawater. It should be noted, however, that the proposed alignments of the slant wells, as shown on Figure 3-3a of the Draft EIR/EIS, are under the

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beach and not the seafloor. The proposed slant wells would be completed in the Dune Sand Aquifer and the 180-FTE Aquifer, largely within the City Limits of the City of Marina.

The length of well casing that would extend offshore was estimated in the Draft EIR/EIS by plotting a projected year 2020 mean high water (MHW) line on a satellite-image map of the beach. The offshore portion was considered to be the portion of the well casing that would be seaward of this projected MHW line (see Table 3-2 and Figure 3-3a of the Draft EIR/EIS). The design details for the proposed slant wells were not included in the Draft EIR/EIS or the supporting publically-available documents.[11] However, Figure 3-3b of the Draft EIR/EIS gives a well length of 970 feet for nine of the proposed slant wells and 684 feet for the test slant well. The estimated offshore portion of the slant wells is based on climate change scenarios in which the high sea-level rise was predicted to be 8.1 centimeters (3.2 inches) by 2020 (see Table 3-2 of the Draft EIR/EIS). It is stated in the Draft EIR/EIS that the screened intervals of these wells will be less than the casing lengths given on Figure 3-3b of the Draft EIR/EIS. Nevertheless, these lengths can be used to estimate the percentage of well casing that would be seaward of the MHW line.

Table 3-2 of the Draft EIR/EIS provides additional factors that increase the length of well casings and portions of the wells considered to be seaward of the MHW line; however, the document does not explain how these factors were derived. It is not explained in the Draft EIR/EIS how the "envelope" length was determined, nor was the rationale for adding these lengths explained in enough detail to assess their validity. A second estimated length intended to account for erosion from a "100-year storm" was also added to the length of well casing that would be considered seaward of the MHW line. However, no explanation is given as to how or why the impact of a storm or erosion would permanently affect the position of the MHW line. Both of these added lengths act to show increased estimates in Table 3-2 of the Draft EIR/EIS of the length of well casing that would be seaward of the MHW line.

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For illustration, JJ&A estimated the percentages of the proposed MPWSP slant well casings that would be seaward of the MHW line shown in the Draft EIR/EIS. For purposes of our analysis, we did not include the additional lengths estimated for the "envelope" or "100-year storm," because the rationale for these additional casing lengths is not explained in the Draft EIR/EIS. The range of well-casing lengths seaward of the MHW line given in Table 3-2 of the Draft EIR/EIS is 0 to 278 feet. Based on the total length of the proposed well casings of 970 feet and the length of the test slant well casing of 684 feet (also given in Table 3-2 of the Draft EIR/EIS), the percentage of casing of individual wells seaward of the MHW line ranges from 0 percent to 29 percent, with a non-zero low of 7 percent and an average of 18 percent. Therefore, an average of 82 percent of the individual well casing lengths of the proposed MPWSP slant wells would be landward of the projected 2020 MHW line and in the City of Marina; i.e., not under the seafloor.

[11] On page 28 of Appendix E2 of the Draft EIR/EIS, it is stated in footnote 79 that Geosciences Support Services provided design details of the proposed slant wells and layout to the current groundwater modeling consultant in a written communication.

2.5 Groundwater Modeling Deficiencies

JJ&A finds six areas for which the groundwater modeling effort conducted for the Draft EIR/EIS, and reported in Appendix E2, is deficient for evaluating the potential for adverse impacts to existing groundwater users in the City of Marina from proposed MPWSP pumping. These deficiencies are due at least in part to the use of a legacy model (the NMGWM) that was not developed and constructed for this specific purpose, and that does not include newly available information regarding the heterogeneous and vertically-connected nature of the aquifer system.

The Draft EIR/EIS used a revised version of the same model that was used to evaluate the potential for impacts to existing groundwater users from proposed MPWSP in the previous DEIR. According to Appendix E2 of the April 2015 DEIR for the MPWSP,[12]

> *"The NMGWM was constructed by integrating the SVIGSM aquifer parameters, recharge and discharge terms, boundary conditions and predictive scenarios to ensure consistency between the two models. It has been used previously to evaluate several proposed projects in the region…"*

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The SVIGSM (Salinas Valley Integrated Groundwater Surface Water Model) was developed for the MCWRA approximately 25 years ago using a modeling platform that is generally no longer used, and has been replaced by a more up-to-date platform that addresses several perceived deficiencies. For its time, and considering the available computing resources, it was a detailed model of Salinas Valley hydrology. However, it is important to recognize that by today's standards the SVIGSM is obsolete and is not capable of providing the level of analysis required of modern models. It is no longer used by the MCWRA, which is currently collaborating with the U.S. Geological Survey (USGS) on a new, modern model that is nearing completion (i.e., the Salinas Valley Integrated Hydrologic Model, or SVIHM).

The NMGWM is refined compared to the SVIGSM, however it was developed for a similar primary purpose: to evaluate the impact of water projects on water supply and groundwater storage at a regional scale.[13] For "water-supply models," the required level of detail is much less than models designed to evaluate project impacts that could degrade water quality, such as impacts due to exacerbated seawater intrusion. This is primarily because of the level of detail needed to achieve the modeling objectives for differing purposes. The tracking of particular parcels of water and inclusion of specific or possible migration pathways are generally not necessary for water-supply projects, because the modeling objectives are typically tailored to evaluate bulk volumetric water supply and the project-related changes to groundwater levels and storage.

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Conversely, particular parcels of water must be tracked accurately to evaluate the water quality impacts due to project-related degradation of water quality. Such models must also simulate the appropriate processes as well as preferential migration/flow pathways in heterogeneous systems. In the case of the proposed MPWSP, the ability to simulate and evaluate potential adverse impacts caused by exacerbated

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[12] http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_toc.html
[13] See page 7 of Appendix E2 of the Draft EIR/EIS.

seawater intrusion requires inclusion of density-dependent flow and solute transport, neither of which are included in the NMGWM described in the Draft EIR/EIS. An additional requirement of a focused site-specific model is that it must provide sufficient spatial resolution. For a finite-difference model like the NMGWM, the model cell dimensions would need to be much smaller than 200 foot by 200 foot cells used in the NMGWM (e.g., cells on the order of 20 feet by 20 feet would be needed).

Water-supply models typically perform very well for calculating the response of water levels and changes in groundwater storage to pumping. As might be expected for a water-supply model of this type, which was used for the Draft EIR/EIS, it is stated in Appendix E2 that the NMGWM performance assessment was conducted for the purpose of supporting the calculation of water-level changes in response to slant well pumping, and not for evaluating the potential adverse impacts from exacerbated seawater intrusion.

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The six areas for which the NMGWM was found to be deficient are discussed in detail in the following subsections.

2.5.1 Modeling Objectives

Modeling objectives succinctly define the purpose of a modeling effort, so that detailed characterization can be focused on those parts of the model that most control outcomes related to the stated purposes of the model. Although not stated clearly in the Draft EIR/EIS, the modeling objectives for the revised NMGWM are implied in Appendix E2 to be (1) delineate the area where drawdown is 1-foot or greater in response to proposed MPWSP pumping, (2) determine the source area(s) from where feedwater for the proposed MPWSP desalination plant would be extracted, and (3) determine if proposed MPWSP pumping would exacerbate seawater intrusion in the SVGB. As such, specific evaluation of potential groundwater quality degradation in the City of Marina resulting from the MPWSP does not appear to have been an objective of the modeling study.

JJ&A's review of Appendix E2 and other portions of the Draft EIR/EIS indicate these modeling objectives are insufficiently defined or incompletely addressed. Thus, the potential for adverse impacts to wells in the City of Marina from the proposed MPWSP has not been adequately evaluated by the modeling studies in the Draft EIR/EIS.

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2.5.1.1 Modeling Objective 1

The first modeling objective essentially defines the area where Project drawdown effects will occur (the Area of Project Effects or APE) that will be further evaluated to determine their significance based on the predicted drawdown within the area. To achieve the first modeling objective (delineating the area where drawdown is 1-foot or greater in response to proposed MPWSP pumping), a "superposition" version of the NMGWM was utilized. Importantly, the superposition technique used analyzed *only* the effects of proposed MPWSP pumping, without considering cumulative pumping in the area or the numerous other stresses on groundwater that have occurred and will continue to occur in the SVGB. The modeling methodology may be adequate to define the APE and to evaluate interference drawdown impacts to existing wells in the area, but it is not sufficiently refined to be useful for evaluating the

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potential for water quality impacts to water supplies from proposed MPWSP feedwater pumping within the defined area. In addition, the approach is not useful for informing the analysis of cumulative impacts.

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Proposed MPWSP pumping will never be the only stress on the aquifers in the vicinity of the Project. It is the cumulative combination of all the groundwater stresses in the SVGB that will have impacts on the DWR-designated medium-priority Monterey Subbasin and the critically overdrafted 180/400-Foot Aquifer Subbasin. Without consideration of these other stresses, such as seasonal trends, municipal and agricultural pumping, and droughts, the cumulative impact of proposed MPWSP pumping on groundwater levels that will control the migration of degraded groundwater in the Project vicinity cannot be determined accurately. For example, the totality of current stresses might be manageable at the basin level, but the addition of MPWSP pumping could potentially cause the new state of stresses to be unmanageable and to induce migration of seawater or degraded groundwater to new areas. Furthermore, the hydrogeological conceptual model used for the NMGWM is not defined with enough precision to support determining the potential for adverse water quality impacts to groundwater in the City of Marina, especially considering newly available information regarding the heterogeneous and vertically connected nature of the aquifer system. Finally, the 180/400-Foot Subbasin is designated as being in a state of critical overdraft, which means that adverse impacts are occurring to which the project would make a cumulatively considerable contribution unless mitigated or accepted.

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2.5.1.2 Modeling Objective 2

The second modeling objective, determine the source area(s) where feedwater for the proposed MPWSP desalination plant would be extracted, examines only one possible scenario and ignores other planned and reasonably foreseeable changes (as described above in Section 2.2). This single scenario is based on current regional groundwater flow patterns, in which the natural, pre-development seaward groundwater flow direction has been reversed due to pumping, which has led to extensive inland seawater intrusion in the SVGB. Current groundwater conditions cause the primary source area for the proposed MPWSP wells to be the subsea portions of area aquifers. However, efforts to control seawater intrusion are based on actions intended to cause inland groundwater levels to increase. If mitigation efforts continue to be successful and inland groundwater levels increase, the source area for the proposed MPWSP wells will be modified concomitantly and will include an increasing amount of water from inland areas. If the natural regional groundwater flow direction is restored, the primary source area for the proposed MPWSP wells will be from the inland areas, not from the subsea portions of the aquifers. Thus, this modeling objective was incompletely addressed.

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2.5.1.3 Modeling Objective 3

The third modeling objective, determine if proposed MPWSP pumping would exacerbate seawater intrusion in the SVGB, cannot be adequately evaluated with the NMGWM (see Section 1.2.2 above). The NMGWM does not have the capability to simulate density-dependent subsurface flow and does not include solute transport, which are two of the governing processes for groundwater flow and water-quality impacts in seawater-intruded aquifers. Furthermore, the NMGWM does not sufficiently

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characterize the degree of aquifer heterogeneity or the actual distribution of seawater-intruded groundwater. This modeling objective was incompletely addressed.

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2.5.2 Model Construction and Revisions

Most of the groundwater modeling analysis reported in Appendix E2 of the Draft EIR/EIS is focused on updating and revising the previous version of the NMGWM,[14] which as noted above appears to have been originally developed as a water-supply model for other purposes. MODFLOW-2000 was utilized in the revised version of the NMGWM used for the Draft EIR/EIS. Among the many modifications and revisions was the inclusion of the Fort Ord Salinas Valley Aquitard (FO-SVA). Appendix E2 states that the FO-SVA and a transition zone west of the FO-SVA were added as new hydraulic conductivity zones to Layer 3 of the NMGWM. These two new zones are shown in map view on Figures 3.4a and 3.4b of the Draft EIR/EIS. One or both of these zones should be identifiable on Figures 3.2b, 3.2c, or 3.2f of the Draft EIR/EIS, which are vertical cross-sections through the NMGWM, but they are not shown.

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Appendix E2 of the Draft EIR/EIS states that MODFLOW has limitations for simulating steep vertical gradients, which occur in the MPWSP area and are important for evaluating the potential for groundwater degradation in the City of Marina as a result of the Project. JJ&A is unaware of any inherent inability of MODFLOW to simulate steep vertical gradients. Such difficulties can, however, arise in models that use a quasi-three-dimensional approach[15] (which is not the case for the NMWGM), or models with an insufficient number of model layers. It should be noted that the number of model layers in the NMGWM was not refined.

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With these deficiencies in model construction, especially in light of the newly available information regarding the heterogeneous and vertically-connected nature of the aquifer system, the model used for impact evaluation in the Draft EIR/EIS cannot adequately support the evaluation of potential adverse impacts to existing groundwater users in the City of Marina. The potential or probability for adverse impacts cannot be effectively evaluated with the NMGWM in its current form.

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2.5.3 Subsurface Seawater Flow and Intrusion

Seawater is denser than fresh water, which imparts a significant downward vertical gradient and driving force for the movement of seawater and brackish groundwater in aquifer systems that are intruded by seawater in shallower levels, such as in the MPWSP area. For the modeling effort described in Appendix E2 of the Draft EIR/EIS, the effects of variable water density were assumed to be negligible. This may be a correct assumption for simulating drawdown and groundwater storage changes due to MPWSP pumping. It is unlikely to be true for evaluating the potential exacerbation of seawater intrusion, especially if the exacerbation is due to vertical flow of seawater and degraded groundwater from shallower to deeper levels of the aquifer system in the MPWSP vicinity.

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[14] The previous version of the NMGWM is not discussed in detail in this memorandum. A detailed review of this previous version was conducted by Lawrence Berkeley Laboratory and is reported in Appendix E1 of the Draft EIR/EIS. A report on the development and application of the previous version of the NMGWM was included in Appendix E2 of the April 2015 Draft EIR for the MPWSP (http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_toc.html).

[15] In the quasi-three-dimensional approach, aquitards are not included as individual model layers as a simplifying assumption. This is common in water-supply models.

Vertical migration of seawater-intruded groundwater is known to occur from the 180-Foot Aquifer to the 400-Foot Aquifer.[16] Downward vertical gradients in the MPWSP area are due to existing groundwater pumping and the density difference between seawater and fresh water. Because pumping in the 900-Foot Aquifer to date has not been as widespread or extensive as in the 400-Foot Aquifer, it is not known if significant vertical migration of seawater-intruded groundwater has occurred or will occur to the 900-Foot Aquifer from the 180-Foot or 400-Foot aquifers.

Although there are no well data currently available that indicate seawater intrusion in the 900-Foot Aquifer, the ERT data in Goebel et al. (2017) indicate that in many areas of the Monterey Bay coastline, salt water is present to at least a depth of 920 feet. Proposed MPWSP pumping could redistribute seawater-intruded groundwater in and around the City of Marina in unpredictable ways, due to heterogeneity in the spatial distribution of seawater-intruded groundwater and hydraulic conductivity (as discussed in Section 2.1 above).

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Deficiencies in the parameterization of hydraulic conductivity and the lack density-dependent groundwater flow and solute transport prevent the NMGWM from supporting adequate assessment of the potential adverse impacts to existing groundwater users in the City of Marina from MPWSP pumping. Further details with regard to hydraulic conductivity parameterization are discussed below in Section 2.5.4.

2.5.4 Parameterization, Model Calibration, Performance Assessment, and Uncertainty Analysis

Parameterization refers to the manner in which aquifer parameters in a model, particularly hydraulic conductivity, are assigned to individual model cells. The simplest method is the homogenous case, in which the same value of hydraulic conductivity is assigned to all model cells. In recognition of geologic variability and to make parameterization more realistic, models are often divided into parameter zones, in which each zone is assigned a single, different hydraulic conductivity. More sophisticated parameterization methods use statistical approaches to assign spatially variable parameter distributions to model cells. Such methods can be applied to an entire model domain defined as a single zone, or different parameter distributions can be assigned to each of multiple zones within a model domain, in which the zones generally represent different geologic or hydrogeologic units.

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The NMGWM was constructed using the zoned approach in model layers 2 through 4, in which single values of aquifer parameters were assigned to individual zones within each layer.[17] In model layers 5 and 6, zones were not used and the spatial distribution of hydraulic conductivity was defined to be variable across each layer, but the method that was used to determine the spatial distribution is not described. The bottom two layers, which include the 900-Foot Aquifer, were assigned single values for each entire layer. As noted above, this type of model construction may be adequate for a "water-supply" model, but it does not support adequate assessment of the potential adverse impacts to existing groundwater users in the City of Marina from MPWSP pumping.

[16] Kennedy/Jenks Consultants, 2004. Hydrostratigraphic analysis of the northern Salinas Valley. Prepared for the Monterey County Water Resources Agency by Kennedy/Jenks Consultants, dated May 14, 2004.
[17] Model layer 1 was used only to simulate the influence of Monterey Bay.

After initial parameter values are assigned to model cells, model performance is typically evaluated using several statistical criteria that compare simulated values to observed values of model variables such as groundwater levels. Parameter values are then updated during model calibration in an effort to improve model performance by minimizing residual differences, i.e., minimizing the differences between simulated and observed values. Detailed procedures for calibrating groundwater flow models can be found in several references.[18] Briefly, recommended procedures include conducting a parameter sensitivity analysis, trial-and-error (manual) adjustment of calibration parameters, automated parameter estimation to improve initial calibration, and conducting an uncertainty analysis.

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Performance of the NMGWM was assessed in Appendix E2 of the Draft EIR/EIS, but there is minimal discussion of how or if model performance was improved (i.e., if the model was calibrated), or if such improvements were attempted, after the initial assignment of hydraulic conductivity values to the model cells. Appendix E2 lacks discussions of a model calibration procedure that was conducted after a parameter sensitivity analysis, prior to simulating the forecast scenarios.

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A large suite of model runs were conducted to evaluate a variety of slant-well pumping and return-water scenarios. Parameter sensitivities for the NMGWM were calculated for horizontal and vertical hydraulic conductivity values. The uncertainty related to these parameters was evaluated by varying the ratio of horizontal to vertical hydraulic conductivity in additional forecast scenario model runs, to evaluate the impact of different values on the model-calculated cone of depression caused by simulated slant well pumping. Automated parameter estimation and the associated uncertainty analysis were not discussed in Appendix E2, relative to minimizing simulation residuals, prior to conducting forecast scenarios. Data uncertainty, hydrogeological conceptual model uncertainty, and uncertainty related to choice of parameterization methods were also not discussed.[19]

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Because the NMGWM model was originally developed for other purposes, our opinion is that the parameterization is too simplified to fully evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from proposed MPWSP pumping. This opinion is especially relevant in light of the newly available information regarding the heterogeneous, vertically-connected nature of the aquifer system, the presence of significant downward vertical hydraulic gradients, and the

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[18] See for example:

ASTM, 2008. Standard Guide for Calibrating a Ground-Water Flow Model Application. American Society for Testing Materials International (ASTM), Designation D 5981 – 96 (Reapproved 2008).

Faunt, C.C., ed., 2009. Groundwater Availability of the Central Valley Aquifer, California. U.S. Geological Survey Professional Paper 1766, 225 p.

Hanson, R.T., Schmid, W., Faunt, C.C., Lear, J., and Lockwood, B., 2014. Integrated Hydrologic Model of Pajaro Valley, Santa Cruz and Monterey Counties, California. U.S. Geological Survey Scientific Investigations Report 2014–5111, 166 p.

Hill, M.C. and Tiedeman, C.R., 2007. Effective Groundwater Model Calibration, with Analysis of Data, Sensitivities, and Uncertainty. John Wiley and Sons, Inc., Hoboken, NJ, 455 p.

Phillips, S.P., Rewis, D.L., and Traum, J.A., 2015. Hydrologic model of the Modesto Region, California, 1960–2004: U.S. Geological Survey Scientific Investigations Report, 2015–5045, 69 p.

[19] Deficiencies such as these were also noted in: Abrams, 2015. Groundwater Model Review, CPUC Monterey Peninsula Water Supply Project DEIR. Technical Memorandum prepared for the City of Marina by Robert H. Abrams, Consulting Hydrogeologist, dated June 29, 2015.

potential for exacerbated seawater intrusion. In addition, insufficient information is provided regarding the model calibration process to understand the reliability or uncertainty of the analysis.

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2.5.5 Superposition Approach

As stated in Appendix E2 of the Draft EIR/EIS, because of known "problems with specified initial water levels and boundary conditions" and the "complex nature of simulating recharge and discharge processes in the Salinas Valley Groundwater Basin," the theory of superposition was used in an attempt to remove the impact of these model deficiencies. A superposition version of the NMGWM was implemented by setting the boundary and initial conditions to fixed groundwater elevations of zero. However, it should be noted that model performance is a function of boundary and initial conditions, as well as aquifer parameters. Changing any of these model components changes the model performance. Because of the manner in which the superposition approach was used in the NMGWM to simulate the model forecast scenarios, the model deficiencies identified by the authors of Appendix E2 remain in the model and thus the true model performance on which the forecast scenarios are based is actually unknown.

The success of superposition modeling in estimating drawdown is dependent on using the correct hydrogeological conceptual model, and performing calibration to the extent needed to support the modeling objectives. As discussed above, the NMGWM was not designed at a scale appropriate to evaluate the potential or probability of adverse water quality impacts to groundwater users in the City of Marina resulting from MPWSP pumping. In addition, the superposition approach cannot be used to evaluate the impact of possible exacerbated seawater intrusion. Furthermore, as noted in Section 2.5.1.1 above, the superposition approach cannot evaluate the cumulative drawdown impacts that are inherent in the highly developed SVGB.

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2.5.6 Boundary and Initial Conditions

The NMGWM deficiencies identified by the authors of Appendix E2 of the Draft EIR/EIS and noted above are attributed to the SVIGSM, particularly for errors related to initial and boundary conditions. Errors such as these should have been corrected before the NMGWM was used to evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from MPWSP pumping. Without correcting these errors, the results of NMGWM forecast scenarios for evaluating the impacts of MPWSP pumping are unreliable and cannot be depended upon to predict future impacts.

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As noted above, the MCWRA and the USGS have nearly completed a new basin-wide model, SVIHM (developed with MODFLOW-OWHM), to replace the SVIGSM.

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This model has far more capabilities than the outdated SVIGSM.[20] One of these capabilities is the ease with which local-scale "child" models with increased spatial resolution can be developed within the regional-scale basin "parent" model using the local-grid refinement technique (LGR). LGR is a more robust method of applying boundary and initial conditions to child models than the procedure used to apply SVIGSM boundary and initial conditions to the NMGWM. LGR allows the stresses simulated in the child model to feedback to the parent model, which allows dynamic adjustment of the boundary conditions at the boundaries between the parent and child models. Furthermore, MODFLOW-OWHM is designed to use the MODFLOW Seawater Intrusion Package, in addition to being able to interface with solute transport models.

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3.0 SUMMARY AND CONCLUSIONS

It is the opinion of JJ&A that the Draft EIR/EIS is incomplete from a technical perspective and that the potential impacts to groundwater users in the City of Marina from the proposed MPWSP have not been adequately evaluated. In addition, the cumulative impacts of the project with existing pumping and reasonably foreseeable changes have not been adequately evaluated, especially in the critically overdrafted 180/400-Foot Aquifer Subbasin, where any contribution to existing adverse impacts would be cumulatively considerable. The technical deficiencies identified herein should be addressed and a revised Draft EIR/EIS prepared before certification by the CPUC and MBNMS. These revisions should be undertaken with consideration of all of the substantive available evidence, appropriate modeling techniques, and reasonably foreseeable future groundwater conditions so that the full suite of potential adverse impacts to groundwater resources and water supplies can be evaluated, including exacerbated seawater intrusion and impacts to the 900-Foot Aquifer.

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[20] Bakker, Mark, Schaars, Frans, Hughes, J.D., Langevin, C.D., and Dausman, A.M., 2013, Documentation of the seawater intrusion (SWI2) package for MODFLOW: U.S. Geological Survey Techniques and Methods, book 6, chap. A46, 47 p.
Hanson, R.T., Boyce, S.E., Schmid, Wolfgang, Hughes, J.D., Mehl, S.M., Leake, S.A., Maddock, Thomas, III, and Niswonger, R.G., 2014, One-Water Hydrologic Flow Model (MODFLOW-OWHM): U.S. Geological Survey Techniques and Methods 6–A51, 120 p.
Mehl, S.W. and Hill, M.C., 2005. MODFLOW-2005, the U.S. Geological Survey Modular Ground-Water Model – Documentation of Shared Node Local Grid Refinement (LGR) and the Boundary Flow and Head (BFH) Package. U.S. Geological Survey Techniques and Methods 6-A12, 68 p.

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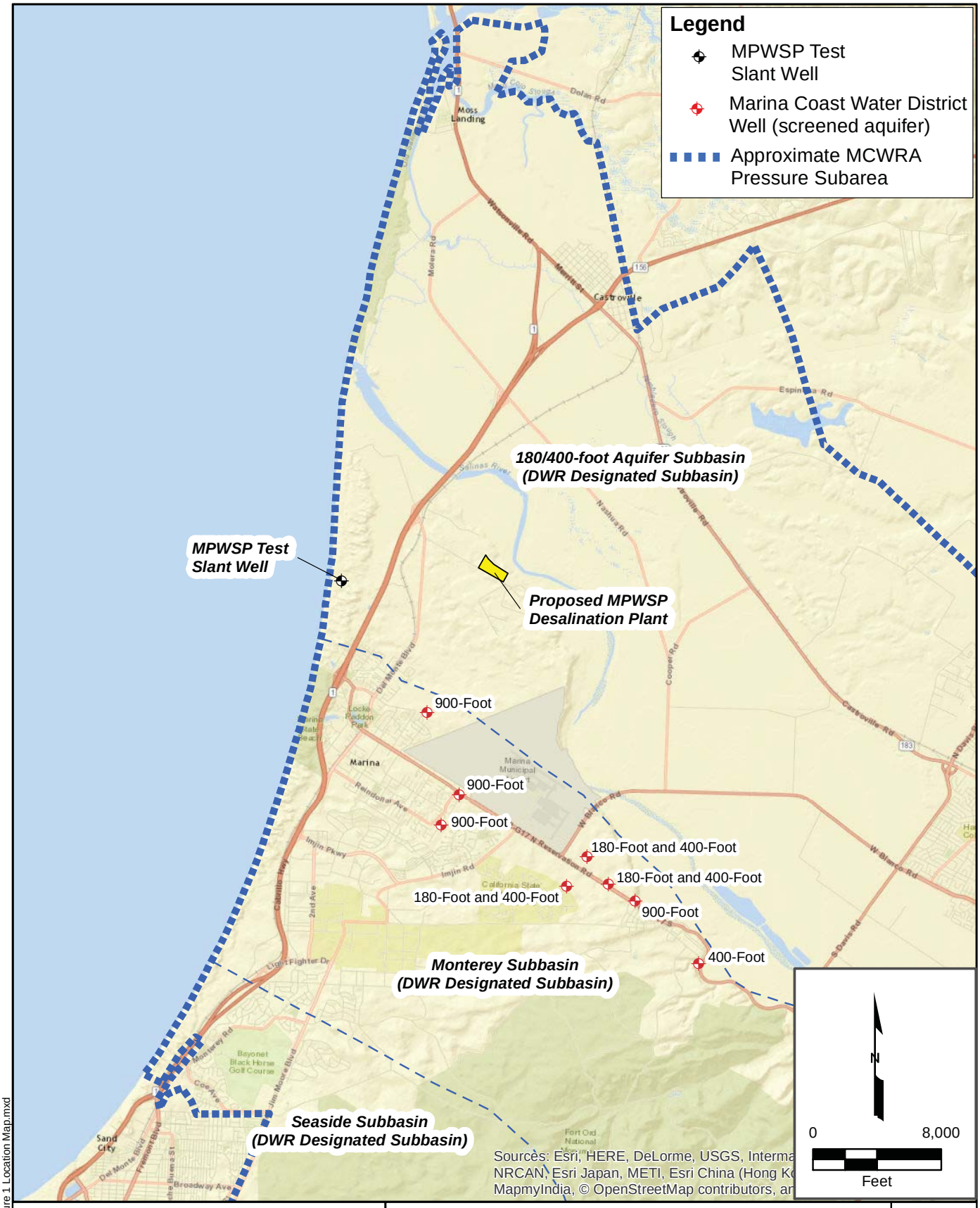


Path: J:\GIS\City of Marina\Figure 1 Location Map.mxd

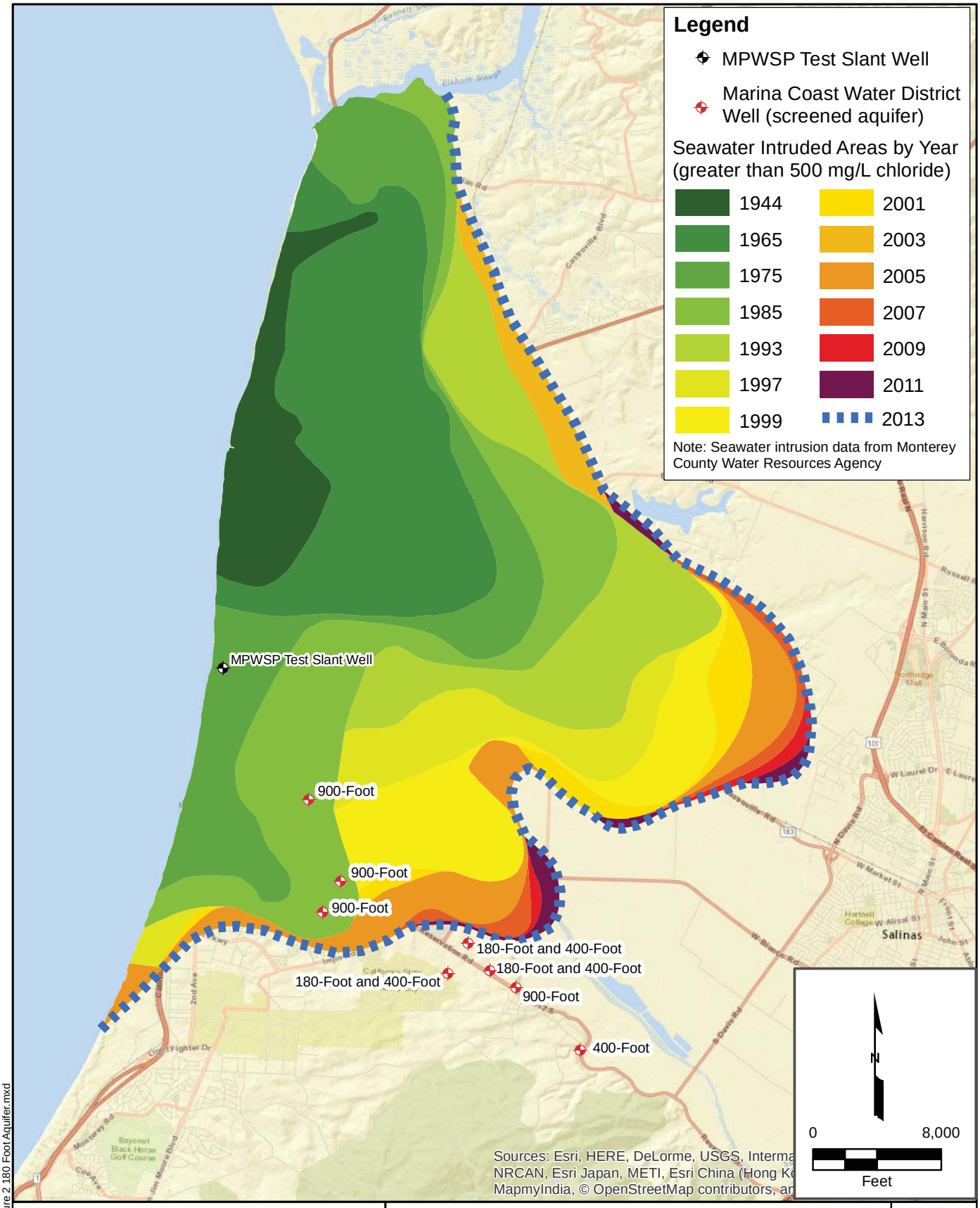
JACOBSON | JAMES
& associates, inc

TITLE: **Location Map**

DATE: 3/23/17

LOCATION: City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

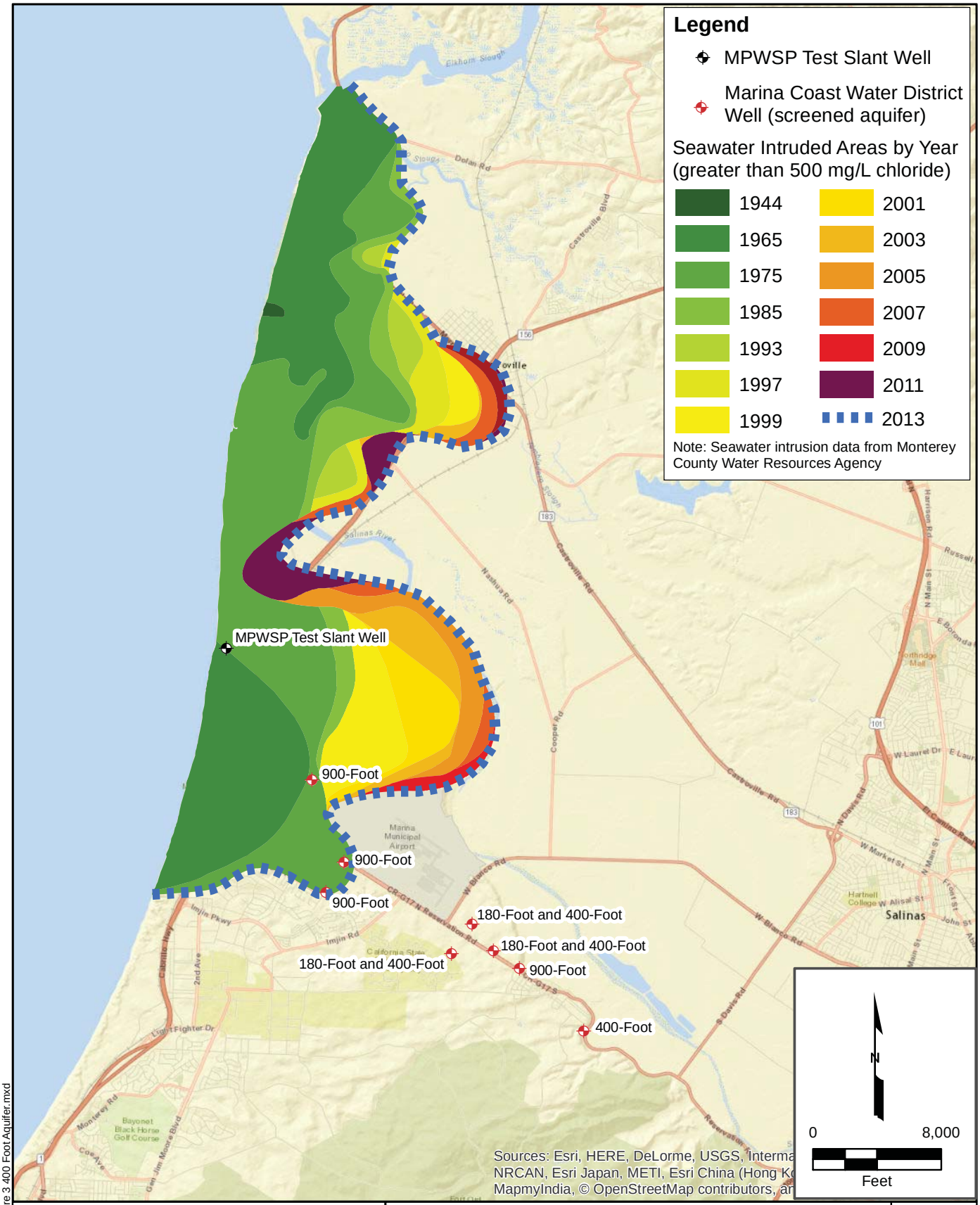
FIGURE: **1**



Path: J:\GIS\City of Marina\Figure 2 180 Foot Aquifer.mxd

JACOBSON | JAMES & associates, inc

TITLE: ***Extent of Seawater Intrusion in the 180-Foot Aquifer***		DATE: 3/23/17
LOCATION:	City of Marina Comments on MPWSP Draft EIR/EIS Monterey County, California	FIGURE: **2**



Path: J:\GIS\City of Marina\Figure 3 400 Foot Aquifer.mxd

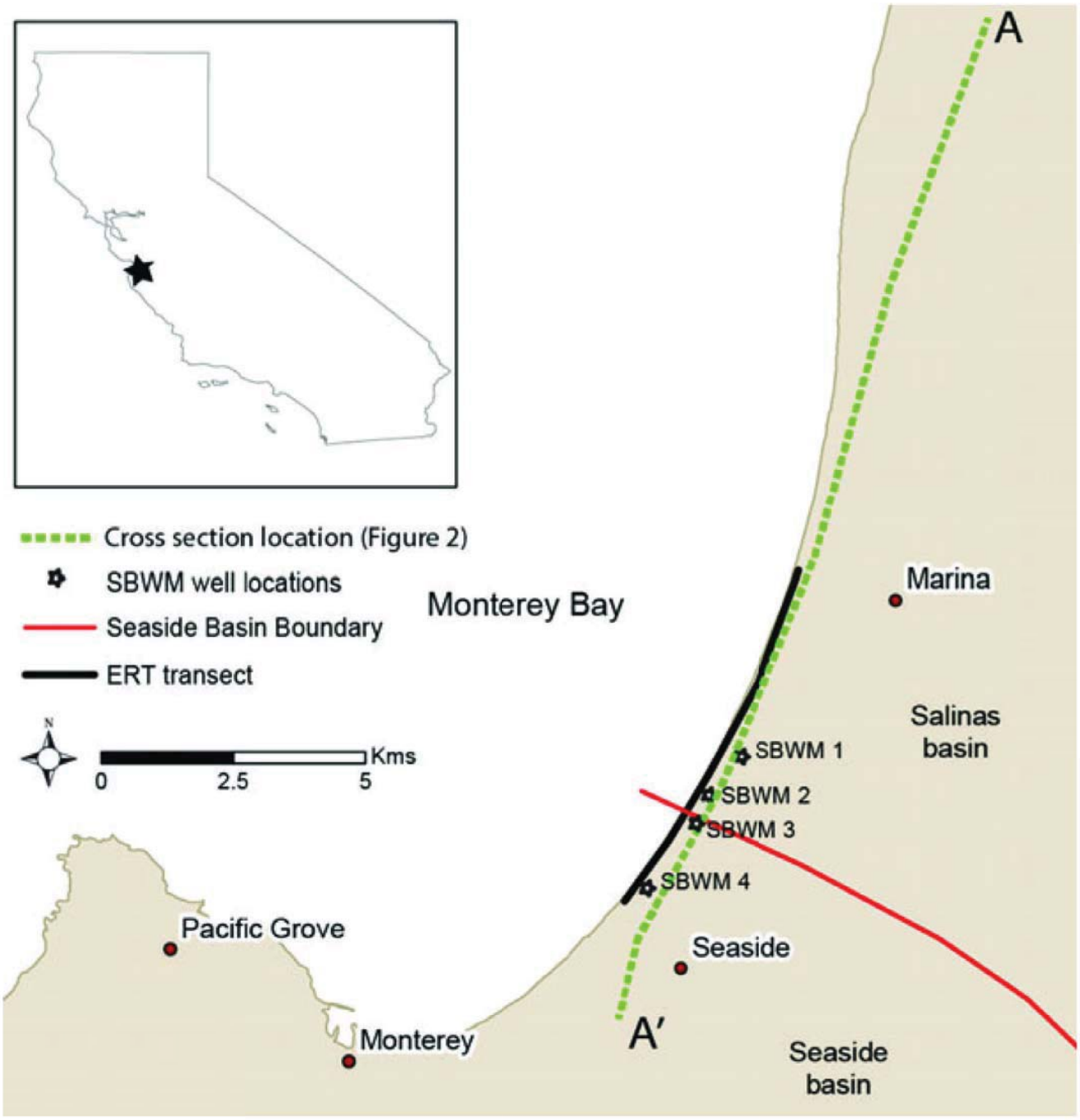
JACOBSON | JAMES & associates, inc

TITLE: ***Extent of Seawater Intrusion in the 400-Foot Aquifer***

DATE: 3/23/17

LOCATION: City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

FIGURE: **3**



Notes:
ERT = Electrical Resistivity Tomography
Source: Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261

J:\GIS\City of Marina\ERT Profile Figures.dwg

JACOBSON | JAMES & associates, inc

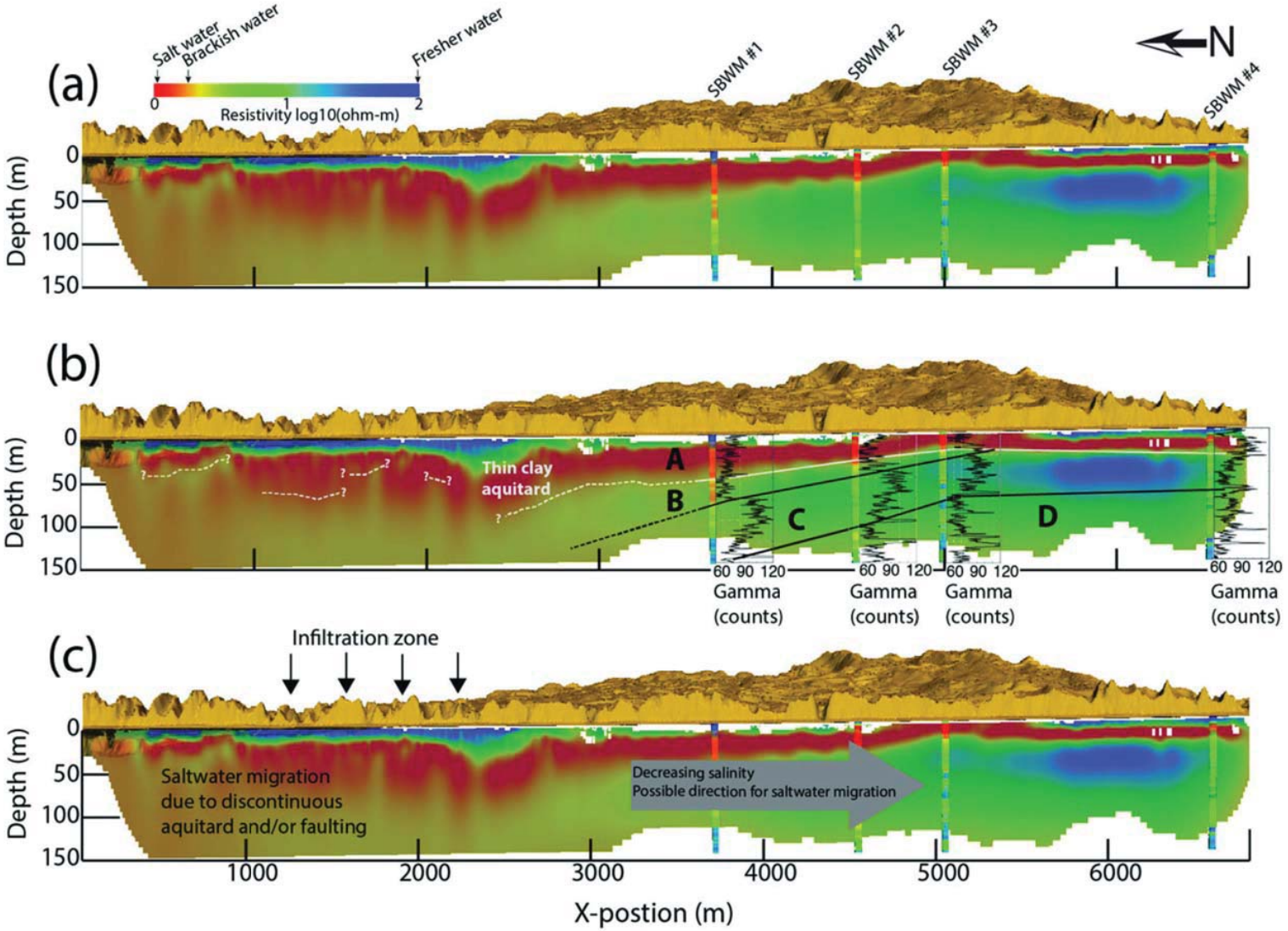
TITLE: ***Location of 4.3-Mile ERT Profile***

DATE: 3/23/17

LOCATION: *City of Marina*
Comments on MPWSP Draft EIR/EIS
Monterey County, California

FIGURE: 4

J:\GIS\City of Marina\ERT Profile Figures.dwg



Notes:
ERT = Electrical Resistivity Tomography
Source: Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261

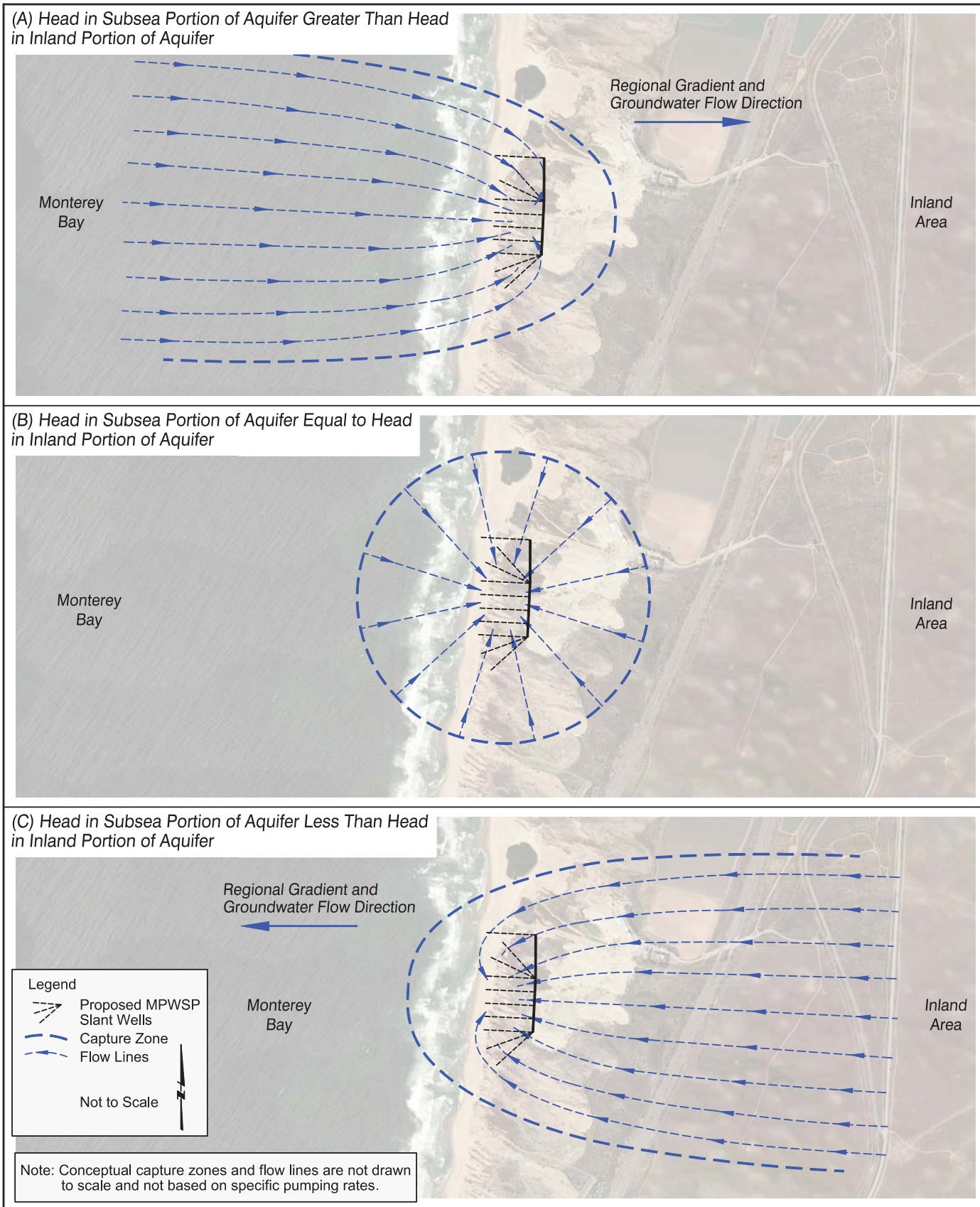
JACOBSON | JAMES
& associates, inc

City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

PROJECT NO.	DATE	DRAWN BY	APPROVED BY
COM-001/01	3/23/17	ML	BA

FIGURE 5

ERT Results and Interpretation along the Profile shown on Figure 4



J:\GIS\City of Marina\Conceptual Capture Zones.dwg

JACOBSON | JAMES & associates, inc

TITLE: Conceptual Capture Zones for Different Regional Gradients

DATE: 3/23/17

LOCATION: City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

FIGURE: 6

MARINA COAST WATER DISTRICT

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March 29, 2017

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Re: CalAm Monterey Peninsula Water Supply Project - Marina Coast Water District's Comments on the Draft Environmental Impact Report/ Environmental Impact Statement, Prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, January 2017 (SCH No. 2006101004)

Dear CPUC/MBNMS:

Thank you for the opportunity to comment on the Monterey Peninsula Water Supply Project ("MPWSP" or "project") proposed by the California-American Water Company ("CalAm" or "Applicant") in Application ("A.") 12-04-019 before the California Public Utilities Commission (the "Commission" or the "CPUC") and the associated Draft Environmental Impact Report/Environmental Impact Statement ("DEIR/EIS" or "Draft EIR/EIS") issued by the CPUC as lead agency under the California Environmental Quality Act ("CEQA") and the Monterey Bay National Marine Sanctuary (the "Sanctuary" or the "MBNMS") as the lead agency under the National Environmental Protection Act ("NEPA") on January 13, 2017.

The purpose of this letter is twofold.

First, this letter provides the comments of the Marina Coast Water District ("MCWD") on the background, legal framework, and practical necessity of the proposed MPWSP in relation to the anticipated significant environmental impacts of the project and proposed mitigation. As explained in detail herein, the proposed project is legally infeasible because it is either inconsistent with or would violate numerous federal, state, regional, and

MCWD-1

local laws and regulations, including but not limited to: (1) California laws applicable to groundwater, including the Sustainable Groundwater Management Act and Monterey County Water Resources Agency Act; (2) the Federal and California endangered species acts; (3) the California Coastal Act; (4) the City of Marina's Local Coastal Plans (LCP); and (5) Monterey County Code of Ordinances section 10.72.030(B). Most critically, CalAm has no water rights in the project area and cannot obtain the water rights needed to operate the project.

MCWD-1 cont.

Moreover, the proposed project is massively oversized, especially in light of the approved Pure Water Monterey Groundwater Replenishment Project ("GWR"), which is included as a component of Alternatives 5a and 5b. As explained below, even Alternative 5a (the purportedly environmentally superior/preferred alternative), provides substantially more water than is needed to meet all the project objectives. However, because the DEIR/EIS fails to consider alternatives to the 6.4 MGD desalination plant that would meet most or all of the project objectives and reduce the project's significant impacts, neither the public nor decisionmakers can comment on potentially feasible alternatives to the MPWSP in light of the approved GWR project. By only proposing alternatives to the originally proposed 9.6 MGD desalination plant (which assumed the GWR project would not happen), the DEIR/EIS sets up a strawman alternatives analysis that fails to meet the requirements of CEQA or NEPA as discussed below.

MCWD-2

Second, this letter provides MCWD's comments on the adequacy of the DEIR/EIS under CEQA (Public Resources Code § 21000 et seq.), the CEQA Guidelines (Cal. Code Regs., tit. l4, § 15000 et seq.), NEPA (42 U.S.C. §4321 et seq.) and its implementing regulations (40 CFR Parts 1500-1508). As explained herein, the DEIR/EIS does not meet the minimum standards of adequacy under CEQA or NEPA.

The EIR is "the heart of CEQA." (Guidelines, § 15003, subd. (a); *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392 ("*Laurel Heights I*").) It "is an 'environmental "alarm bell" whose purpose it is to alert the public and its responsible officials to environmental changes ***before*** they have reached ecological points of no return.' [Citations.]" (*Laurel Heights I, supra*, 47 Cal.3d at p. 392, emphasis added.) "Because the EIR must be certified or rejected by public officials, it is a document of accountability" that ensures "the public will know the basis on which its responsible officials either approve or reject environmentally significant action." (*Ibid.*) Where, as here, the environmental review document does not fully and accurately inform decision-makers, and the public, of the environmental consequences of proposed actions or independently evaluate potentially feasible alternatives that would reduce the project's environmental impacts, the document does not satisfy the basic goals of CEQA. (See Pub. Resources Code, § 21061 ["The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; **and to indicate alternatives to such a project**."], emphasis added.)

MCWD-3

Similar to the requirements for EIRs under CEQA, under NEPA "the purpose of the EIS requirement is to ensure that 'to the fullest extent possible' agency decisionmakers have before them and take into proper account a complete analysis of the project's environmental impact." (*City of Davis v. Coleman* (1975) 521 F.2d 661, 673 [quoting *Calvert Cliffs' Coordinating Committee v. United States Atomic Energy Comm.* (D.C. Cir. 1971) 449 F.2d 1109, 1114].) The backbone of NEPA includes "a broad national commitment to protecting and promoting environmental quality." (*Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 348 (*"Robertson"*); see 42 U.S.C., § 4331.) As such, NEPA requires an agency to prepare an EIS when it proposes "major federal actions significantly affecting the quality of the environment." (42 U.S.C., § 4332, subd. (C); *Robertson, supra,* 490 U.S. at p. 348.) In doing so, the agency must take a "hard look" at environmental consequences of the proposed action. (*Robertson, supra,* 490 U.S. at p. 349.) In this way, NEPA insures that a federal agency has fully contemplated the environmental effects of its action, and "to insure that the public has sufficient information to challenge the agency." (*Robertson, supra,* 490 U.S. at p. 349.)

As discussed in detail below and in the attached technical comments from Hopkins Groundwater Consultants, Inc. ("HGC Comments" – Exhibit # 1), GeoHydros, LLC ("GeoHydros Comments" – Exhibit # 2), Erler & Kalinowski, Inc. ("EKI Comments") – Exhibit # 3), and Intake Works LLC ("Intake Works Comments" – Exhibit # 4), the DEIR/EIS is replete with serious flaws. The DEIR/EIS does not provide an adequate description of the entire project, the environmental setting, or the project's potential impacts, nor does it consider feasible alternatives that would reduce the project's significant environmental impacts. Instead, the DEIR/EIS provides an incomplete project description, a misleading picture of the environmental setting/baseline, and a misleading and unsupported view of the project's potential impacts that would lead any reader to believe the project's environmental impacts are largely benign.

MCWD-3 cont.

For example, the DEIR/EIS leads readers to incorrectly believe the project is designed to pump only seawater, and that while the project "could" incidentally pump a small amount of groundwater, any incidentally pumped groundwater would come from aquifers that are contaminated by seawater and are incapable of supporting beneficial uses. As explained herein, not only is this picture not supported by substantial evidence, but it conflicts with available information that the DEIR/EIS preparers had in their possession but failed to disclose. As a result, the DEIR/EIS fails to provide the necessary evidence or analysis to support its conclusions that the project's direct, indirect, and cumulative groundwater impacts would be less than significant. Moreover, the CPUC and Sanctuary have failed to disclose critical information required by CEQA and NEPA that would allow the public and public agencies to even comment on many of the DEIR/EIS's assumptions, analyses, and conclusions. Therefore, the DEIR/EIS does not meet public disclosure requirements and it does not act as an environmental alarm bell as required by CEQA or take the "hard look"

required by NEPA. Consequently, the CPUC and MBNMS will need to prepare and recirculate a revised DEIR/EIS before making any decisions to approve or deny the MPWSP.

In addition, the DEIR/EIS fails to consider a reasonable range of alternatives that could meet most of the project objectives. Instead, the DEIR/EIS only considers alternatives to CalAm's originally proposed 9.6 MGD desalination plant, which as explained below is massively oversized, especially following the approval of the GWR project and based on a fair assessment of CalAm's own reported supply and demand data. Importantly, there are at least several potentially feasible alternatives that could meet most of the project objectives with the implementation of the approved GWR project that were not considered in the DEIR/EIS. That said, MCWD notes that it cannot support a reduced-sized desalination plant (with GWR[1]) that pumps water from the Marina Subarea[2] of the Salinas Valley Groundwater Basin ("SVGB") absent adequate assurance based on sound science and the most current available data that the Marina Subarea and MCWD's existing vested rights to extract and use SVGB water for the current and future needs of its own service area, will not be harmed by the project. As explained below, the DEIR/EIS falls far short of providing these assurances. MCWD-3 cont.

MCWD's comments provided herein are informed by its in-house and outside experts as well as its understanding of the obligations of: (a) the Commission to act in protection of the public interest in the exercise of its unique and broad authority to regulate privately-owned public utilities in California; and (b) the Sanctuary to protect the coastal ecosystem and cultural resources of the Monterey Bay National Marine Sanctuary. We note that the Commission is required by law, as a fundamental component of its public interest balancing and project approval process, to consider fully the proposed project's "influence on the environment." (Public Utilities Code § 1002(a)(4).) Given these mandates, MCWD does not understand why the CPUC or Sanctuary are considering the originally proposed 9.6 MGD desalination plant in the DEIR/EIS in light of the CalAm's commitment in the MPWSP Settlement Agreement, dated July 31, 2013, and the approval of the GWR project.

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[1] / MCWD has supported and continues to support GWR Project proposed by the Monterey Regional Water Pollution Control Agency ("MRWPCA") and approved in October 2015.

[2] / The "Marina Subarea" is used in these comments to refer to the combination of (1) that portion of the 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River plus (2) the northwest portion of the Monterey Subbasin that would be impacted by the proposed slant well pumping on the CEMEX property. While the Marina Subarea is not a formally DWR-recognized subarea, it contains highly complex hydrogeological conditions that are very different from the portion of the 180/400 Foot Aquifer Subbasin north of the Salinas River as explained herein. The Marina Subarea is the coastal subarea of the overdrafted SVGB and is the area that would be directly impacted by the proposed project feed water pumping of 27,000 AFY. The Monterey County Water Resources Agency has defined the "Pressure Area" as a combination of the DWR-designated 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins (now the new Seaside and Monterey Subbasins). The Pressure Area is not a formally DWR-recognized subarea either, but that term is used throughout the DEIR/EIS as noted below. MCWD-4

I. BACKGROUND, LEGAL FRAMEWORK AND NECESSITY OF MPWSP.

The CPUC and MBNMS are familiar with the historical background of the water supply shortage that has long plagued CalAm's Monterey district, as well as prolonged efforts of numerous stakeholders to solve the problem. (*See, e.g.*, D.10-12-016, pp. 18-30, and orders of the State Water Resources Control Board and Assembly Bill ("AB") 1182 (Stats. 1998, ch. 797) cited therein.) The project, in essence, is intended to cure the significant, ongoing environmental harm to the Carmel River basin that has resulted from CalAm's illegal diversions of Carmel River water. This background is further complicated by the California Legislature's enactment of the landmark Sustainable Groundwater Management Act ("SGMA"), effective January 1, 2015, which effectively vests the protection of groundwater resources in local authorities under their existing and new SGMA police powers. Potential climate-change-related sea level rise must also inform the Commission's and MBNMS's environmental review and ultimate decisions. Here, the Commission must balance its obligation to ensure that CalAm's ratepayers continue to receive convenient and necessary water service against its obligation to comply with CEQA's mandates, carry out the Legislature's mandate to it in AB 1182 to resolve the physical problems presented by CalAm's illegal diversions of Carmel River water, and address the State Water Resources Control Board's orders reducing CalAm's sources of Carmel River Basin water (as the Commission previously acknowledged in D.10-12-016) – all within the sustainable limits of the local groundwater supply, under the SGMA. On the other hand, the MBNMS must evaluate whether it should authorize a prohibited use (16 U.S.C.A. § 1436) under the Sanctuary's Management Plan (http://montereybay.noaa.gov/intro/mp/fmp/02coastal_dev_mp.pdf), which provides that MBNMS should consider public versus private ownership among other factors, and its Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf, which provide that desalination plants should only be approved when other economically and environmentally preferable alternative water sources are infeasible and should be sized not to induce growth within the coastal areas. As discussed below, the project—as proposed—is not consistent with the obligations of the CPUC or the Sanctuary.

MCWD-5

MCWD-6

Formed by a citizens group in 1958, MCWD is a County Water District organized and operating under section 3000 of the California Water Code servicing residents, businesses and organizations throughout Marina and the Ord Community. The District supplies water to over 8,250 water connections, maintains and operates 105 miles of pipeline, 8 reservoirs, 5 booster pump stations and 8 wells. It is also responsible for maintaining the service area's sewer collection system, which includes 20 lift stations and 110 miles of pipeline. MCWD, as the sole provider of municipal water service for over 33,000 residents in the Marina/Ord community, has a vested interest in the integrity and thoroughness of the Commission's environmental review for the proposed MPWSP in order to protect its own ratepayers. The need for careful scrutiny of the proposed project, alternatives and

MCWD-7

cumulative impacts is particularly grave in this situation in which the Applicant proposes that the Commission approve a project designed to offset CalAm's illegal diversions from the Carmel River by pumping groundwater from the 180/400 Foot Aquifer Subbasin, which is designated by the State of California as a Critically Overdrafted Basin, and by adversely impacting groundwater conditions within the Marina Subbasin, which is MCWD's groundwater source. Of note, the entire SVGB, including the aquifers underling the Marina Subarea, lie outside of CalAm's public utility service area on the Monterey Peninsula. While CalAm's public utility service area would receive the benefit of convenient and necessary water service to be provided by the MPWSP, its source of water would be from the Marina Subarea, which since MCWD's founding is the only source of water supplies it has used to serve its ratepayers.

MCWD-7 cont.

More than six years ago, the Applicant, MCWD and others sought and received the Commission's approval for the Regional Desalination Project, a project that was similar in many practical respects to the proposed project. (*See* D.10-12-016.) However, CalAm determined that it would not pursue the Regional Desalination Project, and the Commission permitted CalAm to change course and pursue the MPWSP instead. (D.12-07-008.) [3] The Commission should bear in mind in its environmental review process that the project it approved in 2010 was also *different* from the proposed MPWSP in several key respects related to environmental impacts:

MCWD-8

- *Water rights* (addressed for the MPWSP in DEIR/EIS Chapter 2) for withdrawal of any groundwater component of source water were present in sufficient quantity to ensure project feasibility for the Regional Desalination Project (subject to test well results, *see, e.g.*, D.10-12-016 at Findings of Fact 83, 163-164, 169-170 and at pp. 84-85 of Appendix B thereto [CEQA Findings of Fact and Statement of Overriding Considerations]), due to MCWD's participation in the project. MCWD's vested rights to pump groundwater from the SVGB (discussed in MCWD's comments on DEIR/EIS Chapter 2, below), as well as MCWD's ability to offset the amount of project source water that was SVGB groundwater by a pumping offset (i.e., a commensurate reduction in its own lawful pumping from the basin) was then assumed to ensure that the project would not adversely affect the basin or impair the existing

MCWD-9

[3] / Section 5.2 of the DEIR/EIS states without an explanation that the Regional Desalination Project was not evaluated in detail as an alternative because it is "incapable of meeting most of the basic project objectives or purpose and need as currently defined," (DEIR/EIS, p. 5.2-1 and 5.2-2.) MCWD disagrees with this unsupported conclusion as discussed in MCWD's comments below. Indeed, a smaller Regional Desalination Project configuration using horizontal directional drilling would appear to meet the project objectives and purpose and need. Moreover, it is quite feasible today with Marina Coast's participation, provided that the project would also remain physically feasible within the confines of the SGMA and the greatly-expanded availability of data concerning the state of the aquifers in the Marina Subarea, which data was not used in the DEIR/EIS.

MCWD-10

rights of other users of SVGB groundwater. (See CalAm Coastal Water Project Final EIR, p. 6.2-16 ("The Regional desalination plant would be operated such that … the plant would deliver desalinated water to the MCWD service area within the SVGB in an amount equal to the volume of SVGB-groundwater…."].) The pumping offset by MCWD, a vested holder of water rights in the SVGB, also helped to ensure that the Monterey County Water Resources Agency Act's ("Agency Act") prohibition of the exportation of SVGB groundwater outside the basin would not be violated. (See *ibid.* ["that portion of the potable product water that originated as groundwater rather than seawater would be used on lands overlying the SVGB …].) As discussed below, the one-to-one return ratio was assumed prior to any test well results and new groundwater data indicating that a greater ratio would be needed to offset all direct, indirect, and cumulative impacts to the Marina Subarea from the proposed slant well pumping if vertical or slant wells (as opposed to horizontal wells) were used as the intake technology.

MCWD-9 cont.

- *Basin return and the non-export* groundwater component of source water, and thus compliance with the non-exportation provision of the Agency Act (addressed for the MPWSP in DEIR/EIS § 2.5.1 and 2.6), was assured by providing for MCWD's allocation of product water from the desalination plant in at least an amount equal to the amount of groundwater withdrawn from the basin as part of the project's source water. (See CalAm Coastal Water Project Final EIR, p. 6.2-16.) As discussed below, more recent groundwater data indicates that a greater return water ratio would likely be required if vertical or slant wells (as opposed to horizontal wells) were used as the intake technology.

MCWD-11

- *Vertical wells* (not evaluated in DEIR/EIS, see Appendix I1, at p. I1-4) and possible slant wells, which involve unproven technology, were to be utilized for testing and considered for intake rather than slant wells only. Indeed, vertical wells were the project proponents' preferred option for source water wells. Thus, the reliability of modeling and operation projections, including the assessment of potential environmental impacts, would generally be more certain and readily ascertainable for the more commonly-used vertical well scenarios, as opposed to the greater difficulty of arriving at reliable modeling and operation projections for comparatively new and largely untested slant well technology.

MCWD-12

- *Well testing and comprehensive groundwater modeling* (addressed for the MPWSP in DEIR/EIS Chapters 2 and 4.4) for the Regional Desalination Project was to commence after Commission approval of the project (D.10-12-016 at Findings of Fact 83, 163-164, 169-170 and at pp. 84-85 of Appendix B thereto) with the participation of public agencies, including MCWD and the Monterey County Water Resources Agency ("MCWRA"), and provided for further Commission action in the event that test results did not confirm pre-approval assumptions. This approach ensured that the testing process would be transparent and that there would be flexibility in the future direction of the project, should test results not bear out the projections relied upon for environmental review and approval. Here, the test well process for the MPWSP is

MCWD-13

proceeding *prior* to Commission approval and under a California Coastal Commission process that MCWD contends is flawed and inadequately informed, which the District is contesting elsewhere.[4] MCWD is concerned that transparency and flexibility are being frustrated rather than fostered due to the failure to utilize complete, current and accurate data in the DEIR/EIS and its modeling, as discussed below in detail. For the MPWSP, the test well results were not used to model the project's groundwater impacts disclosed in the DEIR/EIS. (*See* DEIR/EIS, p. 2-35.) As discussed below, the DEIR/EIS abandoned any attempt to model the project's potential impacts in favor of a simplified superposition model that does not evaluate the amount of groundwater that will be pumped from the Marina Subarea or evaluate the project's cumulative impacts. Moreover, there will be no further opportunity for public review and comment on testing and groundwater modeling or any requirement for disclosure of testing and groundwater modeling results or for changes in project configuration following project approval by the Commission. Nor will there be any way to promptly assess whether the project is causing greater impacts than evaluated or anticipated in the DEIR/EIS. Thus, any further MPWSP evaluation, testing, and modeling for groundwater impacts would proceed in a regulatory vacuum and would be shielded from full public scrutiny in violation of CEQA and the Public Utilities Code.

MCWD-13 cont.

Finally, perhaps the most important difference in circumstances between the MPWSP and the Regional Desalination Project is the recent enactment of the SGMA. MCWD will discuss the importance of this change in the legal framework as it bears on environmental review in greater detail below.

MCWD-14

MCWD does not dispute that additional water supplies are needed to serve the Monterey Peninsula in the face of the mandatory reductions imposed by the State Water Board's orders WR 95-10 and WR 2009-0060. However, even the MPWSP's reduced size alternatives (Alternatives 5a and 5b) provide vastly more water than required to meet the nine primary project objective (Executive Summary, p. ES-3). As explained below, MCWD has analyzed CalAm's 2022 water supply sources and demand in accordance with the nine primary project objectives. Based on this analysis, an additional 1,305 acre-feet per year ("AFY") would provide CalAm with a Reserve Margin of 10%. There are one or more Alternate Water Sources that could be implemented to meet this demand without the high cost, high environmental impacts, high energy use, and high greenhouse gas emissions of the proposed MPWSP.

MCWD-15

[4] / Attached as Exhibit "5" are the Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839. As explained in the attached briefs the Coastal Commission failed to consider alternatives to slant wells in approving the MPWSP test slant well.

In light of this reality, MCWD cautions the Commission that in considering whether the currently proposed MPWSP is the project that best serves the public convenience and necessity, and in conducting its environmental review process for the MPWSP **and feasible alternatives** as CEQA and the Public Utilities Code demand, the Commission and Sanctuary take care not to view the Applicant's proposed project through so narrow a prism as to abnegate its fundamental public interest responsibilities. The Commission is required to weigh the environmental impact of the proposed project as a "relevant factor" on equal footing with other "relevant factors" affecting its public convenience and necessity determination. (*Northern California Power Agency v. Public Utilities Com.* (1971) 5 Cal.3d 370.)

MCWD-15 cont.

II. PROCEDURAL MATTERS

A. Independent Judgment

As explained in the Introduction to the DEIR/EIS, before considering an approval of the MPWSP or its alternatives, the Commission must "certify" the final EIR. According to the CEQA Guidelines, "certification" consists of three separate steps. The Commission must conclude, first, that the document "has been completed in compliance with CEQA"; second, that the Commission has reviewed and considered the information within the EIR prior to approving the project; and third, that "the final EIR *reflects the [Commission]'s independent judgment and analysis*." (CEQA Guidelines, § 15090, subd. (a); see also Pub. Resources Code, § 21082.1, subd. (c)(3) [lead agency must make finding that the document reflects the agency's independent judgment].) While the courts will uphold an EIR that is not prepared directly by the lead agency if substantial evidence demonstrates that the lead agency has independently reviewed the EIR and exercised its independent judgment over the document, the courts will not permit lead agencies merely to "rubber stamp" analyses prepared by the project applicant or others without independently reviewing the analysis and the evidence in support of the analysis. (See *People v. County of Kern* (1976) 62 Cal.App.3d 761, 775.)

MCWD-16

Here, it does not appear the CPUC exercised its independent judgment over the groundwater modeling that provided the basis for the CPUC's groundwater consultant's superposition modeling relied on in the DEIR/EIS to support its conclusion regarding the MPWSP's potential groundwater impacts. Based on the Public Records Act and data request responses we have received to date,[5] the HWG, including Geoscience, were intimately involved in the decisions regarding the modeling and selection of alternatives for consideration in the DEIR/EIS. This involvement appears to have significantly prejudiced the DEIR/EIS's analysis and conclusions of the MWPSP's potential groundwater impacts and the selection of potentially feasible alternatives that were evaluated in the DEIR/EIS. As

[5] / Attached as Exhibit 6 is a list of all the Public Records Act and data requests responses we have received to date, together with full copies on electronic media of all the documents produced. MCWD understands that additional documents may be produced following the comment deadline.

explained below and in the attached GeoHydros Comments, the DEIR/EIS modeling is unreliable, contrived, and does not evaluate the project's potential groundwater impacts in any meaningful way. Similarly, the DEIR/EIS' rejection of alternative intake technologies for consideration in the DEIR/EIS is not supported by the evidence, as explained below and in the attached Intake Works Comments, and appears to have been improperly influenced (if not decided) by the HWG.

As the CPUC is aware the four members of the HWG are paid by and represent parties with interests in the approval of the proposed project. Mr. Feeney and Mr. Durbin represent agricultural interests (Salinas Valley Water Coalition and Monterey County Farm Bureau). Their clients have an interest in the success of the project because they are likely to receive substantial increases in water supplies under several variations of the MPWSP. Mr. Leffler is CalAm's representative.

Most importantly, while Geoscience (Mr. Williams) was initially the designated and served as the CPUC representative on the HWG, during that time they also has a contract with CalAm and RBF Consulting, Inc. ("RBF" nka Michael Baker International) for the design, as well as supervision of construction and monitoring of the project's slant test well.[6] As the CPUC is aware, it was discovered after the 2015 release of the original Draft EIR for the MPWSP that Mr. Williams owns patents for slant well technology that may be used for the project. (See http://www.montereyherald.com/environment-and-nature/20150620/key-desal-project-hydrologists-slant-well-patents-questioned; see also July 14, 2015 ALJ Ruling and July 15, 2015 errata, A.12-04-019.) Regardless of whether Mr. Williams will receive any direct financial benefits from the project (which should unquestionably be disclosed) over and above the money he receives from CalAm through his consulting contracts, this creates another potential conflict of interest. Thus, while all four members of the HWG are experienced hydrologists, their clients' interests (and possibly their personal interests) may color their analysis. The Commission subsequently indicated that it would treat the work of Mr. Williams and his firm, Geoscience Support Services, Inc., as having been performed on behalf of CalAm rather than the Commission. Nonetheless, Mr. Williams and his firm remained involved in preparation of the 2017 DEIR/EIS, including groundwater modeling and underlying assumptions. (See, e.g., DEIR/EIS Executive Summary, Environmental Setting at sections 4.2 and 4.4, Appendix C3.) Despite the Commission's statements, Mr. Williams' dual advisory-advocacy role in the same proceeding raises an inference that his

MCWD-16 cont.

[6] / Mr. Williams also testified on behalf of CalAm in Santa Cruz Superior Court proceedings relating to the potential impacts of project's slant test well. (See excerpts of testimony attached as Exhibit "7" from *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. Case No. CV180839.) During his testimony, Mr. Williams testified that he was 100 percent confident that pumping had stabilized in the slant test well after three to five days. (*Ibid.*, p. 202-203.) Later monitoring modeling has shown the test well still has not stabilized, over a year after long term-pumping commenced. Martin Feeney also provided several declarations on CalAm's behalf in those proceedings.

views and opinions may be accorded undue weight in the Commission's environmental review and decision-making processes. Therefore, to ensure the objectivity of the MPWSP's modeling and the adequacy of the EIR, and to allow the Commission to exercise the required "independent judgment," MCWD requests the Commission obtain a peer review from a recognized independent hydrologist that does not represent clients with interests in the success of the MPWSP or alternatives.

Moreover, if Mr. Williams has a financial interest in the project, has served as a consultant for both the Commission as the adjudicatory decision-maker and CalAm as the primary advocacy project proponent, and has served as a leading participant in generating the input of the HWG in both capacities, the question arises whether such status renders the Commission's work on the groundwater and modeling aspects of the DEIR/EIS and the input of the HWG subject to an impermissible conflict of interest. (See *Morongo Band of Mission Indians v. California State Water Resources Control Bd.* (2009) 45 Cal.4th 731.) The Commission and the DEIR/EIS fail adequately to investigate, explore, address and resolve such conflict of interest issues.

MCWD-16 cont.

In conclusion, given the importance of the hydrogeological modeling on the project's overall feasibility and the DEIR/EIS's reliance on the modeling to evaluate that project's potential impacts to the over-drafted Marina subarea (discussed in Part III below) and alternatives, MCWD requests the Commission, at minimum, have Lawrence Berkeley independently review the hydrostratigraphy, assumptions, and calibration of Geoscience/HWG's updated modeling that was used in the DEIR/EIS and Hydrofocus's superposition model as they did for the modeling used in the original Draft EIR. An independent expert should also be identified to evaluate potentially feasible alternatives.

B. Unlawful "Parallel Track" used for examining the environmental impacts

MCWD believes the Commission is utilizing an unlawful "parallel track" methodology by examining the environmental impacts of the project in a CEQA process while examining other public interest factors under the closer scrutiny of a separate Certificate of Public Convenience and Necessity ("CPCN") hearing process so as to deprive the parties of an evidentiary hearing on some, but not all, key relevant factors bearing on the public interest. The Commission's approach in this instance has operated to impair, rather than foster, the public disclosure and transparency that is required under CEQA, as well as the fair balancing of all relevant factors, including "influence on the environment," that is required by the Public Utilities Code. (*Northern California Power Agency v. Public Utilities Com.* (1971) 5 Cal.3d 370; Public Utilities Code § 1002(a)(4).)

MCWD-17

III. THE DEIR/EIS IS FUNDAMENTALLY FLAWED AND MUST BE RECIRCULATED

MCWD provides following, specific comments on the DEIR/EIS. These comments are based on MCWD's review of the DEIR/EIS, documents contained in the CPUC's files,

MCWD-18

other public records, MCWD's independent investigation of this matter, its expertise in developing projects like the MPWSP proposed here, and the attached HGC Comments (Exhibit # 1), GeoHydros Comments (Exhibit # 2), EKI Comments (Exhibit # 3), and Intake Works Comments (Exhibit # 4). Based on its fifty-plus years of experience in providing water service in this area, as well as its prior role in the abandoned Regional Desalination Project, MCWD is uniquely qualified to comment on the DEIR/EIS. (See *Consolidated Irrigation District v. City of Selma* (2012) 204 Cal.App.4th 187, 206 [Water District's operations provided it with expertise in groundwater for purposes of commenting on a project's potential environmental impacts on water supplies].) The CPUC must respond separately to each environmental issue raised in this letter and those raised in HGC, GeoHydros, EKI, and Intake Works Comments on the adequacy of the DEIR/EIS and its Appendices (specifically groundwater modeling) in the Final EIR/EIS responses to comments (CEQA Guidelines, § 15088) as must the Sanctuary under NEPA.

MCWD-18 cont.

A. THE DEIR/EIS'S DISCUSSION OF WATER DEMAND, SUPPLIES, AND WATER RIGHTS IS INADEQUATE AND MISLEADS THE PUBLIC.

DWR Bulletin 118, which was issued in 1980, officially divided up the SVGB into eight different subbasins. Pursuant to SGMA, DWR conducted a Basin Boundary Modification process, which finalized new SVGB Subbasin boundaries in October 2016. Those basin boundaries were incorporated into the Bulletin 118 Interim Update 2016. The SVGB Subbasins are now designated as follows: 180/400 Foot Aquifer, East Side Aquifer, Forebay Aquifer, Upper Valley Aquifer, Paso Robles (60% located in San Luis Obispo County), Seaside, Langley, and Monterey. It is generally agreed that subbasin boundaries were drawn using a fat Crayola and not a sharp pointed pen. These are the official subbasins within the SVGB. All eight subbasins are classified by DWR as being either a high- or medium-priority subbasin subject to the Sustainable Groundwater Management Act discussed below. In January 2016, DWR classified the 180/400 Foot Aquifer Subbasin and the Paso Robles Subbasin as Critically Overdrafted Basins, which means that each of the two subbasin must adopt a SGMA-compliant groundwater sustainability plan or coordinated plans by January 31, 2020, or be subject to a State Water Resources Control Board enforcement intervention. All other subbasins have until January 31, 2022. The basin boundary modification resulted in the size of the Seaside Subbasin being reduced to only include lands within the adjudicated Seaside Groundwater Basin, which is managed by the court-supervised Seaside Basin Watermaster and is essentially exempt from SGMA. CalAm is a member of the Watermaster Board. The former northern portion of the Seaside Area Subbasin and the balance of the former Corral de Tierra Subbasin were merged by DWR into the new Monterey Subbasin. The relationship between MCWD's service areas and the 180/400 Foot Aquifer Subbasin, Monterey Subbasin, and Seaside Subbasin is shown on Exhibit 8 [Map of Service area in relationship to the 180/400, Monterey, and Seaside Subbasins]. (See also EKI Comments, Figure 1.)

MCWD-19

The Monterey County Water Resources Agency ("MCWRA") has combined the 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins into the so-called "Pressure Subarea." (See e.g., Brown and Caldwell's "State of the Salinas

River Groundwater Basin", dated January 16, 2015, which is included in the DEIR/EIS's list of references.) The CPUC and the public should be aware that reports or studies referring to the Pressure Subarea include substantially more land than within just the Marina Subarea.

CalAm had Geoscience prepare a North Marina Groundwater Model; the geographic area covered by the model is shown on Figure 15 in DEIR/EIS Appendix E2. As indicated in Footnote 1, for purposes of these comments, we have identified the Marina Subarea as the area that would be impacted by the proposed MPWSP slant well pumping.

MCWD-19 cont.

1. Major Failure of DEIR/EIS to Perform an Integrated Total Water System Analysis of CalAm's System With and Without the Proposed MPWSP.

The DEIR/EIS blanketly accepts without independent review or any in-depth analysis CalAm's representations each of CalAm's existing and proposed non-MPWSP water supply sources and fails to examine how each of those water supply sources are currently operated to meet CalAm's existing actual demands (i.e., CalAm's 2016 baseline operations) versus how each of those water supply sources could be operated and optimized to meet the nine primary project objectives.

Operating a water utility has similarities to operating an electric utility in that both have to have water supply or electric generation resources available to meet base, peak, and intermediate demands and both have transmission, sub-transmission, and distribution pipelines or electric lines to deliver the water or electricity from the various water supply or electric generation resources to the ultimate customer. A "base" resource is available, around the clock, every day. A "peaking" resource is available during periods of maximum water or electric usage, which will vary by climatic region, such as afternoons on hot summer days in Sacramento. An "immediate" resource is any remaining resource, which is available above base but below peaking.

MCWD-20

Lacking any adequate explanation in the DEIR/EIS, MCWD would surmise that today CalAm uses its Carmel River water as its base resource and peaks with its withdrawals from the Seaside Groundwater Basin (native groundwater plus ASR recoveries). That is a very simple resource mix compared to what will occur in 2022, especially without the MPWSP being constructed.

a. ***CalAm's Monterey District Reserve Margin Requirements.***

Electric utilities are required to have existing electricity generation capacity reserves that serve as a buffer for unplanned demand fluctuations due to sudden increases in demand or power plant emergency outages and to analyze the probabilities that a system emergency may occur. A reserve margin is a measure of the amount of electricity imports and in-state generation capacity available over average peak demand conditions. Reserve margins are measured at two levels: planning (month-ahead to 10 years) and operating (real-time).

MCWD-21

Except for CalAm Primary Project Objective #4 for this DEIR/EIS, which states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," the DEIR/EIS has no discussion of any reserve margin requirements for CalAm's Monterey District. Objective #4 is only a type of planning or month-ahead reserve margin requirement. MCWD would note that the margin requirement is only to meet the peak month demand of existing customers, not of projected customers in 2022. For purposes of these comments, MCWD is assuming a Monterey District reserve margin requirement of ten percent (10%). MCWD-21 cont.

b. ***By 2022, CalAm Will Have a Completely Different Water Supply Mix Even Without the MPWSP.***

The DEIR/EIS fails to consider in its analysis that by 2022, especially without the MPWSP, CalAm will have dramatically shifted from being a Carmel River surface water-centric water system to a Seaside Groundwater Basin-centric system.

Pursuant to SWRCB Order WR 2016-0016, Cal Am is authorized to divert up to 8,310 AFY from the Carmel River through December 31, 2021. That represents 89.5% of its 2016 actual demand of 9,285 AF. Come January 1, 2022, CalAm's legal Carmel River diversions drops to 3,376 AFY or only 36.4% of CalAm's actual 2016 water demand. However, once the GWR Project is operational, the Adjudicated Seaside Basin becomes a comingled pool of native groundwater, Carmel River ASR water, and GWR advanced treated water through both direct injection and in-lieu groundwater recharge. Then 63.6% of CalAm's 2016 demand would be met with Seaside Basin water resources. In-lieu groundwater recharge occurs when advanced treated or recycled water is consumptively used within the Adjudicated Seaside Basin instead of potable water thereby preserving native Seaside Basin groundwater. MCWD-22

This substantial increase in the amount of imported water into the Seaside Basin could significantly improve the groundwater conditions within the Basin thereby allowing for additional pumping by CalAm. The DEIR/EIS does not provided any hydrogeological analysis of the synergistic benefits of all of this out-of-Seaside-Basin water being imported into the Basin.

The DEIR/EIS does not discuss how CalAm could operate its then-available water supply sources in 2022. Instead, the DEIR/EIS basically assumes that CalAm could not meet the DEIR/EIS projected manipulated demand (and not CalAm's actual 2016 demand, which is Primary Project Objective #4) without constructing at least a 6.4 MGD MPWSP. That assumption is false.

CalAm asserts that a minimum 6.4 MGD desalination plant with source water intakes on the CEMEX property coupled with the GWR Project are vitally needed to address the SWRCB's Cease and Desist Order curtailing CalAm's illegal diversions on the Carmel River. While the SWRCB in its Order WR 2016-0016 addressed in part the interrelationship of the

elements of CalAm's Total Water Portfolio, no significant total-water-portfolio-type analysis is contained in the DEIR/EIS. It is essential that the DEIR/EIS closely examine CalAm's existing and proposed elements in its Total Water Portfolio, including how those existing and proposed source elements would interact and be integrated by 2022, and their relationship to meeting the nine Primary Project Objectives.

CalAm has not produced for public review a computer model of its existing water supply sources and demands as they vary by water year type and by month and how it will change come 2022. It is essential that the DEIR/EIS provide such a computer model to allow the CPUC, the public and other decisionmakers to meaningfully evaluate CalAm's water needs and potential alternatives to the MPWSP.

While the Carmel River Legal Limit of 3,376 AFY has been determined by the SWRCB in Order 95-10 and confirmed in Order WR 2016-0016, the DEIR/EIS without significant analysis blanketly accepts CalAm's claims as to the water available from each of CalAm's existing and future non-MPWSP water sources and fails to examine how CalAm's non-MPWSP water sources should be synergistically integrated to maximize their ability to meet the nine Primary Project Objectives. Again, come 2022, CalAm's water system will make a dramatic shift to a Seaside Basin groundwater dependent system, which includes native Seaside Basin groundwater, injected GWR water, injected Carmel River ASR water, and as CalAm proposes an additional 2,100 AFY of injected MPWSP desalinated water. Yet the DEIR/EIS has failed to disclose or perform a month-by-month analysis of how each of CalAm's water supply sources can be utilized in 2022 to optimize the use of each water source both with and without the MPWSP. As discussed below, such an analysis would show that only an additional 1,305 AFY of new water supplies are needed to meet all nine Primary Project Objectives and that the MPWSP is not needed to meet those objectives.

MCWD-22 cont.

i. CalAm's Actual 2016 Demand of 9,285 AF.

Table 2-2, Existing Demand 2006-2015, in Section 2.3.1, page 2-10, shows a 10-year average (2006-2015) of 12,351 AF. Table 2-2, Other Demand Assumptions, page 2-12, shows an "Existing Service Area Demand" of 12,270 AF. The actual 2016 existing demand was 9,285 AF[7], or only 75.7% of 12,270 AF. However, system demand has consistently decreased over the past decade. (See https://www.watersupplyproject.org/system-delivery.) The decrease in demand is apparently due to ratepayer conservation, as well as improvements in system losses due to leaks. (See SWRCB Order 2016-0016, p. 2.) These demand reductions are likely to be permanent, as discussed below.

MCWD-23

The DEIR/EIS' use of 12,270 AFY in its analysis when 9,285 AFY is the actual 2016 demand number is an example of the DEIR/EIS padding the numbers by 2,985 AFY, or 32% more, to justify a larger capacity desalination plant.

[7] / http://www.watersupplyproject.org/system-delivery.

ii. CalAm's Representations as to Its Water Supply.

In Order WR 2016-0016, the SWRCB amended in part Order 2009-0060, the Carmel River Cease and Desist Order by granting CalAm a time extension until December 31, 2021, to terminate all unlawful diversions from the Carmel River. On and after January 1, 2022, CalAm may only divert 3,376 AFY under Order WR 2016-0016 although CalAm and MPWMD jointly will continue to have the right pursuant to SWRCB-issued water right permits 20808A and 20808C to divert up to an additional 5,326 AFY of excess flows for ASR Phases 1 and 2 with an estimated average annual yield of 1,920 AFY.

In Table 2-4, CALAM Monterey District Water Supplies with Proposed MPWSP, page 2-18, CalAm is said to have the following water supply available during the period when CalAm is replenishing/repaying the Seaside Groundwater Basin with a 6.4 MGD Desalination and the GWR Project:

CalAm's Claimed NO MPWSP Water Sources When GWR becomes operational and on January 1, 2022	**Acre Feet per Year**
Carmel River Legal Limit	3,376
Sand City Desalination Plant	94
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,300
Groundwater Replenishment (GWR) Project	3,500
Seaside Basin Adjudicated Groundwater Supply	774
Total No MPWSP Water Supply	9,044

MCWD-24

With an actual 2016 existing demand of 9,285 AF, the above 9,044 AF total is only 241 AF or 2.6% short without considering any additional available water supply from Sand City's 300 AFY desalination plant, ASR, GWR, and the Seaside Basin. Such additional available water supply sources are discussed below.

Note that in Section 5.4.2.1, the DEIR/EIS claims that the "total long-term supply under the No Project Alternative would be 6,380 afy," which excludes all GWR water. If the 3,700 AFY GWR water is added to the 6,380 AFY, the total becomes 10,080 AFY.

iii. Sections 2.2.2.2 and 2.2.4, Seaside Groundwater Basin.

MCWD-25

A substantial majority of the lands in the Seaside Basin are within MCWD's Ord Community service area, not within CalAm's service area. MCWD provides potable water and will soon be providing recycled water to the Ord Community within the Seaside Basin. CalAm has major production wells within the Seaside Basin but most of CalAm's Monterey

District customers are outside of the Seaside Basin so CalAm is a net exporter of native Seaside Basin groundwater. The DEIR/EIS ignores these facts. The fastest growing area within Monterey County is within MCWD's Ord Community service area as part of the economic redevelopment of the former Fort Ord, which places even more emphasis on MCWD's need to protect its potable water supply.

As explained above, come 2022, CalAm's water supply portfolio will shift from a Carmel River-centric system to a Seaside Basin-centric system. Once the GWR Project is operational, the Adjudicated Seaside Basin becomes a comingled pool of native groundwater, Carmel River ASR water, and GWR advanced treated water through both direct injection and in-lieu groundwater recharge. This substantial increase in the amount of imported water into the Basin could significantly improve the groundwater conditions within the Basin thereby allowing for additional pumping by CalAm. However, the DEIR/EIS does not provided any hydrogeological analysis of the synergistic benefits of all of this out-of-Seaside-Basin water being imported into the Basin.

MCWD-25 cont.

The DEIR/EIS also fails to analyze and describe how ASR water, GWR water, and MPWSP water will be imported into and exported out of the Seaside Basin by month and how correspondingly the pipeline conveyance system will be operated to accommodate the water flow. For example, during January, Carmel River ASR would enter the 30-inch MCWD-CalAm joint pipeline from the South through the 36-inch Monterey Pipeline at the same time MPWSP product water through a 36-inch pipeline and recovered GWR water will enter the MCWD-CalAm joint pipeline from the North. Since water cannot move both north and south at the same time in the MCWD-CalAm joint pipeline, does CalAm intend to not send water from the North while Carmel River ASR water is moving North for injection into the Seaside Basin or, if not and the water coming from the North will block the Carmel River ASR water coming from the South, will CalAm not then be effectively sending the Carmel River water directly to its Monterey customers and not north for injection?

MCWD-26

In addition, CalAm is proposing to construct new ASR wells 5 and 6. The new ASR wells are not to inject and recover Carmel River water but to inject and recover 2,100 AFY of MPWSP desalinated water. The 2,100 AFY that would be injected each year into the Seaside Basin means (1) that CalAm could pump at least 1,474 AFY from the Seaside Basin or (2) that instead of taking 25 years to repay the Watermaster at 700 AFY, it would only take about 8 years. As more importantly discussed below, however, CalAm has not shown this additional 2,100 AFY of desalinated water is needed to meet the nine Primary Project Objectives and the MPWSP may be downsized accordingly.

MCWD-27

Proposed Transfer of 700 AFY of MCWD's GWR Project Water Entitlement to Seaside Basin Watermaster Instead of 700 AFY of MPWSP Desalinated Water. Section 2.4.2, page 2-17, states that CalAm and the Seaside Groundwater Basin Watermaster have agreed for CalAm to pay back at the rate of 700 AFY for 25 years the volume of groundwater CalAm has pumped in excess of its adjudicated right at the rate of 700 AFY for

MCWD-28

25 years. CalAm is assuming that the entire 700 AFY would come from the MPWSP plant and has accordingly increased the capacity of the MPWSP plant by 700 AFY, which will result in substantial capital and annual operating and maintenance costs for that added capacity. The DEIR/EIS fails to consider any other options, such as the following.

MCWD is entitled to 1,427 AFY of the output of the GWR Project for use by MCWD's customers within the Seaside Basin portion of MCWD's Ord Community service area, which includes the City of Seaside's Bayonet and Blackhorse Golf Courses. This is in addition to up to 3,700 AFY of GWR water, which will be sold to CalAm. A more practical and cost-effective alternative to building the additional 700 AFY of MPWSP plant capacity would be for CalAm to pay the Watermaster to purchase 700 AFY of MCWD's GWR water for use by MCWD's customers within MCWD's Ord Community service area within the Adjudicated Seaside Basin. This would result in a substantial saving for CalAm's customers by avoiding the need to pay for 700 AFY of desalination plant capacity that is not needed.

This more practical and cost-effective option is based upon representations contained at pages 20 and 21 of the Watermaster's May 23, 2016 Status Report to the Monterey County Superior Court prepared by Attorney Russell M. McGlothlin. Section G of the 2016 Court filing discusses "Potential Request for Relief from the 2018-2021 Triennial Rampdown." The basis for the potential rampdown postponement request is an April 2010 Land Transfer and Water Service Agreement between MCWD and the City of Seaside wherein MCWD agreed to supply the City with 2,500 AF total of potable groundwater for the City's same two golf courses. Section 1.11 of the MCWD-Seaside Agreement states, "This program would result in an 'in-lieu' replenishment of the Seaside Bain (sic) by virtue of suspending the production from the Seaside Basin for gold course irrigation." The golf courses are within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin. Delivery of Salinas Valley groundwater to portions of the former Fort Ord is expressly exempt from the MCWRA Agency Act's groundwater export prohibition. Mr. McGlothlin stated in the 2016 Status Report that had MCWD sold the 2,500 AF directly to the Watermaster that would have constituted a direct replenishment supply for the Basin's benefit upon which a rampdown could be postponed. The Watermaster's March 2, 2017 Case Management Statement to the Court at pages 20 and 21 specifically references the above 2016 representations to the Court. Here, MCWD is proposing that GWR Project recycled water be used in lieu of potable groundwater for the golf courses and for other customers' non-potable water uses.

MCWD-28 cont.

Sand City Desalination Plant: At the time of the SWRCB's October 20, 2009 Carmel River Cease and Desist Order WR 2009-0060, Sand City was constructing a 300 AFY capacity desalination plant. The Order at page 41 stated,

> Of the 300 afy, 94 afy will be used to replace water being diverted from the Carmel River by CalAm for existing water use within Sand City; thus, once the plant becomes operational the

MCWD-29

> city should no longer receive water illegally diverted from the Carmel River. The balance of the plant's production, 206 afy, is for future growth. **Pending the need for the remaining 206 afy, CalAm may use the water to meet the needs of its customers. (Emphasis added.)**

CalAm operates the Plant. While 206 acre feet of the plant's 300 AFY capacity is reserved exclusively for future Sand City development, that development will occur slowly over time as only in-fill and redevelopment opportunities remain because the city is geographically very small and is hemmed in by existing development. Without the Sand City plant, CalAm as the Sand City residents' water provider would be required to provide water for any new development after December 31, 2021. Presumably the 206 AFY is currently available for CalAm's use outside of Sand City yet the DEIR/EIS provides no analysis in Section 2.4.4, page 2-19, as to the projected availability of that 206 AFY in 2022 and beyond. However, Section 5.4.2.3, page 5.4-7, states, "Continued use of approximately 230 afy provided by Sand City's existing desalination plant (*same as proposed project*)." Therefore, MCWD will use 230 AFY as the amount of water available to CalAm from the Sand City plant.

MCWD-29 cont.

ASR Project Phases 1 and 2: SWRCB-issued water right permits 20808A and 20808C jointly to CalAm and the MPWMD with an authorized Carmel River diversion of up to 5,326 AFY between December and May of each year for ASR Phases 1 (ASR Wells 1 and 2) and 2 (ASR Wells 3 and 4) with an estimated average annual yield of 1,920 to 1,970 AFY.

MPWMD on its website on "Aquifer Storage & Recovery" reports an average yield for Phase 1 of "about 920 AFY" and for Phase 2 of "approximately 1,050 AFY", for a total of 1,970 AFY.[8] The difference between MPWMD's total annual yield amount of 1,970 AFY and Table 2-4's amount of 1,300 AFY is 670 AFY.

After December 31, 2021, CalAm is required to reduce its Carmel River by 4,934 AFY or over 59% from 8,310 AFY to 3,376 AFY. The DEIR/EIS fails to provide any analysis of the amount of additional water and the increased frequency of Carmel River water availability for ASR when that diversion reduction occurs. In addition, at the July 19, 2016 SWRCB hearing on what became Order WR 2016-0016, Rob MacLean stated that the new CalAm pipelines to be constructed would provide an additional 1,000 AFY conveyance capacity for Carmel River ASR water. It appears that CalAm has performed an analysis of the increased availability of ASR water come January 1, 2022, but has not shared that analysis with either the CPUC or the public. For purposes of these comments, the SWRCB's lower estimated annual yield of 1,920 AFY annual yield will be used. The DEIR/EIS should explain why it

MCWD-30

[8] / See http://wwvv.mpwmd.net/water-supply/aquifer-storage-recovery/.

does not use 1,920 AFY for CalAm's future ASR water supply, especially for 2022 and beyond. MCWD-30 cont.

GWR Project Supply: The CPUC has approved a water purchase agreement wherein CalAm would purchase 3,500 AFY of GWR Project supply. MRWPCA has also reserved the right to an additional 200 AFY or a total of 3,700 AFY. The additional element of the GWR Project is that MCWD is entitled to an additional 1,427 AFY of advanced treated water to serve MCWD's Ord Community service area. The Board of Directors of the Fort Ord Reuse Authority (FORA) by Resolution 07-10, adopted on June 8, 2007, allocated the 1,427 AFY to its member jurisdictions served by MCWD, including specifically 453 AFY to the City of Seaside, 280 AFY to the City of Del Rey Oaks, and 134 AFY to Monterey County for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin. The City of Seaside, including its two golf courses, and the City of Del Rey Oaks are within the Adjudicated Seaside Basin and their 733 AFY combined allocation would result in additional in-lieu groundwater recharge benefits for the Adjudicated Seaside Basin, which fact is totally ignored in the DEIR/EIS. (See Exhibit 8, [Reference Map of MCWD Service Area in Relation to the Adjudicated Seaside Groundwater Basin].)

Phase 1 of the GWR Project provides for the 3,700 AFY to MRWPCA and 600 AFY of the 1,427 AFY to MCWD. Phase 2 of the GWR Project will increase the Advance Water Treatment Plant capacity by up to an additional 827 AFY to provide the balance of the 1,427 AFY for MCWD's Ord Community service area. This DEIR/EIS should examine (1) CalAm paying the Seaside Watermaster to purchase from MCWD 700 AFY of GWR Project Water for use within the Basin by MCWD's customers in satisfaction of CalAm's obligation to repay the Seaside Watermaster 700 AFY for 25 years and (2) transferring additional Phase 1 and 2 advance treated water from MCWD to MPWMD for use by CalAm to the extent not needed by MCWD's Ord Community customers. MCWD-31

The GWR Product Water Conveyance Facilities (pipeline), which will convey the advance treated water from the new treatment plant to MCWD's Ord Community service area and then onto the new GWR injection facilities, will have sufficient capacity to convey more than 5,127 AFY. It should be noted that MCWD's peak use of the Advance Water Treatment plant and the pipeline will be during the summer months so a much greater portion of the treatment plant capacity and the conveyance capacity of the pipeline will be available during the other months to treat and convey water to the GWR injection facilities. Pursuant to the April 2016 Pure Water Delivery and Supply Project Agreement between MRWPCA and MCWD, the pipeline is to be designed, constructed, owned, and operated by MCWD. That Agreement also authorizes MRWPCA to produce an additional 200 AFY of purified recycled water for the GWR Project injection, or an annual total of 3,700 AFY.

iv. The NO MPWSP Option:

For both the SWRCB proceedings and for this DEIR/EIS, MCWD has analyzed the available information, especially those not considered in this DEIR/EIS, and concludes that the proposed MPWSP does not need to be built. The NO MPWSP Option is based upon the following water sources discussed above, which should be available to CalAm when the GWR Project becomes operational and on January 1, 2022:

CalAm's NO MPWSP Water Sources When GWR becomes operational and on January 1, 2022	**Acre Feet per Year**
Carmel River Legal Limit	3,376
Seaside Basin Adjudicated Groundwater Supply[9]	1,474
Sand City Desalination Plant	230
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,920
Groundwater Replenishment (GWR) Project	3,700
Total No MPWSP Water Supply	**10,700**

MCWD-32

As shown by Scenario A and B of MCWD's Total Water Portfolio analysis, by 2022, CalAm can achieve both (a) 100% compliance with the SWRCB Cease and Desist Order and (b) have an adequate water supply without the MPWSP. (See also the discussion of No Project Alternative in Part III.D below.)

c. ***CalAm's Total Water Portfolio Options for Meeting the Nine Primary Project Objectives.***

i. Scenario A: Using the Actual CalAm 2016 Water Demand of 9,285 AFY for Comparison Purposes and in accordance with Primary Project Objective #4.

The following is a comparison of CalAm's Total Water Portfolio with the MPWSP as discussed above with the DEIR/EIS's representation of CalAm's Water Supplies using a proposed 6.4 MGD MPWSP and the GWR Project shown in Column 3 of Table 2-4, page 2-18:

MCWD-33

[9] / Assumes that CalAm meets its 700 AFY payback obligation to the Seaside Watermaster by paying the cost of 700 AFY of advanced treated water allocated for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin.

CalAm Water Sources	No MPWSP Option	CalAm Water Sources from Table 2-4, Col. 3
Carmel River Legal Limit	3,376	3,376
Seaside Basin Groundwater Supply[10]	1,474	774
Sand City Desalination Plant	230	94
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,920	1,300
Groundwater Replenishment (GWR) Project	3,700	3,500
6.4 MGD Desalination Plant	NA	7,167
Total No MPWSP Water Supply	10,700	16,211
2016 Actual Demand	9,285	9,285
Excess over 2016 Actual Demand	1,415	6,926
Percent of Water Supply in Excess of 2016 Actual Demand	**15.2%**	**74.6%**

MCWD-33 cont.

Another way of analyzing CalAm's Total Water Portfolio in relationship to the non-MPWSP option is through the following Scenario A spreadsheet analysis based upon the following:

- Total Water Portfolio analysis assuming MCWD's numbers for the Seaside Basin Adjudicated Groundwater Supply, Sand City Desalination Plant, ASR Phases 1 and 2, and GWR Project
- Meeting CalAm Project Objectives 1, 2, 3, 4, 5, 8, and 9, including 100% compliance with the SWRCB Carmel River Cease and Desist Order.
- Objective 4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," i.e., 2016 customers. (Executive Summary, p. ES-3) Limiting the Objective to "the peak month demand of existing [2016] customers" makes the project not growth

MCWD-34

[10] / Assumes that CalAm meets its 700 AFY payback obligation to the Seaside Watermaster by paying the cost of 700 AFY of advanced treated water allocated for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin.

inducing and satisfies the Sanctuary's Management Plan requirement that if other economically and environmentally preferable alternative water sources are infeasible, then any new desalination plant should be sized not to induce growth within the coastal areas.

- CalAm's 2016 system deliveries of 9,285 AF as the baseline.
- Proving a Reserve Margin Percentage of at least 10%.

Under Scenario A, MCWD examined four different Total Water Portfolio options, which could be in place by January 1, 2022, with 100% Cease & Desist Order compliance — NO MPWSP, Alternate Water Sources (Alt Water), 6.4 MGD Desal, and 9.6 MGD Desal — in relationship to CalAm's actual 2016 water deliveries. The "NO MPWSP" option assumes that CalAm's MPWSP is not constructed. The "6.4 MGD Desal," and "9.6 MGD Desal" options assumes that CalAm would construct a desalination plant (location of source wells are not assumed to be the CEMEX property or that slant wells would be used) with those respective treatment capacities as discussed in the DEIR/EIS. The DEIR/EIS assumes that a 6.4 MGD plant would produce 7,167 AFY even though CalAm represented in its March 14, 2016 Amended Application to the CPUC that the 6.4 MGD plant would produce 6,252 AFY. Consequently, MCWD assumed a 24/7/365 operating scheme for the desalination plant options.

MCWD-34 cont.

The Scenario A results are as follows:

	No MPWSP	6.4 MGD Desal	9.6 MGD Desal
Total Supply	10,700	17,867	21,450
2016 Demand[11]	9,285	9,285	9,285
Water Supply Reserve Margin	1,415	8,582	12,165
Reserve Margin Percentage (10% assumed needed)	**15.2%**	**92.4%**	**131.0%**

Scenario A meets seven of the nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP. As demonstrated above, Scenario A without the MPWSP will develop water supplies for the CalAm Monterey District service area to replace CalAm's illegal Carmel River diversions (#1), will reduce pumping from the Seaside Groundwater Basin (#2), will pay back the Seaside Groundwater Basin (#3), will develop a reliable water supply for CalAm's Monterey District service area, accounting for the peak monthly demand of existing customers (#4), and develop a reliable water supply that meets fire flow requirements for public safety

MCWD-35

[11] / Primary Project Objective #4 specifies demand of existing (2016) customer demand. See also III.A.1.b.i below. Does not include any return water demand as alternatives exist that would not require any return water.

(#5). Because the MPWSP desalination plant would not be built, a major new large energy use would be eliminated with a corresponding substantial reduction in greenhouse gas emissions per unit of water delivered (#8). In addition, without the MPWSP, substantial project costs would be eliminated with the resulting beneficial effect for water rates (#9). MCWD-35 cont.

ii. Scenario B: Using 2016 Demand, Pebble Beach Water Entitlements, Legal Lots of Record, and 25% of Hospitality Industry Rebound, a Total of 10,915 AFY, for Comparison Purposes.

The differences from the above Scenario A analysis and from the Table 2-3, page 2-12, CalAm demand assumptions are as follows:

- For the "Existing Service Area Demand," the actual 2016 demand of 9,285 AF was used. CalAm Project Objective 4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," i.e., 2016 customers.
- The DEIR/EIS "Pebble Beach Water Entitlements" of 325 AF was used.
- The DEIR/EIS "Legal Lots of Record" of 1,180 AF was used.
- Only 25% of the DEIR/EIS's 500 AF for the "Hospitality Industry Rebound Economic Recover," or 125 AF, was used because in Section 2.3.3.2, pages 2-13 to 2-14, the DEIR/EIS admits that "the region's economy has largely recovered" and that some of the 500 AFY would be available for other uses but fails to identify what those other uses would be and whether that would result in duplicating a CalAm demand. That means that most of the 500 AFY is not needed. Table 2-2 shows a significant progressive reduction in CalAm customers' water as the economy was "recovering." Therefore, MCWD has determined that only 125 AFY, and not 500 AFY, is needed to meet any further Hospitality Industry Rebound to meet Primary Project Objective #7. MCWD has experienced a similar significant progressive reduction in MCWD customers' water use and that has and is occurring even as the number of MCWD's customers continues to grow. Governor Brown has declared, "water conservation must be a part of everyday life."[12] CalAm and MCWD customers have answered that call and implemented water conservation measures in their everyday lives and they will continue to do so. MCWD-36
- Meets all nine Primary Project Objectives, including 100% compliance with the SWRCB Carmel River Cease and Desist Order and with Objective 7 being met as recalculated above.

[12] / http://www.npr.org/sections/thetwo-way/2016/05/09/477392158/california-governor-makes-some-water-restrictions-permanent

- Under the NO MPWSP Option, the comparison assumes that an additional 1,305 AFY of water would be available as discussed below under Alternative Water Sources.
- Proving a Reserve Margin Percentage of at least 10%.

The Scenario B results are as follows:

	No MPWSP	6.4 MGD Desal	9.6 MGD Desal
Total Water Supply Available	12,005	17,867	21,450
2016 Demand + PB + LOR + 50% of HI Rebound	10,915	10,915	10,915
Water Supply Reserve Margin	1,090	6,827	11,040
Reserve Margin Percentage (10% assumed needed)	**10.0%**	**61.8%**	**94.3%**

MCWD-36 cont.

Scenario B meets all nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP. As demonstrated above, Scenario B will develop water supplies for the CalAm Monterey District service area to replace CalAm's illegal Carmel River diversions (#1), will reduce pumping from the Seaside Groundwater Basin (#2), will pay back the Seaside Groundwater Basin (#3), will develop a reliable water supply for CalAm's Monterey District service area, accounting for the peak monthly demand of existing customers (#4), and develop a reliable water supply that meets fire flow requirements for public safety (#5). Provide sufficient water supplies to serve existing vacant legal lots of record (#6), and accommodate tourism demand under the already "largely recovered" economic conditions (#7). Because the MPWSP desalination plant would not be built, a major new large energy use would be eliminated with a corresponding substantial reduction in greenhouse gas emissions per unit of water delivered (#8). In addition, without the MPWSP, substantial project costs would be eliminated with the resulting beneficial effect for water rates (#9).

MCWD-37

iii. Scenario A and B Conclusions:

The Scenario A analysis with accompanying spreadsheet and bar graph (Exhibit 10) shows that the MPWSP is not needed to meet CalAm's actual 2016 water demand, and to provide CalAm with a Water Supply Reserve of 1,415 AFY or a Reserve Margin of 15.2%. Scenario A would meet seven (1, 2, 3, 4, 5, 8, and 9) of the nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP.

MCWD-38

The Scenario B analysis with accompanying spreadsheet and bar graph (Exhibit 11) shows that even if CalAm's actual 2016 water demand is increased by Pebble Beach

Entitlements, Legal Lots of Record, and 25% of the claimed Hospitality Industry Rebound demand, and provide CalAm with a 10% Reserve Margin, that combined demand could be met with an additional 1,305 AFY of water from other sources, which are discussed below under Alternate Water Sources (Alt Water). Scenario B would meet all nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP.

MCWD-38 cont.

d. ***What CalAm has Done to Increase Water Demand by 54% over the 2016 Actual Demand. CalAm's Existing Customers Should Not be Required to Pay for that Significant Water Supply Cost Increase.***

In Table 2-3, page 2-12, the DEIR/EIS assumes that CalAm's "Existing Service Area Demand" is 12,270 AFY based upon 2010 demands and not the actual 2016 demand of 9,285 AFY as required by Primary Project Objective #4. In other words, the DEIR/EIS assumes an "Existing Service Area Demand," which is 2,985 AFY or over 32% more than the actual existing demand. Table 2-3 then goes on to add an additional 2,005 AFY for Pebble Beach Water Entitlements, Hospitality Industry Rebound Economic Recovery, and Legal Lots of Record. In the Section 2.3.3.2 discussion of Hospitality Industry Rebound, pages 2-13 to 2-14, the DEIR/EIS admits that "the region's economy has largely recovered" and that some of the 500 AFY would be available for other uses. CalAm's actual 2016 water demand was 9,285 AF. The DEIR/EIS' new total water demand is 14,275 AFY, or 4,990 AFY more, which is a 54% increase over the actual 2016 water demand. It should be noted that providing service for Pebble Beach Water Entitlements, Hospitality Industry Rebound Economic Recovery, and Legal Lots of Record are *not* within the scope of objectives listed for the operative Project Description that is on file with the Commission, where the primary stated objective is compliance with SWRCB Order 95-10. (Mar. 14, 2016 Amended Appl., Ex. H.) These further objectives have been added by CalAm, as reflected in the DEIR/EIS project description. (Executive Summary, p. ES-3; see pp. 2-10 through 2-15.)

MCWD-39

The DEIR/EIS fails to explain why CalAm's existing customers should be required (1) to pay a 54% increase in water supply in excess of those existing customers' actual demand or (2) to pay for a desalination plant that will act as a very expensive insurance policy. This is the typical investor-owned utility solution to foster a perceived water supply shortage that it then proposes to solve by building the biggest, shiniest new water supply project at the existing customers' expense and at the expense of the environment – bigger is not better here.

MCWD-40

e. ***The DEIR/EIS Shows that the Proposed 6.4 MGD MPWSP is Not Needed and that a 6.4 MGD Plant is Substantially Oversized even with CalAm's Expanded Project Objectives.***

As discussed above, a MPWSP of any size is not needed to meet the current system demand. Under Scenario A, 6,475 AFY, or 5.78 MGD, of the 6.4 MGD MPWSP plant capacity is not needed to meet seven of the expanded DEIR/EIS Primary Project Objectives. Under Scenario B, 4,845 AFY, or 4.33 MGD, of the 6.4 MGD MPWSP plant capacity is not needed to meet all nine of the expanded DEIR/EIS Primary Project Objectives.

MCWD-41

First, as discussed in MCWD's comments A.1.b.i above, the actual 2016 existing demand was 9,285 AF versus Table 2-2, page 2-12 of the DEIR/EIS shows an "Existing Service Area Demand of 12,270 AF. Under Scenario A, that would represent a 2,985 AFY increase over the actual existing demand. Under Scenario B, that would represent a 1,355 AFY increase over the Scenario B demand of 10,915 AFY. Therefore, under Scenario A, there would be 2,985 AFY of overcapacity and, under Scenario B, there would be a 1,355 AFY of overcapacity.

Second, as discussed in DEIR/EIS Section 2.4.3 on page 2-19 and in Section 3.2.4, page 3-43, CalAm is proposing to construct new ASR Wells 5 and 6. However, the new ASR wells are not to inject and recover Carmel River water but to inject and recover 2,100 AFY of MPWSP desalinated water. The DEIR/EIS has not provided any justification as to why 2,100 AFY more water needs to be injected into the Seaside Basin. For example, the DEIR/EIS does not justify this 2,100 AFY desalinated water as payback water to the Seaside Watermaster. Therefore, the MPWSP plant capacity to produce this 2,100 AFY is totally unnecessary.

Third, as discussed above under Seaside Basin Groundwater Supply, DEIR/EIS Section 2.4.2, page 2-17, states that CalAm and the Seaside Groundwater Basin Watermaster have agreed for CalAm to pay back the volume of groundwater CalAm has pumped in excess of its adjudicated right at the rate of 700 AFY for 25 years. CalAm is assuming that the 700 AFY would come from the MPWSP plant and has increased the capacity of the MPWSP plant by 700 AFY for that purpose. The DEIR/EIS fails to consider any other options and as explained above, a more practical and cost-effective option would be for CalAm to pay the Watermaster to purchase 700 AFY of MCWD's share of GWR Project advanced treated water for use by MCWD's customers within MCWD's Ord Community service area within the Adjudicated Seaside Basin. Based upon the cost of GWR Project water under the CPUC-approved Water Sales Agreement, purchasing this additional GWR Project water would be at a substantial savings to the equivalent amount of MPWSP desalinated water. This would further reduce the need for MPWSP plant capacity by an additional 700 AFY.

MCWD-41 cont.

Fourth, DEIR/EIS Section 2.5.1, pages 2-22 to 2-23, discusses CalAm's Salinas Valley Groundwater Basin Return Water obligation to mitigate for pumping SVGB groundwater if the proposed slant well technology and CEMEX well locations are used. Section 2.5.1 states that the proposed "Settlement Agreement on MPWSP Desalination Plant Return Water" would require CalAm to return 690 AFY if the 6.4 MGD plant is built. The DEIR/EIS does not determine how much return water would actually be needed, but apparently decided to use 690 AFY without a sound scientific basis. An amount greater than 690 AFY is likely as discussed below. As also discussed below, another fatal flaw of the DEIR/EIS is the blatant assumption that returning one AF of desalinated water anywhere in the SVGB, especially north of the Salinas River, could be adequate mitigation for direct, indirect, and cumulative impacts from slant well pumping at the CEMEX property under

environmental, groundwater, and SGMA law. While one reading of the Agency Act may support a one-to-one return ratio, the DEIR/EIS does not discuss anywhere whether a one-to-one return ratio is adequate to mitigate for environmental, groundwater, and SGMA direct, indirect, and cumulative impacts from slant well pumping at the CEMEX property. As discussed in MCWD's comments on Project Alternatives, use of proven Horizontal Wells technology would eliminate the need to provide any return water.

Overcapacity Items	Scenario A AFY	Scenario B AFY
Eliminating Excess Demand in DEIR/EIS' "Existing Service Area Demand of 12,270 AF versus Scenario A or Scenario B Demand	2,985	1,355
Eliminating proposed new ASR Wells 5 and 6 and the need 2,100 AFY of MPWSP product water to inject	2,100	2,100
Elimination of repayment to Seaside Watermaster by instead purchasing 700 AFY of GWR water for use within the Adjudicated Basin	700	700
Elimination of Return Water Obligation	690	690
Total Amount of MPWSP Overcapacity	6,475	4,845
Overcapacity Converted into MGD =	5.78 MGD	4.33 MGD
6.4 MGD MPWSP Capacity Remaining	0.62 MGD 694 AFY	2.07 MGD 2,318 AFY

MCWD-41 cont.

In summary, using the DEIR/EIS' own information, 5.78 MGD of a 6.4 MGD MPWSP plant is not needed to meet seven of the Primary Project Objectives and 4.33 MGD is not needed to meet all nine Primary Project Objectives.

f. ***Alternative Water Sources (Alt Water).***

The DEIR/EIS states that no viable alternatives have been identified that would supply water without a desalination plant being included and dismisses all non-desalination plant alternative water sources with the exception of the GWR Project. (DEIR/EIS, pp. 5.2-1 through 5.2-6.) This conclusion, however, is not supported by the record as discussed above. Under the Scenario A analysis above, MCWD has shown that CalAm does not need a desalination plant of any size to meet 2016 demand going forward and to meet Primary Project Objectives 1, 2, 3, 4, 5, 8, and 9. Under the Scenario B analysis above, MCWD has shown that CalAm would only need approximately 1,305 AFY more from Alternate Water Sources to meet all nine Primary Project Objectives.

MCWD-42

Moreover, as a result of the drought, stormwater capture is the new "low hanging fruit" for additional water supplies. January and February 2017 have demonstrated the availability and viability of Salinas River water for stormwater capture projects; however,

MCWD-43

stormwater flows exist in the Salinas River during other than wet water years. The following two excess river flow capture projects would utilize excess flows in the Salinas River and should be analyzed in the DEIR/EIS as they could provide additional assurances that CalAm could obtain sufficient supplies without building the MPWSP desalination plant.

iv. Salinas River Excess Flow Capture – Groundwater Recharge Project.

As a result of the drought, stormwater or excess flow capture is the new "low hanging fruit" for additional water supplies. January and February 2017 have demonstrated the availability and viability of Salinas River water for excess flow capture projects; however, excess flows exist in the Salinas River during other than wet water years. The following two excess river flow capture projects would utilize excess flows in the Salinas River and should be analyzed in the DEIR/EIS as they could provide additional assurances that CalAm could obtain sufficient supplies without the proposed MPWSP desalination plant.

MCWD agrees that the primary purpose of the Salinas Valley Water Project should be to provide groundwater recharge for the Salinas Valley Groundwater Basin. However, during many water years, there are substantial Salinas River flows to Monterey Bay in excess of SVGB groundwater recharge and Salinas River environmental flow needs. For example, because of the substantial magnitude and occurrence of those flows, MCWRA is proposing the construction of an Interlake Tunnel that would divert water from Nacimiento Reservoir to San Antonio Reservoir – water that would otherwise have been spilled at Nacimiento Dam. While the Interlake Tunnel Project will result in storing more stormwater runoff, a new Salinas River diversion and conveyance system is being proposed to convey that water to a new groundwater recharge area near the City of Salinas. However, MCWRA's Salinas River Diversion Facility (the "rubber dam") is an already permitted diversion facility located near Marina at the MRWPCA's regional tertiary treatment plant and the site of the to-be-constructed GWR Advance Treated Water plant. The MCWRA has existing unexercised SWRCB-issued water rights that could be modified to accommodate additional river diversions at the rubber dam for groundwater recharge. For example, a recharge project could divert some 10,000 to 20,000 AF when there are excess flows in the river. Required bypass flows for the protection of Salinas River steelhead would be at minimum levels during the months of November through March when diversions for this project would normally occur. There are at least four potential uses or combination of uses for this water:

MCWD-43 cont.

1. If a blend of river water and tertiary treated water could be treated at MRWPCA's Advance Water Treatment plant, then a portion of this water could be incorporated into the GWR Project for use by CalAm's Monterey District. MCWRA's Agency Act only prohibits the export of Salinas Valley Groundwater Basin groundwater, not Salinas River water.
2. If Salinas River water could be treated in a desalination plant, then a portion of the river water could be treated at a new desalination plant thereby reducing source water pumping.

3. A portion of the excess river water could be conveyed north of the Salinas River to the Castroville area for groundwater recharge. The river water would be treated (e.g., filtered and chlorinated) to the extent necessary. Despite the many years that the Castroville Seawater Intrusion Project (CSIP) has been in operation, the Castroville Community Service District continues to experience significant groundwater supply problems. A significant cause of the groundwater problem is the pumping depression that has developed to the east of CCSD in the northern portion of the City of Salinas caused by over-pumping in the East Side Subbasin, which causes groundwater underneath the CCSD to flow east instead of naturally flowing west to Monterey Bay. See DEIR/EIS Figure 4.4-6.
4. A portion of the excess river water should remain south of the Salinas River in the Marina area for seawater intrusion protection and groundwater recharge. See Exhibit #3 to these Comments, Erler & Kalinowski, Inc., Memorandum dated 22 March 2017, Section 4.2, Impacts of MPWSP on MCWD's Ability to Implement Groundwater Recharge Augmentation at Armstrong Ranch.

MCWD-43 cont.

Because the 180/400 Foot Aquifer Subbasin of the SVGB is classified as a Critically Overdrafted subbasin, i.2, i.3, and i.4 above should be mandatory projects under the Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin.

MCWD is proposing that the Salinas River Excess Flow Capture/Groundwater Recharge Project be implemented and utilized by CalAm by capturing from 3,000 to 4,000 AF in excess river flow years to supply on the average 1,000 AFY as either additional GWR source water (i.1) and/or direct desalination plant source water (i.2).

v. Additional GWR Project Water and ASR water.

Additional GWR Water. As discussed above under "GWR Project Supply," MCWD is entitled to 1,427 AFY of GWR water and MCWD is proposing that CalAm pay the Seaside Watermaster to purchase from MCWD 700 AFY of MCWD's GWR water for use within the Seaside Subbasin by MCWD's Ord Community customers in satisfaction of CalAm's obligation to repay the Seaside Watermaster 700 AFY for 25 years. To the extent that the remaining 727 AFY of GWR water is not needed by MCWD's Ord Community customers, a portion of that 727 AFY could be sold to CalAm.

MCWD-44

MCWD understands Salinas Valley agriculture's concerns over reductions of their recycled water for the Castroville Seawater Intrusion Project (CSIP) as a result of the GWR Project. MCWD suggests that the above Salinas River Stormwater Capture/Groundwater Recharge Project could provide direct groundwater recharge benefits that would combat seawater intrusion, allow more agricultural pumping, and help recover the Castroville area groundwater. For example, would 4,000 AF of groundwater recharge with stormwater capture occurring one-third of the water years be sufficient to offset an additional 1,000 AFY of GWR water going to CalAm?

MCWD-45

Additional ASR Water. As discussed above under "ASR Project Phases 1 and 2," after December 31, 2021, CalAm is required to reduce its Carmel River by 4,934 AFY or over 59% from 8,310 AFY to 3,376 AFY. The DEIR/EIS fails to provide any analysis of the amount of additional water and the increased frequency of Carmel River water availability for ASR when that diversion reduction occurs. In addition, at the July 19, 2016 SWRCB hearing on what became Order WR 2016-0016, Rob MacLean stated that the new CalAm pipelines to be constructed would provide an additional 1,000 AFY conveyance capacity for Carmel River ASR water. It appears that CalAm has performed an analysis of the increased availability of ASR water come January 1, 2022, but has not shared that information with either the CPUC or the public. MCWD-46

vi. Salinas River Excess Flow Capture — Salinas River Water Treatment Plant.

This is not necessarily low hanging fruit but MCWD has already performed a preliminary analysis of the feasibility of diverting Salinas River water in excess of existing agricultural uses and steelhead needs to meet potable water demands. The project would utilize excess water under MCWRA's water right licenses and permits and could utilize the rubber dam or wells along the Salinas River as CalAm does along the Carmel River. River water would not be available in all water years, but for a 5,000 AFY water treatment plant, 1,000 AFY could be used to meet potable water demands within MCWD's Ord Community and the remaining 4,000 AFY could be made available to CalAm's Monterey District and to Castroville Community Services District for direct use and/or for groundwater recharge. MCWD-47

vii. Small Desalination Plant.

MCWD has proposed constructing its own 3,000 AFY (2.7 MGD) desalination plant, which is generally discussed in the DEIR/EIS on pages 4.4-89 to 4.4-90. Pursuant to the Regional Urban Water Augmentation Program (RUWAP), MCWD is obligated to provide an additional 2,400 AFY of augmentation water needed for the redevelopment of Fort Ord. MCWD has secured 1,427 AFY of that from the GWR Project. The remaining 973 AFY could be provided by a 3,000 AFY desalination plant to be owned by MCWD. MCWD's ownership of the plant would comply with the Monterey County ordinance requiring 100% ownership of desalination plants in the county. (See Monterey County Code of Ordinances, section 10.72.030(B).) The balance of 2,027 AFY (1.8 MGD) could be sold to CalAm for its Monterey Peninsula customers. Any MCWD desalination plant would likely use horizontal or vertical wells and not slant wells. MCWD-48

viii. Alternate Water Sources Conclusion.

The DEIR/EIS just focuses on a 6.4 MGD and 9.6 MDG MPWSP desalination plant. The DEIR/EIS failed to do a 2022 Total Water System analysis for CalAm's Monterey District thereby failing to determine the actual water supply and water demand situation needed to meet all nine Primary Project Objectives because, as MCWD has shown, even a 6.4 MGD desalination plant would produce an excess amount of water making actual demand irrelevant. Because of that, alternate water sources were not analyzed because no additional water sources were needed with a 6.4 MGD plant. As MCWD has shown, only MCWD-49

1,305 AFY of alternate water sources are needed to meet all nine Primary Project Objectives without the need to construct the MPWSP. The Excess Flow Capture/Groundwater Recharge Project could provide a significant amount of additional GWR water and groundwater recharge to combat seawater intrusion, especially north of the Salinas River. Additional GWR water and ASR water should also be available to provide the additional 1,305 AFY.

MCWD-49 cont.

2. The DEIR/EIS's discussion of Plant Capacity vastly underestimates the amount of water that would need to be returned to the SVGB.

The adequacy of the DEIR/EIS's discussion of plant capacity is critical to determining the amount of groundwater that must be returned to the SVGB from the MPWSP's source wells given CalAm's lack of water rights. It is also critical for determining whether the project actually has capacity to return the large amount of groundwater it must return to the Marina Subarea. The DEIR/EIS, however, fails to provide any discussion or support for bracketing the return water percentage between 0% to 12%. As discussed in the attached HGC Comments, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. (See HGC Comments, pp. 9-10.) Even the NMGWM2016 calibrated model, which likely underestimates the slant wells production of groundwater, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step. (*Ibid.*) Moreover, this does not account for the amount of return water that may be needed to mitigate groundwater impacts in the Marina Subarea.

MCWD-50

Therefore, the DEIR/EIS must be revised to disclose the potential maximum amount of groundwater that must be returned, especially in the early years, of the project to determine whether the presently proposed slant well intakes are actually feasible. Importantly, other subsurface intakes that the DEIR/EIS fails to analyze would like reduce (Ranney Wells) or eliminate (Horizontal Wells) the need for any return water. In addition, both the no project alternative and GWR project would not require any return water component. Therefore, the revised DEIR/EIS should not assume the return water component is part of CalAm's demand in assessing potentially feasible alternatives, as discussed further below.

3. The DEIR/EIS's discussion of Water Rights Is Misleading, Ignores Established Legal Precedent, and Fails to Demonstrate the Project is Legally Feasible.

Any discussion of the applicability of CEQA/NEPA law, groundwater law, and the Sustainable Groundwater Management Act (SGMA) to the proposed MPWSP is very fact dependent. As discussed in MCWD's comments, the DEIR/EIS analysis in Section 4.4, Groundwater Resources, is fatally flawed, being based upon inaccurate data and modeling, and not fully analyzing the direct, indirect, and cumulative adverse impacts of MPWSP's withdrawal of groundwater from the Marina Subarea. MCWD will fully discuss those matters in its comments on Section 4.4. The following discussion provides MCWD's

MCWD-51

comment on the Section 2.6 discussion as to (1) the DEIR/EIS' theoretical understanding of the law and (2) the law as applied to the facts as ascertained by MCWD. MCWD-51 cont.

a. ***The DEIR/EIS' Discussion of CPUC's Role.***

In the introduction to Section 2.6, the DEIR/EIS makes the following statements:

(1) "The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR/EIS should be construed as the CPUC's opinion regarding such rights,"

(2) "except to the extent that the CPUC must determine whether there is a sufficient degree of likelihood that CalAm will possess rights to water that would supply the desalination plant such that the proposed project can be deemed to be feasible."

(3) "The SVGB is not an adjudicated groundwater basin, so use of the groundwater in the Basin is not subject to existing court decree, written agreements or oversight by an impartial Watermaster."

(4) Three "relevant types of groundwater rights" are:
"(1) overlying rights whereby those who own land atop the Basin may make reasonable use of groundwater on such land; (2) prescriptive rights whereby a water user has acquired another's rights to use water via an open, adverse and sustained use [for at least five years] under a claim of right that such user would otherwise not be entitled to; and (3) appropriative rights whereby the groundwater may be used outside the Basin or for municipal purposes. **While CalAm owns 46 acres of land (the proposed desalination plant location) overlying the Basin, that land would not support sufficient water for the project and would not enable CalAm to use the water beyond the property that it owns.** CalAm has no prescriptive groundwater rights in the Basin. Thus, CalAm would take any Basin water for the project via appropriative rights, which are junior to existing appropriations and to overlying users." (Emphasis added.)

MCWD-52

(5) "If the proposed project is approved and any dispute arises as to whether or not CalAm possesses legal water rights, such dispute likely would be resolved through court action."

(6) "[I]f CalAm did not possess legal rights to use the feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factors in as a key project feasibility issue."

As to Statements (1) and (2), the DEIR/EIS is correct that the CPUC has no legal authority or jurisdiction to determine whether or not CalAm will have the necessary water MCWD-53

rights for the proposed project. However, the DEIR/EIS fails to explain the precise meaning of "a sufficient degree of likelihood," the standard to be allegedly applied by the CPUC, the legal authority for that statement, and examples of where the CPUC has applied that same standard in other proceedings. MCWD-53 cont.

Given Statements (1) and (5) and the SWRCB's statement that CalAm would have the burden of proof to demonstrate that it will have adequate water rights for the project, the burden at the CPUC must be on CalAm to show by a preponderance of the evidence that it has adequate water rights for the project. The burden of proof is not on the public or pubic agencies like MCWD to show that CalAm does not have adequate water rights. MCWD-54

Statement (3) fails to recognize that the extraction of groundwater from the CEMEX property is governed by a written agreement, i.e., the 1996 Annexation Agreement discussed in DEIR/EIS Section 2.6.4. MCWD strongly disagrees with the DEIR/EIS interpretation of that agreement as explained below. In addition, the actual extraction of groundwater occurs on the CEMEX property and not on the proposed desalination plant location. For the same reason that the DEIR/EIS admits in Statement (4) that CalAm has no right to export groundwater beyond the proposed desalination plant location, CalAm has no right to export groundwater beyond the CEMEX property. MCWD-55

As to Statement (4), so-called developed water is not an appropriative right but a separate right to use and export the amount of actual net new water developed. CalAm is not appropriating native groundwater but developing new water. Being so limited, CalAm would not gain legal status as an "appropriator" vis-à-vis other appropriators of native groundwater within the SVGB. MCWD agrees with the Statement (4) principle, as applied to the CEMEX property, that CalAm would not be able to use any groundwater extracted from the CEMEX property beyond the boundaries of that property. MCWD-56

As to Statement (6), the available data shows that groundwater, which meets Basin Plan standards for beneficial uses, within the aquifers that will be impacted by the proposed slant wells at the CEMEX site and that there are foreseeable direct, indirect, and cumulative adverse impacts to those beneficial conditions as result of groundwater extractions by the proposed 6.4 MGD or 9.6 MGD desalination plants uses (as discussed in comments to Section 4.4). Therefore, CalAm cannot acquire water rights to the groundwater that would be extracted by the proposed slant wells and the MPWSP cannot go forward as proposed. MCWD-57

b. ***Section 2.6.1, State Water Resources Control Board Report.***

CalAm is proposing to pump the source water for the MPWSP from that portion of 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River. MCWD's Central Marina and Ord Community water service areas are within portions of three Subbasins: the newly designated Monterey Subbasin, the Adjudicated Seaside Basin, and the 180/400 Foot Aquifer Subbasin. MCWD's production wells are located along the northwestern boundary of the Monterey Subbasin and pump from the groundwater aquifers MCWD-58

that are within both the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin. A MCWD production well is located approximately 1.6 miles from the CEMEX property. (See Exhibit 8 [Map of MCWD Service area].)

MCWD-58 cont.

MCWD agrees that no groundwater right or other water right are needed to extract 100% seawater from Monterey Bay so long as there are no direct, indirect or cumulative impacts to any existing groundwater condition. A basic and essential problem is that the currently proposed length and location of the proposed slants wells will not extend into Monterey Bay as originally proposed by CalAm but will in fact extract groundwater from the 180/400 Foot Aquifer Subbasin with impacts to the adjoining groundwater aquifers. The DEIR/EIS itself admits that it cannot with any certainty determine the percentage of groundwater to be extracted but models up to 12%. However, as discussed below and in the attached HGC and GeoHydros comments, the total annual amount of groundwater water pumped from the proposed slant wells is likely to be significantly higher than 12% at least during the initial years of operation.

MCWD-59

As the DEIR/EIS admits, CalAm has no existing overlying, appropriative or prescriptive groundwater right or claim of right to pump groundwater from the 180/400 Foot Aquifer Subbasin. The SWRCB issued its Final Review of California American Water Company's Monterey Peninsula Water Supply Project more than 3 ½ years ago, on July 31, 2013 (Final Review).

In the Legal Conclusions section of the Executive Summary to the Final Review, page ii, the SWRCB stated:

> To appropriate groundwater from the [Salinas Valley Groundwater] Basin, the burden is on CalAm to show their project will not cause injury to other users. Key factors will be: (1) how much fresh water CalAm extracts as a proportion of the total pumped amount, (to determine the amount of water, that after treatment, could be considered desalinated seawater available for export as developed water); (2) whether pumping affects the water table level in existing users' wells; (3) whether pumping affects seawater intrusion within the Basin; (4) how CalAm returns any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes in the larger Basin area or the immediate area around CalAm's wells.

MCWD-60

The SWRCB stated, "because groundwater in the Basin is in a condition of overdraft, the only way to show there is surplus water available for export to non-overlying

parcels is for a user to develop a new water source" and "[t]he only water that would be available for export is a new supply, or developed water." (Final Review at 35 and 40.)

The SWRCB's Final Review had to speak in general terms because, as the SWRCB itself admitted, the SWRCB lacked the necessary on-site technical information needed to make a legal determination. While emphasizing the need for accurate on-site technical information, the entire Final Review is founded on the misplaced acceptance for legal analysis purposes of CalAm's and now the DEIR/EIS' inaccurate representation of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property. For example, the SWRCB accepted CalAm's allegation that "the seawater intrusion front extends approximately 5 miles landward from the proposed [CEMEX] well locations" (Final Review at 45-46) and that consequently, almost all water pumped will be brackish water and not "fresh water" and that "[t]here is expected to be minimal impact to fresh water sources at start-up and for the first several years of operation as water will certainly be sourced from the intruded portion of the aquifer." (Final Review at 44.) The SWRCB also incorrectly assumes that "it is unlikely that Basin conditions would improve independent of MPWSP operations." (Final Review at 43.) As discussed in our comments on Section 4.4 below and in the attached HGC, EKI and GeoHydros comments, the assumptions have been shown to be wrong.

MCWD-60 cont.

The SWRCB's Definition of "Fresh Water" is Not in Compliance with the SWRCB's own Sources of Drinking Water Policy and Federal and State Law

The SWRCB Final Report states at footnote 40: "Brackish water in this report is defined as groundwater within the seawater intrusion zone that contains chloride levels greater than 500 ppm. Water with chloride concentrations less than 500 mg/L is considered fresh water."

What the SWRCB Final Report completely fails to do is address SWRCB's own Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water." Resolution No. 88-63 is incorporated by reference into the existing 2011 Water Quality Control Plan for the Central Coastal Basin, which is applicable to the proposed project. (See DEIR/EIS, pp. 4.10-37 to 4-10-38.) The Basin Plan may be found at http://www.waterboards.ca.gov/rwqcb3/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf. Resolution No. 88-63 is Appendix A-9 of the Basin Plan. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area:

> All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of:
>
> 1. Surface and ground waters where:

MCWD-61

a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

MCWD-61 cont.

In addition, the SWRCB Final Report completely fails to address the Marina Subarea as an underground source of drinking water. The U.S. Environmental Protection Agency ("USEPA") defines "Underground source of drinking water (USDW)" at 40 CFR 144.3 to mean:

An aquifer or its portion:
(a)(1) Which supplies any public water system; or
(2) Which contains a sufficient quantity of ground water to supply a public water system; and
(i) Currently supplies drinking water for human consumption; or
(ii) Contains fewer than 10,000 mg/l total dissolved solids; and
(b) Which is not an exempted aquifer.

The Marina Subarea supplies MCWD's public water system and currently contains a sufficient quantity of groundwater to supply that system with drinking water for human consumption and contains fewer than 10,000 mg/l TDS. Therefore, the Subarea meets the requirements of an aquifer under part 144.3(a) and it is not an exempted aquifer as defined at 40 CFR 146.4.

MCWD-62

Water Code Section 10780, et seq., is the Groundwater Quality Monitoring Act of 2001. Section 10783(a) states, "The Legislature finds and declares that protecting the state's groundwater for beneficial use, particularly sources and potential sources of drinking water, is of paramount concern." Section 10783(g)(2) specifically cites to the above USEPA's definition and states, "an Underground Source of Drinking Water as containing less than 10,000 milligrams per liter total dissolved solids in groundwater." In its June 23, 2015 revised draft Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation, the SWRCB classifies this Underground Source of Drinking Water as "Protected water."

The DEIR/EIS's water rights discussion is founded upon the SWRCB Final Report. Yet the SWRCB Final Report fails to even discuss its own Resolution No. 88-63, which would prevent Cal Am from claiming as new "developed water" for municipal or domestic water supply purposes any feed water to the extent that source water did not exceed 3,000 mg/L TDS. In addition, the SWRCB Final Report fails to discuss the affected groundwater

MCWD-63

subarea as an "underground source of drinking water" containing less than 10,000 mg/l TDS as specified under both Federal and State law. The DEIR/EIS fails to discuss these very important legal parameters and, therefore, the DEIR/EIS must be revised to address both of those parameters and re-circulated for comment.

MCWD-63 cont.

As discussed below and in other parts of MCWD's comments, the SWRCB Final Review and DEIR/EIS factual assumptions about the groundwater conditions within the Marina Subarea are incorrect. The proposed slant well pumping at the CEMEX site would result in near term and long-term direct, indirect, and cumulative injury to legal users of the groundwater and to groundwater conditions within the Marina Subarea.

MCWD-64

c. ***Section 2.6.2, Project Water Rights.***

The entire DEIR/EIS Section 2.6.2 discussion is based upon the incorrect premise on page 2-32 that "The geographic areas from which the project supply wells could draw water inland of the sea are indeed intruded by seawater" and the additional statement on page 2-37 that "The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water." As discussed above, the entire SWRCB Final Report's legal analysis is founded on the misplaced acceptance of these same CalAm's misrepresentations as to the conditions of the 180/400 Foot Aquifer Subbasin south of the Salinas River. The DEIR/EIS then misrepresents the SWRCB's Final Report by claiming that the Final Report provides the definitive description of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property. As explained in MCWD's comments on Section 4.4, the proposed MPWSP pumping will cause direct, indirect, and cumulative adverse impacts to groundwater conditions. Consequently, CalAm cannot acquire adequate water rights to extract groundwater at the CEMEX site for the MPWSP desalination plant, thereby rendering the project infeasible, at least with the current slant well intake configuration at the CEMEX property.

MCWD-65

d. ***Section 2.6.3, Effect of Monterey County Water Resources Agency Act.***

> A primary purpose of the Agency Act was to give to the MCWRA the power: to increase, and prevent the waste or diminution of the water supply in the Agency, including the control of groundwater extractions as required to prevent or deter the loss of usable groundwater through intrusion of seawater and the replacement of groundwater so controlled through the development and distribution of a substitute surface supply ***and to prohibit groundwater exportations from the Salinas River Groundwater Basin***. [Agency Act, Section 52-8, emphasis added.]

MCWD-66

The economic development of the SVGB is based upon a balance between a predominantly agricultural economy and urban development. Therefore, to achieve this balance, the MCWRA has developed a number of groundwater stabilization and conservation projects (e.g., CSIP) to restore the Basin and prevent seawater intrusion as directed by the Agency Act. As the DEIR/EIS recognizes, to meet the Agency Act's directives, MCWRA

also adopted Ordinance 3709, "prohibiting groundwater extraction within the northern Salinas Valley between the depths of 0 mean sea level and -250 mean sea level." (DEIR/EIS, p. 2-46.) MCWRA's efforts, as well as the efforts of other SVGB users (including MCWD) to restore the Basin and prevent seawater intrusion, have resulted in improved water levels and water quality within the SVGB, particularly in the areas near the project site, as demonstrated by the slant test well's monitoring. (See e.g., attached HGC comments, p. 57.)

The DEIR/EIS's perfunctory discussion of the Agency Act, however, misrepresents the location of the MPWSP source well screens in an effort to suggest the Agency Act and Ordinance 3709 may not apply to prohibit the MPWSP proposed export of the project's treated water. Specifically, the DEIR/EIS misleadingly block quotes the SWRCB report as follows:

> … As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach. Although the project would serve areas within the territory of the MPWSP, the points of diversion for these proposed wells may be located outside the territory of MCWRA as defined by the Agency Act.

MCWD-66 cont.

(DEIR/EIS, p. 2-46, emphasis added.) While the DEIR/EIS does not state what description of the project the SWRCB reviewed, the majority of the MPWSP's proposed slant well's screens are clearly not beneath the ocean floor. (See DEIR/EIS, Figure 3-3b (not to scale).) In fact, at least one of the slant wells (as designed) does not even extend beneath the ocean floor. (*Ibid*.) Plus, the DEIR/EIS acknowledges that it will be required to return the "freshwater portion of the brackish source water that originated from the inland aquifer" that would be pumped by the proposed project. (DEIR/EIS, p. 4.4-49.) Thus, it does not appear there is any question that the well and the well screens are within the jurisdiction of the County and the proposed extractions of groundwater at the CEMEX site for export out of the SVGB is prohibited by the Agency Act. Given the critical importance of this issue, the DEIR/EIS must be re-circulated to disclose to the public and public agencies whether the well screens are located within the jurisdiction of the County.

Without attempting to resolve this issue, the DEIR/EIS suggests it does not matter, stating the SWRCB (while acknowledging that it is not the body charged with interpreting the Agency Act) "opines that the project would appear consistent with the Agency Act and the Ordinance given that the project would return to the Basin ***any quantity of fresh water withdrawn from the Basin***." (DEIR/EIS, p. 2-40, emphasis added.) The DEIR/EIS then concludes without any analysis that it appears at least preliminarily reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance. (*Ibid.*) However, in reaching this conclusion, the DEIR/EIS mischaracterizes both the SWRCB's advisory opinion and Ordinance 3709. First, as explained above, the SWRCB's entire Final Review is founded on the misplaced acceptance for legal analysis purposes of CalAm's and

now the DEIR/EIS' inaccurate representation of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property and the incorrect assumption that a one-to-one return ratio applies. Second, by extracting groundwater that may be beneficially used in accordance with State and Federal law discussed above, the slant wells will cause seawater to contaminate other beneficial use groundwater, which also must be prevented or completely mitigated. Third, the SWRCB Report uses the phrase "incidentally extracted usable groundwater," not "fresh water withdrawn," in reaching its opinion. These are not interchangeable terms. The DEIR/EIS must define and use the Federal and State law definitions of beneficial use groundwater as discussed above in its analysis. As discussed below, it does not appear the MPWSP is feasible if CalAm is required to return all "incidentally extracted usable groundwater" as the SWRCB opined would be required for the project to be consistent with Agency Act and Ordinance 3709. Focusing on extractions also fails to address the requirement to prevent or mitigate reductions in groundwater quality due to the slant wells causing seawater to contaminate beneficial use groundwater. Fourth, the Agency Act and Ordinance 3709 do not differentiate between "usable groundwater" and groundwater. As discussed below and in the attached HGC comments, removing so-called "unusable groundwater" from this area will likely result in the aquifers in the Marina Subarea becoming more saline, which will make "useable" groundwater further inland "unusable" – and increase seawater intrusion. Therefore, the Agency Act and Ordinance 3709 are not unreasonable restrictions given the purpose of the Agency Act. The DEIR/EIS must be revised and re-circulated to address this issue.

MCWD-66 cont.

Moreover, the DEIR/EIS incorrectly assumes that compliance with the Agency Act constitutes compliance with groundwater law and it does not. Compliance with the Agency Act also does not constitute compliance with CEQA, NEPA, or the SGMA. As the SWRCB stated in its Legal Conclusions in the Executive Summary to the Final Report, CalAm has the burden to show that the MPWSP will not cause injury to other users and to existing groundwater conditions. Included in CalAm's burden of proof is to show that the method by which CalAm extract and returns any fresh water it extracts will prevent injury to others and prevent injury to existing groundwater conditions in the vicinity of the CEMEX property. As MCWD's Section 4.4 comments show, "returning" desalinated water to north of the Salinas River does not in any way prevent injury to others or prevent injury to existing groundwater conditions in the vicinity of the CEMEX property.

MCWD-67

What CalAm and the DEIR/EIS are arguing is that even though a person does not have a groundwater right, the person can obtain a groundwater right to extract groundwater from Point X so long as I "return" the same amount of water to Point Y, which is located some eight miles away and across a major river. During our lifetimes, no molecule of water deposited at Point Y will ever appear at Point X given existing groundwater gradients, which causes groundwater in Castroville to flow east and not west to Monterey Bay. No technical or legal authority is cited in support of the proposed North of Salinas River Return Water scheme would fully mitigate for direct, indirect, and cumulative adverse impacts of the slant well pumping at the CEMEX property.

e. ***Section 2.6.4, Effect of Annexation Agreement.***

In Section 2.6.4, the DEIR/EIS incorrectly states that the 500 AFY pumping limitation on the property does not presently apply and that it would not apply until formal annexation. The DEIR/EIS must be revised to correct this inaccuracy, which bears upon the feasibility of the project. The 1996 Annexation Agreement was entered into for the express purposes of groundwater protection and reduction of seawater intrusion. The 1996 Annexation Agreement limits groundwater pumping of non-potable water on the CEMEX property to a total amount of not more than 500 AFY; all of which groundwater can only to be used on the CEMEX property. The owner of the CEMEX property at that time, Lonestar, agreed to limit its then-existing overlying groundwater rights in exchange for other consideration in the agreement and that limitation took effect upon signing of the Annexation Agreement in 1996.

The 1996 Annexation Agreement established "a contractual process for the exercise of regulatory authority by the MCWRA under Water Code App. Section 52-22, and the MCWD under Water Code section 31048." (MCWRA Negative Declaration re: Annexation of Marina Area Lands to Zones 2/2A, dated February 21, 1996, at p. 4.) The purpose of the 1996 Annexation Agreement was to "establish a groundwater mitigation framework for the lands to be annexed, and will provide money from the Marina area for the MCWRA's Basin Management Plan and for Zones 2 and 2A, for management protection of the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion." (Purpose section, Attachment B-1 to Initial Study for Marina Lands Annexation.) The 1996 Annexation Agreement (Sec. 5.9) required MCWD to pay a $2,849,410 fee to MCWRA less a credit of $400,000 based on a 1990 agreement and the similar credit given to the Army. Standby charges and assessments were then levied and collected by the MCWRA on an annual basis. MCWD-68

Attachment B-1 to Initial Study for Marina Lands Annexation stated the following:

> GROUNDWATER PUMPING LIMITS
> Pumping Limits. MCWD currently pumps about 2,200 afy, and Lonestar pumps about 500 afy. Under the Agreement and Framework, the present MCWD service area would be limited to an additional 820 afy of potable groundwater, and would otherwise be subject to the same pumping regulations and restrictions by MCWRA as the area within the City of Salinas. Non-agricultural use of Basin groundwater on the Armstrong Ranch would be limited to 920 afy, 20 afy when the Agreement and Framework becomes effective, an additional 150 afy upon annexation, and additional increments of 150 afy every two years thereafter. Groundwater underlying approximately 730 acres of the Armstrong Ranch would be limited to agricultural use, except that 20 afy could be used for potable uses, and water

from that area could also be used at the regional treatment plant. Lonestar would limit its pumping to its current use of 500 afy.

* * *

MCWRA POLICY CONSIDERATIONS.

a. Effect of the annexation on the overall water supply of the Salinas Valley. All lands being annexed currently overlie the Salinas River Groundwater Basin, and all currently use water from the Basin. Annexation on the terms and conditions of the proposed Annexation Agreement and Mitigation Framework ("Agreement and Framework") will result in limiting the pumping of groundwater from the Basin to less than the amounts which the Marina Coast Water District, RMC Lonestar, and the J.G. Armstrong Family claim the right to pump and use for beneficial use, potentially decreasing ultimate water use from the Basin and demand on the overall water supply of the Basin. The Agreement and Framework also would establish a planning framework which could lead to better management and use of reclaimed wastewater and the encouragement of alternative supplies such as desalinated seawater, which would enhance the overall water supply of the Basin.

b. Effect on increase or decrease of seawater intrusion. Although the annexation will not have a physical impact on seawater intrusion, annexation on the terms and conditions of the Agreement and Framework will establish contractual guidelines and limits for potable and reclaimed water use that should result in no increased seawater intrusion and enhance the MCWRA's ability to mitigate existing seawater intrusion.

c. Effect on overdraft of the Salinas Valley. Marina Coast Water District currently draws most of its water from the deep (900') aquifer, which has not been shown to be in an overdrafted condition and has not been shown to contribute to the overdraft of the shallower aquifers. Lonestar and Armstrong either are already pumping or have the capability to pump from the shallower aquifers. While the annexation will not physically impact overdraft, pumping limits for the annexed Marina Area lands from the deep and the shallower aquifers will limit overdraft of water resources in the Salinas Valley, and a management framework for reclaimed water will help to mitigate overdrafting in the Salinas Valley.

d. Amount of water presently pumped from the aquifer of the Salinas Valley. MCWD has present operational capacity to pump about 6,000 afy, has an approved Urban Water Management Plan and an approved Urban Water Shortage

MCWD-68 cont.

Contingency Plan to pump 3,020 afy of potable water, and presently pumps about 2,200 afy of potable water, including some potable water for the Armstrong Ranch. Lonestar presently pumps about 500 afy. A new, agricultural well of unknown capacity recently has been drilled on the Armstrong Ranch, and is expected to be operational before the MCWRA's Board of Supervisors acts on the proposed annexation.

e. Quality of the water made available. Annexation will not change the quality of water available either from or to the annexed lands. Lands served by MCWD currently have both potable and nonpotable water available from and to those lands. The Lonestar property currently pumps and uses water that is considered nonpotable from the shallower aquifers, and has the ability to drill a well into the deep aquifer to obtain potable water. Groundwater underlying the Armstrong Ranch is potable. Both potable and nonpotable water might be transported to the Marina Area lands from elsewhere in the Basin whether or not the proposed annexation occurs.

f. Amount of additional groundwater to be used by the annexed area. Annexation will not provide additional groundwater to the annexed area, because the Marina area already overlies the Basin. The net projected change in groundwater pumping for the Marina Area by the year 2010, assuming full implementation of the Agreement and Framework, is about 115 afy. This is based on limits on increased pumping in the annexed area of 1,740 acre-feet/year (afy), and decreased groundwater use of 300 afy in the annexed area from desalination and 1,325 afy in adjacent agricultural areas from reclaimed water management.

g. Water supplies for future growth. Annexation will not change water supplies available for future growth. The Agreement and Framework will provide contractual limits on the use of potable water supplies available from the Basin for future growth. The Agreement and Framework also encourages proactive management of the deep aquifer. Reclaimed water supplies may be managed differently if the Agreement and Framework becomes effective. Non-Basin, potable water supplies are not affected by the annexation or the Agreement and Framework. Agricultural water supply within the area to be annexed is not affected by the annexation.

MCWD-68 cont.

Thus, the Initial Study shows that the prescribed pumping limits/groundwater allocations for the annexed Marina Area lands from the deep and the shallower aquifers

were intended to (1) limit and avoid increasing seawater intrusion, (2) enhance the MCWRA's ability to mitigate existing seawater intrusion, (3) not physically impact overdraft, and (4) help limit the overdraft of water resources in the Salinas Valley.

While Section 7.3 of the 1996 Annexation Agreement provides that the Lonestar Property's annexation to Zones 2 and 2A would not take effect until the Lonestar Property has been approved for annexation to the Zones, the 1996 Annexation Agreement itself, including the 500 AFY limitation on pumping on the Lonestar property, took effect in 1996 upon execution of all of the parties. (1996 Annexation Agreement, Section 2.9, p. 2.) More importantly, the then Lonestar property already had an overlying groundwater right, i.e., a right to pump groundwater from the Lonestar property for use on the Lonestar property. Section 7.4.5 limited Lonestar's purpose of use to non-potable industrial or agricultural use. Lonestar agreed that "All groundwater withdrawn from the Basin by Lonestar may be used only within the Basin." (Section 7.1, p. 17.) Section 7.2 states, "Commencing on the effective date of this Agreement and Framework, Lonestar shall limit withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 afy of groundwater." Lonestar did not need to sign the Annexation Agreement to pump 500 AFY for non-potable water uses since it already had that overlying right, but it agreed to that limitation in consideration of the right to obtain potable water from MCWD for future urban development on the property on terms set forth in the agreement and to limit seawater intrusion. Lonestar's overlying right does not provide any benefit to CalAm's proposed extraction and then export of the groundwater off the CEMEX property (property it does not own) and out of the Basin.

MCWD-68 cont.

Even if one were to accept the DEIR/EIS' incorrect conclusion that the Annexation Agreement only applies if and when the CEMEX property is actually annexed to MCWD, groundwater law (as opposed to the Agency Act) prevents the export of the groundwater underlying the CEMEX property from the CEMEX property. The DEIR/EIS itself admits on page 2-30 that CalAm has no right to export groundwater beyond the proposed desalination plant location, and for the same reason, CalAm has no right to export groundwater beyond the CEMEX property where the slant wells would actually be located.

MCWD-69

The DEIR/EIS on page 2-42 additionally proposes that "CalAm could conceivably construct and employ an injection well on the CEMEX property to return 500 afy to that property such that the MPWSP would have a net-zero effect on groundwater from the CEMEX land and conceivably could operate regardless of whether the 500 afy groundwater withdrawal limitation were imposed at some point in the future." Interestingly, the DEIR/EIS admits that in order to "have a net-zero effect on groundwater from the CEMEX land," CalAm needs to inject the return water directly at the CEMEX property. This directly contradicts the DEIR/EIS' support for the Return Water Agreement and supports MCWD's position that providing "return" water to north of the Salinas River will not mitigate for the direct adverse impacts to groundwater from the CEMEX property.

MCWD-70

The DEIR/EIS must be revised to correct this inaccuracy, which bears upon the feasibility of the project.

Moreover, as explained in the HGC Comments, there is no evidence to support the conclusion that returning 500 afy to the CEMEX property would ensure that no more than 500 afy groundwater was withdrawn from the project as limited by the Annexation Agreement. In fact, the evidence indicates substantially more groundwater would need to be injected to demonstrate consistency with the agreement. (See HGC Comments, p. 31.)

MCWD-70 cont.

In short, CalAm does not and will not have sufficient groundwater rights or developed water rights for the proposed MPWSP, and the DEIR/EIS fails to explain this aspect of the water rights framework that governs the Marina Subarea of the SVGB. The DEIR/EIS must be revised to reflect the full scope of the water rights framework that governs the proposed project site and that framework's impact on the feasibility of the project.

MCWD-71

f. ***The DEIR/EIS Provides No Scientific Proof or Analysis in Support of its One-to-One Ratio, which Would Not Mitigate for All Direct, Indirect, and Cumulative Impacts from Slant Well Pumping on the CEMEX Property.***

The DEIR/EIS incorrectly and inexcusably assumes without any scientific proof or analysis that a one-to-one return water ratio would be sufficient to fully mitigate for the source well pumping on the CEMEX property, i.e., for every one AF of good groundwater extracted, it must only be replaced with one AF of desalinated water. DEIR/EIS' one-to-one return water ratio appears to be upon the incorrect assumption that the Agency Act only requires a one-to-one return ration and that compliance with the Agency Act constitutes compliance with groundwater law and it does not. Again, compliance with the Agency Act also does not constitute compliance with CEQA, NEPA, or the SGMA.

MCWD-72

Slant well pumping on the CEMEX property draws seawater, brackish water, and groundwater adequate for beneficial uses to the slant wells. The CEMEX property pumping will also draw seawater into beneficial use groundwater areas thereby directly degrading the groundwater into brackish water. The slant well pumping has direct, indirect, and cumulative adverse water quality and water quantity impacts within the groundwater aquifers, as explained in MCWD's comments on Section 4.4. The one-to-one ratio does not adequately mitigate for all of these impacts being based solely upon direct extraction of beneficial use groundwater. Therefore, the use of a one-to-one return ratio by the DEIR/EIS is a fatal flaw.

g. ***The Sustainable Groundwater Management Act (SGMA).***

The DEIR/EIS Section 2.6 inexplicitly fails to discuss SGMA and that law's applicability to the proposed project. SGMA became effective January 1, 2015. SGMA grants local public agencies the authorities to manage groundwater in a sustainable manner and authorizes state intervention, primarily by the SWRCB when local public agencies fail to take required actions by the deadlines set forth in SGMA. SGMA Water Code Section

MCWD-73

10720.5(b) states, "***Nothing in [SGMA], or in any groundwater management plan adopted pursuant to [SGMA], determines or alters*** surface water rights or ***groundwater rights under common law*** or any provision of law that determines or grants surface water rights." Section 10720.5(c) states that water rights may be determined in a groundwater adjudication action pursuant to Code of Civil Procedure Sections 830, et seq. SGMA applies to the proposed project and the application of SGMA's standards and requirements are separate and apart, although related, to any groundwater rights analysis. The DEIR/EIS must include a SGMA analysis.

MCWD-73 cont.

The California Department of Water Resources had previously classified the 180/400 Foot Aquifer Subbasin as a high-priority subbasin and in January 2016, the Subbasin was designated as a Critically Overdrafted Basin.[13] Both the MPWSP's slant wells and desalination plant are located within the 180/400 Foot Aquifer Subbasin. Because of the Critically Overdrafted Basin classification, the 180/400 Foot Aquifer Subbasin is required to adopt a State-approved groundwater sustainability plan (GS Plan) or coordinated GS Plans by January 31, 2020.[14] The GS Plan must include measurable objectives and milestones in increments of five years to achieve sustainability within 20 years of the GS Plan adoption, which would be no later than January 31, 2040, in the case of the 180/400 Foot Aquifer Subbasin.[15]

The terms "sustainability goal," "sustainable groundwater management," "sustainable yield," and "undesirable results" are defined in Water Code Section 10721. They require that the applicable groundwater sustainability agency (GSA) or agencies within the Subbasin adopt and implement a GS Plan or coordinated GS Plans, which manages the use of groundwater within the Subbasin in a manner that can be maintained during the 20-year time horizon without causing any undesirable results. "Undesirable results" applicable to the proposed MPWSP include (1) Chronic lowering of groundwater levels, (2) Significant and unreasonable reduction of groundwater storage through, for example, causing seawater to displace or contaminate existing groundwater thereby reducing available groundwater storage, (3) Significant and unreasonable seawater intrusion, and (4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supply and including the migration of seawater into portions of aquifers currently occupied with groundwater. The SGMA baseline conditions date is January 1, 2015.[16]

MCWD-74

MCWD's comments on DEIR/EIS Section 4.4, Groundwater Resources, show (1) that there are existing good groundwater conditions in the vicinity of the CEMEX property not recognized in Section 4.4 and (2) that the proposed 6.4 MGD and 9.6 MGD

[13] / http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf
[14] / Water Code §§ 10720.7(a), 10735.2(a)(2), 10735.2(a)(3).
[15] / Water Code § 10727.2(b)(1).
[16] / Water Code § 19727.2(b)(4).

desalination plants will cause or increase all four undesirable results between January 1, 2015, and January 31, 2040. For example, approval of the MPWSP with slant well pumping on the CEMEX property that increases seawater intrusion and decreases good groundwater conditions in the 180/400 Foot Aquifer Subbasin south of the Salinas River, would be in violation of SGMA.

The proposed MPWSP is intended to be a long-term project with an operating life well beyond the requirement of achieving the required sustainability goal by January 31, 2040, for the 180/400 Foot Aquifer Subbasin. The DEIR/EIS' failure to analyze the proposed project's impacts against SGMA's standards and requirements especially relating to how the proposed project will create or increase undesirable results from January 1, 2015, through January 31, 2040, when the 180/400 Foot Aquifer Subbasin is required to achieve its sustainability goal, is another fatal flaw of the DEIR/EIS.

MCWD-74 cont.

* * *

In summary, CalAm cannot obtain any overlying, appropriative, or prescriptive groundwater rights for the proposed project's feed water whether at the proposed site or anywhere overlying the Marina Subarea utilizing the proposed slant well technology and proposed MPWSP source well locations. The DEIR/EIS would fashion a No-Injury Developed Water Export Right based upon a definition of "fresh water," which is not in accordance with the SWRCB's own Source of Drinking Water Policy and not in accordance with Federal and State law. The CPUC must apply the legal parameters in both (1) the SWRCB's own Source of Drinking Water Policy, which is applicable to the proposed project under the Central Coast RWQCB Basin Plan (DEIR/EIS at 4.10-37), and (2) the Underground Source of Drinking Water as defined in Federal and State law, to calculate the amount of "Protected Water" contained in the feed water that the project would pump. Using the same legal parameters, the CPUC would also need to determine to what extent the slant well pumping would cause seawater to contaminate Protected Water.

MCWD-75

CalAm then has the burden to prove that in creating any new developed water, (1) the proposed MPWSP source well pumping will cause no injury to any legal user of the groundwater within the Marina Subarea, (2) will cause no injury to pre-January 1, 2015 baseline groundwater conditions in the Marina Subarea, including, but not limited to, reductions in the availability and quantity of protected groundwater, reductions in groundwater quality, and increases in seawater intrusion, and (3) will not cause any SGMA undesirable results so as to prevent the 180/400 Foot Aquifer Subbasin from achieving groundwater sustainability by 2040. The DEIR/EIS must be revised to acknowledge these circumstances and their impact on project feasibility.

MCWD-76

Finally, the DEIR/EIS should address the Monterey County Code of Ordinances section 10.72.030(B) and the issues surrounding private ownership of desalination plants. We would also point out that the California Coastal Commission ("CCC") report entitled

MCWD-77

Seawater Desalination and the California Coastal Act (CCC, 2004) cited in the DEIR/EIS, addresses Coastal Act public resources policies related to desalination, including policies relating to public versus private ownership of desalination facilities in Chapter 4. As many of these policies relate to environmental impacts (e.g. public trust doctrine and ecosystem preservation) this issue should be addressed in the revised DEIR/EIS. Notable, the Sanctuary's Management Plan, discussed below, provides that MBNMS should consider public versus private ownership.

MCWD-77 cont.

B. THE PROJECT DESCRIPTION INCLUDED IN THE DEIR/EIS IS DEFICIENT UNDER CEQA.

An accurate, stable and finite project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity. (*See San Joaquin Raptor Rescue Center v. County Of Merced* (2007) 149 Cal.App.4th 645, 655 (*Raptor*); *McQueen v. Board of Directors of the Midpeninsula* (1988) 202 Cal.App.3d 1136, 1143; *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193 (*County of Inyo*) [an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR].) The DEIR/EIS's description of the project omits critical information needed to evaluate the potential impacts of the project, including but not limited to the intended life or length of project, decommissioning of slant wells after their useful life, potential need to construct additional slant wells over the life of the project, and the amount of return water that would be required for the project. These failures require that the DEIR/EIS be revised and re-circulated.

MCWD-78

First, the DEIR/EIS's project description fails to adequately disclose the temporal length of the project. While MCWD understands that CalAm is requesting permission to operate the MPWSP through 2060, by failing to disclose this information to the public, it is impossible for the public to understand and comment on the potential long term impacts of the project. The Final EIR/EIS must disclose the length of the project and identify whether all impacts were evaluated based on the proposed 40+ year project life.

MCWD-79

Second, the DEIR/EIS states that the project proposes to convert the slant test well to a permanent well, but fails to address the *requirement* of the California Coastal Commission ("CCC") that the slant well be decommissioned. (DEIR/EIS, p. 3-2.) Rather, the DEIR/EIS states: "Construction of the test slant well and operation of the pilot program was covered under separate environmental review… and it is not part of the proposed project being evaluated in this EIR/EIS.…." If the DEIR/EIS is attempting to tier off of CCC's analysis in its CEQA-equivalent document,[17] the DEIR/EIS must expressly state so in the EIR and follow CEQA's tiering requirements. Regardless, the DEIR/EIS must presume the slant test

MCWD-80

[17] / The DEIR/EIS's statement that the City of Marina completed tis CEQA review in November 2014 is misleading. As CalAm and the DEIR/EIS preparers are aware, the City never completed its CEQA review for the test well, but determined it needed to conduct additional environmental review before considering approval of test well.

well will be decommissioned as required in assessing the project's impacts given the CCC's prior environmental review did evaluate alternative locations for the test well and the acknowledgement the test well is located in an Environmentally Sensitive Habitat Area (ESHA) and within the coastal retreat area. The DEIR/EIS and the CPUC should also require CalAm to account for and return all of the groundwater pumped by the test well as all such groundwater has and will be wasted to the ocean as it is part of the larger project.

MCWD-80 cont.

MCWD-81

Third, the Project Description states the slant wells would require maintenance every 5 years, but fails to discuss decommissioning the wells after their useful life or the need to construct replacement wells during the life of the project. (Compare DEIR/EIS, p. 3-57 to 4.2-70 [operational life of the slant production wells anticipated to be 20 to 25 years).) Given that slant wells are an unproven technology[18] and results from the only existing slant well at the Doheny Beach, in Dana Point, CA (see Geoscience, Inc. 2012, Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well Doheny Beach, Dana Point, California Prepared for: Municipal Water District of Orange County September 7, 2012 , available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf), the DEIR/EIS must disclose, evaluate, and propose mitigation to address how slant wells will be decommissioned after their useful life and how the MPWSP will obtain the required source water over the 40 plus year project when none of the slant wells are anticipated to operate for the full life of the desalination plant.

MCWD-82

Finally, the Project Description fails to disclose the amount of source water that the MPWSP would be required to return to the SVGB. In discussing the Castroville Pipeline, the DEIR/EIS states:

> The 4.5-mile-long, 12-inch-diameter Castroville Pipeline would convey desalinated Salinas Valley return water from the MPWSP Desalination Plant to the CSIP distribution system and the CCSD Well #3. As described in Chapter 2, Water Demand, Supplies and Water Rights, the portion of the water drawn from the subsurface slant wells that is determined to be groundwater originating from the Salinas Valley Groundwater Basin, would be delivered to CCSD as desalinated water in lieu of CCSD pumping an equivalent amount of groundwater. Under the proposed project, the first 800 afy would go to the CCSD and the remaining water would go to the CSIP.

MCWD-83

[18] / Notably, as discussed in Part VIII below, HWG member Mr. Feeney recently participated in another panel for the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014 available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.). That panel concluded that slant wells were unproven technology and infeasible. (See *id.*, pp. 37, 56, 64.)

(DEIR/EIS, p. 3-35, emphasis added.) However, as discussed further below, the DEIR/EIS models the possibility of returning 0%, 3%, 6% and 12% pumped water, but never estimates the amount of return water that will be required. Importantly, the amount of groundwater that would likely need to be returned to the SVGB would be significantly higher than 12 % at least in the initial period of project operation – potentially 30% or more. As discussed in our comments below, even this higher estimate is based on DEIR/EIS unreliable modeling and assumptions that fail to address impacts to the Dune Sand Aquifer. (See comments below on Section 4.4 [Groundwater Resources] and HGC comments, p. 59.)

MCWD-83 cont.

Moreover, the DEIR/EIS fails to disclose to the public how the amount of water that would need to be returned to the Marina Subarea would be calculated and by whom. MCWD requests the DEIR/EIS include a detailed explanation of how the calculation would be done (the methodology to be used), whether any portion of the calculation would be subject to CalAm's discretion, and whether and by whom CalAm's calculation would be reviewed, including any judicial review required. In turn, this calculation must be included as a condition of approval or mitigation.

MCWD-84

Given these omissions, the DEIR/EIS must be revised and recirculated. "[O]nly through an accurate view of the project may the public and interested parties and public agencies balance the proposed project's benefits against its environmental cost, consider appropriate mitigation measures, assess the advantages of terminating the proposal and properly weigh other alternatives…." (*City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1454.) Without this information it is impossible for the public or public agencies to provide meaningful comments on the DEIR/EIS's review of potential impacts and proposed mitigation and alternatives.

MCWD-85

C. THE DEIR/EIS'S ENVIRONMENTAL ANALYSIS IS INADEQUATE.

1. Preliminary Statement Regarding Groundwater Analysis and Need to Recirculate Revised DEIR/EIS.

Based on MCWD's participation in the Regional Desalination Project and its more recent involvement in the environmental review process and litigation relating to CalAm's slant test well for the MPWSP, MCWD is intimately familiar with the public's long-standing concerns relating to the project's potential groundwater impacts to the SVGB. While all of this history is relevant to understanding the project, we do not have the time or the voluminous space necessary to fully recount it all here. However, we do provide a summary of recent events that should be part of the record and that demonstrate the lack of substantial evidence supporting the DEIR/EIS's groundwater analysis.

MCWD-86

SWRCB's Advisory Opinion Determined the Need for the Slant Test Well to Accurately Characterize the Baseline and Potential Impacts to SVGB. The SWRCB's advisory opinion determined that the following actions to support the conclusion of no harm:

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> Studies are needed to determine the extent of the Dune Sand Aquifer, the water quality and quantity of the Dune Sand Aquifer, the extent and thickness of the SVA and the extent of the 180-Foot Aquifer.

(DEIR, p. 4.4-53.) As discussed in the HGC comments, studies to date have not determined the extent or water quality in the Dune Sand Aquifer, which renders the DEIR/EIS's analysis and modeling grossly inadequate. (HGC Comments, p. 2.)

> The DEIR/EIS further acknowledges that the SWRCB required:
>
> "The effects of the MPWSP on the Basin [i.e., the SVGB] need to be evaluated. Specifically, a series of test boring/wells would be needed to assess the hydrogeologic conditions at the site. ***Aquifer testing also would be needed to establish accurate baseline conditions and determine the pumping effects on both the Dune Sand Aquifer and the underlying 180-Foot Aquifer.*** Aquifer tests should mimic proposed pumping rates."
>
> "Updated groundwater modeling will be needed to evaluate future impacts from the MPWSP. Specifically, modeling scenarios will need to be run to predict changes in groundwater levels, groundwater flow direction, and changes in the extent and boundary of the seawater intrusion front. **Additional studies also will be necessary to determine how any extracted fresh water is replaced, whether through re-injection wells, percolation basins, or through existing recharge programs.** It may also be necessary to survey the existing groundwater users in the affected area. The studies will form the basis for a plan that avoids injury to other groundwater users and protects beneficial uses in the Basin. **To ensure that this modeling provides the best assessment of the potential effects of the MPWSP, it is important that any new information gathered during the initial phases of the groundwater investigation be incorporated into the groundwater modeling studies as well as all available information including current activities that could influence the groundwater quality in the Basin."**

(DEIR/EIS, p. 4.4-53, emphasis added.) As noted in below and in the HGC and GeoHydros Comments, the DEIR/EIS's superposition model cannot and does not model groundwater flow direction or the changes in the extent and boundary of the seawater intrusion. A dual density model is required to meet the SWRCB requirements. (See e.g., HGC Comments, p. 34 and GeoHydros Comments, p. 9.)

MCWD-87 cont.

Testimony from HWG's and CPUC's Representatives during Slant Test Well Environmental Review at City of Marina Led the City and Public to Believe Test Well Data Was Necessary and Would be Used in the DEIR/EIS to Evaluate the MPWSP's Groundwater Impacts. CalAm sought approval from the City of Marina to construct the

MCWD-88

slant test well ostensibly for the purpose of satisfying the SWRCB's requirements of assessing the feasibility of MPWSP's slant wells and compiling baseline information for the project's modeling and environmental review. As part of this process the HWG and CPUC representatives stressed the importance of the test well to validate the MPWSP's modeling so the EIR could accurately assess the MPWSP's potential groundwater impacts. Martin Feeney of the HWG testified:

> **The test well is essential for being able to get the data that allows us to validate the models so that we can actually predict the impacts that go into the EIR.** We're at the point now where you can wave your arms about the geology, but we need some real data. We need to stress the system with the test well and to figure out how the system actually reacts so we can answer the questions about water rights, impacts, all those things come out of the actual testing of the test well and looking at the impacts in the monitoring wells that we're putting in around it to see how the whole system reacts. ***This is about a test well that helps us define the actual response of a system to the pumping so that we can accurately look at the impacts.***
>
> … What is the impact to the basin? You know, what is the impact to existing users? You know, I'm being paid by the farm -- farmers because they are concerned. It's about the impacts to the basin. So we got together, and that's the point is to figure out when you test this well, can it be done without impacts? Can it be done that it only takes seawater? That's the purpose of this. It's a feasibility study.
>
> ***My personal -- my personal opinion is this is a little dicey. It may not work.*** Other people have a different opinion. They think it's going to work fine. That's fine. We're to the point now where it's just opinion among a bunch of qualified experts. We need to actually drill this thing and stress it. That's the point.
>
> **So we get the monitoring wells, we get around the pumping well on all sides, we will be able to see what the draw-down effects are, and to be able to build a better groundwater model so that the full-scale project, should it be moved forward, <u>that the modeling that's in the EIR, the full EIR, can accurately model the impacts of the full-scale project</u>. We can't build a model to look at the full-scale project until we know what the aquifer parameters are, the transmissivity, the storativity, and what the boundary condition does to the well draw-down.** That's the deal.

(City of Marina transcript, pp. 110-111, 295-297, emphasis added.)

MCWD-88 cont.

Eric Zigas, the CPUC's environmental consultant, also testified about the importance of the test well to inform the EIR's analysis:

> And the Hydrogeology Work Group, you just heard Martin tell you, they struggled with concepts and understanding, and they've come to what I think is a common understanding of how the basin works.
>
> … ***But uncertainly really is a -- makes for risky decisions***, and risk can be reduced by gaining knowledge, and the knowledge you can gain from the test well will benefit not only CalAm, it will benefit every basin user.
>
> ***… We will also be able to tell you with certainly what the impacts are associated with their wells, but we will only (sic) be able to model it without the well. We won't have real data. Okay?***
>
> So I do encourage you to learn more about your basin, be better informed. ***When we come back in a year with CalAm's application for the Coastal Development Permit, that conversation should be more informed. It should be informed by data and information, and that information will be obtained through this test well. Reduce your risk.*** Go ahead and learn the knowledge. Learn more about your basin.

(City of Marina transcript, pp. 111-118, emphasis added.)

Given the HWG's and the CPUC's representatives' testimony that the slant test well data was needed to accurately model the impacts in the MPWSP EIR, please explain why it is worth taking the risk to approve the project without the using the TSW data in the project's modeling. Please also explain why after all the efforts to construct the test well and obtain monitoring data, the DEIR/EIR only uses a simplified superposition model that precludes prediction of measurable groundwater elevations associated with the proposed pumping and impacts on water quality, which would provide the only means for stakeholders to validate the model predictions and potential project impacts. (See HGC Comments, p. 34; GeoHydos Comments, p. 9.)

MCWD-88 cont.

Slant Test Well Review at the Coastal Commission. When the City determined that an EIR was required before it could consider granting CalAm's Coastal Development Permit (CDP) application for the slant test well, CalAm chose not to work with the City and appealed the City's denial without prejudice to the California Coastal Commission (CCC). As the DEIR/EIS recognizes, the CCC approved CDPs for the MPWSP's slant test well at the CEMEX site in November of 2014. The CCC issued the approvals over MCWD's (and others) objections that approval of the slant test well was premature because it improperly segmented the test well from the whole of the MPWSP, failed to analyze and mitigate the test well's potential impacts to the SVGB, failed to consider feasible alternatives, and

MCWD-89

usurped the City of Marina's land-use authority, among other defects. (See merits briefs in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839, attached as Exhibit "5".) When the CCC approved the slant test well, the CCC overrode the slant test well's significant and unavoidable impacts to ESHA (CCC findings, pp. 3 and 66, attached as Exhibit "9") and the project's inconsistency with the City of Marina's LCP (*id.*, pp. 38, 59, and 62) based on express findings that included the necessity of the slant test well to assess the feasibility, environmental setting, and design of the MPWSP, stating:

> **… pumping and water quality testing to be conducted during the slant well test is necessary to inform the design of a potential full-scale facility. Other actions, such as drilling additional boreholes or conducting additional modeling, would not be sufficient to characterize the site and its potential to provide source water."**

MCWD-89 cont.

(Id., p. 60, emphasis added.) When MCWD sought injunctive relief in its lawsuit to enjoin construction and operations of the slant test well, the CCC, SWRCB, and CalAm argued any delays to the slant well were against the public interest because the information from the slant test well was necessary to inform the MPWSP's feasibility and environmental review.

In light of the statements from the CCC, SWRCB, and CalAm regarding the necessity of the slant test well to inform the CPUC's environmental review, please explain why has the DEIR/EIS used modeling the fully utilizing the information from the operations of the test well? Does the CPUC and Sanctuary disagree with the CCC's and SWRCB's conclusions that detailed analysis of all information from the full term of operations of the slant test well is necessary and relevant to determine the baseline environmental setting and assess the potential impacts for the MPWSP?

2. The DEIR/EIS's Discussion of Groundwater Impacts Does Not Comply with CEQA.

The DEIR/EIS's analysis of groundwater impacts is grossly inadequate as explained below and in the attached HGC Comments (Exhibit # 1), GeoHydros Comments (Exhibit # 2), and EKI Comments (Exhibit # 3).[19] Specifically, the DEIR/EIS baseline description of the Marina Subarea is misleading and conflicts with the best available information; the DEIR/EIS fails to disclose the MPWSP's inconsistencies with applicable laws and regulations; the analysis of groundwater impacts is based on unreliable modeling rather than substantial evidence; and cursory treatment of cumulative impacts does not comply with CEQA or NEPA. These error must be addressed in a revised DEIR/EIS prior the CPUC or Sanctuary's

MCWD-90

[19] / These experts' comments must be responded to separately. While MCWD incorporates by reference these comments into this letter, they are not fully repeated here.

h. ***The baseline description of the Marina Subarea is misleading and conflicts with the best available information;***

CEQA requires an EIR to "delineate environmental conditions prevailing absent the project, defining a 'baseline' against which predicted effects can be described and quantified." (*Neighbors for Smart Rail v. Exposition Metro Line Construction Auth.* (2013) 57 Cal.4th 439, 447.) The baseline is normally the "existing conditions" in the vicinity of the project "as they exist at the time the [NOP] is published." (*Id.* at p. 448.) "Knowledge of the regional setting is critical to the assessment of environmental impacts." (Guidelines, § 15125, subd. (c).) Thus, CEQA Guidelines section 15125 provides that an EIR "must include a description of the physical environmental conditions in the vicinity of the project . . . from both a local and *regional* perspective." (*Id.* at subd. (a), emphasis added.) Furthermore, "[s]pecial emphasis should be placed on environmental resources that are rare or unique to that region and *would be affected by the project*." (*Ibid*, emphasis added.)

MCWD-91

An EIR's description of a project's environmental setting plays a critical role in all of the subsequent parts of the EIR because it provides "the baseline physical conditions by which a Lead Agency determines whether an impact is significant." (Guidelines, § 15125, subd. (a).) Longstanding case law upholds this fundamental principle by recognizing that "[a]n EIR must focus on impacts to the *existing environment*, not hypothetical situations." (*County of Amador* v. *El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 955, emphasis added.)

"If the description of the environmental setting of the project site and surrounding area is inaccurate, incomplete or misleading, the EIR does not comply with CEQA." (*Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 87 (*Cadiz*).) Here, as is explained below, the EIR's "description and consideration" of the regional setting "is so incomplete and misleading that it fails to meet the standard set forth in . . . Guidelines section 15125." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 723.)

Here, the DEIR/EIS fails to comply with the fundamental CEQA baseline disclosure requirements for the following reasons and those included in the HGC comments.

(1) The DEIR/EIS fails to provide an accurate and complete description of the Dune Sand Aquifer in the project area and further inland to the extent the aquifer could be impacted by the project as required by CEQA. Instead the DEIR/EIS presents a misleading picture of the aquifer implying groundwater in the Dune Sand Aquifer has no value or uses, stating: "most of the water in the Dune Sand Aquifer has been intruded by seawater due to proximity with the ocean and seawater intrusion and is considered saline to brackish. (See DEIR/EIS, p. p. 4.4-8 [citing 13 year-old study], emphasis added.) As described in the attached HGC comments and EKI Comments, the Dune Sand Aquifer contains potable, freshwater less than a mile from the project site and extends miles inland. These comments further explain how the Dune Sand

MCWD-92

Aquifer plays an important role in recharging the underlying aquifers and preventing seawater intrusion. MCWD-92 cont.

(2) The DEIR/EIS fails to provide an accurate and complete description of the 180-Foot Equivalent Aquifer in the project area and further inland to the extent the aquifer could be impacted by the project as required by CEQA. Instead the DEIR/EIS presents a misleading picture of the aquifer stating it is unconfined and implying groundwater in the 180-foot Aquifer is controlled by seawater at the site and miles inland, stating: "At the CEMEX site, the Dune Sand Aquifer and the 180-Foot Equivalent Aquifer are unconfined, as there are no extensive overlying low permeability clay units.… Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section." (See DEIR/EIS, p. 4.4-11 [citing without reference to undisclosed recent groundwater testing data].) As described in the attached HGC comments the 180-foot aquifer contains is potable, freshwater less than a mile from the project site. Those comments further explain how the modeling for the project, and thus the DEIR/EIS, assumed the 180-foot aquifer was unconfined despite available information demonstrating otherwise. In fact, the HWG, admitted the 180-foot aquifer is at least semi-confined in the project area. (See HGW Memo, dated June 22, 2015, attached as Exhibit "1".) This error is not insignificant; in fact, this error alone requires re-circulation of the DEIR/EIS with updated modeling. (See HGC comments, p. 36 [describing how change in confinement will dramatically impact modeling – extending the zone of influence/drawdown much further than was modeled and disclosed in the DEIR/EIS].) MCWD-93

(3) The DEIR/EIS fails to provide an accurate and complete description of the 400-Foot Aquifer, stating it "is directly influenced by seawater," which extends for miles inland. (See DEIR/EIS, p. 4.4-11 [citing without reference to undisclosed recent groundwater testing data].) As described in the attached HGC comments [400-foot aquifer contains potable, freshwater less than a mile from the project site]. (See e.g., HGC comments, pp. 57.) MCWD-94

(4) The DEIR/EIS fails to provide an accurate and complete description of groundwater flows and flow direction in the project area. The DEIR/EIS incorrectly suggests that groundwater monitoring from north of the Salinas River shows flows and flow direction in the project area (DEIR/EIS, 4.4-14 - 4.4-16, citing Figures 4.4-5 and 4.4-6.) The cited figures, however, do not cover the project area. (See DEIR/EIS Figures 4.4-5 and 4.4-6.) The DEIR/EIS qualifies this statement for the Dune Sand Aquifer suggesting that while flows in the Dune Sand Aquifer are not known "based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled with little to no net horizontal flow in any particular direction." (DEIR/EIS, 4.4-14.) Again, this is inaccurate. As explained in the attached HGC comments, groundwater data show that flows in the Dune Sand Aquifer flow towards MCWD-95

the ocean and thus are protective of seawater intrusion. (See e.g., HGC comments, p. 70; see Figure 6 attached to same.)

MCWD-95 cont.

(5) The DEIR/EIS fails to provide an accurate and complete description of seawater intrusion in the project area and the area impacted. Instead, the DEIR/EIS misleads the public into believing all groundwater in the Marina Subarea, in fact the entire SVGB to Salinas, is seawater intruded and has no beneficial uses stating:

> Figures 4.4-10 and 4.4-11 illustrate the seawater intrusion areas as of 2013 within the 180-Foot and 400-Foot Aquifers, respectively (MCWRA, 2015)
>
> … The 2013 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, inferred from chloride concentrations greater than 500 mg/L. The seawater intrusion has resulted in the degradation of groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001).

(DEIR/EIS, pp. 4.4-28 and 4.4-31.) As explained in the attached HGC Comments and EKI Comments, Figures 4.4-10 and 4.4-11 are inconsistent with monitoring data that shows that numerous wells with area shown to be seawater intruded, in fact, are not. (See also HGC comments, Figures 1-4 attached to same.) Moreover, the HWG itself has acknowledged the lack of data to support the MCWRA inferences. An accurate map of seawater intrusion, particularly within the area affected by the MPWSP's proposed slant wells is needed to understand the project's impacts. In addition, the DEIR/EIS's suggestion that where monitoring and production wells exceed 500 mg/L, there are no beneficial uses for this water must be revised. (See e.g., HGC comments, pp. 56-57.)

MCWD-96

(6) The DEIR/EIS references the CCC's Special Condition 11 requiring the HWG to establish baseline water and TDS levels before the test well could commence operations does not save the DEIR/EIS either. The DEIR/EIS provides a hyperlink to the HWG's Technical Memorandum stating it "established baseline water and TDS levels" in the project area. (DEIR/EIS, p. 4.4-42.) The HWG's Technical Memorandum, however, does not establish baseline water or TDS levels in the project area, much less the required baseline levels for Monitoring Well No. 4 (MW-4) and three other monitoring wells within 2,000 feet of the test well as required by Special Condition 11. (See HWG's Technical Memorandum, p. 14.) Rather, the memorandum includes a cursory discussion of water levels at some of the monitoring wells over a period of weeks (id., pp. 11-12) and then provides a section entitled "Recommended Monitoring of Baseline and TDS Levels," which suggests a method for evaluating impacts without actually establishing baseline water levels. (Id., p. 14.) Specifically, the Technical Memorandum states that in order to determine impacts to water levels at MW-4:

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> If ground water levels at MW-4 show a continuing downward trend but prior to reaching the threshold prescribed by CDP Condition 11, the test slant well will be voluntarily shut off. If the test slant well is the cause of the downward trend in groundwater levels at MW-4, then groundwater levels will show a recovering trend. If the groundwater levels do not recover, then this is indicative of regional and climatic impacts. The data will be reviewed by the HWG for confirmation and the test slant well will resume pumping. If the ground water levels continue to decline after start up, then the data indicative of impacts other the slant well will be submitted to the Coastal Commission Executive Director, prior to reaching the threshold.

(HWG's Technical Memorandum, p. 14.)

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Did the DEIR/EIS rely on the Technical Memorandum's methodology for assessing impacts to groundwater levels from the MPWSP slant wells in lieu of establishing baseline water levels?

Please explain how the baseline water levels in the Technical Memorandum were used to refine the groundwater models and inform the analysis of the proposed project.

Please identify the baseline water levels in the Dune Sand, 180-FTE, and 400-FTE Aquifers that were used to evaluate the project's potential groundwater impacts (e.g., with the DEIR/EIS's projected drawdown contours).

Similarly, the HWG's Technical Memorandum does not provide TDS levels in the project area, at MW-4, or at the other monitoring well locations. Instead the memo provides three different methods for conducting TDS sampling and states:

> Each method prescribed above will be compared with the data collected by that method to determine whether TDS concentrations remain within acceptable levels or show an increasing trend. Seasonal changes in TDS may result from potential seasonal changes in ground water levels aside from changes potentially induced by groundwater extraction from the test slant well. Changes in TDS will also be compared to changes in groundwater levels to evaluate whether TDS changes represent seasonal water quality change in the underlying aquifers.
>
> If two of the three methods used indicate a rising trend in the MW-4 series monitoring wells, the data will be submitted to the HWG for review prior to reaching the threshold prescribed by

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> CDP Condition. The HWG will evaluate the data to determine whether rising TDS, should it occur, is a result of TSW pumping or from some other cause.

(See HWG's Technical Memorandum, p. 14-15.)

Did the DEIR/EIS rely on the Technical Memorandum's methodology for assessing impacts to water quality from the MPWSP slant wells in lieu of establishing baseline water quality levels?

Please explain how the baseline water quality levels in the Technical Memorandum were used to refine the groundwater models and inform the analysis of the proposed project.

Please identify the baseline TDS/chloride levels in the Dune Sand, 180-FTE, and 400-FTE Aquifers that were used to evaluate the project's potential groundwater impacts (e.g., with the DEIR/EIS's projected drawdown contours).

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The DEIR/EIS's omissions and misleading statements regarding water levels and water quality in the project area, particularly the Marina Subarea, obscure the project's potentially significant impacts to groundwater. As noted above, the SWRCB found that studies, including aquifer testing, are needed to determine the extent of the Dune Sand Aquifer and to establish accurate baseline conditions. This is also a fundamental CEQA requirement. (See *Cadiz*, *supra*, 83 Cal.App.4th 74, 86, [holding EIR was not in compliance with CEQA because the EIR does not discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region].)

As the Court explained in *Cadiz*: "Despite the [Project] EIR's enormity and the length of time devoted to preparing it, the EIR is not in compliance with subdivision (c) of CEQA Guidelines section 15125 because the EIR does not discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region. The EIR does not provide a sufficient description of the environmental setting or adequate information for the public and governmental agencies to evaluate whether the [Project] presents a significant adverse impact on the groundwater contained in the aquifer. In order to weigh and evaluate the risk of groundwater contamination, the volume of water subject to contamination is required… In turn, an informed decision cannot be made as to whether it is worth taking the risk of subjecting a valuable water source to contamination." (83 Cal.App.4th at p. 92.) The same is true here. The DEIR has not, but must, disclose the volume of the groundwater in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, particularly potable water, that may be impacted by the MPWSP over the life of the project.

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Save our Peninsula Committee v. Monterey County Board of Supervisors (2001) 87 Cal.App.4th 99, 121-122 is also on point. In that case, the court explained that CEQA requires "preparers of [an] EIR [to] conduct the investigation and obtain documentation to support a determination of pre-existing conditions" because "the impacts of the project must be measured against the 'real conditions on the ground.'" There, the developer of a proposed residential subdivision on ranch lands had pumped a significant amount of water in the years right before the start of environmental review, presumably in an effort to establish that water use in existing baseline conditions was already high. The court concluded that "this treatment of baseline water use violated the basic principles of CEQA" because "some of these figures, although generated from recent pumping on the property, did not reflect water actually used for irrigating the property." (*Id.* at pp. 120-121.) The EIR was defective for the further reason that the EIR did not provide a clear, consistent description of historic groundwater use, and thus left the public to guess at the baseline conditions against which the project's impacts were measured.

MCWD-99 cont.

In sum, the DEIR/EIS does not provide an accurate and complete description of existing groundwater conditions and groundwater beneficial uses in the area. Therefore, the DEIR/EIS must be revised and re-circulated to disclose (1) how much groundwater is in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, particularly potable water, that may be impacted by the MPWSP over the life of the project; (2) the baseline water levels in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, in the project area and the areas that will or could be affected by the project; and (3) the water quality in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers (percentage that is seawater, brackish, or fresh), that may be impacted by the MPWSP over the life of the project. The DEIR/EIS should also address the importance of the Dune Sand Aquifer as a recharge source for lower aquifers in this part of the Basin (e.g., 180-foot aquifer) and its beneficial use as a protective layer against seawater intrusion. Absent this information, the public and decisionmakers are misled into believing groundwater in the Dune Sand Aquifer has no value or beneficial uses. As a result of the EIR's inadequate description of baseline conditions, the DEIR/EIS fails to fully evaluate impacts to consider potential impacts to the overdrafted Marina Subarea.

i. ***The DEIR/EIS fails to disclose the MPWSP's inconsistencies with applicable State, regional, and local laws and regulations.***

The DEIR/EIS states that Table 4.4-7 describes the state, regional, and local land use plans, policies, and regulations pertaining to groundwater that are relevant to the MPWSP and an analysis of project consistency with such plans, policies, and regulations. The Table, however, does not include any consistency determinations with the regulations described in the Regulatory Section of this Chapter, including the Central Coast RWQCB Basin Plan, the Agency Act, and MCWRA Ordinance 3709. As discussed above in our comments Water Rights, the MPWSP would violate both the Agency Act and Ordinance 3709. This must be disclosed in the Table. The DEIR/EIS should also discuss how the CPUC can approve the project in light of the fact it would violate the Agency Act and MCWRA Ordinance 3709.

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While the DEIR/EIS fails to disclose whether the project would violate the Central Coast RWQCB Basin Plan's water quality objectives, it fails even to mention the project's consistency with Resolution No. 88-63, incorporated by reference into the existing 2011 Water Quality Control Plan for the Central Coastal Basin. (See DEIR/EIS, p. 4.4-32, 4.4-34 and 35.) As noted in our comment on the Water Rights Chapter, Resolution No. 88-63 is Appendix A-9 of the Basin Plan, and is applicable to the proposed project. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area and protects "groundwater considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of:

> 1. Surface and ground waters where:
> a. **The total dissolved solids (TDS) exceed 3,000 mg/L** (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
> b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
> c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day."

(Emphasis added.) The DEIR/EIS, however, suggests that only the ASR Wells for the project are required only to be consistent with the Basin Plan's groundwater quality objectives, suggesting any groundwater extractions that impact groundwater quality and groundwater that currently does not meet drinking water standards does not have value and cannot be significantly impacted. This is inaccurate. The DEIR/EIS must discuss the amount of water within the project area that is suitable, or potentially suitable, for municipal or domestic water supply and how the project will impact these supplies. Without this information, it is impossible for the public and decisionmakers to understand whether the project, as proposed, would violate the Basin Plan.

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j. ***The Analysis of Groundwater Impacts Is Based on Unreliable Modeling Rather than Substantial Evidence***

On Pages 4.4-39 through 4.4-52, the DEIR/EIS describes the investigation of groundwater conditions and modeling, and provide the following assessment of the "Limitations of Groundwater Models" at Page 4.4-44:

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> Groundwater models simulate aquifer conditions based on a specific set of data that describes parameters such the subsurface characteristics, groundwater flow, and land use. The more robust the data set, the more capable the model will be to accurately simulate subsurface conditions. Most groundwater models use conservative input parameters so that the output overstates the

> actual aquifer response. Nevertheless, groundwater models are mathematical-based computer programs that rely on input parameters and, consequently, there is a degree of uncertainty. However, the models used to analyze the proposed project have been used previously and have benefited from input data derived from site-specific subsurface information. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.

As discussed in GeoHydros and HGC comments, the level of degree of uncertainty in the DEIR/EIS's modeling is intolerable given the DEIR/EIS's failure to adequately investigate baseline conditions in the Marina Subarea and to utilize the best available information. The DEIR/EIS decision to abandon all the prior modeling efforts and use the superposition model renders the DEIR/EIS's groundwater analysis fatally defective. First, it the superposition model does not fix or improve the problems with the DEIR/EIS's modeling or its reliability. (See HGC Comments, p. 4; GeoHydros, p. 5.) Rather, it is an improper attempt to mask those problems. (*Ibid.*) Moreover, as explained in the GeoHydros Comment, the superposition modeling is inappropriate here because:

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- it precludes the identification of source water of the MPWSP slant wells, which is a key issue with the application;
- it precludes prediction of measurable groundwater elevations associated with the proposed MPWSP slant wells pumping, which would provide the only means for stakeholders to validate the model predictions and potential project impacts;
- it is unnecessary because it provides no benefit in terms of reliability over the use of the calibrated version of the model for impact assessment, would identify source water of the MPWSP slant wells and predict of measurable groundwater elevations associated with the proposed MPWSP slant wells pumping; and
- it not reliable here to simulate cones of depression in the aquifers created by the proposed MPWSP pumping.

Without addressing the limitations of the superposition model, on Page 4.4-68 the DEIR/EIS concludes:

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> **Conclusion of Impact Analysis - Depletion of Groundwater Supply from the SVGB**
> The proposed project would not deplete groundwater supplies; it would extract primarily seawater and a smaller volume of brackish inland groundwater from a localized area with only minor localized groundwater drawdown. The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity. When desalinated

> water is returned to the basin as part of the MPWSP, groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas would improve as water levels increase as a result of in-lieu groundwater recharge. The return water component of the MPWSP would benefit each of the aquifers by either reducing the area of influence or by increasing groundwater levels in other areas. The effects of return water on the basin water levels are discussed below and shown on Figures 4.4-14 through 4.4-16. If the proposed project did not return any water, localized depressed groundwater levels would persist in the three affected aquifers throughout the life of the project. However, the area affected by groundwater pumping would remain localized and the proposed project would continue to extract only brackish, degraded groundwater from the coast and, to a lesser extent, the inland portion of the aquifer. Based on the conclusions of this analysis, this impact would be less than significant.

MCWD-103 cont.

As addressed in the HGC comments, EKI Comments and GeoHydros Comments, the DEIR/EIS's impact conclusion is not supported by substantial evidence. The DEIR/EIS's modeling must be updated to accurately quantify the amount of groundwater that will be pumped and required to be returned to the basin. The modified modeling must also take into account the semi-confined condition of the 180-FTE Aquifer and the elevated head conditions in the semi-perched Dune Sand Aquifer. As noted in the HGC comments, the DEIR/EIS's conclusion does not recognize existing conditions that have developed since cessation of coastal pumping, including protective water levels in the Dune Sand Aquifer along the coast. In addition, Groundwater production should be calculated to include the 3,000 mg/l beneficial use standard provided in the WQCP. The method of groundwater return to the basin must also be specifically indicated and analyzed to determine the effectiveness of its mitigation for the project's groundwater impacts on the Marina Subarea. In additional, the DEIR/EIS must be revised to include a mandatory mitigation measure that requires adequate monitoring to detect changes to groundwater levels and quality in the Marin Subarea. The mitigation must also include a meaningful performance standard to ensure impact to the Marina Subarea remains less than significant. The current Applicant Proposed measure does not satisfy these fundamental CEQA requirements.

Finally, the DEIR/EIS's conclusion that the project impacts to Groundwater Quality is less than significant, as mitigated, is inadequate and must be updated based on new modeling results. As discussed in HGC's comments, EKI Comments. and GeoHydros Comments, the DEIR/EIS impact conclusions relating to groundwater quality are fundamentally flawed and based on modeling incapable of addressing impacts to water quality. In addition, the DEIR/EIS failure to consider the level of confinement in the Marina Subarea, particularly in

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the areas near existing groundwater remediation systems, renders the DEIR/EIS impact conclusion unsupportable.

Nor does the Mitigation Measure Mitigation Measure 4.4-4 mitigate away this failure. Mitigation cannot be deferred until after project approval except under very limited circumstances. CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both "feasible and efficacious." (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 95 (*CBE v. City of Richmond*). Mitigation Measure Mitigation Measure 4.4-does not meet these standards. First, it is unclear by whom and when the required "determination be made regarding the possibility that the project pumping could affect the extent of the plumes." (DEIR/EIS, p. 4.4-89.) Second, the mitigation states that "In the event that the analysis concludes that the proposed slant wells may affect the extent of the OU1 TCE A-Aquifer Plume and the two OUCTP plumes, then the project applicant shall contact and work with the U.S. Army to address the potential impact by reimbursing the Army for the additional costs to expand the existing treatment systems to include remediating areas where the slant wells have migrated the contamination to previously remediated areas." (Ibid.) Thus, the mitigation is improperly left completely in the discretion of CalAm in violation of CEQA.

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In summary, the DEIR/EIS's inadequate investigation and disclose of baseline conditions in the Marina Subarea and flaws in its modeling, make it impossible for the public or CPUC to make an informed decision on the project's potential groundwater impacts. As discussed in the HGC Comments, EKI Comments and GeoHydros Comments, the MPWSP will cause significant adverse impacts to groundwater supplies and water quality in the Marina Subarea that must be disclosed in a revised DEIR/EIS. After those impacts are disclosed, the DEIR/EIS must adopt all feasible mitigation or an alternative that would reduce these impacts to a less than significant level.

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k. ***The DEIR/EIS's cursory treatment of cumulative impacts does not comply with CEQA or NEPA.***

The DEIR/EIS concludes using a simple list approach the Project's cumulative groundwater impacts are less than significant stating:

> Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than significant. Therefore, the proposed project would not

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> have a cumulatively considerable contribution to a significant cumulative impact during operations (less than significant).

(DEIR/EIS, p. Page 4.4-90.) The DEIR/EIS's approach to assessing cumulative groundwater impacts is inconsistent with both CEQA and NEPA requirements.

An EIR must analyze cumulative impacts because "the full environmental impact of a proposed project cannot be gauged in a vacuum." (*Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 114 ("*CBE v. Resources Agency*").) The CEQA Guidelines define cumulative impacts as "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." (Guidelines, § 15355, subd. (b).) Thus, impacts that are "individually minor" may be "collectively significant." (*Ibid.*)

CEQA requires a lead agency to undertake a two-step cumulative impacts analysis. First, the agency must consider whether the combined effects from the proposed project and other projects would be cumulatively significant. Second, the agency must then consider whether the "proposed project's incremental effects are cumulatively considerable." (*CBE v. Resources Agency*, *supra*, 103 Cal.App.4th at p. 120; Pub. Resources Code, § 21083, subd. (b)(2); Guidelines, §§ 15355, subd. (b), 15064, subd. (h)(1).) This two-part analysis reflects the legal and empirical reality that "the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant." (*CBE v. Resources Agency*, *supra*, Cal.App.4th at p. 120.) Cursory statements of an agency's conclusions are inadequate under CEQA. (*Laurel Heights II*, *supra*, 6 Cal.4th at p. 1124.) The DEIR/EIS's analysis of cumulative impacts to the SVGB violates these CEQA principles in several important ways as discussed below.

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Similarly, NEPA requires the agency to consider whether "the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment." (40 C.F.R. § 1508.27, subd. (b)(7).) The Council on Environmental Quality (CEQ) NEPA regulations define "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. § 1508.7.)

The Ninth Circuit frequently cites a NEPA handbook prepared by CEQ—*Considering Cumulative Effects Under the National Environmental Policy Act* [20] (*Considering Cumulative Effects*)—when discussing the adequacy of the cumulative impact analysis in an EIS. (See, e.g., *Kern v. U.S. Bureau of Land Management*, 284 F.3d 1062 (9th Cir. 2002);

[20] / https://ceq.doe.gov/publications/cumulative_effects.html

Te–Moak Tribe of W. Shoshone of Nev. v. U.S. Dep't of Interior, 608 F.3d 592 (9th Cir. 2010); *Northern Plains Resource Council, Inc. v. Surface Transp. Bd.* (9th Cir. 2011) 668 F.3d 1067.) As explained in that document, a cumulative effects analysis should involve a three step process: (1) scoping; (2) describing the affected environment; and (3) determining the environmental consequences. (*Considering Cumulative Effects,* p. 10.) Regarding the description of the affected environment in a cumulative effects analyses, the document explains that a reasonable forecast of future conditions is critical:

> The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process. The no-action alternative is an effective construct for this purpose, but its characterization is often inadequate for analyzing cumulative effect. Much of the environment has been greatly modified by human activities, and most resources, ecosystems, and human communities are in the process of change as a result of cumulative effects. The analyst must determine the realistic potential for the resource to sustain itself in the future and whether the proposed action will affect this potential; therefore**, the baseline condition of the resource of concern should include a description of how conditions have changed over time and how they are likely to change in the future without the proposed action.**

MCWD-106 cont.

(*Considering Cumulative Effects,* p. 41, emphasis added.)

The CEQ guidance also emphasizes that compiling data on stress factors pertaining to each resource or ecosystem is a critical step in describing the affected environment. (*Id*. at p. 27.) For instance, the handbook explains that while describing the affected environment, "the agency should pay special attention to common natural resource issues that arise as a result of cumulative effects." As an example of such stressors, the handbook cites "aquifer depletion or salt water intrusion following the overdraft of groundwater from numerous uncoordinated uses." (*Id.* at p. 25.) "The goal of characterizing stresses is to determine whether the resources, ecosystems, and human communities of concern are approaching conditions where additional stresses will have an important cumulative effect." (*Id*. p. 29.)

Although "a cumulative effects analysis necessarily involves assumptions and uncertainties," the analysis "must be supported by the best data we have or are able to collect." (*Considering Cumulative Effects,* p. 3; *Oregon Natural Resources Council Fund v. Brong* 492 F.3d 1120, 1134 (9th Cir. 2007) ["cumulative effects analysis requires an agency to predict future conditions"].) "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is ... implicit in NEPA, [courts will] reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." (*Northern Plains Resource Council, Inc. v. Surface Transp. Bd*. (9th Cir. 2011) 668 F.3d 1067, 1079 [also noting that "reasonably foreseeable future actions need to be considered [in a cumulative impact analysis] even if they are not specific proposals."].) Thus, although an agency may explain specific

projections with reference to uncertainty in its cumulative impact analysis, "it may not rely on a statement of uncertainty to avoid . . . the requisite analysis." (*Oregon Natural Resources Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2005).)

The DEIR/EIS fails to meet both CEQA and NEPA requirements for the following reasons.

First, the DEIR/EIS's analysis of cumulative impacts fails to account for how groundwater conditions have changed over time and how they are likely to change in the future without the project. In fact, the DEIR/EIS acknowledges its modeling "only solves for the groundwater changes due solely to the proposed project." It goes on to expressly state:

> These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

(DEIR/EIS, p. 4.4-47 and 4.4-49.) The DEIR/EIS suggests this limited approach to figuratively assessing the project's potential cumulative impacts to groundwater is permissible because baseline conditions reflect the contributions of past actions on groundwater resources within the geographic scope. As explained in the attached HGC Comments, this approach ignores that groundwater conditions have changed over time under baseline conditions and will continue to change in the future from other stressors. As noted above, the DEIR/EIS acknowledges this possibility. The fact that the modeling exists and has been run for the project (but the results not disclosed) and that it address these additional stressors is inexplicable. Even if the DEIR/EIS preparers believe this modeling provides flawed results, the information must be disclosed (with an explanation regarding the flawed results) so the public can comment on the information and the decision makers can take it into account.

Second, the DEIR/EIS's cumulative impacts analysis for groundwater supply impacts improperly relies on its discussion in Impact 4.4-3 that groundwater levels would be

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expected to decrease by 5 or more feet within approximately 1 mile of the MPWSP subsurface slant wells as basis for considering which projects to include in its analysis of cumulative impacts on groundwater supply. Based on this incorrect assumption (see comments on Impact 4.4-3 above), the DEIR/EIS then limits its discussion of cumulative impacts to the Salinas Valley Water Project Phase II (No. 1), the RUWAP Desalination Element (No. 31), and the Slant Test Well Project (No. 47) on the basis that these projects are the only other projects that would overlap with the project's presumed drawdown footprint. It then, without disclosing potential combined drawdown effects of these projects on existing wells, states because these three projects would not result in any net decrease to groundwater within the SVGB there would be no potential cumulative groundwater impacts and adopts the same less than significant conclusion reached for Impact 4.4-3. (DEIR/EIS, pp. DEIR/EIS, pp. 5-22 to 5-24.) This approach is inadequate and must be revised to address the following deficiencies.

- The DEIR/EIS fails to address how the project would impact the SVGB, particularly the Marina Subarea of the SVGB, overdraft conditions and state law requirements for the Groundwater Sustainability Plan that must be adopted to address this issue. (See Chapter 2.0 comments above). It is reasonably foreseeable that at least one Groundwater Sustainability Plan will be adopted that regulates groundwater extractions within the project area. Therefore, the DEIR/EIS must be revised to address and mitigate the project's potential adverse impacts on such a Plan's ability to achieve groundwater sustainability within the project area. (See *Friends of the Eel River*, *supra*, 108 Cal.App.4th at p. 872 [EIR failed to comply with CEQA because its cumulative impacts analysis did not consider potential curtailment of water supplies that could result from regulatory proceedings, which result in "an underestimation of the Agency's ability to meet customer demands without negative environmental consequences."].)
- The DEIR/EIS also fails to discuss how the project could adversely impact environmental gains realized by ongoing water conservation projects in the area.
- The DEIR/EIS also fails to address how increased water use from many of the regional projects will affect groundwater supplies. The DEIR/EIS incorrectly assumes that only past, present and future "water supply projects" within the radius of influence of the project will impact the SVGB and Marina Subarea. (Guidelines, § 15130, subd. (b) (3).) As explained in the attached technical HGC and EKI Comments, the DEIR/EIS's analysis of cumulative impacts is woefully inadequate in this respect.
- The project fails to look at the cumulative impacts of the MPWSP's test well on groundwater supplies, groundwater quality, and impacts to biological resources. The CCC's approval of the slant well excluded any analysis of the potential long-term impacts of the slant well based on its conclusion is would

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be decommissioned after 2 years. The DEIR/EIS must be revised to include this analysis, unless the slant test well will be decommissioned as provided for in the CCC approval.

Finally, the cumulative impacts analysis must be revised to consider reasonably foreseeable projects that will be necessary under the SGMA. See discussion of no project alternative (DEIR/EIS, p. 5.5-84 ["Existing, ongoing regional groundwater pumping would continue throughout the Salinas Valley, as would efforts to develop a sustainable groundwater management plan."]). As a result of these failures, the DEIR/EIS does not accurately consider whether the project's impacts to the SVGB are cumulatively considerable. Instead of following CEQA's mandate, the DEIR/EIS here portrays a fundamental misunderstanding of the statute. The document assumes that if the project's impacts related to groundwater are less than significant (which they are not), then the impacts could not be cumulatively considerable. (DEIR/EIS, p. 5-24.) This approach turns cumulative analysis on its head and is a plain violation of CEQA. An EIR may not conclude that a project will not contribute to cumulative impacts simply because it has a less than significant impact on a project level. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-21.)

MCWD-106 cont.

Therefore, the DEIR/EIS's cumulative analysis must be revised and re-circulated because it was reasonable and practical for the DEIR/EIS to analyze the omitted "past, present, and probable future projects producing related or cumulative impacts," and "their exclusion prevented the severity and significance of the cumulative impacts from being accurately reflected." (Guidelines, § 15130, subd. (b)(1)(A); 124 Cal.App.4th at p. 1215.) The DEIR/EIS's cumulative analysis must also be revised based on updated modeling that does not ignore the best available information regarding groundwater conditions in the project area.

3. The DEIR/EIS's Analysis of Terrestrial Biological Resources is Inadequate.

As emphasized by the California Supreme Court, "CEQA broadly defines the relevant geographical environment as 'the area which will be affected by a proposed project.'" (*Muzzy Ranch Co. v. Solano County Airport Land Use Comm.* (2007) 41 Cal.4th 372, 387 (*Muzzy Ranch*), quoting Pub. Resources Code, § 21060.5 ["Environment" means "the physical conditions which exist within the area which will be affected by a proposed project"].) In *Muzzy Ranch*, the Supreme Court flatly rejected the "suggestion that agencies have no obligation under CEQA to consider geographically distant environmental impacts of their activities." (*Id*. at p. 388.) Rather, an EIR must analyze and disclose all potential impacts, both direct and indirect, and cover the entire area where those impacts may occur.

MCWD-107

Here, as explained in the DEIR/EIS, the "study area" for potential impacts to terrestrial biological resources is limited to a 50-foot buffer around the project features. The DEIR/EIS, however, fails to explain why impacts to biological resources would cease at this arbitrary line. At a minimum, the DEIR/EIS must explain and document the screening

analysis or other methodology used to develop the study area wherein all potential impacts of the project would be captured. That simply did not occur; the DEIR/EIS fails to comply with CEQA's informational disclosure requirements by not identifying any methodology or providing any explanation for the unduly narrow study area.

In fact, the evidence shows that the study area under in the DEIR/EIS is far too narrow to account for all of the project's potential impacts to terrestrial biological resources. For instance, as demonstrated from the figures showing the "biological study area," the study area boundaries slice right through dune and other coastal habitat. But the DEIR/EIS fails to explain why impacts would only occur on one side of this arbitrary line but not the other. Indeed, it is only logical that entire connected habitat areas would be affected by the project.

MCWD-107 cont.

Moreover, despite acknowledging that the project would result in a substantial lowering of groundwater levels and increased salinity levels in the project area, the DEIR/EIS fails to disclose or evaluate how that drawdown or increased salinity could impact biological resources that depend on groundwater. Indeed, the DEIR/EIS acknowledges that the area of drawdown and increased salinity would span for several miles—much further than the 50-foot study area. There is simply no justification for excluding this entire area from the analysis. It is well recognized that changes in groundwater levels can adversely affect overlying habitat, and groundwater-dependent ecosystems in particular.[21] For instance, as explained in an a series of articles by researchers from Stanford University, California is home to a diverse and widespread number of groundwater-dependent species and ecosystems, which can be significantly impacted by even minor changes in groundwater levels. (See Stanford Woods Institute for the Environment, Understanding California's Groundwater, 2014.) [22] The articles note that impacts of pumping groundwater on ecosystems can be most intense in coastal counties (generally surrounding the existing effects of municipal and agricultural pumping) and that these types of impacts should be analyzed and mitigated under CEQA and NEPA. (*Id*.) To reduce potential impacts, the authors recommend that "if there is potential to adversely affect groundwater-dependent ecosystems, comprehensive monitoring conditions on projects should be linked to clear and specific remedial management actions, like cease-to-pump rules based on quantified ecological triggers." (*Id.*) The DEIR/EIS, however, fails to analyze, or even mention, these types of impacts.

MCWD-108

[21] / See, e.g., The Nature Conservancy, California's Groundwater Dependent Ecosystems, http://www.groundwatercalifornia.org/; Jeannette Howard and Matt Merrifield (2010) Mapping Groundwater Dependent Ecosystems in California, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0011249.

[22] / Articles are available at: http://waterinthewest.stanford.edu/groundwater/ http://waterinthewest.stanford.edu/groundwater/overdraft/ http://waterinthewest.stanford.edu/groundwater/conflicts/index.html

Further, the DEIR/EIS acknowledges that there are numerous areas identified as "Potentially USACE, RWQCB, and/or CDFW Jurisdictional" waters. But most of these areas, including wetlands, fall outside of the DEIR/EIS's study area boundaries. As explained above, wetlands and similar ecosystems frequently depend on, and are often interconnected with groundwater, particularly when, as here, the groundwater table is close to the surface. The Sanctuary's *Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary* (NOAA, 2010) state that "implementation of subsurface intakes should not cause saltwater intrusion to aquifers ***or adversely affect coastal wetlands that may be connected to the same aquifer being used by the intake***." Nonetheless, the DEIR/EIS makes no attempt to evaluate these potential impacts. As result, the DEIR/EIS fails as an informational document by failing to analyze and mitigate potential impacts to these areas from a lower groundwater table and increased salinity. The CPUC cannot hide behind its failure to gather relevant data. (See *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1378 ["an agency [will] not be allowed to hide behind its own failure to gather relevant data . . . . CEQA places the burden of environmental investigation on government rather than the public."].) And, as explained below, it is insufficient under CEQA to rely on separate regulatory programs or future permitting requirements to justify the failure to analyze and disclose all of the project's potential impacts. (See, e.g., *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.)

MCWD-109

In short, the analysis in the DEIR/EIS must encompass a study area that is supported by substantial evidence and that is adequately explained and justified in the DEIR/EIS. By limiting the biological resources to an arbitrary 50-foot buffer area, the DEIR/EIS fails to meet CEQA's basic requirement of analyzing and mitigating all of the project's potential direct, indirect, and cumulative environmental impacts to biological resources.

MCWD-110

l. ***Mitigation Measures for Impacts to Biological Resources Are Inadequate***

The DEIR/EIS's mitigation for impacts to biological resources fails to comply with CEQA's basic requirements for mitigation in several ways. First, the biological resources section is riddled with improperly deferred mitigation. To comply with CEQA, formulation of mitigation cannot be deferred until after project approval except under very limited circumstances. (CEQA Guidelines, § 15126.4, subd. (A)(1)(b).) "Impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR." (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.) CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both "feasible and efficacious." (*CBE v. City of Richmond, supra*, 184 Cal.App.4th at p. 95; see also *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645,669-71 (*Raptor*) [county improperly deferred mitigation when it allowed a land management plan for special status vernal pool species to be developed with the CDFW and

MCWD-111

USFWS after certification of EIR]; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1396 [conditioning a permit on "recommendations of a report that had yet to be performed" constituted improper deferral of mitigation].) "Fundamentally, the development of mitigation measures, as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval; but rather, an open process that also involves other interested agencies and the public." (*CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 93.) Here, many mitigation measures are improperly deferred and the mitigation measures frequently call for the development of future plans or reports, without either setting performance standards or demonstrating how the impact can be mitigated in the manner described in the EIR. MCWD-111 cont.

Second, the mitigation measures are tarnished with impermissible qualifying language for implementation of the measures such as "to the extent practicable" or "where feasible," which renders the measures totally unenforceable. CEQA requires more. "A public agency shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable. . ." (CEQA Guidelines, § 15126.4, subd. (a)(2); see also *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 444.) MCWD-112

Third, the DEIR/EIS cannot rely on future coordination with other agencies with jurisdiction over biological resources or a requisite future permitting process as enforceable mitigation. (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.) Similarly, an agency cannot simply rely on future agency consultation or compliance with regulations to support a less than significant conclusion. (*Ibid*.) This is because there is usually no assurance that granting of permits or compliance with regulation will ensure that impacts are mitigated to a less than significant level. For example, just because the USFWS issues an incidental take permit does not mean the project will not have a significant impact on species. In fact, it means the project will likely have adverse impacts on species, but the agency will permit those impacts to occur. MCWD-113

Fourth, the analysis is defective because it fails to explain how the mitigation measures will mitigate the impacts to a less than significant level. Instead, the DEIR/EIS merely states that an impact may be significant generally, then lists some mitigation measures, and then concludes, without explanation or evidentiary support, that the mitigation measures will reduce the impacts to a less than significant level. In other words, the DEIR/EIS improperly assumes that mitigation will be implemented, will be effective, and will mitigate impacts to a less than significant level. This is not appropriate under CEQA. An EIR must include "sufficient information and analysis to enable the public to discern the analytic route the agency traveled from evidence to action." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1397; see also *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645 [improper to assume that mitigation will be implemented as part of the project].) As explained by the California Supreme Court, "[t]o facilitate CEQA's informational role, the [CEQA document] must MCWD-114

contain facts and analysis, not just the agency's bare conclusions or opinions. . . . [It] must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 404.) The absence of this analysis here renders the DEIR/EIS inadequate as an informational document.

MCWD-114 cont.

These problems are pervasive throughout the mitigation measures in this section of the DEIR/EIS. Below are several specific examples.

- Mitigation Measure 4.6-1a. Mitigation Measure 4.6-1a requires CalAm retain a biologist to oversee compliance with the avoidance and minimization measures for special status species and sensitive habitats and document certain activities. This measure does little, if anything, to ensure that the mitigation measures are properly implemented and effective. First, rather than allowing CalAm to retain a biologist at its discretion as the measure permits, the CPUC should select a neutral and independent biologist to serve as the Lead Biologist. This would remove any bias, either actual or perceived, on the part of the biologist because the biologist would not be contracted to CalAm. Further, all reports and documentation (including documentation of violations of the measures and compliance reports) must be made available to the public for review and comment on the MPSWP website. Making this information publicly available is the only way to ensure that the measures are being implemented properly and are effective. This is especially true for the monthly summary monitoring reports, which are intended to document the effectiveness and practicality of the prescribed measures and may recommend modifications to the measures. Moreover, language in this measure suggesting that the "prescribed" mitigation measures might not be practical or of effective, raises serious doubts regarding whether the CPUC has fully evaluated whether the proposed mitigation measures are feasible and will be effective *before* project approval, as CEQA requires.

MCWD-115

- **Mitigation Measure 4.6-1c**. Mitigation Measure 4.6-1c is rife with language allowing improper deferral and precatory language that severely diminishes the likely effectiveness of the measure. As a consequence, the DEIR/EIS cannot rely on the measure to reduce impacts to a less than significant level. For instance, Mitigation Measure 4.6-1c, subpart (1), requires construction areas to be delineated prior to construction and prohibits construction-related disturbance outside the boundaries only when approved by the Lead Biologist. This is improper deferral. Without any performance standards describing when the Lead Biologist can approve construction-related activities outside of the delineated area, this measure is meaningless. The measure must include performance standards that establish objective criteria for determining when project activities could occur outside the delineated boundary. The measure

MCWD-116

should at least require that the additional area be evaluated and delineated before construction activities can occur to avoid impacts. Mitigation Measure 4.6-1c, subpart (5), states that "standard" best management practices ("BMP") shall be employed and provides two examples. To comply with CEQA, however, the measure must state what specific BMPs will be required and include firm language to ensure that the mitigation will be binding and enforceable.

MCWD-116 cont.

- Mitigation Measure 4.6-1d. Mitigation Measure 4.6-1d allows construction to occur at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant during the snowy plover breeding season if approved by USFWS. The measure does not include any enforceable criteria or means by which impacts to plover might be avoided or reduced to a less than significant level. The measure must explain under what circumstances the USFWS might approve such activities and why allowing those activities during the breeding season would not impact snowy plover. This measure is especially troubling because the DEIR/EIS recognizes that any construction activities occurring during plover breeding season could affect the species. There is ample evidence showing that any construction activities during snowy plover nesting and breeding season will adversely affect the species. (See e.g., CCC Staff Report[23].) Further, the measure states that if work cannot be completed during the non-nesting season, a qualified biologist must conduct preconstruction surveys to determine if snowy plover nests are present within 300 feet. But there are no measures to implement if snowy plover nests are discovered. Instead, the measure states that the biologist must consult with USFWS to determine any additional measures that should be implemented. This is improper deferral of mitigation. Compounding this error, there are no performance standards that will ensure impacts to snowy plover will not occur. And there is no reason that enforceable mitigation measures cannot be developed now. During non-nesting season, the measure only requires a biologist to "inform CalAm of wintering plover activity" so they can make construction decisions that avoid or minimize disturbance to plovers. This measure too lacks any performance standard to ensure that impacts to plover will be less than significant. Even if an impacts is "minimized," that does not mean that significant impacts will not occur. The measure also states that temporarily impacted habitat must be "restored," but there is no standard for what type or amount of "restoration" would be sufficient to mitigate the impact. Instead, the determination is improperly

MCWD-117

[23] CCC Staff Report, November 12, 2014, available at https://documents.coastal.ca.gov/reports/2014/11/W14a-s-11-2014.pdf and CCC Staff Report, October 5, 2015 available at https://documents.coastal.ca.gov/reports/2015/10/Tu15a-10-2015.pdf

deferred to a yet-to-be-prepared Habitat Mitigation and Monitoring Plan. There is no reason that the plan cannot be developed now, before impacts occur, as required by CEQA. And the measure allows CalAm to contribute funds to either a mitigation bank or to an existing restoration program "in lieu" of undertaking restoration actions. But there is no explanation why paying funds would reduce the physical impact to snowy plover and its habitat to a less than significant level.

MCWD-117 cont.

- Mitigation Measure 4.6-1e. Mitigation Measure 4.6-1e is riddled with the qualifier "if feasible" which removes any teeth from the measure. If the measure is ultimately determined to be not feasible, it does not need to be implemented. The problem is that the impact conclusion relies on the mitigation measure to reduce the impact to a less than significant level. But since there is no guarantee that the mitigation measure will be implemented and will be effective given the "if feasible" language, it is not appropriate to rely on the measure to support the conclusion. Unless the DEIR/EIS provides firm and enforceable mitigation measures the impact should be found significant and unavoidable. This comment applies to all mitigation measures in this DEIR/EIS that include similar qualifying language. Subpart (2) includes additional flaws. It states that if avoidance is not feasible, additional measures "to be determined" will be implemented. This measure constitutes improper deferral of mitigation. The measures should be identified now and should be imposed as a requirement. Subpart (3) is problematic because it acknowledges the take of protected plant species may occur. If anything, the probability of take and the need for an incidental take permit indicate that a significant impact will occur, even if the take is allowed under the permit. This comment applies for all mitigation measures that acknowledge that a take may occur or that an incidental take permit may be required. Subpart (5) is even worse. It states that compensation in the form of land purchase or restoration "shall be provided to the level acceptable to the resource agencies" and will be determined on a "case-by-case basis." This is deferral of mitigation personified. There is no reason that the minimum level of compensation cannot be established now. The measure must include the minimum level of compensation that would be necessary to mitigate the impact to a less than significant level. Further the measure should include a monitoring program with success criteria to ensure that the compensatory mitigation will actually mitigate the loss of special-status plants. In fact, the very agency that is charged with protecting California's plant and wildlife species—the California Department of Fish and Wildlife (CDFW)—has determined that Mitigation Measure 4.6-1e is not adequate to mitigate impacts to special-status plants. (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Among other flaws, DFW explained that reintroduction of sensitive plant species that may be impacted by the project is not recommended for species with sensitive habitats found in the project area and that there is no evidence that the identified

MCWD-118

measures will be successful. (*Id*.) DFW concluded that because there is no information in the DEIR/EIS regarding the success of relocation and relocation of sensitive plants, and because that type of mitigation is generally not successful or recommended for various reasons, the primary measure relied on in the DEIR/EIS is not sufficient to mitigate impact to less than significant. (*Id*.)

MCWD-118 cont.

- Mitigation Measure 4.6-1f. Like many other mitigation measures in this section, Mitigation Measure 4.6-1f, only requires that construction activities avoid impacts where feasible. As noted above, this makes the mitigation measure unenforceable and the DEIR/EIS cannot rely on it to support the conclusion that the impact is less than significant. The measure attempts to remedy this problem by including additional requirements if it is not feasible to avoid impacts during construction, but the additional requirements are also not proper mitigation. First, the mitigation is improperly deferred because it only requires the biologist to create a relocation plan after the project has already been approved. By deferring development of the plan, including the scope of the survey area and identification of appropriate relocation sites, it is impossible to determine whether the mitigation will be feasible or will be effective. And again, requiring approval of the plan by USFWS does not save the measure. Further, although subpart (5) includes what appears to be an attempt at the type of performance standard necessary for deferred mitigation (e.g., a minimum compensatory ratio of 2:1), the standard is negated entirely by the language allowing an alternate compensatory ratio as "otherwise negotiated with USFWS." The measure must state a firm and specific ratio and explain why that ratio is sufficient to mitigate the impact. This cannot be left up in the air in the DEIR/EIS and then decided at a later date after the project has been approved, even if the ultimate determination is made by USFWS.

MCWD-119

- Mitigation Measure 4.6-1g. Mitigation Measure 4.6-1g is improperly deferred because it only requires that a plan for relocation be developed after project approval. There is no reason the relocation plan cannot be developed now before the project is approved. There is similarly no reason why relocation sites cannot be identified and surveyed before project approval to determine if relocation is even feasible. Further, because there is no evidence that relocation is feasible, the DEIR/EIS cannot rely on this mitigation measure to support the conclusion that impacts would be less than significant. Finally, it is unclear whether a biologist would be authorized to perform the required analysis or relocation based on a Scientific Collecting Permit issued by CDFW, since the analysis and relocation is not for scientific study.

MCWD-120

- Mitigation Measure 4.6-1h. Mitigation Measure 4.6-1h also constitutes improper deferral of mitigation by requiring plans to be developed after project approval and, like other mitigation measure in this section, is marred by qualifying language such as "if feasible." Further, subpart (5) is

MCWD-121

unenforceable because it allows ground-disturbing activities to occur "if otherwise authorized by CDFW." Whether another agency might authorize impacts to occur has no bearing on whether the impact is significant. Further, the mitigation specifies a "buffer distance" to be established based on the "level of disturbance." But the measure is silent as to how the level of disturbance might be determined, why the distances were selected, and how they would reduce impacts to less than significant levels. Subpart (6) is similarly deficient because there are no objective criteria to establish the "level of disturbance" and no explanation why the different buffers would be adequate to mitigate impacts. Subpart (7) is wholly unenforceable because it only includes a recommendation, rather than a requirement, that burrowing owls be excluded from burrows. The measure must use firm language (i.e. "shall") to ensure the mitigation is adopted and enforced. Subpart (8) is inadequate because there is no explanation why the measure would reduce the impact below the significance threshold. It simply requires site monitoring to avoid take. Take is not the threshold of significance for this impact. Even if no "take" occurs, there may still be a significant impact to the species. MCWD-121 cont.

- Mitigation Measure 4.6-1i. Mitigation Measure 4.6-1i suffers several flaws. First, it constitutes improper deferral of mitigation by requiring post-approval plans for mitigation. Second, the measure does not require any pre-construction surveys or avoidance measures for construction activities that would be completed entirely during the non-nesting season, but there is no explanation why construction-related impacts would not occur during that time. MCWD-122

- Mitigation Measure 4.6-1j. Mitigation Measure 4.6-1j is improperly deferred because it allows "suitable buffers" to be determined after the project has been approved (subpart (5)(b)). As explained above, the buffer must be established now and included as specific performance criteria. Further, there needs to be an explanation why the buffer was selected and how it will actually reduce the impact to a less than significant level. Further, the measure should include compensation for any temporary or permanent loss of habitat. MCWD-123

- Mitigation Measure 4.6-1k. Mitigation Measure 4.6-1k is similarly inadequate because it requires the biologist to establish a "suitable buffer area" to avoid impact to woodrat nests (subpart (3)). There is no indication what might be considered a suitable buffer or why the buffer might minimize impacts. Further, subpart (4) is improper because it only requires relocation "to the extent feasible," which removes all enforceability from the measure. The measure then states that if relocation cannot be avoided within the peak breeding season, the lead agency shall contact CDFW for further guidance and CDFW's recommendation will be implemented. This is textbook deferral of mitigation and is prohibited under CEQA. There is no evidence that relocation MCWD-124

is feasible and there are no performance standards included in the mitigation that would ensure impacts are avoided. MCWD-124 cont.

- Mitigation Measure 4.6-1l. Mitigation Measure 4.6-1l states that bat roosts that begin during construction are presumed to be unaffected, and no buffer would be necessary. This statement defies logic and is not supported by any evidence. There are a variety of construction activities that would affect bats in different ways; just because bats may roost during some construction activities does not mean they would be unaffected by other activities. Further, the mitigation prohibits the take of "species," but as explained above, take is not the threshold of significance. Even if there is no take, there still may be significant impacts. MCWD-125

- Mitigation Measure 4.6-1m. Mitigation Measure 4.6-1m requires that facilities shall be sited and construction activities planned to avoid impacts on native stands of Monterey pine, but only "to the extent feasible." Although the mitigation includes additional mitigation if avoidance is not feasible, the success of that mitigation relies on the creation of a plan that details the monitoring requirements and success criteria. These are exactly the type of performance criteria that must be established before project approval if deferral of mitigation is to be permitted. The monitoring requirements and success criteria must be established and explained now to ensure that impacts will not occur. MCWD-126

- Mitigation Measure 4.6-1n. Mitigation Measure 4.6-1n requires CalAm to develop a plan for mitigation after project approval. This too is textbook deferral of mitigation. As explained above, an agency may defer the formulation of mitigation only if, among other requirements, the mitigation includes specific performance criteria that will ensure impacts are minimized. Mitigation Measure 4.6-1n, however, explicitly allows, in fact requires, the post approval plan to include "performance standards by which successful completion of mitigation can be assessed and insured." This is exactly what CEQA prohibits. There is no reason that the mitigation plans cannot be developed now, including the requisite "monitoring plans and schedule" or the "reporting requirements and schedule," for example. Further, the measure allows for compensatory mitigation lieu of active restoration without any explanation why this is feasible or would reduce impacts below the identified significance thresholds. This problem is exacerbated by the fact that numerous mitigation measures reference and rely on Mitigation Measure 4.6-1n to ensure impacts will be less than significant. All of those mitigation measures are therefore inadequate as well. MCWD-127

- Mitigation Measure 4.6-1o. Mitigation Measure 4.6-1o is improperly deferred because it because it allows the relocation plan to be developed after project approval, including the identification of relocation sites. There are no MCWD-128

performance standards to ensure that relocation is successful and, because relocation sites have not been identified, there is no evidence that the mitigation is feasible. Further, the mitigation allows red-legged frogs and tiger salamanders to be relocated according to the improperly deferred relocation plan only if authorized by USFWS and CDFW. There is no assurance that those agencies will authorize relocation of the species and, in any event, it is unlikely they will authorize relocation in all instances. Indeed, CDFW has already commented that the mitigation measures for impact to the California tiger salamander are inadequate and questioned whether the mitigation would be in compliance with Fish and Game Code and the California Endangered Species Act (CESA). (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Therefore, the DEIR/EIS cannot rely on this mitigation measure to support the conclusion that impacts will be less than significant. This impact, like many others in this section, should be significant and unavoidable.

MCWD-128 cont.

- Mitigation Measure 4.6-1q. Mitigation Measure 4.6-1q is improperly deferred because it only requires a plan to be developed after project approval. The measure acknowledges that a frac-out may occur at the project site, which would cause a significant impact, and only after that occurs would CalAm be required to "consult with" the staffs of the relevant agencies "regarding appropriate incident-specific actions to be undertaken." Again, there are no performance standards or any assurance that this measure would reduce this impact to less than significant.

MCWD-129

m. ***The Analysis and Mitigation for Construction-Related Impacts to Habitats, Including Environmentally Sensitive Habitat Areas (ESHAs), are Inadequate***

Under Impact 4.6-2, the DEIR/EIS claims that various habitat areas, including central dune scrub at the subsurface slant well site and beach adjacent to the site, central dune scrub along the Transition Main Alignment, and other habitat areas that will be effected by project components, *may* be considered primary and secondary habitat under the City of Marina Local Coastal Land Use Plan, and *may* be considered ESHA by the CCC. This is a major understatement that renders the DEIR/EIS inadequate as an informational document. These areas include both primary and secondary habitat under the City's Local Coastal Land Use Plan (LCLUP) and is designated as ESHA by the CCC. (These areas have already been established and delineated by the City and the CCC. The DEIR/EIS must disclose all areas designated as primary or secondary habitat by the City or as ESHA by the CCC and fully explain how the project would affect those habitat areas.

MCWD-130

Further, as part of the project, CalAm intends to convert the temporary test well at the CEMEX site into a production well for the MPWSP. This slant well is located in ESHA. (See e.g., CCC Staff Report.) But the DEIR/EIS ignores this fact and fails to analyze the long-term impacts to ESHA and snowy plover habitat when the slant well is converted into a production well, as proposed. Instead the DEIR/EIS defers the consideration of these impacts by suggesting these issues will be worked out during the Coastal Development

MCWD-131

Permit (CDP) application process. (DEIR/EIS, pp. 4.6-70; 4.6-207.) This is improper deferral of analysis and mitigation under CEQA. Simply stating that the mitigation measures will reduce impacts by "ensuring the project conforms to ESHA policies (including local coastal plan policies)" does not cure this defect. As explained elsewhere, the DEIR/EIS acknowledges that the project will be inconsistent with ESHA policies, including local coastal plan policies. Even if the CPUC or the CCC ultimately decide to override these policies, and are able to make the findings required to do so, that does not mean that significant impacts to ESHA would not occur. Indeed, as acknowledged elsewhere in the DEIR/EIS, the Staff Report for the temporary test well (which will be converted to a production well) found impacts to ESHA and snowy plover habitat to be significant and unavoidable. (DEIR/EIS, p. 6.4-224.) That section of the DEIR/EIS also acknowledges that project facilities "would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats," and concludes that this would be "a significant and unavoidable impact." (DEIR/EIS, p. 6.4-224.) Thus, the DEIR/EIS itself is internally inconsistent on this issue.

Moreover, by ignoring the fact that the test slant well (and proposed production well) is already sited in ESHA, the DEIR/EIS overlooks major land use implications. One major oversight in the DEIR/EIS is the fact that the Coastal Act prohibits development in ESHA if there are feasible alternative locations available. (See Pub. Resources Code, § 30260; see also Pub. Resources Code, § 30240, subd. (a) ["Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas."].) Because the DEIR/EIS identifies feasible alternatives sites for the slant wells (see DEIR/EIS Chapter 7, Alternatives), the existing slant well must be decommissioned and relocated if slant wells are approved at the CEMEX site. But this is not explained or evaluated in the DEIR/EIS.

MCWD-131 cont.

The discussion regarding conflicts with numerous policies in the City of Marina's LCLUP is also inadequate. Although numerous conflicts are acknowledged (See, e.g., DEIR/EIS, p. 4.6-219, 4.6-260), there is no explanation of whether they are indicative of environmental impacts or how the conflicts will be resolved. Instead the text refers to the discussion under the various impacts, which are entirely conclusory and inadequate as described above.

Further, the DEIR/EIS fails entirely to explain why these impacts would be rendered less than significant after the mitigation. Indeed, for the reasons explained above, the conclusion is unsupportable and is inconsistent with other impact conclusions in the DEIR/EIS, as noted above. Like many impacts in this section, this impact should be identified as significant and unavoidable.

The mitigation measures proposed under Impact 4.6-2 do not cure these problems. And those mitigation measures are also inadequate for additional reasons. The reasons most of the mitigation measure are inadequate or improper are explained above. The few

additional measures included for this Impact 4.6-2 fare no better than the others, and raise a host of additional problems.

- Mitigation Measure 4.6-2a. Mitigation Measure 4.6-2a requires consultation with local agencies and the CCC regarding ESHAs. As noted above, various project elements are proposed in areas already designated as ESHA by the CCC. The DEIR/EIS, therefore, is required to disclose the amount of ESHA that could be disturbed by project activities and the full extent of the potential impacts. This analysis cannot be deferred until after the CPUC approves the project, or be punted to the CCC for later consideration. Moreover, even if the CCC approves a CDP for the project, that does not mean that significant impacts to ESHA will not occur. It would just mean that the CCC decided to make the findings necessary to site the project in ESHA *despite the project's significant impacts*. Even with mitigation proposed in the DEIR/EIS, the impacts to ESHA must be considered significant and unavoidable.
- Mitigation Measure 4.6-2b. Mitigation Measure 4.6-2b only requires the construction contractor(s) to implement the identified avoidance and minimization measures "to the extent feasible." As explained above, this qualifying language renders the measure wholly unenforceable and inadequate under CEQA. Further, the measure requires restoration and compensation in accordance with Mitigation Measure 4.6-1n, which is improper deferral of mitigation, as explained above. There is also no evidence that this mitigation measure is feasible and no explanation why it would be effective. Furthermore, as explained in *Bolsa Chica Land Trust v. Superior Court* (1999) 71 Cal.App.4th 493, 507, impacts to ESHA cannot be mitigated through compensatory mitigation: "the language of section 30240 does not permit a process by which the habitat values of an ESHA can be isolated and then recreated in another location. Rather, a literal reading of the statute protects the area of an ESHA from uses that threaten the habitat values, which exist in the ESHA. Importantly, while the obvious goal of section 30240 is to protect habitat values, the express terms of the statute do not provide that protection by treating those values as intangibles which can be moved from place to place to suit the needs of development. Rather, the terms of the statute protect habitat values by placing strict limits on the uses which may occur in an ESHA and by carefully controlling the manner uses in the area around the ESHA are developed." The mitigation for impacts to ESHA and snowy plover habitat should be revised and the impact conclusion should be changed to significant and unavoidable.

MCWD-131 cont.

Finally, as explained previously, the mitigation measures for impacts to special-status bird species is grossly inadequate. CDFW agrees. (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Because there is no evidence that the mitigation measures will be effective and no explanation how they will avoid or reduce the impact to a less than significant level,

MCWD-132

the DEIR/EIS cannot rely on the measures to support the conclusion that impacts will be less than significant. MCWD-132 cont.

n. ***The Analysis and Mitigation for Construction-Related Impacts to Wetlands and Other Jurisdictional Waters is Inadequate***

The DEIR/EIS's analysis of impacts to federal wetlands, federal other waters, and/or waters of the state during construction, suffers numerous flaws. Foremost, as explained above, the DEIR/EIS fails to analyze impacts to all of the wetlands and other jurisdictional waters that could be affected by the project. Although the DEIR/EIS identifies numerous areas that likely constitute jurisdictional waters under the state and federal definitions in close proximity to many project components, the DEIR/EIS fails to analyze impacts to those areas because they are located outside the arbitrary 50-foot study area. There is no explanation or evidentiary support for why the wetlands or other waters beyond 50-foot line would not be affected during construction or operation of the project. MCWD-133

Further, the mitigation included under Impact 4.6-3 suffers the same problems identified above for the other measures in this section of the DEIR/EIS. Most notably, the mitigation is improperly deferred and there is no explanation of why the mitigation is feasible and will be effective. Accordingly, the conclusion that impacts will be mitigated to a less than significant level is not supported by substantial evidence.

- Mitigation Measure 4.6-3. Mitigation Measure 4.6-3 calls for a wetland delineation to be conducted after project approval to determine the extent of jurisdictional waters that will be affected by the project. Because wetlands were not delineated prior to or concurrently with the preparation of the DEIR/EIS, the analysis of potential impacts is perfunctory. There is no way the reader or the CPUC can comprehend the full and accurate extent of potential impacts. Further, the mitigation measure states that compensation shall include the preparation of a Wetland Mitigation and Monitoring Plan (WMMP) to be prepared after project approval. The WMMP will include baseline information, monitoring methods and schedule, and "performance and success criteria." Problems with this measure abound. First, establishing the baseline is the first step in the analysis and cannot be deferred under any circumstance. Second, performance and success criteria must be included as part of the measure itself, if deferral of mitigation is to be permitted. Simply put, this measure does not comply with CEQA's most basic requirements. MCWD-134

o. ***The Discussion of Operation-Related Impacts and Mitigation Measures Are Inadequate.***

The DEIR/EIS states that any disturbance associated with pipeline repairs cannot be determined and therefore is not analyzed at all in the DEIR/EIS. (DEIR/EIS, p. 4.6-234.) CEQA, however, requires analysis of all components of the project and potential impacts that are reasonably foreseeable. Because CEQA is interpreted to afford the fullest possible MCWD-135

protection of the environment (*Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259), this is a low bar. As acknowledged in the DEIR/EIS, at least some level of repair work is reasonably foreseeable. Therefore, the DEIR/EIS must at least disclose in general terms the type of repair work that is expected and the potential for environmental impacts. MCWD-135 cont.

Impact 4.6-6 states that noise or disturbance from maintenance activities could directly or indirectly impact wintering plovers. (DEIR/EIS, p. 4.6-235.) But there is no analysis of what potential impacts might occur. Instead the DEIR/EIS attempts to justify the lack of analysis by suggesting impacts would be only short-term and temporary. But CEQA requires analysis of all potential environmental impacts including those that are only short-term or temporary. There must be a full discussion of impacts to snowy plover from maintenance and operations of the project. MCWD-136

Impact 4.6-6 also acknowledges that, over the life of the project, "migratory waterfowl could become sick or die from use of the brine storage basin, a significant impact." (DEIR/EIS, p. 4.6-237.) But the mitigation relied on to mitigate this impact only provides that bird deterrents "should" be utilized at the Brine Storage Basin, the type of bird deterrent "should" be determined by the lead biologist, and "should" be modified if the bird deterrents are either not sufficient at deterring birds from the Brine Storage Basin or pose a risk to wildlife. Because there is no mandatory language in the measure, it is entirely unenforceable. For that reason alone, the DEIR/EIS cannot rely on the mitigation measure to reduce the impact to less than significant. Moreover, the only evidence cited to support the measure is a single sentence stating that "bird deterrent measures (such as use of a falconer, bird whistles, and fine ropes placed over the pond) are used at the adjacent MRWPCA Regional Wastewater Treatment Plant to successfully deter most birds from their ponds," without explaining what "most" birds means. (DEIR/EIS, p. 4.6-237.) Thus, the DEIR/EIS acknowledges that the project will cause an unquantified number of birds to die, but because deterrent devices implemented for another project (similar to those recommended but not required here) successfully deterred most birds (ostensibly meaning more than half), the impact is considered less than significant. This explanation is entirely inadequate under CEQA. What amount of dead birds does the DEIR/EIS consider to be a significant impact? MCWD-137

The DEIR/EIS also fails to disclose impacts to wildlife species that would result from erosion control measures. Notably, as explained in comments from CDFW, the use of certain types of erosion-control methods would likely cause impacts to several species, including reptile and amphibian deaths. This potential impact is ignored entirely. The DEIR/EIS must analyze these potential impacts and require mitigation measures to ensure that the impacts are avoided or reduced. MCWD-138

Moreover, the DEIR/EIS fails to address whether impacts would occur to special status plants and other species that depend on groundwater. Indeed, the DEIR/EIS fails to address any impacts to groundwater-dependent ecosystems despite acknowledging that the project would result in substantial drawdown of groundwater levels and an increase in MCWD-139

salinity levels. These types of changes would obviously have an impact on overlying habitat and species. But these potential impacts are ignored entirely in the DEIR/EIS. MCWD-139 cont.

To address impacts that are identified as significant, the DEIR/EIS relies on many of the same mitigation measures that are fatally defective for the numerous reasons described above. The additional mitigation in this section suffers many of the same problems. There is no explanation why the mitigation measures are feasible or how they will be effective and how they will mitigate the impact to a less than significant level. Again it is not sufficient to acknowledge a significant impact will occur, then list a number of mitigation measures, and then baldly assert that the mitigation will reduce the impacts to a less than significant level. The DEIR/EIS must explain why the selected mitigation measures will work and the conclusion must be supported by substantial evidence. This critical component of the CEQA analysis is missing from every impact discussion in this section. MCWD-140

Impact 4.6-6 and Impact 4.6-7, in particular, rely on the same mitigation measures that are inadequate for the reasons described above. Like the other impacts in this section, there is no supporting evidence at all and no explanation regarding how the mitigation will work and why the impacts will be reduced to a less than significant level. This is a plain violation of CEQA and renders the DEIR/EIS inadequate as an informational document.

p. ***The Analysis and Mitigation for Operations-Related Impacts to Wetlands and Other Jurisdictional Waters is Inadequate.***

Impact 4.6-8 purports to analyze adverse effects on federal wetlands, federal other waters, and/or waters of the state during project operations. But the discussion only addresses impacts related to ground disturbance and maintenance activities. There is zero discussion regarding how the ongoing operation of the facilities (i.e., pumping groundwater) will impact wetlands and other jurisdictional waters overlying the groundwater aquifers. The notion that the significant drawdown caused by the project in the groundwater aquifers underlying, and likely hydrologically connected to, the wetlands and other jurisdiction waters would have no impact defies logic. As noted above, by lowering the groundwater table and increasing salinity levels, the project would likely impact those wetlands and other waters. Yet the DEIR/EIS is silent on this potential impact. MCWD-141

This failure further demonstrates that the 50-foot study area is arbitrary and fails to account for all of the project's potential environmental impacts, as described above. Despite the fact that the DEIR/EIS identifies numerous areas that are potential wetlands or other jurisdictional waters in close proximity to the project, the DEIR/EIS does not analyze potential impacts because the features are beyond the 50-foot line. Even if the 50-foot study area could be justified for surface impacts (as explained above, it cannot) the underground (i.e. groundwater) impacts undeniably extend much further. Indeed, the maps in the DEIR/EIS show that the groundwater levels would decline by substantial amounts over the span of several miles—not just within the 50-foot study area. But there is no discussion regarding how changes in groundwater levels, or increases in salinity levels, could affect

overlying wetlands or other groundwater-dependent ecosystems. The DEIR/EIS must be revised to analyze these potential impacts and identify feasible mitigation measures that will reduce the impacts.

Moreover, as with other impacts in this section, the DEIR/EIS relies on mitigation measures that are woefully inadequate to support the conclusion that these impacts would be less than significant with mitigation. The reasons that these mitigation measures are inadequate are described above. Notably, the measure constitute improper deferral of mitigation, lack enforceable standards, and improperly rely on other agencies' regulatory programs without any explanation how the mitigation measures will reduce the impacts to a level of insignificance.

MCWD-141 cont.

q. ***The Discussion Regarding Consistency with an Adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or Other Approved Habitat Conservation Plan is Inadequate.***

As explained in the DEIR/EIS, the preparation of an HCP for the former Fort Ord military base, which will supersede the current Fort Ord Habitat Management Plan, was already underway when the DEIR/EIS was published and was expected to be complete in late 2016. (Draft EIR, p. 4.6-252.) Because the HCP was not yet adopted, the DEIR/EIS claimed that the requirements and mitigation measures cannot be known at this time. (*Id*.) Even if that was true then, the information is available now or should be before project approval is considered. Therefore, the Final EIR must analyze whether the project is consistent with the HCP for the former Fort Ord military base.

MCWD-142

This impact also relies on the same mitigation measures that are inadequate for numerous reasons described above. Mitigation Measure 4.6-8 fares no better. The mitigation requires only that CalAm implement certain vague measures, "unless otherwise negotiated between CalAm and FORA." As explained previously, CEQA does not allow for project proponents to "negotiate" mitigation measures after project approval. (*CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 93 ["Fundamentally, the development of mitigation measures, as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval"].) Instead the measures must be fully enforceable at the time the project is approved and must identify specific performance criteria that ensure the impact will be less than significant. Mitigation Measure 4.6-8 does neither.

r. ***The Discussion of Cumulative Impacts is Inadequate.***

The cumulative impacts analysis is a mass of flaws. Foremost, the DEIR/EIS improperly relies on the significance conclusions for project-specific impacts to conclude that the cumulative impacts would not be cumulatively considerable. This approach has been rejected by the courts time and again. (See, e.g., *CBE v. Resources Agency* (2002) 103 Cal.App.4th 98,120; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721.) Just because a project does not cause a significant impact by itself, does not mean

MCWD-143

that the project contribution to a cumulatively significant impact is not cumulatively considerable. Indeed, as recognized in the CEQA Guidelines, a project's incremental effects may be cumulatively considerable even when its individual effects are limited. (CEQA Guidelines, §§ 15130, 15064, subd. (h)(1), 15355, subd. (b).) (*Ibid*.; see also *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1072 ["Under CEQA, a project having no significant effect on the environment when considered by itself may nonetheless have such an impact when considered in conjunction with-or cumulatively to-other past, existing or planned environmental influences. (CEQA Guidelines §§ 15130, subd. (a), 15064, subd. (h)(1))."].) But, here, the DEIR/EIS states that because certain project-specific impacts are mitigated to a less than significant level, the project's impact is not cumulatively considerable. This does not comply with CEQA's cumulative impact requirements.

For other cumulative impacts, the DEIR/EIS concludes that the project's contribution to a cumulative significant impact would not be cumulatively considerable because the project's contribution to the impact would be relatively small. For instance, the DEIR/EIS concludes that the project's contribution to cumulative impacts on wetlands or other waters would not be cumulatively considerable because, after mitigation, the MPWSP's residual effects "would be temporary and limited to a small percentage of wetlands habitat in the geographic scope of analysis." (DEIR/EIS, p. 4.6-260.) The courts have routinely rejected this type of "ratio" or "drop-in-the-bucket" methodology. (See *CBE v. Resources Agency* (2002) 103 Cal.App.4th 98,120; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721.) Under this reasoning, each cumulative project could individually gobble-up only a small percentage of the available wetlands until all of the wetlands are gone, but none of the projects' impact would be considered cumulatively considerable. This is impermissible under CEQA.

MCWD-143 cont.

Moreover, even if the methodology used in the DEIR/EIS was appropriate under CEQA, the cumulative impacts analysis is tainted by the DEIR/EIS's failure to adequately fully analyze and disclose all of the project-specific impacts on terrestrial biological resources, as explained above. And the cumulative impacts analysis relies on the same mitigation measures that, as already explained, are inadequate under CEQA. The EIR also fails to consider how the habitat restoration required under the CEMEX reclamation plan will be affected by the project. In fact the DEIR/EIS fails disclose or acknowledge the existence of the reclamation plan and associated revegetation plan for the CEMEX site, which requires restoration or slopes and successful revegetation in the areas that will be affected by the project. (See RMC Lonestar, Reclamation Plan, Lapis Plant, City of Marina, County of Monterey: dated August, 1989; revised October 22, 1988 (Items Nos. 22, 27 and 29) and April 10, 1991 (Items Nos. 20, 22, 27 and 28); see also Burleson Consulting, Inc., 2016, 2016 Annual Revegetation Report, Lapis Sand Plant, Marina California, report prepared for CEMEX by Burleson Consulting, Inc., dated December 2016). Notably, no active mining is occurring in the area where the slant wells are proposed and "significant portions of the dune slopes previously mined in the southern portion of the property are considered to have met

MCWD-144

reclamation requirements." (see 2016 SMARA Mine Inspection Lapis Sand Plant, CA MINE ID No. 91-27-0006, City of Marina, California, December 9, 2016, available at ftp://ftp.consrv.ca.gov/pub/smgb/February-08-2017/19%20RBM%2002082017-12B-1%20Lapis%20Plant%20(91-27-0006).pdf.) The DEIR/EIS must be updated to disclose how the project will impact reclamation and revegetation requirements for the CEMEX site.

MCWD-144 cont.

Finally, the cumulative impacts analysis is woefully light on information. Although the discussion notes that cumulative impacts may occur, there is no quantification of impacts or other information or data that would allow the reader or the CPUC to understand the extent of those impacts. As explained previously, conclusory statements without explanation and evidentiary support do not suffice.

MCWD-145

4. The DEIR/EIS's Discussion of Coastal Erosion Impacts is Inadequate

The DEIR/EIS reveals that there is a likelihood coastal retreat could migrate the beach inland such that the subsurface slant well casings, concrete well head vaults, electrical panels, and certain sections of conveyance pipelines would become located on the beach within the project lifetime. (DEIR/EIS, pp. 4.2-48 through 4.2-52; 4.2-68 through 4.2-69.) The DEIR/EIS further acknowledges that the exposure of the project components to wave action, storm events, and rip embayments could alter the existing natural beach dynamics and the coastal environment, resulting in an increase in beach erosion and/or an interruption in the sand supply to other beaches along the Monterey Bay. The DEIR/EIS, however, fails to adequately analyze the potential for such impacts and fails to include adequate mitigation or alternatives to minimize or avoid those impacts.

The DEIR/EIS states the coastal retreat study (ESA, 2014 – Appendix C-2) anticipated that the subsurface slant wells in the CEMEX active mining area could become located on the beach within the project lifetime. It further states coastal retreat study assumes a worst case scenario for planning purposes; the actual amount or rate of coastal retreat could be less. (DEIR/EIS, pp. 4.2-69.) While perhaps this was accurate in 2014, the failure to update this study based more recent information violates the CEQA and NEPA. For example, we understand the annual erosion rate of 2014 at the CEMEX coastline nearly doubled from 220,000 to 380,000 cubic feet in 2016. Does the DEIR/EIS account for this? Moreover, the public cannot determine what annual erosion rate was used in the DEIR/EIS. What annual erosion rate was used in the DEIR/EIS and Appendix C-2? Is the 15 feet of scour that was observed around the exposed section of the outfall during the winter storm surge in early March 2016 that exposed the buried slant test well connection to the MRWPCA ocean outfall pipe (see DEIR/EIS, p. 4.2-22) consistent with the 2014 coastal retreat study projections? In addition, the DEIR/EIS's failure to use available computer-aided modeling as identified in Appendix C-2 is inconsistent with CEQA and NEPA's requirements.

MCWD-146

Figures 4.2-7 and 4.2-8 appear inaccurate and may mislead the public and decision makers. Is the current test well head 30 feet in elevation from the intertidal zone as shown in

MCWD-147

Figures 4.2-7? Does Figure 4.2-8 (which claims to be a representative image) representative of all each slant well location and the slant well that would most likely be impacted by coastal retreat?

MCWD-147 cont.

The DEIR/EIS states the final design locations for the slant wells were relocated approximately 400 feet further inland from the originally proposed locations to the locations shown on Figures 4.2-7, 4.2-8, and 3-3. (DEIR/EIS, p. 4.2-69.) Therefore, the DEIR/EIS concludes the proposed slant wells would not be exposed during the operational life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment. The use of the 20- to 25-year operational life for the slant wells to evaluate this impact is not consistent with the other sections of the DEIR/EIS, which never mention the potential for the slant wells being deconstructed (with the exception of the existing test well) or reconstructed over the 40 year life of the project. This inconsistency must be addressed in the revised DEIR/EIS.

MCWD-148

The DEIR/EIS states that the anticipated future presence of the test slant well on the beach due to coastal retreat would result in a significant impact, but that Mitigation Measure 4.2-9 (Slant Well Abandonment Plan) would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissioning before the beach migrates inland to the location of the subsurface slant wells. (DEIR/EIS, pp. 4.2-71 through 4.2-72.) This conclusion is not supported by the DEIR/EIS's discussion. Moreover, the mitigation measure does not meet CEQA's requirements.

First, the Mitigation Measure 4.2-9 impermissibly delegates to CalAm the responsibility for annual monitoring of the rate of coastal retreat relative to the slant wells at the CEMEX site and the discretion to determine when the slant wells and associated pipelines have 5 years before exposure. (DEIR/EIS, p. 4.2-72.) There is not oversight or public reporting requirement. This violates CEQA requirements that "[m]itigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments." (*Center for Biological Diversity v. California Dept. of Fish and Wildlife* (2015) 62 Cal.4th 204, 237 [citing Guidelines § 15126.4, subd. (a)(2)].)

MCWD-149

Second, the mitigation measure states the sections of slant well casing and pipelines at risk of exposure shall be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (ESA, 2014) or as directed by any permit condition. (DEIR/EIS, p. 4.2-72.) This constitutes improper deferral of mitigation and fails to address that the Coastal Erosion Study concludes (albeit inadequately) that none of the slant wells casings or pipelines (with the exception of the test well) would be uncovered with the time period specified in the mitigation measure. Moreover, deconstruction of the test well and slant wells to a depth that they would not result in additional coastal erosion in the foreseeable future after the project is completed must also be addressed. What happens if the slant wells casings or pipelines are uncovered after 2060?

Finally, this high likelihood of exposure of the test well structures is enough reason to decommission the test well as required by the CCC in February 2018 or sooner. MCWD-149 cont.

5. The DEIR/EIS's Discussion of Land Use Impacts Fails to Disclose or Analyze the Numerous Land Use Conflicts

Under CEQA, an EIR must discuss any inconsistencies between a proposed project and applicable general plans, specific plans, and regional plans. (CEQA Guidelines, § 15125, subd. (d).) A project is consistent with a plan "if, considering all its aspects, it will further the objectives and policies of the . . . plan and not obstruct their obtainment." (*FUTURE v. Board of Supervisors* (1998) 62 Cal.App.4th 1332, 1336.) In *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342, the court rejected the county's claim that a project was consistent with local plans because the EIR at issue did not "contain an adequate *discussion*" of local plan consistency. (*Id.* at p. 381, emphasis added.) The purpose of the required analysis is to identify any inconsistencies and to evaluate and consider ways to modify the project to avoid them. (*Orinda Assn. v. Board of Supervisors* (1986) 182 Cal.App.3d 1145, 1168-1169 [referencing EIR discussion of plan inconsistencies and mitigation measures to avoid them].)

Here, the DEIR/EIS's discussion regarding plan inconsistency and land use impacts does not satisfy CEQA. First, the land use section of the DEIR/EIS claims that all policies applicable to the project and relevant to land use are listed in Table 4.8-2. That is obviously not true. Table 4.8-2 includes only a tiny fraction of plans and policies that apply to the project. For example, in Section 4.4, Groundwater Resources, the DEIR/EIS notes that there are numerous state and local plans, policies, and laws that apply to the project. (DEIR/EIS, pp. 4.4-32 - 4.4-40.) But the Groundwater Resources section only includes a consistency determination for a few of these policies, and none are discussed in Section 4.8, despite the DEIR/EIS's promise that "a general overview of these policy documents is presented in Section 4.8, Land Use, Land Use Planning, and Recreation." (DEIR/EIS, p. 4.4-38.) MCWD-150

Worse yet, the land use section, including Table 4.8-2, does not even list all of the relevant plans and policies that were adopted specifically for the purpose of avoiding or mitigating an environmental effects – an identified threshold of significance for land use impacts. (DEIR/EIS, p. 4.8-34.) In fact, the table does not even include the policies and plans that are identified in other sections of the DEIR/EIS. For example, the Terrestrial Biological Resources section alone lists 30 pages of plans and policies related to protecting environmental resources and identifies copious inconsistencies or "potential inconsistencies." (DEIR/EIS, pp. 4.6-88 – 4.6-118 [Table 4.6-4].) Although numerous inconsistencies are identified, they are not analyzed or discussed anywhere in the DEIR/EIS. (See *Napa Citizens for Honest Government v. Napa County Board of Supervisors, supra,* 91 Cal.App.4th at p. 381 [EIR overturned because it did not include an adequate discussion regarding plan inconsistencies].) Instead, the DEIR/EIS simply lists the plans and policies and states in conclusory fashion that the proposed mitigation measures would bring the MPWSP into conformity with the plans and polices. (See, e.g., DEIR/EIS, pp. 4.6-162-164; 4.6-203-204;

4.6-219; 4.6-230; 4.6-232-233; 4.6-240-241; 4.6-245-246; 4.6-248-250.) There is no support for these conclusions and they are likely not accurate in most instances. Even if the DEIR/EIS could accurately conclude that an impact is less than significant after mitigation based on the thresholds of significance that does not mean the project would be consistent with all relevant plans and policies. For example, there are numerous local policies that prohibit development in protected habitat and ESHA, or otherwise seek to protect and conserve such habitat. (See DEIR/EIS, 4.6-88 – 4.6-118 [Table 4.6-4].) But the project is sited directly in ESHA and would adversely impact protected habitat. Given the project's inconsistency with the City of Marina's LCP and Coastal, it is remarkable those issues are not address in this Chapter. In fact, unless the City of Marina amends its LCP, it would appear the MPWSP cannot be approved. (Attached as Exhibit "5" are the Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839.) The DEIR/EIS failure to address this fundamental issue requires recirculation. In any event, even if the consistency determination could be justified, CEQA requires a much better explanation regarding *how* the project would be consistent with the plans or policies. The conclusory statements in the DEIR/EIS do not suffice.

MCWD-150 cont.

Further, because the land use section includes a threshold of significance that specifically states that a significant impact would occur the project would "conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect, all of the inconsistencies and "potential inconsistencies" identified in other sections of the DEIR/EIS must be discussed in the land use section and analyzed against this threshold. The required analysis will likely uncover numerous significant environmental impacts that are currently not disclosed, including some that are likely unavoidable. The DEIR/EIS must also discuss ways the inconsistencies can be avoided and whether any of the inconsistencies are indicative of any other environmental impacts. Because the updated analysis will require adding significant new information to the DEIR/EIS, the documents must be recirculated for public review and comment.

6. The DEIR/EIS's Discussion of Hazards and Hazardous Materials Is Inadequate.

The DEIR/EIS reveals that there is a high likelihood that hazardous materials are present in the soil and groundwater in the project area, which pose significant health risks to workers and the public. (DEIR/EIS, pp. 4.7-2 through 4.7-12; 4.7-28 through 4.7-30.) Given the nature of the project, and particularly the fact that it involves significant disruption of soil and groundwater in the area, the project is likely to have significant impacts regarding hazards and hazardous materials. The DEIR/EIS, however, fails to adequately analyze the potential for such impacts and fails to include adequate mitigation measures to minimize or avoid those impacts.

MCWD-151

For Impact 4.7-2, for example, the DEIR/EIS explains that the potential for contaminated soil and groundwater to be released into the environment is considered

significant and proposes two mitigation measures. Neither the discussion of the impact or the proposed mitigation is adequate.

Although the DEIR/EIS discloses that a potential impact could occur including "health and safety risks" to workers and the public, it fails to describe the type of health risks that are present or the severity of the impact. (DEIR/EIS, p. 4.7-28.) Nevertheless, the DEIR/EIS states that implementation of Mitigation Measure 4.7-2a and Mitigation Measure 4.7-2b would reduce the impact to a less-than-significant level. There is, however, zero explanation of how the mitigation measures will operate and how they will reduce the impact to a less-than-significant level.

Further, the measures merely call for the preparation of various plans after the project is approved, which constitutes improper deferral of mitigation. (See *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281 ["impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating that the impact can be mitigated in the manner described in the EIR"].) Most glaringly, rather than including performance standards in the mitigation as CEQA requires, Mitigation 4.7-2b requires standards to be developed at some future time. For example, the measure states that "the plan must identify protocols for testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste." (DEIR/EIS, p. 4.7-30.) It also calls for the development of a groundwater dewatering and disposal plan that will "identify the locations at which groundwater dewatering is likely to be required, the method to analyze groundwater for hazardous materials, and appropriate treatment or disposal methods." (*Ibid*.) These are precisely the types of issues that must be resolved before the project is approved to demonstrate that the mitigation will be feasible and effective.

MCWD-151 cont.

The analysis under Impact 4.7-4 is similarly defective. The analysis simply states that hazardous materials storage and stormwater permitting requirements would ensure the risk of release of hazardous materials during construction would be low. There is no explanation how compliance with those requirements would reduce this particular impact to a less-than-significant level. Also, CEQA contains certain notice and consultation requirements for projects within a quarter-mile of a school site "that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code." (Pub. Resources Code, § 21151.4.) The DEIR/EIS does not discuss compliance with section 21151.4.

MCWD-152

Finally, the cumulative impacts analysis is also inadequate in that it relies on Mitigation Measures 4.7-2a and 4.7-2b to reduce the project's contribution to potential releases of or exposure to hazardous materials in soil or groundwater to a less-than-

MCWD-153

significant level. As set forth above, these measures improperly defer mitigation in violation of CEQA. MCWD-153 cont.

7. The DEIR/EIS's Discussion of Greenhouse Gas Emissions is Inadequate.

The DEIR/EIS's discussion of Greenhouse Gas Emissions (GHGs) is plagued by the inadequacies from Chapter 4.18, Energy Conservation, discussed below. Notably, the proposed mitigation does not satisfy CEQA.

The proposed mitigation in DEIR/EIS Section 4.11, Greenhouse Gas Emissions, is improperly deferred and inadequately discussed in violation of both CEQA and NEPA. All of the problems with Mitigation Measure 4.18-1, which is also relied on to mitigate GHG emissions, are described below under the discussion of the energy analysis.

CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both "feasible and efficacious." (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70 ("*CBE v. City of Richmond*"); see also *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 669-71 [county improperly deferred mitigation when it allowed a land management plan for special status vernal pool species to be developed after certification of an EIR]; *Gentry v. City of Murietta* (1995) 36 Cal.App.4th 1359, 1396 [conditioning a permit on "recommendations of a report that had yet to be performed" constituted improper deferral of mitigation].) "A study conducted after approval of a project will inevitably have a diminished influence on decision-making. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA." (*CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 92, quoting *Sundstrom, supra,* 202 Cal.App.3d at p. 307.) "Fundamentally, the development of mitigation measures as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval; but rather, *an open process that also involves other interested agencies and the public*." (*Ibid.,* emphasis added.) MCWD-154

As an added consideration, NEPA requires that "an EIS contain a detailed discussion of possible mitigation measures." (*Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 351.) "Mitigation must 'be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.'" (*Carmel-By-the-Sea v. U.S. Dept. of Transportation* (9th Cir. 1997) 123 F.3d 1142, 1154.) "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." (*Northwest Indian Cemetery Protective Assn. v. Peterson* (9th Cir. 1986) 795 F.2d 688, 697, *rev'd on other grounds, Lyng v. Northwest Indian Protective Assn.* (1988) 485 U.S. 439 ("*Northwest Indian Cemetery*").) A perfunctory description of mitigation measures is inconsistent with the "hard look" an agency is required to render under NEPA. (*Neighbors of Cuddy Mountain v. U.S. Forest Service* (9th Cir. 1998) 137 F.3d 1372, 1380-1381 ("*Cuddy Mountain*") [EIS

inadequate where agency did not provide an estimate of effectiveness of a mitigation measure, nor provide a reasoned explanation as to why such an estimate was not possible].)

Mitigation Measure 4.18-1 violates these basic requirements for the reasons set forth below in comments related to Section 4.18, Energy Conservation.

Mitigation Measure 4.11-1, subsection (b) suffers from similar fatal flaws. The qualifier that CalAm need only make a "good faith effort" (see DEIR/EIS, p. 4-11.21) to obtain renewable energy for operations of the project makes the mitigation unenforceable and a far cry from what CEQA and NEPA require. (See 95 *CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 95; CEQ Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the effects of Climate Change in NEPA Reviews, p. 19 ["agencies should carefully evaluate the quality of [potential] mitigation to ensure it is additional, verifiable, durable, enforceable, and will be implemented].) The DEIR/EIS provides no definition of what constitutes "good faith," making it appear as though the term was included merely to give CalAm an easy out.

In January 2017, California Air Resources Board (CARB) released the Draft 2017 Climate Change Scoping Plan Update—which identifies the overall strategy to reduce GHG emissions by 40 percent below 1990 levels by 2030. With respect to the water sector, the plan identifies reduction of energy intensity as the primary reduction strategy for the water sector. (2017 Scoping Plan Update, p. 126.) While the DEIR/EIS acknowledges that the vast majority of GHG emissions associated with long-term operation of the project would be due to the astronomical energy use in the desalination process, Mitigation 4.11-1 is hardly adequate to ensure any reduction in the project's electricity consumption. MCWD-154 cont.

The suggestion that CalAm is actually required to do anything under this mitigation measure is misleading. Rather, it amounts to a bald attempt to avoid performing all feasible mitigation measures. Moreover, as noted below, CEQA and Appendix F require that a discussion and analysis of renewable energy options must be included in the EIR. But instead, the DEIR/EIS defers this analysis and allows CalAm to proceed without implementing any feasible renewable energy options even though such options would reduce GHG emissions and conserve energy.

Worse yet, there are readily available mitigation measures that would reduce this significant and unavoidable impact (potentially even to a less-than-significant level). For example, GHG emissions associated with the project could be reduced by purchasing carbon offsets. Yet, the DEIR/EIS summarily dismisses the use of carbon offsets—concluding that the indirect GHG emissions are associated with electricity generation by fossil fuel plants, which are already subject to CARB's cap-and-trade program. However, under the cap-and-trade program carbon offsets are limited to eight percent of a covered entity's compliance obligation per compliance period. (Cal. Code Regs. tit. 17, § 95856, subd. (h)(A).) Mitigation for the project's GHG emissions should not rest solely on outside programs and regulations.

At a minimum, the CPUC should require CalAm to purchase carbon offsets sufficient to reduce the GHG emissions to a "net zero" level (i.e., sufficient to fully offset the emissions of the project). Carbon offsets are feasible and are frequently used to offset GHG emissions for projects, including desalination projects. (See *North Coast Rivers Alliance v. Marin Municipal Water District Bd. of Directors* (2013) 216 Cal.App.4th 614, 653 [in approving a desalination plant project, "the District's Board adopted a policy requiring offsets for all project-related GHG emissions"].) Further supporting the feasibility of carbon offsets, the analysis in the 2017 Draft Scoping Plan Update finds that cap-and-trade is the lowest cost, most policy efficient approach, and provides certainty that the 2030 goals will be met, even if other measures fall short. (2017 Draft Scoping Plan Update, pp. 69-72.) It should also be noted that the MBNMS Guidelines for Desalination Plants states that "Applicants should also identify measures available to reduce electricity use and related emissions (e.g., energy efficient pumps, low resistance pipes, ***use of sustainable electricity sources***, etc.) ***and to mitigate for all remaining emissions (e.g., purchase of offsets and/or credits that are consistent with the policies and guidelines of the California Global Warming Solutions Act of 2006 (AB 32), etc.***)." (see p. 7, emphasis added, available at http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf)

MCWD-154 cont.

It is important to emphasize that simply because the DEIR/EIS concludes that all GHG emissions impacts are significant and unavoidable does not absolve the CPUC or Sanctuary of its obligation under CEQA to mitigate potential environmental impacts to the fullest extent feasible. In other words, finding GHG emissions significant and unavoidable cannot save the DEIR/EIS from its inadequacies. (See e.g., *California Clean Energy Committee v. City of Woodland* (2014) 225 Cal.App.4th 173 ("*California Clean Energy Committee*") [mitigation measure in EIR requiring further study of potential urban decay impacts was improper, despite EIR's conclusion that the impact was significant and unavoidable].) The DEIR/EIS must be revised to include fully enforceable mitigation measures that are supported by substantial evidence.

8. The DEIR/EIS's Discussion of Public Services and Utilities Is Inadequate.

The DEIR/EIS discussion of Public Utilities fails to discuss the MPWSP's potential impacts on MCWD's service area and water supplies, including the Regional Urban Water Augmentation Project ("RUWAP") Desalination Element. As addressed above, updated modeling based on the best available information is needed to ensure the MPWSP will not impact MCWD's wells, which serve as the sole source of supply for the Marina/Ord Community. The DEIR/EIS also needs to address here, or at minimum in the cumulative impacts analysis, how the MPWSP would affect the salinity levels of the proposed source wells for the RUWAP Desalination Element, either in this section or in its cumulative impacts analysis. The discussion must disclose whether increased salinity levels at the proposed RUWAP source well locations due to the MPWSP would require MCWD to install additional infrastructure for the treatment of source water or increase energy requirements (as well as the associated air quality/GHG emissions and impacts associated with any increased energy requirements).

MCWD-155

The DEIR/EIS should also confirm that MRWPCA's ocean outfall has capacity to handle both MPWSP discharges and MCWD's vested rights to the facility, including discharges from the RUWAP Desalination Element, as well as MRWPCA's ordinary use. To the extent MCWD's ability to use the outfall would be affected or additional requirements would be imposed on MCWD, this information should be disclosed in the revised and re-circulated DEIR/EIS. MCWD-156

Finally, under the DEIR, MCWD's 30" pipeline in General Jim Moore Blvd. has been made a critical component of the MPWSP delivery system. The New 36" Transmission Main from the MPWSP desalination plant terminates into MCWD's pipeline. From there, the water is carried through MCWD's water system, and then back to the Cal Am system to deliver its water to its proposed Terminal Reservoir and to the Monterey Peninsula. This is not clearly described nor discussed in the DEIR/EIS and is shown as a pipeline "gap" between the proposed Terminal Reservoir and the end of the New Transmission Main in many of the Figures in the DEIR/EIS. The DEIR/EIS does not address the capacity limitations in MCWD's pipeline that may be exceeded by adding additional water from the MPWSP to flow through this pipeline in addition to the capacity needed by MCWD to serve the South Ord portion of its Ord Community service area when those areas develop and the capacity needed by MRWPCA to convey GWR water.

Further, the DEIR/EIS does not explain how MCWD's pipeline is to be operated with the new supply to allow it to adequately serve both CalAm's and MCWD's water systems. MCWD currently allows Cal Am to use the pipeline for Carmel River water injection into the Seaside Basin (Phase 1 and Phase 2 ASR) under an Agreement between the two parties (2007 Wheeling Agreement). However, subject to operational studies, the pipeline may not be able to be used simultaneously to convey (1) MCWD's water south to meet service area demands, (2) Carmel River water north for ASR injection, (3) GWR water south to the Peninsula, (4) extracted ASR water south to the Peninsula, and (5) direct distribution of CalAm's desalination water south to the Peninsula. For example, during January, how will the MCWD pipeline be operated if Carmel River is available to convey north in the MCWD pipeline for ASR injection while at the same time CalAm wants to convey GWR water and desalination water south in the same pipeline? There are significant complexities to overcome in operating the pipeline in this manner, which may cause the need for additional booster pumps, reservoirs, a completely separate pipeline to convey all or some of the desal water, and/or a reduction in pipeline life through intensified use, all of which have not been adequately addressed in the DEIR/EIS. This is another example of the failure of the DEIR/EIS to perform an integrated total water system analysis of CalAm's system. MCWD-157

In order to explore whether MCWD's pipeline can accommodate both MCWD's needs and CalAm's needs, the DEIR/EIS must provide CalAm's average, max day, and peak hour demands for the use of the pipeline and a projected use of the pipeline broken down for

each calendar month of the year, including proposed injection and extraction into and from the Seaside basin, for both the 9.6 MGD plant and the 6.4 MGD plant. MCWD-157 cont.

Additionally, MCWD identified significant conflicts between the planned MPWSP New Transmission Main and the existing/planned MCWD utilities in Light Fighter Drive and General Jim Moore Blvd. From DEIR/EIS figures 3-8 and 3-9, the MPWSP Transmission Main conflicts with the existing and planned MCWD facilities and possibly conflicts with other utilities as well (e.g. PG&E). The DEIR/EIS does not adequately address the conflicts in the alignment of the utilities and how those are to be mitigated. MCWD-158

9. The DEIR/EIS's Discussion of Energy Consumption and Mitigation is Inadequate.

The DEIR/EIS's discussion of energy conservation and proposed mitigation in Section 4.18, Energy Conservation, is inadequate under CEQA and NEPA.

CEQA Guidelines Appendix F provides that the "[p]otentially significant energy implications of a project shall be considered in an EIR." As recently explained in *California Clean Energy Committee, supra,* 225 Cal.App.4th at p. 203, "an EIR is 'fatally defective' when it fails to include a detailed statement setting forth the mitigation measures proposed to reduce wasteful, inefficient, and unnecessary consumption of energy." The court in that case was emphatic that the provisions set forth in Appendix F are mandatory, and failure to include the items listed under Appendix F, Section II (EIR Content) renders an EIR inadequate. (*Id*., at pp. 209-213.) The energy discussion in the DEIR/EIS does not address all of the items in Appendix F and is inadequate in numerous other respects. MCWD-159

s. ***The DEIR/EIS fails to analyze renewable energy options.***

In direct contravention of Appendix F and the court's holding in *California Clean Energy Committee, supra,* 225 Cal.App.4th 173, the DEIR/EIS fails to analyze renewable energy options. The introduction to Appendix F states that its goals include "increasing reliance on renewable energy sources." (CEQA Guidelines, Appendix F, § I, subd. 3.) Appendix F further states that "[m]itigation measures may include: [¶] … [¶] 4. Alternate fuels (particularly renewable ones) or energy systems." (*Id*., § II, subd. D.4.) The DEIR/EIS barely pays lip service to a single option for renewable energy—the Landfill-Gas-to-Energy Option. (DEIR/EIS, p. 4.18-13.) Despite the fact that it would substantially reduce energy consumption, the DEIR/EIS provides no analysis of this option. (*Ibid*.) Instead, the DEIR/EIS states that "[i]mplementation of this option and the construction of associated interconnected improvements would require separate environmental review and are not evaluated in this EIR/EIS." (*Ibid*.) MCWD-160

This is not appropriate. To comply with CEQA, this feasible renewable energy option is required to be included and analyzed in the DEIR/EIS, and discussed as mitigation in accordance with Appendix F. (See also *California Clean Energy Committee, supra,* 225 Cal.App.4th at p. 213 [holding EIR "failed to comply with the requirements of Appendix F to the Guidelines by not discussing or analyzing renewable energy options"]; *Id*. at p. 213, ["the

requirement to adopt energy impact mitigation measures 'is substantive and not procedural in nature and was enacted for the purpose of requiring the lead agencies to focus upon the energy problem in the preparation of the final EIR.' [Citation.]"].)

Moreover, any future review and approval of this project component in a separate environmental document would, as contemplated in the DEIR/EIS, constitute improper piecemealing under CEQA. CEQA requires that all project components and all reasonably foreseeable project activities must be analyzed together in a single EIR. (See *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 396; CEQA Guidelines, § 15378, subd. (a) [the term "project" under CEQA is defined as the "whole of an action"].) Similarly, federal regulations implementing NEPA prohibit the "segmentation" of environmental analysis by mandating that "[p]roposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." (40 C.F.R., § 1502(a).) Therefore, the feasible option that would mitigate energy impacts must be analyzed now as part of the DEIR/EIS. MCWD-160 cont.

t. ***The DEIR/EIS ignores indirect energy consumption associated with construction of the Project.***

The DEIR/EIS completely ignores the massive amount of electricity and energy that would be indirectly consumed during construction of the project. To skirt the disclosure of indirect energy consumption and to avoid any analysis, the DEIR/EIS states that the amount of electricity and indirect energy consumption that would be associated with the project is unknown and cannot be estimated, but is not expected to be substantial. (DEIR, p. 4.18-14.) This is inconsistent with the previous statement in the DEIR/EIS that "indirect energy use typically represents three-quarters of the total construction energy consumed, while direct energy use represents about one-quarter." (*Ibid*.) In other words, based on that statement, it is reasonable to assume that at least three times the amount of energy use disclosed and analyzed in the DEIR/EIS would be consumed by activities that, although indirect, are attributable to the project. But the DEIR/EIS fails to even attempt to quantify the amount of electricity and indirect energy consumption or discuss ways to reduce the consumption. Without full disclosure of energy consumption and a complete analysis, it is impossible for the reader (and the decisionmakers) to understand the full construction impacts of the project, as they relate to energy. MCWD-161

u. ***The analysis of energy consumption during Project operations is conclusory and not supported by substantial evidence.***

As an initial matter, the DEIR/EIS fails to provide adequate explanation to support the assumptions upon which the project's energy consumption is based. The DEIR/EIS states that CalAm's operational electrical power demand for the proposed project is estimated to be approximately 63,164 MWh per year, which would result in a net increase in CalAm's annual electrical power demand for water production of approximately 51,698 MWh per year. (DEIR, p. 4.18-16.) But there is no explanation how the 63,164 MWh per year figure was derived—making it impossible for the reader to assess the veracity of that number. The MCWD-162

document cited to support this number ("CalAm 2016") provides little help.[24] The document is a one page table that provides very little by way of explanation for how the energy demand was calculated. In fact, the amount of energy consumption for the MPWSP Desalination Plant appears to be based entirely on an email from CDM Smith, the contents of which are not described in the EIR itself[25] (CalAm 2016). This table also provides zero information regarding the project's energy peak demands, costs, fluctuations in energy use due to intake salinity and water temperature, power supply availability in the Monterey region during peak periods, or electric line upgrade requirements. Please explain how these numbers changed so dramatically from prior estimates.

MCWD-162 cont.

Furthermore, the analysis of energy consumption during project operations (Impact 4.18-2) is conclusory and unsupported by substantial evidence. After disclosing the energy consumption during operations would be astronomical (63,164 MWh of electricity and 26,000 gallons of fuel annually), the DEIR/EIS provides very little discussion regarding how energy use could be reduced. There is no discussion as to the effectiveness of the energy efficient design elements, which are proposed to be incorporated into the project. Nor is there any discussion of accessing available sustainable electricity sources. Instead, the discussion purports to justify the enormous energy consumption on the basis that the project will help CalAm provide water to its customers.

That is not the purpose of energy analysis (or an EIR for that matter). If the CPUC determines that the project's benefits outweigh its significant impacts, and that determination is supported by substantial evidence, it can make such findings in a statement of overriding considerations if and when it approves the project. (See CEQA Guidelines, § 15093.) But that does not excuse the CPUC from proposing mitigation that could reduce significant energy impacts.

MCWD-163

Notably, the DEIR/EIS itself mentions at least one feasible way to mitigate this impact—implementation of the Landfill-Gas-to-Energy Option, which would provide an alternative source of power for the project. But the DEIR/EIS does not consider this mitigation measure or any others. The Section 4.11, Greenhouse Gas Emissions, of the DEIR/EIS even acknowledges, although without much elaboration, that "there may be

[24] / In any event, the data relied on to support this determination must be presented and explained in the draft EIR itself, and not buried in an incompressible report that is merely cited by the DEIR/EIS. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 422 (*"Vineyard"*) ["The data in an EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project. Information 'scattered here and there in EIR appendices or a report 'buried in an appendix,' is not a substitute for 'a good faith reasoned analysis.' [Citations.]"].)

[25] / It is impossible to verify the numerical figures set forth in the DEIR/EIS for the MWSP Desalination Plant, itself.

additional feasible energy reducing features available to reduce the electrical consumption associated with the project." (DEIR/EIS, p. 4.11-22.)

MCWD-163 cont.

v. ***The DEIR/EIS improperly defers mitigation for Impact 4.18-1.***

Mitigation Measure 4.18-1 is improper and cannot support a less-than-significant impact determination. This measure constitutes improper deferral of mitigation because it merely requires CalAm to prepare a plan that will identify mitigation measures *after* project approval. (DEIR/EIS, p. 4.18-15.) A fundamental requirement of CEQA is that the formulation of mitigation cannot be deferred until after project approval except in limited circumstances, as set forth above. Mitigation Measure 4.18-1 provides no performance criteria; there is no explanation (or reason) why mitigation cannot be developed now; and there is no assurance the mitigation will be both feasible and efficacious. In fact, the measure only requires the yet-to-be determined mitigation measures "where feasible" or "to the maximum extent feasible." (DEIR/EIS, p. 4.18-15.) Thus, in addition to being improperly deferred, the measure has absolutely no teeth. There is no support for the conclusion that the mitigation measures would reduce the impact to a less-than-significant level.

MCWD-164

Mitigation Measure 4.18-1 also falls far short of federal standards, which are set forth in the above, in that there is an utter lack of discussion or quantification of the estimated effectiveness of energy efficiency measures with respect to construction impacts. The DEIR/EIS instead merely provides the conclusory statement that with mitigation (the substance of which is to be determined at a later date), the significant energy impact would somehow be reduced to a less-than-significant level. This cursory and unsupported discussion does not satisfy NEPA requirements. (See *Northwest Indian Cemetery, supra*, 795 F.2d, at p. 697; *Cuddy Mountain, supra,* 137 F.3d at pp. 1380-1381.)

Moreover, there are numerous additional mitigation measures that would reduce this impact that are both feasible and widely accepted, but are not considered in the DEIR/EIS. For example, the CPUC could require that CalAm use only the most efficient off-road equipment and vehicles to reduce the amount of fuel consumed by project activities or include other mechanisms to ensure greater fuel efficiency for equipment and vehicles. Further, as explained in CEQA Guidelines, Appendix F, "the discussion should explain why certain measures were incorporated into the project and why other measures were dismissed." (§ II, subd. D.1.) The DEIR/EIS fails to do this.

w. ***The DEIR/EIS fails to adequately address transportation energy impacts.***

Appendix F states that the environmental impacts subject to the EIR process include "[t]he project's projected transportation energy use requirements and its overall use of efficient transportation alternatives. (§ II, subd. C.6.) Here the project would result in an additional 60 commuter vehicle trips per day. (DEIR/EIS, p. 4.18-16.) Yet, the DEIR/EIS concludes that the energy impacts from operation of the project would be less than significant—and therefore fails to consider mitigation for transportation energy impacts. (See *California Clean Energy Committee, supra,* 225 Cal.App.4th at p. 210 [EIR analysis

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deficient where it did not assess or consider mitigation for transportation energy impacts of the project].) The CPUC should consider mitigation measures that would reduce the amount of fuel consumption from vehicle trips such as a ride-share or electric vehicle program or offer alternative modes of transportation if the amount of trips required cannot be reduced by other means. (See CEQA Guidelines, Appendix F, § C.6 [discussion must include the project's "overall use of efficient transportation alternatives"].)

MCWD-165 cont.

x. ***The DEIR/EIS conclusion as to Impact 4.18-3 is unsupported by substantial evidence.***

The conclusion under Impact 4.18-3 that the project would not constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations is conclusory and not supported by substantial evidence. There is no discussion of peak or base period electrical demand or any other facts or evidence in the DEIR/EIS to support the conclusion that impacts would be less than significant.

For example, just based upon the statement that the proposed project would result in a net increase of electrical demand of 51,698 MWh per year, would mean that if you assume that the project is in constant 24/7 electrical use, the new electric generating capacity required to supply that new energy demand would be 5.90 Mwh per hour or 141.6 Mwh per day. The actual peak energy demands could be higher and coincide with the existing peak energy demands for this area, which would result in even greater environmental impacts.

MCWD-166

Given that Moss Landing is PG&E's transmission hub for this area, it would not be unreasonable to assume that this additional energy use would be supplied at times during peak periods from the Moss Landing Power Plant, resulting in increases in power plant cooling water demands from Monterey Bay and increased amounts of air pollutants generated by burning GHG-intensive fuel in this very region.

The DEIR/EIS lacks area-specific analysis of whether the PG&E sub-transmission electric lines from Moss Landing to the proposed project site are sufficient to meet this new electricity demand or whether those lines will need to be upgraded resulting in additional indirect project impacts.

In fact, the conclusion appears to be based entirely on a personal communication with PG&E via email, the contents of which are not described in the EIR itself. This total lack of a specific discussion as to the new significant electric generation and sub-transmission requirements and their impacts on the environment in a DEIR/EIS by the CPUC—which directly regulates PG&E—is highly unusual and emphasizes the sweeping inadequacy of the DEIR/EIS's discussion on energy impacts. The facts and evidence that support the conclusions must be included in the DEIR/EIS itself so the public and decisionmakers can readily evaluate the information and determine whether the conclusions are accurate. (See e.g., *Vineyard, supra,* 40 Cal.4th at p. 422.)

y. ***The DEIR/EIS's discussion of cumulative impacts related to energy conservation is inadequate.***

An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable." (CEQA Guidelines, § 15130, subd. (a). A project's incremental contribution is cumulatively considerable if "the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (CEQA Guidelines, § 15065, subd. (a)(3).) The DEIR/EIS plainly fails to comply with CEQA with respect to the cumulative energy impacts of the project.

The DEIR/EIS incorrectly relies on Mitigation Measure 4.18-1 to conclude that project construction would not have a cumulatively considerable contribution to a significant cumulative impact on the availability of fuel sources. As set forth above, Mitigation Measure 4.18-1 improperly defers mitigation and cannot serve as the basis of support for such a conclusion. MCWD-167

Additionally, statements regarding the cumulative impacts of project operation on energy conservation are conclusory and unsupported by substantial evidence. The DEIR/EIS acknowledges that many of the other cumulative projects would be high demand users and that upgrades to the existing distribution system may be required. (DEIR/EIS, pp. 4.18-18 through 4.18-19.) Yet, without any further explanation, the DEIR/EIS simply concludes that the project would not have a cumulatively considerable contribution associated with energy use. (See CEQA Guidelines, § 15130, subd. (a)(2) [If a lead agency concludes that a cumulative impact is not significant, the EIR must provide a brief explanation of the basis of the finding and identify the facts and analysis supporting it]; *Klamath-Siskiyou Wildlands Center v. U.S. Bureau of Land Management* (9th Cir. 2004) 387 F.3d 989, 993 ["proper consideration of the cumulative impacts of a project requires some quantified or detailed information; … [g]eneral statements about the possible effects and some risk do not constitute the hard look absent a justification regarding why more definitive information could not be provided" (internal quotations omitted)].) The cumulative impacts discussion related to energy conservation falls short of both CEQA and NEPA standards.

D. THE DEIR/EIS FAILS TO INCLUDE A REASONABLE RANGE OF POTENTIALLY FEASIBLE ALTERNATIVES AND THE ALTERNATIVES ANALYSIS IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE.

As the DEIR/EIS acknowledges CEQA requires an EIR to "describe a range of reasonable alternatives to the project … which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects … and evaluate the comparative merits of the alternatives." (Guidelines, §§ 15126.6, subd. (a), 15002, subd. (a)(3); see also 42 U.S.C. 4332(C)(iii) [NEPA requiring same].) The DEIR/EIS, however, fails to meet this fundamental requirement. MCWD-168

The fundamental problem with the DEIR/EIS's alternatives analysis is that it only considers alternatives to CalAm's originally proposed 9.6 MGD desalination plant that is no longer necessary in light the approval of the GWR project. Confusingly, the DEIR/EIS states that "the GWR Project would not be relevant in the context of the proposed project *or any alternative that includes a 9.6 mgd desalination plant* built and operated by CalAm (i.e., Alternatives 1 and 2) because, if the GWR project is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would construct the 6.4 mgd plant as described in Alternatives 5a and 5b." (DEIR/EIS, pp. 5.2-6 and 5.2-7.) Inexplicably, the DEIR/EIS, however, ignores the reality that GWR Project has been approved and evaluates the comparatives merits of alternatives to the originally proposed 9.6 MGD desalination plant.[26] In doing so the DEIR/EIS sets up a strawman analysis and concludes the 6.4 MGD plant with GWR is the environmentally superior alternative. The DEIR/EIS, however, fails to consider alternatives to the 6.4 MGD plant (with GWR) that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant impacts.[27] As discussed below, the DEIR/EIS only considers alternatives that would meet all (rather than most) of the Primary Project Objectives and with either a 6.4 MGD or 9.6 MGD plant provide vastly more water supplies than are necessary. It does not consider alternatives that could feasibly attain most of the Primary Project Objectives (with the GWR Project and without either the 6.4 MGD or 9.6 MGD plant), but would avoid or substantially lessen any of the significant effects. As a result, not only does the DEIR/EIS fail to consider a reasonable range of alternatives, it also fails to meet the EIR's major function "to ensure that ***all reasonable alternatives to proposed projects are thoroughly assessed by the responsible official***." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 400 [emphasis added].**)**

MCWD-168 cont.

10. Comments on Alternatives Not Evaluated in Detail

An "EIR 'is required to make an in-depth discussion of those alternatives identified as at least *potentially feasible*.' [Citation.]" (*Preservation Action Council v. City of San Jose* (2006) 141 Cal.App.4th 1336, 1354, italics added.) "While the lead agency may ultimately determine that the potentially feasible alternatives are not actually feasible due to other considerations, the actual infeasibility of a potential alternative does not preclude the

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[26] / In fact, the originally proposed 9.6 MGD desalination plant is no longer feasible given CalAm commitment to the GWR project under the July 30, 2013 Settlement Agreement on Plant Size, etc., wherein it agreed to pursue the 6.4 MGD plant with implementation of GWR. (Sett. Agr., p. 4 at § 3(c).) The CPUC approved CalAm's entry into an agreement to purchase GWR water from MRWPCA in D.16-09-021.

[27] / The DEIR/EIS's identification of the project's significant environmental impacts in the Alternatives chapter (Section 5.1.1.2) must be revised to the extent additional significant and unavoidable impacts are identified in the revised DEIR/EIS. As explained in the comments above and the expert comments attached to this letter, the proposed project will result in significant and unavoidable impacts to the SVGB among others.

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inclusion of that alternative among the reasonable range of alternatives." (*Watsonville Pilots Assn. v. City of Watsonville* (2010) 183 Cal.App.4th 1059, 1087.)

The DEIR/EIS states that the alternatives listed in Section 5.2 and Appendix I1 were either "considered and rejected in earlier environmental review documents because the projects were determined to be politically, legally, economically, or technically infeasible" or "are concepts that were speculative or technically or economically infeasible." (DEIR/EIS, p. 5.2-7.) When an agency uses the scoping process to narrow the range of potential alternatives to be analyzed in detail in an EIR, the EIR must describe the facts and rationale by which rejected alternatives were deemed infeasible. (*Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376, 404–405 ["An EIR's discussion of alternatives must contain analysis sufficient to allow informed decision making"; CEQA Guidelines, § 15126.6, subd. (c).) Here, the DEIR/EIS erroneously excludes several *potentially* feasible alternatives that could feasibly attain most of the basic objectives of the project and would avoid or substantially lessen the proposed project's significant impacts without any factual basis. In fact, as discussed below, the rationale for excluding several alternatives is demonstrably false. Therefore, the DEIR/EIS must be revised and recirculated so the public, responsible public agencies, and decisionmakers can consider and comment on these potentially feasible alternatives.

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z. ***Comments on Alternatives Rejected and Not Mentioned in DEIR/EIS***

ix. The use of Horizontal Wells for MPWSP intakes is potentially feasible and would eliminate or reduce several of the project's significant and unavoidable environmental impacts.

The DEIR/EIS dismisses the feasibility of horizontal wells without adequately describing the technology, its advantages over the project's proposed slant wells intakes, or its appropriateness for the Monterey Bay coastal environment. (See Intake Works Comments, p. 7.) Instead, the DEIR/EIS summarily rejects horizontal (or "HDD") wells as a potentially feasible alternative intake technology in Appendix I1, stating: "Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options); (2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3) HDD would not avoid or minimize any of the impacts associated with the proposed action." (Appendix I1, p I1-5) There is no evidence or citations to evidence that provide support for any of these conclusions. As explained below and in the attached Intake Works Comments, all three conclusions are inaccurate.

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Horizontal wells could be constructed faster than the proposed MPWSP slant wells, have fewer physical limitations, and are potentially less expensive than the proposed slant wells.

Contrary to the DEIR/EIS's conclusion in Appendix I1 that HDD would be challenging in terms of construction time, the construction time for developing Horizontal Wells would likely be considerable shorter than the construction time needed to develop the MPWSP's proposed slant wells. As described in the attached Intake Works Comments, eight horizontal wells were drilled using one HDD drilling rig in approximately four (4) months along the Spanish Mediterranean Coast. Moreover, unlike the proposed slant wells, additional HDD drilling rigs could be used to ensure all required horizontal wells could be drilled within a timeframe that would avoid Snowy Plover breeding season. Additionally, unlike slant wells, HDD wells can curve to avoid unfavorable subsurface conditions. Finally, contrary the DEIR/EIS's suggestion the disposal of drilling sludge would be similar to, or less of an issue, than for the MPWSP's proposed slant wells. (See Intake Works Comments, p. 8.)

Importantly, Horizontal Wells can extend much further than the 2,500-foot mentioned in the Appendix I1 description of Horizontal Wells. (See Intake Works Comments, pp. 11-12.) As a result, the well heads can be located further from the beach than the MPWSP's proposed slant wells to avoid ESHA.

Thus, there is no support for the DEIR/EIS rejecting Horizontal Wells on this basis.

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Horizontal wells, unlike slant wells, have been employed successfully as a desalinization intake.

The DEIR/EIS states, without any supporting citations, that installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis. (Appendix I1, p I1-5.) Initially, this rationale provides no basis for rejecting Horizontal Wells here, whether the proposed intake technology has never been demonstrated successfully. As discussed below, the only operation slant well designed to extract ocean water, other the MPWSP test slant well (which has been started and stopped on countless occasions over its short duration), is Dana Point that under recent longer term testing dramatically declined in efficiency. Even if this was a potential basis for rejecting Horizontal Wells, the DEIR/EIS's conclusion is unsupportable. Artificial gravel-pack filters have been installed and are successfully operating around horizontal well screens within the range of depositional environments in and around the Monterey Bay area that would be encountered at potential sites for horizontal wells. Moreover, artificial filter packs have not been required when utilizing the Neodren® technology in horizontal wells. (See Intake Works Comments, pp. 13-14.)

Thus, there is no support for the DEIR/EIS rejecting Horizontal Wells on this basis.

Horizontal wells would avoid or minimize many of the significant impacts associated with the proposed project and would reduce the amount of source water needed for the MPWSP.

The DEIR/EIS's conclusion that HDD would not avoid or minimize any of the impacts associated with the proposed action is untenable, and appears to demonstrate a significant lack of independent judgment on the part of the DEIR/EIS preparers. (See discussion in Part II.A, above). While HDD could potentially be employed at numerous locations along the Monterey Coast, including but not limited to locations within CalAm's service area, it has the potential to avoid many of the projects' significant impacts at both locations identified in the DEIR/EIS.

For example, if horizontal wells were properly designed at or near the CEMEX site, they would likely avoid or reduce many of the proposed project's significant impacts:

1. Because Horizontal Wells can extend thousands of feet more than the proposed slant wells, they could be located further onshore and outside of ESHA, which would avoid the proposed project's impacts to endangered species as wells as the project's inconsistencies with the City of Marina's LCP and Coastal Act. (See Intake Works Comments, pp. 11-12, 14.)
2. Because Horizontal Wells can extend thousands of feet more than the proposed slant wells and at a curve, they can actually be screened underneath the ocean floor to avoid drawing in groundwater from the SVGB basin, which would avoid the project's impacts to groundwater levels and quality. This in turn would avoid potential significant impacts groundwater dependent ecosystems that the DEIR/EIS fails to evaluate. (See Intake Works Comments, pp. 14.)
3. Because Horizontal Wells could avoid drawing in groundwater from the SVGB there would be no need to return water to the SVGB, which would reduce all the impacts associated with return water pipeline. (See Intake Works Comments, p. 14.)
4. Because Horizontal Wells could avoid the need for any return water to the SVGB, they would reduce the amount of supply water and desalinated water needed for the MPWSP, which would reduce energy impacts and GHG emissions. (See Intake Works Comments, p. 14.)

MCWD-171 cont.

Similarly, if horizontal wells were properly designed at or near the Potrero Road site they would likely avoid or reduce many of the potentially significant impacts identified at this location:

- Because Horizontal Wells can extend thousands of feet more than the proposed slant wells, they can actually be screened underneath the ocean floor to avoid drawing in groundwater from the SVGB basin, which would avoid drawdown impacts to groundwater basin water levels and therefore would

eliminate any potential impacts to Elkhorn Slough (which the DEIR/EIS speculates may be significant). (See Intake Works Comments, p. 14.)

- Similar to the CEMEX site, Horizontal Wells would not take in groundwater from SVGB there would be no return water obligation, which would reduce all impacts associated with return water pipeline. (See Intake Works Comments, p. 14.)
- Similar to the CEMEX site, Horizontal Wells could avoid the need for any return water to the SVGB, they would reduce the amount of supply water and desalinated water needed for the MPWSP, which would reduce energy impacts and GHG emissions. (See Intake Works Comments, p. 14.)

Moreover, additional locations closer to or in CalAm's service area may be feasible, which in turn could substantially reduce the length of the pipelines proposed for the project and impacts associated with those pipelines. (See Intake Works Comments, p. 14.)

Finally, the DEIR/EIS's suggestion that Horizontal Wells may be more expensive is impossible to evaluate given the information provided in the DEIR/EIS. While drilling the Horizontal Wells could be more expensive than the proposed slant wells, such a comparison does not address the potential cost savings from water and pipeline savings. Moreover, potential alternatives cannot be excluded from consideration because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council*, *supra*, (2006) 141 Cal.App.4th at p. 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers*, *supra*, 213 Cal.App.4th at pp. 1303-1304; *Goleta I*, supra, 197 Cal.App.3d at pp. 1180–1183.) Similarly, the fact that CalAm has constructed a slant test well at the CEMEX site does not make slant wells more viable than Horizontal Wells. This is especially true given the Coastal Commission's failed to consider alternative technologies prior to approving the test slant well.[28] As discussed below, if CalAm desires to test a Horizontal Well before considering this alternative, CalAm has sufficient water supplies with GWR to evaluate this technology prior to seeking approval of the MPWSP.

MCWD-171 cont.

In summary, Horizontal Wells are, at minimum, potentially feasible and would avoid or substantially lessen many of the proposed project's significant environmental impacts. Therefore, the DEIR/EIS's alternatives analysis must be revised and recirculated to evaluate Horizontal Wells to comply with CEQA and NEPA. This analysis should consider the number of Horizontal Wells necessary to meet most of the project objectives (including the reduction in supply needed for the proposed slant wells return water) rather than the amount

[28] / CalAm and the Coastal Commission have argued the test well is not part of the MPWSP and will not prejudice the environmental review or consideration of alternatives for the larger MPWSP. (Attached as Exhibit "5" are the Parties' briefs on the merits in MCWD v. California Coastal Commission, Santa Cruz Superior Court Case No. CV180839.)

of feedwater required for the proposed 9.6 MGD desalination plant that provides an oversupply of water. MCWD-171 cont.

x. Vertical wells

The DEIR/EIS's rejection of vertical wells for the alleged reason that the number of "vertical wells that would be needed to provide a reliable source water flow to the desalination plant is considered infeasible, both from a construction and operational perspective and in terms of economic, legal (permitting) and environmental factors" is again not supported by any facts. (DEIR/EIS Appendix I1, p. I1-4 and I1-5.) As noted above, a potential alternative cannot be excluded from consideration because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council*, *supra*, (2006) 141 Cal.App.4th at p. 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers*, *supra*, 213 Cal.App.4th at pp. 1303-1304; *Goleta I*, supra, 197 Cal.App.3d at pp. 1180–1183.) Moreover, given the CPUC approved vertical wells as part of the Regional Project, the argument that this alternative source is not potentially feasible actually conflicts with the record. As noted above, there is no reason why the legal permitting factors would be more onerous than for the slant wells proposed by the MPWSP. In fact, the fact vertical wells can be construct outside ESHA and other environmentally sensitive habitat likely makes permitting vertical wells more feasible. The DEIR/EIS suggestion that undisclosed environmental factors make vertical wells infeasible without any analysis cannot be supported under CEQA. MCWD-172

Finally, the DEIR/EIS only considers vertical wells without GWR and, therefore, improperly estimates that at least 24 vertical wells would be required. As discussed above, the DEIR/EIS must address whether the use of vertical wells (with GWR) could meet most of the project objectives, rather than the amount of feedwater required for the proposed 9.6 MGD desalination plant that provides an oversupply of water. As noted in the attached Intake Works Comments, using vertical wells with pre-engineered, so called "packaged" desalination systems, could result in avoiding or substantially lessening the proposed project's significant impacts and may be more economical because package solutions are available for desalination plants that are up to 5 MGD. (See Intake Works Comments, pp. 4-5.)

xi. Infiltration Galleries

The DEIR/EIS's rejection of infiltration galleries without analysis is similarly not supported by substantial evidence and would appear to conflict with available data on the feasibility of this option provided in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf. That report concluded that infiltration galleries were the only potentially feasible options for subsurface intakes for the proposed Poseidon Water Desalination Facility, which proposes producing 50 MCWD-173

Million Gallons per Day (MGD) of potable water, five times as much as the current project. The CCC's Report notes that:

> ***A key aspect of a beach gallery system is that it underlies the surf zone of the beach, fully or in part. This means that the active infiltration face of the filter is continuously cleaned by the mechanical energy of the breaking waves and is therefore self-cleaning*** (Maliva and Missimer, 2010). ***Also, the location within the intertidal zone allows the gallery to be continuously recharged with no impact on the inland shallow aquifer system. The vertical flow of water from the sea assures that the inorganic chemistry is not significantly altered over time***… The gallery system is unaffected by variations in the deeper groundwater, which could be fresh or brackish in nature at the shoreline. The uppermost natural sand layer is the primary treatment zone within the filter and will likely allow the removal of all algae and a high percentage of bacteria and naturally occurring organic compounds (e.g., natural organic matter). The long-term data collected at the seabed gallery in Japan shows that the SDI was reduced below two, which is at the approximate level produced by conventional SWRO pretreatment systems (Shimokawa, 2012).
>
> ***The beach gallery would reduce or eliminate the impingement and entrainment of marine fauna. Also, upon completion of construction, the gallery would be located below the surface and could not be observed by beach users***

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(Id. at p. 40, emphasis added.)

The DEIR/EIS's determination that infiltration galleries result in permanent disturbance to habitat does not appear to be consistent with the CCC's report. (*Ibid.*; see also *id.*, Figure 3.6 on p. 41.) Unlike the Fukuora location (on the semi-protected coast of the Sea of Genkai), it may be possible to limit the amount of excavation and lay out sections of filter pipe on the sandy seabed and allow natural forces to bury the system at the CEMEX site. The sandy bottom biological community is adapted to moving sands, which could reduce potential significant impacts. In addition, contrary to the DEIR/EIS's suggestion the sediment or filtration bed is unlikely to need much maintenance work given the turbulent forces near the seafloor would keep the upper most layer of the filter bed active. See Intake Works Comments, pp. 5-6.)

Notably, as with Horizontal Wells, infiltration galleries would eliminate impacts to the SVGB, which would eliminate the need for return water and the proposed return pipeline thereby avoiding those impacts as discussed above. As infiltration galleries are at least potentially feasible and would eliminate the project's significant impacts to the SVGB, including the Marina Subarea, the alternative must

actually be discussed in the DEIR/EIS before the CPUC can determine it is not feasible due to environmental impacts. Again, the size of the infiltration gallery should be based on need to meet most of the project objectives (including the reduction in supply needed for the proposed slant wells return water) rather than the amount of feedwater required for the proposed 9.6 MGD desalination plant that is provides an oversupply of water

MCWD-173 cont.

xii. EIR/EIS Fails to acknowledge, disclose, analyze the uncertainty regarding the long-term operational efficiencies of slant wells

Finally, the DEIR/EIS's discussion of slant wells ignore the fact that slant wells are unproven technology. As addressed in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California:

> Only one slant well has been successfully constructed to date, although a major installation to provide 20 MGD of feedwater capacity is under consideration in the Monterey Bay area [this project]. The successfully completed well is at Dana Point. When it was built and tested in 2006, it was test pumped at 2000 gpm and displayed a well efficiency of 95%. ***Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012*** (GeoScience 2012). ***Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.***
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. ***The advantage of having a subsea completion is largely lost in confined aquifers.*** The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but ***there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.***
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

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(CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf, emphasis added.)

In addition, the DEIR/EIS's failure to disclose and discuss the reduced efficiency of the Dana Point slant well is surprising given CPUC's representative on the HWG authored the report on this decline. (See GeoScience's Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well, Doheny Beach, Dana Point, California, dated September 7, 2012, available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf.) Notably, information from data responses and public records act requests reveal that Mr. Williams and Geoscience were involved in the selection process for alternatives despite the potential conflict of interests identified above. The DEIR/EIS's failure to disclose and address the findings in both reports require recirculation so the public can is aware of the project's risks and can comment on them. The risk that the project may not succeed is not born solely by the applicant, or CalAm ratepayers, here.

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As explained in the Intake Works and HGC Comments, while the efficiency problems from the Dana Point may not manifest themselves at the CEMEX site, there is a considerable risk they could based on the previous study and unproven track record for this technology. Therefore, the DEIR/EIS must discuss mitigation in the event there is a considerable drop in efficiency as it would likely eliminate the MPWSP's ability to provide return water. Specifically, the DEIR/EIS must evaluate the how many slant wells will likely need to be replaced over foreseeable life of the project, where the replacement wells would be located, and the potential impacts of replacing the slant wells. The DEIR/EIS must also evaluate potential alternatives to slant wells if efficiency drops to the point that alternative feed water sources are required.

aa. ***Comments on Alternatives Rejected and Not Evaluated in Detail in DEIR/EIS***

Section 5.2.1 states that is summarizes the previous proposals and projects, and the environmental documentation prepared for them (as relevant), and discusses why each of these alternatives is not addressed in detail in this EIR/EIS. The DEIR/EIS further states that no viable alternatives have been identified that would supply water without a desalination plant being included. This conclusion, however, is improperly based on the assumption that any feasible alternative must meet all of the project's objectives. As discussed in Part I of these comments and below, at minimum the Coastal Water Project/Regional Project remains potentially feasible. The DEIR/EIS, however, must evaluate whether the other alternatives in this section could meet most of the project objectives, including the already approved GWR as a component or on stand-alone basis.

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xiii. i. The Coastal Water Project/Regional Desalination Project Remains Potentially Feasible.

First, the DEIR/EIS' suggestion that Coastal Water Project/Regional Desalination Project (or "Regional Project") approved by the CPUC in 2010 is "no longer feasible for economic, social and legal reasons" is not supported by facts. The DEIR/EIS fails to provide any explanation or facts supporting its assertion that the Regional Project is not feasible. "A

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potential alternative should not be excluded from consideration merely because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council v. City of San Jose* (2006) 141 Cal.App.4th 1336, 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1303-1304.) As explained in *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1180–1183 (*Goleta I*) assertions that a particular alternative is economically infeasible simply because it would be more expensive or less profitable to the private applicant are not adequate. "In the absence of comparative data and analysis, no meaningful conclusions regarding the feasibility of the alternative could have been reached." (*Id.* at pp. 1180–1181.) The Court of Appeal added that:

> The fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project.

(*Ibid.*) Because the DEIR/EIS fails support its conclusion that the Regional Project is infeasible and rejects it out of hand, additional analysis is required before the CPUC may approve the project. (Pub. Resources Code, § 21002; *Sierra Club v. Gilroy City Council* (1990) 220 Cal.App.3d 30, 31.) Similarly there is no discussion, and MCWD is unaware of any reasons why the Regional Project is infeasible. The fact that CalAm would like to proceed with MPWSP without the involvement of MCWD or another public agency, does not render such alternatives infeasible. (See *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437, 1462 [An agency may not simply accept the project proponent's assertions about an alternative; rather, the agency "must independently participate, review, analyze and discuss the alternatives in good faith"], quoting *Kings Cnty. Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692, 736 (1990).) MCWD is willing to work through any issues relating to Regional Project. The fact that CalAm would prefer to go it alone does not make the Regional Project infeasible.

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Notably, the Regional Project configuration approved in 2010 with Marina Coast's participation is likely more feasible than the currently proposed project for the reasons explained in Part I above, including:

- The Regional Project addresses CalAm's lack of water rights that likely make the MPWSP infeasible.
- The Regional Project addresses the MPWSP's inability to comply with the Agency Act, which likely makes the MPWSP infeasible.
- The Regional Project's approval of vertical wells addressed high risks associated with slant wells that could make the MPWSP infeasible.

- The Regional Project Well included testing and comprehensive groundwater modeling to ensure groundwater impacts remained less-than significant unlike the MPWSP.
- The Regional Project, unlike the MPWSP, satisfies the Monterey County Desal Ordinance, which requires public ownership of desalination plants constructed within the County.

MCWD-176 cont.

In sum, it is likely the Regional Project remains feasible provided that the project would be within the confines of the SGMA and the greatly-expanded availability of data concerning the state of the basin and pertinent sub-basin, as well as current drought and climate-change related conditions. Again, it is certainly more feasible the project, as proposed.

xiv. The GWR Project Meets Most of the Project Objectives.

The DEIR/EIS states that the "GWR Project is not considered in this DEIR/EIS as a stand-alone alternative to the MPWSP because it would not provide enough water to meet the basic project objectives of the MPWSP; ***it would be about 6,250 afy short***." (DEIR/EIS, p. 5.2-6.) Again, this conclusion is improperly based on the assumption that feasible alternatives must meet all the project objectives as incorrectly construed by the DEIR/EIS. For example, Primary Project Objective #4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers." "Existing customers' demand is reflected in the 2016 actual demand of 9,285 AF, not the 2016 demand plus the future water needed to meet Pebble Beach water entitlements, legal lots of record, and the hospitality industry rebound. As discussed above, in Part III.A.1 of these comments and below, it appears GWR Project, which would include additional sources of water not currently projected to be used for Phases 1 and 2, would meet most of the Primary Project Objectives under Scenario A and Scenario B, if not all of the Primary Project Objectives. The DEIR/EIS, however, fails to disclose this fact.

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Rather, the DEIR/EIS states the GWR Project is included in the No Project/No Action alternative and "would not be relevant in the context of the proposed project or any alternative that includes a 9.6 mgd desalination plant built and operated by CalAm," because CalAm would instead construct the 6.4 MGD plant, which would have production capacity substantially in excess of any demand in 2022 and beyond. (DEIR/EIS, pp. 5.2-6 and 5.2-7.) Why does the DEIR/EIS assume that the GWR Project under the No Project/No Action alternative, but fail to consider it in evaluating the feasibility of alternatives that do not include slant well intakes.

bb. ***Comments on Alternatives Intake Options not carried forward for analysis in the DEIR/EIS***

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DEIR/EIS Section 5.3.3.11 states that Intake Option 11 (Ranney Wells in Seaside/Sand City) was not carried forward in the alternatives analysis stating:

> As described in Appendix I2, Intake Option 11 would involve the installation of three Ranney wells at two sites in the former Fort Ord coastal area in Seaside and Sand City. However, the former ***Fort Ord Wastewater Treatment Plant site and former Stillwell Hall sites faced political challenges*** …

(DEIR/EIS, p. 5.3-17, emphasis added.) The DEIR/EIS rejection of this alternative on the grounds it would could face political challenges is not grounds to reject this alternative under CEQA. Notably, the CEMEX site faces major political challenges also. Unlike the CEMEX site, however, the Seaside/Sand City Intake Option draw water from within CalAm's service area. So the affected municipalities and residents would at least ostensibly receive benefits from the project, unlike the citizens of Marina. In sum, potential political challenges is not grounds for failing to consider this alternative that would likely reduce the project's significant impacts. Therefore, the revised DEIR/EIS must include this alternative.

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Even more egregious, the DEIR/EIS decision not to include Ranney Wells at the CEMEX site based on speculation that this option would have similar impacts to the MPWSP's proposed slant wells and is not supported. As discussed in the attached Intake Works Comments (see pp. 14-15), the DEIR/EIS's analysis makes several incorrect assumptions about the technology and fails to provide meaningful analysis of this option. Most critically, the DEIR/EIS description of the option proposes to construct the Ranney Wells so they would extract groundwater from the deeper aquifers. If the Ranney Wells were properly designed to tap the shallow marine aquifer, this alternative would likely significantly reduce the project's groundwater impacts (and potentially other impacts). Given the DEIR/EIS concludes that Ranney Wells at the CEMEX site are at least potentially feasible, the DEIR/EIS must be revised to evaluate whether they would potentially reduce the project's significant impacts at the CEMEX site. As explained in the attached Intake Works Comments, available information indicates they could, if properly designed. Given the project's significant groundwater impacts to the Marina Subarea, including the 180-foot aquifer, the DEIR/EIS must evaluate Ranney Wells at the CEMEX site to meet its obligation under CEQA and NEPA.

11. Comments on Analysis of CEQA Alternatives (Section 5.4).

cc. ***Comments on the No Project Alternative***

Initially, the DEIR/EIS discussion of the no project alternatives fails to address what is reasonably expected to occur in the foreseeable future at the CEMEX project site (i.e., any reclamation that would occur, decommissioning of test well, restoration of ESHA, etc.) if the project if is not approved. Instead, the DEIR/EIS only discusses the effect that the No Project Alternative would have on water supplies and impacts associated with those supplies. The DEIR/EIS's summary on water supplies appears to ring a false alarm stating:

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> Impacts related to a No Project Alternative could result in severely supply-constrained conditions in CalAm's Monterey

> District. Existing conservation programs would continue to be implemented and new conservation and rationing measures would be required in an attempt to balance out the severe supply shortfall following Carmel River diversion curtailments under the Revised CDO in 2018 through 2021. Given the limited water supplies, it is assumed this alternative would trigger Stage 3, Conservation Rates, and very possibly Stage 4, Rationing Measures, of the Monterey Peninsula Water Conservation and Rationing Plan.

(DEIR/EIS, p. 5.4-10.) The DEIR/EIS then states the No Project Alternative with the (already approved) GWR Project:

> The GWR Project, when constructed, would provide 3,500 of potable supply for the CalAm service area. ***With the GWR Project supply, total supplies available to CalAm at the end of the Revised CDO extension period would total about 9,880 afy, which is about*** 81 percent of 2010 demand and approximately ***89 percent of estimated demand after implementation of foreseeable demand management and offset programs and other planned projects described in Section 5.4.2.3.*** Although this volume of supply would be much closer to the existing demand, the No Project Alternative in combination with the GWR Project would fail to meet most project objectives. While this scenario would achieve compliance with the Revised CDO and the Seaside Groundwater Basin Adjudication, even in combination with the GWR Project, the No Project Alternative would not provide supply to allow for replenishment of water that CalAm previously pumped from the Seaside Basin in excess of CalAm's adjudicated right; would not provide water supply reliability; and would not provide supply for Pebble Beach water entitlement-holders, for the development of vacant legal lots of record, or supply to meet demand resulting from economic recovery and rebound of the hospitality industry. In addition to failing to provide sufficient supply to meet the average annual demand assumed in MPWSP planning, the No Project Alternative combined with a GWR Project water purchase agreement would not provide sufficient supply flexibility to meet most peak demands

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(DEIR/EIS, p. 5.4-11, emphasis added.) Despite the fact that even by CalAm's own estimation (without independent modeling verification) that the No Project alternative with the GWR would meet 89 percent of its 2010 demand and exceed its 2016 demand of 9,285

AFY, the DEIR/EIS remarkably did not revise its conclusion that the no project alternative would likely trigger Stage 4, Rationing Measures, of the Monterey Peninsula Water Conservation and Rationing Plan. What is the rationale for not revising the conclusion?

The DEIR/EIS also appears to miscalculate the amount of water that would be available under the No Project Alternative with GWR. As discussed in Part III.A.1 above, if the 3,700 AFY GWR water is added to the 6,380 AFY identified in the No Project Alternative (on p. 5.4-9), the total becomes 10,080 AFY, not 9,880 AFY. Why does the DEIR/EIS use 9,880 AFY as that total amount water available? If this was a mathematical error, and assuming 10,080 AFY provides 795 AFY more than CalAm's 2016 demand of 9,285 AFY, what is the basis for concluding the No Project Alternative with GWR does not meet <u>most</u> of the project objectives? Assuming all the non-water supply objectives (i.e., Primary Objectives 8 and 9, and CalAm's secondary objective can be met by an alternative), what is the minimum amount of water supplies are needed to meet most of the project objectives? This number must be disclosed and its method of calculation for the public and decisionmakers to evaluate the potential feasibility of alternatives, including the No Project Alternative.

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dd. ***Comments on the Alternative 1 – Slant Wells at Potrero Road***

Regarding Alternative 1, the DEIR/EIS states:

> Alternative 1 would contain the same elements as the proposed project and would produce the same volume of product water. However, because of the hydrogeology of the Potrero Road area, Alternative 1 would draw a greater volume of water from the Salinas Valley Groundwater Basin than the proposed project. In the event the Salinas Valley Return Water obligation is determined to be 12 percent (the highest return value simulated), Alternative 1 would meet the need for replacement supplies and meeting peak month demand, but limited supply would be available for other uses, including accommodating tourism demand under recovered economic conditions. Alternative 1 would not provide sufficient supplies to serve existing vacant legal lots of record and would therefore, not meet the project objective/need for water, some of which was to support limited growth (e.g., Objective 6)..

MCWD-180

(DEIR/EIS, p. 5.4-15.) How does the DEIR/EIS determine that Alternative 1 would not provide sufficient supplies to meet Objective 6? How much water would Alternative 1 produce? How much water does the DEIR/EIS estimate would be needed to meet Salinas Valley Return Water obligations? How was this estimate calculated? What assumptions were used in the calculation?

After determining Alternative 1 would result in a reduced impact conclusion on groundwater quality compared to the proposed project, the DEIR/EIS states:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. ***The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes.*** This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, ***Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.***

MCWD-180 cont.

(DEIR/EIS, pp. 5.5-114, emphasis added; see also 5.5-128 [reaching same conclusion as to Alternative 5A].) As explained in the HGC Comments, this conclusion is based on the NMGWM^{2016} model, which is poorly calibrated and does not reliably predict potential drawdown, especially for the Potrero Road site, which the modeling uses untested and not substantiated vertical hydraulic conductivity values that are 2 orders of magnitude less than the CEMEX site. As explained in HGC's comment, the assessment of the impact of surface water losses from Elkhorn Slough due to pumping is general and compared to annual conditions that don't consider low-flow or no-flow conditions resulting from seasonal or climatic dry periods. (HGC Comments, p. 61, 78.) Thus, without improved modeling, it impossible for the DEIR/EIS to assess whether this this impact is significant and therefore, what the environmentally superior alternative is.

While MCWD does not fault the DEIR/EIS for conservatively determining this impact is significant due to the lack reliable modeling information, MCWD notes this this conservative conclusion is inconsistent with the DEIR/EIS's conclusion regarding the potential impacts to the Salinas River and the Tembladero Slough. However, the fact that the DEIR/EIS's modeling cannot predict the amount of water diverted from Elkhorn Slough and conservatively assumes operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes does not excuse the DEIR/EIS from qualitatively evaluating the potential impacts. What are the potential impacts to aquatic habitat in Elkhorn Slough that could result from Alternative 1 and Alternative 5A? Without this information is impossible to determine whether any

potential impacts could be mitigated. Moreover, these potential impacts must compared with the projects potential impacts to groundwater dependent ecosystems (that are not evaluated in the DEIR/EIS) and ESHA so the public and decisionmakers can weigh the environmental consequences of these alternatives with those of the proposed project. MCWD-180 cont.

12. Comments on Environmentally Superior Alternative/Preferred Alternative (Section 5.6.)

The DEIR/EIS discussion of the Environmentally Superior Alternative/Preferred Alternative states:

> While CalAm is seeking approval of the 9.6 mgd project (proposed project), CalAm proposes to move forward with a 6.4 mgd desalination plant (Alternative 5a and 5b) if the GWR project is successfully implemented to help meet the SWRCB's CDO. In case the GWR project faces hurdles that would impair its ability to supply the additional 3.2 mgd of water for CalAm's customers in a timely manner, CalAm also seeks contingency approval for the 9.6 mgd desalination plant.

MCWD-181

(DEIR/EIS, p. 5.6-2) The DEIR/EIS's decision to speculate that approved GWR project may not be fully implemented, without any explanation as why, in order to provide CalAm with an apparent contingency plan (which could allow CalAm abandon the GWR Project like the Regional Project for purely financial reasons) fatally undermines the DEIR/EIS's Alternatives Analysis and the CEQA and NEPA processes. As noted above, using this dual-track approach is inconsistent with CEQA and NEPA and this sets up a strawman alternative that ignores the fact the GWR Project is approved and moving forward.

Based on the DEIR/EIS's decision to compare all the alternatives to the vastly oversized and unnecessary 9.6 MGD project originally proposed by CalAm (prior to the approval of GWR), the DEIR/EIS determines that Alternative 5a paired with the GWR project, is the environmentally superior/environmentally preferred alternative. (DEIR/EIS, p. 5.6-7.) This conclusion, however, is fundamentally flawed because the DEIR/EIS fails to evaluate multiple potentially feasible alternatives that would eliminate or reduce the project significant and unavoidable impacts. As explained above, both Horizontal Wells and Ranney Wells are potentially feasible alternatives that would eliminate or reduce the project's significant and unavoidable impacts. MCWD-182

Setting aside these errors, the DEIR/EIS's conclusion that Alternative 5b (Reduced Desal with Slant Wells at Potrero Road) is environmentally inferior to Alternative 1A appears indefensible. The DEIR/EIS acknowledges that Alternative 5b would have similar but reduced groundwater level impacts at Elkhorn Slough in the Dune Sands aquifer. But concludes that "Although it would avoid impacts on marine and terrestrial biological resources at the proposed CEMEX site, the impacts on Elkhorn Slough biological resources were determined to be of greater magnitude. Therefore, Alternative 5b would not offer overall environmental advantages over the proposed project or Alternative 5a." The MCWD-183

DEIR/EIS provides no explanation for its determination that Alternative 5b's potential impacts on Elkhorn Slough biological resources are of greater magnitude than avoid Alternative 5b's impacts on marine and terrestrial biological resources at the proposed CEMEX site. As noted above, there is explanation in the DEIR/EIS of the Alternative 5b's potential impacts on Elkhorn Slough biological resources. Again, with any explanation, it is impossible for the public or decisionmakers to comment on or evaluate the DEIR/EIS's conclusion.

MCWD-183 cont.

Finally, based on its comments above, MCWD offers the following comments regarding alternatives that must be considered in a revised DEIR/EIS, given the project significant impacts on the Marina Subarea, CalAm lack of water rights, and the Agency Act's prohibition of exports from the SVGB, before the CPCU or Sanctuary can determine the Environmentally Superior Alternative/Preferred Alternative.

- Horizontal Wells at CEMEX site. (See Intake Works Comments, p. 20.)
- Horizontal Wells at the Potrero site and/or other sites closer to CalAm's service area. (See Intake Works Comments, p. 20.)
- Ranney wells at CEMEX and Potrero Road sites. (See Intake Works Comments, p. 20.)
- Ranney wells at sites along Carmel Beach or other suitable locations closer to CalAm's service area. (See Intake Works Comments, p. 16.)
- In addition, the DEIR/EIS must consider alternative locations for a permanent wells on CEMEX site other than the slant well site. The CCC has determined that the existing slant test well is located in "primary habitat" (CCC Findings (analysis limited to temporary impacts to ESHA) – and MPWSP propose to make this location permanent. As this is inconsistent with City of Marina's LCP, the current test well location cannot be permitted by the City of Marina without an amendment to the City's LCP. Moreover, even under the CCC's current findings relating to the test well, a slant well at this location can only be approved if there are not feasible alternative locations on the CEMEX site. (*Ibid.*) Given the DEIR/EIS's suggestion the other proposed slant well locations are not within primary habitat – removal of the test well to one of these locations is required.

MCWD-184

In sum, the DEIR/EIS must be revised and recirculated to consider these alternatives. As explained in *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1180–1183 (*Goleta I*) assertions that a particular alternative is economically infeasible simply because it would be more expensive or less profitable to the private applicant are not adequate. "In the absence of comparative data and analysis, no meaningful conclusions Because the DEIR/EIS fails to provide substantial evidence supporting a finding of infeasibility for any suggested alternatives above and rejects them out of hand, additional analysis is required before the CPUC or Sanctuary can consider approval of the project.

(Pub. Resources Code, § 21002; *Sierra Club v. Gilroy City Council* (1990) 220 Cal.App.3d 30, 31.) MCWD-184 cont.

Given these serious flaws in the DEIR/EIS analysis, the only Alternatives that MCWD can support is a test well for any of the above alternatives. This assumes any approved test well's impacts will adequately mitigated, unlike the CEMEX slant well, to ensure no harm to the SVGB. We further note that the Potrero Road site appears to be a superior site for subsurface seawater intake facilities for the reasons explained in the HGC Comments. Therefore, MCWD requests CPUC move forward with a test well alternative at the Potrero Road site. MCWD-185

E. Other Considerations.

13. Comments on Growth-Inducing Impacts (Section 6.3)

As explained in above in Part III.A.1, the proposed project provides substantially more water than is needed to meet the peak month demand of existing 2016 customers. Contrary to the DEIR/EIS's conclusion CalAm's requested contingency approval for the 9.6 MDG desalination plant would likely induce growth within the coastal areas substantially in manner that would be inconsistent with Sanctuary's Management Plan requirements. Unless the DEIR/EIS is revised to either eliminate the 9.6 MDG desalination plant from consideration, this section of the DEIR/EIS must be revised to evaluate the possibility of both the 6 MDG desalination plant and the GWR Project (potentially without CalAm's participation). Moreover, this Section must be revised based an independently reviewed assessment (preferably a computer model of its existing water supply sources and demands as they vary by water year type and by month and how it will change come 2022) of CalAm's future water supplies and demands. MCWD-186

14. Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines (Section 6.4)

The DEIR/EIS states the project is consistent with Sanctuary Desalination Guideline that "The implementation of subsurface intakes ***s<u>hould not cause saltwater intrusion to aquifers or adversely affect coastal wetlands that may be connected to the same aquifer</u>*** being used by the intake, and the intake proposal must address the likelihood of increased coastal erosion in the future." (Compare Monterey Bay National Marine Sanctuary Desalination Guidelines, p. 6 to DEIR, p. 6-48.) As discussed, above the DEIR/EIS modeling cannot and does not evaluate the project's potential to cause saltwater intrusion to aquifers or adversely affect coastal wetlands that may be connected to the same aquifer. Moreover, as explained in the attached HGC and EKI Comments, the project by design will cause seawater intrusion to Marina Subarea aquifers and adversely affect coastal wetlands that may be connected to the Marina Subarea. Therefore, this DEIR/EIS must be revised to disclose the project is not consistent with the Guideline. This Section should also be revised to consider the issue surrounding public versus private ownership based on the Sanctuary's MCWD-187 MCWD-188

Management Plan. It should also address the project's consistency with the NOAA Guideline: "Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project." (Monterey Bay National Marine Sanctuary Desalination Guidelines, p. 4.) Given these policies, MCWD fails to understand why the DEIR/EIS is only considering CalAm's go-it-alone approach or open water intakes. MCWD-188 cont.

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MCWD requests that The Figure 5.1 from appendix E2 be revised to show the areas impacted on a topographical map or other map were locations or landmarks are visible. The current figure does not allow the public to understand the extent of potential impacts. MCWD-189

F. Recirculation of the Revised DEIR/EIS with Project or Programmatic Analysis of MPWSP Source Water Is Required.

State CEQA Guidelines Section 15088.5 provides for recirculation of an EIR prior to certification when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review but before certification. The term "information" can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement.

The number one concern of MCWD and many other interested parties has been whether and to what extent the MPWSP will impact existing groundwater resources in the SVGB and Marina Subarea. As explained above, the DEIR/EIS groundwater analysis is fundamental flawed and fails to disclose adequate information regarding the Marina Subarea aquifer that will be impacted by the proposed MPWSP slant wells. This violates CEQA fundamental principles. *Cadiz Land Co., Inc., supra*, is on point. In that case the petitioner's comments on a draft EIR and a supplement to the draft EIR, including the consultant's report, proved that the EIR could have included an estimate of the groundwater volume in the aquifer. According to the court, upon receipt of these comments, "the County should have revised the EIR to include such information, along with a discussion of the estimated date of depletion of the aquifer water." (83 Cal.App.4th at p. 95.) Acknowledging that the county's decisionmakers considered this information before approving the project, the court nevertheless held that the consultant's report constituted "significant new information" within the meaning of Public Resources Code section 21092.1, and that "the EIR should have been revised and recirculated for purposes of informing the public and governmental agencies of the volume of groundwater at risk and to allow the public and governmental agencies to respond to such information." (*Ibid*.) As in *Cadiz*, recirculation is required here. MCWD-190

IV. CONCLUSION.

MCWD requests the DEIR/EIS be revised as detailed in the comments above. Due to the significant nature of the revisions that will be required, MCWD believes that the DEIR/EIS is plainly deficient. After the Commission and Sanctuary make the recommended revisions, the DEIR/EIS must be re-circulated for further comment.

In addition, due to the seeming infeasibility of the proposed project based on both legal and physical considerations related to likely significant adverse impacts on the groundwater environment, MCWD recommends that the Commission and CalAm consider the full range of feasible alternative configurations and feasible alternatives (including the no project alternative) that are not presently or sufficiently addressed in the DEIR/EIS.

MCWD-191

CalAm and other project proponents have been using the "Cliff" argument to scare people into supporting the MPWSP. The argument is that if Cal-Am does not get a 9.6 MGD desalination plant built by 2021, then come January 1, 2022, when the final diversion reduction under the Carmel River Cease and Desist Order kicks in, there will be severe rationing. The DEIR/EIS's no project alternative analysis improperly adopts this scare technique. As MCWD has explained to the State Water Resources Control Board and explained above—there is no cliff. As MCWD has shown, Scenario A meets seven of nine Primary Project Objectives without the need to construct the MPWSP. Consequently, there is additional time to properly evaluate feasible alternatives, including intake technologies and locations, which would result in significantly less impacts to the environment and groundwater and lower capital costs by properly sizing the project. In fact, given the proposed project's risks and significant impacts, this evaluation is required for all the reasons explained above.

Sincerely,

Keith Van Der Maaten

Marina Coast Water District
General Manager

EXHIBIT LIST

Marina Coast Water District's
Comments on the 2017 DEIR/DEIS for the MPWSP
California Public Utilities Commission proceeding A.12-04-019

1. HGW Comments; Hopkins resume
2. GeoHydros Comments; Kincaid and Day CV; GeoHydros SOQ
3. EKI Comments
4. IntakeWorks Comments; Jones CV
5. Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839
6. Inventory of transmitted flash drive folders – containing
   Public Records Act responses received to date from the Commission and
   Data request responses in A.12-04-019 received to date from the Applicant
7. Excerpts of testimony of Dennis Williams in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. Case No.: CV180839
8. Map of Marina Coast Service area in relationship to the 180/400, Monterey, and Seaside Subbasins
9. Coastal Commission findings
10. Scenario A Water Portfolio analysis
11. Scenario B Water Portfolio analysis

HOPKINS
GROUNDWATER
CONSULTANTS, INC.
THE WATER RESOURCE SPECIALISTS

March 29, 2017
Project No. 15-004-01

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Attention: Mr. Keith Van Der Maaten
General Manager

Subject: CalAm Monterey Peninsula Water Supply Project, Draft Environmental Impact Report/Environmental Impact Statement, Prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, January 2017.

Dear Mr. Keith Van Der Maaten:

As requested, Hopkins Groundwater Consultants, Inc. (HGC) has reviewed the hydrogeology-related and alternatives portions of the Cal-Am Monterey Peninsula Water Supply Project (MPWSP or the "project") Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS) prepared for the California Public Utilities Commission, dated January 2017, and is providing these comments for Marina Coast Water District's (MCWD) consideration and use. In preparing these comments, we have reviewed the relevant portions of: (1) the DEIR/EIS; (2) the DEIR/EIS appendices; (3) references cited in the DEIR/EIS and DEIR/EIS appendices; (4) the calibrated model developed for the MPWSP and the application of the superposition model scenario constructed to evaluate the project; (5) the documents provided to HGC in response to MCWD's data and public records act requests that were made available before March 27, 2017; and (6) publicly available information referenced at the end of our comments.[1]

Preliminary Statement on DEIR/EIS's Analysis of MPWSP's Hydrogeological Analysis.

The DEIR/EIS frames the MPWSP and the project area hydrogeology in a manner that would lead anyone to believe the MPWSP can cause no harm and will ultimately be of benefit to the entire Salinas Valley Groundwater Basin (SVGB) as well as all groundwater users in the project area. In painting this picture, however, the DEIR/EIS mischaracterizes the project and the complex hydrogeological conditions in the project area by incorrectly suggesting, without any supporting evidence in many cases, that:

[1] / As you are aware, our review of the DEIR/EIS was hampered by the extensive delays in receiving requested information relied on in the DEIR/EIS's groundwater analysis and modeling. In addition, we still have not received some of the information we requested through MCWD's data and public records act requests that would further inform our comments and analysis.

1. The intake system will induce seawater flow vertically through the ocean floor by using facilities that extend beyond the coastline at sufficiently shallow depths to virtually eliminate the production of groundwater from the overdrafted SVGB, and in particular the Marina Subarea[2]. As explained in Comment Nos. 2, 6, 9, 11, 14, 22, and 23 below, this assertion is not accurate.

2. The shallow aquifers along the coastline around the CEMEX site are fully intruded by seawater and the groundwater in the project area of SVGB consists almost entirely of highly saline seawater that extends up to 8 miles inland. As explained in Comment Nos. 3, 7, 9, 15, 16, 17, 19, 20, 21, 22, 24, 29, 33, 36, and 37 below, this characterization ignores contrary information, is a gross misrepresentation of the aquifers in the Marina Subarea, and is simply not accurate.

3. The groundwater gradient (flow) in all aquifer zones produced by the project is onshore (inland or away from the coast) in the entire area that is potentially impacted by the MPWSP and efforts to abate seawater intrusion (prohibition of groundwater production in coastal areas of SVGB Pressure Area, etc.) have had little to no effect on restoring coastal conditions and are not expected to over the entire life of the project. As explained in Comment Nos. 2, 3, 6, 11, 15, 16, 19, 23, 26, and 37 below, this is also not accurate.

4. Historical studies are sufficiently complete and comprehensive in nature to document conditions in the vicinity of the project using existing wells (or without wells) and that baseline conditions inland of the project area, within the area the model shows will become completely intruded by seawater, do not need to be investigated prior to designing the project and modeling its impacts. As explained in Comment Nos. 3, 7, 9, 15, 16, 17, 18, 19, 20, 22, 24, 26, 27, 28, 29, 30, 33, 34, 36, 37, 38, 39, 42, and 43 below, this is not accurate.

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[2] / The "Marina Subarea" is used in these comments to refer to the combination of (1) that portion of the 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River plus (2) the northwest portion of the Monterey Subbasin that would be impacted by the proposed slant well pumping on the CEMEX property. While the Marina Subarea is not a formally DWR-recognized subarea, it contains highly complex hydrogeological conditions that are very different from the portion of the 180/400 Foot Aquifer Subbasin north of the Salinas River as explained herein. The Marina Subarea is the coastal subarea of the overdrafted SVGB and is the area that would be directly impacted by the proposed project feed water pumping of 27,000 AFY. The Monterey County Water Resources Agency has defined the "Pressure Area" as a combination of the DWR-designated 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins (now the new Seaside and Monterey Subbasins). The Pressure Area is not a formally DWR-recognized subarea either, but that term is used throughout the DEIR/EIS.

5. The limited exploration and testing to date sufficiently validates the assumptions in the DEIR/EIS's groundwater model(s) used to simulate impacts of the proposed project and additional modeling based on actual conditions identified through recent fieldwork and laboratory testing is not necessary to disclosure of the project's potential groundwater impacts or evaluate of project alternatives. As explained in Comment Nos. 2, 4, 5, 6, 15, 18, 25, 26, 27, 28, 29, 31, 32, 33, 38, and 39 below, this is not accurate.
6. The DEIR/EIS's superposition model is reliable and demonstrates that the project's potential impacts on groundwater levels and groundwater quality in the Marina Subarea will be less than significant. As explained in Comment Nos. 4, 5, 8, 15, 25, 26, 27, 28, 30, 31, 32, 35, 37, and 39 below, this is not accurate.
7. Mitigation of the project's impacts can be accomplished through multiple methods and means. As explained in Comment Nos. 1, 4, 6, 8, 9, 10, 11, 12, 13, 21, 22, 23, 24, 25, 29, 30, 34, 35, 36, and 40 below, this is not accurate.

With these factors and hydrogeological conditions in mind, HGC has reviewed pertinent sections of the DEIR/EIS, calibrated model and superposition model numerical files that were made publicly available, numerous historical reports, and the baseline hydrogeological data that have been generated prior to February 2017 near the CEMEX site and south of the Salinas River (and is still being generated at the time of this review), and we offer the following comments for your consideration. Following our detailed comments on the DEIR/EIS, we also provide a summary of our conclusions and recommendations at end of the document.

Prior to turning to our specific comments, we note that our review of the documentation of the groundwater models that were constructed to simulate surface water and groundwater in the SVGB indicates there is a fundamental problem with the modeling utilized for the DEIR/EIS. Namely, the calibrated North Marina Groundwater Model ($NMGWM^{2016}$) was abandoned and replaced with the inferior superposition model because of technical problems. While not explained in the DEIR/EIS, based on our review, the problems appear to originate with the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) where all wells used to calibrate the model are located north of the Salinas River outside of the Marina Subarea/project area (LSCE, 2015).[3] The problems, however, carry over to the $NMGWM^{2016}$ and CEMEX Model (CM), which were used to create the DEIR/EIS's superposition model as explained below.

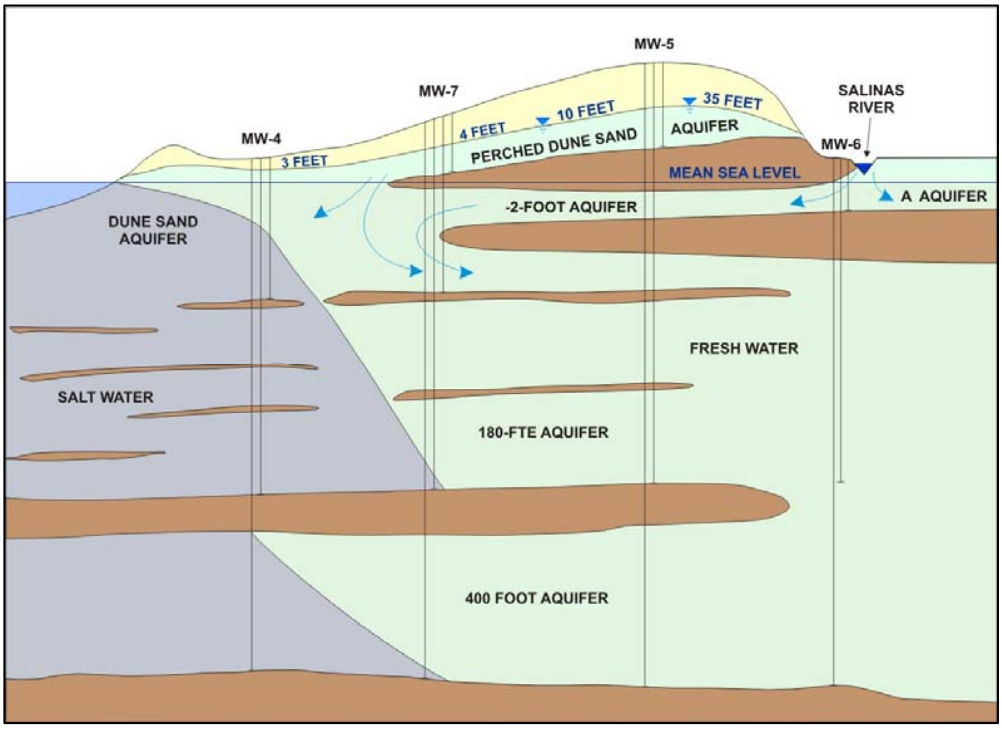
[3] / The Marina Subarea/project area as defined by available studies (KJC, 2004, Geoscience, 2014) as being separated from the main portion of the Pressure Area north of the Salinas River by a geologic facies change (the depositional environment) creating differences in the strata that formed as the 180-Foot Aquifer and 180-Foot Equivalent Aquifer (180-FTE), and the shallower Dune Sand and A-Aquifer zones.

The NMGWM^{2016} domain covers the coastal area northwest of Salinas and uses input from the SVIGSM for its simulations. The NMGWM^{2016}, however, largely uses wells north of the Salinas River as target wells for model calibration while incorporating only a few wells from the Fort Ord area south of the river along with abbreviated data sets from the TSW monitoring wells. The results of the NMGWM^{2016} simulations were used as input to the CM, which has a domain that covers a smaller area centered around the CEMEX active mining area and was used to simulate effects of production proposed for the TSW project. The NMGWM^{2016} was then initially used to evaluate the effects of the proposed MPWSP, but later abandoned because of the inability to complete satisfactory model calibration in the Dune Sand and 180-FTE Aquifers south of the river.

It appears the NMGWM^{2016} modeling was abandoned due to the difficulty with model calibration in the modelers attempts to add hydrogeologic information that was not included in the SVIGSM. This additional information generated by the pre-project studies indicates a semi-perched groundwater condition within the Dune Sand Aquifer that is also documented by other studies. This condition is of particular importance because it has resulted in Dune Sand Aquifer groundwater elevations in the Fort Ord area of 70 to 90 feet above mean sea level (amsl) (Ahtna, 2015), which decline to approximately 35 feet amsl at MW-5S. The presence and effects of this perched layer of fresh water was attempted to be incorporated in the NMGWM^{2016}, but was unsuccessful. The wells located south of the Salinas River in the project area that were used for calibration to compare simulated results with observed groundwater level elevations produced model error in the Dune Sand Aquifer (model layer 2) on the order of 30%. Consequently, there was not a high level of confidence in the accuracy of model predictions in the project area. Nonetheless, the hydraulic conductivity values used unsuccessfully in the NMGWM^{2016} were subsequently used to create the superposition model. As a result, the superposition model uses all the aquifer parameters of the poorly calibrated NMGWM^{2016} and assigns new boundary conditions and starting heads of zero. This maneuver, however, does not fix or improve the problems with the DEIR/EIS's modeling or its reliability. In fact, instead of improving on the poorly calibrated model, the maneuver removes all other stresses and recharge conditions in the basin and fails to address the project's impacts on the beneficial groundwater conditions that have developed in the Marina Subarea. Not only does this make the DEIR/EIS's assessment of groundwater even more unreliable, as a result the DEIR/EIS is incapable and therefore fails to evaluate the project's impacts on semi-perched groundwater conditions within the Dune Sand Aquifer and the semi-confined -2-Foot Dune Sand Aquifer conditions. This failure is fatal to the DEIR/EIS's ability to reliably analyze the project's potential groundwater impacts.

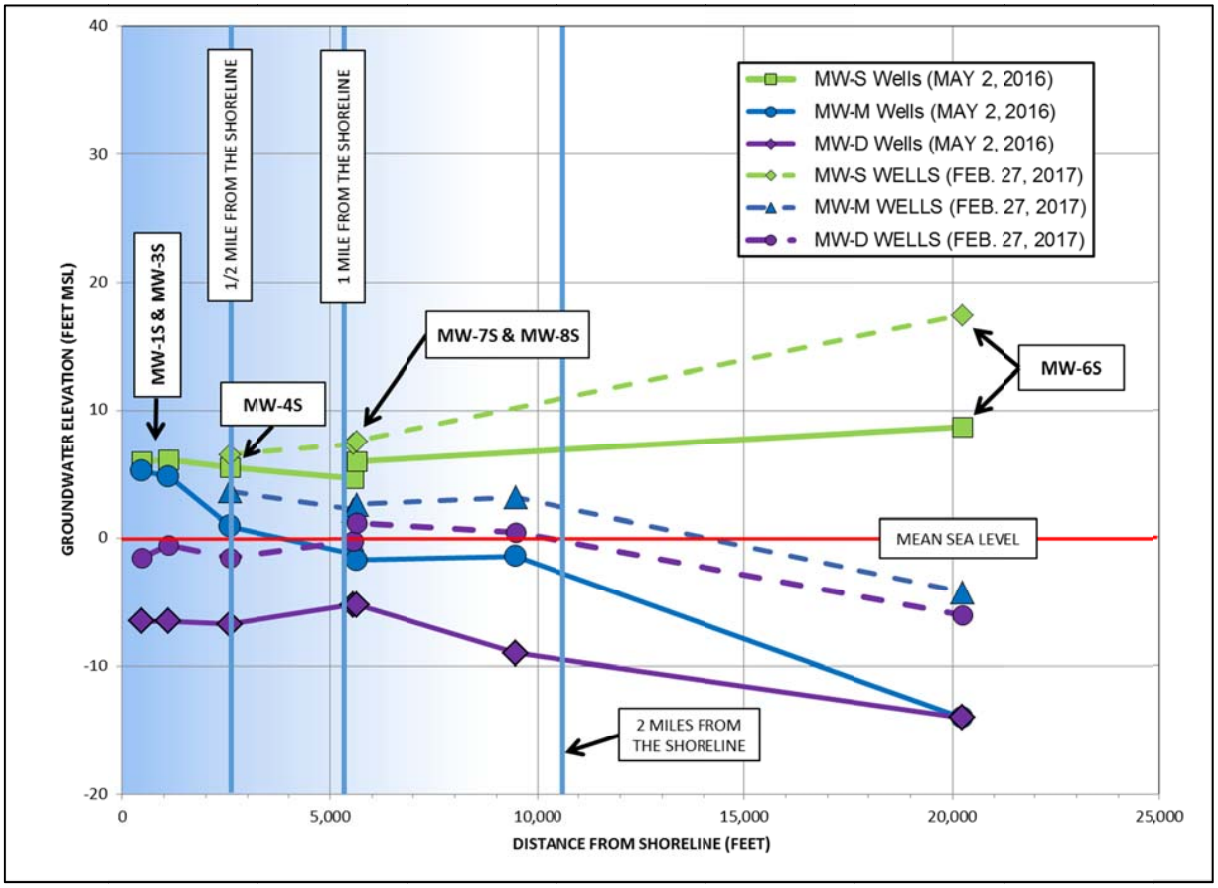
As discussed in detail below, the pre-project studies indicate that MW-1S, MW-3S, MW-4S, and MW-7S likely are connected to the Dune Sand Aquifer zone recognized as the -2-Foot Aquifer that is identified beneath the County landfill site (Geoscience, 2016). The elevation and thickness of this zone indicates it likely has a hydraulic continuity to the A-Aquifer zone in the main portion of the SVGB located north of the river. The concept demonstrated by these data is further illustrated on Diagram 1 – Conceptual Hydrogeology of Marina Subarea along with the perched Dune Sand Aquifer condition.

Diagram 1 – Conceptual Hydrogeology of Marina Subarea



Also discussed below, recent data obtained regarding the gradient beneath the landfill (near MW-5) shows recharge from the river that creates a groundwater gradient toward the coastline. Importantly, this is consistent with the elevated heads in MW-6S where it also receives recharge from the river. Diagram 2 – Water Level Elevation and Shoreline Proximity compares available data that were collected just prior to restarting the long term pumping test on May 2, 2016, and the high water level conditions observed on February 27, 2017. This diagram shows the wells that are constructed in the Dune Sand Aquifer zone that is equivalent to the -2-Foot Aquifer zone along with MW-6S, which is in the A Aquifer zone (Geoscience, 2016). As shown by these data, there is a groundwater gradient that moves water from the river area of recharge toward the coastline in the Marina Subarea of the SVGB. Monitoring Well MW-5S data with water levels in excess of 35 feet amsl were not included in Diagram 2 because it is now recognized to be screened in a semi-perched dune sand layer on top of the aquitard layer identified as the Fort Ord Salinas Valley Aquitard (FO-SVA). The FO-SVA layer overlies the -2-Foot Aquifer/Dune Sand Aquifer, which is reportedly 30 to 40 feet thick and rests on the Salinas Valley Aquitard near the river in the Marina Subarea northeast of the project site (Geoscience, 2016).

Diagram 2 – Water Level Elevation and Shoreline Proximity



The significance of this condition south of the Salinas River is illustrated by Diagram 3 – Particle Tracking With No Background Gradient, and Diagram 4 – Particle Tracking With 8-Foot Gradient Across Model Domain. The DEIR/EIS, however, does not recognize this condition due to the poor model calibration.

Turning back to the modeling used in the DEIR/EIS, the NMGWM^{2016} was constructed with a landward gradient in the 180-Foot Aquifer and does not simulate the -2-Foot-Aquifer beneath the confining layer that underlies the perched portion of the Dune Sand Aquifer. Initial head conditions create a constant landward flow of seawater beneath the perched layer. The particle tracking results during operation of wells for the MPWSP were not presented for either the calibrated NMGWM^{2016} or the superposition model, however particle movement would be similar to Diagram 3, which has a flat gradient prior to pumping, like the superposition model. As shown in Diagram 4, an 8-foot gradient across the entire model toward the coastline results in a different flow pattern and the capture of groundwater that is flowing toward the shoreline like the groundwater in the semi-perched Dune Sand Aquifer above the confining layer and groundwater in the -2-Foot Dune Sand Aquifer below the confining layer (see Diagram 2).

Diagram 3 – Particle Tracking With No Background Gradient

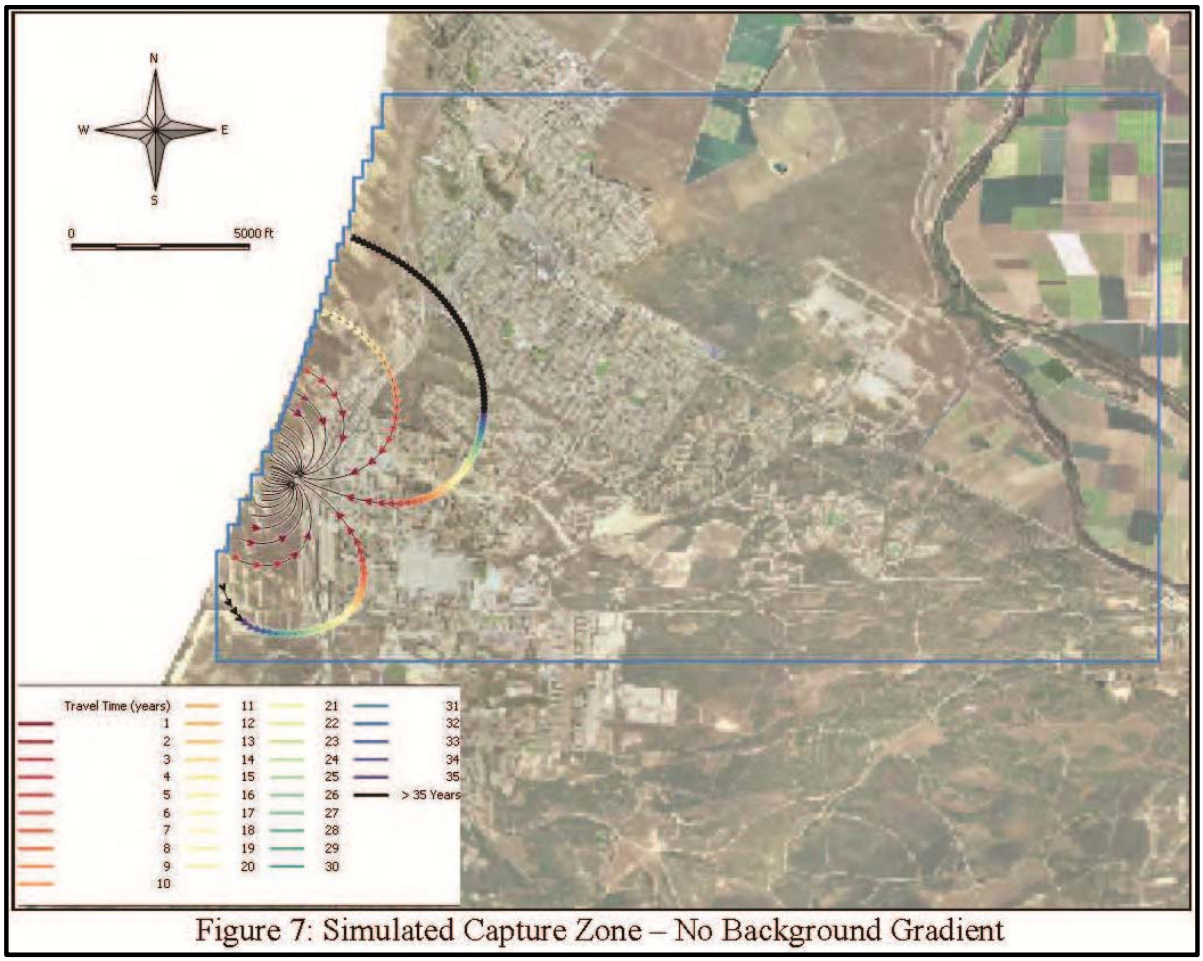


Figure 7: Simulated Capture Zone – No Background Gradient

FROM (HYDROMETRICS, 2006)

Again, this failure is fatal to the DEIR/EIS's ability to reliably analyze the project's potential groundwater impacts. Given the potential magnitude of the increased groundwater production, the impacts to the SVGB, in particular the Marina Subarea, the project's potential impact on the Marina Subarea are very likely grossly understated by the superposition model. Therefore, a well calibrated model is needed to quantify the project's potential impacts with a reasonable scientific basis. Specifically, a model that utilizes all the recharge and discharge components included in the older SVIGSM, and constructed with a level of detail reflecting our present understanding and knowledge of the hydrogeological system in the Marina Subarea is needed. Moreover, because seawater is an issue, a dual density model should be used to allow calculation of the head differences between the ocean water offshore and onshore, and freshwater in the aquifer zones inland and to allow prediction of water quality changes and the concentrations of feedwater that would be produced by the proposed project.

**Diagram 4 - Particle Tracking With
8-Foot Gradient Across Model Domain**

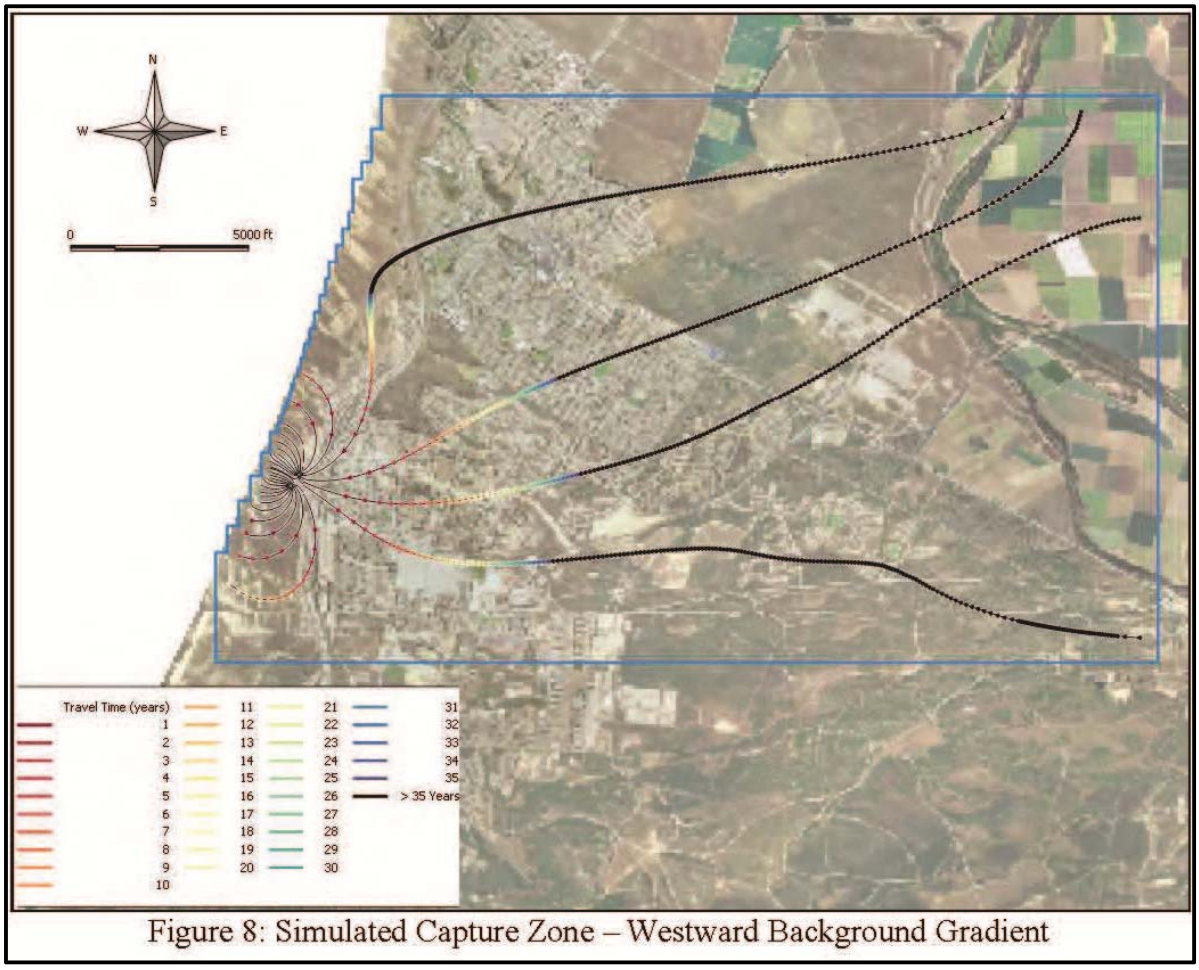


Figure 8: Simulated Capture Zone – Westward Background Gradient

FROM (HYDROMETRICS, 2006)

With this understanding of perched groundwater conditions within the Dune Sand Aquifer in the Marina Subarea and with the fundamental flaws in the DEIR/EIS's modeling, we offer the following specific comments on the DER/EIS. To simplify the presentation of our comments and assist your review of these pertinent issues, we have excerpted or summarized the sections of the DEIR/EIS that we address and subsequently provide our comments or concerns of the hydrogeological issues that are crucial to understanding the potential project impacts. Please note that while we have selected certain sections of the DEIR/EIS to comment upon, our comments apply to similar statements that are repeated in other sections of the DEIR/EIS.

Comments on DEIR/EIS Chapter 2 (Water Demand, Supplies, and Water Rights).

DEIR/EIS's water rights discussion fails to estimate the amount of return water required for the project and may have insufficient supply to meet all return water requirements:

On **Page 2-22 of the DEIR/EIS** states:

> MPWSP source water would include some brackish groundwater from the SVGB. As part of the proposed project, CalAm would return to the SVGB a volume of desalinated product water equal to the amount of SVGB groundwater included in the source water. While CalAm's SVGB return water obligation will be based on the amount of fresh water in the source water, in order to consider the effect of the return water for this EIR/EIS, groundwater modeling simulated scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources). The amount of SVGB groundwater included in the source water is expected to decrease over time (CalAm et al., 2016b).

Then on **Page 2-35 of the DEIR/EIS** states:

> CalAm proposes as part of the MPWSP to return to the Basin (in the manner further described below) the fresh water portion of the brackish source water. In other words, although the groundwater modeling indicates that the Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water, the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water.

HGC Comment No. 1:

The DEIR/EIS fails to disclose the amount of return water that would be necessary to replace the groundwater drawn from the SVGB as proposed in the Project Description.[4] Nor does the DEIR/EIS provide any discussion or information to support bracketing the return water percentage between 0% to 12%. In fact, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. Even the $NMGWM^{2016}$ calibrated model, which likely underestimates the slant wells production of groundwater as discussed in

[4] / As discussed below and in Comment No. 4 below, the return water proposal in the DEIR/EIS does not address the amount return water that is needed to mitigate the project's cumulative impacts on groundwater quality that would be required to comply with the SWRCB's report, the SGMA, and CEQA.

Comment No. 5 below, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step.[5]

While it is not stated exactly how the range of 0 to 12 percent estimates were determined in the DEIR/EIS, an analysis of the salinity of the feedwater using ocean water with a total dissolved solids (TDS) concentration of 33,500 milligrams per liter (mg/l) and groundwater with an average TDS concentration of 440 mg/l can yield an estimate. Using these values and the laboratory test results obtained during the MPWSP's Test Slant Well (TSW) production period and included in the water quality report to the Hydrogeologic Working Group (HWG) (Geoscience, 2015p, Table 2), the TSW produced water with an average TDS concentration of 25,033 mg/l and was comprised of 25.6 percent groundwater and 74.4 percent ocean water.

Over the initial period of the long-term pumping test, the TDS concentration had reached approximately 29,100 mg/l prior to cessation of the test in early June 2015. Subsequent laboratory test results indicate that on December 12, 2016, and January 19, 2017 the TDS concentration had reached approximately 30,200 mg/l and 31,700 mg/l, respectively. Using these values along with the average February 2017 value of 29,900 mg/l, we can estimate a range of return water quantities by considering the groundwater component produced if a groundwater TDS concentration of 1,000 mg/l (State Drinking Water secondary standard) or 3,000 mg/l (Regional Water Quality Control Board [RWQCB] Water Quality Control Plan (WQCP) for the Central Coast Basin, water quality defined for beneficial uses) were used compared to the reported 440 mg/l average groundwater TDS concentration. Table 1 – Feedwater Composition Based on TDS Concentrations shows a comparison of the results using these values.

As shown, approximately 13.3 to 14.4 percent of the feedwater was groundwater when pumping was initiated. While higher salinity feedwater was produced by the TSW in December 2016 and January 2017, the concentration declined by February 2017 where approximately 11 to 12 percent of the groundwater produced would need to be returned. As explained below (see Comment No. 33), the water quality bias of the TSW to be more saline than other comparable

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[5] / Modeling summarized in Appendix E1 of the **April 30, 2015 MPWSP Draft EIR** (Geoscience, 2014a, Figure 20) indicates that the initial groundwater production would be much greater during the initial production period (50 to 40 percent during the first year) and would decrease over a 4-year period to an estimated 4 percent after 4 years of production. Our review of the NMGWM^{2016} calibrated model results indicates that initially over 25 percent of the production will come from groundwater and that after 5 years, the component predicted to come from the SVGB is approximately 10 percent. The NMGWM^{2016} calibrated model, like the prior modeling, likely underestimates the slant wells production of groundwater (See Comment Nos. 3 and 9 below) and should not be considered to represent maximum amount of groundwater that may need to be returned to comply with the Agency Act.

wells located away from the CEMEX operations is a result of the dredge pond location and the salt water discharges that occur inland of the TSW location.

Notably, if a greater percentage of groundwater is produced than presently estimated by the DEIR/EIS, which is likely, or if usable groundwater salinity increases, the annual amount of return water to the SVGB would increase accordingly. The higher return water volumes required during the initial production period when a greater component of groundwater is pumped is not addressed in the DEIR/EIS. Please note that our comment here should not be interpreted to suggest the return of all groundwater to the SVGB as proposed MPWSP's return water proposal would mitigate the project's impacts to the Marina Subarea. The inadequacy of the DEIR/EIS's analysis of the MPWSP's return water proposal and DEIR/EIS's failure to mitigate the project's cumulative impacts on groundwater is discussed in HGC Comment No. 4.

Table 1 – Feedwater Composition Based on TDS Concentrations

OCEAN WATER SALINITY (MG/L)	GROUNDWATER SALINITY (MG/L)	FEEDWATER SALINITY (MG/L)	GROUNDWATER PERCENTAGE	OCEAN WATER PERCENTAGE
33,500	440	29,085	13.3	86.7
33,500	1,000	29,085	13.5	86.5
33,500	3,000	29,085	14.4	85.6
33,500	440	30,200	10.0	90.0
33,500	1,000	30,200	10.2	89.8
33,500	3,000	30,200	10.8	89.2
33,500	440	31,700	5.4	94.6
33,500	1,000	31,700	5.5	94.5
33,500	3,000	31,700	5.9	94.1
33,500	440	29,900	10.9	89.1
33,500	1,000	29,900	11.1	88.9
33,500	3,000	29,900	11.8	88.2

Finally, the DEIR/EIS cites to the settlement agreement regarding return water as support for the assumption that the amount of SVGB groundwater included in the source water is expected to decrease over time. This assumption appears to be based on the belief that the project's cumulative impacts will make the entire Marina Subarea hypersaline and therefore less

groundwater will be available to pump. Under the proposed return water agreement and project description, the greater the project's cumulative impacts to the Marina Subarea water quality, the less mitigation Cal-Am is required to provide. Not only is this inconsistent mitigation requirements under the California Environmental Quality Act (CEQA), it ignores the Sustainable Groundwater Management Act's (SGMA) mandates as discussed below. As shown in Diagram 4, when efforts under SGMA increase inland groundwater levels to further abate seawater intrusion, a greater amount of groundwater will be captured by the slant well intake system.

DEIR/EIS's water rights discussion presents misleading picture of where slant wells will draw water:

One such example is on **Page 2-30,** where the DEIR/EIS states, "The proposed project (MPSWP) and Alternative 5a are designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean … b***ecause the project supply wells could draw some water from the Basin***, concerns have been expressed as to whether CalAm does or will hold legal rights to use the water that would be taken by the slant wells, treated at the desalination plant and supplied to CalAm customers located outside the Basin." (emphasis added)

HGC Comment No. 2:

The above statements are likely to mislead the public and the Commissioners. While it may be accurate to state that the proposed slant wells will pump most of the water from underneath the ocean, to state that the project supply wells "could draw some water from the Basin," using the term "could" inaccurately suggests there is some doubt that groundwater would be drawn from the SVGB.

While the amount of groundwater that would be drawn from the SVGB cannot be accurately determined based on available information or DEIR/EIS modeling to date, there is no question a substantial amount of groundwater will be drawn from the SVGB – and based on currently available information, a much greater quantity than indicated in the DEIR/EIS as discussed in Comment No. 1 and explained later in these comments.

DEIR/EIS's water rights discussion inaccurately suggests the MPWSP will create "developed water" because all the aquifers in the Marina Subarea of the SVGB are contaminated by seawater and will not support beneficial uses; this conflicts with available data from the TSW's monitoring wells:

Specifically, **Pages 2-32 and 33** of the DEIR/EIS state:

> Essentially, if the extraction of otherwise unusable Basin groundwater will not harm lawful water users and any fresh water extracted can be returned to the Basin without injury to existing legal water users, then CalAm would have rights to the portion of feedwater that comes from the Basin because the MPWSP product water that contains such Basin water would be "developed water."

Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source. "The key principle of developed water is if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized." Report at 37. Due to long-term seawater intrusion (where the seawater has moved inland) in the Basin, large areas of the Basin groundwater are impaired as to drinking and agricultural uses. The geographic areas from which the project supply wells could draw water inland of the sea are indeed intruded by seawater. (See Section 4.4, Groundwater Resources) "Since this groundwater is reportedly impaired, it is unlikely that this water is, or will be put to beneficial use." Report at 15. In fact, in response to concerns over seawater intrusion and historic overdraft in the Basin, the County adopted Ordinance No. 3709, which precludes the installation of new groundwater wells and prohibits groundwater pumping between mean sea level and 250 feet below mean sea level in certain areas.

HGC Comment No. 3:

Contrary to the DEIR/EIS suggestion, "developed water" is not being created by the MPWSP, but is already there because of the restriction on pumping from Monterey County adopted Ordinance No. 3709 (and conservation efforts in the area) and it would otherwise be available to existing overliers and appropriators if it were not for the Ordinance restrictions. As shown in Table 2 – Groundwater Composition Based on TDS Concentrations – the salinity of groundwater in the Marina Subarea affected by the project is not largely intruded by seawater as claimed in the DEIR/EIS. Using the TDS concentration of 33,500 mg/l for ocean water and the TDS concentration of native groundwater 440 mg/l,[6] we analyzed the composition of the local groundwater in the aquifer zones that will be produced by the MPWSP slant wells by using the following equation:

$$OWP = (GS-IS) / (OWS - IS) \times 100.$$

OWP = Ocean Water Percentage, (%)
GS = Groundwater Salinity, (mg/l)
IS = Inland Water Salinity (TDS = 440 mg/l)
OWS = Ocean Water Salinity (TDS = 33,500 mg/l)

[6] / Our use of 440 mg/l here is based upon the TDS concentration provided by Geoscience as the SVGB average concentration. It should not be used to infer that groundwater that exceeds 440 mg/l has no beneficial uses. As discussed in Comment No. 21, the DEIR/EIS assumption that groundwater that exceeds 500 mg/l has no beneficial uses is wrong and inconsistent with the Basin Plan.

The analysis of available data shows that the percentage of ocean water decreases significantly within a short distance from the coastline. It also shows that within the area affected by the project, the groundwater is not the salinity of seawater as claimed in above passage – or intruded for up to 8 miles inland as stated in the DEIR/EIS on page 4.4-31. A visual presentation of these data is shown in Diagram 5 – Percent Groundwater and Ocean Water with Distance from the Shoreline.

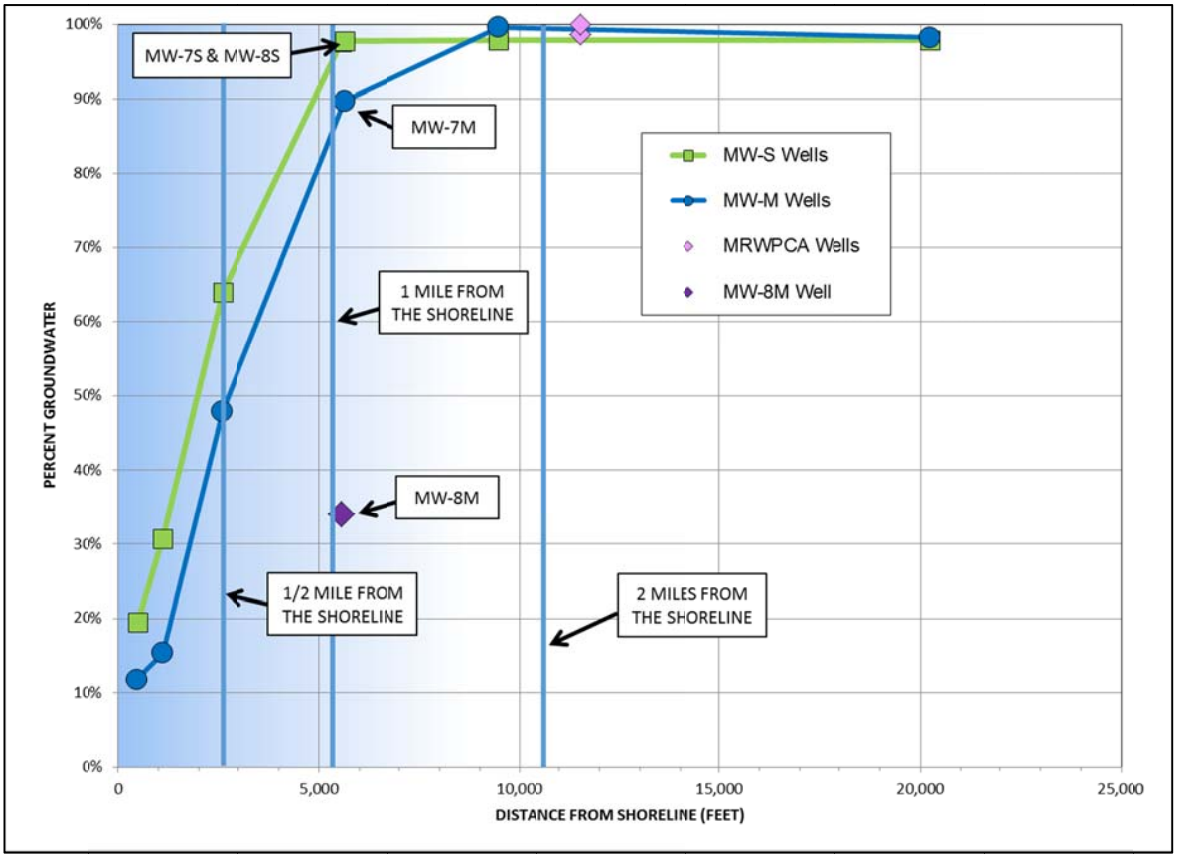
Table 2 – Groundwater Composition Based on TDS Concentrations

GROUND-WATER SAMPLE LOCATION	OCEAN WATER SALINITY/TDS (MG/L)	GROUND-WATER SALINITY/TDS (MG/L)[1]	GROUND-WATER SAMPLE SALINITY/TDS (MG/L)	PERCENT GROUND-WATER	PERCENT OCEAN WATER	DISTANCE FROM THE COASTLINE (FEET)
DUNE SAND AQUIFER OR A-AQUIFER						
MW-1S	33,500	440	27,050[2]	19.5 %	80.5 %	480
MW-3S	33,500	440	23,350[2]	30.7 %	69.3 %	1,100
MW-4S	33,500	440	12,350[2]	64.0 %	36.0 %	2,590
MW-5S	33,500	440	1,141[2]	97.9 %	2.1 %	9,450
MW-6S	33,500	440	608	99.5 %	0.5 %	20,240
180-FOOT AQUIFER						
MW-1M	33,500	440	29,600[2]	11.8 %	88.2 %	465
MW-3M	33,500	440	28,400[2]	15.4 %	84.6 %	1,102
MW-4M	33,500	440	17,700[2]	47.8 %	52.2 %	2,580
MW-5M	33,500	440	558[2]	99.6 %	0.4 %	9,462
MW-6M	33,500	440	966	98.4 %	1.6 %	20,240
400-FOOT AQUIFER						
MRWPCA NO. 1	33,500	440	890[3]	98.6 %	1.4 %	11,530
MRWPCA NO. 2	33,500	440	350[4]	100.3 %	-0.3[4]	11,530

1 – AVERAGE INLAND WATER SALINITY FROM (GEOSCIENCE, 2015a)
2 – AVERAGED FROM DATA IN (GEOSCIENCE, 2015p) TABLE 2
3 – DATA FROM (GEOSCIENCE, 2015p) FIGURE 3-5
4 – WATER QUALITY BETTER THAN INLAND WATER SALINITY

Figure 1 – Average Chloride Concentrations, Dune Sand and 180-Foot Aquifer (attached to these comments) shows the location of the wells being monitored for the TSW project. As shown, the chloride concentrations in the 180-Foot Aquifer decrease from 9,664 mg/l in MW-4M to 105 mg/l in MW-5M, which is in the middle of the reported zone of seawater intrusion that is defined by a chloride concentration of 500 mg/l (B&C, 2015). Figure 2 – Average Total Dissolved Solids Concentrations, Dune Sand and 180-Foot Aquifer (attached to these comments) shows this same trend in the average TDS values obtained from available laboratory data (Geoscience, 2015p) and unpublished data provided by the CPUC in response to an MCWD data request, which we understand MCWD will include with its comments.

Diagram 5 – Percent Groundwater and Ocean Water with Distance from the Shoreline



The Monterey Regional Water Pollution Control Agency (MRWPCA) well locations are indicated on Figures 1, and 2, for reference, however, available data are provided on Figure 3 – MRWPCA Wells in 400-Foot Aquifer (attached to these comments), which shows the delineation of the seawater intrusion front(s) estimated by previous study (B&C, 2015) for water

quality in the 400-Foot Aquifer at the MRWPCA site. As shown on Figure 3, the MRWPCA Wells are within the seawater intruded portion of the SVGB but have a fresh water quality.

To assist in reviewing the chemical character of the fresh water contained in the 180-FTE and Dune Sand Aquifers Figures 4 - and 5 – Stiff Diagrams Dune Sand and A Aquifer, and 180-Foot Aquifer (attached to these comments), respectively, visually show the dominant cations and anions for available groundwater data. As shown in Figure 4, monitoring wells MW-5S, MW-6S, MW-7S, and MW-8S have a distinctly different chemistry than the cluster of wells located at the CEMEX site. First, there are a number of overlying land uses in that area including agricultural, waste disposal, composting, and sewage treatment that commonly contribute salts and nutrients to groundwater. For instance, MW-5S has a water surface of approximately 35 feet above sea level. It is not possible for seawater intrusion to flow uphill to this location. The chemical character of MW-5S groundwater is a calcium chloride with a nitrate concentration of approximately 235 mg/l (nitrate as NO_3). Seawater does not have a high concentration of nitrate, which clearly shows this freshwater source has received about 25% of its existing dissolved mineralogy as a nutrient from overlying land uses. Both MW-7S and MW-8S have high nitrate concentrations of 198 mg/l and 123 mg/l, respectively, which appear to be flowing from the semi-perched water source at MW-5S and dilute on its way westward. Both MW-7S and MW-7M have a calcium chloride chemical character consistent with recharge from the semi-perched layer and not seawater with a sodium chloride chemical character.

These data appear to indicate that cessation of pumping along the coast in combination with natural recharge mechanisms, only now being discussed, has resulted in favorable groundwater conditions that appear to be protecting the shallow aquifers in an area of the SVGB located inland of the project and south (or in the vicinity) of the Salinas River. The DEIR/EIS does not acknowledge these water quality data as significant and insists that the groundwater is impaired to an extent that it is unlikely that this water is suitable for, or can be put to beneficial use. Available data do not support the DEIR/EIS's conclusion and in fact indicate additional study of existing conditions should be conducted to further understand sources of groundwater recharge and its movement within the aquifers of the Marina Subarea of the SVGB Pressure Area.

DEIR/EIS's water rights discussion incorrectly assumes that the proposed return water agreement or other alternatives will mitigate the project's groundwater impacts in the Marina Subarea as required by the State Water Resources Control Board's (SWRCB's) advisory opinion and CEQA:

On **Page 2-34 and 35**, the DEIR/EIS quotes the SWRCB report stating:

> Cal-Am could use one of several possible options to replace any fresh water it extracts from the Basin. Cal-Am could return the water to the aquifer through injection wells, percolation basins, or through the CSIP. Cal-Am would need to determine which of these methods would be the most feasible, and would in fact, ensure no

> harm to existing legal users. The feasibility analysis would depend on site-specific geologic conditions at reinjection well locations and at the percolation areas. These studies need to be described and supported in detail before Cal-Am can claim an appropriative right to export surplus developed water from the Basin.

Report at 39. The Report emphasizes more than once that any injection wells or percolation basins for the purpose of returning fresh water to the Basin would need to be located where the underlying aquifer does not contain degraded water so as to avoid a waste of beneficial water.

> In summary, to appropriate groundwater from the Basin, the burden is on Cal-Am to show no injury to other users. Key factors will be the following: (1) how much fresh water Cal-Am is extracting as a proportion of the total pumped amount and how much desalinated water is thus available for export as developed water; (2) whether pumping affects the water table level in existing users' wells and whether Cal-Am can avoid injury that would otherwise result from any lowering of water levels through monetary compensation or paying for upgraded wells; (3) whether pumping affects water quality to users' wells within the capture zone and whether Cal-Am can avoid or compensate for water quality impacts; (4) how Cal-Am should return any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes, both in the larger Basin area and the immediate area around Cal-Am's wells.

Report at 46. The Report concluded that further data were needed in order to apply the facts and evidence to the criteria set forth in the Report for determining CalAm's water rights. The Report noted that information was needed pertaining to the depth of the project supply slant wells, the hydrogeologic conditions of the site and the area, updated modeling to evaluate the impacts of the project, aquifer testing, and studies to help determine how extracted fresh water would be replaced. Most of these studies and activities have been undertaken and the results are described and reflected in Section 4.4, Groundwater Resources. CalAm has supplied details about its proposed supply wells and return water proposal. Test borings have helped to characterize the hydrogeologic framework within which the project would operate. Groundwater modeling has been conducted. CalAm also obtained approval to construct a test well on the CEMEX site. That well is in place (and core samples taken during the drilling of the well confirmed the assumptions about hydrogeologic conditions) and test pumping is occurring. Test slant well pumping and monitoring data was used to refine the aquifer properties

represented in the revised version of the groundwater model to test the model's reliability for simulating drawdown from slant well pumping. Once the test well results are complete, the modeling will be verified and will be re-run as warranted. Thus, the full panoply of evidence concerning the project's relationship to groundwater (and thus water rights) may continue to evolve and be refined throughout the CPUC proceeding. This preliminary analysis of water rights is based upon detailed and extensive groundwater aquifer characterization and groundwater modeling that has been undertaken by the EIR/EIS preparers to assess the effects of the project on Basin groundwater users.

HGC Comment No. 4:

The DEIR/EIS incorrectly assumes the "Settlement Agreement on MPWSP Desalination Plant Return Water," will mitigate all the project's groundwater impacts. The proposal, however, would return groundwater to the SVGB and provide benefit to well operators located north of the Salinas River, which is outside of the area that will experience the greatest impact from the project (i.e. Marina Subarea) which is located south of the river. See HGC Comments 9 and 10 for further discussion.

Regional data available for model construction south of the Salinas River in the vicinity of the CEMEX site are limited. The initial field work and aquifer testing conducted for the TSW project has provided hydrogeological data indicating conditions that were not anticipated during construction of the model (i.e., 180-FTE Aquifer semi-confinement, mounded water in the Dune Sand Aquifer, a portion of the Dune Sand Aquifer being confined along the river, freshwater present in the 180-FTE Aquifer at MW-5, etc.). The Lawrence Berkeley National Laboratories Peer Review contained in DEIR/EIS as Appendix E1 reviewed the hydrogeologic conditions incorporated and omitted from NMGWM ^{2015} and indicated on page 26 that,

> "In this case, the input of areal recharge to the 180-FTE at the edge of the FO-SVA will not increase in response to extractions, and so the area of capture zone in the 180-FTE aquifer will increase. Consequently the distribution of water level drawdowns due to the proposed extraction will be different than those predicted by the model. The portion of the total volume of water extracted that is from beneath the onshore is also likely to be different."

To proceed with any level of confidence with the water rights analysis and the amount of return water that will be required of the project, it is imperative that aquifer test results from the TSW and monitoring well information be used along with historical data available from Fort Ord Wells and the landfill monitoring wells to update and calibrate the NMGWM^{2016} in order to simulate MPWSP impacts. Incorporation of these data will require successful model modification and recalibration of the area south of the river to an acceptable standard. The failure to achieve successful modification and calibration is reportedly why the calibrated model (NMGWM^{2016}) was abandoned and the superposition model approach adopted. Without successful model revision and recalibration based on the newly acquired data, it will be

impossible for experts, much less the public, to understand the potential impacts of the TSW and the MPWSP production as explained in our comments.

DEIR/EIS's water rights discussion of potential harm fails to provide any estimate of groundwater pumped from slant wells and thus cannot assess the feasibility of the project or potential impacts to the groundwater basin or potential harm to users:

On **Page 2-35**, the DEIR/EIS states:

> The extensive groundwater modeling conducted for this EIR/EIS and discussed in detail in the Groundwater Resources section and in Appendix E2 is different from that conducted for the 2015 Draft EIR on the MPWSP. As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. **This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells** [emphasis added]. Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water, which is a combination of ocean water and water that originated from the inland aquifers of the Basin. CalAm proposes as part of the MPWSP to return to the Basin (in the manner further described below) the fresh water portion of the brackish source water. In other words, although the groundwater modeling indicates that the **Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water** [emphasis added], the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water.
>
> The concept of significant effect under CEQA is not necessarily synonymous with harm or injury to water rights holders. In other words, physical change caused by the project might not rise to the level of a significant environmental impact under CEQA, but could still cause some harm or injury to a Basin water user (for instance, if the cost to a Basin water rights holder of withdrawing water were to rise even though the environment would not suffer significant impacts). Here, though, the Groundwater Resources section of this EIR/EIS strives to and does in fact effectively and meaningfully analyze two of the three precise concepts of "harm" or "injury" set forth in the Report. **These two criteria are reduction in the availability of fresh water and reduction of water quality** [emphasis added]. In addition, the analysis in the Groundwater Resources section (based upon the groundwater modeling) provides an answer to the third concept of injury

> set forth in the Report, that of a reduction in groundwater levels that requires users to spend additional funds to extract water.

HGC Comment No. 5:

This section appropriately states that "This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells." Then it concludes "Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water." This statement is contradicted by the freshwater quality observed in wells constructed and/or sampled for the observation of test slant well pumping. The blanket statement of seawater intrusion in the area ignores the conditions that have protected this specific section of coastline in the Marina Subarea and result in fresh water located in both the Dune Sand and 180-FTE Aquifers. When fresh quality groundwater is drawn from these inland areas and mixed with seawater produced by the MPWSP, a brackish source water at the project intake facilities will be the result.

Groundwater modeling conducted using the NMGWM^{2016} or the superposition model does not indicate that the "Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water…". Neither of these models are a dual density model that can track and predict water quality changes. The MPWSP brackish source water is a result of mixing seawater and fresh potable groundwater drawn into the slant well facilities from the SVGB. It is only a matter of inference to conclude that the contamination of the freshwater with seawater will result in a brackish water supply, even without the modeling capabilities.

The analysis conducted for the DEIR/EIS cannot and does not effectively or meaningfully analyze the reduction in the availability of fresh water or reduction of water quality as stated in the above passage. Rather, because the models constructed for the DEIR/EIS are not capable of this analysis, the DEIR/EIS's discussion of these issues amounts to pure speculation. Importantly, the DEIR/EIS conclusions are not consistent with the limited data that is available, which indicate a substantial area of fresh water that is contained in the 180-FTE and Dune Sand Aquifers directly inland of the CEMEX site. As this groundwater is removed by the project and replaced with seawater, the project will effectively reduce fresh water in the Marina Subarea for the duration of the project and the induced concentrated flow of seawater will reduce the water quality and render the area unsuitable for freshwater projects for the foreseeable future.

DEIR/EIS's water rights discussion conclusion that the MPWSP will not significantly impact groundwater resources is not supported by the MPWSP modeling to date or other evidence:

On **Page 2-36**, the DEIR/EIS after addressing the significance thresholds further goes on to state:

> Applying the thresholds stated above, the analysis concludes that the MPWSP would not result in a significant impact to groundwater resources. It would not reduce, or affect at all, the availability of fresh water (only brackish water from the Basin is projected to be drawn into the MPWSP supply); would not lower groundwater levels in the Basin so as to affect the water supply of any

groundwater users or substantially deplete aquifer volume; and would not alter or reduce groundwater quality.

HGC Comment No. 6:

The DEIR/EIS's conclusions are not supported by the information presented in the DEIR/EIS or any other evidence and must be revised.

First, the suggestion that the project "would not affect at all" the availability of fresh water because only brackish water is projected to be drawn into the MPWSP supply is misleading and conflicts with other sections of the DEIR/EIS. As discussed in Comment No. 5 above, the DEIR/EIS's speculation that only brackish water would be extracted by the project's slant wells is not supported by the models used to analyze the project impacts. It would appear beyond dispute that the project will replace freshwater and slightly brackish water with highly saline seawater and, therefore, alter and reduce the groundwater quality. Nor is this impact limited to the upper aquifers in the Marina area, the water budget obtained from our independent operation of the calibrated NMGWM^{2016} shows that the project will effectively cause up to 235 acre-feet per year to seep upward out of the 900 Foot-Deep Aquifer. This quantity could be significant on a cumulative basis and could adversely affect the main source of groundwater presently used by the MCWD - the deep aquifer. Therefore, the DEIR/EIS must be revised based on reliable modeling to disclose that the project will reduce the availability of fresh water in the Marina Subarea, including the Deep 900-Foot Aquifer.

Second, the DEIR/EIS's statement that the project would not lower groundwater levels in the SVGM so as to affect the water supply of any groundwater users or substantially deplete aquifer volume is similarly unsupportable. The DEIR/EIS incorrectly assumes that unless the project is directly/solely responsible for causing water levels in an existing well to drop below the wells' screened intervals, the project would not substantially deplete aquifer volume. Despite the fact that it is undisputed that the project will deplete aquifer volumes, the DEIR/EIS fails to consider what amount of depletion would constitute a substantial impact. As explained further below, assuming that lowering groundwater levels in the Marina Subarea would not substantially deplete aquifer volume unless an existing well goes dry is not a meaningful analysis, especially in this portion of the SVGB where pumping is restricted to support basin water level recovery.

Third, the DEIR/EIS's statement that the project would not alter or reduce groundwater quality is demonstrably false. The project, by design, will significantly reduce groundwater quality within the Marina Subarea. Moreover, this statement fails to consider how dropping groundwater heads along the coast has the potential to significantly induce greater seawater intrusion and interfere with future Sustainable Groundwater Management Agency activities.

DEIR/EIS's water rights discussion conclusion that the SVGB and Basin users will not be harmed fails to consider the project's water quality impacts on the Marina Subarea:

On **Page 2-36 and 37**, the DEIR/EIS states:

> Due to the long-degraded condition of water in the Basin within the radius of influence (the area within which the project could affect groundwater levels), there are few active wells that could potentially be affected by the project. As discussed in detail in the Section 4.4, Groundwater Resources, there are only three active supply wells with well screens across the Dune Sand Aquifer or 180-Foot Equivalent Aquifer within the area where the project may cause groundwater levels to decrease by more than 1 foot but no more than 5 feet.3 These three wells are located at the Monterey Peninsula Landfill and are used for dust control. Given that the well pumps and the screens are set at least tens of feet below the existing groundwater level, a decrease in the levels of less than 5 feet would not cause injury to this overlying user. There are four active wells with well screens in the 400-Foot Aquifer. These include the South Well on the CEMEX property, a well on land owned by Ag Land Trust that is used to supply water for dust control, and two private wells with unknown owners. Due to the brackish to saline quality of the groundwater within the 400-Foot Aquifer, these wells would not be expected to supply drinking water. The Groundwater Resources section concludes as to all active wells that a water level decline between 1 and 5 feet would not expose well screens, cause damage, or reduce yield in the groundwater supply wells that could be influenced by the MPWSP. All in all, the project was determined not to result in a significant impact in terms of groundwater supplies either quantitatively or qualitatively. Thus, it appears reasonable to conclude that the MPWSP would not result in harm or injury to the water rights of legal users of water in the Basin in terms of fresh water supply or water quality, two of the Report's three injury criteria relative to the development of legal water rights.

HGC Comment No. 7:

As noted above, this is not a meaningful analysis of the project's potential to substantially deplete aquifer volumes or impact current water users within the Marina Subarea. More importantly, it does not assess or analyze the project's potential cumulative water quality impacts on existing users, in and outside the potential drawdown area, or reasonably foreseeable groundwater projects that may be conducted under the SGMA. These projects include, but are not limited to, the use of the MCWD's Armstrong Ranch property for storage and recovery of river diversions.

DEIR/EIS's water rights discussion conclusion that the SVGB and Basin users will not be harmed fails to consider the project's water quality impacts on the Marina Subarea water rights holders:

On **Page 2-37**, the DEIR/EIS states:

> Turning to the third of the three injury criteria set forth in the Report – increased pumping costs – as noted above, the water levels in seven potentially active wells could drop by somewhere between 1 and 5 feet, thus requiring marginally more

energy to extract the water from those wells. As a physical solution to ensure that those well owners continue to enjoy the same measure of water rights as they do prior to MPWSP implementation and thus are not injured, CalAm could compensate the well owners for any increased pumping costs causally tied to the MPWSP. Assuming that CalAm were to compensate the owner of these wells for any increased pumping costs sustained due to the MPWSP, the slant wells' operation would not cause injury under the Report's third injury criteria.

Furthermore, CalAm has proposed a mitigation measure (set forth in Section 4.4, Groundwater Resources as Mitigation Measure 4.4-3) to further ensure that Basin groundwater users are not injured. Working with the Monterey County Water Resources Agency, CalAm would fund the installation of monitoring wells to expand the County's network of groundwater monitoring wells so as to be better able to monitor on an on-going basis the effect of the project slant wells on groundwater within the radius of influence. If the monitoring efforts were to demonstrate that the project were affecting any existing neighboring active wells, CalAm would coordinate with the affected well owner and take both interim and long-term steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs).

In light of the foregoing, it seems reasonable to conclude that the MPWSP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce "developed water" for beneficial use and under the physical solution doctrine.

HGC Comment No. 8:

Groundwater Resources Mitigation Measure 4.4-3, which is voluntary and appears unenforceable, fails to ensure the project will not result in significant groundwater impacts to the Marina Subarea or its groundwater users. Given the DEIR/EIS's use of the superposition model, which fails to evaluate potential future cumulative conditions, it would be impossible for anyone to assess whether impacts to a well are directly tied to the MPWSP. As well, the use of this model cannot determine the impact of the project on future basin management efforts planned to improve the groundwater conditions in the SVGB.

Again, the DEIR/EIS does not assess or analyze the project's potential water quality impacts on existing users, in and outside the potential drawdown area, or with any reasonably foreseeable groundwater projects under the SGMA.

DEIR/EIS's water rights discussion estimates regarding feedwater composition are not supported by evidence and conflict with the SWRCB RWQCB WQCP:

On **Pages 2-37 and 38**, the DEIR/EIS states:

> The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water. Based on the groundwater modeling and as discussed in the Groundwater Resources section, while the project may actually improve the Basin's seawater intrusion issue by slowing the seawater interface line from advancing more inland, the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project. If indeed no fresh water is withdrawn by the project, then no physical solution in the form of return to the Basin of fresh water (or other off-setting mechanism to alleviate the harm) would be required in order for CalAm to secure and maintain water rights for the project feedwater. If the water in the Basin were to become fresher in the future such that the MPWSP supply wells were drawing fresh water from the Basin, then a physical solution (such as the proposed return component of the project, discussed below) would be needed in order for CalAm to maintain rights to the Basin water for the project.
>
> In any event, the proposed project does include a return water component. CalAm proposes to return to the Basin the percentage of supply water that is determined to have originated from the inland aquifers of the Basin, i.e., the fresh water component of the water that is extracted by the slant wells as if the brackish water could be segregated between its ocean (seawater) and inland (fresh water) elements. Not only would this plan further ensure that there is no injury to Basin groundwater users, but the Basin and its groundwater users could be benefitted by the return of fresh water to the seawater-intruded Basin.

HGC Comment No. 9:

First, data developed for the TSW project indicate that the blanket statement "The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water" is false as discussed above. Wells MW-5, MW-6, MW-7, and MW-8 shallow and middle wells are located within the geographical area that would be affected by the project and the measured TDS concentrations for samples from the Dune Sand Aquifer wells ranges from approximately 608 to 1,237 mg/l and is considered fresh water under the Basin Plan. Table 3 – Dune Sand and 180-FTE Aquifers Water Quality Data summarizes the existing freshwater quality in these 4 shallow wells. Moreover, salts impacting these wells are derived from overlying land uses and not seawater intrusion. See HGC Comment No. 3. As well, the 180-FTE Aquifer zone was found to be saline at MW-8M, but brackish at MW-7M and fresh at MW-5M and MW-6M. These new data indicate the statement that the project "may actually improve the Basin's seawater intrusion issue" is not accurate for this area of the SVGB.

Other than the more coastal wells MW-7M and MW-8M, these wells do not contain chloride concentrations above the 500 mg/l indicator of seawater intrusion (see Table 3).

Table 3 – Dune Sand and 180-FTE Aquifers
Water Quality Data

WATER QUALITY SOURCE	SAMPLE DATES[1]	TDS (MG/L)	CHLORIDE (MG/L)	NITRATE-NO3 (MG/L)[3]
MW-5S	3/10/15 4/02/15	1,142	272	235
MW-5M	3/03/15 4/02/15	559	105	67
MW-6S	4/05/15	608	57	ND
MW-6M	4/04/15	966	167	ND
MW-7S	8/03/15	1,200	387	198
MW-7M	8/02/15	3,832	1,739	15
MW-8S	5/28/15 6/23/15	1,237	256	119
MW-8M	5/27/15 6/23/15	22,250	11,463	6

[1] – IF MORE THAN ONE SAMPLE DATE IS SHOWN SAMPLE RESULTS WERE AVERAGED

Second, the determination method for calculating brackish groundwater produced is not clearly identified in the DEIR/EIS. Brackish groundwater proximate to the CEMEX site has been identified through initial water quality testing of monitoring well samples for the TSW project. The results of a feedwater blend using these brackish groundwater data for comparison are presented in Table 4 – Feedwater Composition Based on Brackish Groundwater TDS Concentrations.

These estimates indicate the range of fresh and brackish groundwater percentages that would be required to be returned to the SVGB given present water quality conditions in shallow and middle aquifers at MW-4. Brackish groundwater samples proximate to the TSW indicates the average TDS concentration is between 12,350 and 17,700 mg/l. Based on these brackish groundwater concentrations and using the present average feedwater salinity (29,900 mg/l) previously estimated from the February 2017 samples (Geoscience, 2017), the amount of

groundwater produced by the MPWSP from the SVGB would range between 4,596 and 6,152 afy (17 to 22.8 percent).

Table 4 – Feedwater Composition Based on Brackish Groundwater TDS Concentrations

WATER QUALITY SOURCE	OCEAN WATER SALINITY (MG/L)	GROUND-WATER SALINITY (MG/L)	FEED-WATER SALINITY (MG/L)[3]	GROUND-WATER (%)	OCEAN WATER (%)	ESTIMATED ANNUAL QUANTITY RETURNED (AFY)
BASIN AVE.	33,500	440[1]	29,900	10.9	89.1	2,943
WQCP	33,500	3,000	29,900	11.8	88.2	3,187
MW-4S	33,500	12,350[2]	29,900	17.0	83.0	4,596
MW-4M	33,500	17,700[2]	29,900	22.8	77.2	6,152
MW-5S	33,500	1,142	29,900	11.1	88.9	3,004
MW-5M	33,500	559	29,900	10.9	89.1	2,951
MW-6S	33,500	608	29,900	10.9	89.1	2,955
MW-6M	33,500	966	29,900	11.1	88.9	2,988
MW-7S	33,500	1,200	29,900	11.1	88.9	3,009
MW-7M	33,500	3,832	29,900	12.1	87.9	3,276

1 – AVERAGE INLAND WATER SALINITY FROM (GEOSCIENCE, 2015a)
2 – AVERAGED FROM DATA IN (GEOSCIENCE, 2015p) TABLE 2
3 – AVERAGED FROM TSW LABORATORY TESTS IN FEBRUARY 2017 (GEOSCIENCE, 2017)

For comparison, the present feedwater concentration would require 2,943 afy be returned to the SVGB as groundwater produced with an average TDS concentration of 440 mg/l. Using the RWQCB WQCP TDS concentration of 3,000 mg/l as usable groundwater indicates over 3,187 afy would need to be returned to the SVGB to mitigate groundwater pumped as a feedwater supply. These estimates ignore the salt water recharged to the aquifer inland of the TSW by the CEMEX operations.

Moreover, the project return water proposed would not ensure that there is no injury to SVGB groundwater users. While the return water proposal would likely increase groundwater levels in other areas of the SVGB around Castroville, it would not address potential harms to present and future legal users in the Marina Subarea.

DEIR/EIS's assumption that the "Settlement Agreement on MPWSP Desalination Plant Return Water" will mitigate the project's groundwater impacts to the SVGB and the Marina Subarea is not supportable:

On **Page 2-38 and 39**, the DEIR/EIS states:

> CalAm has worked with other stake-holders to develop its current proposal for returning water to the Basin. The construct proposed was not an identified option at the time that the SWRCB Report was prepared and thus was not specifically addressed therein, but appears to advance the goals stated in the Report for returning water to the Basin. CalAm proposes to deliver fully desalinated water to end users for use in lieu of existing groundwater production from the SVGB.
>
> The two points of delivery would be (i) to the Castroville Community Services District (CCSD) to supply water for municipal purposes (e.g., typical drinking, bathing, sewer, watering and other non-agricultural water uses) and (ii) to the Castroville Seawater Intrusion Project (CSIP) pond or directly into the reclaimed water CSIP pipe for use by the agricultural users that obtain water through CSIP. Under these return water locales, the clean desalinated water would be provided for municipal or agricultural use (respectively) in lieu of pumping Basin water in an amount equal to the quantity of return water. The return water would be supplied as follows:
>
> 1. At the start-up of the MPWSP, 175 acre feet of return water would be provided to CSIP.
>
> 2. Each year, 805 acre feet of return water will be provided to CCSD, even if the calculated amount of Basin water withdrawn by MPWSP is less than that amount.
>
> 3. To the extent that the calculated amount of Basin water withdrawn by MPWSP exceeds 805 acre feet, that excess amount will be provided to CSIP.
>
> Water is expected to be returned between May and November of the same calendar year as it is withdrawn (see Chapter 3, operating table) such that the senior overlying and prescriptive users would not suffer harm from loss of water. As examined by the groundwater modeling and explained in the Groundwater Resources section, this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD and adjacent areas because water levels would increase as a result of in-lieu groundwater recharge, and would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas. Since this return option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, it appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.

HGC Comment No. 10:

First, the 175-acre feet of return water would be provided to CSIP at the start-up of the MPWSP grossly underestimates the amount of groundwater that modeling shows will be pumped during the initial start-up period. See HGC Comment Nos. 1 and 5.

Second, the statement that the project would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas is misleading. While the proposed return water agreement would likely increase groundwater levels in other areas, it would not reduce the area of influence within the Marina Subarea. Moreover, the DEIR/EIS suggestion that the project would benefit legal water users is only a half-truth as it fails to acknowledge that it does not address potential harms to present and future legal users in the Marina Subarea.

For this mitigation measure to be effective, the water user receiving the offset supply to reduce pumping must be located in the Marina Subarea of the SVGB affected by the project (i.e., south of the Salinas River). To avoid potential injury to the Marina Subarea, the DEIR/EIS should also analyze potential mitigation through injection well sites to ensure they will mitigate the projects impacts on the SVGB to a less-than significant level (i.e., no degradation of water quality in the Marina Subarea). We note that placing the wells in the wrong location could actually push groundwater impacted by seawater into aquifer areas that are currently fresh to slightly brackish in quality, but usable.

DEIR/EIS's discussion of the project's consistency with Monterey County Water Resources Agency (MCWRA) Agency Act is misleading and inaccurate.

On **Pages 2-39 and 40**, the DEIR/EIS states:

> … the State Water Resources Control Board Report, discussed in detail above, raises the question as to whether the Agency Act would apply to all of the proposed project groundwater extractions given the location of some screens of the slant wells outside the jurisdictional boundaries of the County:
>
> > The applicability of the Agency Act to the MPWSP is unclear. As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach. Although the project would serve areas within the territory of the MPWSP, the points of diversion for these proposed wells may be located outside the territory of MCWRA as defined by the Agency Act.
>
> Report at 39. The Agency Act's effect on project feasibility may be minimized by virtue of its application only to water drawn through well screens located within County jurisdiction.
>
> Assuming, however, that the Agency Act would apply to the entire project, the Report (while acknowledging that the SWRCB is not the body charged with interpreting the Agency Act) opines that the project would appear consistent with

the Agency Act and the Ordinance given that the project would return to the Basin any quantity of fresh water withdrawn from the Basin. The Report states:

> Based on the State Water Board's analysis, as reflected in the Report, the Project as proposed would return any incidentally extracted usable groundwater to the Basin. The only water that would be available for export is a new supply, or developed water. Accordingly, it does not appear that the Agency Act or the Ordinance operate to prohibit the Project. The State Water Board is not the agency responsible for interpreting the Agency Act or MRWCA's ordinances. It should be recognized, however, that to the extent the language of the Agency Act and ordinance permit, they should be interpreted consistent with policy of article X, section 2 of the California Constitution [declaring that the waters of the state shall be put to maximum beneficial use], including the physical solution doctrine . . .

Report at 40. Therefore, it appears at least preliminary reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility.

HGC Comment No. 11:

First, the DEIR/EIS presents inconsistent and misleading language regarding the location of the well screens. As the DEIR/EIS preparers are aware, the project's slant well locations have moved significantly landward when compared to the originally proposed project intake location evaluated by the SWRCB (see Figure 4, SWRCB, 2013). The conceptual location and design of the original slant well seawater intake system array is shown in Diagram 6 – Original Test Slant Well Design Evaluated by SWRCB. Contrary to this original design, the proposed slant well designs and locations disclosed in the DEIR/EIS indicate a majority of the well screen sections are now located landward of the shoreline. In addition, only the deepest portions of the well screens would potentially be located beneath the ocean floor with the shallower well screen intervals producing from the Dune Sand Aquifer and located onshore (see DEIR/EIS, Chapter 3, Figures 3-3a and 3-3b, and Table 3-2). Thus, the project does not appear to comply with the MCWRA Agency Act (also see details on, Geoscience, 2015a, Figures 47, 48, and 51 to 69) as the DEIR/EIS suggests. The DEIR/EIS must be revised to address consistency with the Agency Act based on the percentage of the well screens for each test well that has screened intervals located landward of the beach mean high water line to assess consistency with the MCWRA Agency Act. It is also not clear if the SWRCB would have arrived at the same conclusions if it had been reviewing the presently proposed intake design.

Diagram 6 – Original Test Slant Well Design Evaluated by SWRCB

Second, it is unclear as to what is considered "usable groundwater." To be consistent with the RWQCB WQCP, all water under 3,000 mg/l TDS would need to be returned (RWQCB, 2011). See HGC Comment No. 21.

Finally, we note that the Agency Act further empowers the MCWRA to prevent extraction of groundwater from particular areas of the SVGB if needed to protect groundwater supplies. As discussed in these comments, the project will adversely impact groundwater supplies. Therefore, the DEIR/EIS must address compliance with this mandate also.

DEIR/EIS's discussion of the project's consistency with the Annexation Agreement is not supported by the evidence.

On **Page 2-42**, the DEIR/EIS states:

> Moreover, even if annexation of the CEMEX property to MCWD's benefit assessment zones were to take place in the future, triggering the 500 afy groundwater withdrawal limitation, it appears that operation of the MPWSP could still be feasible. CalAm could conceivably construct and employ an injection well on the CEMEX property to return 500 afy to that property such that the MPWSP would have a net-zero effect on groundwater from the CEMEX land and conceivably could operate regardless of whether the 500 afy groundwater withdrawal limitation were imposed at some point in the future.

HGC Comment No. 12:

There is no evidence to support the conclusion that returning 500 afy to the CEMEX property would ensure that no more than 500 afy groundwater was withdrawn from the project as limited by the Annexation Agreement. In fact, the evidence indicates substantially more groundwater would need to be injected to demonstrate consistency with the agreement.

Comments on DEIR/EIS Chapter 3 (Project Description).

DEIR/EIS's project description inaccurately suggests the TSW's groundwater impacts were fully evaluated by the California Coastal Commission:

The DEIR/EIS at **Page 3-2** states:

> To inform the final design of the subsurface slant wells and the MPWSP Desalination Plant treatment system, and to collect geologic and hydrogeologic data needed for Federal, state, regional, and local permits for the full-scale project, CalAm built a test slant well at the same location as the seawater intake system for the proposed Project. CalAm currently is operating the test slant well as a pilot program to collect data. Construction of the test slant well and operation of the pilot program was covered under separate environmental review. The test slant well is permitted to operate until February 2018 and it is not part of the proposed Project being evaluated in this EIR/EIS. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be removed. However, if the proposed subsurface slant wells at CEMEX are ultimately approved as part of the proposed Project, CalAm would convert the test slant well into a permanent well and operate it as part of the seawater intake system. The conversion and long-term operation of the well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project.

HGC Comment No. 13:

I have previously provided comments on the California Coastal Commission's analysis of the TSW in the *MCWD v. California Coastal Commission* litigation. Please refer to my comments addressing the inadequacies in the Coastal Commission environmental review of the TSW. I further note the project should return the groundwater that has been pumped to date by the TSW as mitigation for the project's cumulative impacts to groundwater.

DEIR/EIS's project description inaccurately suggests all slant wells would extend offshore:

On **Pages 3-15 through 17**, the DEIR/EIS states:

> The nine new permanent slant wells would be approximately 900 to 1,000 feet long and drilled at approximately 14 degrees below horizontal to extend offshore

> to a distance of 161 to 356 feet seaward of the MHW line (except #8, which would not extend past the MHW line) and to a depth of 190 to 210 feet beneath the seafloor. This means that although all construction activities and ground disturbance would occur above mean sea level and landward of the MHW line, the well casings would extend subsurface and seaward of the MHW line and below the seafloor within MBNMS. Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. CalAm would operate eight wells at a time at approximately 2,100 gallons per minute (gpm) per well and maintain the other two wells on standby.
>
> Table 3-2 presents the total length of each slant well extending seaward of the MHW line. Because the slant wells would be drilled at a 14-degree angle, the horizontal distance to which the wells would extend seaward of the MHW line would be slightly shorter than the length of the well casing. This is illustrated in Figure 3-3b, Illustrative Cross-Sectional View of Subsurface Slant Wells.
>
> The 10 slant wells would be located at six sites along the back of the dunes: four sites (the test slant well site and three new sites) would each have one slant well, and two sites would have three slant wells (see Figure 3-3a). The well sites are numbered sequentially, with Site 1 being the northernmost site and Site 6 the southernmost site. The test slant well would be converted into a permanent well at Site 1. The nine new permanent wells would be drilled over a total distance of about 900 feet at Sites 2 through 6. The wellheads of the three new permanent wells at Site 2 would be located about 300 feet south of Site 1. Sites 3, 4, and 5 would be spaced approximately 250 feet apart and would have one slant well each. Site 6 would have three wells.

HGC Comment No. 14:

Again, we note that as designed, most of the slant well screen sections are not below the ocean floor and "seaward of the Mean High Water (MHW) line." See HGC Comment No. 11. We further note that the drilling technology utilized by the project has physical limitations. To the extent the drag (friction) on the drill casing exceeds the ability of the drill rig or the strength of the drill casing material being used, the length of the wellbore could be shortened and the well screen production sections would be that much more short of being offshore. In fact, it is our understanding the TSW is significantly shorter than designed due to drilling problems. The DEIR/EIS has not disclosed these problems or described how they will be resolved for new slant wells. If the seawater intake facilities were actually located at a shallow depth and a sufficient distance offshore, the problems with SVGB groundwater production would be mitigated.

Comments on DEIR/EIS Chapter 4.4 (Groundwater Resources).

DEIR/EIS's analysis of groundwater impacts fails to consider or disclose best available information in evaluating potential impacts to the SVGB and the Marina Subarea:

On **Page 4.4-4**, the DEIR/EIS states:

> This chapter's description of the groundwater system underlying the project area reflects the scientific community's current understanding of the subsurface geologic units and the depth and extent of the aquifers and aquitards …This comprehensive description of the groundwater system was developed through the collaborative efforts of recognized experts in Monterey Bay coastal geology and groundwater, as well as stakeholders in the groundwater use and management process who are familiar with this region. This body of expertise is the Hydrogeology Working Group (HWG), with members that represent the Salinas Valley Water Coalition, the Monterey County Farm Bureau, California American Water Company (CalAm); the CPUC/MBNMS CEQA/NEPA team members attend the meetings.[1] To identify the area's hydrology, the HWG relied on previous groundwater studies, published geologic maps, observation of well performance, water quality data, and findings from site-specific subsurface investigations and modeling. The data review and eventual formulation of an evidence- and science-based understanding of the local and regional hydrogeology required several years. So, to enable analysis of the impacts of the proposed project, this EIR/EIS presents the best information available for describing the hydrogeologic setting of the study area.
>
> [1] The HWG developed a collaborative plan of investigation to assess the hydrogeologic conditions in the project area. The draft work plan provided a phased approach to progressively investigate the hydrogeology and the potential effects of the project on aquifers from the use of subsurface slant wells for obtaining feedwater supply. The final work plan incorporated comments and recommendations by members of the HWG, and covered the investigative steps needed to evaluate the project impacts (Geoscience, 2013c). The final work plan became the hydrogeology investigation roadmap and resulted in the implementation of the fieldwork and modeling efforts described in the approach to analysis, Section 4.4.3.2.

HGC Comment No. 15:

As discussed herein, there are major holes in the project data set, analysis, and modeling. Initially, the TSW was installed along with the project monitoring wells during an extended drought period. Therefore, the conclusions reached from evaluation of these data are limited to these dry climatic conditions and cannot represent wet or average water year conditions within the Salinas Valley that affect the Marina Subarea. Recently during the 2016-2017 water year, abundant rainfall has ended the drought conditions and for the first time in the project 1 ½-year-baseline data set that is presently being established, the shallow monitoring wells MW-6S, MW-8S, and MW-9S show the result of significant recharge from the river (see Diagram 2). This recharge resulted in water level elevations ranging from approximately 7.5 feet amsl in MW-8S

to 17.5 feet amsl in MW-6S. These observations show that the river recharges the Dune Sand Aquifer in the vicinity of the Marina Subarea. However, it is not clear if the high water levels were purely a result of excess river flows, or a result of inflation of the rubber dam located downstream of MW-6. This occurrence is not discussed in the DEIR/EIS, nor was it recognized or discussed in the TSW Long Term Monitoring Report No. 96 and HWG Monthly Monitoring Report No. 16 where it is plainly visible (see Geoscience, 2017, Figure 2-5). This additional recharge mechanism substantiates the inference that protective groundwater levels in the Marina Subarea are maintained under average climatic conditions and have prevented saltwater intrusion into the Dune Sand Aquifer. This condition has likely protected the 180-FTE Aquifer and preserved the freshwater condition observed in MW-5M and MW-6M. Without a data set from a sufficiently long baseline period, the analysis that forms the "evidence- and science-based understanding of the local and regional hydrogeology" is biased by the limited baseline period observed along with the conclusions that are derived from it.

Next, the field work plan discussed in footnote 1 developed by the HWG also included a monitoring well (MW-2) which was to be located away from the CEMEX site and parallel to the coastline. Because MW-2 was never drilled, data are not available to evaluate the shallow coastal conditions in the Dune Sand Aquifer at a location removed from the influence of the CEMEX operations. These plant operations routinely discharge seawater into the dune sands landward of the TSW. The saline water originates from the dredge pond operations and from up to 500 afy produced from the CEMEX wells that draw from the seawater intruded 400-Foot Aquifer. Without MW-2, the effect of the CEMEX discharges on the TSW water quality cannot be determined. This artificial saltwater influence is not evaluated and will not be present further south along the coast where the remaining intake wells will be located. See HGC Comment No. 33 and Diagram 7.

The difficulty with model calibration in the Dune Sand and 180-FTE Aquifers south of the river is believed to largely result from a lack of data that developed the understanding of the hydrogeology and the aquifers recharge mechanisms that were used by the United States Geological Survey (USGS) in the SVIGSM. When this was discovered, the DEIR/EIS modeling effort abandoned the poorly calibrated NMGWM and switched to the superposition model, which still used the same aquifer parameters. Any error that was in the poorly calibrated area of the NMGWM south of the Salinas River, was brought into the superposition model and subjected to a new set of model boundary conditions. As such, the use of the inferior superposition model approach cannot show cumulative effects. Also, because the model is not a dual density model, it cannot be used to show effects of the CEMEX operation on the water quality produced by the TSW and ultimately the water quality changes in the Marina Subarea aquifers.

In summary, the DEIR/EIS's statement that its evaluation of groundwater impacts is based on an evidence- and science-based understanding of the local and regional hydrogeology and the best information available for describing the hydrogeologic setting of the study area, in fact, is not supportable. Importantly, the DEIR/EIS does not discuss how the project will affect

protective groundwater levels necessary to abate seawater intrusion in the SVGB and subsequently affect future sustainable conditions as discussed above and further below.

DEIR/EIS's analysis of groundwater impacts misrepresents baseline conditions in the Dune Sand Aquifer:

On **Pages 4.4-6 through 4.4-8**, the DEIR/EIS states:

> The Older Dune Sand, referred to as the Dune Sand Aquifer, extends to 85 to 95 feet below the ground surface beneath the CEMEX site and is about 60 feet thick at the locations of the proposed slant wells. The shallow aquifer underlying the Moss Landing Area is referred to as the Perched A Aquifer and differs from the Dune Sand Aquifer in that it is underlain by a defined layer of less permeable, fine-grained sediments known as the Salinas Valley Aquitard. Water quality of the Perched A Aquifer and Dune Sand Aquifer is directly influenced and controlled by seawater. Because of the aquifer's proximity to the ocean, most of the water in the Dune Sand Aquifer has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004). This influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence. Figure 4.4-3 presents a west to east geologic cross section that illustrates the relationship of the aquifers and geologic units from the CEMEX area to east of Highway 1 and Del Monte Boulevard. The upper portions of the proposed slant wells at the CEMEX of the proposed slant wells at the CEMEX site would have well screens installed across them, and would draw water from these deposits.

HGC Comment No. 16:

Based on data provided by the TSW investigation, the DEIR/EIS's statement that "Dune Sand Aquifer is directly influenced and controlled by seawater" is inaccurate. More importantly, the DEIR/EIS fails to quantify the fresh water held in storage in the Dune Sand Aquifer between the Salinas River and Fort Ord. It also does not estimate the amount of recharge the aquifer receives annually and the direction of flow in the the Dune Sand Aquifer beneath the confining layer (-2-Foot Aquifer). Without this information, it is impossible for experts, much less the public, to understand the project's potential impacts.

In Table 4.4-1 on page 4.4-6, the DEIR/EIS states: "shallow groundwater is not expected within the elevated dune deposits, except in localized low-lying areas along the coastline." This conclusion fails to recognize the protective head that is provided by this layer of the Dune Sand Aquifer along the coastline and, therefore, further undermines the project's evaluation of potential impacts to the groundwater system. We further note that relying on broad statements about the occurrence of seawater intrusion from a 2004 study (KGC, 2004) that did not have the benefit of the data being generated by the TSW project is not scientifically supportable because it inappropriately ignores the data that has been developed for project analysis. The DEIR/EIS's conceptual description of seawater in the Dune Sand Aquifer, which is being inferred from "the

aquifers proximity to the ocean" is then offset by the statement that "this influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence" does not remedy this problem. Without any attempt to quantify the fresh water held in storage in the Dune Sand Aquifer between the Salinas River and Fort Ord, neither experts nor the public can assess the project's potential impacts as noted above. Also, see Comment No. 3.

DEIR/EIS's analysis of groundwater impacts ignores available information demonstrating 180-Foot Aquifer is not unconfined rendering its analysis and modeling inadequate:

On **Page 4.4-11**, the DEIR/EIS states:

> At the CEMEX site, the Dune Sand Aquifer and the 180-FTE Aquifer are unconfined, as there are no extensive overlying low-permeability clay units.
>
> The Terrace Deposits of the 180-FTE Aquifer are composed of former alluvial fan and river floodplain deposits, possibly with some marine terrace deposits that contain sand, silt, and gravel now buried under the coastal dunes. There is groundwater within the Terrace Deposits, which extend to 240 to 255 feet below the ground surface beneath the CEMEX site, and are about 135 feet thick at the proposed slant well locations, thinning seaward. Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits.

HGC Comment No. 17:

Initially the DEIR's statements that Dune Sand Aquifer and the 180-FTE Aquifer are unconfined at the CEMEX site appear to conflict with the previous acknowledgement that the 180-FTE is semi-confined (Geoscience, 2015r, page 5), which indicate that the originally unconfined nature of the aquifer and its communication with the overlying Dune Sand Aquifer is overstated. This is not insignificant as the higher degree of confinement in the 180-FTE Aquifer will likely result in a greater radius of influence and more drawdown at further distances than the DEIR/EIS model presently predicts. Moreover, the presence of an aquitard layer just inland of the project area is documented by other studies including (Harding ESE, 2001, Plates 1 through 6, and Ahtna, 2015).

The DEIR's statement that recent groundwater testing shows the quality of water in the 180-FTE Aquifer is directly influenced by seawater is misleading. As discussed in Comment No. 3, data obtained from the TSW phase of work indicate that the blanket concept that all groundwater in the 180-FTE Aquifer is saline for miles inland is inaccurate. (See also Figures 1, 2, and 5).

DEIR/EIS's analysis of groundwater impacts inaccurately describes groundwater flow in the Dune Sand Aquifer:

On **Page 4.4-14**, the DEIR/EIS states:

> The MCWRA conducts a groundwater monitoring program throughout the Salinas Valley that for the fall 2013 monitoring event included 61 wells in the 180-Foot Aquifer and 103 wells in the 400-Foot Aquifer (Brown and Caldwell, 2015). Water-level data collected from wells in the study area indicate that the direction of groundwater flow is from the ocean to inland, as shown on Figures 4.4-5 and 4.4-6.
>
> In the Pressure and East Side Areas, groundwater flows northwest from the upper reaches of the SVGB until it reaches the city of Salinas, at which point groundwater in both the 180-Foot and 400-Foot Aquifers flows towards a groundwater depression north of the city (MCWRA, 2014b). Along the coast, flow in both the 180-Foot and 400-Foot Aquifers is towards the east, or landward, and has resulted in seawater intrusion. At the proposed slant well locations, the Dune Sand and 180-FTE Aquifers along the coast are hydraulically connected to the Pacific Ocean, as verified by the saline chemistry of the groundwater samples collected from borings drilled along the coast. The groundwater flow patterns within the Dune Sand Aquifer are not known but, based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled, with little to no net horizontal flow in any particular direction.
>
> There is a groundwater divide along the north side of the SGB separating groundwater flow paths between the SGB and the SVGB in both the shallow and deep aquifers, as illustrated on Figures 4.4-7 and 4.4-8. The SGB has been divided into four subareas, with the northern two composing the Northern Subbasin and the southern two composing the Southern Subbasin. The proposed ASR injection/extraction wells would be located near the northern border of the Northern Subbasin. There is a groundwater depression in both the shallow and deep aquifers in the Northern Subbasin, resulting in some landward flow along the coast (HydroMetrics, 2015).

HGC Comment No. 18:

The DEIR/EIS's description of the groundwater flow pattern in the Dune Sand Aquifer is inaccurate and based on available data (Harding ESE, 2001, Ahtna, 2015) it likely affects the ability to calibrate the model in the area south of the river. The conceptual complexity of the groundwater flow in the project area is shown in Diagrams 1 and 2 above. Most critically, without using available information and filling data gaps, the DEIR/EIS's description of baseline coastal aquifer flow conditions makes it impossible to quantitatively analyze the project's potential impacts on water quality. As explained in Comment No. 3, the project inland

monitoring wells discovered a significant amount of freshwater and brackish groundwater within the Marina Subarea of the project area of influence.

One such discovery was well MW-5S, which was constructed in the Dune Sand Aquifer that is perched on top of a regional clay layer. Adjacent the Salinas River at the Monterey Peninsula Landfill, this aquifer zone is designated as the 35-Foot Aquifer. This same Dune Sand Aquifer layer was also identified to the south in the Fort Ord cleanup site where it was designated as being perched/semi perched on top of the FO-SVA. Available groundwater elevation data from the Dune Sand Aquifer wells constructed for the TSW project were combined with data from the regional landfill, Fort Ord cleanup, and Beacon Gas Station cleanup sites to construct Figure 6 – Dune Sand Aquifer Groundwater Elevation Contour Map (attached to these comments). As shown, groundwater is flowing into the Marina Subarea on top of the FO-SVA layer from the area of aquifer recharge to the south. Data for the Dune Sand Aquifer used to construct this figure were obtained from readily available consultant reports and are shown in Figure 7 – Fort Ord Cleanup Site Groundwater Elevation Data, Figure 8 – Monterey Peninsula Landfill Groundwater Elevation Data, and Figure 9 – Beacon Gas Station Groundwater Elevation Data (attached to these comments). The most important aspect of these data is that perched groundwater is flowing toward the coast and infiltrating into the underlying -2-Foot Dune Sand Aquifer and the underlying semi-confined 180-FTE Aquifer. This source of recharge is unique to the Marina Subarea portion of the SVGB and is believed to contribute to protective groundwater conditions.

DEIR/EIS's investigation of the project area is inadequate to support the DEIR/EIS's groundwater impacts analysis:

On **Pages 4.4-21 and 22**, the DEIR/EIS states:

> CalAm commissioned a subsurface soil and groundwater investigation to further understand the existing subsurface geologic units, aquifers, and water quality of the proposed slant well locations on the CEMEX site. The investigation included the installation of nested monitoring wells and the test slant well, subsurface lithologic logging, soil and groundwater sample analysis, aquifer testing, and aquifer conditions modeling (Geoscience, 2013c, 2016a, 2016b). Figure 4.4-9 shows the locations of the nested monitoring wells. The nested wells have screen intervals to discretely sample the Dune Sand Aquifer, 180-FTE Aquifer, and the 400-Foot Aquifer depth intervals. The subsurface investigation provided information and data to better characterize the subsurface stratigraphy, aquifer conditions, how the aquifer responds to pumping, and groundwater chemistry at various depth intervals. Updated information on subsurface materials informed the design of the proposed slant wells, and data on groundwater flow characteristics and water chemistry facilitated further refinement of the groundwater models used to analyze project impacts.

> The proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer from about 30 feet below msl to 200 feet below mean sea level (Geosciences, 2016b). As discussed above in Section 4.2, the Dune Sand Aquifer overlies the 180-FTE Aquifer with no aquitard /between the units. The test slant well is screened across both units and has been sampled on a weekly basis when operational. Table 4.4-4 summarizes water quality results from the May 19, 2016, sampling event. The table also provides the chemical composition of seawater; as the comparison shows, the water quality from the test slant well closely resembles the average seawater TDS concentration found along the central coast of California.

HGC Comment No. 19:

We note that the boreholes referenced by this discussion are all close to the ocean and not representative of background data at inland locations that will be affected by the MPWSP. These data show only near shoreline conditions. As shown by the water composition in MW-4 (see Table 2, Diagram 5 above, and Figure 1 attached to these comments), the water quality begins to change significantly within a short distance of the coastline. Also, there is no discussion about the CEMEX operations that discharge saline water inland of the TSW which serves to create a saline mound of groundwater and bias the produced TSW water quality. See HGC Comment No. 33.

Because there is a lack of discussion of the groundwater quality in SVGB Pressure Area south of the Salinas River, the discussion of borehole data improperly implies water quality is the same throughout the project area of influence. It is reasonable to assume that the water quality at the CEMEX site would be worse than quality further inland where recharge from the Dune Sand Aquifer is likely occurring along with recharge from the Salinas River. The interconnectivity of the -2-Foot Aquifer beneath the Monterey County Landfill and the shallow Dune Sand Aquifer screened by MW-1, MW-3, MW-4, MW-7, and MW-8 is indicated by the study (Geoscience, 2016). This aquifer is also recognized as being recharged by the Salinas River in this area of the Marina Subarea (Geoscience, 2016). The recent water level rise in MW-6, MW-8, and MW-9 (Geoscience, 2017, Figures 2-5, 2-7, and 2-8) when winter rains resulted in significant river flows shows the likely hydraulic connectivity between the river and these wells and that this inland freshwater recharge keeps the saline groundwater close to the coast in the Dune Sand Aquifer (see Diagrams 1, 2, 5 above, and Figure 1 attached).

DEIR/EIS's groundwater impacts analysis baseline description of seawater intrusion in the SVGB, particular the Marina Subarea, is misleading and conflicts with available information:

On **Page 4.4-28 through 4.4-32**, the DEIR/EIS states:

> Figures 4.4-10 and 4.4-11 illustrate the seawater intrusion areas as of 2013 within the 180-Foot and 400-Foot Aquifers, respectively (MCWRA, 2015). Seawater intrusion occurs when ocean water enters fresh groundwater aquifers at the coast and migrates inland. The salty seawater combines with the fresh groundwater to

create a mixture referred to as brackish. Brackish groundwater can contain Total Dissolved Solids (TDS) concentrations ranging from that of seawater (about 35,000 mg/L) down to 500 mg/L near the leading edge of the inland seawater intrusion front. Brackish water in the 180-foot aquifer near the proposed project ranges from about 5,000 mg/L to 29,000 mg/L. The California Secondary Drinking Water Standard was amended in 2006 to include a Maximum Recommended Level for TDS in drinking water of 250 mg/L (Cal. Code Regs., tit. 22, § 64449). The MCWRA define the leading edge of inland seawater intrusion as groundwater containing TDS at 500mg/L or more.

The current, standard practice for monitoring the inland advance of seawater intrusion involves TDS analysis of groundwater from a select group of monitoring wells that intersect the seawater-intruded aquifers. The TDS concentration data are used to identify the areas of the aquifer intruded by seawater and to plot the leading edge of the inland seawater intrusion front. The more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented. Regular annual monitoring data can be used to estimate the rate at which seawater is migrating inland. The MCWRA has been conducting seawater intrusion monitoring for many years using several groundwater wells in the western end of the Salinas Valley.

Geophysics are giving researchers the opportunity to study seawater intrusion using high-resolution, regional scale imaging. The technique, sometimes referred to as Electrical Resistivity Tomography (ERT), can be used to differentiate salty water from fresh water hundreds of feet beneath the ground. Electrical resistivity imaging uses a series of sensors placed along a transect line on the ground surface. An electrical current is applied and the sensors measure the electrical resistance the current encounters as it travels at depth between the sensors. Salty water has a lower resistance than freshwater, due to the higher TDS. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that indicate areas of fresh water, brackish water and seawater. Over the past few years, Stanford environmental geophysics researcher Rosemary Knight has conducted a study to determine the viability of using electrical resistivity techniques to study seawater intrusion along the coast of the Monterey Bay. Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells.

Salinas Valley Groundwater Basin

…. The 2013 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, as inferred from chloride concentrations greater than 500 mg/L. The

seawater intrusion degraded groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001). Increased degradation of coastal groundwater aquifers led to restrictions on drilling groundwater wells and extracting groundwater from areas affected by seawater intrusion, as discussed in Section 4.4.2, Regulatory Framework. Such restrictions are intended to reduce further inland migration of seawater and reduce the landward advance of the seawater/freshwater interface.

Seaside Groundwater Basin

Groundwater pumping from aquifers in the SGB has exceeded recharge and freshwater inflows that caused pumping depressions near the coast, as shown on the groundwater flow maps for both the shallow aquifer zone (see Figure 4.4-7) and the deep aquifer zone (see Figure 4.4-8) (HydroMetrics, 2015). In addition, seawater intrusion has occurred just north of the SGB in the adjacent 180/400 Foot Aquifer Subbasin of the SVGB, as discussed above. The boundary between these two basins is a groundwater divide that migrates in response to variations in natural recharge and pumping on either side of the divide. HydroMetrics noted increased chloride concentrations in two wells along the coast, although the concentrations have not yet exceeded drinking water standards. These conditions all suggest that the SGB could be vulnerable to seawater intrusion.

HGC Comment No. 20:

Data developed by the TSW project indicates the DEIR/EIS's baseline description is inaccurate. While effects of seawater intrusion are evident significant distances inland, the entire area between the seawater intrusion front defined by ongoing study (MCWRA, 2014) and the coastline where the MPWSP intake system is proposed is not all intruded by seawater. Since the cessation of pumping in restricted areas along the coast, the hydrologic balance in the groundwater system has changed. Additional field data must be obtained in the area directly affected by the project to define the pre-project baseline conditions that have developed over the last two decades (see attached Figures 1 and 2). As the DEIR/EIS recognizes, the more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented. South of the Salinas River, the MCWRA program lacks sufficient monitoring wells within the Marina Subarea. Moreover, there is no monitoring or mapping for the Dune Sand Aquifer. The seawater intrusion section incorrectly states that "the MCWRA define the leading edge of inland **seawater intrusion as groundwater containing TDS at 500 mg/L or more**." [emphasis added] The MCWRA study tracks the concentration of chloride and defines seawater intrusion as groundwater containing 500 mg/l or more of chloride, not TDS. The discussion interjects a reference to the highest drinking water standard for TDS of 250 mg/l without mentioning that municipalities can serve a municipal drinking water supply that occasionally exceeds 1,000 mg/l TDS concentration. The discussion continues to indicate low TDS concentrations are used as the basis for seawater intrusion. This whole section is misleading and misinforms the public and the Commissioners.

This discussion is also in direct conflict with the groundwater quality objectives shown in Table 4.4-6 where the 180-Foot Aquifer objective is 1,500 mg/l TDS concentration. This does not indicate that the aquifer objective promotes a component of seawater intrusion as implied by the previous discussion.

DEIR/EIS's groundwater impacts analysis fails to address conflicts with the SWRCB's WQCP; MPWSP would likely violate WQCP's anti-degradation policy:

On **Page 4.4-35** , the DEIR/EIS states:

> The RWQCB has established water quality objectives for selected groundwater resources; these objectives serve as a basis for evaluating water quality management in the basin. Specific water quality objectives have been defined for the 180-Foot Aquifer and 400-Foot Aquifer for the SVGB, as listed in Table 4.4-6 below.

TABLE 4.4-6 - GROUNDWATER QUALITY OBJECTIVES

AQUIFER	TDS	CHLORIDE	SULFATE	BORON	SODIUM	NITRATE AS NITROGEN
180-FOOT	1,500	250	600	0.5	250	1
400-FOOT	400	50	100	0.2	50	1

NOTES: All concentration are in milligrams per liter (mg/L) SOURCE: RWQCB, 2011b.

> The Basin Plan would apply to the treated water to be injected into the proposed ASR injection/extraction wells because it could affect the quality and beneficial uses of the Basin's groundwater. Accordingly, these project elements would be subject to regular water quality monitoring by the RWQCB. This water quality monitoring would ensure that any deviation from the established objectives is identified and corrected pursuant to Basin Plan requirements.

HGC Comment No. 21:

The DEIR/EIS only addresses whether the project "operational discharges" of the MPWSP would be consistent with the provisions of the SWRCB Anti-Degradation Policy (Chapter 4.3) and the project's ASR injection wells. The DEIR/EIS must be revised to also address whether the extraction proposed by the project is consistent with the SWRCB's Anti-Degradation Policy. As discussed herein, it appears the project will violate the RWQCB WQCP objectives by degrading the water quality within the SVGB over a significant area. The model results indicate that areas of the Pressure Area that range from brackish to fresh will be degraded and will become hypersaline as a result of project pumping. Drawdown effectuated in the onshore portion of the aquifer system that is beyond the capture zone of the slant wells is a

cumulative effect that will contribute to a greater onshore gradient and proportionally increase the rate of seawater intrusion into those portions of the SVGB.

This section of the DEIR/EIS also fails to discuss the regulatory guidance in the 2011 WQCP for the Central Coast Basin where Resolution No. 88-63 is incorporated by reference and applies to the proposed project. The WQCP may be found at http://www.waterboards.ca.gov/rwqcb3/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf, and Resolution No. 88-63 is Appendix A-9 of the WQCP. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area and indicates that all surface and ground waters of the State are considered suitable, or potentially suitable, for municipal or domestic water supply with the exception of:

a. The TDS exceeds 3,000 mg/l (5,000 µmhos/cm, electrical conductivity);

b. Contamination exists, that cannot reasonably be treated for domestic use;

c. The source is not sufficient to supply an average sustained yield of 200 gallons per day;

This indicates that based upon Resolution No. 88-63, the feedwater, which includes "developed water" that is not suitable or potentially suitable for municipal or domestic water supply purposes, is water that exceeds 3,000 mg/l TDS, in order to be eligible as "developed water." The DEIR/EIS's focus on the groundwater quality objectives and failure to discuss this standard does not sufficiently inform the public or the decision makers of the potential impacts of producing groundwater for the project that is potentially suitable for municipal or domestic uses either through treatment or blending. This reference indicates that at least the 3,000 mg/l TDS concentration should be utilized in determining the production of usable groundwater from the SVGB and not the inland average of 440 mg/l. It should also be recognized that MW-5S, MW-5M, MW-6S, MW-6M, MW-7S, MW-8S all contain groundwater that meets the WQCP objective of 1,500 mg/l TDS concentration. See HGC Comment Nos. 1, 3, and 10 to understand the significance of this issue.

DEIR/EIS fails to address Sustainable Groundwater Management Act and the MPWSP likely conflicts with the Act:

On **Page 4.4-37**, the DEIR/EIS states:

> Adopted in 2014, the Sustainable Groundwater Management Act (SGMA) provides local agencies the capability to customize groundwater sustainability plans to their regional economic and environmental needs. SGMA creates a framework for sustainable, local groundwater management in California. The DWR and the SWRCB are the lead state agencies responsible for developing regulations and reporting requirements necessary to carry out SGMA. DWR sets basin prioritization, basin boundaries, and develops regulations for groundwater sustainability. The SWRCB is responsible for fee schedules, data reporting, probationary designations and interim sustainability plans (DWR, 2016a). The

State of California has designated the Salinas Valley as a priority basin and stakeholders have been working since 2015 to form a Groundwater Sustainability Agency for the Salinas Valley. The MPWMD applied to alter the boundaries of the Seaside/Corral de Tierra areas so they are similar to the adjudicated boundaries of the Seaside Basin. While the SGMA does not have a direct impact on the MPWSP, it is included here as it is new legislation affecting both the Salinas Valley Groundwater Basin and the boundaries of the adjudicated Seaside Basin. The proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an irrigation supply. Rather, when considering seawater intrusion and water surface elevations in the 400-Foot Aquifer, the proposed project may have a positive contribution to the sustainable management of groundwater. Regarding the former, groundwater modeling shows that the proposed project would retard the advance and limit the ultimate inland extent of seawater intrusion. With respect to the latter, by returning in-lieu desalinated water to the CCSD, the proposed project would provide recharge benefits to groundwater levels in the 400-Foot Aquifer. For these reasons, the proposed project would not conflict with the SGMA.

HGC Comment No. 22:

The DEIR/EIS discussion of the MPWSP's consistency with the Sustainable Groundwater Management Act (SGMA), which became effective January 1, 2015, is grossly inadequate. The SGMA defines "basin" as either a subbasin or a basin. (Water Code, § 10721, subd. (b).) The California Department of Water Resources had previously classified the 180/400 Foot Aquifer Subbasin as a high-priority subbasin and in January 2016, the Subbasin was designated as a Critically Overdrafted Basin. (http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf) Both the MPWSP's slant wells and desalination plant are located within the 180/400 Foot Aquifer Subbasin.

Because of the Critically Overdrafted Basin classification, the 180/400 Foot Aquifer Subbasin is required to adopt a State-approved groundwater sustainability plan (GSP) or coordinated GSPs by January 31, 2020. The GSP must include measurable objectives and milestones in increments of five years to achieve sustainability within 20 years of the GSP adoption, which would be no later than January 31, 2040, in the case of the 180/400 Foot Aquifer Subbasin. Because of these existing conditions, it is false to state "the proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an irrigation supply". Ultimately, the stakeholders forming the sustainable Groundwater Management Agency (GMA) will be responsible to deal with any adverse impacts that result from the project.

While the DEIR/EIS focuses on whether the MPWSP pumping will injure any legal user of the groundwater, it fails to address whether MPWSP pumping will further injure the overdrafted, seawater-intruded groundwater subbasin and prevent the subbasin from full

groundwater sustainability within the Marina Subarea. (Water Code, § 10727.2, subd. (b)(1)). Given the MCWD's and other concerted efforts to address seawater intrusion and over-pumping, the DEIR/EIS's failure to address this issue should be considered a serious flaw.

The Marina Subarea of the SVGB must be included in an adopted groundwater sustainability plan due to its designation as a priority subbasin. The Act requires "the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing implementation of measures targeted to ensure that the applicable basin [or subbasin] is operated within its sustainable yield." (Water Code, § 10721, subd. (t).) The sustainability goal must be achieved in the subbasin or basin within 20 years of the implementation of the groundwater sustainability plan. (Water Code, § 10727.2, subd. (b).) **"Sustainable yield"** is defined as **"the maximum quantity of water,** calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, **that can be withdrawn annually from a groundwater supply without causing an undesirable result."** (Water Code, § 10721, subd. (v), emphasis added.) The DEIR/EIS does not address the MPWSP's potential impacts on sustainable yields in the Marina Subarea or the SVGB. Nor does it address reasonably foreseeable projects that must be proposed to bring the Marina Subarea of the SVGB into compliance with SGMA.

Instead, the DEIR/EIS assumes there is no benefit to the local development and use of the brackish or fresh quality groundwater contained within the coastal portion of the SVGB Pressure Area. It fails to consider the use of treatment or blending of this groundwater for future sustainable uses within the basin. The MPWSP as proposed, however, will remove freshwater and the brackish groundwater influenced by seawater and replace it with highly saline groundwater (pure seawater) by inducing seawater intrusion. The DEIR/EIS ignores the potential for local SVGB users to use the brackish groundwater supply as a beneficial use for sustainable basin management efforts and that seawater intrusion is identified as an undesirable result. It also fails to address how the MPWSP will impact potable water within the Marina Subarea as noted above and discussed below.

While the DEIR/EIS references the recent State of the Salinas River Groundwater Basin Report, dated January 16, 2015, from the Monterey County Water Resources Agency, the DEIR/EIS fails to discuss or heed its recommendation. The Report notes that based on the continued large storage declines in the East Side and Pressure Areas (and resulting groundwater head declines and seawater intrusion), the current distribution of groundwater extractions is not sustainable. Seawater intrusion can account for up to 18,000 afy of the total storage loss of 24,000 afy. Sustainable use of groundwater will only be achieved by aggressive and cooperative water resources planning to mitigate seawater intrusion and groundwater head declines. As the Salinas River Groundwater Basin Report concluded:

> The consequences of no-action under continued drought conditions will be the imminent advancement of seawater intrusion within the next few years and the continued decline of groundwater head. Both of these conditions would necessitate the drilling of deeper groundwater wells to produce the quantity and

> quality of water needed for consumptive use and irrigation. The installation of deeper wells may not be feasible in some areas because of lower groundwater yield and water quality in the Pressure Deep Aquifer. A more sustainable and long term management practice would encourage a Basin-wide redistribution and reduction of groundwater pumping, which would require cooperative and aggressive resource management. The unsustainability of the current distribution of groundwater extractions has long been recognized by various investigators, and Basin- wide redistribution and reduction of pumping have been recommended previously (e.g. DWR, 1946).

(Report at p. ES-12; see also p. 6-3.) Based on this conclusion, the Salinas River Groundwater Basin Report provided several options for reducing storage losses in the SVGB. One option was to reduce pumping in the Pressure and East Side to assist in mitigating some of the anticipated effects of the extended drought on groundwater storage and water quality. **The report noted that shifting of pumping to areas further away from the coast would also be helpful,** as long as it is shifted south of the current head trough in the East Side Subarea. **A second alternative was shifting of some pumping from the P-180 and P-400 Aquifers to the Pressure Deep Aquifer to reduce the storage deficit in the shallower aquifers.** The MPWSP's proposed slant wells are inconsistent with the Report's recommendations for addressing continued declining aquifer heads, water storage losses, and seawater intrusion in the Basin. The slant wells represent a significant increase in pumping from the Dune Sand Aquifer and 180-foot Aquifers in the Marina Subarea over existing conditions and will reverse the cumulative efforts of MCWD and others to shift production to other aquifer zones and reduce pumping in the 180-foot aquifer in order to reduce seawater intrusion. The DEIR/EIS also does not consider cumulative impacts on future plans to expand these groundwater management efforts.

Notably, the DEIR/EIS, also fails to discuss historical studies that have indicated there are 2 locations at the shoreline where seawater inflow preferentially follows the paths of greatest hydraulic conductance (least impedance to flow) when onshore gradients induce landward flow of groundwater (KJC, 2004, Page ES-15, Figure 3). The main pathway identified is located north of the Salinas River where the greatest amount of seawater has intruded into the heavily used portion of the Pressure Area. The second preferential pathway for flow is located south of Marina and allows seawater to flow into the aquifers beneath the Fort Ord Area. This area is south of the boundary defined as the Pressure Area by some studies, but within the Pressure Area defined by other studies. The CEMEX site lies midway between these 2 areas of preferential seawater intrusion and does not directly intercept either of these main areas of onshore flow. The potential impact of this condition, or the relocation of the project further north or south to better benefit the coastal conditions is not discussed in the DEIR/EIS.

As previously discussed, the project will contribute to the present overdraft of the SVGB and effectively induce the SGMA identified undesirable result of seawater intrusion. While the DEIR/EIS indicates the project would not conflict with the SGMA, the study does not mention groundwater dependent ecosystems and the potential undesirable result that may occur within the

coastal dunes when water levels are lowered to levels below the root zones of groundwater dependent plants. The study also does not address how the replacement of a floating freshwater lens along the shoreline with seawater could potentially impact salt sensitive plants within the area of project influence.

In summary, the DEIR/EIS provides insufficient discussion of the effect and application of the most notable development in California water law in the past century, the enactment of the SGMA and the proposed slant wells are inconsistent with the Salinas River Groundwater Basin Report recommendations to shift pumping away from the coast and into deeper aquifers.

The DEIR/EIS's discussion of the project's consistency with MCWRA Agency Act and MCWRA Ordinance 3709 is misleading and inaccurate.

On **Page 4.4-38**, the DEIR/EIS states:

> As discussed more fully in Section 2.7, Water Rights, given the locations of the slant well screens beyond the jurisdictional boundaries of the County, it is not clear whether the Agency Act applies to the proposed project. However, as further discussed in that section, were the Agency Act to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This is because the proposed project would return to the SVGB any incidentally extracted useable groundwater. The water available for export would be new supply, or developed water, not extracted from the SVGB.
>
> MCWRA Ordinance 3709 prohibits drilling into and pumping groundwater from the 180-Foot Aquifer within specific onshore areas, designated as Territories A and B (MCWRA, 1993). The proposed seawater intake system would be located at the westernmost edge of Territory B. Although the wells would be drilled within Territory B, the source water for the proposed project would be extracted from beneath the ocean floor, an area not located within the restrictive territories identified by Ordinance 3709. As with the Agency Act, it is not clear that the MCWRA Ordinance 3709 applies to the proposed project. However, for the same reasons presented above, if it were to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This issue is discussed further in Section 2.7, Water Rights.

HGC Comment No. 23:

As noted above, the DEIR/EIS's statement that the locations of the slant well screens are "beyond the jurisdictional boundaries of the County" is inconsistent with the DEIR/EIS's project description. As addressed above in HGC Comment No. 12, only the deepest portions of the well screens would potentially be located at a depth of a couple hundred feet beneath the ocean floor with the shallower well screen intervals producing from the Dune Sand and 180-FTE Aquifers and located onshore and within the jurisdictional boundaries of the County. (see DEIR/EIS,

Chapter 3, Figures 3-3a and 3-3b, and Table 3-2). The DEIR/EIS must be revised to address the percentage of the well screens for each test well that has screened intervals located landward of the beach to assess consistency with the MCWRA Agency Act.

Second, it is unclear as to what is considered "any incidentally extracted useable groundwater." As noted above, to be consistent with the RWQCB WQCP all water with TDS levels under 3,000 mg/l would need to be returned (RWQCB, 2011). See also HGC Comment No. 3, explaining that the MPWSP slant wells will likely extract significant amounts of groundwater from the Marina Subarea because the area is not completely filled with seawater.

As discussed above, many of the MPWSP's proposed slant wells will not actually extend beneath the ocean floor and a large section of the well screens that produce groundwater is onshore within the restrictive territory identified by Ordinance 3709. The well designs shown in the DEIR/EIS indicate the onshore sections of the well screens that will contribute groundwater to the slant well facilities and are not "beneath the ocean floor." The DEIR/EIS does not demonstrate through use of a territorial boundary map that the slant well configurations and designs are located outside Territory B and comply with the ordinance.

While the DEIR discusses the Agency Act and recognizes the provisions in Ordinance 3709, it has not demonstrated that operation of the proposed MPWSP well facilities as designed will not violate both regulations.

The DEIR/EIS's modeling relies on the Geosciences 2016 CEMEX Model Update, which makes a number of unsupported assumptions based on the lack of available data.

On **Page 4.4-42 and 4.4-43**, the DEIR/EIS states:

> CalAm installed the test slant well to further evaluate subsurface conditions and to test the response of the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer to pumping. The results have been used to refine the groundwater models and inform the analysis of the proposed project. The first phase of the test slant well investigation began with the construction of a 724-foot long test well drilled at an angle of 19 degrees below horizontal at the CEMEX site. Special Condition 11 of the Coastal Development Permit, "Protection of Nearby Wells," requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long term pumping tests (Geoscience 2015b). The long-term pumping test began in mid-April 2015, and results are available at http://www.watersupplyproject.org/#!test-well/c1f1l.
>
> **Monitoring Wells Installation and Testing**
>
> To monitor the response of the aquifers to pumping from the test slant well and verify that the aquifers would respond as simulated by the groundwater modeling discussed below, CalAm installed a network of monitoring well clusters at the locations shown on Figure 4.4-9, along with a water level data logger in the pond that CEMEX uses to dredge sand (Geoscience, 2016b). The details of the

subsurface exploration including boring logs, well construction details, field screening tests results, and laboratory analytical results are presented in a report titled: Monterey Peninsula Water Supply Project, Hydrogeologic Investigation, Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update (Geosciences, 2016b). The Hydrogeological Working Group peer reviewed TM2 before the final document was released; that document is also discussed in Section 4.2, Geology, Soils, and Seismicity. Four of the monitoring well clusters are located west to east along the CEMEX access road, from near the proposed slant wells to near the CEMEX facility entrance. Monitoring well clusters were also installed at the proposed desalination plant site on Charles Benson Road, at the intersection of Lapis Road and Del Monte Road, and along West Blanco Road about 4 miles southeast of the CEMEX site. The clusters monitor water levels and chemistry in the Dune Sand, 180-FTE, and 400-Foot Aquifers. Groundwater elevation and water quality data developed from monitoring the cluster wells are presented in the impact analysis, below.

HGC Comment No. 24:

First, my comments and testimony in the *MCWD v. Coastal Commission* case addressed Technical Memorandum No. 1 that did not establish baseline conditions at MW-4 or any of the other required monitoring wells. Rather, the memorandum included a cursory discussion of water levels at some of the monitoring wells over a period of weeks (or a couple months depending on the date of their construction) and then provides a Section 7.0 entitled "Recommended Monitoring of Baseline and TDS Levels," which suggests a method for evaluating impacts without actually establishing baseline water levels. (See Geoscience 2015p, Technical Memorandum, p. 14.) There was no information regarding tidal, seasonal, or climatic variations in the memorandum. In fact, it was even unclear what was being considered as pre-pumping conditions.

With its predecessor (TM1), TM2 (Geoscience, 2016) provides information on all the wells constructed to date, and attempts to summarize baseline conditions, the TSW and monitoring wells were installed during a drought. The single season groundwater contour maps for the fall of 2015 inadequately show the coastal conditions in the Marina Subarea of the SVGB. Notable, until the spring of 2017, the river and its reservoir system have been stressed by reduced rainfall. Showing seasonal low water levels during an extended dry period does not sufficiently portray the dynamic system that has largely been undocumented. For instance, the entire record of MW-6S shows a relatively constant level for the A Aquifer with the seasonal variation of approximately 1 to 1.5 feet between April 2015 and December 2016. With the end of the drought, we see an entirely new dynamic. The water level in the fall of 2015 was 7.8 feet (see TM2, Figure 10) and only changed when storm flows resumed in the river. As winter rains filled reservoirs and caused tributary runoff, the Salinas River flows began to show a huge source of recharge to the A Aquifer zone. MW-6S rose from its steady trend approximately 10 feet resulting in shallow groundwater levels of over 17 feet amsl. The TSW project may be

developing baseline data, but this source of recharge to the shallow A Aquifer, -2-Foot Aquifer, and Dune Sand Aquifer was not apparent in previous data. The 2015 fall season water level in MW-7S used for contouring was 3.9 feet amsl. The level was observed to rise to about 6 feet amsl after the winter rains of 2015, and it remained above 5.5 feet amsl throughout 2016. These are all protective water levels for the Dune Sand Aquifer. But now the coastal water levels are at approximately 8 feet amsl and rising. This protective head condition could only be speculated, prior to this year's observations and was based on the fresh water quality present in the aquifer instead of seawater. There were no baseline data available in this central area of the Marina Subarea prior to TSW project monitoring.

Furthermore, as actual field data are being developed, the adequacy of the originally proposed work plan for field investigations must be reviewed and revised. Recent findings indicate that Monitoring Well No. 2 should provide valuable information for understanding the changes in the hydrogeology that occur south of the CEMEX site where the intake wells are proposed and project impacts would occur. This monitoring well has not yet been constructed. Recent information indicates that the complexities of the hydrogeology in the Marina Subarea are not well understood and should be further investigated to fully define the potential MPWSP impacts.

The degree of uncertainty in the DEIR/EIS's groundwater modeling is intolerable due to its failure to utilize the best available information:

On **Pages 4.4-43 through 4.4-51,** the DEIR/EIS describes the investigation of groundwater conditions and modeling, and provides the following assessment of the "Limitations of Groundwater Models" at Page **4.4-44:**

> Groundwater models simulate aquifer conditions based on a specific set of data that describes parameters such the subsurface characteristics, groundwater flow, and land use. The more robust the data set, the more capable the model will be to accurately simulate subsurface conditions. Most groundwater models use conservative input parameters so that the output overstates the actual aquifer response. Nevertheless, groundwater models are mathematical-based computer programs that rely on input parameters and, consequently, there is a degree of uncertainty. However, the models used to analyze the proposed project have been used previously and have benefited from input data derived from site-specific subsurface information. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.

On Page **4.4-47**, however, the DEIR/EIS further reveals it did not use the prior models:

> For this project, the NMGWM is converted to a superposition model and only solves for the groundwater changes due solely to the proposed project. These changes are independent of the effects from the other stresses on the basin such as

seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

Then on Page **4.4-49**, however, the DEIR/EIS further reveals it did not determine return water that would be required or address cumulative impacts (other than sea level rise):

Return Water Considerations

The MPWSP proposes to return a certain fraction of water (referred to here as return water) extracted by the slant wells to water users in SVGB as desalinated product water … The exact quantity of water to be returned annually would vary and would be determined each year using a mathematical formula. However, for groundwater modeling and impact analysis purposes in this EIR/EIS, it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin. The water would be returned to the SVGB through deliveries of up to 800 afy of desalinated product water to the Castroville Community Services District (CCSD). This water would be piped to the CCSD and the CSIP and provided to water customers instead of their pumping an equal amount from the ground. This method of returning water is referred to as in-lieu recharge because the delivered water would reduce the need to pump groundwater in corresponding quantities. The NMGWM accounts for the 0 to 12 percent range by simulating the aquifer response in the various scenarios with a 0, 3, 6, and 12 percent returned product water.

Model Period

The model period for the NMGWM is 63 years. The model scenarios are run over a set time period, beginning with the baseline conditions and extending out to a future point in time, typically set as the life span of a given project. Over this time period, land use, climate conditions, and, if located along the coast, sea level rise would be expected to change. ***However, as discussed above, superposition modeling does not account for other stresses on the basin except for the effects***

on groundwater flow from projected sea level rise over the 63 years of modeled operations. (emphasis added)

HGC Comment No. 25:

As discussed in HGC Comment No. 5, the level of degree of uncertainty in the DEIR/EIS's modeling is intolerable given its failure to utilize the best available information.

As previously discussed, ***the recalibrated NMGWM^{2016} was not successful*** at providing shallow groundwater responses to project pumping and in fact may be less representative of real world conditions than the predecessor model NMGWM^{2015}. The CEMEX model is too small to be used to project aquifer parameters across the NMGWM domain. The SVIGSM is inappropriately constructed in the project area and did not include boundary recharge into the Dune Sand Aquifer or the existence of the FO-SVA and cannot be used to feed realistic input into the NMGWM^{2016}. The unsuccessful calibration attempts prevented using data developed from the site specific study unless a new model was constructed. ***Instead and because of these failings, the effort to use a calibrated model was aborted and the superposition model was constructed.*** The superposition, however, uses the hydraulic conductivity values for aquifers in the Marina Subarea from the ***recalibrated NMGWM^{2016}***, which did not predict water levels within an acceptable error range, and therefore its results are similarly unreliable, if not worse. Moreover, while the superposition model can simulate drawdowns, it can't be used to evaluate the project's impacts on water quality or the project's potential cumulative impacts. It is also incapable of showing the water budget (from different sources) and boundary conditions dictate results by limiting drawdown effects. As a result, it cannot be used to estimate the amount of return water or evaluate whether the project is performing as expected in the future. Finally, the DEIR's reliance on the modeling to date to evaluate the project's potential impacts on groundwater in the Marina Subarea is not tolerable based on the DEIR/EIS's own evaluation criteria.

DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57,** the DEIR/EIS provides the following threshold of significance for Impact 4.4-3:

> Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations. (Less than Significant)

HGC Comment No. 26:

Given the DEIR/EIS's inadequate investigation of baseline conditions in the Marina Subarea and flaws in its modeling, there is no way for the public or Commission to make an informed decision on the project's potential groundwater impacts for the reasons discussed in HGC Comment Nos. 5 and 25 above and further below. We note that the threshold includes "interfering substantially with groundwater recharge," which would include the interception of

recharge before it reaches its area of replenishment and/or beneficial use. Notable, groundwater recharge can serve many purposes including replenishing groundwater being removed, diluting groundwater as it is flowing through an area, and/or maintaining a sufficient head to prevent the movement of poor quality water in an undesirable direction. As discussed above, the superposition groundwater model constructed and utilized to assess impacts in the DEIR/EIS is incapable of predicting the impact of the project on any of these groundwater recharge benefits. As a result, the DEIR/EIS's less than significant determination is speculation at best.

The DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supply is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57,** the DEIR/EIS states:

> The first step in this analysis was to determine the pumping scenario that would have the most profound aquifer response surrounding the slant wells at the CEMEX site in order to conservatively judge potential impacts. Extracting groundwater from slant wells at the CEMEX site could cause an aquifer response up to 4 miles inland. Figure 4.4-13 shows the cone of depression with -1, -5, -10, and -20-foot drawdown contours and the extent of pumping influence in the 180-FTE Aquifer; these drawdowns would stabilize within five years after pumping begins, and would remain stable as long as the MPWSP is pumping. For purposes of this impact analysis, this model scenario assumes that no water would be returned to the SVGB and the sea level would be consistent with current levels. This scenario generates the most pronounced cone of depression with the largest area of influence because groundwater would not be returned to the basin, and because current sea level would not increase groundwater levels and gradients at the coast as it is expected to do in the next 63-years. This scenario is used to represent the maximum area of pumping influence. In other words, Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project.

HGC Comment No. 27:

The DEIR/EIS representation that Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project is simplistic and the discussion should actually clarify it is the worst case that the superposition model can simulate. This error is significant and results in the DEIR/EIS failing to evaluate potential impacts on future inland water quality degradation, on depletion of storage, on Groundwater-Dependent Ecosystems, and the project's consistency with the requirements under the SGMA.

The DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supply is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57 through 4.4-59,** the DEIR/EIS states:

> The second step in this analysis was to use the drawdown contour map on Figure 4.4-13 to determine the area of influence and maximum drawdown caused by the slant well pumping. As shown by modeling results depicted on Figure 4.4-13 the center of the cone of depression and thus, the capture zone for the slant wells show that the majority of the groundwater drawn into the proposed MPWSP slant wells would originate in the aquifer zones located at and offshore of the coast and would be composed primarily of seawater. This is illustrated by the configuration of the cone of depression shown in Figure 4.4-13. The western extent of the cone of depression is just offshore and in close proximity to the slant wells where the drawdown is deepest and contours are steeper, indicating more flow to the slant wells and higher yield near the coast. At the coast, seawater entering the slant wells would have the shortest and least restricted pathway through the overlying sea floor deposits. The drawdown contours extend inland but at considerably shallower gradients, between -1 and -5 feet, indicating that the inland basin is less permeable, and that groundwater must flow through thicker sediments to reach the slant wells. This additional resistance to flow reduces the volume of water available to the slant wells and flattens the gradient. The cone of depression shown on Figure 4.4-13 illustrates that the majority of the water pumped at the slant wells would originate at the coast and just offshore, where the drawdown is most pronounced while a smaller volume of groundwater would be extracted from the inland portion of the 180-Foot Aquifer.

HGC Comment No. 28:

While the superposition model results can illustrate the concept of groundwater flow direction, it cannot quantify the amount of seawater or fresh groundwater that will be produced. The discussion about the apparent resistance to flow from the landward side of the project and that the inland basin is less permeable is merely an observation of the lower hydraulic conductivity values assigned in the model domain inland of the CEMEX site. As discussed above, hydraulic conductivity values assigned in the superposition model are based on the ***recalibrated NMGWM^{2016}*** model and therefore are not reliable.

DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supplies is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-59,** the DEIR/EIS states:

> The third step in this analysis was to assess the quality and current use of the groundwater that would be extracted by the slant wells. The MPWSP slant wells would not extract potable groundwater. The groundwater in the 180-foot Aquifer that is underlying the area influenced by the MPWSP pumping, up to about 4 miles inland, has been intruded with seawater for decades, and far exceeds the State Drinking Water Standard of 500 mg/L of total dissolved solids (TDS).23 The inland groundwater has been degraded by legacy and ongoing seawater intrusion and is not being produced for beneficial potable uses. Figure 4.4-10, above, shows the areas of groundwater in the 180-Foot Aquifer degraded by seawater intrusion over time. The CEMEX site and the area of influence from slant well pumping in the 180-FTE are well within the area degraded by historical sea water intrusion.
>
> Recent testing for TDS in groundwater within the area of influence of the proposed MPWSP slant well pumping verifies the degree of seawater intrusion. Water samples from Monitoring Well MW7M (180-FTE Aquifer) and MW-7D (400-Foot Aquifer), located just over a mile southeast from the proposed slant well location, contained TDS concentrations at 3,832 mg/L and 26,700 mg/L, respectively. Samples from Monitoring Well MW-8M and MW8D, located 1.5 miles to the northeast, had TDS concentrations of 24,000 mg/L and 583 mg/L, respectively. Monitoring Well MW-9S (Dune Sand Aquifer) and MW-9M (180-FTE Aquifer), located 2 miles to the northeast, had TDS concentrations of 3,204 mg/L and 29,000 mg/L, respectively. These data show that groundwater within the inland area of influence of the proposed MWSP slant wells is brackish with elevated TDS attributable to seawater intrusion; the groundwater in the Dune Sand, 180-FTE and 400-foot Aquifer is therefore unsuitable for potable supply.
>
> Current groundwater production in the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer, which are projected to exhibit a response to MPWSP slant well pumping, is limited to minor irrigation and dust control. There are no water supply wells pumping potable water. Most of the wells in this area are no longer active because of seawater intrusion. Furthermore, groundwater production is restricted within the seawater intruded coastal areas in the vicinity of the CEMEX site through MCWRA Ordinance 3709, which prohibits drilling wells and pumping groundwater from the 180-FTE Aquifer in order to protect groundwater resources. The slant wells at CEMEX and the area of pumping

influence east of CEMEX are within the jurisdictional boundary of Ordinance 3709.

HGC Comment No. 29:

First, while the statement that "the MPWSP slant wells would not extract potable groundwater" may be accurate, it is also misleading. While it is true that once the freshwater produced from the inland side of the intake wells is mixed with ocean water, it will no longer be "potable," the statement is misleading to the lay reader because it incorrectly suggests/implies that no potable groundwater would be drawn into the slant wells. Therefore, the DEIR/EIS should clarify this statement and recognize that the project's slant wells would extract both seawater and freshwater and/or brackish groundwater suitable for beneficial uses.

Second, the DEIR/EIS only discusses the groundwater that would be extracted from 180-FTE Aquifer and provides a broad sweeping statement that 180-FTE Aquifer: a) is seawater up to about 4 miles inland, b) has been intruded for decades, and c) far exceeds the State Drinking Water Standard of 500 mg/L Critically, the DEIR/EIS fails to address the Dune Sand Aquifer implying there is no beneficial uses for the water that the aquifer contains. As explained in HGC Comment No. 3, the water quality data developed by the project show fresh water within 2 miles of the coast in the 180-FTE and 400 Foot Aquifers (see Diagram 5 above). The Dune Sand Aquifer contains fresh water within 1 mile of the coast and is believed to be contributing to protective conditions in the underlying 180-FTE Aquifer through recharge along the coast (see attached Figures 1 and 4).

The statements regarding seawater intrusion into the 180-FTE Aquifer are only partially correct and thus misleading. The DEIR/EIS's statement that the 180-FTE Aquifer groundwater has been degraded (a relative term) by legacy and ongoing seawater intrusion is accurate, but the suggestions that it is completely intruded to about 4 miles inland is false. As previously explained, the TSW findings show that inland of the project location this aquifer has fresh water at MW-5 and MW-6 (see attached Figures 1 and 2).

The DEIR/EIS's claim that recent testing for TDS in groundwater within the area of influence of the proposed MPWSP slant well pumping verifies the degree of seawater intrusion but it shows significant amounts of brackish and fresh groundwater in areas where the aquifers where inferred to be completely filled with seawater (see attached Figures 4 and 5).

Finally, using the DEIR/EIS's statement that characterizes the groundwater in the 180-FTE Aquifer as far exceeding the State Drinking Water Standard of 500 mg/L, the DEIR/EIS improperly limits its analysis to whether the project will directly impact "potable" uses. The DEIR/EIS fails to address whether the project will have a direct, indirect, or cumulative impacts on all types of beneficial uses of groundwater in Marina Subarea aquifers. The DEIR/EIS is careful not to say "**all uses,**" it merely concludes that "groundwater in the Dune Sand, 180-FTE and 400-foot Aquifer is therefore unsuitable for potable supply", which again is extremely misleading. This approach implies that if groundwater is not suitable to meet the highest drinking water standards without blending or treatment, it has no beneficial use. This is

distracting from the reason why decades of seawater intrusion (which is not a linear process) has not rendered the entire coastal area completely full of salt water and how recent management efforts have abated intrusion to its current position and slowed its rate of advancement.

Coastal farming has been impacted by saltwater intrusion for over 70 years and yet it continues to produce groundwater inland. Initially, dilution of minor seawater incursions with freshwater sources onshore could make the salinity of the groundwater supply tolerable. Dilution of legacy saline water along the coast and further inland is visible from both water quality measurements taken by the TSW program and by the lack of advancement of the 500 mg/l chloride front observed between 2011 and 2013. While greater management efforts are planned to further reduce pumping along the coastal portion of the SVGB, natural and artificial replenishment of freshwater to the coastal portion of the basin serves to dilute and make the originally unsuitable quality of groundwater acceptable for beneficial uses decades later and miles inland.

At the time of the TSW investigation, the groundwater within a half mile of the coast shows significant dilution in certain areas of certain aquifer zones (see Diagram 5 above) and within a mile of the coast, fresh water is present that could be used for irrigation of several types of crops and for potable consumption (with nitrate removal). The key issues are really that the TSW project findings are helping to develop our understanding of the natural groundwater recharge and flow conditions in the Marina Subarea and that management strategies are beginning to manifest visible beneficial results.

A better understanding of the present condition would be that the effects of seawater intrusion since 1944 extends significant distances inland, but the extent of intrusion varies along the coast (particularly in the Marina Subarea) and accurate maps of this intrusion do not currently exist. Notably, as shown by the TSW project data (Geoscience, 2015p, Table 2), and contrary to the implication of statements elsewhere in the DEIR/EIS, seawater does not occupy the 180-Foot/180 FTE Aquifer or the 400-Foot Aquifer between the CEMEX site and 8 miles inland or 3.5 miles inland, respectively (See HGC Comment No. 4, Table 2, Diagram 4 above, and Figures 1 through 5 attached to this letter). These statements and similar statements throughout the DEIR/EIS must be revised so the public and decision makers are not led to believe all the groundwater in the Marina Subarea is contaminated by seawater and that all management efforts have failed.

Furthermore, the concept that wells that are located within the radius of influence and screened in the 180-Foot and 400-Foot Aquifers have been brackish-to-saline for years, and are no longer serving irrigation or potable uses is also misleading given the well production prohibition zone along the coast has stopped well production in these affected aquifer zones. The prohibition of pumping along the coastal portion of the SVGB, including the Marina Subarea, as a management effort has almost entirely removed active wells in the Dune Sand Aquifer and the 180-Foot/180-FTE Aquifer from operation (except the CEMEX wells). As discussed above, this lack of pumping (and other conservation efforts) has resulted in restoring groundwater quality and improved protective heads from seawater intrusion in the Marina

Subarea even during the current extended drought period. The DEIR/EIS's discussion of the lack of facilities that would be directly impacted by the MPWSP's operational drawdown is not surprising nor particularly relevant to whether the MPWSP would result in adverse impacts to the Marina Subarea and the SVGB as a whole. The bigger question is whether the project would result in a "net deficit in aquifer volume" as it relates to long-term water quality impacts and basin management efforts, not drawdown impacts on proximal well facilities operations. For these reasons and those discussed above, the DEIR/EIS analysis of MPWPS potential to cause a "net deficit in aquifer volume" (loss of storage) as it relates to long-term water quality impacts and basin management efforts is woefully inadequate.

The DEIR/EIS's conclusion that the project impacts to Salinas Valley Groundwater Basin groundwater supplies is less than significant must be updated based on new modeling results that address cumulative impacts and disclose the amount groundwater supplies within the Marina Subarea that will be depleted:

On **Page 4.4-60**, the DEIR/EIS states:

> The proposed project would not deplete groundwater supplies; it would extract primarily seawater and a smaller volume of brackish inland groundwater from a localized area with only minor localized groundwater drawdown. The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity. When desalinated water is returned to the basin as part of the MPWSP, groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas would improve as water levels increase as a result of in-lieu groundwater recharge. The return water component of the MPWSP would benefit each of the aquifers by either reducing the area of influence or by increasing groundwater levels in other areas. The effects of return water on the basin water levels are discussed below and shown on Figures 4.4-14 through 4.4-16. If the proposed project did not return any water, localized depressed groundwater levels would persist in the three affected aquifers throughout the life of the project. However, the area affected by groundwater pumping would remain localized and the proposed project would continue to extract only brackish, degraded groundwater from the coast and, to a lesser extent, the inland portion of the aquifer. Based on the conclusions of this analysis, this impact would be less than significant.

HGC Comment No. 30:

The statement that "The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity" assumes there is no way to pump brackish groundwater and clean it up for beneficial potable uses. This is false. As discussed above, the shallow aquifers in the coastal

area are not presently pumped because of a management strategy that has been employed to abate seawater intrusion and not solely because it has a component of seawater present.

Again, the DEIR/EIS's statement that the "proposed project would not deplete groundwater supplies" is misleading to the public and the Commissioners. With only a month to review the ***recalibrated NMGWM^{2016}*** and superposition model due to the CPUC's failure to make this information available until February 16, 2017, we have worked with GeoHydros to analyze groundwater depletion from the proposed production of 27,000 afy. Based on this review of ***recalibrated NMGWM^{2016}***, which likely understates the project's impacts as discussed above, the MPWSP would initially produce approximately 30 percent of its supply from groundwater. Again, if the model was properly calibrated, this number could be higher. Nonetheless, the water budget clearly shows the project will draw a substantial portion of groundwater during the initial year at minimum. Moreover, the water budget also show that project would significantly reduce groundwater storage within the Marina Subarea. The DEIR/EIS must be revised to disclose the amount of Marina Subarea groundwater supplies that would be depleted by the project. Without this information, it is impossible for the public and Commissioners to propose or evaluate potential mitigation measures. While the CPUC may determine that the impacts to groundwater supplies in the Marina Subarea are significant and unavoidable, it cannot approve the project without disclosing this condition and allowing public comment on this impact.

In addition, the DEIR/EIS's characterization of the project as creating only a "minor localized groundwater drawdown" is misleading and fails to acknowledge the magnitude of the groundwater extraction proposed. As designed, a single well would produce 2,100 gpm and the operation of 8 wells would total 16,800 gpm. That rate of groundwater extraction would fill an average size swimming pool in 1.5 to 2 minutes. Different than other municipal wells that cycle to meet day time demands and then rest at night, the MPWSP intake wells would pump constantly. Similarly, the suggestion that the project would only draw a small amount of brackish groundwater from the inland side of the project is significantly downplaying the quantity to be produced. Annually, the project production of groundwater would fill a 2,700-acre reservoir with water to a depth of 10 feet. After 10 years, the reservoir would be one hundred feet deep.

Finally, the return water component of the MPWSP would benefit each of the aquifers "by either reducing the area of influence **or** by increasing groundwater levels in other areas" does not address or mitigate impacts to the Marina Subarea aquifers directly impacted by the project.

Again, groundwater production should be calculated to include the 3,000 mg/l beneficial use standard provided in the WQCP. The amount of groundwater return to the basin needs to be specifically indicated and analyzed to determine the effectiveness of its implied mitigation of the potential project impacts.

The DEIR/EIS's conclusion that the project impacts to the existing wells is less than significant must be updated based on new modeling results that address cumulative drawdown levels:

On **Page 4.4-68**, the DEIR/EIS states:

> The nearby groundwater production wells affected by the change in groundwater levels are built in the Dune Sand Aquifer, 180-FTE Aquifer, or the 400-Foot Aquifer and thus have casings, pumps, and screens at depths considerably deeper than the depths at which MPWSP pumping could affect the water levels. A water level decline between 1 and 5 feet would not expose screens, cause damage, or reduce yield in the groundwater supply wells influenced by MPWSP pumping. Based on the modeled response of the 24.1-mgd extraction rate at the CEMEX site, the impact on nearby water supply wells would be less than significant.

HGC Comment No. 31:

As discussed above, the superposition model does not address cumulative drawdown and therefore does not address the project's potential to impact existing wells under cumulative conditions, which could include extended drought periods.

The DEIR/EIS's conclusion that the impacts of the project on the surface water-groundwater interaction at the Salinas River and Tembladero Slough is inconsistent with the conclusions in the Alternatives Section regarding Elkhorn Slough:

On **Page 4.4-70**, the DEIR/EIS states:

> The NMGWM can estimate the loss of groundwater outflow to a surface water feature such as the Salinas River. Based on the modeling, the estimated volume of groundwater removed from the river recharge system would be approximately 400 afy. A similar condition exists for Tembladero Slough, where the volume of groundwater removed by the slant well pumping from that system would be about 65 afy. The volume of water flowing to the ocean through the Salinas River in 2012 was about 250,000 afy, so the reduction of 400 afy is about 0.16 percent of the total flow. From a surface water supply standpoint, this magnitude of groundwater diversion from the Salinas River would be a minor, if not immeasurable, reduction in surface water supply. The same conclusion is applied to the Tembladero Slough, where the removal of 65 afy of groundwater discharge would not constitute a recognizable loss in supply for that system. The reduction of surface water attributable to slant well pumping is not a substantial reduction of water supply and thus this impact would be a less than significant impact.

On **Page 5.5-114**, the DEIR/EIS states:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from

Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

HGC Comment No. 32:

The assessment of the impact of surface water losses from these features due to the project pumping is general and compared to annual conditions that don't consider low-flow or no-flow conditions resulting from seasonal or climatic dry periods. This may be largely a result of the inadequacy of the NMGWM^{2016} prior to switching to use of the superposition model. In addition, the DEIR's conclusion regarding the potential impacts to the Salinas River and the Tembladero Slough are inconsistent with its treatment of Elkhorn Slough in the Alternatives Chapter.

The DEIR/EIS's discussion of the surface water-groundwater interaction at CEMEX fails to analyze or disclose how the TSW's impacts were effected by CEMEX operations making the revised modeling subject to untolerable uncertainty.

On **Page 4.4-70 through 4.4-72**, the DEIR/EIS states:

The CEMEX facility has several ponds on its property. The largest pond, located to the north of the slant wells, is the source of the sand mined by CEMEX. The impact analysis of MPWSP pumping effects on recharge considered the largest pond to determine whether the proposed project would have an adverse impact on its recharge or on the current sand mining operations. A significant impact would occur if the proposed pumping at CEMEX reduced recharge to the Dune Sand Aquifer or interfered with or otherwise limited the ability of CEMEX to operate due to intolerable draw down in its main sand mining pond.

Pond Operation

The bottom of the large CEMEX dredge pond is assumed to be at about 10 to 20 feet below the surface water level in the pond (Geoscience, 2015b). The water level in the pond is in hydraulic connection with the ocean, receiving ocean water as seepage through the beach sand and occasional storm surges over the beach and into the pond. Winter storm surges push sand with very little silt or clay particles over the beach and into the largest pond, and the sand settles to the bottom of the pond. CEMEX then dredges the sand from the pond, sorts the sand

into different grain sizes depending on the desired end product, and washes the sand to remove residual salts from seawater. The wash water is routed to the smaller ponds located north and east of the location of the proposed slant wells, where the seawater seeps into the sand and migrates back to the ocean. The larger, deeper sand source pond is in an area composed entirely of sand. The water level in the largest pond is controlled by the ocean tides (Geoscience, 2015b). Occasionally, storm surges remove the sand barrier between the larger dredge pond and the ocean and the pond temporarily becomes a small bay, as occurred in March 2016. The smaller, shallower wash water ponds are fed entirely by the wash water and are not directly connected to either to the ocean or the underlying groundwater; wash water either evaporates or infiltrates into the shallow sand and migrates to the ocean.

A water level transducer was installed in the large dredge pond on the CEMEX property to monitor changes in water elevations. The most recent monitoring report indicates that the pond is tidally influenced (Geoscience, 2015a, b) due to the proximity of the pond to the ocean (within 200 feet). In addition, the pond water level monitoring indicates that the sand mining operations conducted on Monday through Friday also affect pond water levels. Pond water levels fluctuate and decrease during the week as sand and water is pumped out of the pond and then stabilize on Saturday and Sunday when the sand mining operations are closed.

Impact Analysis for CEMEX Dredging Pond Drawdown

This impact analysis is based on the analysis completed for the test slant well, which was completed in September 2014, and is also informed by data that was generated in April 2015 after a five-day constant discharge pump test of the test slant well.

In the September 2014 analysis, the localized CEMEX model was used to determine whether the dredge pond would be influenced by pumping at the proposed test well operating at 2,500 gallons per minute (gpm) (Geoscience, 2014a). The localized CEMEX model simulates the response of the Dune Sand Aquifer in its second, third, and fourth vertical layers. The depth of the large dredge pond falls within the second and part of the third model layer so the response in the dredge pond would be captured as a response in the upper portion of the Dune Sand Aquifer. The CEMEX model simulated the test well pumping for 8 months at 2,500 gpm. The results of the model run showed a drawdown at the dredge pond of about 1 foot. If a drawdown of 1 foot occurred for a pumping rate of 2,500 gpm from one well (the test slant well), there is a possibility that additional drawdown would occur in the pond during operation of the all of the proposed slant wells, which would operate at the combined pumping rate of 24.1 mgd or about 16,736 gpm. However, when compared to the daily tidal

fluctuations in the dredge pond water levels of up to eight feet throughout the year, the decline in the water surface of any depth would be masked by the consistent recharge and tidal influence from the ocean.

On March 8, 2015, a water-level transducer was installed in the dredge pond, and it has been collecting data ever since. In April 2015, a five-day constant-discharge pumping test was conducted (Geoscience, 2015b). The transducer showed a series of cyclical fluctuations from March 8 through March 21, followed by relatively flat levels through April 2, followed by similar pattern of cyclical fluctuations at similar elevations through April 11. The cyclical fluctuations are due to a combination of tidal influence and the routine dredging of the pond for sand. The early March fluctuations, which occurred before the pumping test, and the early April fluctuations, which occurred during the pumping test, show a similar pattern at about the same water level, indicating that the water level in the dredge pond was not being influenced by the pumping of the test slant well. This also indicates that as the pond is dredged, the water levels quickly recover, with seawater seeping through the loose sand on the beach.

While pumping at the slant wells could elicit a drawdown response in the large dredge pond over periods of extended pumping, the magnitude of that response would not interfere with recharge to the Dune Sand Aquifer, nor would it inhibit sand mining operations by depleting available water supplies to the pond. This impact is less than significant.

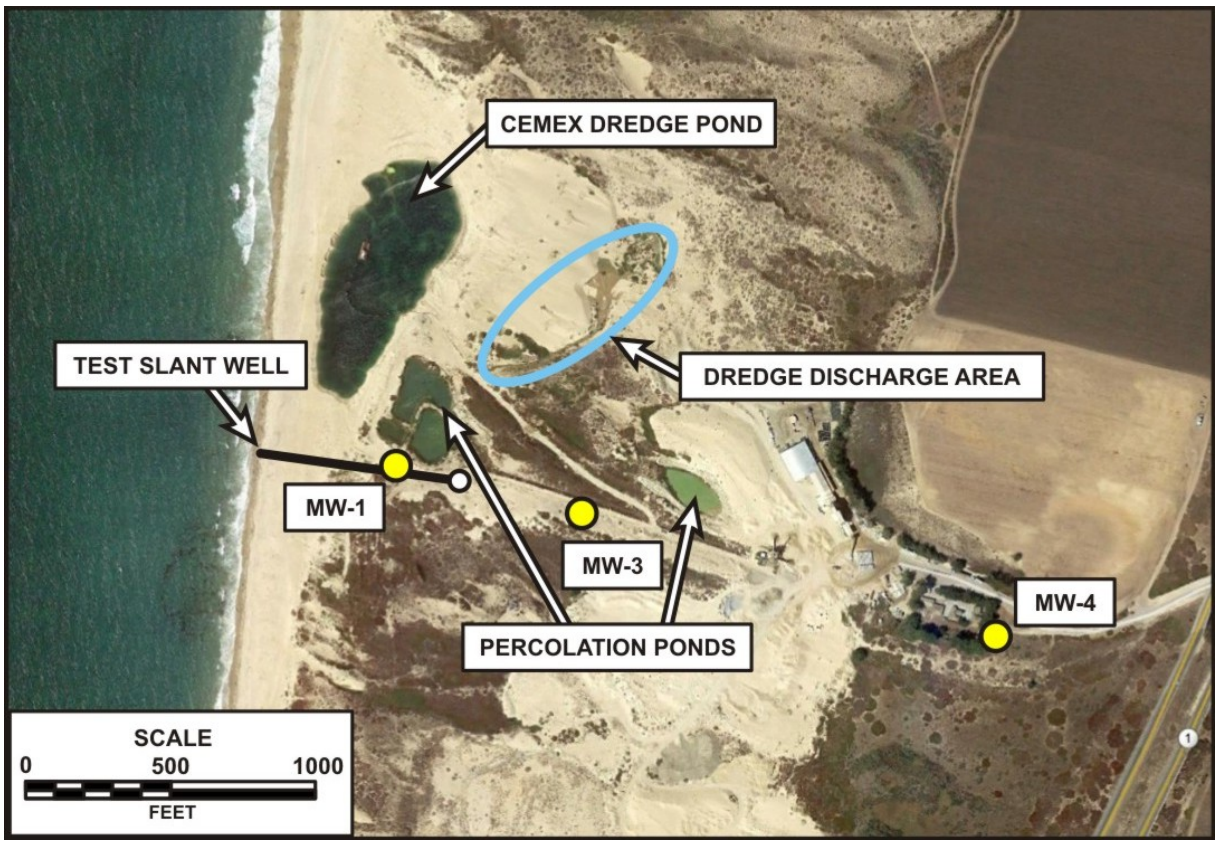
HGC Comment No. 33:

While the project may not significantly impact CEMEX's dredge pond operations, the DEIR/EIS fails to disclose how CEMEX's operations affected the test slant well discharge water quality and whether they would have similar effects on the 9 additional slant wells proposed further south and away from the dredge pond, the dredge pond discharges, and wash water containment ponds infiltration. Notably, due to CEMEX operation, the measured values relevant to salinity (specific conductivity, TDS, and practical salinity units (PSU)) provided by the TSW laboratory results and field measurements are not representative of what is expected from the larger MPWSP source wells array. At the time the higher salinity water quality samples were taken, the CEMEX dredge pond, which is in close proximity to the test well and inland of the shoreline, was breached for a significant period of time and directly filled by ocean water. It is likely the significant increase in salinity readings in the TSW during and following this period of time. The result was a large surge of ocean water into the dredge pond area overlying the inland portion of the beach adjacent to the test well. This condition will not persist throughout the year and is not present at the other proposed MPWSP source well locations.

Additionally, the CEMEX plant operations have influenced shallow groundwater quality in this reach of the shoreline for decades. As shown on Diagram 7 – CEMEX Surface Water Features August 2013, the test slant well is located adjacent to numerous sources of saline water

that are not present at other locations along the coast in particular where the other source water wells are proposed.

Diagram 7 – CEMEX Surface Water Features August 2013



These localized sources of salt water shown in Diagram 7 significantly influence the quality of the shallow groundwater that is observed in MW-1, MW-3, MW-4 and produced by the test slant well. The results in an overestimation of the seawater component flowing landward from the shoreline and an under estimation of the return water that will be required for mitigation.

The depletion of these landward sources of seawater is evident in the declining specific conductance trend for the TSW since November of 2016 (see Figure 3-12, Geoscience, 2017) and the overall decline in specific conductance trend in MW-4S since operation of TSW (see Figure 3-3, Geoscience, 2017).

Finally, I would note that this comment was provided to the CPUC in my testimony regarding the return water proposal, but the DEIR/EIS still does not address this issue.

The DEIR/EIS's conclusion that Impact 4.4-3 is less than significant is not supported by the best available scientific evidence and must be updated based on new modeling:

On **Page 4.4-73 through 4.4-74**, the DEIR/EIS concludes:

> The proposed project would extract mostly seawater and some brackish groundwater from a localized area; no fresh water supplies would be removed from the basin. When water is returned to the basin, groundwater conditions in the 400-Foot Aquifer underlying the CSIP and CCSD and adjacent areas would improve. Water levels in nearby wells may decline in the 180-FTE Aquifer between 1 and 5 feet, but that would not expose screens, cause damage, or reduce yield in the groundwater supply wells. Injection and extraction through the ASR well system would be managed so that the water provided from the desalination plant would not constitute a net change in storage. The reduction of surface water from the Salinas River attributable to slant well pumping would not be a substantial loss to water supply, nor would it constitute a substantial interference to surface water recharge. Pumping at the slant wells could cause drawdown in the large dredge pond over periods of extended pumping, but the magnitude of that response would not interfere with recharge. The MPWSP may slightly increase the area of impervious surface in the project area, but it would not reduce the potential for surface water to recharge the underlying aquifers. Impacts associated with changes to groundwater recharge during the operation of all project facilities would be less than significant.

HGC Comment No. 34:

As explained above, the DEIR/EIS's conclusion regarding Impact 4.4-3 are based on assumptions that conflict with the best available evidence and groundwater modeling that fails to assess cumulative conditions. The DEIR/EIS's conclusion that no fresh water supplies would be removed from the basin is not based on modeling capable of evaluating this criteria or other scientifically acceptable criteria. As a result the DEIR/EIS's conclusion the impact is less than significant is pure speculation. More importantly, it conflicts with available information regarding the groundwater conditions in the Marina Subarea and ignore the project's impacts on water quality.

The DEIR/EIS's conclusion that Applicant Proposed Measure 4.4-3 is not necessary to avoid impacts to the groundwater aquifers in the Marina Subarea is unsupportable; the measure, however, is inadequate to ensure the project would not result in significant impact:

On **Page 4.4-68**, the DEIR/EIS states:

> CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB. So, as part of the project, CalAm proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot or more in the Dune Sand

Aquifer and the 180-FTE Aquifer. This constitutes an Applicant-Proposed mitigation measure that is presented and evaluated at the end of Impact 4.4-3.

On **Page 4.4-74 and 75**, the DEIR/EIS further provides:

The project applicant has proposed to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer. ***This Applicant Proposed Measure is not required to reduce a potential impact to less than significant. [emphasis added]***

… Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage.

Prior to the start of MPWSP construction, the project applicant, working with the MCWRA, shall fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. Once expanded, the program will monitor groundwater levels and water quality within the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer and within at least one mile outside of the predicted radius of influence. The area of groundwater monitoring shall be determined by MCWRA and the MPWSP HWG. The elements of the groundwater monitoring program proposed under this measure are described below.

• Using a current survey of wells within the pumping influence of the slant wells, CalAm will offer to private and public well owners the opportunity to participate in a voluntary groundwater monitoring program to conduct groundwater elevation and quality monitoring. The voluntary groundwater monitoring program shall include retaining an independent hydrogeologist to evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, and flow rate) of participating wells prior to the start of slant well pumping. Water elevation and quality monitoring shall begin following initial groundwater well assessment.

• Based on a review of the well network of voluntary well owners, CalAm will identify areas lacking adequate groundwater data and if deemed necessary, install new monitoring wells. These new wells would be in the 180-Foot Aquifer.

• Seven clusters of monitoring wells were recently completed on and near the CEMEX property. These well clusters monitor various depths within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the monitoring network.

• Using the groundwater data developed through the voluntary well monitoring program and data gathered at the new monitoring wells, ***CalAm will evaluate***

whether project pumping is causing a measurable and consistent drawdown of local groundwater levels in nearby wells that is distinguishable from seasonal groundwater level fluctuations. In the event that a consistent and measurable drawdown is identified, CalAm will determine if the observed degree of drawdown would damage or otherwise adversely affect active water supply wells. ***[emphasis added.]*** Adverse effects from lowered groundwater levels in existing active groundwater supply wells can include cavitation due to exposure of the well screen, water elevation declines that draw water below pump intakes, reduced well yields and pumping rates, and changes in groundwater quality indicating that project pumping is drawing lower quality water toward the well. Adverse effects would only occur in active wells; inactive wells would not be considered for mitigation.

• If it is determined that a nearby active groundwater well has been damaged or otherwise negatively affected by the project pumping of the slant wells, the project applicant shall coordinate with the well owner to arrange for an interim water supply and begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well.

Applicant Proposed Measure 4.4-3 would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that the project is causing groundwater levels to damage local active wells, this measure would ensure that active wells are repaired or replaced. Implementation of Applicant Proposed Mitigation Measure 4.4-3 is not necessary to address any significant project effect.

HGC Comment No. 35:

The fact that "CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB," but the CPUC and Monterey Bay National Marine Sanctuary (MBNMS) do not recognize the need for continued monitoring is troubling. As explained above, the DEIR/EIS's conclusion regarding Impact 4.4-3 are based on assumptions that conflict with the best available evidence and groundwater modeling that fails to assess cumulative conditions. The superposition model cannot assess water quality impacts or cumulative conditions. The DEIR/EIS itself acknowledges the "Limitations of Groundwater Models" at Page 4.4-44. As noted above, there are no borehole results or monitoring wells located in the project coastal area south of the test slant well or in the area between the project and Dune Sand Aquifer within the Fort Ord area. Thus, the DEIR/EIS's conclusion that

additional monitoring is not required to ensure the project's impacts are less than significant is unsupportable.

Moreover, the Applicant Proposed Measure 4.4-3 even if adopted as mandatory mitigation would not reduce the project's potential groundwater impacts to a less-than-significant level. First, the measure fails to identify where additional monitoring wells will be located. In addition, leaving this decision to CalAm as well as the responsibility to evaluate whether project pumping is causing a measurable and consistent drawdown of local groundwater levels in nearby wells that is distinguishable from seasonal groundwater level fluctuations is problematic given CalAm's advocacy positions regarding the test slant well to date. Rather, another public agency with the expertise and jurisdiction to enforce the mitigation measure and be responsible for implementing the corrective action measures must be identified. The mitigation measure also needs to be expanded to ensure that the project does not directly, indirectly or cumulatively cause undesirable results as defined under the SGMA. It should also require a pumping curtailment or other measures to address the potential undesirable impacts that could result from the project. As discussed above, without modeling or other scientifically supported estimates of future groundwater levels and groundwater quality impacts, it will be impossible to determine whether the project pumping is causing a measurable or consistent drawdown in the affected aquifers.

The DEIR/EIS's conclusion that the project impacts to groundwater quality within the slant well pumping area of influence is less than significant, is inadequate and must be updated based on new modeling results:

On **Page 4.4-76**, the DEIR/EIS states:

> From the time the slant wells begin pumping, and throughout the life of the project, local groundwater quality around the slant wells and within the cone of depression could change from the brackish quality it is now to higher salinity groundwater. The degradation in water quality (measured as an increase in TDS) would occur because the slant wells would draw in the brackish water that is currently in the aquifer formation and seawater would flow in to replace it. This effect would be most detectable near the coast at the CEMEX site and less pronounced inland because seawater would enter the slant wells more readily closer to the Monterey Bay compared to farther east where a smaller fraction of brackish groundwater would be drawn from the inland portion of the aquifers.
>
> This impact analysis considers whether this projected degradation in localized water quality would constitute a significant impact. A significant impact would occur if the proposed project violated water quality standards or degraded a groundwater source such that it would interrupt or eliminate the available potable groundwater for other users in the basin. Groundwater in the Dune Sand and the 180-FTE Aquifers within the area projected to be affected by slant well pumping is not used for potable supply or irrigation. As stated in Impact 4.4-3, the use of

> the current groundwater production in this area is limited to minor irrigation and dust control. There are no water supply wells pumping potable water, and most of the wells in this area are no longer active because of seawater intrusion. Furthermore, groundwater production is restricted in the vicinity of the CEMEX site through MCWRA Ordinance 3709, which prohibits drilling wells and pumping groundwater from the 180-FTE Aquifer in order to protect groundwater resources.
>
> Based on current groundwater quality and the minimal groundwater use within the area affected by slant well pumping, the localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users. Therefore, this impact is considered less than significant.

HGC Comment No. 36:

The DEIR/EIS limits its analysis to whether the project would violate water quality standards or degrade the groundwater source such that it would interrupt or eliminate "the available potable groundwater for other users in the basin." As noted above, the DEIR/EIS's assumption that any water that does not meet the most stringent potable water standards has no beneficial uses and can be degraded without causing any significant impact is inconsistent with the SWRCB Basin Plan and SWRCB Anti-Degradation Policy. Moreover, also explained above, the TSW monitoring results show there are significant areas of freshwater within within the cone of depression. Finally, we note that changing fresh quality and slightly brackish groundwater within the Marina Subarea to hypersaline water will impact the ability to meet the SGMA's mandates. The statement that "the ***localized change in groundwater quality that could occur (emphasis added)*** as a result of slant well pumping is not expected to violate water quality standards" is misleading and inaccurate. The suggestion that water quality changes could occur indicates that they also could not. The DEIR should identify under what scenarios the project would not change the water quality in the Marina Subarea. As discussed above, causing any area of the basin that is fresh in quality or slightly brackish to become hypersaline will violate the basin WQCP objectives of 1,500 mg/l TDS. Therefore, the DEIR/EIS must be revised to disclose this impact is significant. If feasible mitigation is not identified that would reduce this impact to a less than significant level, which may be the case, the DEIR/EIS must disclose the impact would remain significant and unavoidable AFTER all feasible mitigation is adopted.

The DEIR/EIS's conclusion that the project impacts to groundwater quality within the slant well pumping area of influence is less than significant, is inadequate and must be updated based on new modeling results:

On **Page 4.4-77**, the DEIR/EIS states:

> As shown on Figures 4.4-10 and 4.4-11, the current location of the seawater/freshwater interface is about 8 miles inland in the 180-Foot Aquifer and

3.5 miles inland in the 400-Foot Aquifer. Once operational, the proposed slant wells would extract 24.1 mgd from the subsurface. A significant impact would occur if the proposed project caused the seawater/freshwater interface to migrate further inland, thereby exacerbating the seawater intrusion condition in the SVGB.

The effects on seawater intrusion were evaluated using the NMGWM with particle tracking (described in the Approach to Analysis section, above). Figure 4.4-17 shows the coastal seawater intrusion in the SVGB using the seawater/freshwater interface location estimated by the MCWRA and shown in Figures 4.4-10 and 4.4-11. Before running the model to simulate the 63 years of operation, individual water "particles" were placed along the leading edge of the mapped seawater intrusion front. Without the project, these particles are expected to continue to migrate inland with the movement of the seawater/freshwater interface. The NMGWM is a superposition model, meaning that modeled project effects are isolated from all other stresses in the basin, such as the effects from other groundwater pumpers, inland pressure gradients, injection systems, and recharge. In superposition, the NMGWM output is therefore the change attributable solely to the slant well pumping. Figure 4.4-17 depicts the resulting particle-tracking outputs, showing that a number of particles radiate away from the seawater/freshwater front back towards the coast. In Figure 4.4-17, some particle locations change substantially, whereas others do not. As to those that do change, the change in particle location shows where the seawater front would be after 63 years of MPWSP pumping if that was the only factor affecting groundwater movement in the basin (no recharge, no groundwater pumping, no pressure gradients, etc.). Therefore, Figure 4.4-17 illustrates the MPWSP's contribution to redirecting or reversing the inland advance of seawater intrusion. Because there are many stresses in the basin, the MPWSP project would not necessarily draw the leading edge of the seawater intrusion line back towards the coast to the extent shown by the particle-tracking output, but it does indicate that the MPWSP provides a benefit for the basin. Based on the particle-tracking results, the MPWSP would not exacerbate seawater intrusion, and groundwater extraction from the coast, as part of project operations, would be expected to retard future inland migration of the seawater/freshwater interface. The proposed project would facilitate the reduction of seawater intrusion in the long term, and the impacts of the proposed project are considered less than significant.

HGC Comment No. 37:

As noted above, the MCWRA maps used to justify the DEIR/EIS position are included with this response letter and include recent data from the TSW project that contradict the blanket statement that the freshwater/seawater interface is 8 miles inland (see attached Figures 1 through 5 and Diagram 5). Moreover, MCWRA does not have any maps for the extent of seawater

intrusion into the Dune Sand Aquifer. In fact, the DEIR/EIS does not address or evaluate potential impact to the Dune Sand Aquifer. As discussed above, the Dune Sand Aquifer water elevations indicate it flows toward the ocean (see Diagram 2 above and Figure 6 attached). Therefore, the project's impact on lowering heads within the Dune Sand Aquifer will induce seawater intrusion where it presently does not exist. The DEIR/EIS's failure to analyze or disclose this impact lacks any support and conflicts with the best available information. Moreover, increasing seawater intrusion into the Dune Sand Aquifer will in turn likely increase seawater intrusion into the lower aquifers that currently are recharged by freshwater from the Dune Sand Aquifer. Therefore, the DEIR/EIS must be revised to disclose this impact is significant. If feasible mitigation is not identified that would reduce this impact to a less than significant level, which may be the case, the DEIR/EIS must disclose the impact would remain significant and unavoidable AFTER all feasible mitigation is adopted.

The DEIR/EIS's conclusion that the project impacts to groundwater quality associated with existing groundwater remediation systems is less than significant, as mitigated, is inadequate and must be updated based on new modeling results that address cumulative impacts:

On **Page 4.4-86**, the DEIR/EIS concludes:

> **Impact Conclusion Groundwater Quality**
>
> For the slant wells, the seawater/freshwater interface would migrate back toward the ocean, which would be a less-than-significant impact. For the slant wells, the potential impact of interference with existing remediation systems would be reduced to less than significant with the implementation of Mitigation Measure 4.4-4. For the ASR injection/extraction wells, the net addition of injection water is considered a less than significant impact. For the ASR injection/extraction wells, the potential impact of interference with existing remediation systems would be less than significant. The operation of all other project facilities would have no impact on groundwater quality.
>
> Therefore, for the proposed project as a whole, the potential operations impacts would be less than significant with mitigation, relative to groundwater quality.

HGC Comment No. 38:

As discussed above, the presence of the FO-SVA and the groundwater gradient in the perched Dune Sand Aquifer control the present migration of contamination beneath the Fort Ord remediation site. As previously indicated, the project's increased production from the Dune Sand Aquifer could result in significantly more drawdown than previously anticipated which could accelerate or even change the direction of the contaminant plumes. This should be re-evaluated when the NMGWM^{2016} is appropriately revised and calibrated or a new dual density model is constructed. Mitigation Measure 4.4-4 is problematic and unlikely to ensure the project's impacts are mitigated for the same reasons identified in my comments about Mitigation

Measure 4.4-3 – namely the mitigation is delegated to Cal-Am without any meaningful performance standards.

The DEIR/EIS's conclusion that the project cumulative groundwater impacts is less than significant is inadequate and must be updated based on new modeling results that includes cumulative impacts:

On **Page 4.4-90**, the DEIR/EIS concludes:

> Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than significant. Therefore, the proposed project would not have a cumulatively considerable contribution to a significant cumulative impact during operations (less than significant).

HGC Comment No. 39:

The DEIR/EIS's analysis of cumulative impacts fails to account for how groundwater conditions have changed over time and how they are likely to change in the future without the project. In fact, the DEIR/EIS acknowledges its modeling "only solves for the groundwater changes due solely to the proposed project." It goes on to expressly state:

> These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

The DEIR/EIS suggests this limited approach to figuratively assessing the project's potential cumulative impacts to groundwater is permissible because baseline conditions reflect the contributions of past actions on groundwater resources within the geographic scope. This approach ignores that groundwater conditions have changed over time under baseline conditions and will continue to change in the future from other stressors. As noted above, the DEIR/EIS acknowledges this possibility. The fact that the modeling exists and has been run for the project (but the results not disclosed) and that it address these additional stressors is inexplicable. Even if the DEIR/EIS preparers believe

this modeling provides flawed results, the information must be disclosed (with an explanation regarding the flawed results) so the public can comment on the information and the decision makers can take it into account.

Finally, the cumulative impacts analysis must be revised to consider reasonably foreseeable projects that will be necessary under the SGMA. See discussion of no project alternative (DEIR/EIS, p. 5.5-84 ["Existing, ongoing regional groundwater pumping would continue throughout the Salinas Valley, as would efforts to develop a sustainable groundwater management plan."]).

DEIR/EIS Chapter 7 (Alternatives).

DEIR's discussion of slant wells ignores the fact that slant wells are an unproven technology.

Other than the recently completed TSW, there is only one slant well that has been successfully constructed to date in Dana Point, California. As addressed in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California:

> When it was built and tested in 2006, it was test pumped at 2,000 gpm and displayed a well efficiency of 95%. Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012 (GeoScience, 2012). Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.
>
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. **The advantage of having a subsea completion is largely lost in confined aquifers *(emphasis added)*.** The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.
>
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

(CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.)

HGC Comment No. 40:

We were surprised the DEIR/EIS does not discuss the CCC's Report or efficiency issues raised in the report (although it is referenced on 5.3-57) given that Martin Feeney, a Hydrogeologic Working Group member, was one of the Report's authors and Geoscience was involved in the well construction and testing. While the efficiency problems from the Dana Point may not manifest themselves at the CEMEX site, there is a considerable risk that has been identified by previous study. Therefore, the DEIR/EIS should discuss mitigation in the event there is a considerable drop in efficiency as it would likely eliminate the MPWSP's ability to provide return water. Alternatively, this could be considered a fatal flaw for the project.

The Potrero Road site appears to be a superior site for subsurface seawater intake facilities. Given aquifer parameter estimations and hydraulic boundary condition assumptions made in the model, a test well at the Potrero Road site is necessary to determine the accuracy of the aquifer parameter estimations and assumptions.

The DEIR/EIS on **p. 5.4-15** states:

> Alternative 1 would contain the same elements as the proposed project and would produce the same volume of product water. However, because of the hydrogeology of the Potrero Road area, Alternative 1 would draw a greater volume of water from the Salinas Valley Groundwater Basin than the proposed project. In the event the Salinas Valley Return Water obligation is determined to be 12 percent (the highest return value simulated), Alternative 1 would meet the need for replacement supplies and meeting peak month demand, but limited supply would be available for other uses, including accommodating tourism demand under recovered economic conditions. Alternative 1 would not provide sufficient supplies to serve existing vacant legal lots of record and would therefore, not meet the project objective/need for water, some of which was to support limited growth (e.g., Objective 6).

The DEIR/EIS then further states on **p. 5.5-86 through 5.5-90**:

> **Effects on the Perched-A Aquifer**
>
> Slant well pumping at Potrero Road would create a cone of depression in the Perched-A Aquifer that would extend up to 5 miles inland, as shown in Figure 5.5-2.4 The extent of modeled drawdown in the Perched-A Aquifer is almost twice the inland distance modeled at CEMEX for the proposed project because: 1) the Perched-A Aquifer is not as thick as the Dune Sand Aquifer underlying the CEMEX site, and 2) the ocean water capture zone is restricted at Potrero Road to the Perched-A Aquifer (the wells would not also be screened in the 180/180-FTE

Aquifers) because the underlying Salinas Valley Aquitard separates the Perched-A Aquifer from the 180-Foot Aquifer. The 1-foot drawdown response would be similar in the Perched-A Aquifer with and without modeled return water scenarios (0, 3, 6, and 12 percent), because the resulting in-lieu recharge in the 400-Foot Aquifer would have a negligible effect on recharge in the Perched-A Aquifer. Modeling indicates that pumping under Alternative 1 would influence the Perched-A Aquifer north of Potrero Road and the cone of depression would encompass the mouth of the Elkhorn Slough and about 1 mile inland up the slough (a portion of which is within MBNMS). This effect is shown by the 1-foot drawdown contour lines on Figures 5.5-2 and 5.5-3 and these results suggest a direct or indirect effect of project pumping at Potrero Road on the surface water-groundwater interaction in the Elkhorn Slough. For example, the slant well pumping at Potrero Road could draw in groundwater that would otherwise flow to recharge the Slough, or draw surface water directly from the Slough that would not occur under the proposed project. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Effects on the 180-Foot Aquifer

Figure 5.5-3 shows the effects on the 180-Foot Aquifer from slant well pumping for Alternative 1, for varying percentages of Salinas Valley return water (0, 3, 6 and 12 percent return water). The modeled aquifer response shows a cone of depression that extends a maximum of about 4 miles inland with 0 percent return water, and the maximum extent of the cone is reduced by about 2 miles with increased percentages of return water. The modeled drawdown in the 180-Foot Aquifer is not directly due to project pumping because the slant wells at Potrero Road would not be screened in the 180-Foot Aquifer; rather, the water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 180-Foot Aquifer may have been interpreted by the model as drawdown due to pumping. Similar to the effects on the Perched-A Aquifer, the response from slant well pumping (1-foot contour line at 0 percent and 3 percent return water) extends north to partially encompass the mouth of the Elkhorn Slough, indicating a possible surface water-groundwater interaction with the Slough. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Pumping Response on 400-Foot Aquifer

Figure 5.5-4 shows the effects of the slant well pumping at Potrero Road on the 400-Foot Aquifer. The 1-foot drawdown contour, representing 0 percent return water, shows the largest area of drawdown extending about 2 miles inland and offshore about 0.75 mile. The 1-foot drawdown contour with 3 percent return

water extends inland only about 1.5 miles and offshore about 0.5 mile. There is also a localized groundwater level increase in Castroville with 3 percent return water. The 1-foot contour resulting from 6 percent return water shows a groundwater level rise in Castroville, as does the 12 percent return water contour that is almost 5 miles in diameter. The response from slant well pumping, as shown by the 1-foot drawdown contour at 0 percent and 3 percent return water, extends north to partially encompass the mouth of the Elkhorn Slough. Given the depth of the 400-Foot Aquifer and the presence of the Salinas Valley Aquitard, it is unlikely that there would be a direct surface water-groundwater interaction between the Elkhorn Slough and the 400-Foot Aquifer. The water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 400-Foot Aquifer was likely interpreted by the model as drawdown in the 400-Foot Aquifer and given the location of Elkhorn Slough relative to the northern boundary of the NMGWM, quantification is not feasible within the context of the model.

Analysis and Conclusion of Operational Impacts

Pumping of slant wells at Potrero Road under Alternative 1 would extract mostly seawater and inland brackish water from an area where groundwater is not extracted for beneficial uses by others. There would be some degree of water level increase in areas of the 400-Foot Aquifer as a result of the Salinas Valley return water. No groundwater supply wells are currently pumping within the area of influence of the affected aquifers; therefore, Alternative 1 would have a reduced potential for impact on supply at nearby wells compared to the proposed project. However, like the proposed project, and would result in the same impact conclusion as the proposed project, less than significant. However, like the proposed project, Applicant-Proposed Mitigation Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage) would be implemented under Alternative 1, in recognition of the need to provide continued verification that project pumping from Alternative 1 would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB.

Regarding Water Quality Impacts, the DEIR/EIS states on p. **5.5-90**:

Similar to the proposed project, Alternative 1 would gradually and locally degrade groundwater quality from brackish to more saline as project pumping continues. However, this degradation would not violate water quality standards or interrupt or eliminate groundwater supply for other users. Groundwater modeling results show that Alternative 1 slant well pumping would hold back inland migration of the seawater intrusion front similar to the proposed project. However, because the effects of slant well pumping at Potrero Road would extend farther north than the proposed project, it would have a greater positive influence on the northern half of the seawater intrusion front compared to the proposed project.

> Unlike the proposed project, Alternative 1 groundwater extraction would occur too far north to interfere with groundwater remediation systems currently operating at the former Fort Ord Army base. Therefore, the Alternative 1 intake system would not interfere with active remediation systems or contaminant plumes, the impact would be decreased compared to the proposed project and Mitigation Measure 4.4-4 (Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes) would not have to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality.
>
> In summary, project pumping at Potrero Road, like the proposed project at CEMEX, would cause the brackish groundwater to locally turn more saline, but not in violation of water quality standards; it would hold back seawater intrusion similar to the proposed project but would have a greater positive effect on the northern portion of the intrusion front; and it would eliminate the potential interference with existing contaminant plumes and remediation systems at the former Fort Ord military base as a result of slant well operation, eliminating the need for mitigation. Therefore, Alternative 1 would result in a reduced impact conclusion on groundwater quality compared to the proposed project, less than significant.

Regarding operational impacts on marine biological resources, the DEIR/EIS states on p. **5.5-114**:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

HGC Comment No. 41:

Our review of the project field investigations study indicate that the Potrero Road site hydrogeology and aquifer property estimations were defined by 5 formation samples collected

from a single borehole (Geoscience, 2014). The hydraulic conductivity values estimated from the grain-size analyses of those samples show a highly permeable aquifer that would yield water to well facilities with up to 3 times the performance of wells at the CEMEX site. Compared to the 6 boreholes drilled at the CEMEX site during the initial study, there are limited data from which to build a high level of confidence in the model input parameters and subsequent model results and DEIR/EIS conclusions about the viability of the Potrero Road site. Similarly, the NMGWM used substantial water level data from the 180-Foot Aquifer for model calibration, but no well data from the Dune Sand/A Aquifer zone that is the target for production by the Potrero Road alternative.

The vertical hydraulic conductivity used in the model (0.16 feet/day) at the Potrero Road site is not only untested and not substantiated by production test data, it is 2 orders of magnitude less than the CEMEX site estimate (15 feet/day). While the horizontal hydraulic conductivity value was estimated at 2 times greater than the modeled value at the CEMEX site, the reduced vertical hydraulic conductivity indicates a confined/semi-confined condition. The simulated impact of these aquifer parameter estimations results in a significant impedance to vertical flow from the ocean floor and a reduced amount of seawater infiltration estimated by the model. The greater horizontal hydraulic conductivity combined with reduced vertical flow results in a greater amount of groundwater production estimated. Should the actual aquifer conditions allow greater vertical flow from the ocean floor, the model simulations would indicate a significantly greater production of seawater and far lower production of groundwater.

The designs of slant well facilities at the Potrero Road site extend significantly further offshore with a majority of the well screen sections beneath the ocean floor (Geoscience, 2014, Figures 49, 50, and 68 to 84). The wells are significantly shallower in depth and located above SVA only in the Dune Sand/A Aquifer. This design and configuration would result in little impact on the 180-Foot Aquifer, below the SVA, and is closer to the ocean floor, which is better positioned for inducing seawater infiltration. Water quality test data indicate the salinity of the groundwater in the Dune Sand/A Aquifer at Potrero Road is virtually seawater (34,000 to 34,853 mg/l TDS).

Aside from the aquifer parameter estimations and hydraulic boundary condition assumptions made by the study, the Potrero Road site appears to be a superior site for subsurface seawater intake facilities. For this reason, we recommend the MPWSP construct a TSW at the Potrero Road Site to determine the accuracy of the aquifer hydraulic conductivity estimations that were derived from an empirical estimation method. If the assumed conditions that are simulated in the model are biased by the lack of data, the model results are overstating the groundwater that will be produced from the Dune Sand/A Aquifer zone and underestimating the amount of seawater that would be produced by an intake system at the Potrero Road site.

The DEIR/EIS should consider relocation of the MPWSP's subsurface intake wells either further north or south to better benefit the coastal conditions in the Pressure Area where seawater inflow preferentially follows the paths of greatest hydraulic conductance

HGC Comment No. 41:

Historical studies have indicated that there are 2 locations along the coastal portion of the Pressure Area where seawater inflow preferentially follows the paths of greatest hydraulic conductance (least impedance to flow) and where onshore gradients induce landward flow of groundwater (KJC, 2004, Page ES-15, Figure 3). The main pathway is located north of the Salinas River where the greatest amount of seawater has intruded into the heavily used portion of the Pressure Area. The second preferential pathway for flow is located south of Marina and allows seawater to flow into the aquifers beneath the Fort Ord Area. This area is south of the boundary defined as the Pressure Area by some studies, but within the Pressure Area defined by other studies. The CEMEX site lies midway between these 2 areas of preferential seawater intrusion and does not directly intercept either of these main areas of onshore flow. The potential impact of this condition, or the relocation of the project further north or south to better benefit the coastal conditions is not discussed in the DEIR/EIS.

DEIR/EIS Chapter 4.6 (Terrestrial Biological Resources).

On p. 4.6-3, the DEIR/EIS defines the area studied for potential impacts to terrestrial biological resources:

> Study area encompasses a 50-foot buffer around the project area. A 50-foot buffer around the project area was established as the survey area to ensure biological resources within the project area and immediate adjacent vicinity were assessed for potential direct and indirect project impacts.

HGC Comment No. 42:

The study area fails to account for potential operation impacts from the slant well drawdown and water quality impacts on groundwater-dependent ecosystems. The significant drawdown and changes to water quality have the potential to impact wetlands and other biological resources that rely on the groundwater resources within the project area of influence. The DEIR/EIS must be revised to disclose, analyze, and mitigate potential impacts on groundwater-dependent ecosystems within the operational area of influence. A cursory review of the Figure showing "Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area" shows resources both within and outside the areas evaluated by the study that are within the drawdown contours of the project and could be adversely impacted by the project's reduction of water levels and water quality. The SGMA defines adverse impacts to groundwater dependent ecosystems as an undesirable result and further supports the need for additional analysis that extends beyond construction related impacts.

Conclusion

Based on the findings of our review, HGC concludes that at a minimum the DEIR/EIS needs revision to include an adequate description of baseline conditions as they are presently being observed and the unique hydrogeology of the Marina Subarea portion of the SVGB. The DEIR/EIS must also utilize the information developed from the TSW field investigations and available from other studies in the Marina Subarea to refine and fully calibrate the NMGWM^{2016} or preferably construct a dual density model that would generate a reasonable level of confidence in the simulated effects of the MPWSP. Without this information, it is impossible to determine whether the project's significant impacts on groundwater levels (storage) and water quality can be mitigated to a less than significant level.

The revised DEIR/EIS must also provide analysis of alternatives that could satisfy the project's water demand requirements. That discussion must compare the impacts of each alternatives water intake sources (e.g. slant wells, Ranney collectors, beach infiltration galleries, horizontal directional drilling, etc.) with real data, not conjecture. Without a revised DEIR/EIS that provides this information, it is impossible to make an informed decision regarding the potential impacts of the project on the SVGB, particularly the aquifers in the Marina Subarea, and whether feasible alternatives to the project would reduce the project's significant impacts. We also conclude that if the seawater intake facilities were located a sufficient distance offshore beneath the ocean floor and effectively inducing seawater infiltration, the groundwater impacts from the MPWSP to the SVGB could be mitigated.

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.

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Attachments: Figure 1 - Average Chloride Concentrations Dune Sand and 180-Foot Aquifer
Figure 2 – Average Total Dissolved Solids Concentrations Dune Sand and 180-Foot Aquifer
Figure 3 – MRWPCA Wells in 400-Foot Aquifer
Figure 4 – Stiff Diagrams Dune Sand and A Aquifer
Figure 5 – Stiff Diagrams 180-Foot Aquifer
Figure 6 – Dune Sand Aquifer Groundwater Elevation Contour Map
Figure 7 – Fort Ord Cleanup Site Groundwater Elevation Data
Figure 8 – Monterey Peninsula Landfill Groundwater Elevation Data
Figure 9 – Beacon Gas Station Groundwater Elevation Data

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FIGURES

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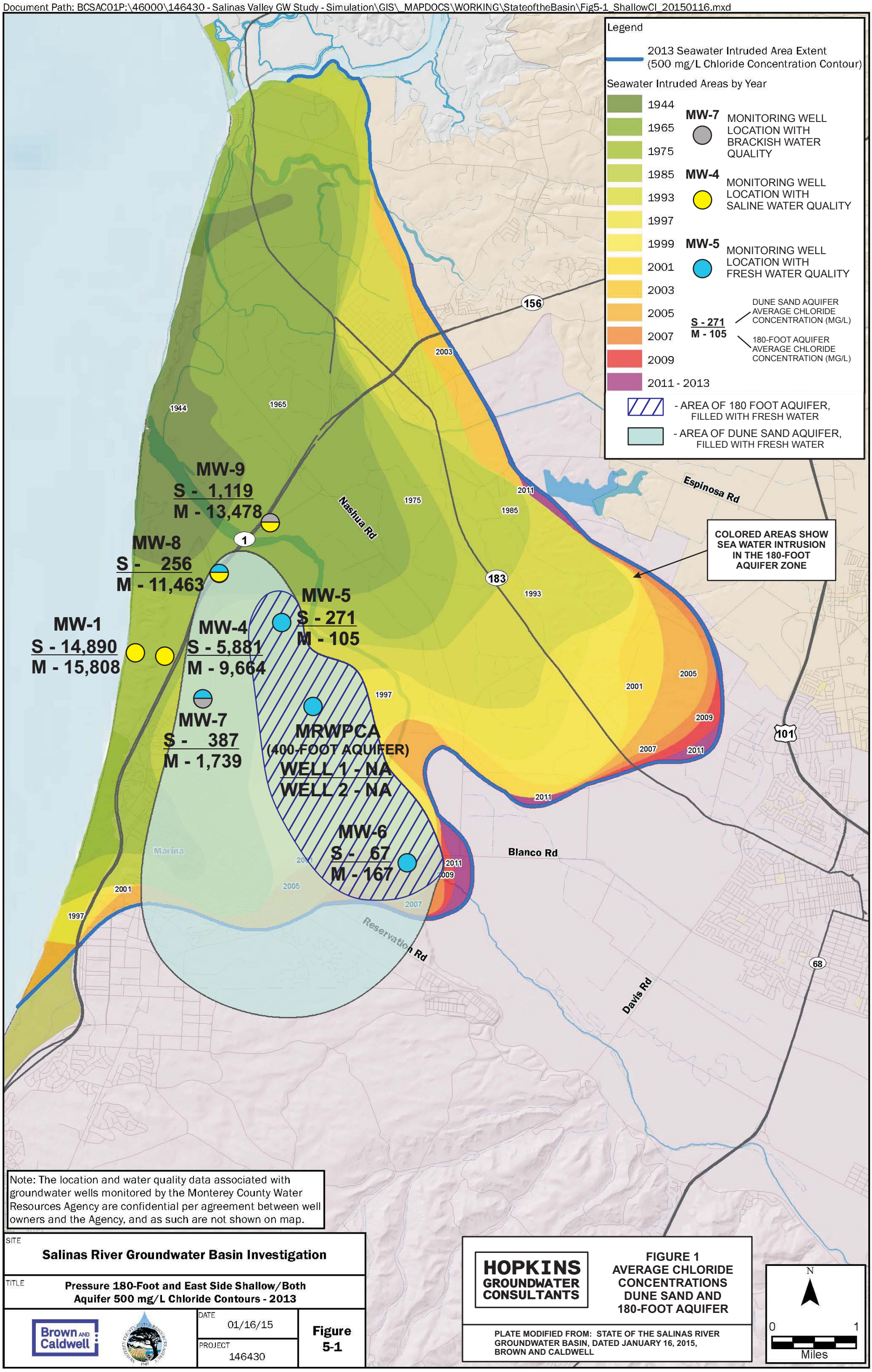

Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE
Salinas River Groundwater Basin Investigation

TITLE
Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure 5-1

HOPKINS GROUNDWATER CONSULTANTS

FIGURE 1
AVERAGE CHLORIDE CONCENTRATIONS DUNE SAND AND 180-FOOT AQUIFER

PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL

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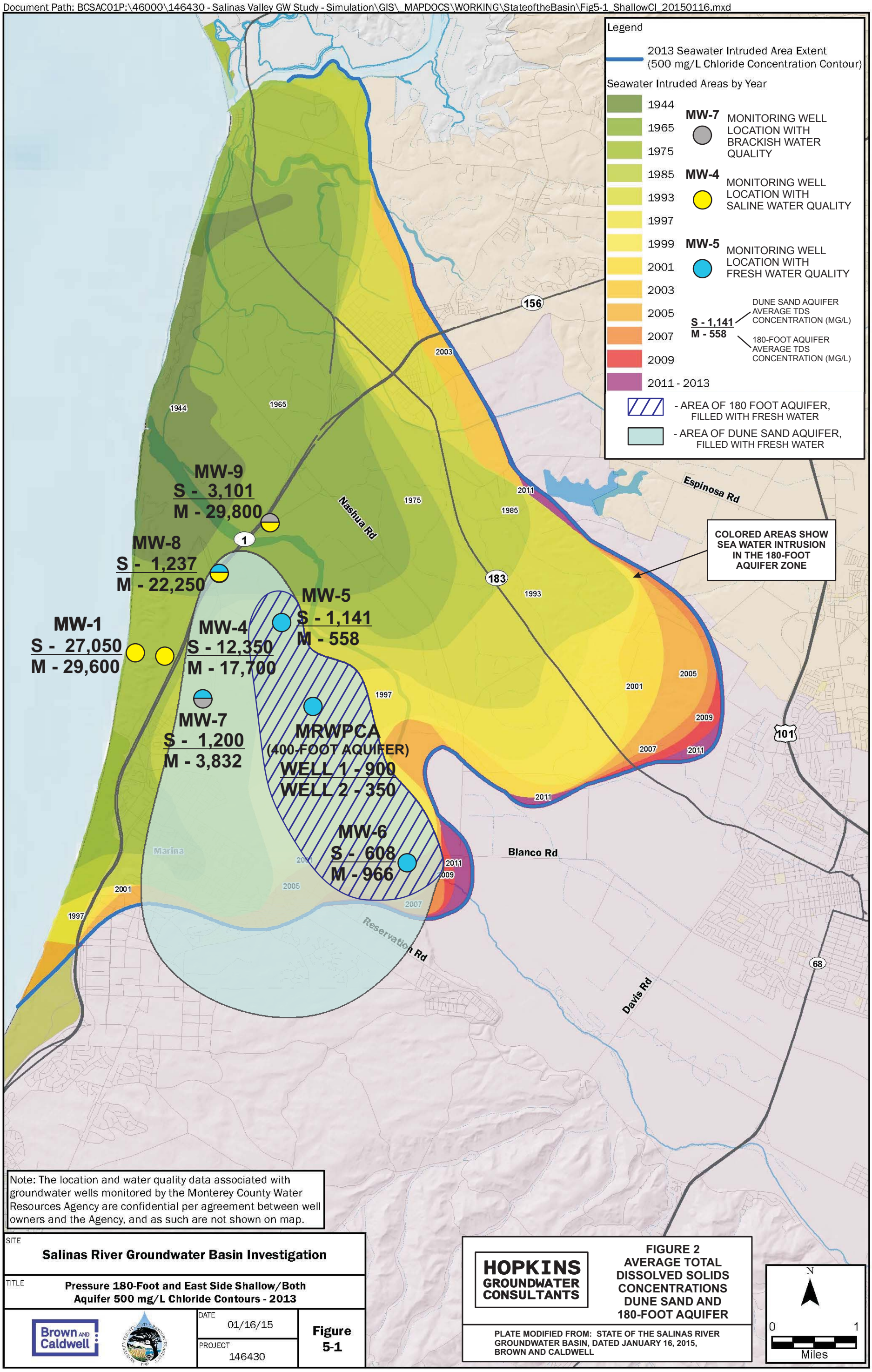

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SITE
Salinas River Groundwater Basin Investigation

TITLE
Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure 5-1

HOPKINS GROUNDWATER CONSULTANTS

FIGURE 2
AVERAGE TOTAL DISSOLVED SOLIDS CONCENTRATIONS DUNE SAND AND 180-FOOT AQUIFER

PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL

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Legend

2013 Seawater Intruded Area Extent (500 mg/L Chloride Concentration Contour)

Seawater Intruded Areas by Year

- 1959
- 1975
- 1985
- 1990
- 1993
- 1995
- 1997
- 1999
- 2001
- 2003
- 2005
- 2007
- 2009
- 2011 - 2013

MRWPCA WELLS

Nashua Rd

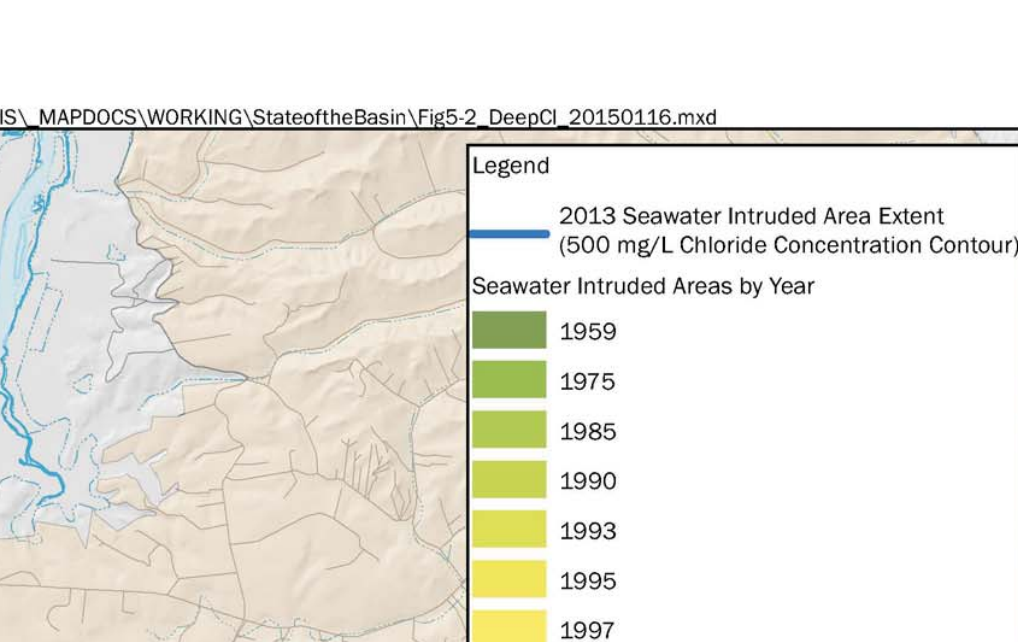
Marina

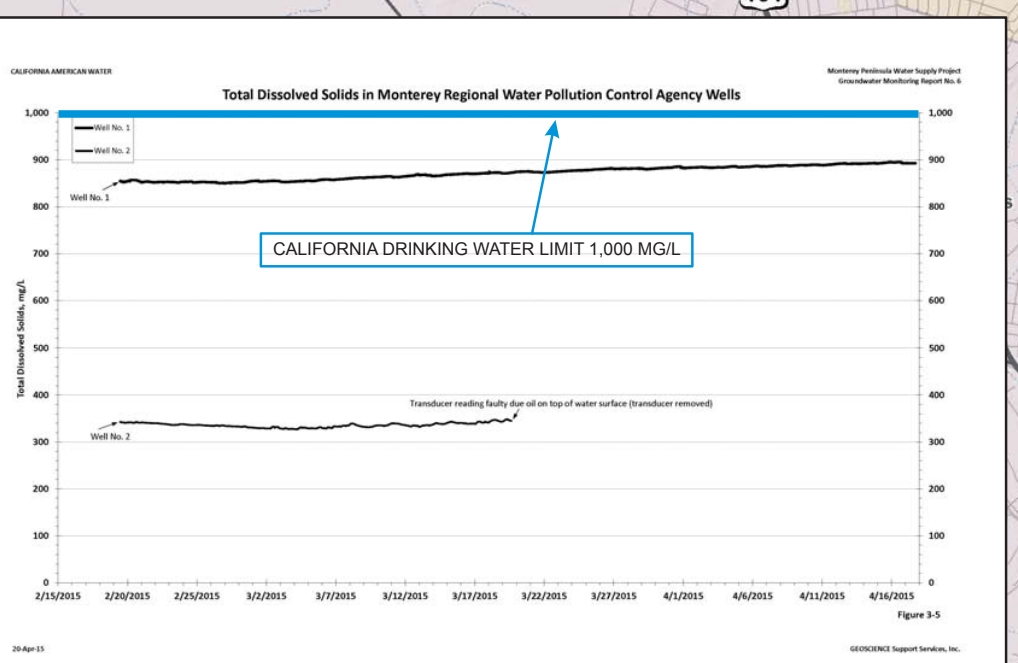
Reservation Rd

156

1

101





Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE
Salinas River Groundwater Basin Investigation

TITLE
Pressure 400-Foot and East Side Deep Aquifer 500 mg/L Chloride Contours - 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure 5-2

HOPKINS GROUNDWATER CONSULTANTS

FIGURE 3
MRWPCA WELLS IN 400-FOOT AQUIFER

PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL

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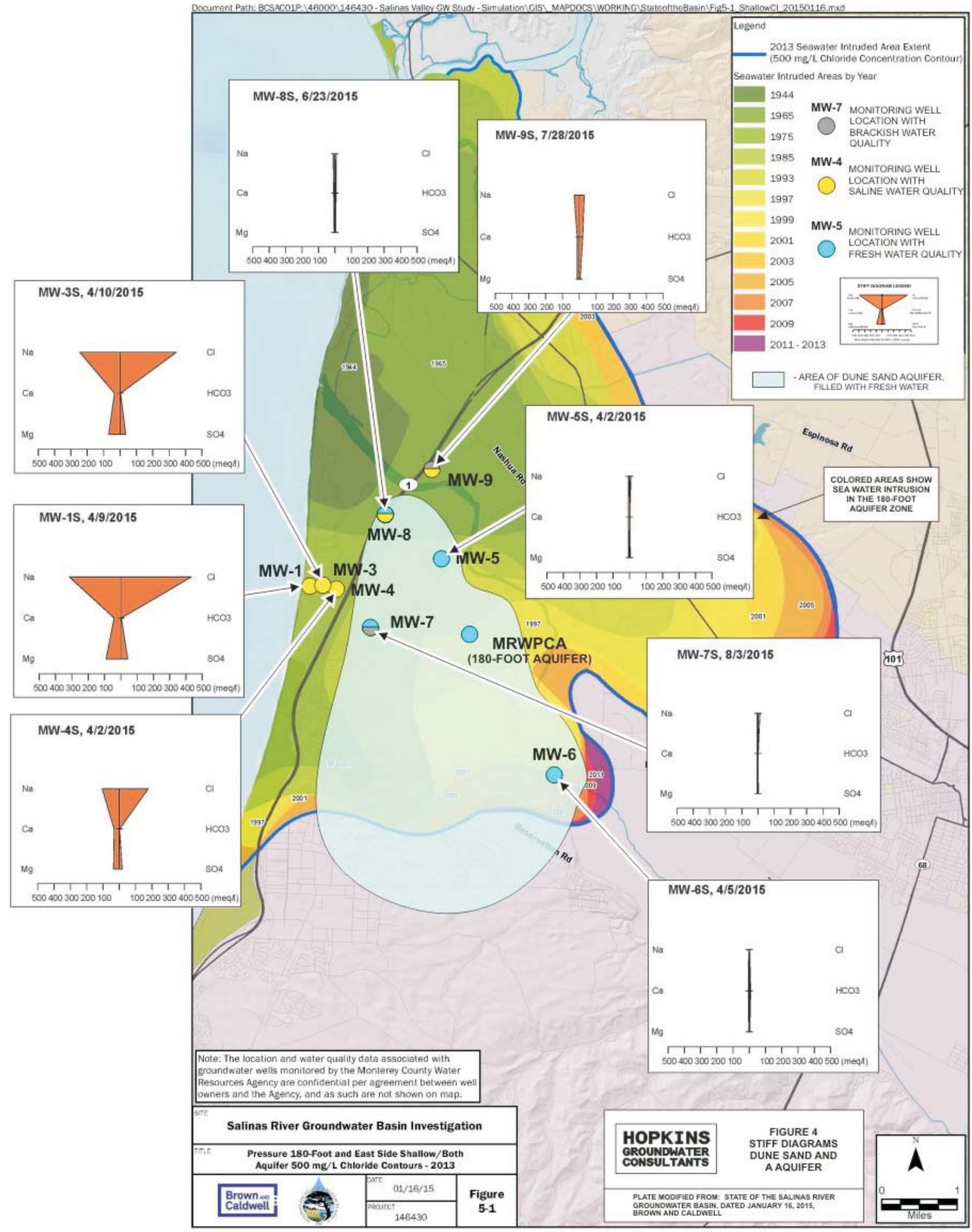

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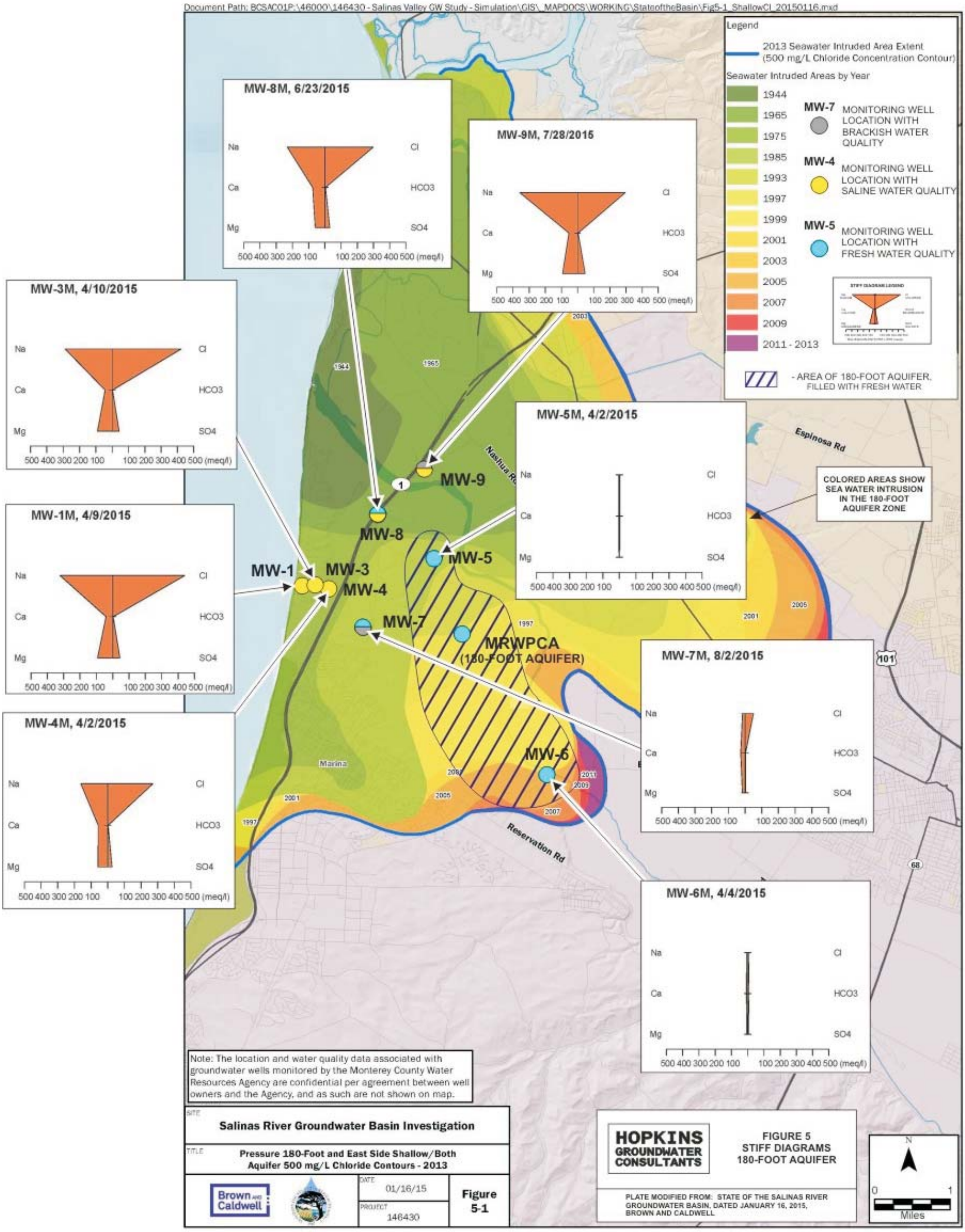
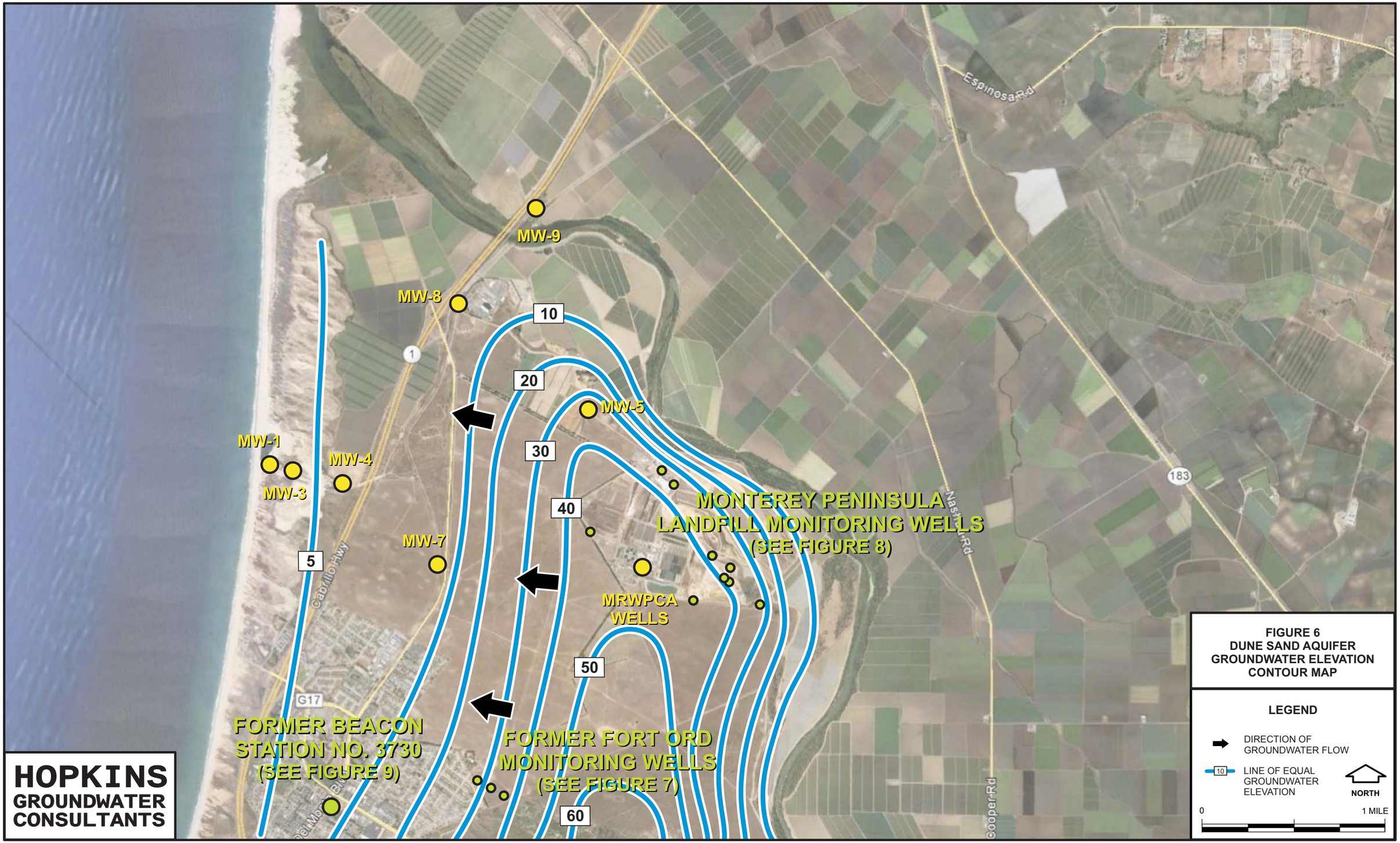
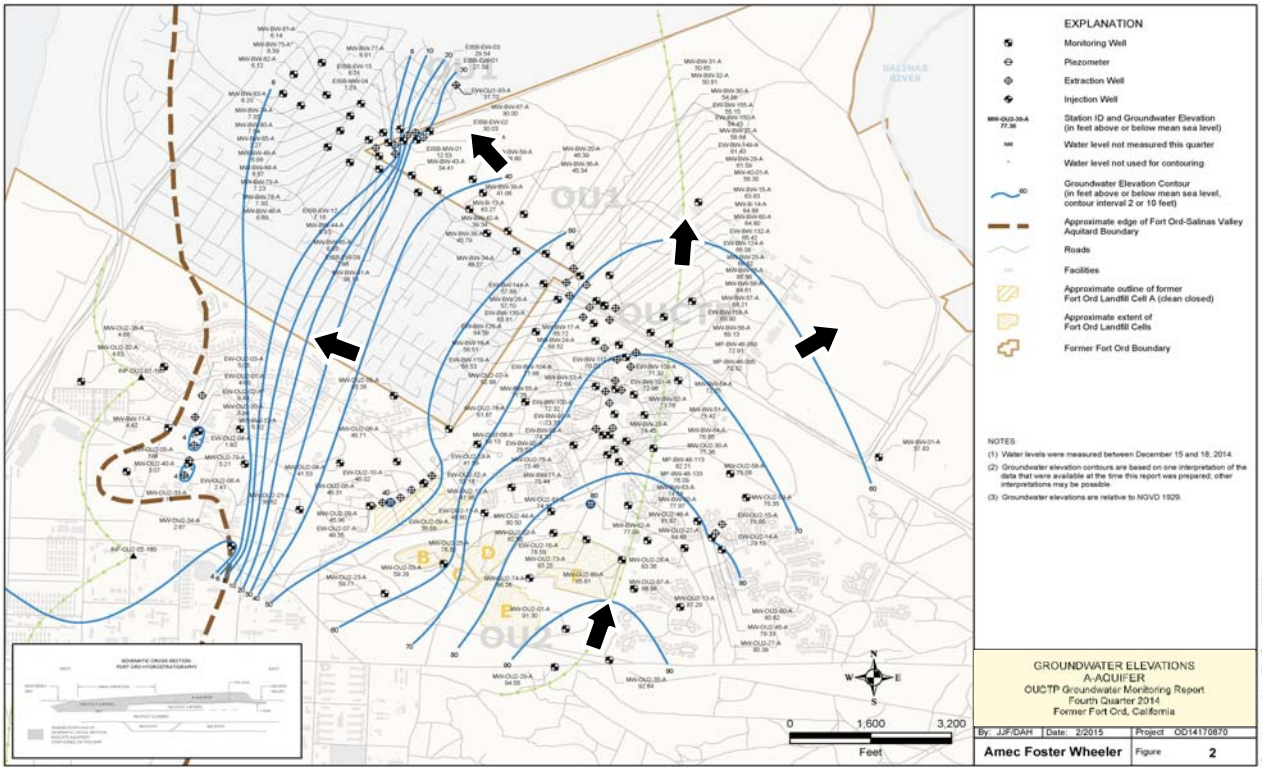
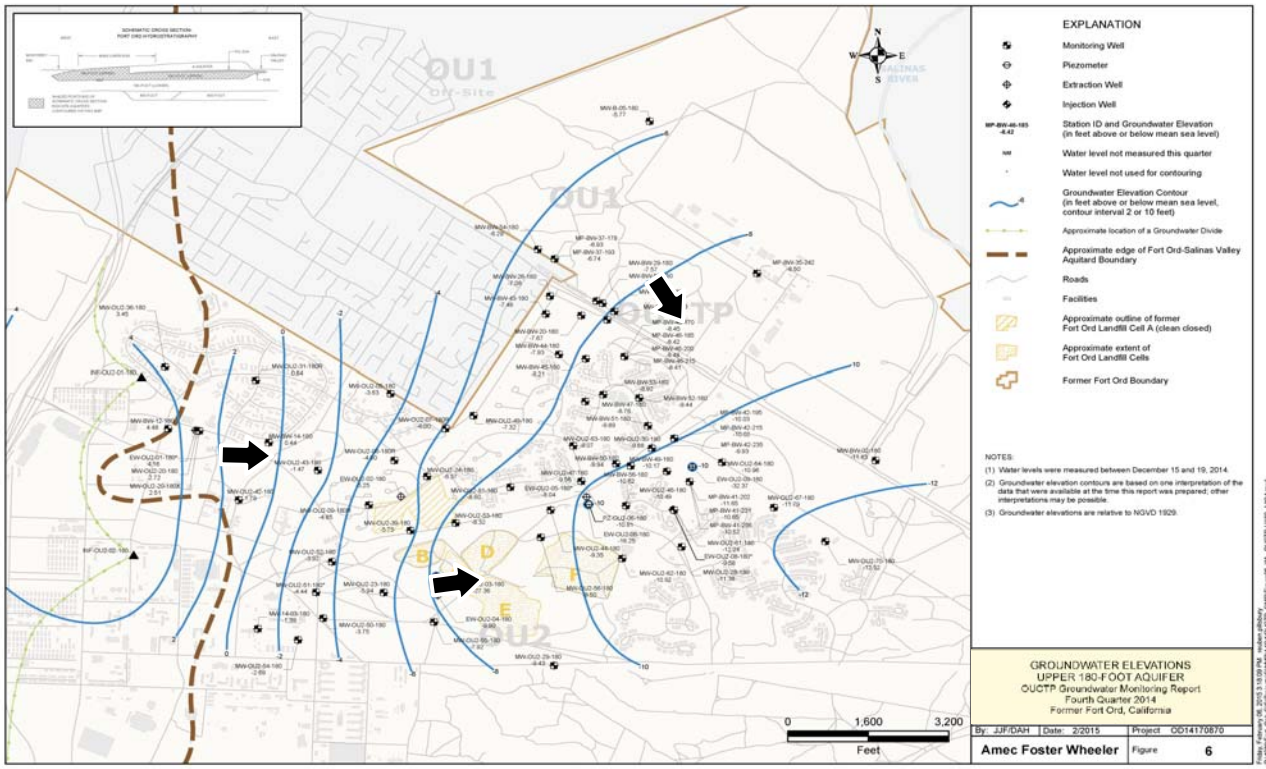


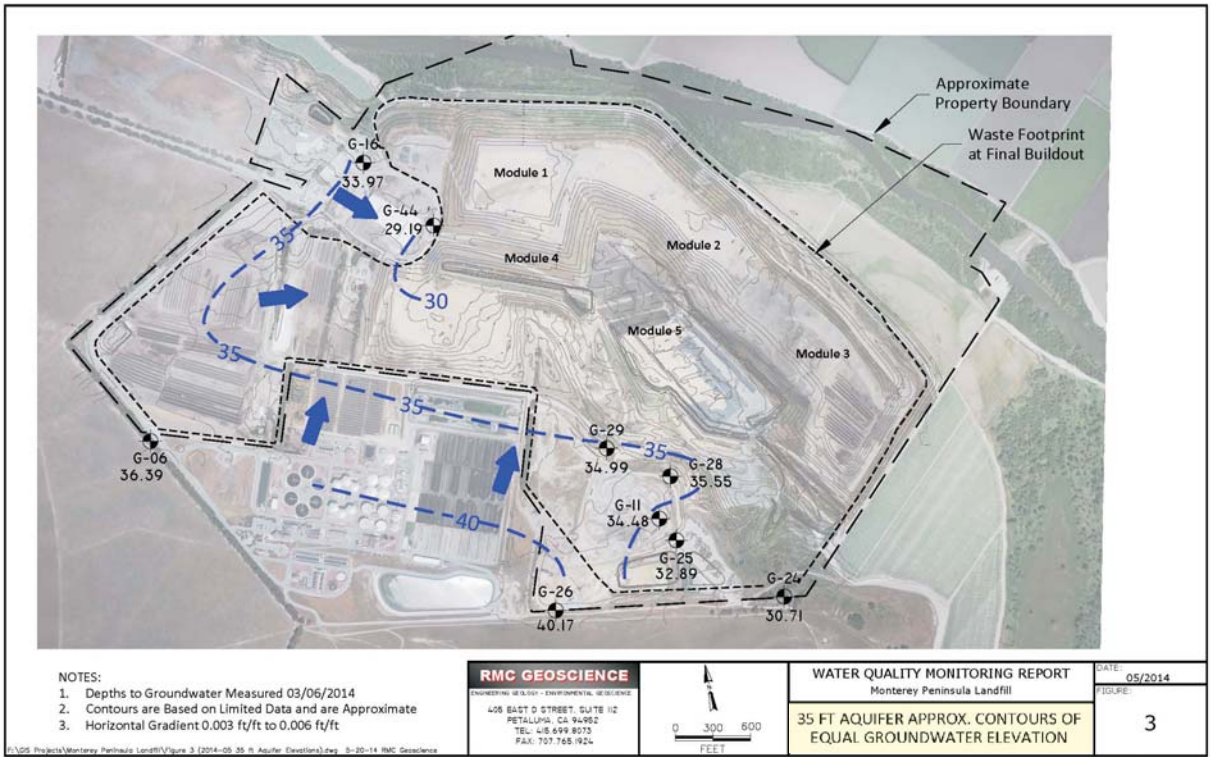

MW-9
MW-8
10
20
MW-5
30
MW-1
MW-4
MW-3
40
MW-7
5
MRWPCA
WELLS
50
G17
60
Espinosa Rd
183
Nash Rd
Cooper Rd
Cabrillo Hwy
MONTEREY PENINSULA
LANDFILL MONITORING WELLS
(SEE FIGURE 8)
FORMER BEACON
STATION NO. 3730
(SEE FIGURE 9)
FORMER FORT ORD
MONITORING WELLS
(SEE FIGURE 7)
HOPKINS
GROUNDWATER
CONSULTANTS
FIGURE 6
DUNE SAND AQUIFER
GROUNDWATER ELEVATION
CONTOUR MAP
LEGEND
DIRECTION OF
GROUNDWATER FLOW
10
LINE OF EQUAL
GROUNDWATER
ELEVATION
NORTH
0
1 MILE

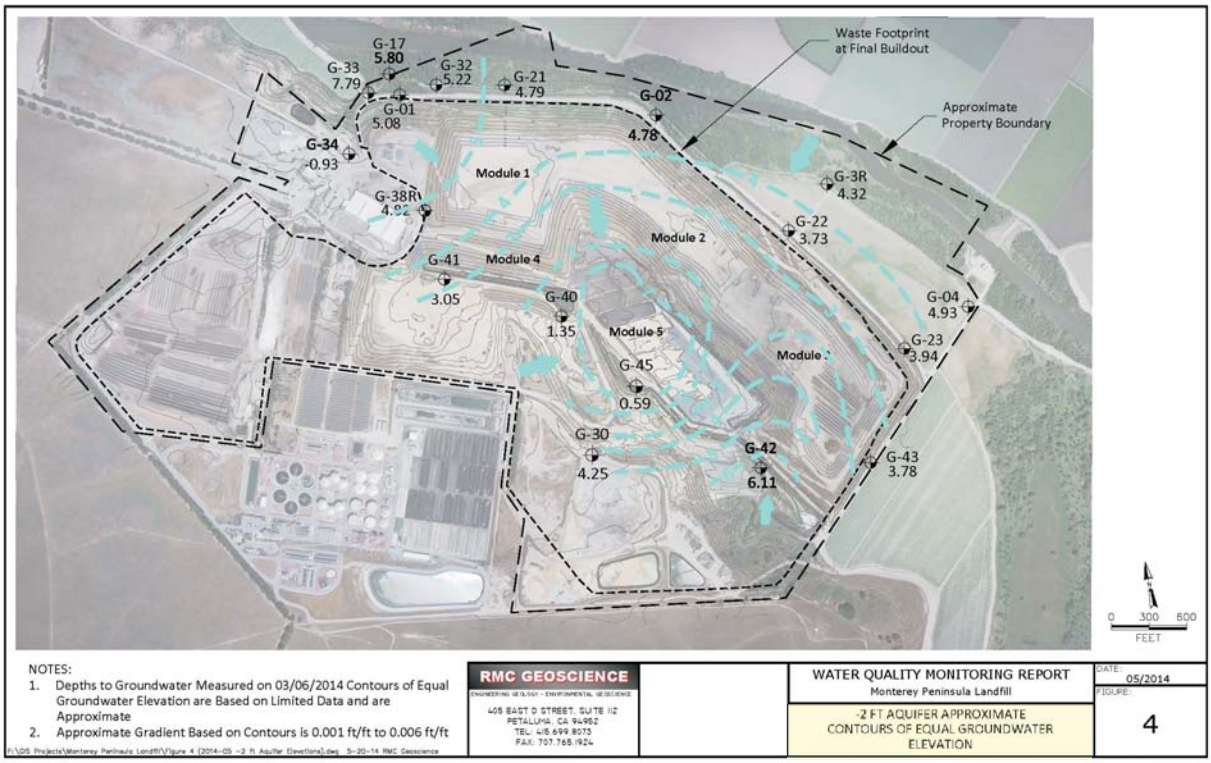




HOPKINS GROUNDWATER CONSULTANTS

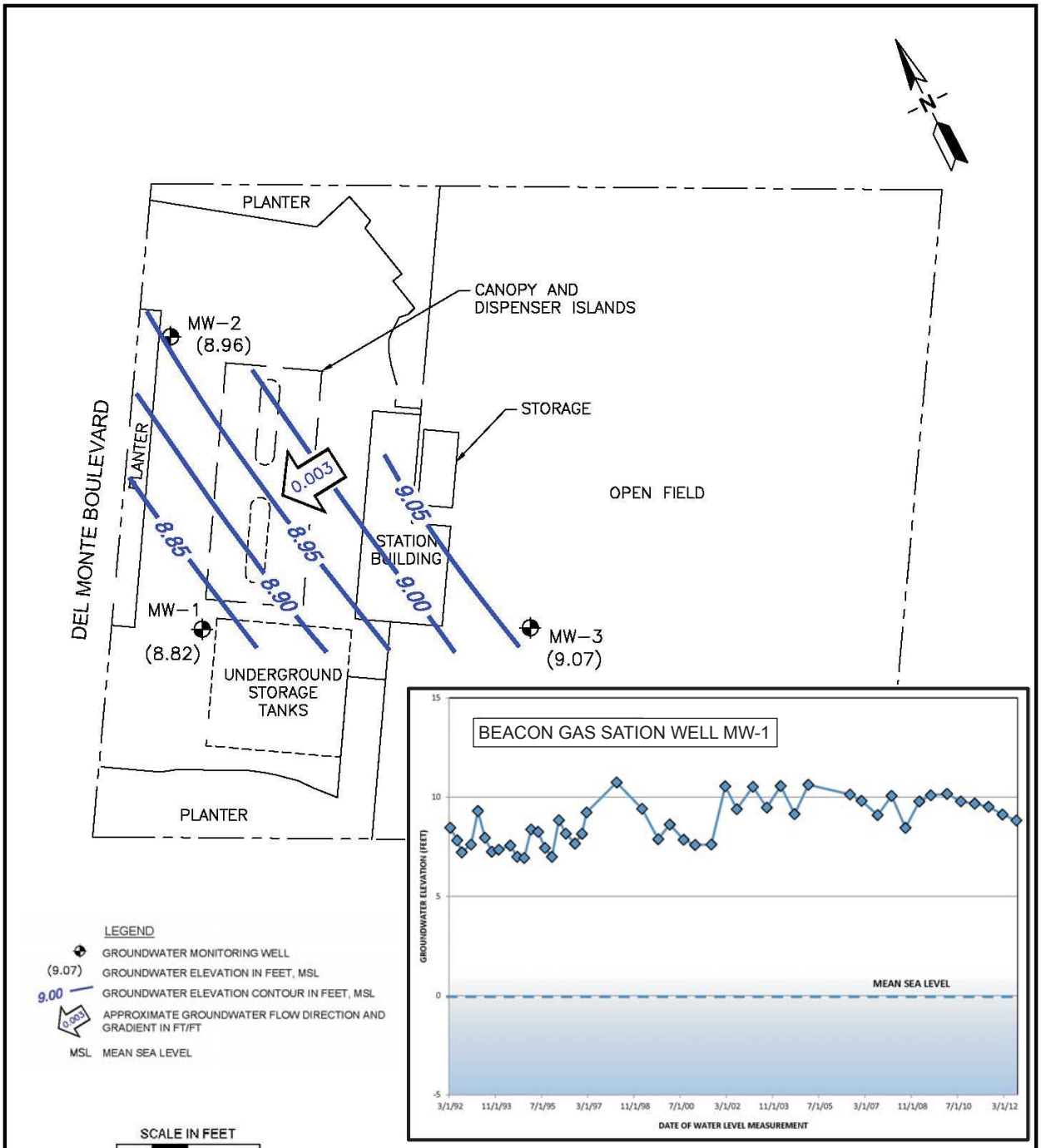
FIGURE 7
FORT ORD CLEANUP SITE
GROUNDWATER ELEVATION DATA





HOPKINS GROUNDWATER CONSULTANTS

FIGURE 8
MONTEREY PENINSULA LANDFILL
GROUNDWATER ELEVATION DATA



REF. 213_001\213.009.004 2SA12 figures.dwg
Base Map from Kadence Consultants, Inc.

HOPKINS GROUNDWATER CONSULTANTS

FIGURE 9
BEACON GAS STATION
GROUNDWATER ELEVATION DATA

PREPARED BY

TRINITY source group, inc.
Environmental Consultants
500 Chestnut Street, Suite 225
Santa Cruz, California 95060
v: 831.426.5600
f: 831.426.5602

GROUNDWATER ELEVATION CONTOUR MAP, AUGUST 14, 2012
Former Beacon Station No. 3730
3144 Del Monte Boulevard
Marina, California

PROJECT: 213.009.004

FIGURE: 2

GeoHydros LLC

March 27, 2017

Keith Van Der Maaten
General Manager
Marina Coast Water District

Subject: Review of the 2016 North Marina Groundwater Model

Dear Mr Van Der Maaten,

Please find attached our report summarizing our review and findings regarding the 2016 North Marina Groundwater Model.

In summary, we believe our report sufficiently demonstrates why the Draft EIR/EIS's conclusions regarding the MPWSP's groundwater impacts are not scientifically supportable and conflict with available information. Please note that given the problems with the model calibration identified above, we do not recommend additional scenario analysis using the 2016 NMGWM because it would not provide scientifically supportable results.

Please contact us is you have any questions or would like us to perform additional analyses. We have also attached our firm CV and individual CVs, as you requested.

Sincerely,

Todd R Kincaid, Ph.D.
President, Principal Hydrogeologist

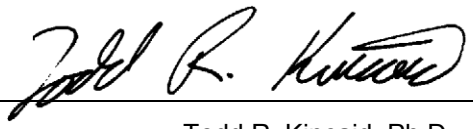
Review of the 2016 Version of the North Marina Groundwater Model Marina Coast California

March 27, 2017

Prepared for:

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Prepared by:



Todd R. Kincaid, Ph.D.
President / Principal Hydrogeologist

I, Kevin E. Day, P.G., no. 8034, have read and agree with the findings in this report titled *2016 Version of the North Marina Groundwater Model Marina Coast, California dated March 27, 2017* and do hereby certify that I currently hold an active professional geology license in the state of California. The report on the status of tasks, including the evaluation of the updated North Marina Groundwater Model prepared by Dr. Todd R. Kincaid of GeoHydros, LLC, has been reviewed by me and found to be in conformance with currently accepted geologic practices, pursuant to Title 16, Division 29 of the California Code of Regulations.

Kevin Day, P.G.

California License No. 8034

March 27, 2017

Date

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Appendix 3 Water Budget Reports Exported from the Calibrated and DD1-44/56 Scenarios of the 2016 North Marina Groundwater Model

1 BACKGROUND

GeoHydros, LLC was contracted by the Marina Coast Water District to review the 2016 version of the North Marina Groundwater Model (NMGWM) with specific regard to the findings derived from that model and reported in Section 4.4[1] and Appendix E2[2] of the CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS dated January 2017 and used as the basis for the determinations of impact from proposed slant well pumping near the city of Marina, California. Our work included a review of the documents listed above and the 2015 version of Appendix E2; and obtaining, running, and performing scenario analyses with the calibrated version of the 2016 NMGWM and the associated "superposition" models that were created from it for the 2016 EIR/EIS.

2 NMGWM

The 2016 NMGWM is a finite difference numerical groundwater flow model constructed with the MODFLOW groundwater modeling software[3] using a uniform grid of 200 x 200 foot cells. The model simulates flow from the Pacific Ocean into and through four aquifers separated by aquitards that inhibit but do not prevent vertical flow between the aquifers. The model is a modification of the 2015 version[4] to include and address more site specific hydrostratigraphic units, namely the Dune Sand Aquifer and the Salinas Valley aquitard, groundwater elevations in the vicinity of the proposed wells, and structural changes that favored the conceptualized flow from the Pacific Ocean into the aquifers[5].

Table 1. Hydrostratigraphic Units in the 2016 NMGWM

Layer	Type	Name
1	N/A	Ocean
2	Aquifer	Dune Sand Aquifer
3	Aquitard	Salinas Valley Aquitard
4	Aquifer	180-ft Aquifer
5	Aquitard	180/400-ft Aquitard
6	Aquifer	400-ft Aquifer
7	Aquitard	400/900-ft Aquitard
8	Aquifer	900-ft Aquifer

MCWD-GH-01

The model has been used directly or indirectly to predict the impacts to groundwater resources of various possible configurations of a proposed project to withdraw groundwater from the Dune Sand and 180-FT aquifers adjacent to the coast of the Pacific Ocean at the CEMEX site (Figure 1). Predictions stemming from the model include: 1) delineation of cones of depression in the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers associated with different pumping, return flow, and sea level scenarios; 2) quantification of the sources of water that will supply the proposed extractions, namely the ocean versus groundwater; and 3) the effect of the proposed pumping scenarios on the transition zone between freshwater and salt water in the aquifers.

---

[1] Groundwater Resources Section of the CalAm Monterey Peninsula Water Supply Project 2017 Draft EIR/EIS dated January 2017, ESA / 205335.01
[2] Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.
[3] Harbaugh, A.W.; Banta, E.R.; Hill, M.C.; McDonald, M.G., 2000. MODFLOW-2000, the U.S. Geological Survey Modular Ground-Water Model -- User Guide to Modularization, Open File Report 00-92.
[4] Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.
[5] Table 3.1, Appendix E2, Ibid

The model domain encompasses a nearly square area rotated 16 degrees clockwise, approximately 13 miles northwest-southeast by 11.4 miles northeast-southwest, approximately 40% of which extends into the Pacific Ocean (Figure 1). The model boundaries are arbitrary and do not represent natural hydrologic divides therefore the model simulates flow across the external boundaries that cannot be verified from data. MCWD-GH-02

General head boundary conditions were assigned to the inland portions of the external model boundaries meaning that the groundwater elevations were inferred by the model from nearby wells or sources at some distance from the boundary. In these cells, flow across the boundaries was determined by the simulated hydraulic gradient and the specified hydraulic conductivities. Constant head boundary conditions were assigned to the outer boundaries of the offshore portions of the external model boundaries as well as all offshore cells in the uppermost model layer and a portion of the offshore cells in Layers 2-6 (Figures 2 and 3). The constant head boundary assignments differed from the 2015 version of the NMGWM in that the 2016 version prescribed equivalent freshwater heads to the offshore cells that account for the depth of the ocean water over the respective model layers and the density difference between saltwater and freshwater[6] whereas the 2015 version assigned constant heads only in layer 1 (ocean) and set the values to sea level[7]. Figures 4 and 5 show perspective cross-sections through the model domain that depict the effect of the equivalent freshwater head assignments in the ocean on the hydraulic gradient (slope) of the groundwater surfaces in the Dune Sand Aquifer (model layer 2) and the 180-FT Aquifer (model layer 4). MCWD-GH-03

By limiting the use of equivalent freshwater heads to the ocean side of the model layers, HydroFocus did not account for the effect of varying salinities in the groundwater inland from the coast and therefore over-predicted the west-east hydraulic gradient. This results in a failure to reasonably simulate saltwater intrusion as it appears was the intent. The appropriate way to simulate saltwater intrusion is with the use of a dual-density model such as could have been constructed with the SEAWAT or FEFLOW groundwater modeling software. In its present form, the NMGWM should not be used to infer how the proposed project or any other stresses would likely affect saltwater intrusion or the position of the saltwater/freshwater interface in any of the simulated aquifers. Use of a dual-density simulation software would also allow for model calibration to salinities observed in onshore wells. MCWD-GH-04

External head-dependent boundary conditions (aquifer water levels), pumping rates, recharge rates, and stream losses and gains were derived from the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM),[8] which is a considerably larger and coarser model encompassing the Salinas River watershed that does not simulate the added hydrostratigraphic units (Dune Sand Aquifer or Salinas Valley Aquitard). The interconnectivity between these two models is problematic because they simulate different conceptual hydrostratigraphic frameworks. In particular, the initial heads and boundary conditions pertaining to the Dune Sand Aquifer and Salinas Valley Aquitard are likely not appropriate resulting in a poor simulation of MCWD-GH-05

---

[6] Table 3.1, Appendix E2, of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.
[7] Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.
[8] Montgomery Watson, 1997, "Salinas Valley Integrated Ground Water and Surface Model Update, Final Report," May 1997.

groundwater levels and horizontal and vertical hydraulic gradients in these units. HydroFocus identified this problem as a likely source of the large calibration errors in the Dune Sand Aquifer monitoring wells. MCWD-GH-05 cont.

Due in part to the constant head boundary assignments and relationship to the SVIGSM, the design of the 2016 NMGWM yields implausible hydraulic conditions in all four of the simulated aquifers. Figures 6-9 depict the simulated groundwater surfaces for each of the four aquifers at the first and last timestep in the 32-year simulation period. MCWD-GH-06

Figure 6 reveals that the Dune Sand Aquifer is essentially not present at the first timestep and that there is little to no northward flow across the model boundary in the aquifer in the last timestep though the aquifer is reported to continue southward into the Fort Ord region. Appendix 1 provides groundwater surfaces exported after each year of the simulation period, which reveal that the Dune Sand Aquifer doesn't fully evolve until approximately year 20. Though fluctuations in recharge and pumping incorporated into the transient simulation contribute to the simulated variation through time, the difference between the hydrostratigraphic frameworks represented in the SVIGSM and the NMGWM is most likely the dominant cause. MCWD-GH-07

The simulated groundwater surface in the Dune Sand Aquifer is inconsistent with the majority of the surfaces simulated by the 2015 version of the model. Specifically, the 2015 version of the model depicted northward flow into the model domain in the Dune Sand Aquifer for multiple of the simulated scenarios, whereas the 2016 version represents the Dune Sand Aquifer as a mound that doesn't extend to the south, which differs from the conceptual model that reflects hydraulic continuity into the Fort Ord area. These differences indicate that the changes made in the 2016 version of the NMGWM also contributed to the problems with the Dune Sand Aquifer simulation and calibration. MCWD-GH-08

Figures 8-9 show nearly consistent west-to-east hydraulic gradients across the model domain in the 400-FT and 900-FT aquifers indicating that the ocean is the primary source of water flowing across the model. Based on these maps, we would infer that nearly all of the volume of these two aquifers throughout the model domain should be substantially impacted by saltwater intrusion. The occurrence and use of freshwater from these lower aquifers indicates that model is over-estimating the gradient and/or not adequately simulating the sources of fresh groundwater inflow to the aquifers within the model domain. MCWD-GH-09

The calibration criteria used to define model acceptability addressed only the difference between simulated and observed groundwater levels at the calibration wells wherein the definition of acceptable was achieving a root mean square error (RMSE) of 10% - 15% of the range in observed groundwater elevations within the model domain. This criteria was more permissive than the 10% value described in the 2015 version of the model documentation and the RMSE for the whole model increased from the 2015 version (10.5 feet)[9] to the 2016 version (12.4 feet)[10]. MCWD-GH-10

---

[9] Figure 37, Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.

[10] Figure 4.3a, Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.

Inspection of the calibration plots presented by HydroFocus[11] indicates that the range in groundwater elevations for all simulated aquifers is approximately 200 feet. For the individual aquifers, the ranges are approximately 100 feet, 50 feet, 110 feet, and 80 feet for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers respectively. The HydroFocus calibration criteria would therefore be 20-30 feet for the whole model, and 10-15 feet, 5-7.5 feet, 11-16.5 feet, and 8-12 feet for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers respectively. Within this context, the model fails the stated calibration test in the Dune Sand Aquifer (RMSE=30.2). Using the stricter 2015 version of the criteria, the model also fails the calibration test for the 180-FT Aquifer (RMSE=7.2) and the 900-FT Aquifer (RMSE=11.3). In general, we have inferred from the data and results available that the quality of the model calibration declined between the 2015 and the 2016 versions, which further indicates that the changes made during the 2016 revisions have resulted in diminished reliability and contribute to the calibration problems cited by HydroFocus and attributed to the SVIGSM. Moreover, guidelines for model calibration also include ensuring the appropriateness of the model boundary conditions, the conceptual model, and the initial conditions for transient models[12], all of which are problematic in the 2016 NMGWM. MCWD-GH-11

For the reasons described above, the NMGWM predictions of impacts to groundwater resources due to the proposed pumping are not reliable particularly in the Dune Sand Aquifer. The calibration problems in the Dune Sand Aquifer undermine confidence in the hydraulic conductivity assignments in Layer 2 and Layer 3 and therefore the predicted magnitude and spatial extent of the cones of depression in those layers. MCWD-GH-12

HydroFocus performed sensitivity analyses to address uncertainty with respect to hydraulic conductivity assignments by varying the ratio between horizontal and vertical hydraulic conductivity by a factor of five to create scenarios for higher and lower vertical anisotropy[13]. Their results indicate that a five-fold increase in horizontal hydraulic conductivity coupled with a five-fold decrease in vertical hydraulic conductivity can substantially increase the predicted size of the cone-of-depression, nearly doubling the size in the Dune Sand Aquifer. Their findings emphasize the importance of achieving better calibration in the Dune Sand Aquifer to the reliability of the impact predictions. MCWD-GH-13

The boundary conditions problems, particularly the southern boundary in Layer 2, prevents the simulation of inflow to the model domain from the southern boundary and undermines confidence in the predicted contributions to the proposed pumping from the Dune Sand Aquifer. MCWD-GH-14

Finally, the model cannot simulate saltwater intrusion nor the effect of pumping on the position of the transition zone between freshwater and salt water conditions in the aquifers due to the proposed pumping scenarios because it is not a dual-density model. The use of equivalent freshwater heads does not overcome this limitation. MCWD-GH-15

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[11] Figures 4.3a – 4.3c, Appendix E2 of the 2017 Draft EIR/EIS, Ibid.

[12] Reilly, T.E. and Harbaugh, A.W., 2004. Guidelines for Evaluating Groundwater Flow Models, U.S. Geological Survey, Scientific Investigations Report 2004-5038.

[13] Section 6.0 & Figures 6.1-6.2, Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.

3 SUPERPOSITION MODEL

Superposition modeling is a method used to simulate the effects of some specific and singular form of aquifer stress (including pumping) on groundwater levels that can be used only when the effects of the active aquifer stresses are related linearly, i.e. simply additive. The method is typically used when the totality of aquifer stresses is too complicated to be pragmatically simulated or when there is insufficient data to develop a comprehensive simulation. The superposition method does not add to the confidence in the predictions, it merely simplifies the process of rendering a prediction in exchange for reduced ability to evaluate the condition of the hydrologic system. Such conditions would include groundwater surface elevations, water budget impacts, and/or impacts to existing actions such as other pumping, groundwater/surface water exchange, or cross-boundary flows.

In the case of the NMGWM, superposition models were generated for each pumping scenario by removing all other simulated stresses from the model and adjusting initial and boundary condition heads to 0.0 feet thereby providing a convenient datum for the simulation of cones of depression. In doing this, the models use the same distribution of horizontal and vertical hydraulic conductivities that were derived through model calibration and limited impacts assessments to a prediction of the cone-of-depression associated with each pumping scenario.

MCWD-GH-16

Though superposition modeling is a valid technique, it isn't necessary or appropriate for these evaluations because:

1) superposition modeling precludes evaluation of impacts to the water budget associated with the proposed pumping, i.e. defining the source of water to be extracted, which is a critical and central point of concern for stakeholders regarding the proposed project;
2) superposition modeling precludes prediction of measurable changes associated with the proposed pumping (i.e. predicted groundwater elevations and gradients), which would provide the only means for stakeholders to validate the model predictions and potential project impacts;
3) a comprehensive numerical model that includes other active stresses had been developed and calibrated that could be used to render those assessments;
4) GeoScience had previously developed impact assessments using the calibrated model directly and thus the groundwork for repeating that process had presumably been laid; and
5) a comparison of the cones of depression predicted by the superposition model and those we developed using the calibrated version of the 2016 NMGWM reveal that the prescription of the 0.0 datum to initial and boundary heads constrained their size and thus likely under-estimates the spatial extent of drawdown associated with the proposed pumping (Figures 10-13).

MCWD-GH-17

4 EVALUATION OF POTENTIAL IMPACTS

Though the calibration and boundary condition problems described in Section 2 render predictions derived from the NMGWM unreliable particularly with respect to the Dune Sand Aquifer, we performed one of the scenario analyses using the calibrated NMGWM to expand on the depiction of potential impacts described in the Draft EIR/EIS. To do this, we modified the calibrated model to include the proposed pumping, ran the

MCWD-GH-18

modified model, and compared the results to the calibrated version to evaluate and report impacts to groundwater surfaces and the water budget. We chose scenario DD1-44/56, which assumes a project pumping rate of 24.1 million gallons per day (mgd), no return flows, and 2012 sea level conditions[14].

The associated pumping assignments were copied from the wells file associated with the DD1-44/56 superposition model and inserted into the assignments into the wells file associated with the calibrated model. The model was then rerun to produce results that include the proposed project pumping. This approach effectively assumes that the proposed pumping described by the DD1-44/56 scenario began at the beginning of the transient simulation period wherein all other aquifer stresses remained identical to those prescribed for the calibrated scenario. Water budget and heads were then extracted and used in conjunction with the same output exported from the calibrated scenario as the basis for the impact assessments presented below.

MCWD-GH-18 cont.

4.1 Impact to Groundwater Surfaces

Figures 14-17 depict the simulated groundwater surfaces for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers exported from the calibrated and DD1-44/56 scenarios after the final timestep in the calibrated model's simulation period. The maps show obvious cones of depression surrounding the proposed pumping wells at the CMEX Site but no obvious perturbations to the groundwater surfaces in the lower 400-FT and 900-FT aquifers.

MCWD-GH-19

Figures 18-21 depict the simulated impacts to the groundwater surfaces (cones-of-depression) in the four aquifers after the first and last timestep in the calibrated model's simulation period that were created by subtracting the calibrated groundwater surface from the DD1-44/56 scenario surface for each aquifer and each timestep. The Dune Sand, 180-FT, and 400-FT aquifers all show obvious impacts that significantly expand over the course of the simulation period where as no impacts greater than or equal to 0.5 feet are predicted to occur in the lowest 900-FT Aquifer. For both the Dune Sand and 180-FT aquifers, reductions in the groundwater surface of more than 1 foot are predicted to extend for considerable distances (>3 miles) to the east, north, and south from the proposed wells and be slightly more extensive in the 180-FT aquifer than in the Dune Sand Aquifer. Reductions of between 0.5 and 1 foot are predicted to extend for more than 6 miles to the northeastern boundary of the Dune Sand Aquifer and more than 4 miles to the northeast in the 180-FT aquifer. Reductions in the groundwater surface of between 5 and 10 feet in both aquifers are predicted to occur to within ~1 mile of the wells (reaching across Cabrillo Highway).

MCWD-GH-20

Appendix 2 provides simplified drawdown maps for each of the four aquifers computed for the last timestep in each year of the 32-year simulation period. These maps show that drawdown in the 180-FT, 400-FT, and 900-FT (shown in these figures as between 0.25 and 0.5 feet) aquifers is predicted to stabilize after approximately 5 years of continuous pumping meaning that the full impact to groundwater surface elevations can be expected to occur within five years after the beginning of pumping. Drawdown maps for the Dune Sand Aquifer reveal a substantially different response over time wherein the cone-of-depression is predicted to continue to expand over the course of ~25 years after the beginning of pumping. Most of the change

[14] *Scenarios_Matrix.xlsx, provided to GeoHydros from the applicant.*

however is isolated to the same teardrop-shaped region where the model must first create the aquifer due to its probable absence in the initial and boundary condition heads derived from the SVIGSM.

Drawdowns created under other of the proposed project scenarios would be proportionally different as defined by the magnitude of pumping and returns. The relative differences between the predictions for the Dune Sand and lower aquifers will however be similar because these are driven by the model configuration more so than the scenario characteristics such as the magnitude of the proposed pumping and/or proposed return flows.

MCWD-GH-20 cont.

4.2 Water Budget Impacts

One of the fundamental capabilities of the numerical groundwater flow model is the water budget analysis, which quantifies all flows into and out of the model through all of the source sink terms incorporated in the model design. The impact of any action or stress to the aquifer can then be evaluated in much the same way as drawdown maps are calculated, by running the water budget report for both the scenario being evaluated and the calibrated scenario and comparing the results. Tables 2 and 3 and Figures 22-24 provide summaries of the water budget analysis conducted from reports extracted and compared in the manner described above for five timesteps in the calibrated and DD1-44/56 scenarios of the 2016 NMGWM. Appendix 3 provides the water budget reports from which these analyses were derived.

Table 2. Summary of water budget analyses performed using reports generated from the calibrated and DD1-44/56 scenarios of the 2016 NMGWM.

	Changes to the Water Budget (CFD) after Specified Timesteps				
Source/Sink	TS-01	TS-YR01	TS-YR02	TS-YR10	TS-Final
Increased Inflow from Storage:	635,888	37,439	12,907	1,550	-1,220
Decreased Outflow to Storage:	283,852	33,804	11,785	246	19
Increased Ocean Inflow:	2,201,807	2,787,850	2,816,520	2,848,200	2,737,204
Decreased Ocean Outflow:	25,414	82,248	76,582	54,399	167,494
Increased Bndy Inflow:	47,136	163,713	179,681	136,078	183,288
Decreased Bndy Outflow:	30,142	116,688	124,231	181,237	135,005
Total	*3,224,240*	*3,221,741*	*3,221,706*	*3,221,710*	*3,221,790*
% of Proposed Extractions:	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
	Source/Sink Contributions to the Proposed Extractions after Specified Timesteps				
Source/Sink	*TS-01*	*TS-YR01*	*TS-YR02*	*TS-YR10*	*TS-Final*
Increased Inflow from Storage:	*19.7%*	*1.2%*	*0.4%*	*0.0%*	*0.0%*
Decreased Outflow to Storage:	*8.8%*	*1.0%*	*0.4%*	*0.0%*	*0.0%*
Increased Ocean Inflow:	*68.3%*	*86.5%*	*87.4%*	*88.4%*	*85.0%*
Decreased Ocean Outflow:	*0.8%*	*2.6%*	*2.4%*	*1.7%*	*5.2%*
Increased Bndy Inflow:	*1.5%*	*5.1%*	*5.6%*	*4.2%*	*5.7%*
Decreased Bndy Outflow:	*0.9%*	*3.6%*	*3.9%*	*5.6%*	*4.2%*
Total	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

MCWD-GH-21

Table 3. Evolution of source water for the proposed extractions as defined by water budget reports exported from five timesteps of the calibrated and DD1-44/56 scenarios of the 2016 NMGWM.

Days after Start	Ocean	DSA	SVA	180-ft	400-ft	900-ft	*Total*	Total GW
30	69.1%	22.3%	4.2%	3.5%	0.6%	0.3%	*100%*	30.9%
365	89.0%	3.6%	0.1%	4.9%	1.6%	0.8%	*100%*	11.0%
730	89.7%	2.4%	0.0%	5.2%	1.8%	0.8%	*100%*	10.3%
3,650	90.0%	1.9%	0.0%	5.3%	1.9%	0.9%	*100%*	10.0%
11,680	90.0%	1.8%	0.0%	5.3%	1.9%	0.9%	*100%*	9.9%

The water budget data indicates that the proposed pumping will initially derive more than 30% of the water from groundwater, predominantly the Dune Sand Aquifer (>22%) and to a smaller extent the 180-FT, 400-FT, and 900-FT aquifers. The groundwater contribution is predicted to decline to approximately 10% within 1-2 years and stabilize at that level of contribution after approximately 5 years throughout the remainder of the 32-year simulation period. Approximately 2.8% of the proposed extractions is predicted to come from the deeper 400-Ft and 900-FT aquifers, which equates to approximately 756 acre-feet per year. This water will come from cross-boundary flows into the respective aquifers and then via upward flow into the overlying 180-FT and Dune Sand Aquifers. Increased cross-boundary flows indicate that the cones of depression created by the existing wells will expand into the adjacent areas outside of the NMGWM domain.

The magnitudes of the water budget impacts described above will differ proportionally with the pumping magnitudes and return flows defined by the different project scenarios. The percentages described in Table 3 will likely be similar owing to the linearity in the groundwater flow and drawdown calculations.

MCWD-GH-21 cont.

5 CONCLUSIONS

- The 2016 NMGWM is poorly calibrated in the Dune Sand Aquifer likely due to incongruity between the NMGWM and the SVIGSM and to the assignment of large constant head elevations offshore in the ocean, Dune Sand Aquifer, Salinas Valley Aquitard, 180-FT Aquifer, 180/400-FT Aquitard, and 400-FT Aquifers.

MCWD-GH-22

- Using the stricter 2015 version of the calibration criteria (10% of observed head variation), the model fails calibration in the 180-FT Aquifer and the 900-FT Aquifer in addition to the Dune Sand Aquifer. In general, we have inferred from the data and results available that the quality of the model calibration declined between the 2015 and the 2016 versions, which indicates that the changes made during the 2016 revisions have resulted in diminished reliability.

MCWD-GH-23

- The poor calibration in the Dune Sand Aquifer undermines confidence in the magnitude and distribution of the assigned horizontal and vertical conductivities, and thus the predicted impact to groundwater elevations and predicted percentage of aquifer water that will be extracted by the proposed project because both of these impacts are largely predicated on the magnitude and distribution of hydraulic conductivities.

MCWD-GH-24

- The steep eastward hydraulic gradient from the ocean across the model domain in the 400-FT and 900-FT aquifers is improbable and inconsistent with the extraction of freshwater from these aquifers from within the model domain, and the groundwater surfaces simulated by all but the driest condition scenarios reported for the 2015 version of the NMGWM.

MCWD-GH-25

- The 2016 NMGWM cannot simulate saltwater intrusion to any of the simulated aquifers nor can it be used to predict how the proposed pumping might affect the position of the transition zone between freshwater and saltwater conditions in the aquifers. MCWD-GH-26
- The use of equivalent freshwater heads does not provide any meaningful simulation of landward saltwater migration and their assignments likely contributes to the calibration problems. MCWD-GH-27
- A dual-density model should be constructed if saltwater intrusion and/or the impact of the proposed project on groundwater salinities is to be evaluated. MCWD-GH-28
- It is unlikely that the incongruity between the NMGWM and SVIGSM hydrostratigraphies can be overcome through model calibration owing to the degree to which initial and boundary heads in the NMGWM are dependent on SVIGSM output, and this limitation undermines confidence in NMGWM predictions. MCWD-GH-29
- Superposition modeling is inappropriate for this evaluation because: MCWD-GH-30
    - it precludes the identification of source water contributions to the proposed extractions, which is a key issue with the application;
    - it precludes prediction of measurable groundwater elevations associated with the proposed pumping, which would provide the only means for stakeholders to validate the model predictions and potential project impacts;
    - it is unnecessary because it provides no benefit in terms of reliability over the use of the calibrated version of the model for impact assessment, which allows for the assessments described above; and
    - the prescription of the 0.0 datum to initial and boundary heads has been shown to constrain the spatial extent of the simulated cones of depression in the aquifers created by the proposed pumping.
- Notwithstanding the limitations of the model described above, the model reveals potential impacts that were not fully described in the Draft EIR/EIS. The most relevant of these are: MCWD-GH-31
    - the proposed pumping will initially derive more than 30% of the water from groundwater, predominantly the Dune Sand Aquifer (>22%) and to a smaller extent the 180-FT, 400-FT, and 900-FT aquifers.
    - Within 1-2 years, the groundwater contribution to the proposed extractions is predicted to decline to approximately 10% and stabilize at that level of contribution throughout the life of the proposed project.
    - A small but relevant portion of the proposed extraction (2.8% or 756 acre-feet for scenario DD1-44/56) is predicted to come from the deeper 400-Ft and 900-FT aquifers indicating that the proposed extractions will contribute to any overdraft problems in those aquifers.
    - For both the Dune Sand and 180-FT aquifers reductions in the groundwater surface of more than 1 foot are predicted to extend for considerable distances (>3 miles) to the east, north, and south from the proposed wells within five years after the start of pumping under the DD1-44/56 scenario. MCWD-GH-32

- The predicted cone-of-depression will be slightly more extensive in the 180-FT aquifer than in the Dune Sand Aquifer.
- Reductions of between 0.5 and 1 foot are predicted to extend for more than 6 miles to the northeastern boundary of the Dune Sand Aquifer and more than 4 miles to the northeast in the 180-FT aquifer within five years of the start of pumping under the DD1-44/56 scenario.
- Reductions in the groundwater surface of between 5 and 10 feet in both aquifers are predicted to occur to within ~1 mile of the wells (reaching across Cabrillo Highway) within five years of the start of pumping under the DD1-44/56 scenario.

MCWD-GH-32 cont.

- The sensitivity analyses performed by HydroFocus with respect to hydraulic conductivity indicate that the predicted impacts could be substantially understated, which demonstrates the importance of achieving better calibration.

MCWD-GH-33

- Reconstructing the model using a dual-density program, extending the model boundaries to natural divides or to a sufficiently distant point that boundary effects on the predicted impacts of the proposed project are eliminated or marginalized, and calibrating the model to groundwater salinities as well as heads would substantially increase the reliability of the predicted impacts.

MCWD-GH-34

- Based on the findings presented in this report, we believe that the Draft EIR/EIS's conclusions regarding the MPWSP's groundwater impacts are not scientifically supportable and that they conflict with available information.
- Given the problems with the model calibration identified above, we do not recommend additional scenario analysis using the 2016 NMGWM because it would not provide scientifically supportable results.

MCWD-GH-35

6 FIGURES

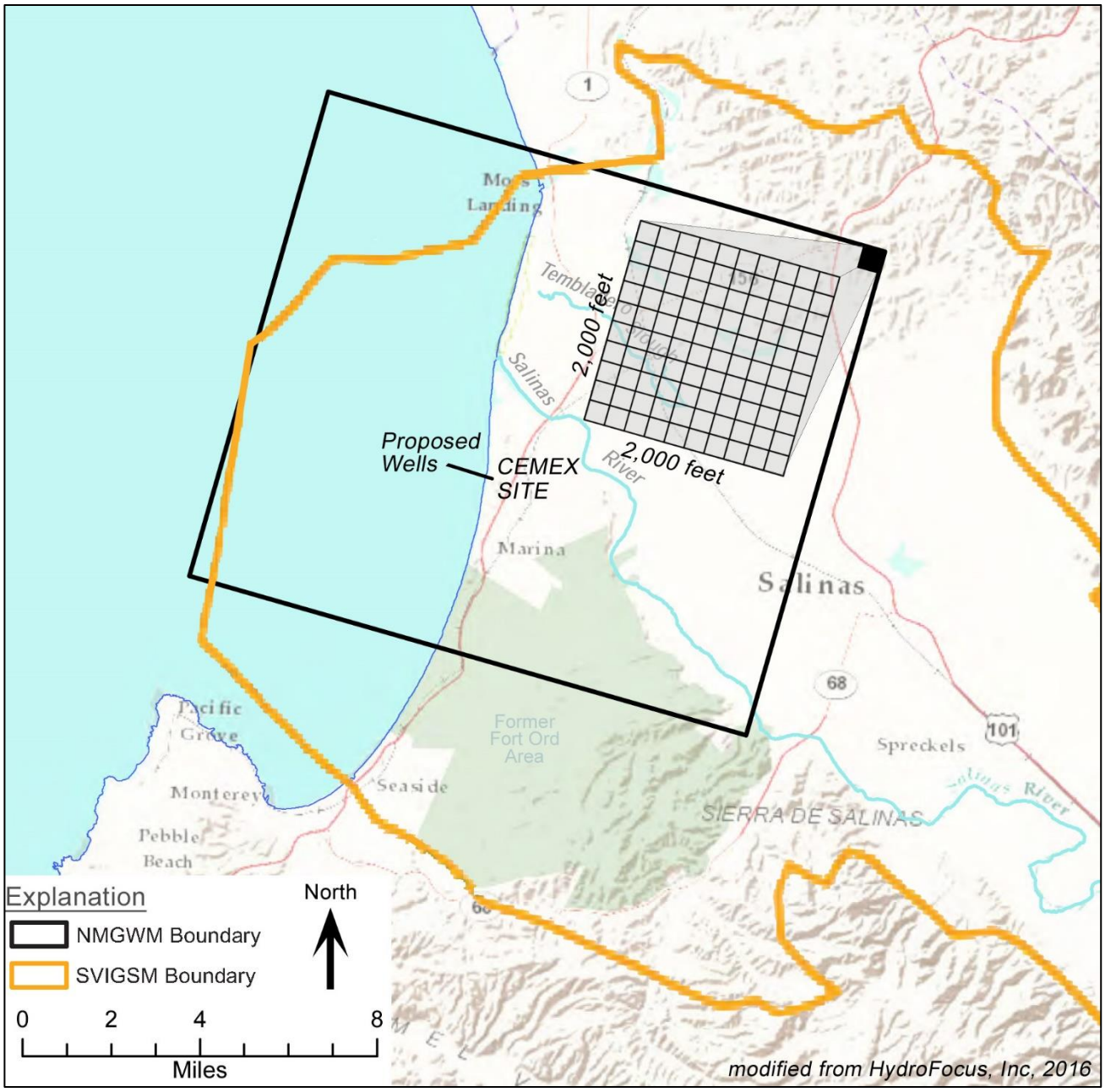

Figure 1.
Map showing the boundaries of the North Marina Groundwater Model and the Salinas Valley Integrated Groundwater Surface Water Model relative to the proposed wells.

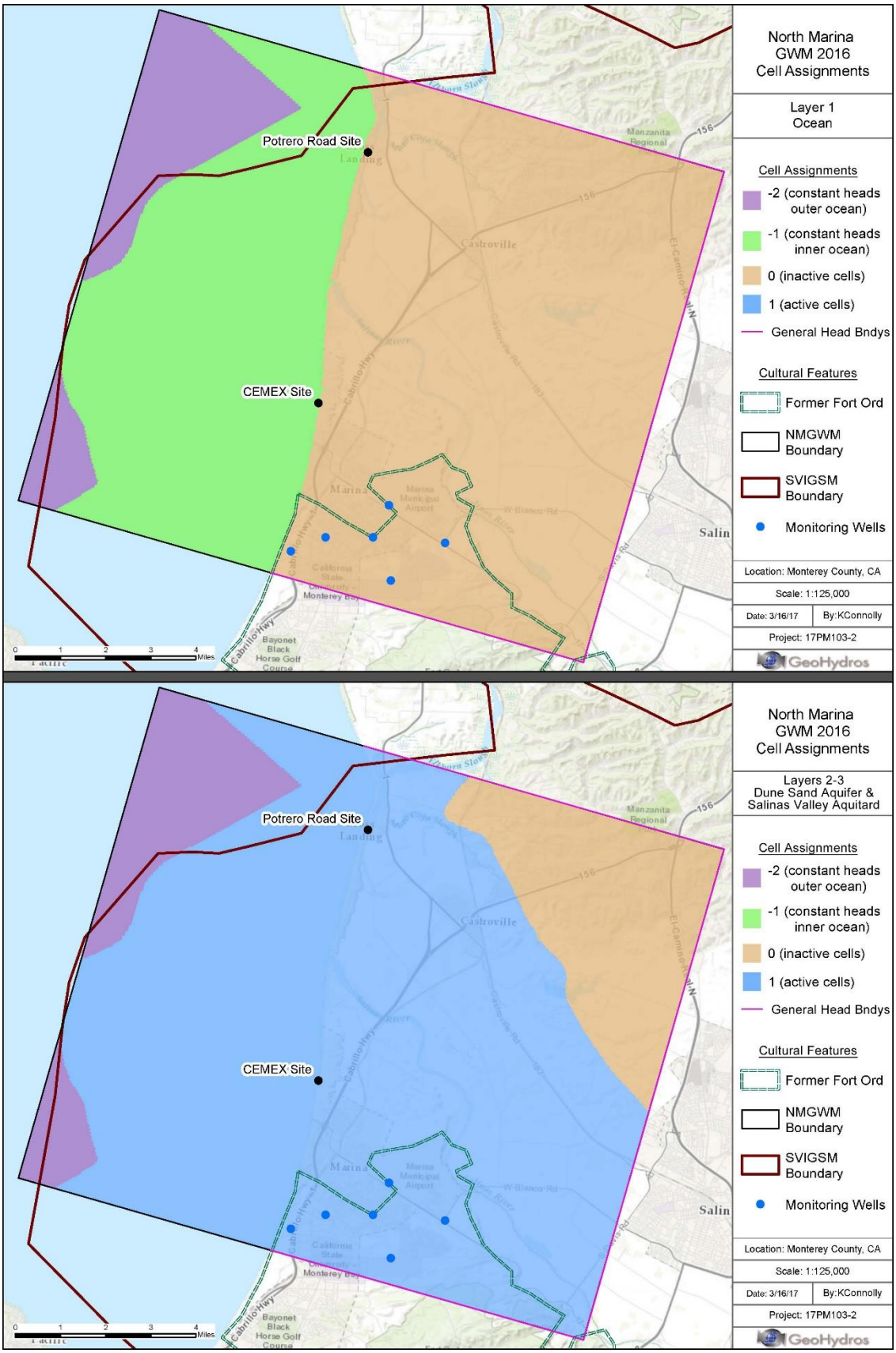

Figure 2.
NMGWM-2016 Cell Assignments & Boundary Conditions for Layer 1 (ocean - top) and Layers 2 & 3 (Dune Sand Aquifer & Salinas Valley Aquitard - bottom).

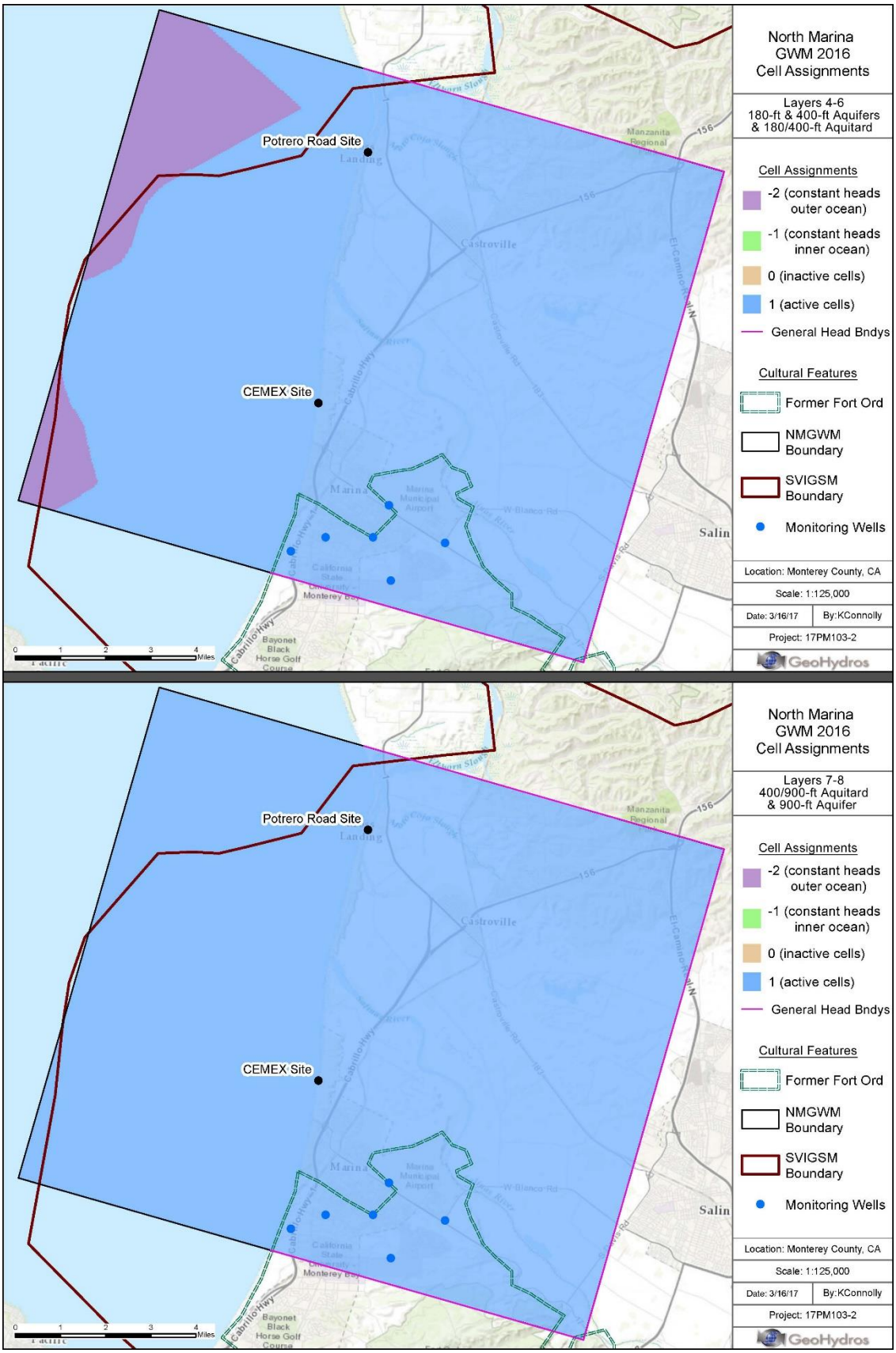

Figure 3.
NMGWM-2016 Cell Assignments & Boundary Conditions for Layers 4-6 (180-ft and 400-ft Aquifers & 180/400-ft Aquitard - top) and Layers 7 & 8 (400/900-ft Aquitard & 900-ft Aquifer - bottom).

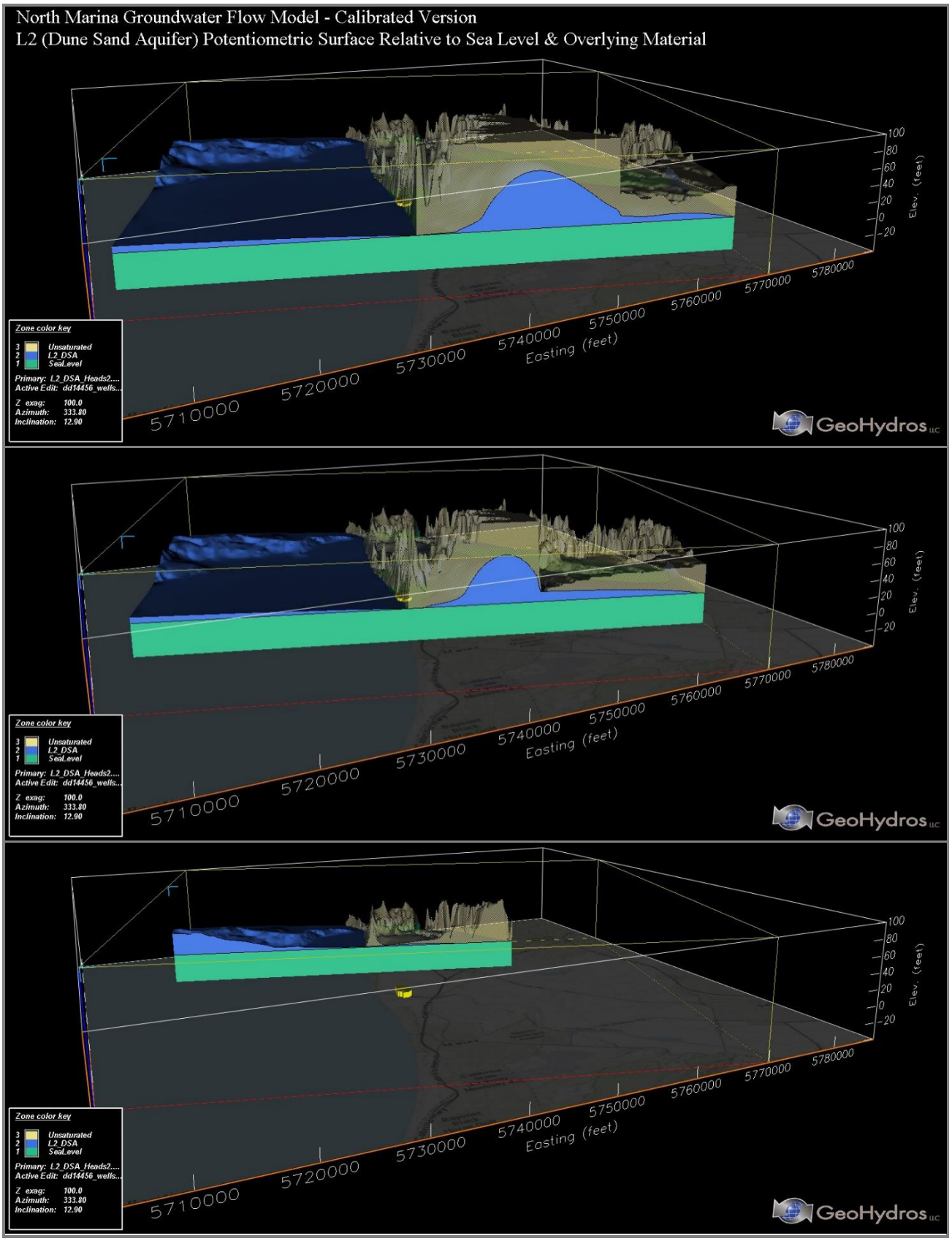

Figure 4.
Perspective west-east cross-sections through the 2016 NMGWM (calibrated scenario) showing the effect of equivalent freshwater head assignments in the Dune Sand Aquifer and the resulting groundwater surface relative to sea level and a cropped portion of the overlying material.

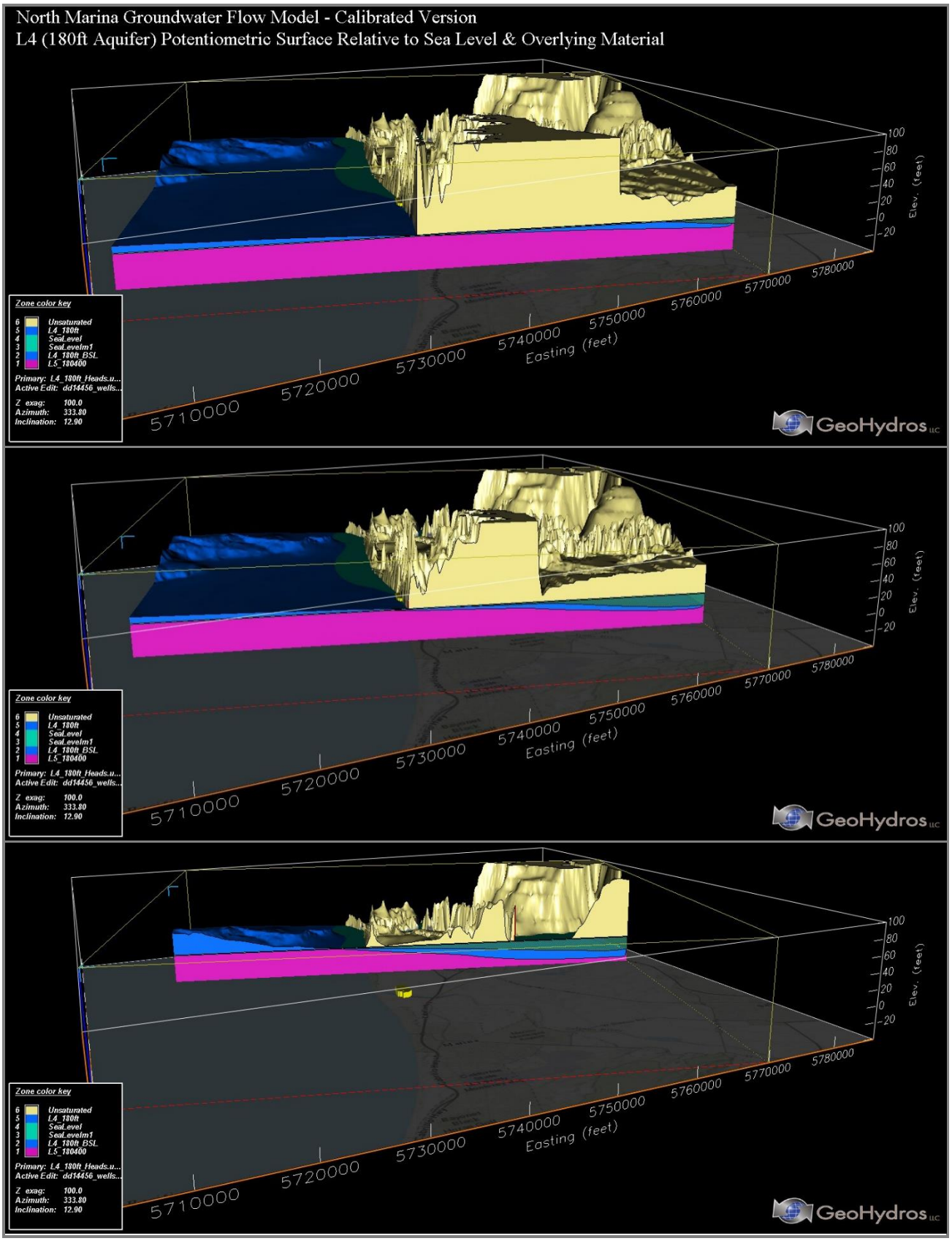

Figure 5.
Perspective west-east cross-sections through the 2016 NMGWM (calibrated scenario) showing the effect of equivalent freshwater head assignments in the 180-FT Aquifer and the resulting groundwater surface relative to sea level and a cropped portion of the overlying material.

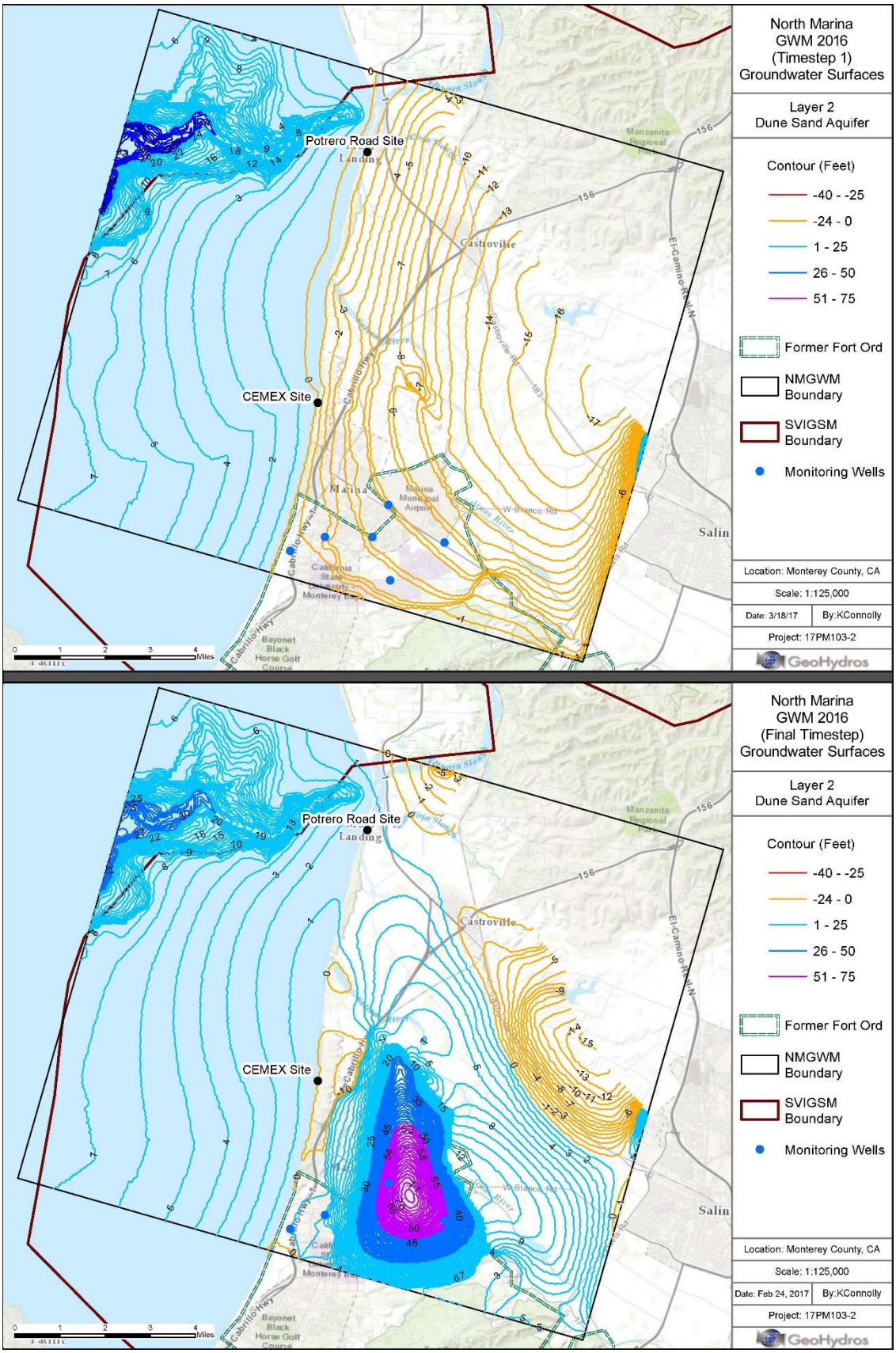

Figure 6.
Comparison of groundwater surfaces for the Dune Sand Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

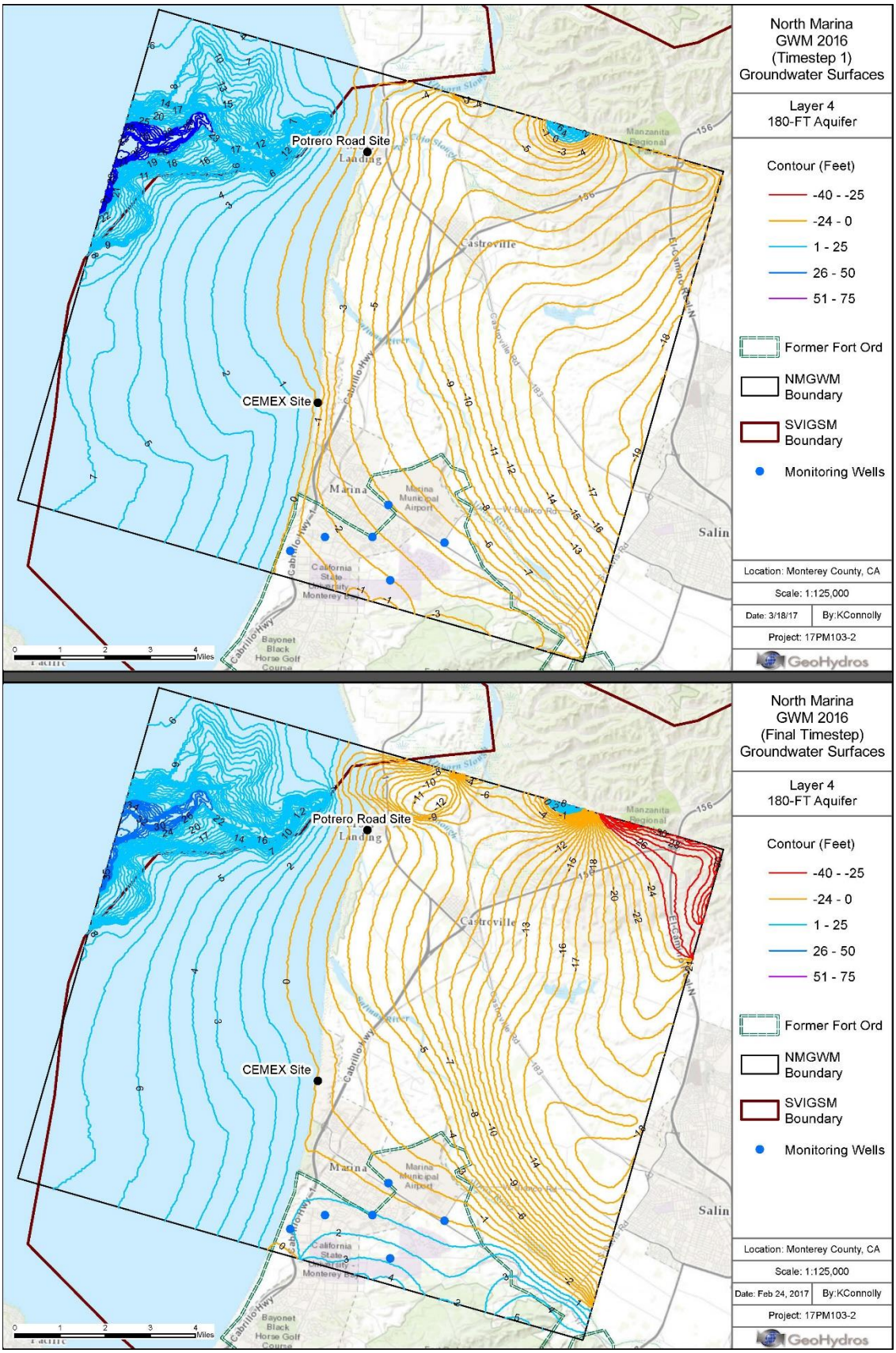

Figure 7.
Comparison of groundwater surfaces for the 180-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

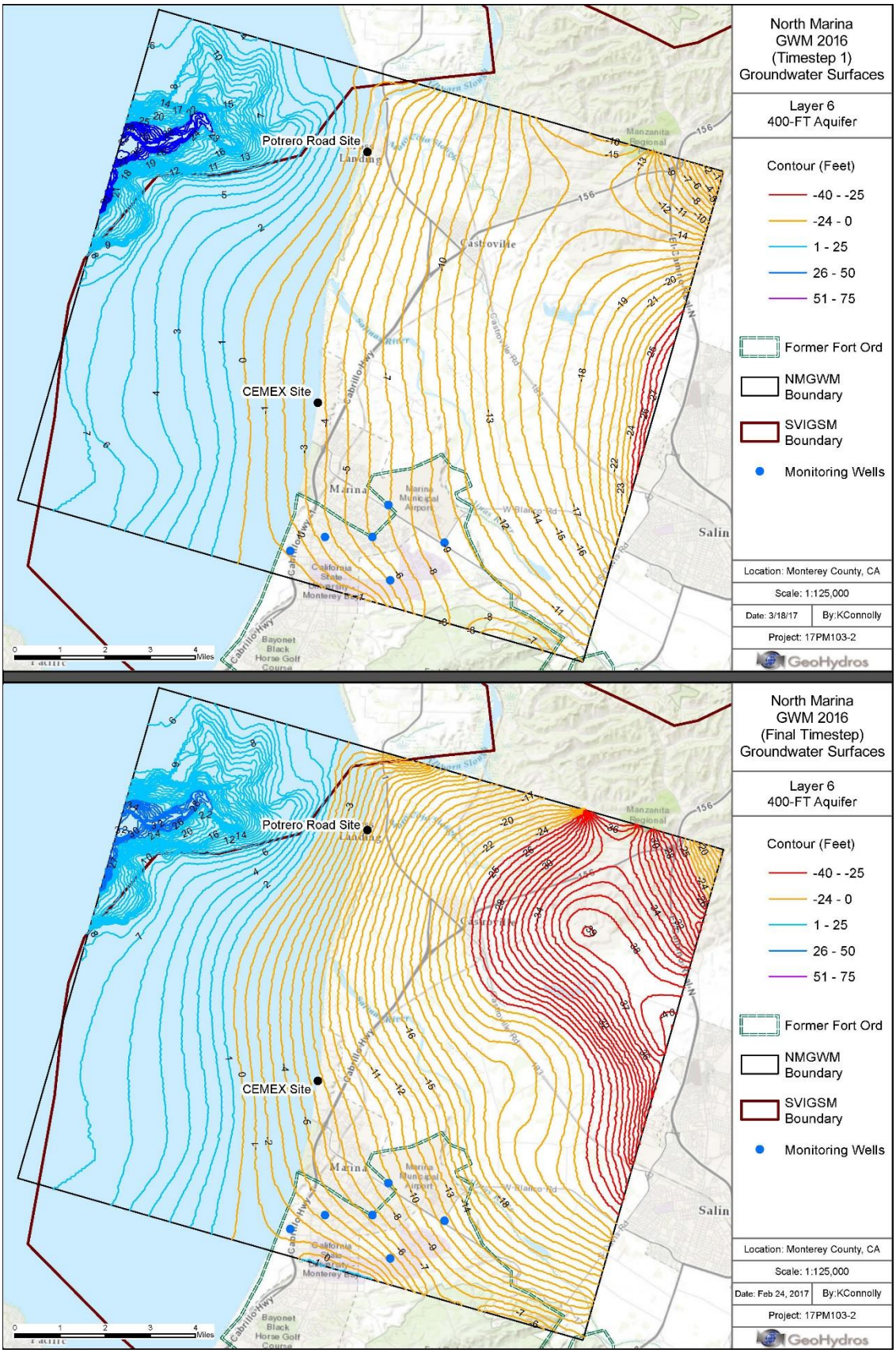

Figure 8.
Comparison of groundwater surfaces for the 400-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

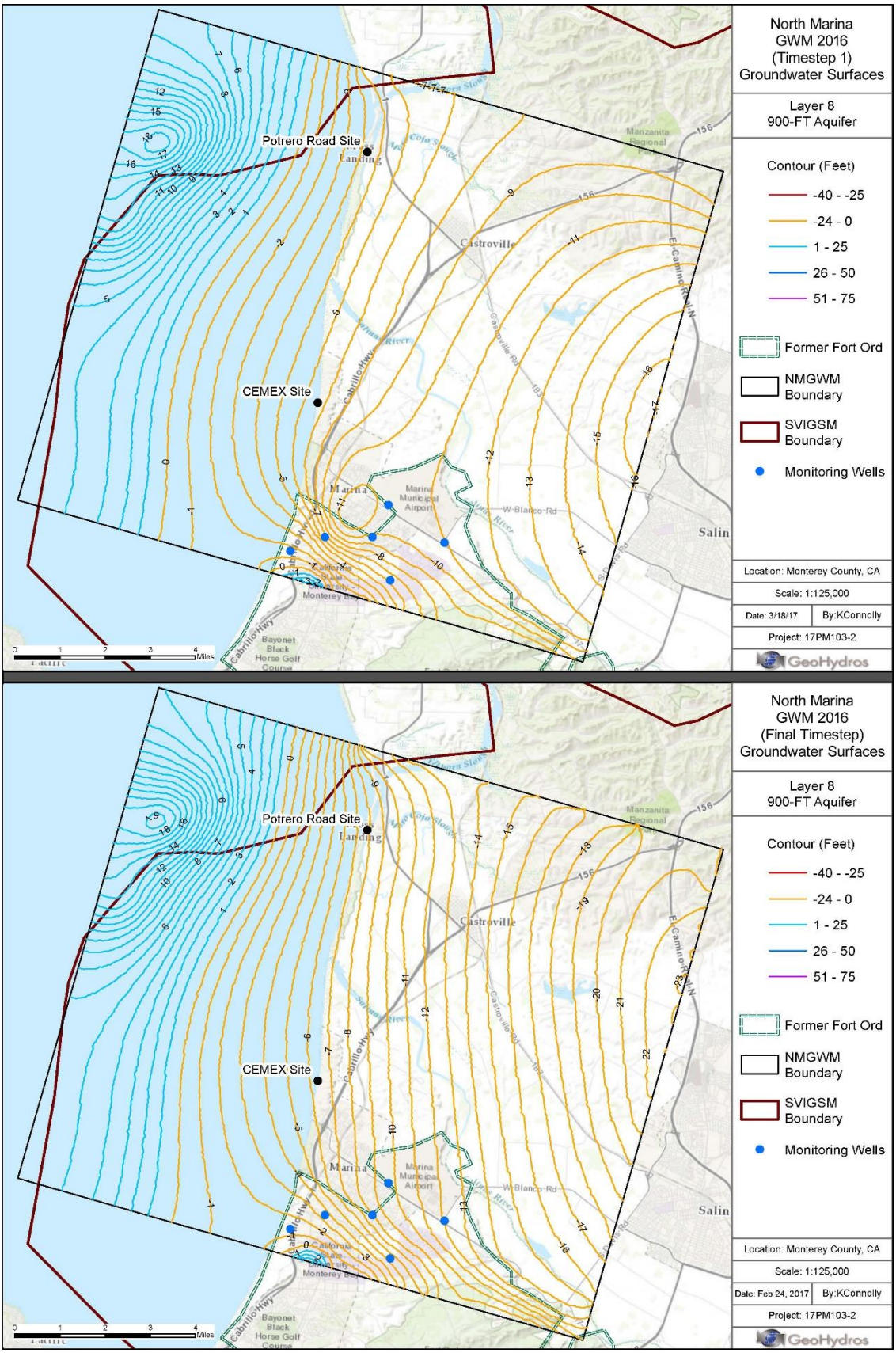

Figure 9.
Comparison of groundwater surfaces for the 900-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

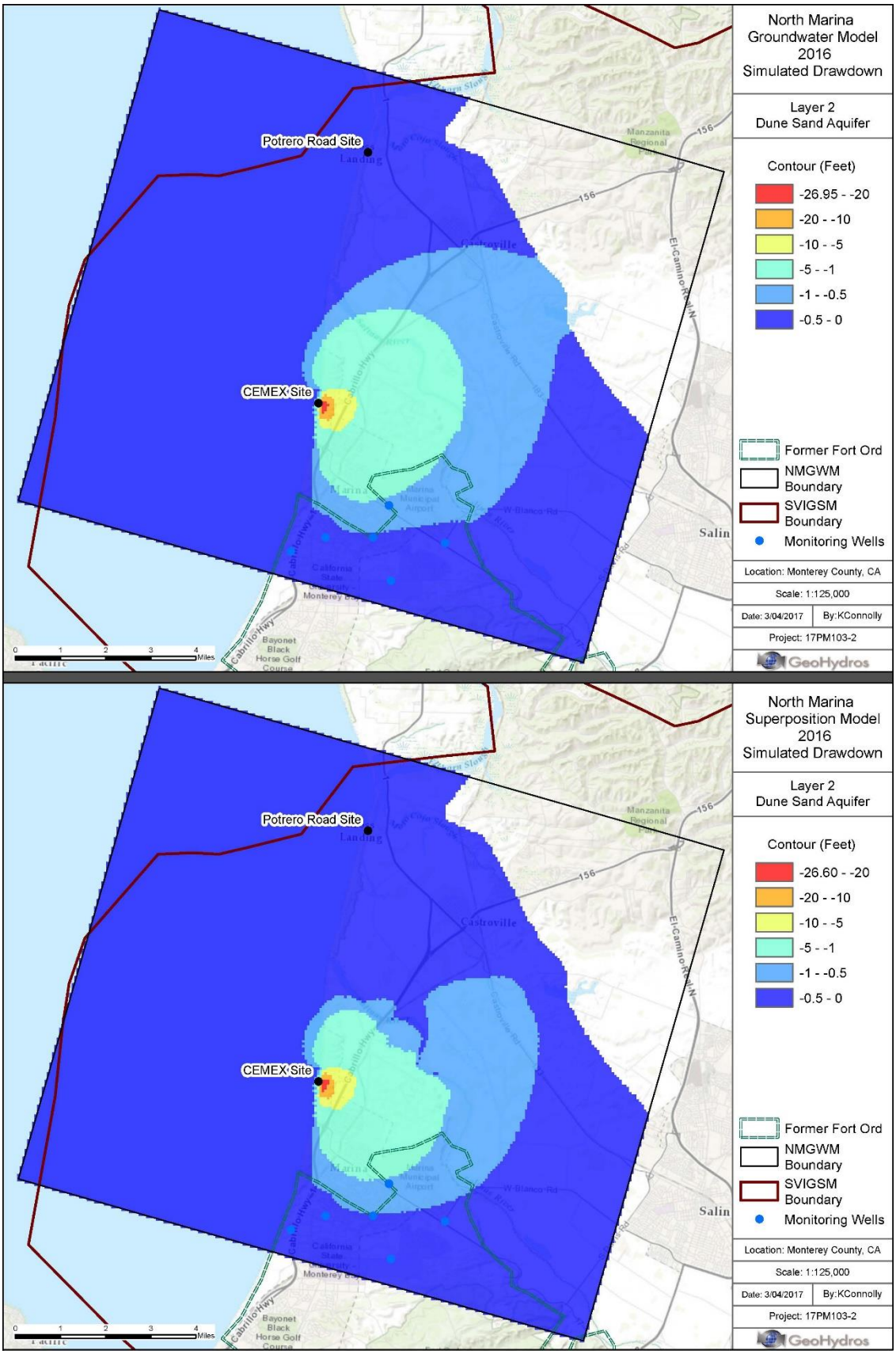

Figure 10.
Comparison of simulated drawdown in in the Dune Sand Aquifer (Layer 2) derived from the calibrated version of the 2016 version of the NMGWM (top) and the Superposition model (bottom).

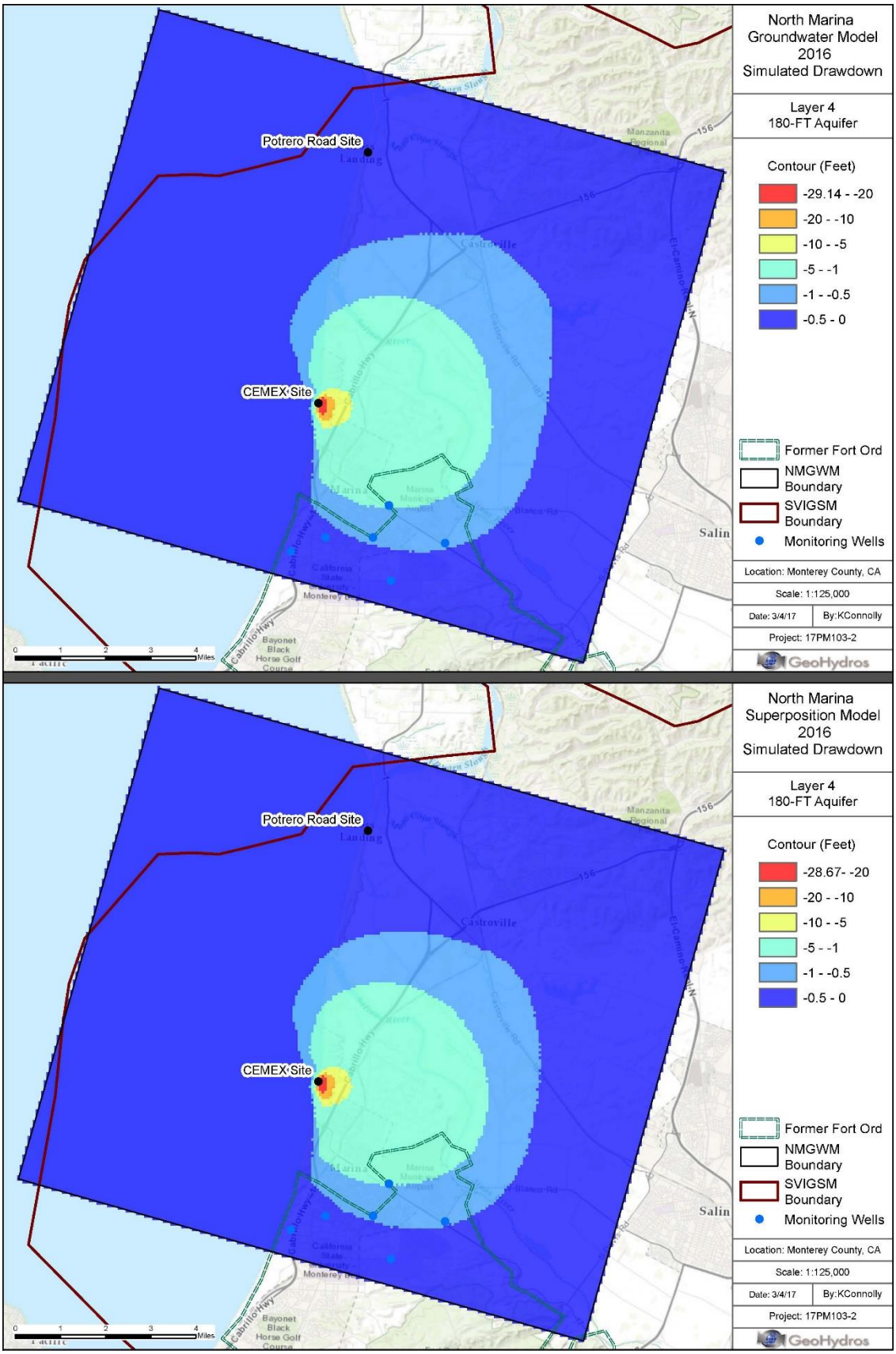

Figure 11.
Comparison of simulated drawdown in in the 180-FT Aquifer (Layer 4) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

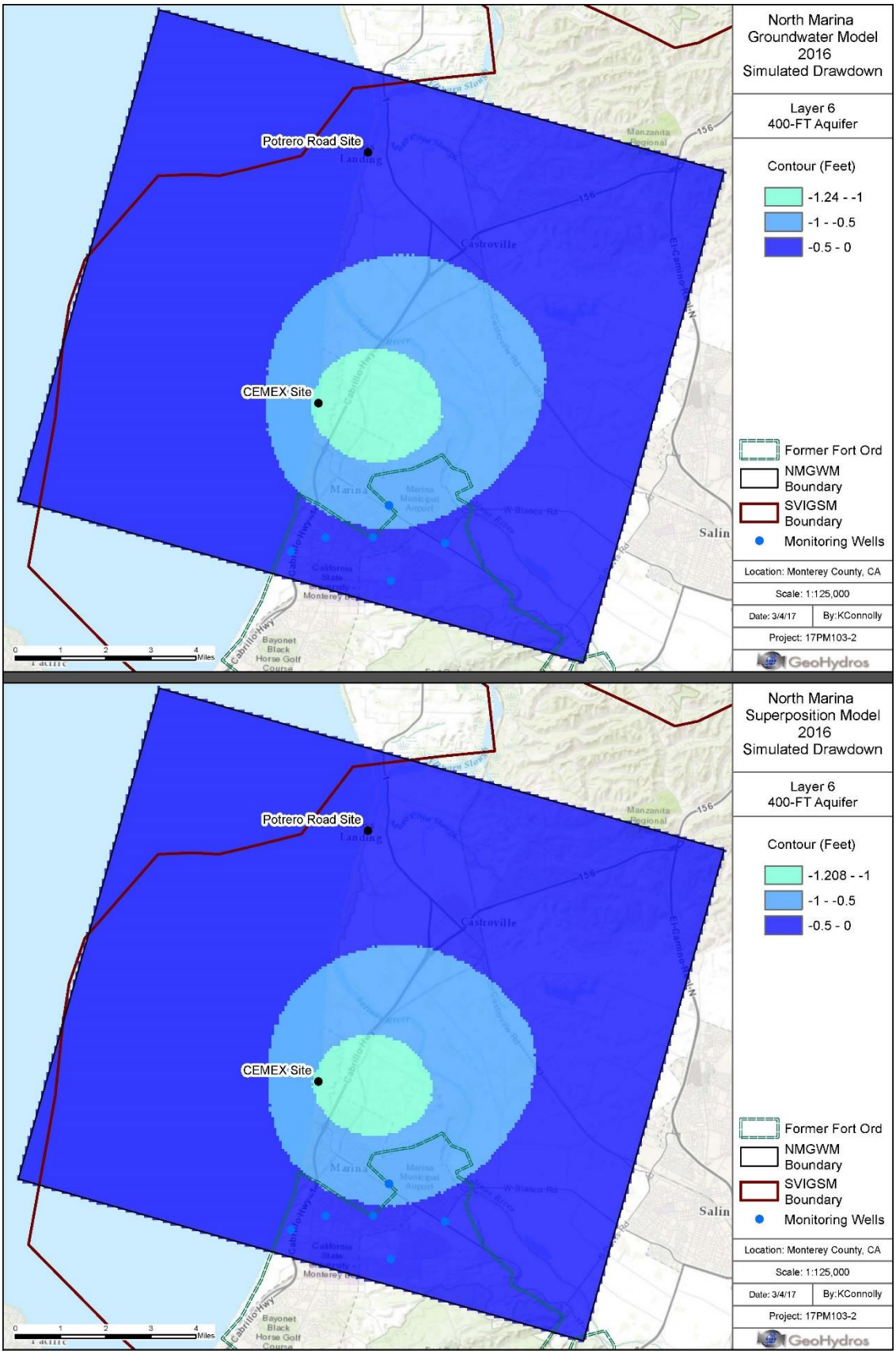

Figure 12.
Comparison of simulated drawdown in in the 400-FT Aquifer (Layer 6) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

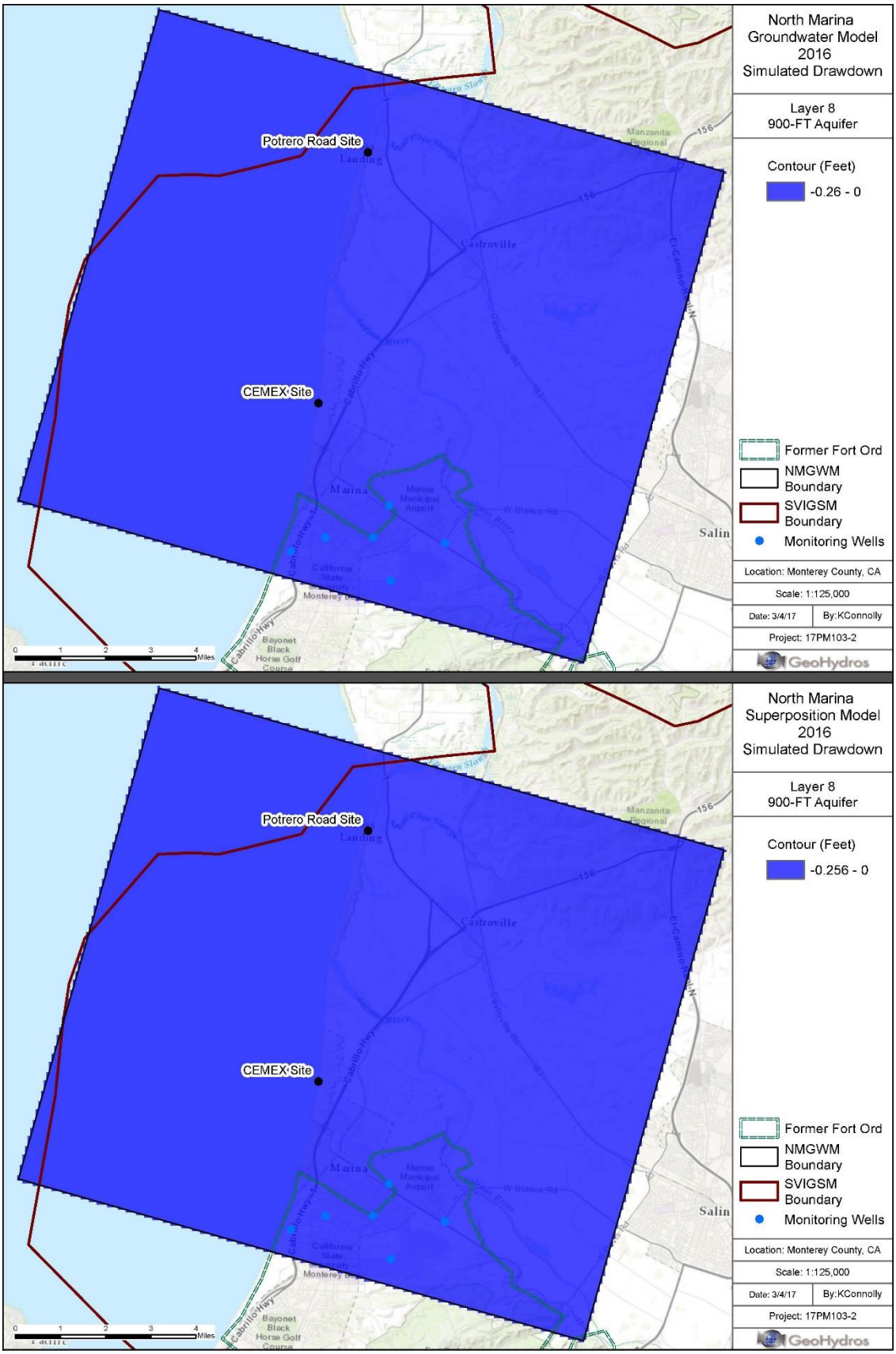

Figure 13.
Comparison of simulated drawdown in in the 900-FT Aquifer (Layer 8) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

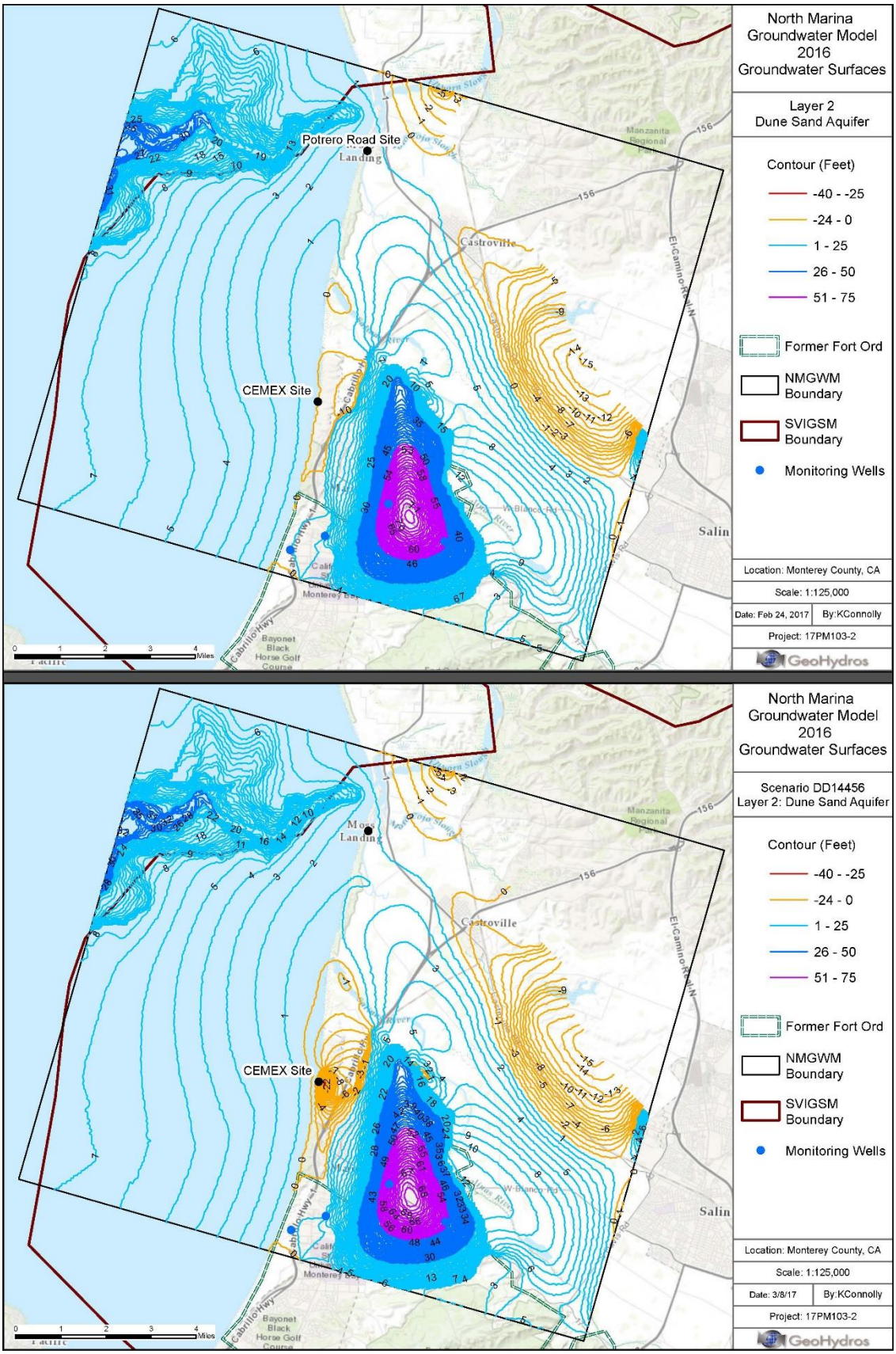

Figure 14. Simulated water table surface in the Dune Sand Aquifer (Layer 2) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing mounding due to recharge in the Dune Sand Aquifer and equivalent fresh water heads assigned as constant values in the ocean resulting in a large eastward gradient across the model.

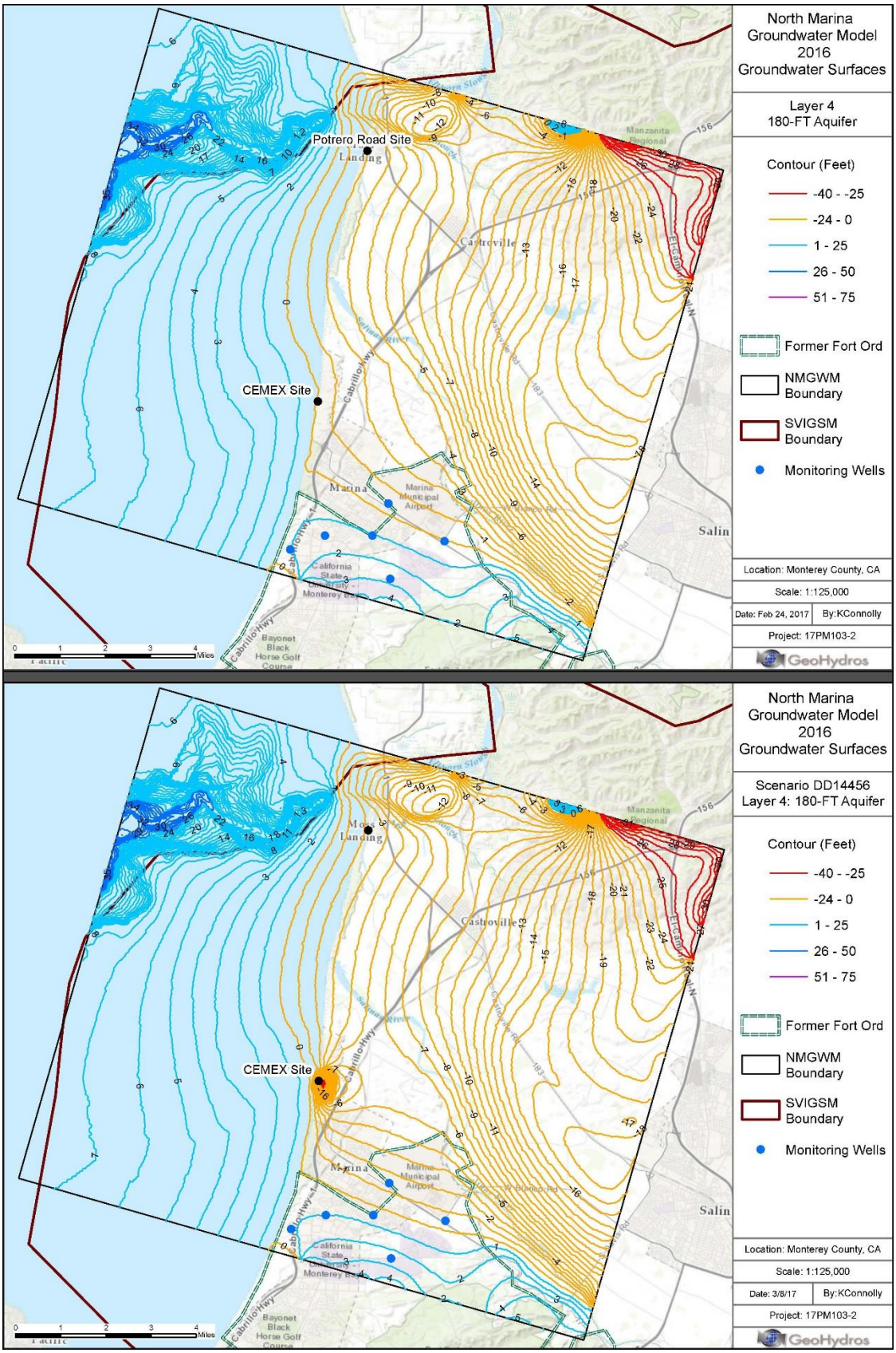

Figure 15. Simulated water table surface in the 180-ft Aquifer (Layer 4) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing some mounding due to recharge in the Dune Sand Aquifer and equivalent fresh water heads assigned as constants in the ocean resulting in a large eastward gradient across the model.

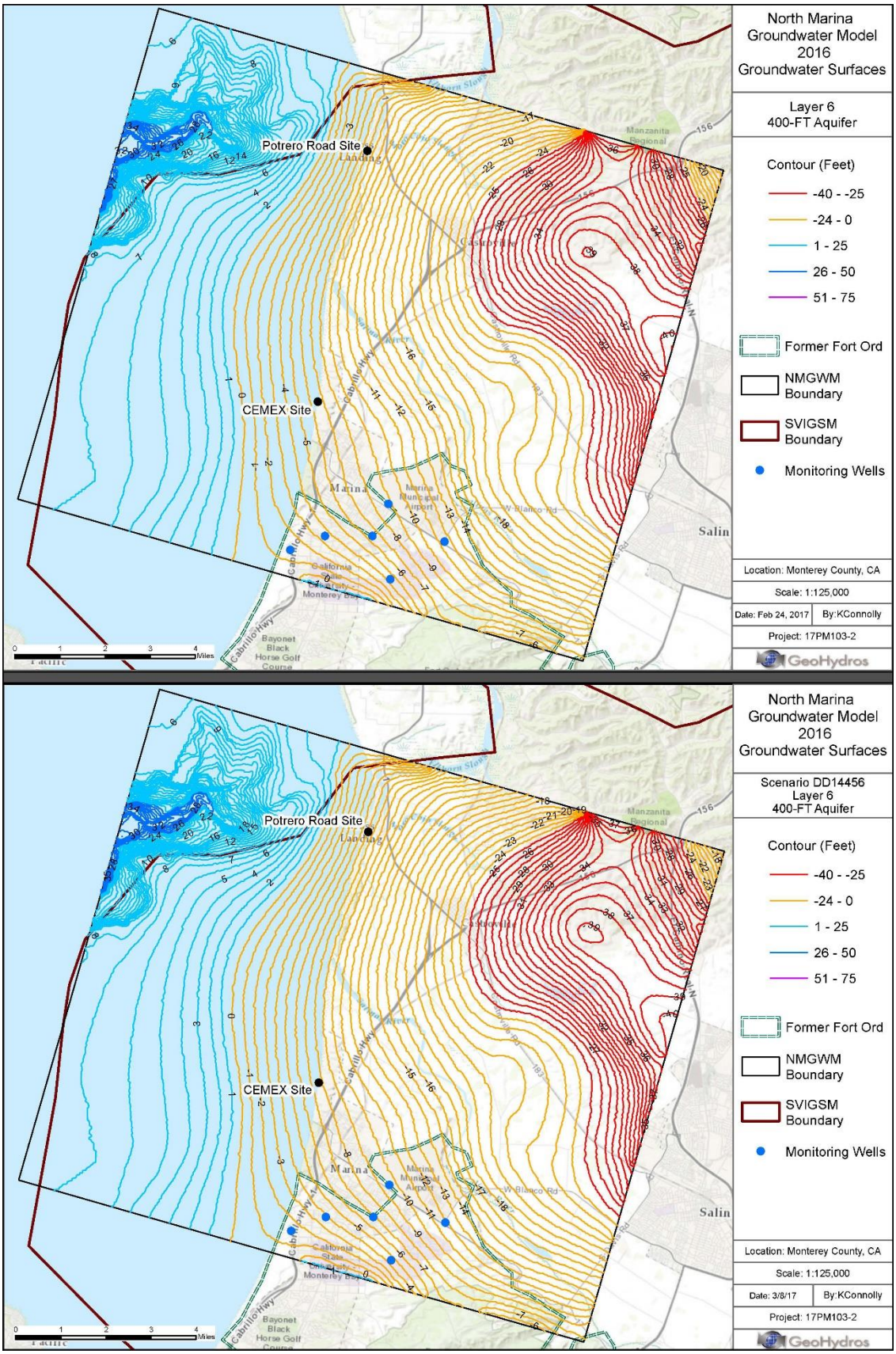

Figure 16. Simulated water table surface in the 400-ft Aquifer (Layer 6) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing equiv. fresh water heads assigned as constants in the ocean resulting in the ocean being the primary source of water flow across the model.

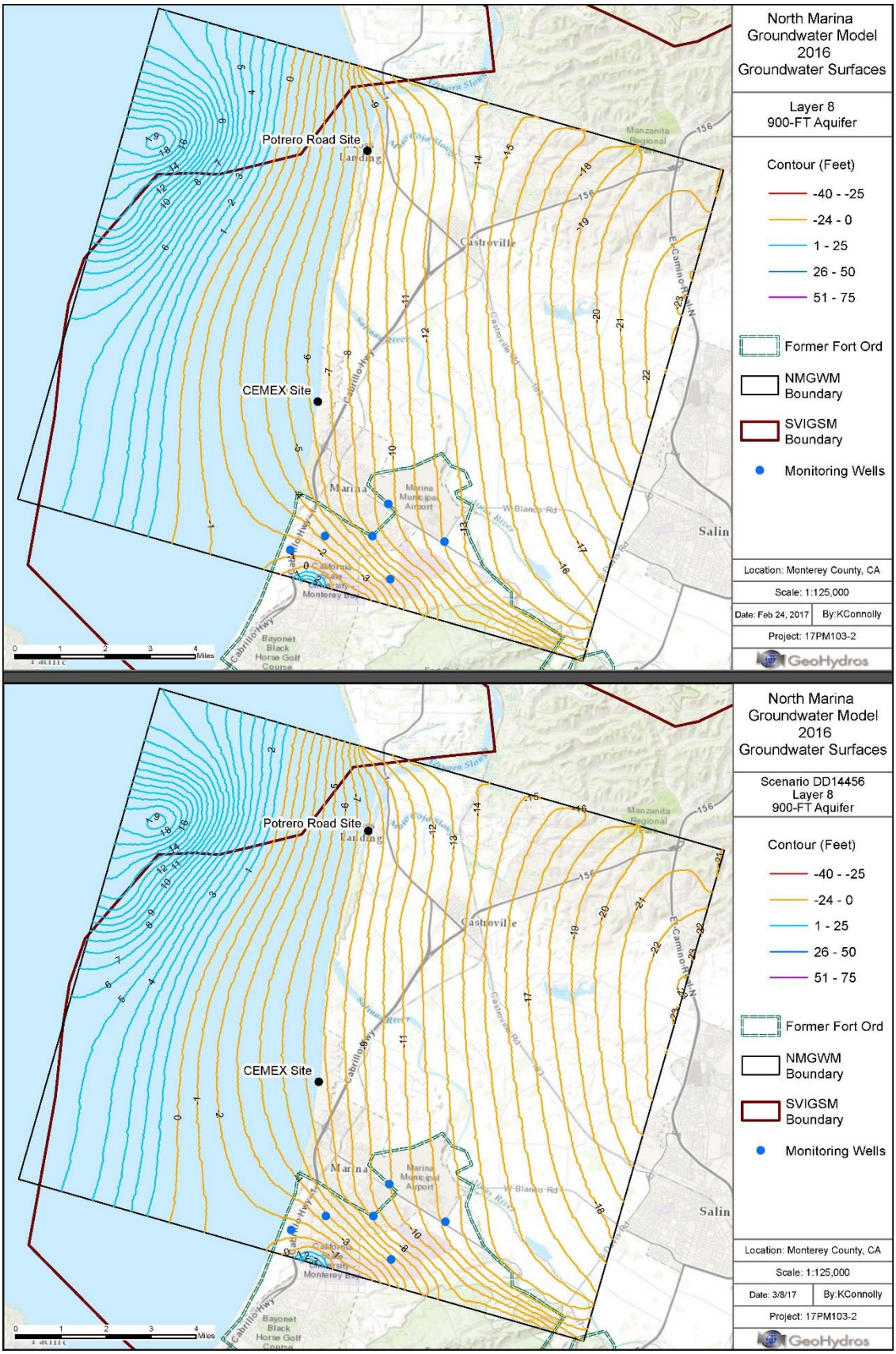

Figure 17. Simulated water table surface in the 900-ft Aquifer (Layer 8) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing the effect of equiv. fresh water heads assigned in overlying layers in the ocean and that the ocean is the primary source of water flow across the model.

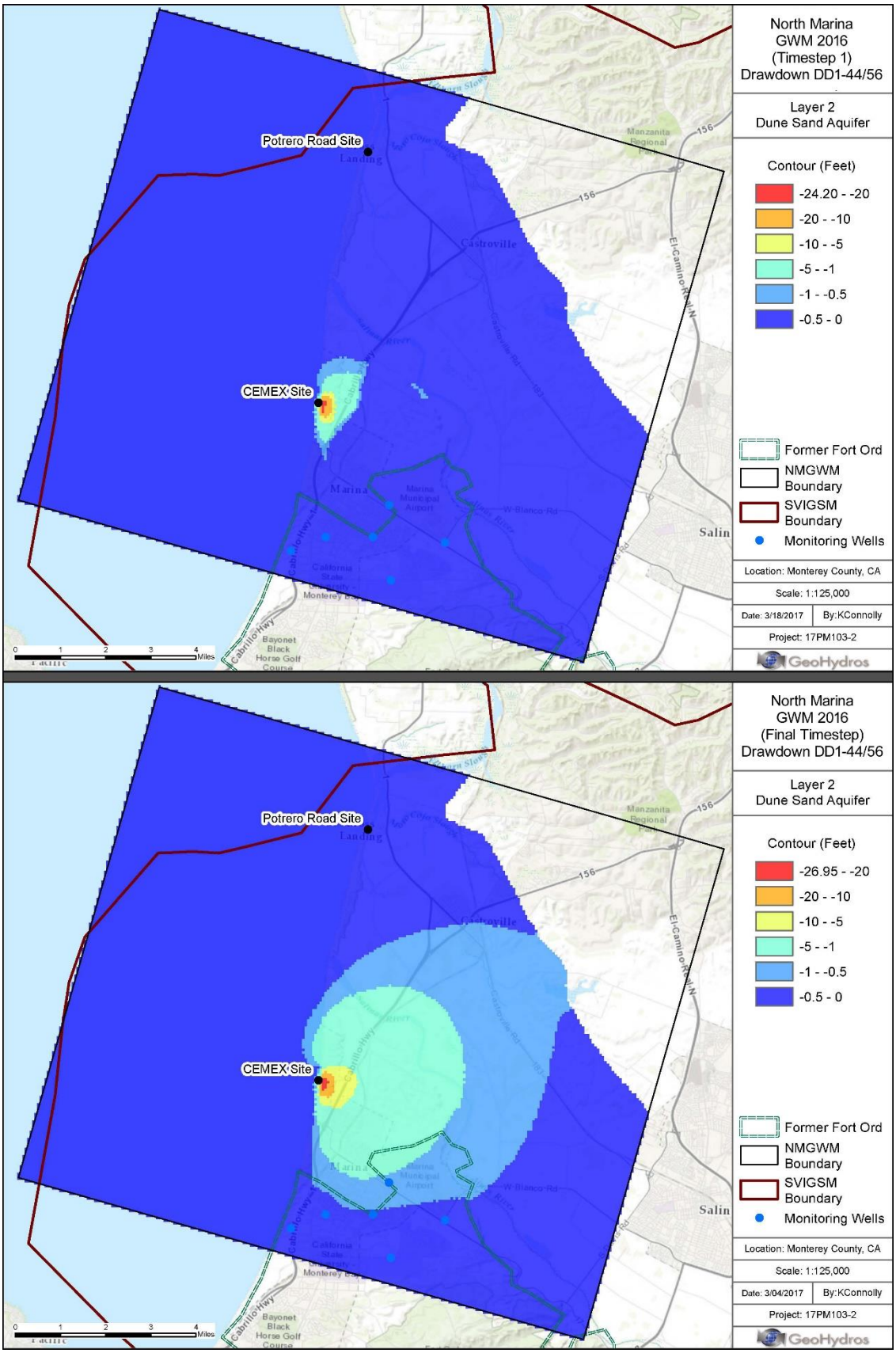

Figure 18.
Simulated drawdown in the Dune Sand Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

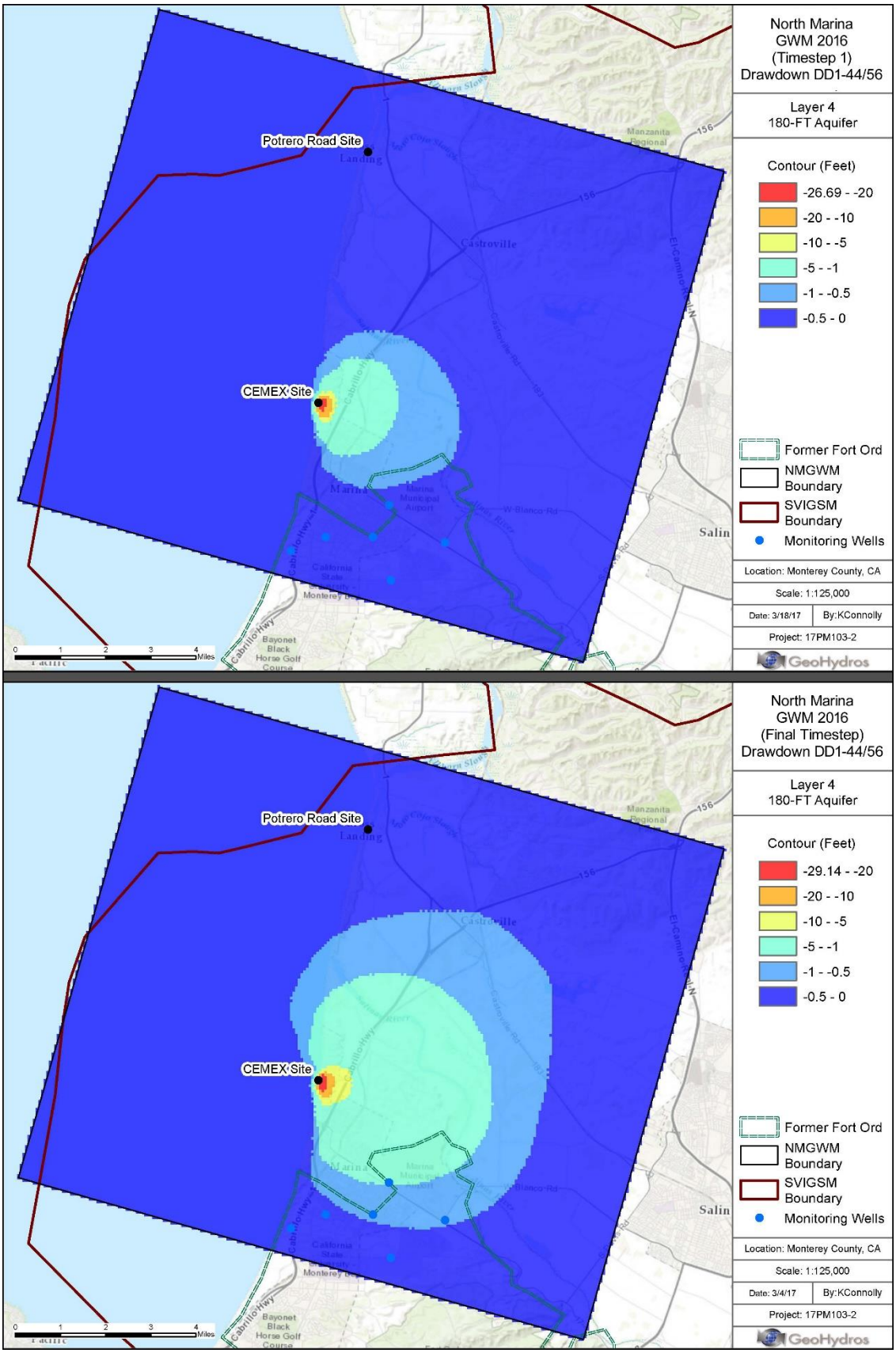

Figure 19.
Simulated drawdown in the 180-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

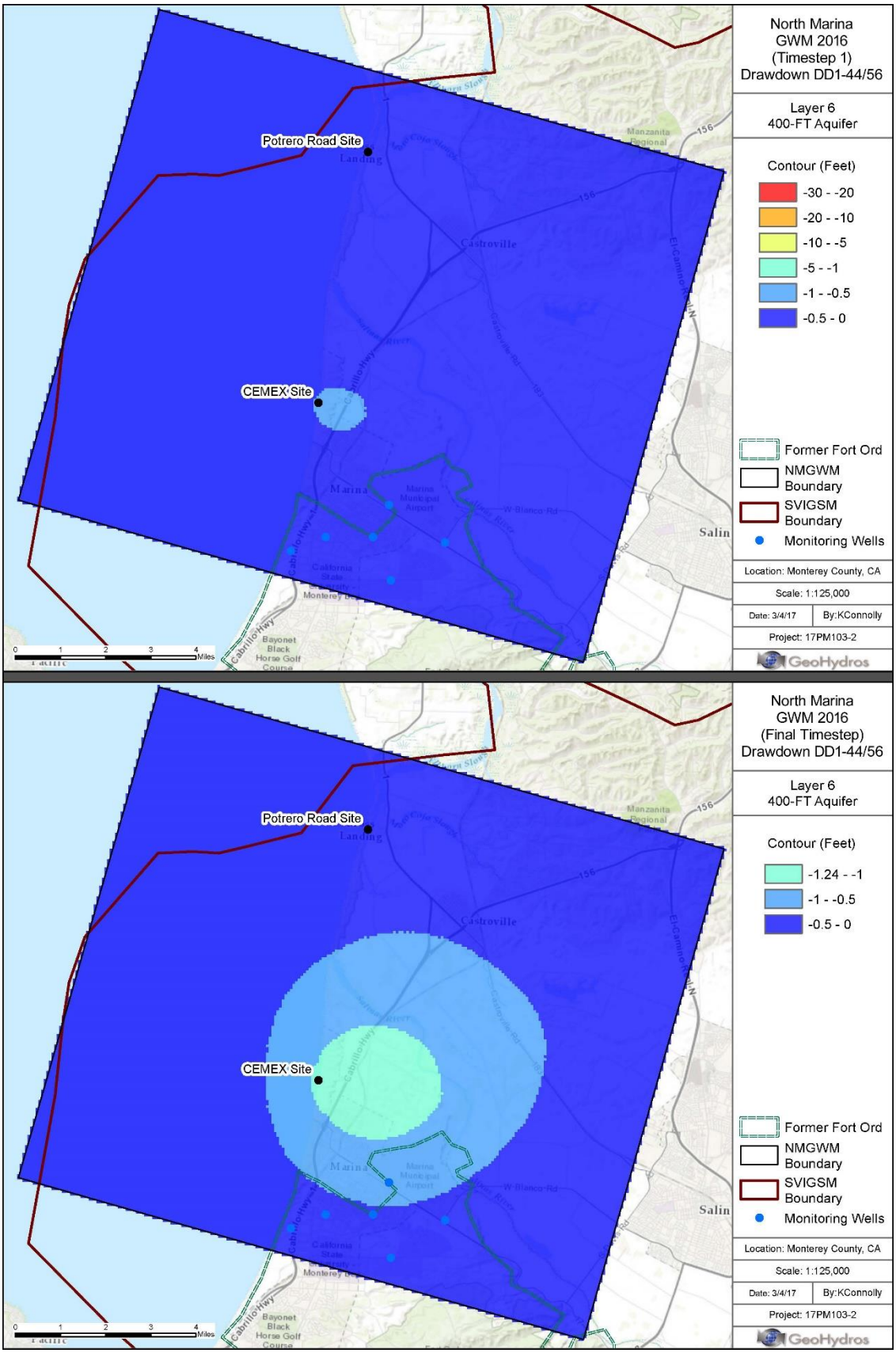

Figure 20.
Simulated drawdown in the 400-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

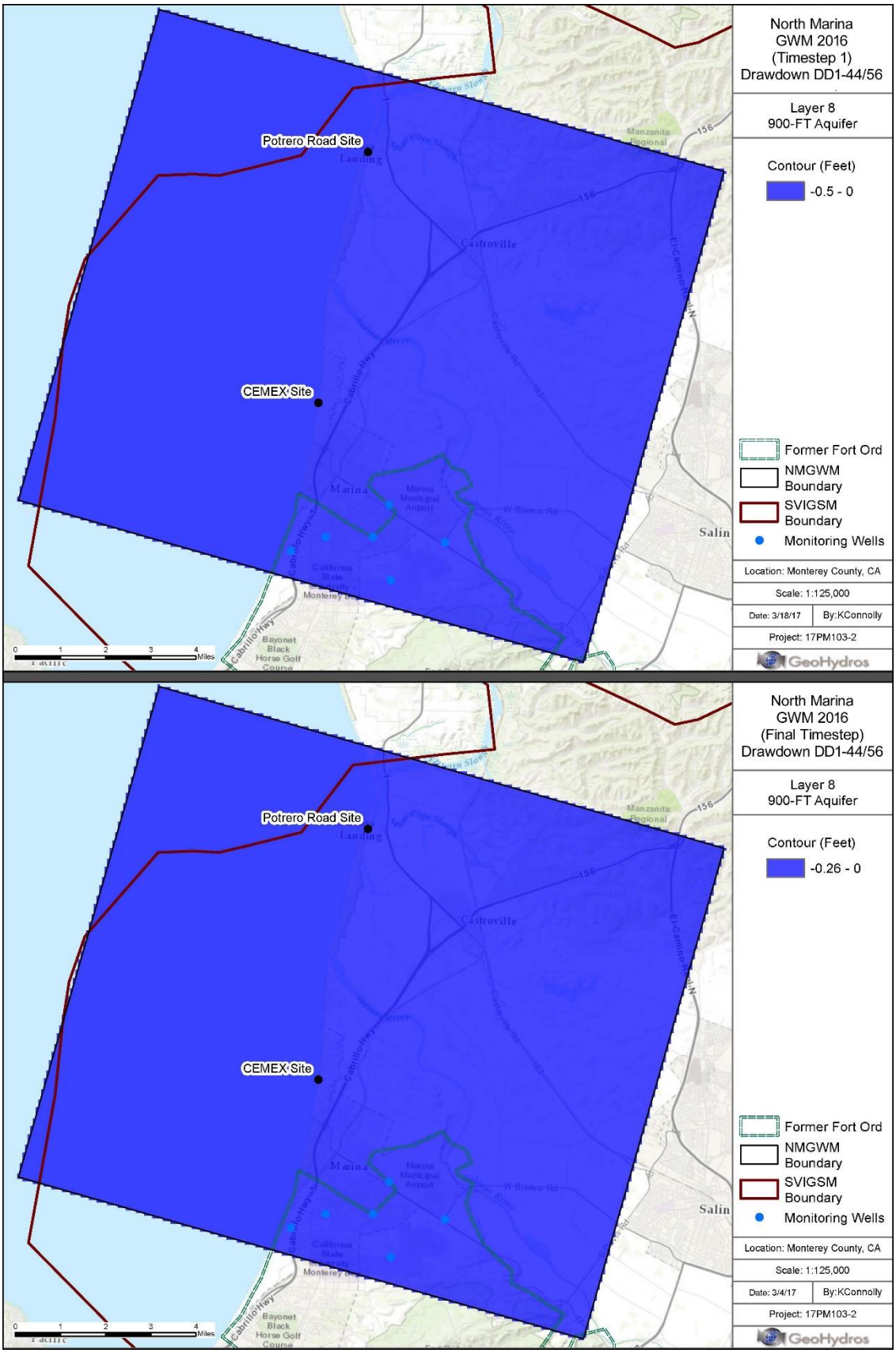

Figure 21.
Simulated drawdown in the 900-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

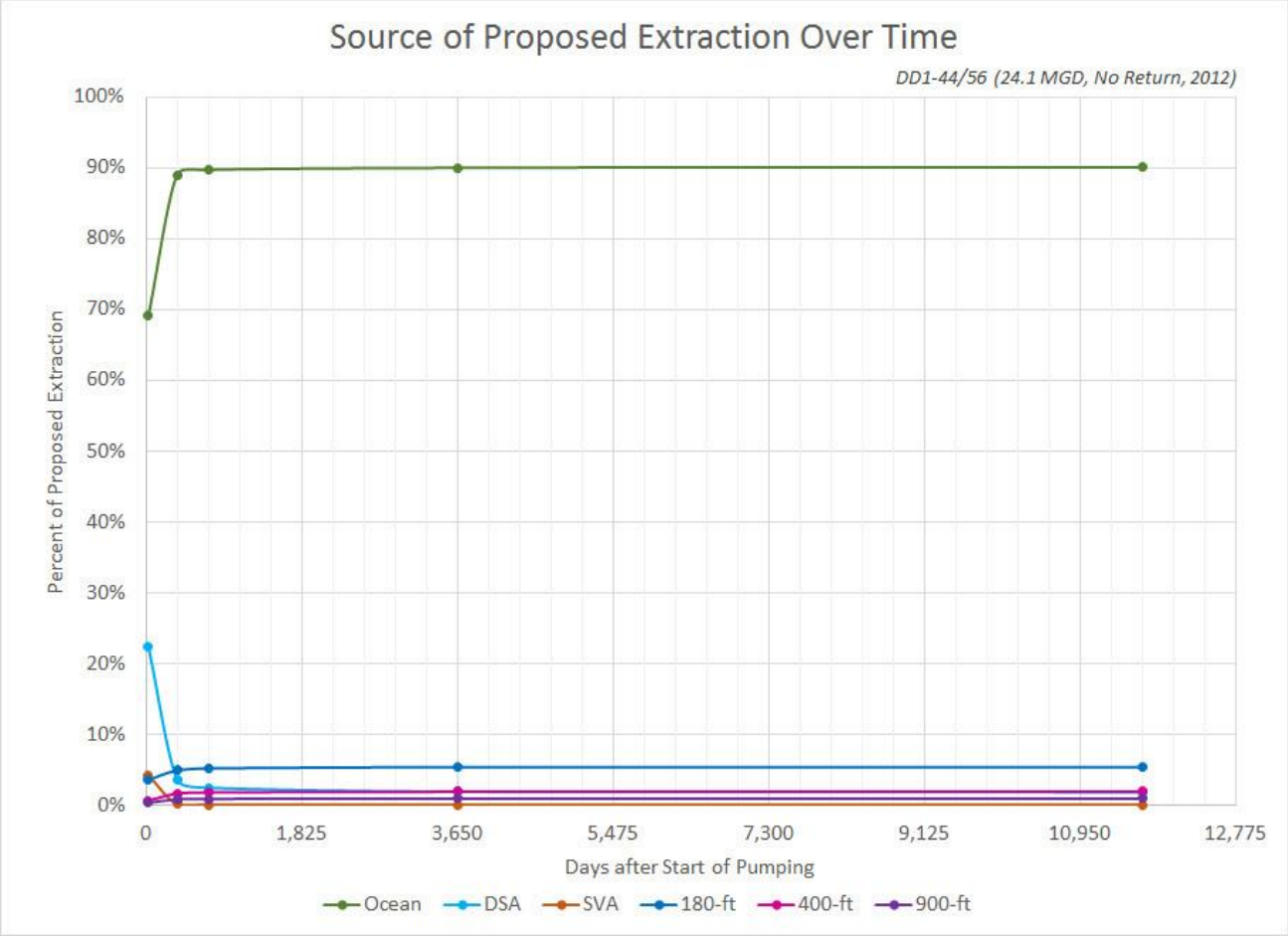

Figure 22.
Plot showing how the source of water to the proposed extractions is predicted to evolve over time.

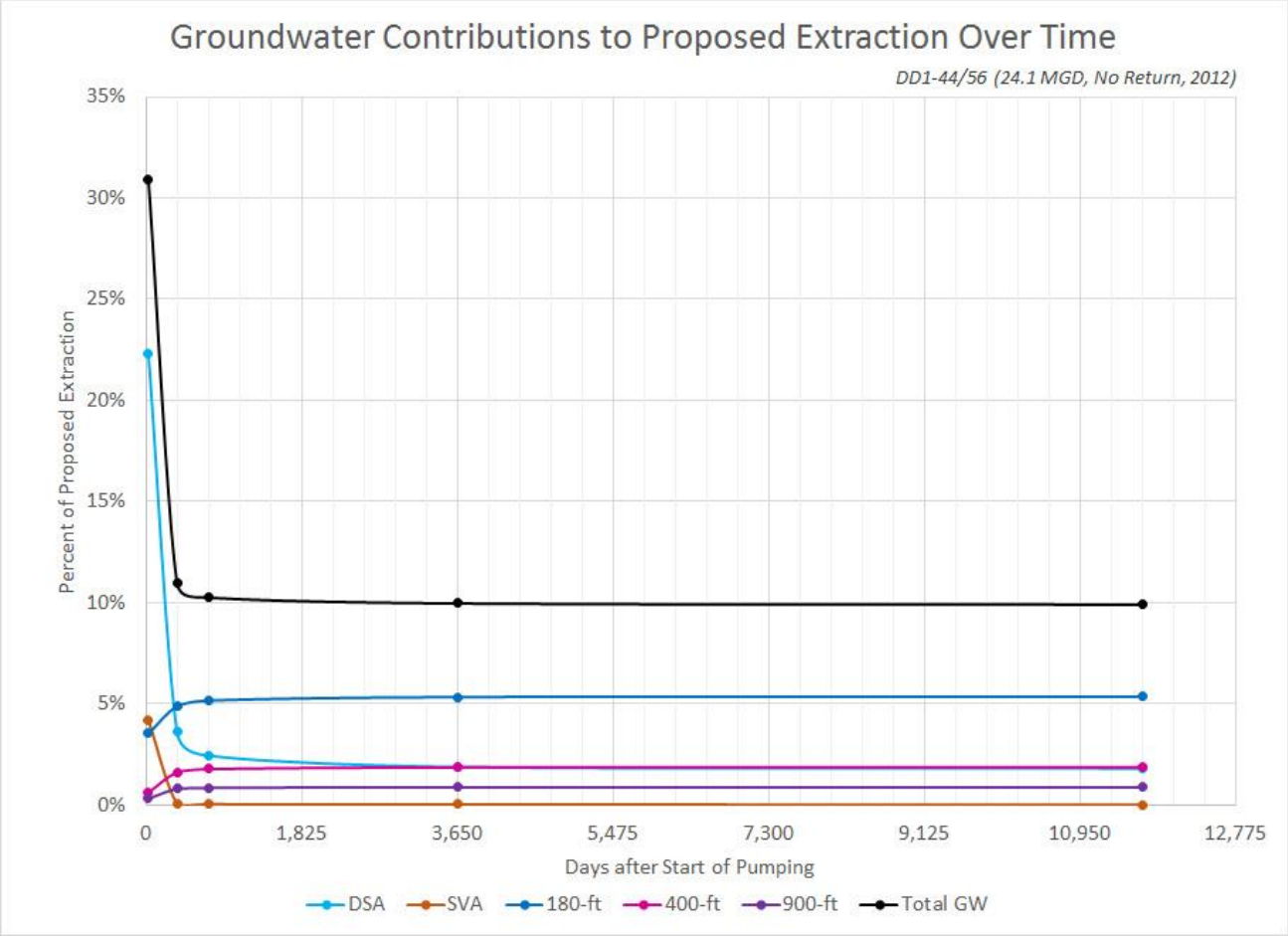

Figure 23.
Plot showing how the contribution from groundwater to the proposed wells is predicted to evolve over time.

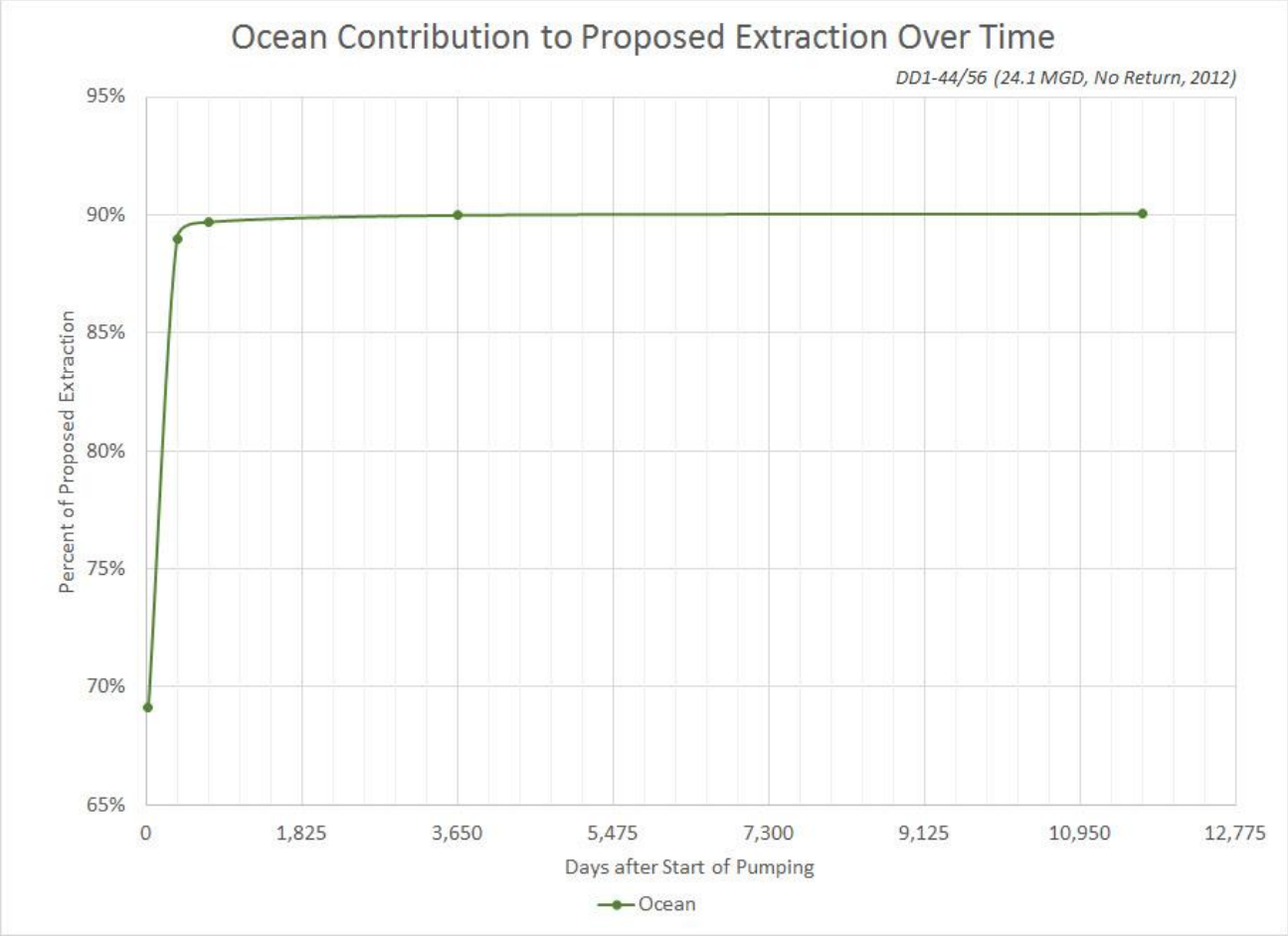

Figure 24.
Plot showing how the contribution from the ocean to the proposed wells is predicted to evolve over time.

28 March 2017

MEMORANDUM

To: Keith Van Der Maaten, P.E., Marina Coast Water District
Michael Wegley, P.E., Marina Coast Water District

From: Vera Nelson, P.E., Erler & Kalinowski, Inc.
Anona Dutton, P.G., C.Hg, Erler & Kalinowski, Inc.

Subject: Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017
Marina Coast Water District, California
(EKI B60094.01)

On behalf of the Marina Coast Water District ("MCWD" or "District"), Erler & Kalinowski, Inc. ("EKI") has reviewed and prepared comments on the California America Water ("CalAm") Monterey Peninsula Water Supply Project ("MPWSP" or "Project") Draft Environmental Impact Report/Environmental Impact Statement, released 13 January 2017 ("DEIR/EIS"). The DEIR/EIS was prepared on behalf of the California Public Utilities Commission ("CPUC") and the Monterey Bay National Marine Sanctuary ("MBNMS"). The DEIR/EIS analyzes the potential environmental impacts of the proposed CalAm Project which includes an intake system consisting of 10 subsurface slant wells at the CEMEX sand mining site near the City of Marina; a desalination plant; a brine discharge system; product water conveyance pipelines; one pump station; storage facilities; and improvements to the existing Seaside Groundwater Basin's aquifer storage and recovery ("ASR") system. The proposed intake system lies immediately northwest of MCWD's Service Area, which includes the Central Marina Service Area, the MCWD Sphere of Influence ("SOI"), and the Ord Community Service Area, see Figure 1 (Shaaf & Wheeler, 2016).

A central issue addressed in the DEIR/EIS relates to CalAm's legal right to extract source water for the Project from offshore aquifers of the Salinas Valley Groundwater Basin ("SVGB"). This issue is addressed by the State Water Resources Control Board ("SWRCB") in its 2013 letter included in Appendix B2 of the DEIR/EIS, which states that in order for CalAm to appropriate groundwater from the SVGB, the DEIR/EIS must demonstrate that the proposed Project "*will not*

harm or cause injury to other basin users". The SWRCB (2013) makes specific recommendations regarding additional studies and analyses required to make such a demonstration.

EKI's comments on the DEIR/EIS evaluate: (1) the adequacy of information presented in the DEIR/EIS to meet the SWRCB's requirement that the proposed Project "*will not harm or cause injury to other basin users*", and (2) whether the Project specifically has the potential to harm or cause injury to MCWD interests in the local subbasins. Where information is found to be inadequate, additional studies, demonstrations, and/or mitigation measures are identified. Specific issues discussed in this comment letter are summarized below.

- **The DEIR/EIS does not incorporate water quality from the Dune Sand Aquifer and 180-Foot Aquifer from nearby Fort Ord where over 300 monitoring wells have been installed.** The omission of these data leads to an incomplete understanding of hydrogeologic conditions and the importance of the Dune Sand Aquifer in limiting saltwater intrusion and providing fresh water recharge to the 180-Foot Aquifer within MCWD's service area. Fort Ord water quality data and water quality data collected from Cal Am monitoring wells show that fresh water exists in both the Dune Sand Aquifer and the upper 180-Foot Aquifer outside of the immediate area of the CEMEX site. This information is critical to the evaluation of the Project which will influence groundwater flow in these zones and disrupt the current system equilibrium.

- **The DEIR/EIS dismisses the potential beneficial use of groundwater within the Dune Sand and 180-Foot Aquifers.** Their characterization is based on assumed "poor water quality" and the current absence of groundwater production wells. This characterization is inconsistent with available monitoring well data, the Water Quality Control Plan for the Central Coastal Basin "Basin Plan" (RWQCB, 2016), and the remedial action objectives applied to these aquifer zones at Fort Ord, where millions of dollars have been spent restoring groundwater to drinking water standards. The DEIR/EIS also fails to consider the Project's impact on potential beneficial use of these aquifer zones for storage or augmentation of groundwater supplies through applied recharge. Multiple studies and field investigations have been conducted by MCWD since 2008 to assess such groundwater recharge options at the nearby Armstrong Ranch, many of which would be precluded by the Project.

- **The DEIR/EIS provides inadequate documentation of groundwater modeling inputs and outputs to facilitate transparency, public review, and future verification of results**. The DEIR/EIS does not include figures identifying assumed baseline water levels

in each aquifer zone so hydraulic gradients can be verified. This issue is of particular concern for the Dune Sand Aquifer where model calibration results for Fort Ord wells are extremely poor. The DEIR/EIS also does not identify groundwater flow paths prior to and after Project implementation so changes to salt water migration patterns can be assessed and effects of boundary conditions can be evaluated. The use of superposition also precludes verification of modeling results through future monitoring. Most importantly, the modeling does not assess potential water quality changes to the Dune Sand Aquifer and the upper 180-Foot Aquifer that will occur as a result of reduced recharge from the Dune Sand Aquifer and induced saltwater migration inland of the Project's slant wells.

- **Groundwater modeling presented in the DEIR/EIS predicts that extraction from the slant wells will create significant water level declines within in the Dune Sand and 180-Foot Aquifers.** Although it is impossible to accurately assess the impacts of the Project on groundwater levels within MCWD's service area, given the poor model calibration for the Dune Sand and 180-Foot Aquifers south of the Salinas River, the model does predict that drawdowns will extend between 1.5 and 4.5 miles inland into MCWD's service area. Nonetheless, the DEIR/EIS does not acknowledge that any negative impacts to water quality will occur as a result. Cal Am proposes to replace groundwater withdrawn from these aquifer zones by in-lieu recharge in the 400-Foot Aquifer outside of MCWD's service area. This proposed in-lieu recharge, however, will not mitigate the Project's adverse impacts to Dune Sand and 180-Foot Aquifers or avoid harm to MCWD water rights. Nor does it recognize that the Project will preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or augmentation of groundwater supplies through surface water recharge at Armstrong Ranch.

Further information in support each of these comments is provided below.

1. THE PROJECT DOES NOT DEMONSTRATE COMPLIANCE WITH SWRCB REQUIREMENTS FOR APPROPRIATION OF GROUNDWATER FROM THE SVGB

The SWRCB 2013 letter included in Appendix B2 of the DEIR/EIS (SWRCB, 2013) states: MCWD-EKI-1

> *To appropriate groundwater from the Basin, the burden is on Cal-Am to show their project will not cause injury to other users… The groundwater quality in the Basin will be a key factor in determining the effects of extraction on groundwater users in the Basin, assessing*

> *any potential injury that may occur, and measures that would be necessary to compensate for it…*
>
> *Additional information is needed to accurately determine MPWSP impacts on current and future conditions of the Basin regardless of whether the extraction occurs from pumped or gravity wells. First, specific information is needed on the depth of the wells and aquifer conditions. Studies are needed to determine the extent of the Dune Sand Aquifer, the water quality and water quantity of the Dune Sand Aquifer, the extent and thickness of the Salinas Valley Aquitard, and the extent of the 180-Foot Aquifer.*

As described in detail in the following comments, the DEIR/EIS does not meet the SWRCB criteria for demonstrating that the Project *will not cause injury*. In particular, through omission of publicly available data, the DEIR/EIS does not accurately characterize water quality and hydrogeologic conditions within the Dune Sand Aquifer and 180-Foot Aquifer in the vicinity of Project which includes the northern portion of MCWD's Service Area (i.e., including the Ford Ord portion of the Monterey Subbasin) (see Figure 2). As shown in Figures 3 and 4, water quality data, specifically Total Dissolved Solids ("TDS") and chloride data, have been collected over the years in the vicinity of the Project and south into Fort Ord. These data show that groundwater with TDS concentrations of less than 3,000 milligrams per liter ("mg/L"), which is the SWRCB Resolution No. 88-63 criteria *potentially suitable, for municipal or domestic water supply*[1] standard for drinking water, is present in the Dune Sand Aquifer and the 180-Foot Aquifer in the vicinity of the Project site and south into Fort Ord. These data show that the Dune Sand Aquifer and upper 180-Foot Aquifer are an important source of water in the region. As a result of this failure, the DEIR/EIS fails to analyze or disclose that increased groundwater extraction from Project wells

MCWD-EKI-1 cont.

[1] SWRCB Resolution No. 88-63 states:

All surface and ground waters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be designated by the Regional Boards with the exception of surface and ground waters where:

a. *The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 us/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or*
b. *there is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or*
c. *The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.*

would impact the equilibrium of that system and the local and regional groundwater quality. Therefore, the DEIR/EIS does not demonstrate compliance with the SWRCB requirements for appropriation of groundwater from the SVGB

MCWD-EKI-1 cont.

2. PROJECTED IMPACTS FROM THE PROJECT ARE INCONSISTENT WITH THE BASIN PLAN

Potential degradation of groundwater water quality in the Dune Sand Aquifer and the 180-Foot Aquifer by the Project violates the Water Quality Control Plan for the Central Coastal Basin "Basin Plan" (RWQCB, 2016), which designates all groundwater within the SVGB as potential drinking water source[2]. As shown in Figures 3 and 4, groundwater in the Dune Sand Aquifer and upper 180-Foot Aquifer inland of the Project site meets the SWRCB Resolution No. 88-63 criteria for *potentially suitable, for municipal or domestic water supply*. This beneficial use designation within the Basin Plan is articulated as an applicable or relevant and appropriate requirement ("ARAR") within the Fort Ord Basin Wide Record of Decision (U.S. Department of the Army, 1997). As such, national and state primary drinking water standards are identified as ARARs and established as remedial action objectives for groundwater in the Dune Sand Aquifer and 180-Foot Aquifer at chemically impacted sites at Fort Ord. Millions of dollars have been, and continue to be spent, to remediate groundwater to meet these remedial action objectives within these aquifer zones. Therefore, statements made within the DEIR/EIS that imply that these aquifer zones have poor water quality and therefore have limited or no beneficial use, are inconsistent with the Basin Plan and any potential degradation of groundwater within these aquifers must be addressed within the DEIR/EIS.

MCWD-EKI-2

The Basin Plan further states that:

> *Controllable water quality shall conform to the water quality objectives contained herein. When other conditions cause degradation of water quality beyond the levels or limits established as water quality objectives, controllable conditions shall not cause further degradation of water quality*[3].

Therefore, further degradation of existing water quality even within brackish areas of the aquifers is also precluded under the Basin Plan.

[2] Basin Plan *Chapter 2.I. Present and Potential Beneficial Uses*. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."
[3] RWQCB,2016. Chapter 3. Section II Water Quality Objectives. Page 3-1

3. HYDROGEOLOGIC CONDITIONS AND WATER QUALITY IN DUNE SAND AQUIFER AND UPPER 180-FOOT AQUIFER ARE INCOMPLETELY CHARACTERIZED IN THE DEIR/EIS

The Project slant wells at the CEMEX Site will be screened through the Dune Sand Aquifer and into the 180-Foot Aquifer. These wells will draw groundwater from these zones and potentially underlying aquifer zones. Therefore, characterization of groundwater quality and flow conditions within these aquifer zones is critical to understanding Project impacts. Cal Am recently installed eight groundwater monitoring well clusters (MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9) to further assess baseline groundwater conditions and monitor the response to extraction at the test slant well installed at the CEMEX Site. When information from these wells is combined with data from Fort Ord, a basic understanding of groundwater flow and quality conditions in the Project vicinity and within the northern portion of MCWD's Service Area can be inferred with reasonable confidence; such work or understanding is not reflected in the DEIR/EIS.

MCWD-EKI-3

Specifically, the baseline water level data and water quality information presented in the DEIR/EIS for the adjacent MCWD Service Area is incomplete. No water level maps for the Dune Sand Aquifer are included, although, as described below, water level data have been collected from local and CalAm monitoring wells that, when plotted, show a Bay-ward gradient and an apparent connection between the Dune Sand Aquifer and the 180-Foot Aquifer in the vicinity of the Project site. In addition, publicly-available water quality data from Fort Ord, where over 300 monitoring wells in the Dune Sand Aquifer and 180-Foot Aquifer have been installed, are not presented or analyzed.

Further, although the DEIR/EIS estimates projected drawdown within the Dune Sand Aquifer and 180-Foot Aquifer, the DEIR/EIS does not address the impacts of the Project on freshwater recharge from the Dune Sand Aquifer into the 180-Foot Aquifer. It is apparent that the modeling does not accurately characterize baseline water level conditions in these aquifer zones based on the limited information included in the DEIR/EIS for this area and extremely poor model calibration results are reported for the Dune Sand Aquifer (i.e., the root mean square error between modeled and observed water levels for the Dune Sand Aquifer is 30.2 feet).

3.1 The DEIR/EIS Does Not Adequately Characterize or Address Project Impacts to Groundwater Flow Within and Between the Dune Sand and 180-Foot Aquifers

The DEIR/EIS provides limited information regarding groundwater levels and hydraulic gradients in the Dune Sand Aquifer and 180-Foot Aquifer in the northern portion of MCWD's Service Area although over 300 monitoring wells have been installed at Fort Ord in these aquifer zones. For example, DEIR/EIS Figures 4.4-5 and 4.4-7 only present baseline water level data for the 180-Foot Aquifer in the 180/400 Foot Subbasin north of the Salinas River and in the Seaside Subbasin, respectively – no data are presented for the Monterey Subbasin, which lies between those two subbasins and includes the MCWD Service Area. Selected Fort Ord wells have been incorporated into the numerical model, however calibration results for the Dune Sand Aquifer are poor and do not accurately reflect baseline conditions[4]. The DEIR/EIS's failure to adequately characterize baseline conditions in the Dune Sand Aquifer is exemplified in its statement: MCWD-EKI-3.1

> *The groundwater flow patterns within the Dune Sand Aquifer are not known but, based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled, with little to no net horizontal flow in any particular direction*[5].

Draft Technical Memorandum No.2 ("TM2") referenced in the DEIR/EIS (Geosciences, 2016), includes water level maps for the Dune Sand Aquifer and 180-Foot Aquifer[6]. However, these maps further complicate and obscure the continuity of groundwater flow within the Dune Sand Aquifer, by separating this aquifer into a "perched zone" and "-2 foot aquifer zone", and incorrectly imply that groundwater flow is discontinuous between Fort Ord and the northern portion of MCWD service area in both the Dune Sand and 180-Foot Aquifers. Copies of these maps are presented in Appendix B hereto.

[4] The root mean square error between modeled and observed water levels for the Dune Sand Aquifer was 30.2 feet.
[5] DEIR/EIS Section 4.4.1.3 Groundwater Flow and Occurrence; Groundwater Elevations and Flow Directions page 4.4-14
[6] TM2 Figure 9- Groundwater Elevations – "Perched Aquifer" (Using Fort Ord "A" Aquifer Wells, MCPCA 35-Foot Aquifer Wells, and MPWSP MW-5S) Fall 2015; Figure 10 - Groundwater Elevations – "Dune Sand Aquifer" (Using MCPCA -2-Foot Aquifer Wells, and MPWSP Shallow Completions and showing Fort Ord "A" Aquifer Monitoring Wells) Fall 2015; Figure 11- Groundwater Elevations – "180-FTE/180-Foot Aquifer" (Using Fort Ord Upper 180-Foot Aquifer Wells and MPWSP Middle Completions) Fall 2015

In contrast to this finding, EKI used water level data collected from CalAm[7] and Fort Ord wells to map hydraulic gradients in the Dune Sand Aquifer and 180-Foot Aquifer in the northern portion of MCWD's Service Area. These maps are presented on Figures 5 and 6, respectively, and present water level data measured in:

(a) Cal Am monitoring wells on 3 May 2016, immediately prior to the restart of extraction from the slant well[8], and
(b) Fort Ord wells in early June 2016, as part of the self-monitoring program conducted by the Army.

As shown on Figure 5, groundwater in the Dune Sand Aquifer in the northern portion of MCWDs Service Area is significantly above sea level and flows west towards Monterey Bay. In contrast, as shown in Figure 6, groundwater in the 180-Foot Aquifer flows eastward towards a regional pumping center in the interior of the Salinas Valley. Based on the head differences between these aquifers it is apparent that the Dune Sand Aquifer is "perched" on the Salinas Valley Aquitard in inland areas but has some degree of connection with the 180-Foot Aquifer as one moves west towards the Bay (i.e., the head difference between the two aquifer systems lessens near the Project Site).

MCWD-EKI-3.1 cont.

These water level data in combination with water quality data obtained from Fort Ord indicate that fresh water from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer upgradient of coast and the Project site and then "U-turns" and flows back into the basin. The exact location and volume of groundwater that seeps from the Dune Sand Aquifer into the upper 180-Foot Aquifer and makes this "U-Turn" has not been quantified. However, data from Fort Ord indicates that seepage from the Dune Sand Aquifer near Monterey Bay (where water levels are above sea level) into the underlying 180-Foot Aquifer (where water levels are below sea level) has effectively stopped salt water intrusion in the upper 180-Foot Aquifer in that area. This natural mounding has maintained freshwater in the upper portion of the 180-Foot Aquifer under much of Fort Ord (see Figures 3 and 4). This natural barrier appears to have been undermined north of Fort

[7] Cal Am installed 8 well clusters (MW-1 and MW-3 through MW-9) in the northern portion of MCWD's Service Area in 2015. These wells were installed pursuant to the requirements of Coastal Development Permit and a request by the Monterey County Water Resource Agency ("MCWRA").

[8] Water level data from MRWPCA-1 collected during the baseline period ending on 11 April 2015, indicates that the potentiometric head elevation was -5 ft MSL. Although the transducer in this well apparently failed after the baseline period, review of water level data from nearby Cal Am 180-Foot Aquifer monitoring wells (MW-7M, MW-5M) indicates that water levels measured in 2015 are generally consistent with those measured in 2016, outside of the direct influence of the slant well and that water levels declined approximately 2 to 4 feet between April and May in the 180-Foot Aquifer in 2015 and 2016. Therefore, an estimated water level of -7 ft MSL has been included on Figure 6 for MRWPCA-1, for general reference. Replacement of the transducer in this well is recommended along with hand measurements to verify hydraulic gradients in this area.

Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX Plant, and would likely be further disturbed by the Project. MCWD-EKI-3.1 cont.

3.2 The DEIR/EIS Does Not Adequately Characterize Water Quality Conditions in the Dune Sand Aquifer and 180-Foot Aquifer

The water quality data included in the DEIR/EIS for the Dune Sand Aquifer and the 180-Foot Aquifer is limited to the immediate vicinity of the CEMEX facility where salt water intrusion has occurred and does not accurately characterize water quality as more broadly observed in these aquifer zones. For example, statements made in the DEIR/EIS indicate that groundwater within Dune Sand Aquifer and the 180-Foot Aquifer are directly and widely impacted by sea water[9,10]. However, the absence of inclusion of data from Fort Ord leads to an incomplete understanding of hydrogeologic conditions and the importance of the Dune Sand Aquifer in actually limiting saltwater intrusion and providing fresh water recharge to the 180-Foot Aquifer within the northern portion of MCWD's Service Area and inland of the Project site. Contrary to statements made in the DEIR/EIS, water level and water quality data obtained at Cal Am's recently installed monitoring well clusters MW-5, MW-6, MW-7 and Monterey Regional Water Pollution Control Agency ("MRWPCA") wells 1 and 2, indicate that chloride and TDS concentrations in the Dune Sand Aquifer and upper portion of the 180-Foot Aquifer meet SWRCB Resolution No. 88-63 criteria as a potential drinking water source and California Secondary Drinking Water Standards for these constituents[11]. Maps depicting TDS and chloride concentrations detected in groundwater samples most recently collected from Fort Ord and CalAm wells screened in these zones over the last 10 years (i.e., 2006 through 2016) are presented on Figures 3 and 4. These figures show that, outside of the immediate area of the CEMEX Site, groundwater in these aquifer zones is <u>not brackish</u> as characterized in the DEIR/EIS. MCWD-EKI-3.2

[9] On page 4.4-6 and 4.4-8 the DEIR/EIS states *Water quality of the Perched A Aquifer and Dune Sand Aquifer is directly influenced and controlled by seawater. Because of the aquifer's proximity to the ocean, most of the water in the Dune Sand Aquifer has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004). This influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence.*

[10] On page 4.4-11the DEIR/EIS states *Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits*

[11] The recommended and upper secondary maximum contaminant levels for chloride are 250 mg/L and 500 mg/L. The recommended and upper secondary maximum contaminant level for total dissolved solids (TDS) is 500 mg/L and 1000 mg/L, respectively. (California Code of Regulations, Title 22. Division 4 Environmental Health, Chapter 15. Domestic Water Quality and Monitoring Regulations, Article 16, dated 27 September 2006.

The information presented in Figures 3 and 4 is consistent with data collected at Fort Ord in the late 1990's which was presented in Harding ESE's, *Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California,* prepared for MCWRA dated 12 April 2001. (Harding, 2001). A copy of selected figures which depict water quality information from the upper 180-Foot Aquifer zone are included in Appendix A, hereto.

Geologic, water level, and water quality information from Fort Ord indicates that there are multiple clay zones within the 180-Foot Aquifer. As one moves deeper within this aquifer the salinity increases. A north-south transect that extends from Fort Ord into the area inland of the CEMEX facility was constructed (Figure 7). The transect identifies well screen depths and TDS and chloride measurements in wells screened in the 180-Foot Aquifer (Figure 8). These figures show that wells at Fort Ord that are screened in the upper 180-Foot Aquifer contain fresh water, but that salinity likely increases with depth. This is particularly apparent at well MCWD#05[12], which has a long screened interval that extends across the upper and lower portions of the aquifer[13]. Vertical profiling conducted in 1991 during groundwater extraction indicated:

MCWD-EKI-3.2 cont.

- TDS concentrations of <1,000 mg/L in the upper portion of the screen interval (i.e., elevations above -155 ft MSL); and
- TDS concentrations of approximately 5,000 mg/L at bottom of screen interval (i.e., elevations between -195 ft MSL to -235 ft MSL) (Stalle, Gardner & Dunne, Inc., 1991).

These data provide insight regarding TDS concentrations detected in wells with long screened intervals, such as those constructed by CalAm, which likely reflect a mix of lower salinity (fresh) water from the upper portions of the 180-Foot Aquifer and more saline water from the deeper portion of the aquifer. Therefore, data from these wells is difficult to interpret and inadequate for characterizing salinity within the upper portions of the 180-Foot Aquifer. It is likely that the well known saltwater intrusion maps prepared by MCRA and cited in the DEIR/EIS are based on wells screened in the lower portion of the 180-Foot Aquifer[14].

[12] Well MCWD#05 is screened in the 180 Foot Aquifer and was shut down in 1983 due to elevated TDS concentrations (i.e., up to 4,000 mg/L).
[13] The screen at well MCWD#05 extends from approximately 216 ft below ground surface ("bgs") to 370 ft bgs; corresponding to an elevation of -91 feet mean sea level ("ft MSL") to -245 ft MSL
[14] In locations where wells screen across both fresh water and saline water and vertical gradients exist between zones TDS concentrations measured in the well bore may only reflect the salinity of groundwater from the zone at higher hydraulic head, as groundwater flows down the well bore from the zone with higher head to lower head, and therefore samples collected are not reflective of water quality in both zones. Such conditions were observed at MCWD#05, where vertical profiles of EC measurements during pre-pumping static conditions were all 500 micro

Arguments have been made that extraction from the upper 180-Foot Aquifer would inevitably draw water from deeper zones. However, numerous groundwater extraction wells have been operating within the upper 180-Foot Aquifer at Fort Ord to facilitate remediation of volatile organic compounds. These wells have maintained low salinity levels, demonstrating the significant vertical stratification of salinity within higher permeability sediments within the 180-Foot Aquifer. These conditions confirm the aquifer's beneficial use designation within the Basin Plan and substantiate remedial action objectives established at Fort Ord, which are reviewed by the U.S. Environmental Protection Agency every five years, and continue to drive remedial efforts at Fort Ord to bring groundwater back to drinking water standards. As such, statements made in the DEIR/EIS that dismiss the beneficial use and conditions of the local groundwater system are inconsistent with the data and minimize the potential impact that the Project will have on degrading groundwater quality.

MCWD-EKI-3.2 cont.

4. THE PROJECT WILL IMPACT GROUNDWATER CONDITIONS AND MCWD'S ABILITY TO IMPLEMENT GROUNDWATER RECHARGE AUGMENTATION AT ARMSTRONG RANCH

4.1 Impacts of the Project on Groundwater Conditions

Construction and operation of the Project as proposed will (a) limit recharge of fresh water from the Dune Sand Aquifer into the upper 180-Foot Aquifer, (b) influence this natural hydraulic barrier and (c) decrease the existing freshwater zone within a portion of MCWD's service area. The estimated area of impact from the Project's proposed intake system on the Dune Sand and 180-Foot Aquifer is presented on Figures 9 and 10. This figure shows that the zone of influence extends anywhere from 1.5 miles to 4.5 miles inland based on modeled results[15]. As shown in these figures, withdrawal of groundwater from the proposed slant wells will draw fresh water from Dune Sand Aquifer, which in turn will decrease recharge of such water into to the 180-Foot Aquifer. The full extent of these impacts is unknown and must be evaluated prior to Project approval.

MCWD-EKI-4

Further, water within both the Dune Sand Aquifer and upper 180-Foot Aquifer will be fully saline within the zone of capture of the slant wells, as ocean water will be drawn into these areas by the slant wells. The predicted lateral extents of these capture zones based on groundwater modeling

siemens (i.e., 270 mg/L TDS). These conditions could explain, low salinity levels measured in samples collected in Some Cal Am wells and MRWPCA wells 1 and 2, which are screened at the base of this aquifer zone.

[15] Figure E3 of Appendix E2 of DEIR EIS

results are depicted on Figure 5.6 of Appendix E2 of the DEIR/EIS and have been included on Figures 11 and 12, herein. No current water quality data exists in the southern portion of these capture zones which may extend into areas where non-saline water currently exists. Further characterization of water quality in these areas is needed prior to Project approval to verify that degradation of the beneficial uses of groundwater will not occur at these locations. In addition, it is anticipated that the salinity of groundwater within the Dune Sand Aquifer and 180-Foot Aquifer will increase immediately inland of these capture zones as saline water is drawn into these areas to backfill groundwater that is withdrawn. The DEIR/EIS discounts such impacts as it erroneously characterizes all water within the area as salt water intruded and does not recognize its designated beneficial use. The modeling in the DEIR/EIS must estimate changes in salinity within MCWD's Service Area.

4.2 Impacts of MPWSP on MCWD's Ability to Implement Groundwater Recharge Augmentation at Armstrong Ranch

MCWD-EKI-4 cont.

The Project will also affect MCWD's ability to utilize the Dune Sand Aquifer for storage and/or groundwater recharge augmentation at Armstrong Ranch. Armstrong Ranch is a 230 acre property located with MCWD's sphere of influence and owned by MCWD (Figures 1 and 2). MCWD has conducted multiple studies to evaluate the potential for groundwater recharge augmentation at Armstrong Ranch. These studies include:

- Todd Engineers, 2008. *Phase I Investigation Armstrong Ranch Groundwater Storage Project.* Marina Coast Water District, Marina;
- RMC, 23 May 2008. *Preliminary Draft Technical Memorandum, Armstrong Ranch: Seasonal Subsurface Storage of Recycled Water, Modeling TM;*
- RMC, 2 October 2008. *Draft Technical Memorandum, Marina Coast Water District – Water Augmentation Project; and*
- EKI, 16 January 2017. *Technical Memorandum, Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property*

These studies evaluate the potential for infiltrating and or/storing surplus Salinas River storm flows and/or tertiary treated recycled water from MRWPCA in the Dune Sand Aquifer and potentially extract stored water from the Dune Sand or 180-Foot Aquifers. The studies include:

(a) Compilation/evaluation of historic water levels from (3) existing Dune Sand Aquifer monitoring wells located on Armstrong Ranch, completion of four (4) borings and four cone penetrometer testing ("CPT") sites to assess geologic conditions in the Dune Sand Aquifer at Armstrong Ranch, (Todd, 2008);
(b) Numerical groundwater monitoring to estimate the volume of water that could be stored in the Dune Sand Aquifer through infiltration, (RMC, 2008a);
(c) Conceptual plans and cost estimates for storage of Salinas River winter storm flows that exceed National Oceanic and Atmospheric Administration National Marine Fisheries ("NOAA") instream requirements within the Dune Sand Aquifer (RMC, 2008b);
(d) A feasibility study assessing the viability and potential costs for increasing MCWD's water supplies through augmented groundwater recharge at the Armstrong Ranch Property (EKI, 2017).

MCWD-EKI-4 cont.

The studies conclude that local hydrogeologic conditions would support enhanced groundwater recharge at Armstrong Ranch. One of the simplest and most cost effective options evaluated as part of the EKI's (2017) feasibility study focuses on direct infiltration of surplus Salinas River storm flows and/or tertiary treated recycled water from MRWPCA into the Dune Sand Aquifer for later extraction from the 180-Foot Aquifer at Armstrong Ranch[16]. Further description of this option is illustrated on Figure 13.

Implementation of such an option could be used to augment MCWD groundwater supplies by approximately 1,500 acre-feet per year ("AFY") to 3,000 AFY, and could aid in limiting salt water intrusion within the 180-Foot Aquifer. The Project as proposed, however, would preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or groundwater recharge augmentation at Armstrong Ranch, because groundwater within the Dune Sand Aquifer downgradient of Armstrong Ranch would be drawn into the Project's slant wells and not return to the groundwater system within MCWD's service area.

5. THERE ARE SIGNIFICANT DEFICIENCIES IN THE GROUNDWATER MODELING APPROACH AND PRESENTATION

MCWD-EKI-5

The DEIR/EIS provides inadequate documentation of groundwater modeling inputs and outputs to facilitate transparency and public review of results. For example, the DEIR/EIS does not include

[16] Salinas River storm flows could be augmented by tertiary treated wastewater flows, if it were demonstrated that waste water flows had at least one (1) year of residence time within the aquifer.

figures identifying assumed and calibrated baseline water levels in each aquifer zone so hydraulic gradients can be verified. This issue is of particular concern south of the Salinas River for the 180-Foot Aquifer and the Dune Sand Aquifer where model calibration results for Fort Ord wells are extremely poor and water quality conditions are mischaracterized in statements made in the DEIR/EIS (see Section 3.1 herein). The DEIR/EIS also does not identify groundwater flow paths prior to and after Project implementation so changes to salt water migration patterns can be assessed and effects of boundary conditions can be evaluated. The use of a superposition model, also precludes verification of modeling results through future monitoring and obscures potential model deficiencies. Most importantly, the modeling does not assess potential water quality changes to the Dune Sand Aquifer and the upper 180-Foot Aquifer that will occur as a result of reduced recharge from the Dune Sand Aquifer and induced saltwater migration inland of the Projects slant wells. In order to evaluate potential impacts of the Project on salt water intrusion and water quality, a well calibrated density dependent fate and transport model must be used.
The absence of this information does not meet the requirements specified by the SWRCB in its 2013 letter, discussed in Section 1 herein, and does not address the extent of the project's potential degradation of groundwater which would be in direct violation of the Basin Plan.

MCWD-EKI-5 cont.

6. IN-LIEU RECHARGE DOES NOT ADDRESS PROJECT IMPACTS ON MCWD'S SERVICE AREA

The DEIR/EIS states that slant wells will draw water and create water level declines within in the Dune Sand Aquifer and 180-Foot Aquifer approximately 1.5 to 4.5 miles inland of the slant wells within MCWD's service area, but does not acknowledge that any negative impacts to water quality will occur as a result of such withdrawals as it dismisses potential beneficial use of groundwater within these aquifer zones. Cal Am proposes to replace groundwater withdrawn from these aquifer zones by in-lieu recharge of the 400-foot aquifer within other areas of the SVGB. This replacement water does not mitigate impacts or avoid harm to MCWD water rights, nor does it recognize that the Project will preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or augmentation of groundwater supplies through surface water recharge at Armstrong Ranch.

MCWD-EKI-6

7. CONCLUSIONS

The DEIR/EIS does not demonstrate the proposed Project "*will not harm or cause injury to other basin users*" as required by the SWRCB for CalAm to appropriate groundwater from the SVGB, (SWRCB, 2013). These comments demonstrate that prior to Project approval Cal Am must at a minimum:

MCWD-EKI-7

(a) Further characterize baseline hydrogeologic and salinity conditions in the Dune Sand and 180 Foot Aquifers in MCWD's Service Area, including installation of additional groundwater monitoring wells to establish baseline water quality conditions and facilitate future monitoring of groundwater within the Dune Sand Aquifer and upper and lower portions of the 180-Foot Aquifer within the predicted capture zone of the slant wells

(b) Expand/modify groundwater modeling and use a well calibrated density dependent fate and transport model to assess changes in salinity within each aquifer, including the upper 180-Foot Aquifer zone, to demonstrate that the Project will not degrade groundwater quality in MCWD's Service Area and not preclude MCWD's options for groundwater augmentation at Armstrong Ranch.

(c) Commit to future long-term monitoring of water levels and water quality within MCWD's Service Area if the Project is implemented to demonstrate that the Project does not degrade groundwater conditions within MCWD's service area and provide a mitigation plan to address any degradation in water quality that is observed. Such monitoring and mitigation should be conducted under the oversight of the RWQCB, to verify that the Project does not violate the provisions of the Basin Plan.

MCWD-EKI-7 cont.

ACRONYMS

ASR	Aquifer storage and recovery
Basin Plan	Water Quality Control Plan for the Central Coastal Basin
CalAm	California American Water
CPUC	California Public Utilities Commission
DEIR/EIS	Draft Environmental Report/Environmental Impact Statement
EKI	Erler & Kalinowski, Inc.
MBNMS	Monterey Bay National Marine Sanctuary
MCL	Maximum Contaminant Level
MCWD Service Area	Collectively refers to the Central Marina service area, MCWD sphere of influence ("SOI"), and Ord Community Service Area
MCWD:	Marina Coast Water District or District
MCWRA	Monterey County Water Resources Agency
MCWRA	Monterey County Water Resources Agency
MPWSP	Monterey Peninsula Water Supply Project
MRWPCA	Monterey Regional Water Pollution Control Agency
NOAA	National Oceanic and Atmospheric Administration National Marine Fisheries
RWQCB	Central Coast Regional Water Quality Control Board
SOI	Sphere of influence
SRDF	Salinas River Diversion Facility
SVGB	Salinas Valley Groundwater Basin
SVIGSM	Salinas Valley Integrated Groundwater Surface Model
SVWP	Salinas Valley water project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TM2	Geosciences Draft Technical Memorandum No. 2

FIGURES

Figure 1. MCWD Service Area

Figure 2. Northern portion of MCWD's Service Area

Figure 3. Groundwater Quality, TDS and Chloride – Dune Sand Aquifer

Figure 4. Groundwater Quality, TDS and Chloride – 180 Foot Aquifer

Figure 5. Groundwater Elevations – Dune Sand Aquifer

Figure 6. Groundwater Elevations –180 Foot Aquifer

Figure 7. Well Screen Transect A – A' Location – 180 Foot Aquifer

Figure 8. Well Screen Transect A – A'

Figure 9. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – Dune Sand Aquifer

Figure 10. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – (upper) 180 Foot Aquifer

Figure 11. Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006 – 2016) – Dune Sand Aquifer

Figure 12. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – (upper) 180 Foot Aquifer

Figure 13. Conceptual Map Groundwater Augmentation at Armstrong Ranch – Option 1

APENDICIES

Appendix A: Selected figures from Harding ESE, *Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California*, prepared for Monterey County Water Resources Agency, dated 12 April 2001

Appendix B: Selected figures from Geoscience Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. Released July 2016

REFERENCES

Alta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016

California Coastal Commission, 2014. Coastal Development Permit #A-3-MRA-14-0050 issued to Cal Am dated 8-Dec-14

EKI, 16 January 2017. Technical Memorandum, Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property, dated 16 January 2017

Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May 2016.

Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

Geosciences, 2014. Monterey Peninsula Water Supply Project Hydrogeologic Investigation Technical Memorandum (TM1) Summary of Results – Exploratory Boreholes, dated 8 July 2014.

Geoscience, 2015. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.

Geoscience, 2016. Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. released July 2016

SWRCB, 2017. State Water Resources Control Board GeoTracker database, accessed 13 February 2017

Harding ESE, 2001. Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California, prepared for Monterey County Water Resources Agency, dated 12 April 2001

RMC,2008a. Preliminary Draft Technical Memorandum, Armstrong Ranch: Seasonal Subsurface Storage of Recycled Water, Modeling TM, dated 23 May 2008;

RMC, 2008b. Draft Technical Memorandum to Marina Coast Water District- Water Augmentation Project, Subject Water Supply Evaluation Date 2 October 2008.

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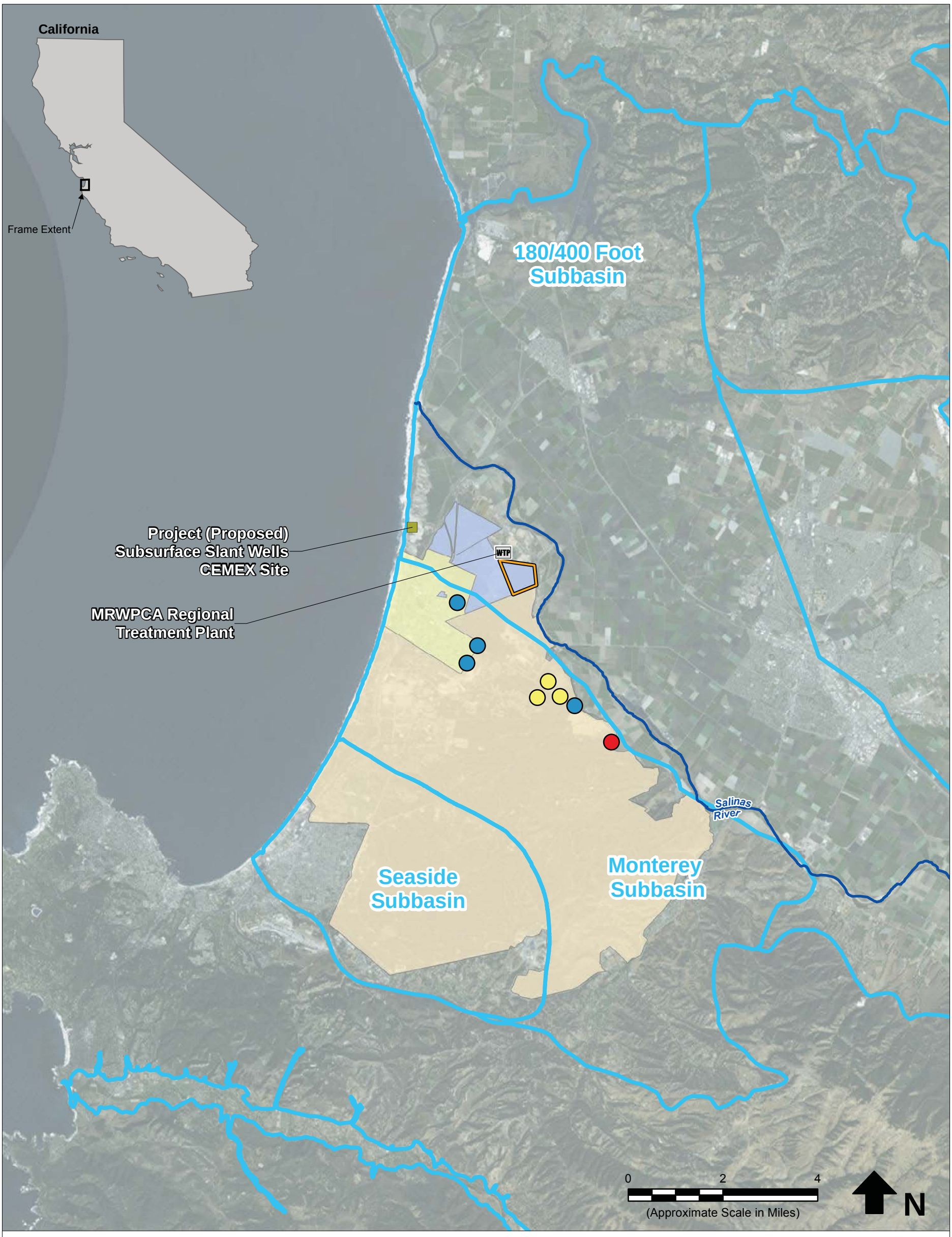
RWQCB, 2016. Water Quality Control Plan for the Central Coast Basin, Regional Water Quality Control Board Central Coast Region, State Water Resources control Board, California Environmental protection Agency, March 2016 Edition

Schaaf & Wheeler, 2016. Marina Coast Water District, 2055 Urban Water Management Plan, Dated June 2016

Stalle, Gardner & Dunne, Inc., 1991. Ground Water Quality Assessment-District Well No. 5., released July 3 1991

Todd Engineers, 2008. Phase I Investigation Armstrong Ranch Groundwater Storage Project. Marina Coast Water District, Marina;

U.S. Department of the Army, 1997. Record of Decision Basinwide Remedial Investigation Sites, Fort Ord, California



Legend

- DWR Groundwater Basin
- MCWD's Service Area - Ord Community
- MCWD's Service Area - Central Marina
- MCWD's Sphere of Influence
- Armstrong Ranch

MCWD Wells by Aquifer

- 180-Foot and 400-Foot
- 400-Foot
- Deep

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
MRWPCA = Monterey Regional Water Pollution Control Agency

Notes

1. All locations are approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, Obtained 22 March 2017.

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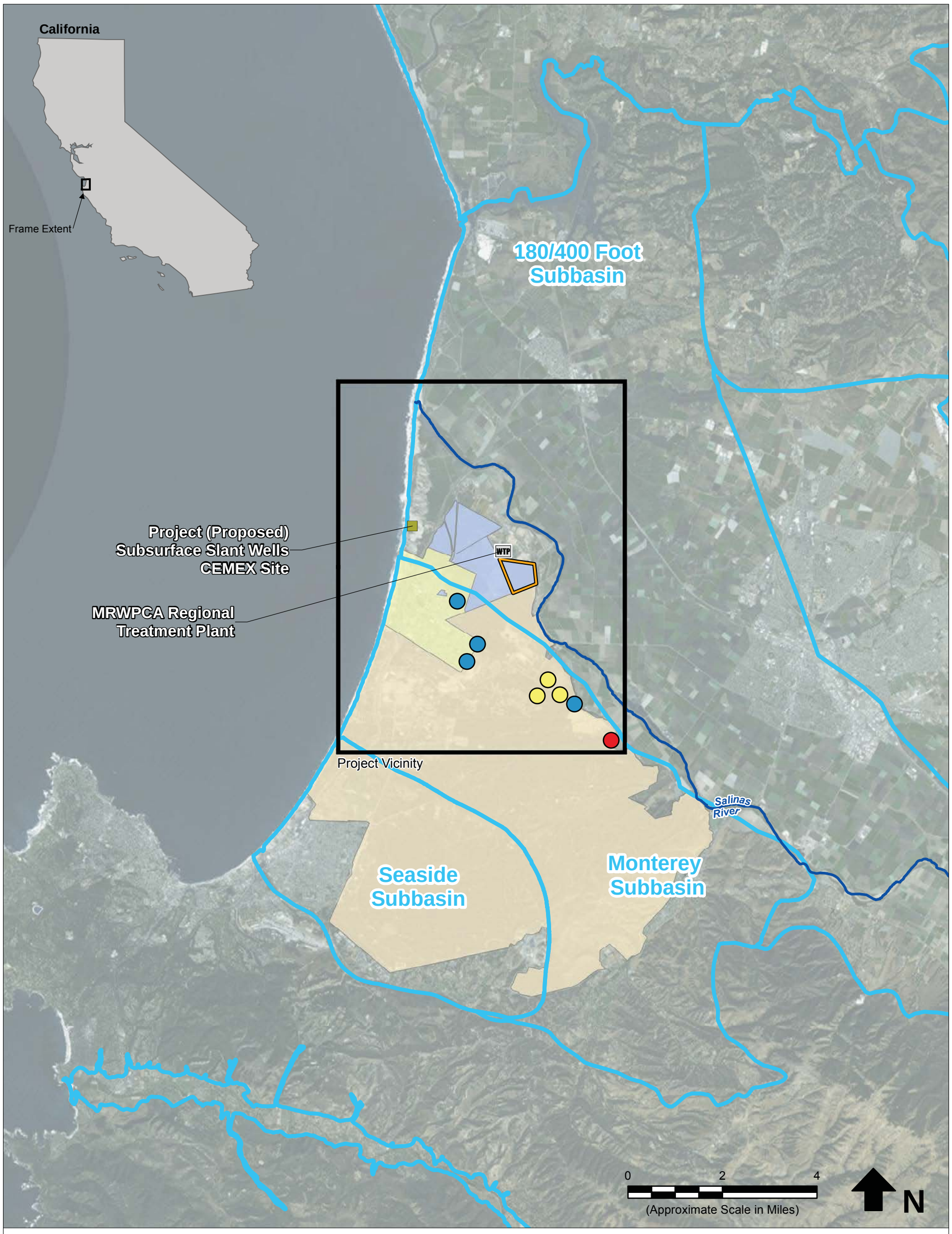
Erler & Kalinowski, Inc.

MCWD Service Area

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 1



Legend

- DWR Groundwater Basin
- MCWD's Service Area - Ord Community
- MCWD's Service Area - Central Marina
- MCWD's Sphere of Influence
- Armstrong Ranch

MCWD Wells by Aquifer

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MRWPCA = Monterey Regional Water Pollution Control Agency

Notes

1. All locations are approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, Obtained 22 March 2017.

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Erler & Kalinowski, Inc.

Project Vicinity

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 2

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8S — Well ID
1,214/251 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Abbreviations

DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids
mg/L	= milligrams per liter		

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

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Groundwater Quality, TDS and Chloride - Dune Sand Aquifer (2006-2016)

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 3

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Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M (Well ID)
20,500/10,546 (TDS/Chloride Concentration (mg/L))
(6/23/2015) (Sample Date)

Abbreviations

DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids
mg/L	= milligrams per liter		

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

Erler & Kalinowski, Inc.

Groundwater Quality TDS and Chloride - Upper 180 Foot Aquifer (2006-2016)

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 4

Path: X:\B60094\Maps\2017\02\Fig4_TDS_CL_180ftAquifer.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Groundwater Divide
- Edge of Fort Ord-Salinas Valley Aquitard
- Groundwater Elevation Contour (2' Interval)
- Groundwater Elevation Contour (10' Interval)
- Cal Am Monitoring Well
- Fort Ord Monitoring Well

Well Labeling

MW-5S (Well ID)
35 (Groundwater Elevation (ft MSL))

Abbreviations

Cal Am	= California American Water	MCWD	= Marina Coast Water District
DWR	= Department of Water Resources	mg/L	= milligram per liter
ft MSL	= feet mean sea level	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Groundwater levels obtained from Reference 2 are measured in May 2016. Groundwater levels at Fort Ord are measured during June 2016 (Ahta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016). All groundwater levels are approximate.
3. Groundwater levels have been correlated for density, where TDS > 10,000 mg/L (see Reference 3).
4. Groundwater elevation contour dashed where approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May-2016.
3. Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

Erler & Kalinowski, Inc.

Groundwater Elevations
Dune Sand Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 5

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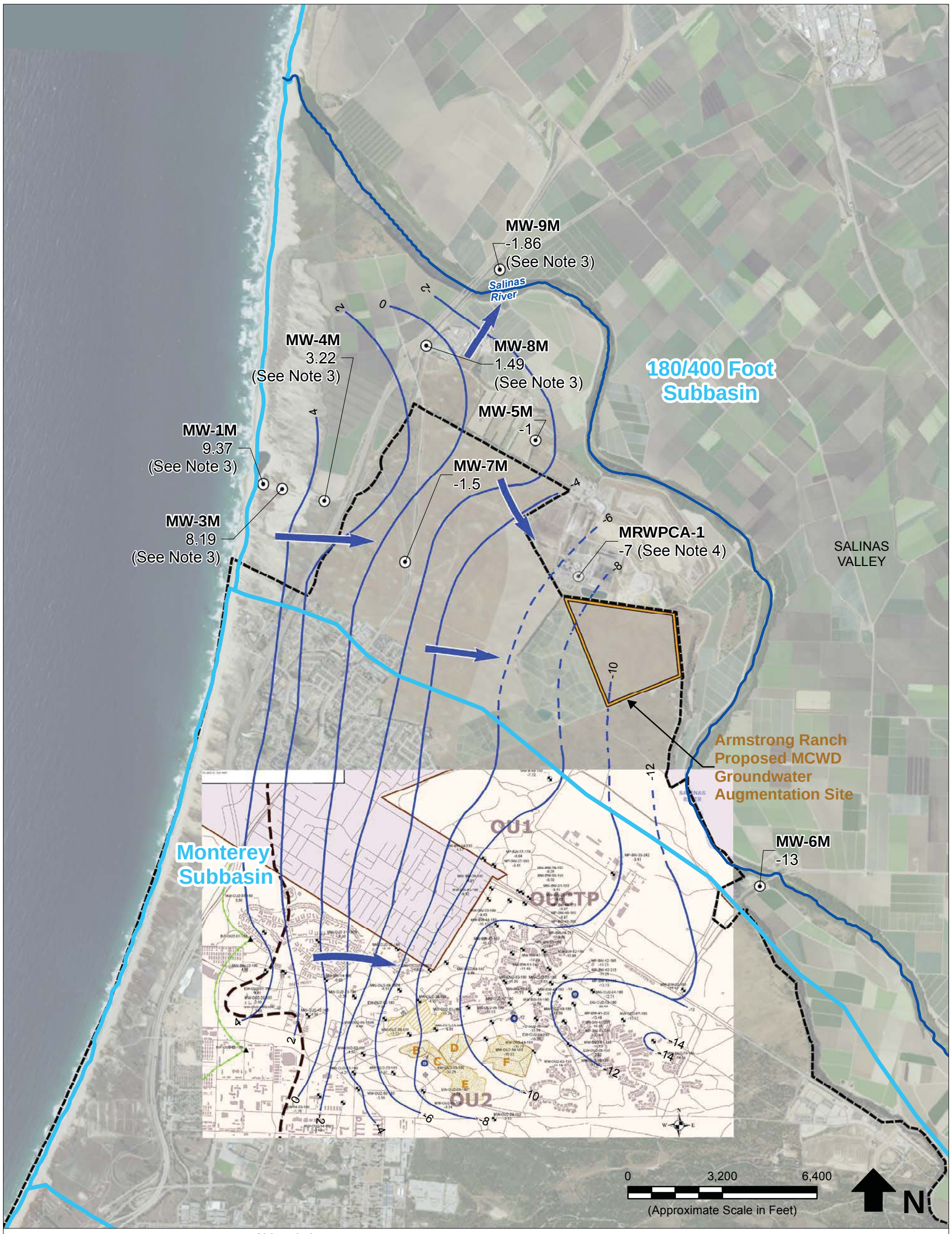

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Groundwater Divide
- Edge of Fort Ord-Salinas Valley Aquitard
- Groundwater Elevation Contour (2' Interval)
- Cal Am Monitoring Well
- Fort Ord Monitoring Well

Well Labeling

MW-5M (Well ID)
-1 (Groundwater Elevation (ft MSL))

Abbreviations

Cal Am	= California American Water	MCWD	= Marina Coast Water District
DWR	= Department of Water Resources	mg/L	= milligram per liter
ft MSL	= feet mean sea level	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Groundwater levels obtained from Reference 2 are measured in May 2016. Groundwater levels at Fort Ord are measured during June 2016 (Ahta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016). All groundwater levels are approximate.
3. Groundwater levels have been correlated for density, where TDS > 10,000 mg/L (see Reference 3).
4. Water level at MRWPCA-1 estimated based on baseline water level measurements from April 2015 and changes observed in water levels at other nearby Cal Am 180 Foot wells between April 2015 and May 2016.
5. Groundwater elevation contour dashed where approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May-2016.
3. Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

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Groundwater Elevations
180 Foot Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 6

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Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Transect A-A'
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M (Well ID)
20,500/10,546 (TDS/Chloride Concentration (mg/L))
(6/23/2015) (Sample Date)

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
mg/L = milligrams per liter
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. Water Quality Assessment conducted by MCWD in 1991 indicates TDS <1000 ug/L in upper portion of screen interval (i.e., elevations above -155 ft MSL) and approximately 5,000 mg/L at bottom of screen interval (i.e., elevations between -195 ft MSL to -235 ft MSL).

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

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Well Screen Transect A-A' Location
180 Foot Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 7

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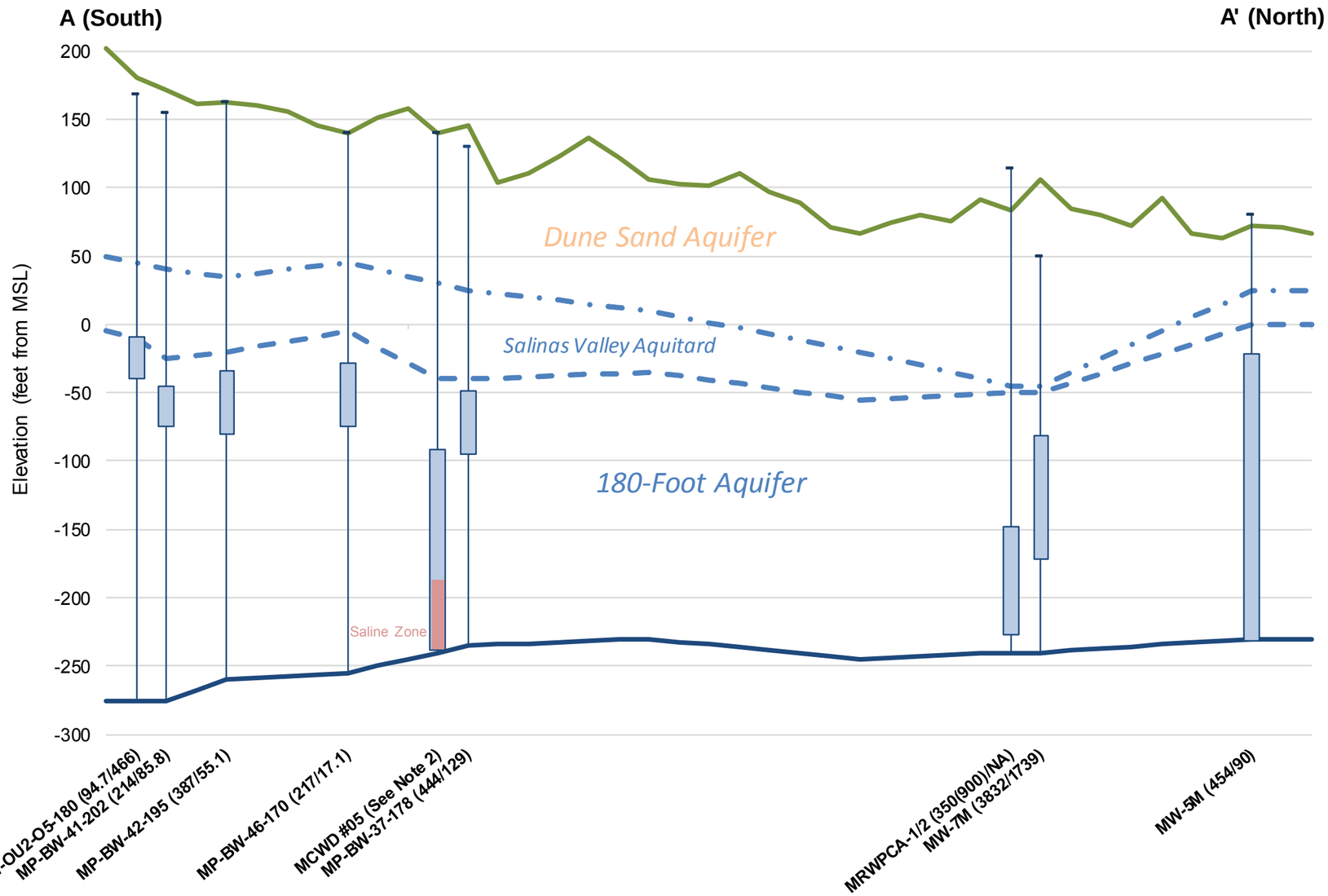

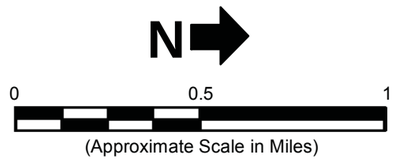

Legend

- Ground Surface Elevation (feet)
- Top of Salinas Valley Aquitard
- Bottom of Salinas Valley Aquitard
- Top of 180/400 Aquitard
- Well Screen Interval
- **MW-5M (454/90)** —— TDS/Chloride Concentration (mg/L)
  - └—— Well ID

Abbreviations

ft. = feet
MSL = mean sea level
NA = not analyzed
TDS = total dissolved solids

Notes

1. Wells MRWPCA-1/2, MW-5M, and MW=7M were sampled in 2015. Well EW-OU2-05-180 was sampled in 2009. Wells MP-BW-41-202, MP-BW-46-170, and MP-BW-37-178 were sampled in 2008. Well MP-BW-42-195 was sampled in 2007. Well MCWD #05 was sampled in 1991.
2. Water Quality Assessment conducted at MCWD #05 in 1991 indicates TDS less than 1000 mg/L in upper portion of screen interval (i.e. elevations above -155 ft MSL) and approximately 5,000 mg/L at bottom of screen interval (i.e. elevations between -195 ft. MSL to -235 ft MSL)

Sources

1. Geoscience, 2016. Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. released July 2016
2. State Water Resources Control Board GeoTracker database, accessed 13 February 2017
3. Stalle, Gardner and Dunne, Inc., 1991. Ground Water Quality Assessment: District Well No. 5., released July 3 1991

Erler & Kalinowski, Inc.

Well Screen Intervals
Transect A-A'

Marina Coast Water District
Marina, CA
February 2017
B60094.01
Figure 8

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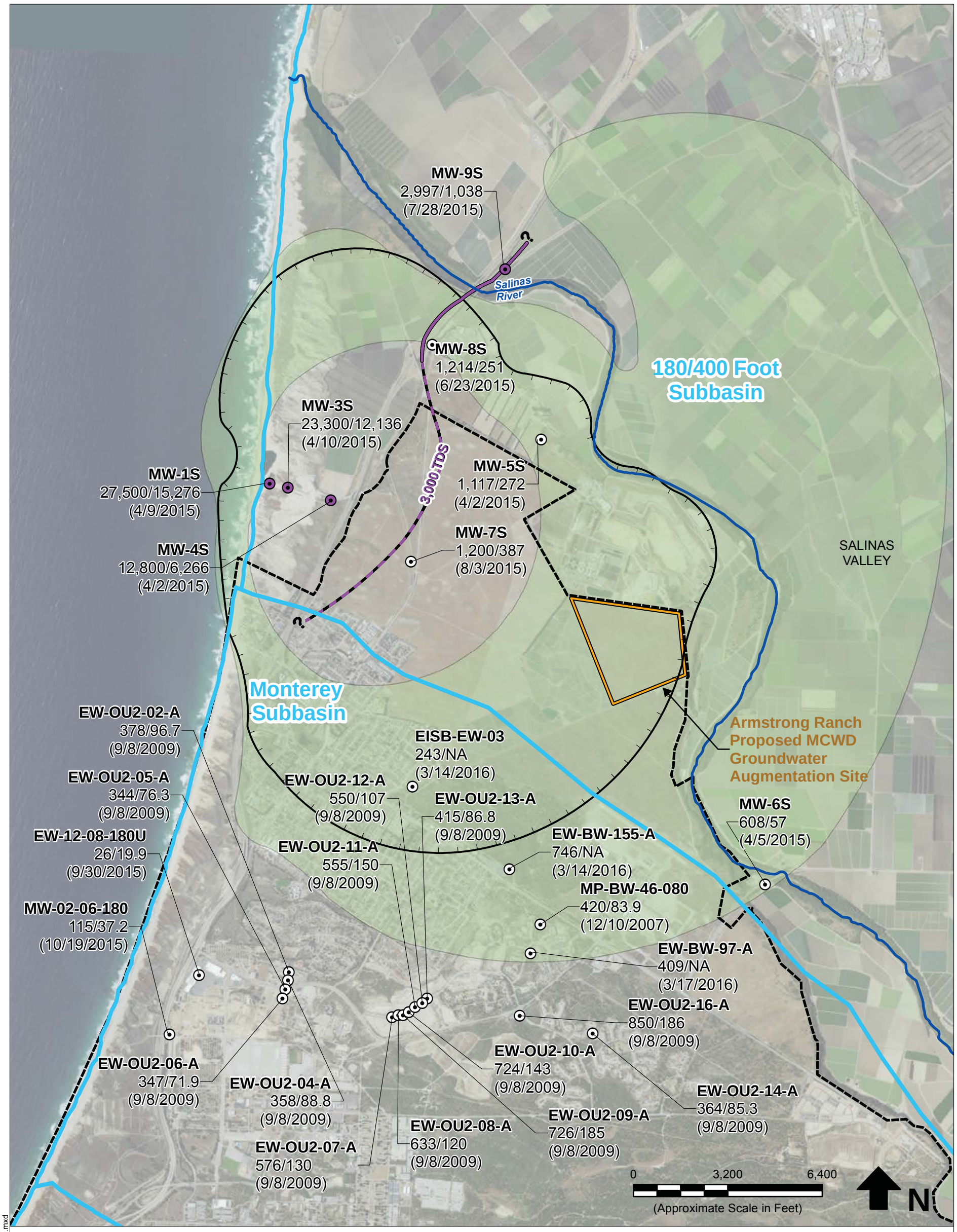


Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Groundwater Level Decrease (Drawdown) Contour 1'
- Possible Extent of 1' Drawdown (Based on Sensitivity Tests)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

- Well ID (MW-8S)
- 1,214/251 TDS/Chloride Concentration (mg/L)
- (6/23/2015) Sample Date

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
mg/L = milligrams per liter
NA = not analyzed
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.
3. Drawdowns based on extraction of 24.1 MGD at CEMEX Site 2012 sea level, no return water.

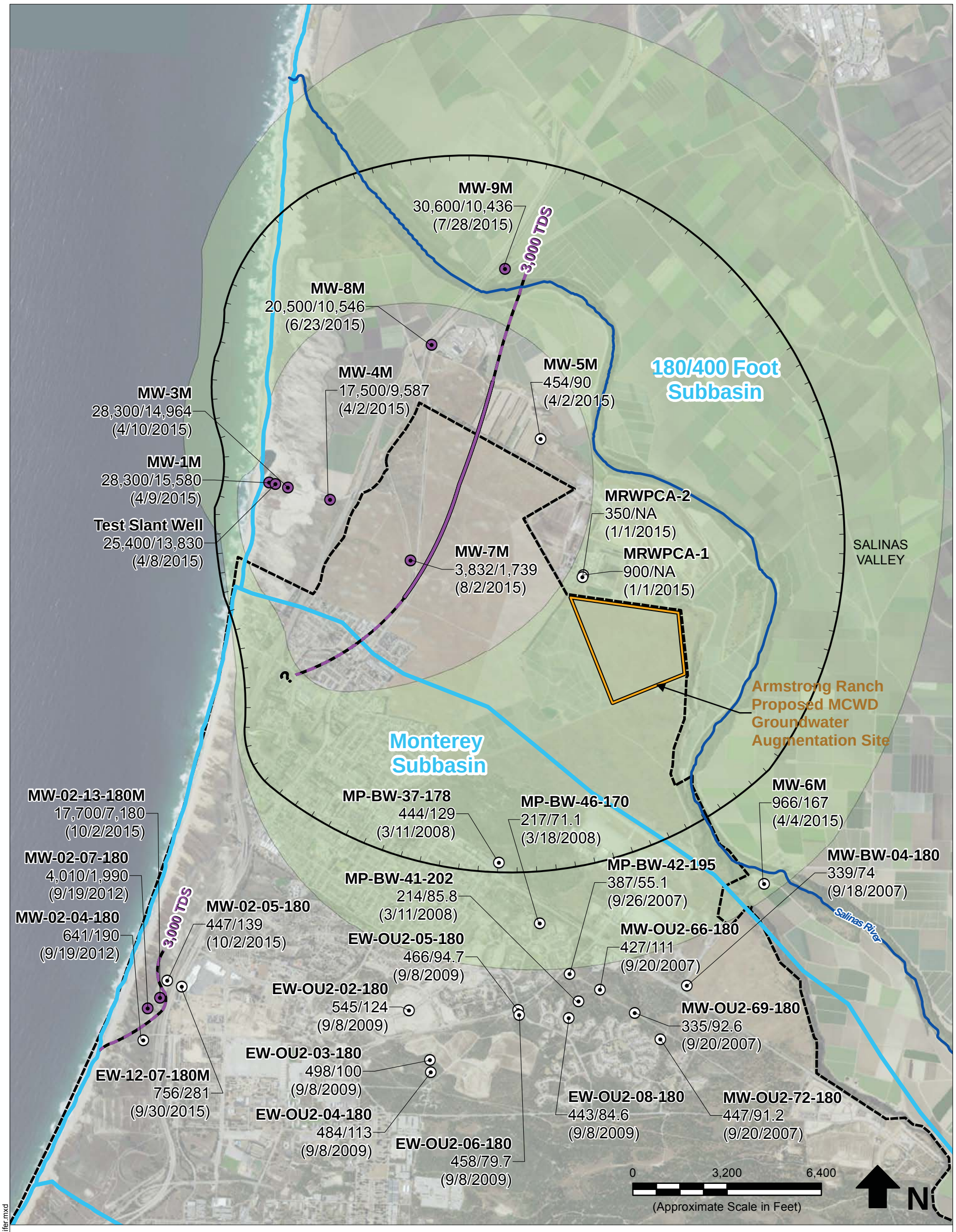
Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

Erler & Kalinowski, Inc.

Predicted Lateral Extent of Drawdown
TDS/Chloride Concentrations
(2006-2016) - Dune Sand Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 9

Path: X:\B60094\Maps\2017\02\Fig9_TDS_CL_WithDrawdown_DuneSand.mxd



Path: X:\B60094\Maps\2017\02\Fig10_TDS_CL_WithDrawdown_180ftAquifer.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Groundwater Level Decrease (Drawdown) Contour 1'
- Possible Extent of 1' Drawdown (Based on Sensitivity Tests)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M (Well ID)
20,500/10,546 (TDS/Chloride Concentration (mg/L))
(6/23/2015) (Sample Date)

Abbreviations

DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids
mg/L	= milligrams per liter		

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.
3. Drawdowns based on extraction of 24.1 MGD at CEMEX Site 2012 sea level, no return water.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Harding, 2001. Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, dated 12 April 2001.

Erler & Kalinowski, Inc.

Predicted Lateral Extent of Drawdown
TDS/Chloride Concentrations (2006-2016)
(Upper) 180 Foot Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 10

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Ocean Capture Zone (0.004, 0.007, 0.0011)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8S (Well ID)
1,214/251 TDS/Chloride Concentration (mg/L)
(6/23/2015) Sample Date

Abbreviations

avg = average
DWR = Department of Water Resources
MCWD = Marina Coast Water District
mg/L = milligrams per liter
NA = not analyzed
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. Ocean Capture Zone, porosity = 0.1, average gradient between 0.0004 and 0.0011.
3. TDS Isoconcentration line is dashed when approximated off sparse data.

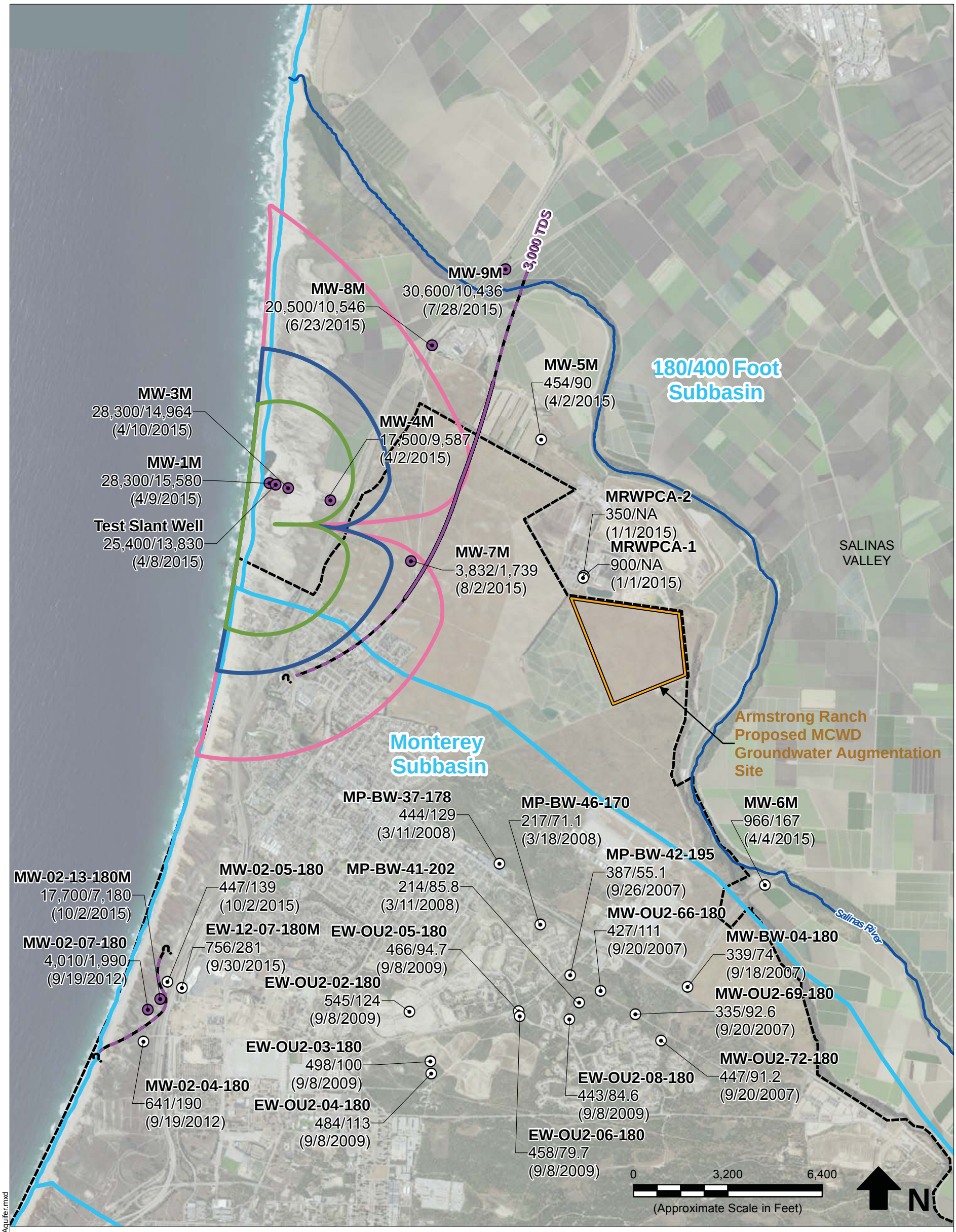
Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

Erler & Kalinowski, Inc.

Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006-2016) - Dune Sand Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 11

Path: X:\B60094\Maps\2017\02\Fig11_TDS_CL_WithOceanCapture_DuneSand.mxd



Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Ocean Capture Zone (0.004 / 0.007 / 0.0011)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M
20,500/10,546 (6/23/2015)

- Well ID
- TDS/Chloride Concentration (mg/L)
- Sample Date

Abbreviations

avg	= average	mg/L	= milligrams per liter
DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Ocean Capture Zone, porosity = 0.1, average gradient between 0.0004 and 0.0011.
3. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

Erler & Kalinowski, Inc.

Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006-2016) - (Upper 180 Foot Aquifer)

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 12

Path: X:\B60094\Maps\2017\02\Fig12_TDS_CL_WithOceanCapture_180ftAquifer.mxd

Legend

- Armstrong Ranch
- Detention/Settling Basin
- Infiltration Pond
- 80 AF Pond (MRWPCA)
- Pipeline to Armstrong Ranch
- SRDF Surface Water Intake Pipeline
- Pipeline to MCWD System
- 180-Foot Aquifer Extraction Well

Abbreviations

MCWD = Marina Coast Water District
MRWPCA = Monterey Regional Water Pollution Control Agency
SRDF = Salinas River Diversion Facility

Notes

1. All locations are approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.

0 3,200 6,400

(Approximate Scale in Feet)

N

Erler & Kalinowski, Inc.

Conceptual Map
Groundwater Augmentation at
Armstrong Ranch – Option 1
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.00
Figure 13

Path: X:\B60094\Maps\2017\02\Fig13_ConceptualGrndWatrAugOption1.mxd

March 28, 2017

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Attn: Mr. Keith Van Der Maaten
General Manager

Dear Mr. Van Der Maaten:

Subject: Monterey Peninsula Water Supply Project
Draft Environmental Impact Report/Environmental Impact Statement

Intake Works LLC has reviewed the Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project prepared for California Public Utilities Commission and the Monterey Bay National Marine Sanctuary (dated January 2017) and provides these comments regarding potential alternatives to the proposed MPWSP slant well intake system and desalination plant, as requested. As we previously informed you, our review of the DEIR/EIS was initially hampered by delays in receiving references cited in the DEIR/EIS and ultimately the lack of any references for most of the DEIR/EIS's conclusions regarding alternative intake technologies. Based on information provided in the DEIR/EIS and the limited reference materials cited in the document and appendices, the DEIR/EIS's conclusion that slant wells are the only potentially feasible subsurface intake system for the MPWSP is unsupportable. While we generally agree with the DEIR/EIS's conclusions regarding the unacceptable impacts of open water intakes, there are several alternative subsurface intake technologies that are likely feasible (based on available information) and would avoid or reduce the MPWSP's significant impacts as discussed below. MCWD-IW-01

Comments on MPWSP DEIR/EIS

In preparing these comments, we have reviewed the relevant portions of (1) the DEIR/EIS (2) the DEIR/EIS appendices; (3) references cited in the DEIR/EIS and DEIR/EIS appendices (where available); and (4) publicly available information referenced in these comments. We have also conducted independent research regarding intake technologies based on work in this area and our experience in seawater desalination. MCWD-IW-02

I. Comments on Open-Water and Subsurface Intakes (Appendix I1)

As requested, our comments focus on whether there are potentially feasible intake technologies for the MPWSP that could reduce the project's environmental impacts. Therefore, our review was primarily focused on Appendix I1 (and the limited reference materials cited in the appendix). We provide the following comments on Appendix I1, which are identified under section headings for ease of reference:

A. ***Comments on Operations and Maintenance Considerations for Open-Water Intakes (I1-3)***

The Open-Water Intake section's statement that maintenance would occur every 3 to 5 years is not supported by any research and appears unrealistic (See p. I1-3). Based on reports from existing seawater intakes in the Monterey Bay National Marine Sanctuary and other intakes along the Monterey Bay, it is more likely that Intake Screens would need to be cleaned every 3 to 5 months.[1] The Intake pipelines would also need to be "pigged" at least annually.[2] MCWD-IW-03

B. ***Comments on Subsurface Intakes (I1-3 through I1-7):***

The General Comments section of Subsurface Intakes states: "*the magnitude of potential entrainment of marine species into the bottom sediments caused by continuous subsurface intake operations has not been systematically and scientifically studied to date*" citing WateReuse 2011 (See p. I1-3). While a full citation of the reference was not provided in the DEIR/EIS reference materials, we assume the citation referred to in Appendix I1 is the white paper entitled "Desalination Plant Intakes Impingement and Entrainment Impact and Solutions" from the WateReuse Foundation which states, "to date there are no studies that document the actual level of entrainment reduction that can be achieved by these types of intakes." (WateReuse 2011, p. 9).[3,4] This nonsensical statement appears to repeat comments from proponents of open-ocean intakes. If there was impingement of marine species on the surface of the seabed, especially marine fish larvae, there would be an accompanying biological response which would be noteworthy. To our knowledge, there is no field observation of increase biomass, increase primary production, increase in fish density (or diversity) or other marine invertebrates' population increase in zones of subsurface infiltration. Studying a non-significant biological event is extremely difficult (i.e. expensive) and, therefore, it is not surprising that no agencies have funded a study of entrainment for intakes that draw water through several feet of natural sediment or artificial media. MCWD-IW-04

The appendix, next addresses the advantages of subsurface intakes compared with open ocean intake (See p. I1-3). This discussion is based on work done for a regional desalination project in Santa Cruz involving the adjacent Soquel Creek Water District and the City of Santa MCWD-IW-05

[1] Eric Quanmen, Facilities Systems Manager, Monterey Bay Aquarium, e-mail February 15, 2017.

[2] As per Wikipedia, "Pigging in the context of pipelines refers to the practice of using devices known as "pigs" to perform various maintenance operations. A "pig" in the pipeline industry is a tool that is sent down a pipeline and propelled by the pressure of the product flow in the pipeline itself."

[3] WateReuse Association, 2011. Desalination Plant Intakes: Impingement and Entrainment Impacts and Solutions. *WateReuse Association White Paper*.

[4] Similar to comments by Daniel P. Cartamil, Marine Biologist from Scripps Institution of Oceanography in his opinion piece "Evidence to Support an 'Eco-Friendly' Desalination Technology Lacking when comparing subsurface infiltration galleries with open-ocean intakes systems" that appeared in The Scientist (http://www.the-scientist.com/?articles.view/articleNo/47085/title/Opinion--Evidence-to-Support-an--Eco-Friendly--Desalination-Technology-Lacking/).

Cruz Water Department that advocated for a direct intake system.[5] While reference is not on point, we agree there are significant advantages of using *appropriate* subsurface intakes for seawater desalination.

First, the elimination of impingement and entrainment of marine organisms through subsurface intakes is a serious issue and provides many benefits. Not only from a regulatory perspective (Desalination Amendment to the Ocean Plan encourages indirect or subsurface intake technologies), but also from an operational perspective, removal of organic material prior to reverse osmosis membrane is beneficial to the desalination plant operation. The RO membranes are designed to separate water from salt in an aqueous solution. The reverse osmosis membranes are not designed to deal with fluctuating biological (organic) loads, which require additional pretreatment systems. Employing subsurface intakes, there is a substantial reduction in pretreatment equipment, smaller footprint, lower chemical usage (including costs for training of personnel and storage of chemical supplies), and reduced energy consumption – which all add up to real cost savings over the lifecycle of the plant.[6]

MCWD-IW-05 cont.

The second advantage listed in the appendix is that "*natural water filtration and pretreatment provided by ocean floor sediments, which in some cases can reduce the need for some treatment chemical during the desalination process.*" Again, we concur with this statement.

For example, data from Neodren systems[7] show that Neodren filtrate, the source water delivered through the under-the-sea intake conveyance, has reduced range or variation in temperature[8] that allow for more stable operations. The data also show the filtrate has reduced turbidity compared with ambient natural seawater conditions.[9] This is an important attribute because RO membrane manufactures require low turbidity waters for processing. Manufacturers

[5] Kennedy/Jenks Consultants. 2011. scwd2 Seawater Desalination Intake Technical Feasibility Study (ITFS). September 21.

[6] To illustrate this point, a proposal for a nearby open ocean desalination plant with approximately 12 MGD production includes an engineer's estimate of the amount of waste derived from the pretreatment process. The estimate of dry sludge is 27.6 tons per day requiring 20 dump trucks per week to haul waste offsite. Draft Process Design Report for the People's Moss Landing Water Desal Plant prepared by Watek Engineering, February 27, 2015. see http://thepeopleswater.com/Draft_Process_Design_Report_and_Cost_Information.pdf

[7] Neodren systems (discussed in more detail in section on Horizontal Wells below) are seawater intake subsystems in which filter pipes are installed in boreholes executed from the back of the beach by drilling subsoil and boring into geological formation offshore (see Figure 1 below)

[8] Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

[9] Typically, turbidity values for a Neodren system are much less than 2.0 NTU. Nephelometric Turbidity Unit (NTU) refer to EPA Method 180.1. Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

of the seawater reverse osmosis membranes recommend a silt density index (SDI[10]) of 5 or lower for seawater reverse osmosis membrane systems.[11] In our experience, when using the Neodren systems, particle concentrations are lower than ambient natural seawater conditions;[12] total suspended solids – a measure of the dry weight of particles trapped by a filter – are lower;[13] and total organic carbon, a measure of the amount of Carbon bound in organic compounds is reduced.[14,15]

The third benefit listed in the appendix is that "*minimal growth of marine organisms that occurs inside the intake pipeline*." Again, we agree this is an important consideration as biological fouling prevention is important for overall operational efficiency. The more biological material that is prevented from entering the desalination subsystem, the better the system will perform over a longer period before diminished yield, failure, repair or other faults.

And finally, we generally agree with the statement that if intake technologies are not appropriately sited, subsurface intakes can adversely affect coastal aquifers and increase the risk of saltwater intrusion in freshwater aquifers (see p. I1-4). We note, however, that the vertical and slant wells are far and away the most likely to impact *adversely* affect coastal aquifers and *increase* the risk of saltwater intrusion in freshwater aquifers as explained more fully below.

MCWD-IW-05 cont.

1. Comments on Vertical Wells conclusions (I1-4 through I1-5):

While the DEIR/EIS's overall description of vertical wells as applied to the MPWSP appear to be generally accurate, its conclusion that they are not a potentially feasible alternative intake source for the MPWSP lacks any supporting factual information. Vertical wells have been in use for a long time, have a good track record, and are used in seawater desalination internationally. The celebrated case is in Malta where the Pembrooke desalination plant has a capacity of 9.5 MGD from a field of vertical wells in a sandstone formation is of similar size the proposed MPWSP. Notably, for smaller systems on the order of 5 MGD, there is documented life cycle costs saving approaching 17% when vertical wells at the beach are installed.[16] As the appendix notes, the primary limitation for vertical wells is logistics of dealing with multiple well heads spread out over some expanse. We also agree it is preferable to locate beach wells as close to the coastline as possible to minimize impacts on inland aquifers, because the influence over groundwater supplies inland of the sea are a concern as noted. That said, vertical wells can be

MCWD-IW-06

[10]Silt Density Index – a measure of fouling capacity of RO membranes systems – is greatly reduced to less than 5.0 (SDI_{15}) SDI_{15} is notation used for ASTM Standard D4189 Standard Test Method for Silt Density Index (SDI) of Water at 15-minute interval.

[11] Membrane Manufacturers will not guarantee their products if SDI is above 5.

[12] Peters, T., Schuster, O., von Harten, B., Ulbricht, M. Schmidt, E. Pintó, D. and Pintó, E. (2008) Comparison of options for seawater pre-treatment for SWRO plants. 10th World Filtration Congress, proceedings volume II, Leipzig/Germany, April 14-18, 2008

[13] Peters, T. (2009) personal communication (email), 1/17/2009

[14] Münk, F. (2008) Ecological and economic analysis of seawater desalination plants. Diploma Thesis, University of Karlsruhe, Institute for Hydromechanics, Karlsruhe

[15] Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

[16] Schwarcz, J. (2000) Beach wells intake for small seawater reverse osmosis plants, Middle East Desalination Research Center Project 7-BS-015.

located outside of or inland of environmentally sensitive habitat areas. They can also be sited in areas where studies show the greatest amount of seawater has intruded (or areas indicating a preferential seawater inflow) to reduce groundwater impacts. Neither the appendix nor the DEIR/EIS provides any information regarding these possibilities. MCWD-IW-06 cont.

We further note that expansion of the current Sand City desalination system or similar system may meet the water requirements of the MPWSP with a smaller overall ecological and environmental impact. Therefore, we would recommend DEIR/EIS address the capacity for expanding the existing Sand City Desalination facility. If this is not feasible, we would recommend the DEIR/EIS examine the use of pre-engineered, so called "packaged" desalination systems which could result in avoiding or substantially lessening the proposed project's significant impacts. Smaller desalinations systems (even if two are required) can be accomplished with significantly less environmental impacts and can be more economical because package solutions are available for desalination plants that are up to 5 MGD. To illustrate, IDE Technologies Ltd. has a modular RO which can be bought, leased or contracted for water purchase (see http://www.ide-tech.com/solutions/ide-progreen/). Modular systems also reduce site work, come pre-assembled, and reduce installation time. In the case of the IDE Technologies system, no chemicals are required as the systems uses the brine concentrate to purge the membranes. The system also has a relatively low electrical consumption (10 – 12 kWhr/1000 gal), and consequently lower OPEX. Several other firms that have similar offerings. (See Exhibit 1 - Summary of City of Santa Barbara Desalination Plant Reactivation Project choice of a modular approach in 2016). We also note that packaged or modular systems reduce consulting engineers custom design work, foster concurrent civil site work and fabrication of SWRO modules, allow consistency between multiple desalination sites, similar parts, similar training and can be controlled remotely and thus reduce operational costs. MCWD-IW-07

In summary, using a package system with vertical wells may provide sufficient supplies to meet CalAm's water demand in conjunction with the Pure Water Monterey Groundwater Replenishment (GWR) Project noted in the DEIR/EIS. Obviously with the implementation of the GWR Project, the number of vertical wells required for feed water supplies would be substantially lower than the 24 estimated in Apppendix I1. (see p. I1-4.) This reduction could address the unspecified economic, legal (permitting) and environmental factors noted in the Appendix. However, without any information regarding these factors, we cannot assess this conclusion is accurate. We only note that given the *potential* reductions in environmental impacts and costs, we were surprised the DEIR/EIS did not evaluate vertical wells in its alternatives analysis.

2. Comments on Infiltration Galleries conclusions (I1-5):

The DEIR/EIS's limited and conclusory discussion of infiltration galleries as applied to the MPWSP seems wholly inadequate. The DEIR/EIS dismisses this alternative intake option stating because of the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and sensitive marine habitat, it is considered infeasible based upon environmental, social and legal factors. Again, no analysis or information is provided regarding the environmental, social and legal factors that would make this infiltration galleries infeasible. MCWD-IW-08

We note that beach infiltrations galleries were examined in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach".[17] Their conclusion that infiltration galleries located closer to the beach were potentially a feasible options for subsurface intakes for the proposed Poseidon Water Desalination Facility, which proposes producing 50 Million Gallons per Day (MGD) of potable water, five times as much as the current project. The CCC's Report notes that:

> ***A key aspect of a beach gallery system is that it underlies the surf zone of the beach, fully or in part. This means that the active infiltration face of the filter is continuously cleaned by the mechanical energy of the breaking waves and is therefore self-cleaning*** (Maliva and Missimer, 2010). ***Also, the location within the intertidal zone allows the gallery to be continuously recharged with no impact on the inland shallow aquifer system. The vertical flow of water from the sea assures that the inorganic chemistry is not significantly altered over time***… The gallery system is unaffected by variations in the deeper groundwater, which could be fresh or brackish in nature at the shoreline. The uppermost natural sand layer is the primary treatment zone within the filter and will likely allow the removal of all algae and a high percentage of bacteria and naturally occurring organic compounds (e.g., natural organic matter). The long-term data collected at the seabed gallery in Japan shows that the SDI was reduced below two, which is at the approximate level produced by conventional SWRO pretreatment systems (Shimokawa, 2012).
>
> ***The beach gallery would reduce or eliminate the impingement and entrainment of marine fauna. Also, upon completion of construction, the gallery would be located below the surface and could not be observed by beach users.***

(Id. at p. 40.)

MCWD-IW-08 cont.

The DEIR/EIS does not address why the same would not hold true for the MPWSP. Notably, the DEIR/EIS's apparent conclusion that infiltration galleries result in permanent disturbance to habitat does not appear to be consistent with the CCC's report. (*Ibid.*; see also *id.*, Figure 3.6 on p. 41.) Moreover, the DEIR/EIS, does not address whether an infiltration gallery could be designed in such a way that would not require the massive excavation and artificial prescribed fill used in the existing infiltration case in Fukuora, Japan cited in the CCC Report. Unlike the Fukuora location (on the semi-protected coast of the Sea of Genkai),[18] it may be possible to lay out sections of filter pipe on the sandy seabed and allow natural forces to bury the system over time. The sandy bottom biological community in Monterey is adapted to moving sands and may not be significantly impacted. Regardless, without any discussion or information

[17] http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.
[18] The infiltration gallery in Fukuora, Japan has a capacity of 27.2 MGD operating since 2005 (Missimer et al 2013).

regarding the potential impacts at the CEMEX site (or elsewhere) it is impossible to comment further on this issue.

Importantly, beach infiltration gallery would not adversely impact the coastal aquifers as they do not pump groundwater. Therefore, because infiltration galleries are at least potentially feasible and could eliminate some of project's significant impacts, the DEIR/EIS's failure to address the potential options for infiltration galleries or its environmental impacts is not supported by the any available information.

MCWD-IW-08 cont.

3. Comments on Horizontal Wells conclusions (I1-5)

The DEIR/EIS's limited discussion of horizontal (or HDD) wells as applied to the MPWSP wholly inadequate. The Appendix states that it describes each subsurface intake type to include "*typical suitable locations, examples of existing technology, general construction methodology, operation and maintenance, and capabilities and limitations*" (page I1-4). Given our particular expertise as it relates to Horizontal Wells, we were shocked that DEIR/EIS—in less than 200 words---dismissed this technology in an Appendix without citation to a single reference material. (See Appendix I1 Open-Water and Subsurface Intakes, p. I1-5.) Importantly, the DEIR/EIS dismisses the feasibility of horizontal wells without adequately describing the technology, its advantages over the project's proposed slant wells intakes and its appropriateness for the Monterey Bay coastal environment as the Appendix suggests.[19] Therefore, we provide the following information for your background regarding Horizontal Wells using the Neodren subsurface intake systems.[20] While our comments address Horizontal Wells using Neodren subsurface intake systems, please note there are other Horizontal Well technologies that could also be employed and could be investigated by the CPUC or Sanctuary. Following this background, we explain why none of the reasons listed for rejecting Horizontal Wells are accurate.

MCWD-IW-09

a) Background on Horizontal Wells Not Included In the DEIR/EIS

Directional boring also known as Horizontal Directional Drilling (HDD) is "a steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area."[21] A key aspect is the shallow arc as shown in Figure 2 below.

Horizontal Wells have been installed using directional boring techniques at multiple locations internationally. While there is currently no installation in California, this is not

[19] We note that in the past couple of years with the flurry of activities involving subsurface intakes and the interest in HDD, no one from the CPUC or MBNMS has contacted Catalana de Perforacions (developers of Neodren subsurface seawater intake systems) for information regarding its feasibility for the MPWSP. We find this remarkable because the technology has been discussed at various desalination conferences (including in California) on panels with Geoscience (the developers of the Slant Well technology for the MPWSP). A copy of Neodren Subsurface Intake Technology presentation at recent California Conference is attached as Exhibit 2.

[20] Attached as Exhibit 3 is a bibliography on Neodren.

[21] https://en.wikipedia.org/wiki/Directional_boring

surprising because most seawater desalination is performed outside the United States. In fact, there are only a handful operational seawater desalination plants in California, and even fewer operational seawater desalination plants in California that use subsurface intakes.

The technology of HDD, however, is well known in California having been conceived to cross rivers by Martin Cherrington in the early 1970s. When excavating or trenching is not practical, HDD is commonly used in a wide variety of environments including crossing under

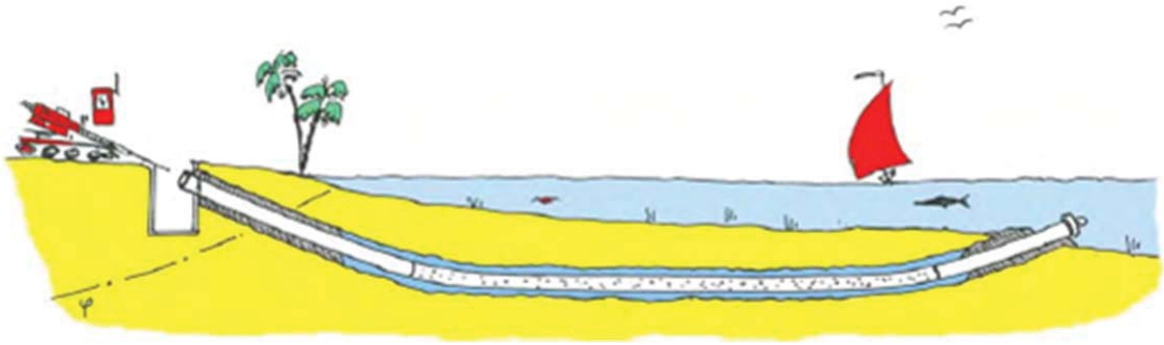


Figure 1. Cross section of stylized Neodren installation.

MCWD-IW-09 cont.

waterways, roadways, congested areas, sensitive environmental areas and areas where other methods are more destructive or expensive.

The technology of HDD, however, is well known in California having been conceived to cross rivers by Martin Cherrington in the early 1970s. When excavating or trenching is not practical, HDD is commonly used in a wide variety of environments including crossing under waterways, roadways, congested areas, sensitive environmental areas and areas where other methods are more destructive or expensive.

The constellation or spatial pattern of lateral wells is dependent on the site and its hydrogeological properties. Note that in the existing operating intakes joined to seawater desalination plants, none of them are in 3 or 4 well clusters as advertised in the DEIR/EIS (page I1-5).

Typical Suitable Locations

In the case of Neodren subsurface seawater intake systems, coastal sites with appropriate offshore geological formation for transmission of water through the upper 15 to 30 ft of the seafloor are ideal.

Examples of Existing Technology

Neodren systems have been installed at various sites in Spain (Table 1). The Neodren drains are engineered to ensure the correct scheduling per pipe specification, pipe path positioning and punch out location. Using basic installation techniques, HDD allows multiple

curves in plan and section, striving to avoid submerged structures and geological stratums with no productive yield. Drain filter pipes are installed in the excavated borehole, ensuring a long-term intake, and ensuring stability of the borehole. In total, 36 lateral drains comprising over 5 miles of pipe drawing in 63.4 MGD are operating at seawater desalination plants.

Table 1. Neodren Installations in Spain.

Year	Location and description	m^3/day	l/s/m	Status
1996	Fish farm, Sant Pere Pescador (Gerona)	4,320	0.22	Operating
2001	Fish farm, Sant Pere Pescador (addition)	8,640	0.26	Operating
2003	SWRO IDAM, San Pedro del Pinatar (MU)	172,800	0.44	Operating
2003	Fish farm, Cabo Cope (Murcia)	8,640	0.48	Operating
2004	SWRO, IDAM Águilas (Murcia)	41,472	0.48	Operating
2004	Cooling water, Albuixech (V)	47,952	2.92	Operating
2005	Investigation for SWRO IDAM en Barcelona	8,500	0.33	Dismantled
2005	Investigation for SWRO IDAM Alicante, phase 1	1,128	0.46	Operating
2006	IDAM Águilas (MU), Com. de Regantes	31,104	0.46	Operating
2007	Investigation SWRO, Tordera (Girona)	8,640	0.33	Dismantled
2008	Addition to desalination Plant, Alicante II	76,300	0.30	Operating
2008	Application CRAM (El Prat de Llobregat)	8,640	0.33	Operating

Note: Dismantled systems were customer's decisions after test and data collection.
Source: Catalana de Perforacions.

MCWD-IW-09 cont.

General Construction Methodology

The general construction methodology can be divided into the construction of the borehole and the insertion of the filter pipe. To establish an appropriately sized borehole, first a pilot hole is drilled with a guidance system to steer the drilling head along the desired route. A reamer is added to the drill string to expand the annulus of the borehole. Once the reaming is complete, the hole is swapped to insure passage of the filter pipe. General guidance on HDD is available[22,23,24] as well as industry standards.[25]

Float-and-Sink Method. For the insertion of the filter pipe, the preferred method is the float-and-sink method outlined in Chapter 10 Marine Installations of the Plastic Pipe Institute'

[22] Willoughby, David (2005). Horizontal Directional Drilling, p. 1-263. McGraw-Hill, New York. ISBN 0- 07-145473-X.
[23] Short, Jim (1993). Introduction to Directional and Horizontal Drilling, p. 1-222. PennWell Books, Tulsa, Oklahoma. ISBN 0-87814-395-5.
[24] HDD Consortium. (2008). Horizontal Directional Drilling–Good Practices Guidelines.
[25] ASTM International F1962, Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

Handbook of Polyethylene Pipe[26]. Conventionally, filter pipes are pulled into the borehole with the float-and-sink method. Obviously, care and attention are required to the details of the design to insure a safe and successful operation.

The 'Push' Technique. Alternatively, a newer process developed by The HDD Company, is similar as drilling a water well. By directionally boring from shore into and through the offshore aquifer, a steel casing can be put into the borehole to greatly aid insertion of the well screen and avoid release of drilling fluids into the marine environment. Once the casing has been installed, the well screen is inserted, then the casing pipe can be removed and lateral well can be completed. Multiple wells can be placed into the aquifer.

A significant benefit of this "push" approach is the virtual elimination of marine support operations, thus considerably reducing installation costs and most disturbances to the seafloor. This benefit is an important development in subsurface intakes especially along environmentally sensitive coast lines in California. Operating well back from the beach, under the sea intakes can operate effectively with low environmental impact on the marine environment, nearshore coastal environment and foreshore habitat.

MCWD-IW-09 cont.

Permits should not be any more difficult than a permit for a typical water well. No fisheries would be impacted. The procedure is virtually the same as vertical water wells with the exception that HDD can drill further and place more well screen (horizontally) into the aquifers.

Operation and Maintenance

The operation and maintenance requirement are minimal with the Neodren system. According to Jordi Camps Querol, Technical Director of Catalana de Perforacions, who has been involved since the beginning of Neodren development, Neodren "only needs to be able to have some backwash, in case of fine sands." [27] Some installations prefer occasional backwash of the subsea intake system at approximately twice the inflow rate. Discussions with Neodren consultant Dr. Thomas Peter indicated that most plants do not backwash. Neodren systems have been deployed since 1996, and that experience shows Neodren is a long-lasting and less expensive solution over the long term.

b) The DEIR/EIS reasons for not analyzing Horizontal Wells are unsupported and inaccurate.

The DEIR/EIS (at p I1-5) states: "*Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options); (2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3) HDD would not avoid or minimize any of the impacts associated with the proposed action.*" There is no evidence provided to support any of the conclusion. As explained below, all three conclusions are inaccurate.

MCWD-IW-10

[26] Available online at the Plastic Pipe Institutes web site. The Plastic Pipe Institute Handbook of Polyethylene Pipe, Chapter 10 Marine Installations

[27] Email from Jordi Camps Querol to A.T. Jones, February 20, 2017

First, the DEIR/EIS dismisses the capabilities of Horizontal wells, but does not adequately address the limitations of this technology. The DEIR states that *"wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options)"*

Construction Time. The construction time for developing horizontal directionally drilled drains or lateral wells would be considerable shorter than the proponent's preference for angle wells based on construction times along the Spanish Mediterranean Coast for Neodren system. The closest example is Alicante II where an additional eight (8) laterals were commissioned using one HDD drilling rig. The drilling schedule was not the critical path for completion of the project. Construction on this project took about four (4) months. The intake flow was 20.15 MGD.[28]

Multiple HDD maxi-rigs could be used to accelerate schedules, if that is a requirement. The HDD Company (Cameron Park, CA) through its affiliate, The Crossing Company, operate 27 HDD rigs in western North America. As it is likely, if not certain, that Horizontal Wells could be constructed in less time that proposed slant wells, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable.

MCWD-IW-10 cont.

Physical Limitations. The DEIR/EIS's conclusions regarding the physical limitations of HDD are based on either no information or outdated information. In fact, the physical limitations of HDD are much less than the slant well technology proposed for the MPWSP. For example, in terms of length, HDD can extend further than the 2,500-foot maximum mentioned in the description of Horizontal Wells (Appendix I1 p. I1-5). Table 2 below summarizes select recent activities that highlight lengths more than 2,500 feet specifically related to shore approaches or ocean outfalls.[29] As a result, HDD wells can be located significantly further inland than slant wells and avoid impacts to sensitive habitats and impacts associated with potential exposure from erosion.

Table 2. Selected HDD Projects with Shore Approaches or Ocean Outfalls.

Project Name	Location		Formation
FASTER Cable Project	Bandon, Oregon	Beach Approach: Pacific Ocean 5,000' of 5" Steel Pipe	Sandstone / Siltstone Rock
ZA1 - 230KV UG Line	San Francisco, California	(6)-Beach Approaches into S.F. Bay 12" & 3" HDPE Bundle	Rock and Bay Mud
Mayport Naval Base	Jacksonville, Florida	Beach Approach - 4000' of 5" steel	Sand/Silts

[28] See attached Appendix with site profiles and photographs during construction.
[29] 'Shore approaches' or 'ocean outfalls' are terms used in HDD to describe drilling out under the sea.

OOI RSN	Pacific City, Oregon	(2) Beach Approaches 5000' of 5" Steel Pipe (ea.)	Sands/Silts/Clays
Hueneme Outfall Replacement	Port Hueneme, California	2540' of 36" HDPE Ocean Outfall in the Pacific Ocean	Sand, Silts, Cobble and Boulders
Wastewater Treatment Plant Outfall		4600 feet of 18" Steel Outfall Columbia River. Installation of 80-foot diffuser, pig launching facility, 500 feet of Ductile	Silt, Sand and Gravel
Twin Rocks Sanitary District Ocean Outfall	Twin Rocks, Oregon	4400' Beach Approach. 8" coated steel pipe.	Sand, Silt and Gravel
Effluent Disposal System.	Port Orford, OR	2200' of 12" HDPE for an Ocean Outfall	Mudstone
NOSD HDD Outfall Replacement	Netarts, Oregon	4150' of 14" HDPE Ocean outfall	Mudstone and Basalt

Source: The HDD Company

Moreover, unlike slant wells, HDD wells can avoid unfavorable subsurface conditions. Notably, The HDD Company has installed pipelines and utilities for ocean outfalls, under rivers, ship channels, creeks, wetlands, buildings and highways. The company is noted for execution in difficult situations. Therefore, as there is no support for rejecting Horizontal Wells on this basis, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable.

MCWD-IW-10 cont.

Disposal of Drilling Sludge. Finally, the disposal of drilling sludge is not an issue for this site. There are options within Monterey County including Johnson Valley part of the Salinas Valley Solid Waste Authority. Importantly, the proposed Slant Wells would have the same issues relating to drilling sludge, if not further concerns related to chemical nature of their deeper geologic materials. Therefore, as there is no support for rejecting Horizontal Wells on this basis, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable.

Number of Wells and Expense. The DEIR/EIS Appendix states that approximately 10 to 12 horizontal wells would be needed to provide sufficient source water for the 9.6-mgd MPWSP Desalination Plant. We believe this estimate is potentially reasonable, but would need additional information that was not provided in the DEIR/EIS to confirm. While we believe the DEIR/EIS's suggestion that Horizontal Wells would be more expensive than other options is likely inaccurate, there is insufficient information provided to comment on this issue. Based on our knowledge of the costs of slant wells to date, we do not believe that drilling Horizontal Wells is likely to be more expensive. We also note that using Horizontal Wells would eliminate the need for return water and the proposed Castroville Pipeline, which ironically would be installed beneath the Salinas River and Tembladero Slough using HDD. (See DEIR/EIS, p. 4.6-142.) Therefore, we believe that Horizontal Wells could actually reduce the MPWSP's costs.

Finally, there are more operating Horizontal Wells conveying seawater to reverse osmosis plants in the world than Slant Wells drawing water from deep aquifers for desalination. In fact, we are unaware of any operating Slant Wells drawing water from deep aquifers for desalination. Given the observed reduction in efficiency over a short period at Dana Point Slant Well (discussed below), it is possible, if not likely, that less Horizontal Wells would be needed to supply the required feedwater than slant wells over the life of the project.

Second, the DEIR/EIS's statement that "*(2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis*" (Appendix I, page I1-5) is inaccurate.

Artificial Filter Packs. Starting in 1985 in the United States, artificial gravel-pack filters around horizontal well screens have been designed, constructed and operating per plan. One drilling and construction company, Layne, has installed tens of thousands of lineal feet of gravel-packed lateral well screens. Sites have been coastal and inland. Subsurface deposits at potential sites in and around the Monterey Bay area would fall within the range of depositional environments in which screens have been successfully installed.

Moreover, to date, artificial filter packs have not been required when utilizing the Spanish technology Neodren. The function of the artificial filter pack is to prevent unwanted sands and fines from entering the plant. The Neodren system accomplishes this goal by utilizing well screens with high porosity (35% to 45%) that match soil formation characteristics. The nature of the sintered high molecular weight polyethylene well screen allows uniform pore size distribution. A scanning electron micrograph of the material shows polymer structure with closely controlled pores allowing water movement towards the inner conduit (Figure 2).

MCWD-IW-10 cont.

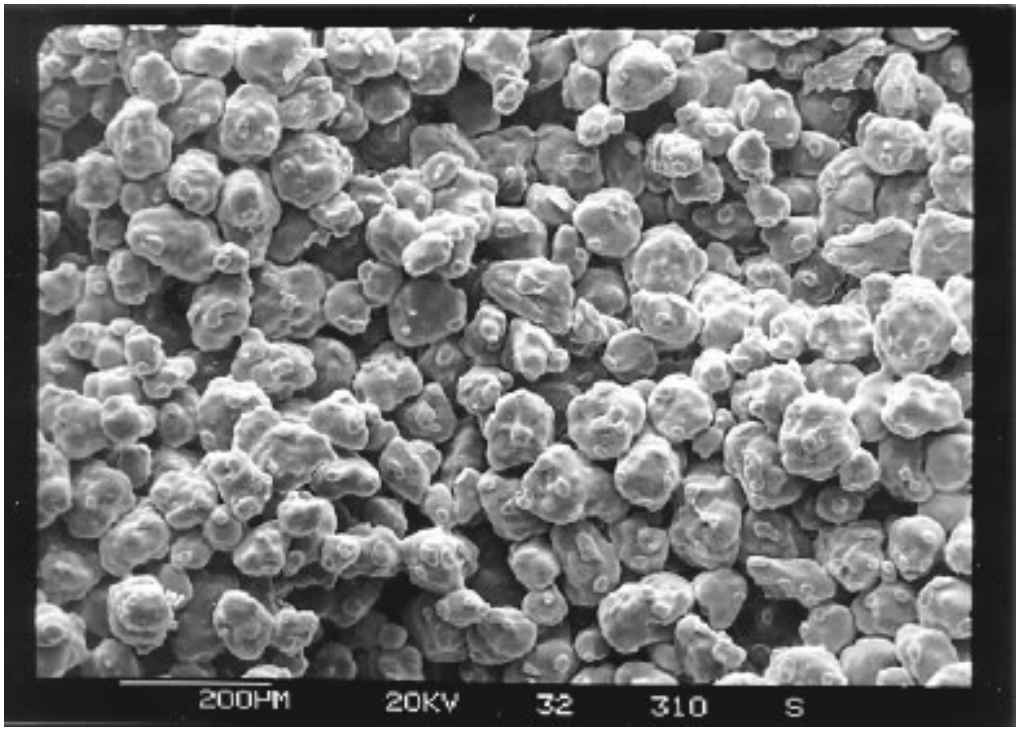


Figure 2. SEM Micrograph of sintered HDPE well screen

MCWD-IW-10 cont.

To illustrate this point, in the case of the current Intake Test Program comparing side by side screened open ocean intake with a subsurface intake, the San Diego County Water Authority selected a Neodren system which will have an average grain cut off size of 60 microns.

Finally, if filter packs are required, an offshore oil and gas product that uses an open-cell foam, which allows normal fluid production while controlling sand migration, could be used here.

Again, there is no support for rejecting Horizontal Wells on this basis. Therefore, the decision to exclude this alternative from analysis in the EIR/EIS is unsupportable.

Third, the DEIR/EIS's conclusion that "*HDD would not avoid or minimize any of the impacts associated with the proposed action"* is also based on unsupported conclusions and unsupportable for the reasons explained below.

MCWD-IW-11

Horizontal Wells Have the Potential to Avoid or Substantial Reduce the Projects Significant Environmental Impacts. At the CEMEX site, construction activities for the HDD intake could be located well further inland and outside any endangered species habitat avoiding impacts to endangered species along the coast. If HDD intake is designed to extract water from upper section of the marine sediment with direct conductance to the overlying seawater, then impacts to groundwater basin water levels would be circumvented and the groundwater quality would not be impacted. There would be no take from the Salinas Valley Groundwater Basin (SVGB), so there would be no need for the return water obligation. This method would reduce impacts associated with return water pipeline, reduce amount of water needed (thus less wells

and less disturbance). As noted above, the Castroville Return Water Pipeline, would be installed beneath the Salinas River and Tembladero Slough using the same HDD drilling technology as Horizontal Wells to avoid impacts.

At the Potrero site, drawdown impacts on groundwater basin could be avoided, if properly designed and installed HDD intakes to take advantage of the transmission of seawater in the upper 15 to 25 feet of sea bottom sediments, therefore, eliminate impacts to Elkhorn Slough. If seawater is drawn into a HDD intake in the upper most section of the seafloor, the groundwater from SVGB would not be impacted and thus there would be no obligation to convey desalinated product water to the interior, which would reduce all impacts associated with return water pipeline.

MCWD-IW-11 cont.

By drawing seawater from the uppermost strata and eliminating the need for returning water to the SVGB as proposed, HDD intakes would avoid the impacts associated with the return water pipeline and reduce the amount of supply water necessary for the MPWSP thereby also reducing energy needs and impacts on GHG.

We would also note that Horizontal Wells could potentially be located at numerous other locations along the Monterey Coast Shoreline, including locations closer to CalAm's service area.

4. Comments on Ranney Wells

The DEIR/EIS's decision that Ranney Wells would have similar impacts to the MPWSP's proposed slant wells and, therefore, need not be evaluated further is based on the limited discussion in Appendix I1 and conclusory allegations in the DEIR/EIS. (DEIR/EIS, p. 5.3-18.) The discussion of Ranney Wells in Appendix I1, like the DEIR/EIS's conclusions is not supported by any meaningful analysis and appears to be inaccurate.

To illustrate Ranney Collector Wells functioning in the marine environment, the DEIR/EIS (at p. I1-6) cites the California Academy of Sciences in San Francisco as an example. Unfortunately, the Ranney Well that served the Steinhart Aquarium in Cal Academy has been shut down since July 2010.[30] Ranney seawater collector wells in Mexico, however, have been operating since 2000. The site was revisited by the Project Manager about ten (10) years after commissioning and showed no signs of "discernible degradation of the well screens." [31]

MCWD-IW-12

The DEIR/EIS's description of the approach in this analysis related to requiring a shaft 90 to 260 feet deep seems ridiculous if they are attempting to tap into the shallow marine aquifer. As proposed it is an extension of a vertical shaft with lateral jacked radial arms serving to extract groundwater from the deeper aquifers. This error, could be the reason the DEIR/EIS concludes the Ranney Wells would have similar groundwater impacts. If the Ranney Wells were properly designed to tap the shallow marine aquifer, this alternative would likely significantly reduce groundwater impacts.

[30] Ed Miller, Senior Aquarist (retired), Steinhart Aquarium, personal correspondence with Arnell Bautista, Chief Engineer, Steinhart Aquarium, February 10, 2017.
[31] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.

The DEIR/EIS's statement about distance between Ranney Wells of 350 to 500 feet should be clarified to indicate that the objective of spacing Ranney Wells is to minimize hydraulic interference and is dependent on the well yields and aquifer characteristics.

The DEIR/EIS's statement that the construction area for a Ranney Well set up is larger than a Geoscience Slant Well construction site is suspect. If photographs during the construction phase of the Geoscience Dana Point Test Slant Well are indicative, then a Ranney Well could occupy the same footprint according to experts in Ranney Collector Wells operations.[32] As with other subsurface systems, the infrastructure including electrical panels can be below grade, if there is an aesthetic concern.

The construction process for Ranney Wells does not include dewatering as described in the Appendix I1. An upcoming Ranney Collector Well site is ½ acre, half the size used in this analysis. The duration of construction could be as short as 4 months and extend over a year depending on limitation to seasonal construction.

Contrary to the statements on page I1-7 related to submersible pumps, most collector wells employ vertical turbine pumps, although submersible pumps have also been used. Collector Wells could be connected by piping in such a way that the wells drain by gravity into a common wet well with pumping station located outside any sensitive habitat. For the MPWSP, vertical turbine pumps work satisfactory.

MCWD-IW-12 cont.

Regarding the DEIR/EIS's suggestion on the limitation on the lateral lengths, if they have any experts advising them, they should be aware that laterals are routinely installed to 150 to 300 feet using conventional Ranney technology, but that longer horizontal wells screens are available using modified methods. One project had lengths out to 800 ft. Thus, the statement that Ranney Collectors for water supply are limited to 150 feet is unsubstantiated and outdated. Typical projects are 150 to 200 feet or more in lateral extent.[33]

The DEIR/EIS's statement related to equivalency of Slant Wells occupying the same physical area is also unlikely. There would be, depending on the number of collector wells needed, likely fewer Ranney Wells than Slant Wells, which would reduce the Ranney Well footprint.

In summary, the DEIR/EIS will need evaluate the Ranney Wells as they are both feasible and would at least potentially reduce the project's significant impacts at the CEMEX site.

We also note, that one could envision Ranney Collectors at two or three sites along the Carmel Beach providing adequate feedwater for the smaller desalting option of 6.4 MGD. The relatively larger sand size at this site would be ideal for transmission of seawater from the shallower marine aquifer. This intake site could avoid issues of endangered species and is closer to where the water is to be delivered, thus is could drastically cut cost of conveyance of product water. Carmel Beach is a 2-km long continuous beach, part of the Carmel River littoral cell which delivers sand and sediment in a principally southward direction. According to the USGS,

MCWD-IW-13

[32] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.
[33] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.

the Carmel Beach has had a long-term accretionary trend from 1896 to 2002.[34] However, along the southern segment of the beach, the shorter-term influences (1952 to 2002) have been erosionary at a rate of 1.7 m/yr.[35] Finally, we note that with uncertainty in Pacific Ocean climate, having flexibility among several intake systems to draw feed water, is something the DEIR/EIS should consider.

MCWD-IW-13 cont.

5. Comments on Slant Wells

The DEIR/EIS's discussion of slant wells ignores the fact that slant wells are experimental unproven technology, with no track record in terms of long term operations. As noted above, we find this particular problematic given the DEIR's rejection of Horizontal Wells on this basis. Notably, an independent scientific technical advisory panel for an ocean desalination facility in Southern California convened as part of the California Coastal Commission proceedings addressed concerns about the engineering performance of a slant well in this manner[36]:

> Only one slant well has been successfully constructed to date, although a major installation to provide 20 MGD of feedwater capacity is under consideration in the Monterey Bay area *[this project*]. The successfully completed well is at Dana Point. When it was built and tested in 2006, it was test pumped at 2000 gpm and displayed a well efficiency of 95%. Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012 (GeoScience 2012). Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.
>
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity

MCWD-IW-14

[34] Dartnell, P., Maier, K.L., Erdey, M.D., Dieter, B.E., Golden, N.E., Johnson, S.Y., Hartwell, S.R., Cochrane, G.R., Ritchie, A.C., Finlayson, D.P., Kvitek, R.G., Sliter, R.W., Greene, H.G., Davenport, C.W., Endris, C.A., and Krigsman, L.M. (P. Dartnell and S.A. Cochran, eds.), 2016, California State Waters Map Series—Monterey Canyon and Vicinity, California: U.S. Geological Survey Open-File Report 2016–1072, 48 p., 10 sheets, scale 1:24,000, http://dx.doi.org/10.3133/ofr20161072.

[35] Hapke, C.J., Reid, D., Richmond, B.B., Ruggiero, P., and List, J., 2006, National assessment of shoreline change part 3—Historical shoreline change and associated coastal land loss along sandy shorelines of the California coast: U.S. Geological Survey Open-File Report 2006–1219, 72 p., available at http://pubs.usgs.gov/of/2006/1219/.

[36] CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf

> Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. The advantage of having a subsea completion is largely lost in confined aquifers**.** The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

MCWD-IW-14 cont.

This report was available over two years prior to the release of the DEIR/EIS. Remarkably, the DEIR/EIS fails acknowledged or address the conclusions in the report. The DEIR/EIS's failure to disclose and discuss the reduced efficiency of the Dana Point Slant Well testing is particularly noteworthy because one of the representative on the Hydrogeology Working Group authored the report on the Slant Well's decline.[37]

The DEIR/EIS's failure to disclose and address the findings in both reports must be acknowledged and addressed in the DEIR/EIS as it bears on the project's potential environmental impacts. Specifically, the DEIR/EIS must evaluate the how many slant wells will likely need to be replaced over the course of the foreseeable life of the project, and the impacts of replacing that number slant wells. Even under a best-case scenario, it is likely that all of the slant wells will need to be replaced at least once if not more. Notably, the selection of metallic components for the well screen and well, even if stainless steel, are not advisable in the highly corrosive seawater environment. The use of sacrificial zinc anode to deter galvanic corrosion is putting a band aid on a pulsating wound. Corrosion will continue; requiring replacement of the Slant Wells. The DEIR/EIS must be revised to address these impacts and address the impacts of replacement slant wells.

[37] See GeoSciences's Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well, Doheny Beach, Dana Point, California, dated September 7, 2012, available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf

II. Comments on DEIR-EIS Project Description

Comments on *Pretreatment System* (3.2.2.1)

Without some understanding of the source water chemistry, it is difficult to comment on the pretreatment process outlined. Note that the decision on the pretreatment filtration (media versus pressure filtration) has not been decided, probably for the same reason that the water quality of source water is unknown.

The coagulation and flocculation processes outlined in the pretreatment subsystem may not be relevant to subsurface intake sourced feedwater. If subsurface intakes are properly installed, the dissolved organic matter generally seen in natural seawater is not a factor in RO operations. In discussions with the design-build consultants on the desalination facility, they did not have access to water quality of the feedwater, so a conservative approach of introducing the possibility of a coagulation and flocculation steps was acknowledged. MCWD-IW-15

Comments on *Reverse Osmosis System* (3.2.2.2)

The configuration of the SWRO process is conventional with a first stage, followed by a partial second stage to reduce boron concentration to level acceptable to the drinking water standards of California (1 mg/l B). Other developers in the Monterey County have proposed a similar RO design.[38] MCWD-IW-16

Comments on *Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges* (3.4.1)

The statement about periodic maintenance of slant wells, "*The slant wells would require maintenance every 5 years*." (3-57), seem highly optimistic given the state of development of the Slant Well technology. This information is unknown as there are no operating wells to derive maintenance records. When the casing is withdrawn, the slumping sand could enter the well screen. Additionally, after the first maintenance efforts, when the gravel/sand filter pack gets agitated, the introduction of sand into the well is likely. Attempts to mitigate this issue have been presented by GEOSCIENCE such as a half-moon cover of the well screen area to alleviate sand migration. MCWD-IW-17

Comments on *Power Demand* (3.4.5)

Most seawater desalination plants with capacity proposed in this project built in the last ten years incorporate energy recovery, whether isobaric or centrifugal, as means to lower energy consumption which can be a significant cost component of the operating budget. MCWD-IW-18

Qualifications of Intake Works LLC and Anthony T. Jones, Ph.D.

[38] Draft Process Design Report for the People's Moss Landing Water Desal Plant prepared by Watek Engineering, February 27, 2015. see http://thepeopleswater.com/Draft_Process_Design_Report_and_Cost_Information.pdf

Intake Works LLC is a group of oceanographers, marine geologists, marine ecologists, HDD drilling specialists and marine construction professionals engaged in developing under-the-sea intakes for delivering low-turbid ocean water for industrial processes such as desalination. The company has surveyed existing seawater desalination intakes internationally and visited intake facilities in Malta, Spain, Saudi Arabia, Mexico, US Virgin Islands, and the Bahamas, besides installations in Massachusetts, Florida and California. We have studied various types of seawater intake systems and been involved in developing a synthetic infiltration system for porting the correct filter media to a proposed site.[39] The company is currently comparing subsurface intake systems with a direct wedge-wire screen open intake system at Camp Pendleton for the San Diego County Water Authority. Additionally, we have projects in Baja California providing intake installation for an aquaculture development.

As it relates to HDD, we work closely with Catalana de Perforacions (Barcelona, Spain), the drilling company that developed the Neodren process of installing microporous filterpipe under the sea from shore with horizontal directional drilling. Intake Works is the licensed provider of this technology in California. A brochure from Catalana de Perforacions describing their project history with Neodren installations (Exhibit 3).

Anthony T. Jones, Ph.D is the primary author of these comments. Prior to joining Intake Works, Anthony T. Jones, Ph.D was the Chief Technology Officer for Campbell Applied Physics Inc. and its predecessor, Oases Global System, where he led a team that developed advanced seawater desalination systems incorporating technology transferred from the US Department of Energy national laboratories. The team he led demonstrated, at a $1/8^{th}$ scale, 30% lower energy consumption and up to 70% lower carbon footprint for seawater reverse osmosis potable water production. As it relates to this assignment, he served as a taxonomic expert and provided science support for U.S. Navy studies on marine biological fouling in San Diego Bay as part of a Congress-mandated study of an anti-fouling paint, tributyl tin. While participating in a study of sediment transport along shore and down submarine canyons for the US Army Corp of Engineers, he made more than 200 dives in the head of Scripps Canyon and La Jolla Canyon to observe firsthand the migration of sand down canyons. Additionally, his scientific diving training began at dive sites along the Monterey Peninsula. His first research cruise was off Monterey coring the deep-sea Monterey and Delgada fan on a US Geological Survey research vessel. Finally, he worked on a retrofit of Marina Coast Water District's seawater desalination in 2002.[40] A copy of his CV is attached as Exhibit 4.

[39] Jones, A. T. (2008). Can we reposition the preferred geological conditions necessary for an infiltration gallery? The development of a synthetic infiltration gallery. *Desalination*, *221*(1-3), 598-601.

[40] Campbell, R. L., Hanlon, J., Seamon, F., & Jones, A. T. (2003). Retrofit of a California coastal desalination plant: add technology, lower costs. In *OCEANS 2003. Proceedings* (Vol. 1, pp. 246-248). IEEE.

Conclusion

For the reasons outlined in the foregoing comments, we conclude the DEIR/EIS's conclusions regarding the Alternatives are unsupportable. To consider a reasonable range of alternatives, the DEIR/EIS must be revised to analyze, at minimum, the following potentially feasible alternatives, which would likely reduce the project's significant impacts:

(1) Horizontal Wells at CEMEX site

(2) Horizontal Wells at the Potrero site and/or other sites closer to CalAm's service area.

(3) Ranney wells at CEMEX and Potrero Road sites.

(4) Ranney wells at sites along Carmel Beach or other suitable locations closer to CalAm's service area.

MCWD-IW-19

As discussed above, each of these alternatives was dismissed based on misinformation about the design, installation, maintenance and cost savings in comparison to the unproven Slant Well technology proposed for the MPWSP. At minimum, the each of these alternatives is potentially feasible, would avoid or reduce the project's significant environmental impacts, and meet all (or most) the project objectives as well as the stated purpose and need statements declared in the EIR. Without a fuller analysis of these alternatives, the DEIR/EIS does not consider a reasonable range of alternatives, and lacks support for its conclusion regarding the environmentally superior alternative.

Sincerely,

Anthony T. Jones, Ph.D.
President

Attachments: Exhibit 1. City of Santa Barbara Desalination Reactivation Project information
Exhibit 2. Presentation on Neodren Subsurface Intake Technology
Exhibit 3. Brochure on Neodren Projects from Catalana de Perforacions
Exhibit 4. Curriculum Vitae Anthony T. Jones, Ph.D.

Marina Coast Water District (MCWD-HGC2)

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November 9, 2017

Eric Zigas, Environmental Science Associates (ESA)
550 Kearny Street, Suite 800
San Francisco, CA 94108

Mary Jo Borak, CPUC
c/o ESA

Karen Grimmer, Monterey Bay National Marine Sanctuary
c/o ESA

Re: Information to Consider in the Environmental Review of the Monterey Peninsula Water Supply Project (CPUC Proceeding A-12-04-019)

Dear Mr. Zigas, Ms. Borak, and Ms Grimmer:

On March 29, 2017, the Marina Coast Water District (MCWD) provided comments regarding Cal Am's Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement that was prepared for the California Public Utilities Commission and the Monterey Bay National Marine Sanctuary. Since that time, MCWD has performed additional studies of the Salinas Valley Groundwater Basin as part of the District's responsibilities as a Groundwater Sustainability Agency in both the DWR Bulletin 118 Monterey Subbasin and the 180/400 Subbasin. We are providing the reports from those studies for your consideration in the environmental review process for the proposed Monterey Peninsula Water Supply Project.

Enclosed is a June 16, 2017, preliminary report from Stanford University (Gottschalk and Knight), "Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District"; a September 29, 2017, memo report by Hopkins Groundwater Consultants, "Monterey Peninsula Water Supply Project Return Water"; and a memo report by EKI Environmental and Water, "Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord Marina Coast Water District, California". The final report from Stanford University on the Airborne Electromagnetic Survey (SkyTEM) is expected to be complete in early 2018 and we will provide that report as soon as it is available.

Very truly yours,

Keith Van Der Maaten, PE
General Manager

Enclosures

HOPKINS
GROUNDWATER
CONSULTANTS, INC.
THE WATER RESOURCE SPECIALISTS

MEMORANDUM

To: Mr. Keith Van Der Maaten
General Manager, Marina Coast Water District

From: Curtis J. Hopkins
Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc.

Date: September 29, 2017

Subject: Monterey Peninsula Water Supply Project Return Water

Introduction

Hopkins Groundwater Consultants, Inc. (HGC) provides this memorandum to update our January 22, 2016, report to Marina Coast Water District (MCWD) regarding the Monterey Peninsula Water Supply Project (MPWSP or the project) return water proposal that was submitted to the California Public Utilities Commission (CPUC) with Curtis Hopkins' direct testimony dated January 22, 2016, including estimates regarding "return water" volume. This memorandum supplements that analysis and provides our professional opinion on why providing return water to the Castroville area as proposed in the Return Water Settlement Agreement will not address or mitigate the adverse groundwater impacts caused by the project in the North Marina Area of the 180-400 Foot Aquifer Subbasin within the Salinas Valley Groundwater Basin (SVGB). As explained in our prior memorandum and expanded upon herein, providing return water north of the Salinas River may beneficially affect groundwater in those aquifers, but it will not mitigate the project's primary adverse impacts to the aquifers south of the Salinas River and its water users. This memorandum further addresses new evidence, including the recent airborne electromagnetic (AEM) data collection by a team from Stanford University led by Dr. Rosemary Knight and the preliminary report on the data, which supports our original analysis regarding the extensive groundwater resources in the shallow aquifers along the coastline around the CEMEX site that will be adversely impacted by the MPWSP. This new evidence also confirms the importance of preserving and protecting the groundwater resources in these coastal aquifers. As requested, HGC provides our professional opinion regarding California American Water Company's (Cal-Am's) revised estimates regarding the volume of "return water" that the proposed MPWSP will be obliged to return to the SVGB.

In preparing these comments, we have reviewed the relevant portions of: (1) the MPWSP Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) prepared for the CPUC, dated January 2017; (2) the DEIR/EIS appendices; (3) Direct Testimony of Ian Crooks, dated September 15, 2017; (4) Settlement Agreement on MPWSP Desalination Plant

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Return Water, filed on June 14, 2016 (Return Water Settlement); (5) the documents provided to HGC in response to MCWD's data and public records act requests that were made available before September 26, 2017; (6) publicly available information referenced at the end of our comments; and (7) Preliminary Interpretation of SkyTEM Data Acquired in the MCWD, Ian Gottschalk and Rosemary Knight, dated June 16, 2017 (SkyTem Data Report). We note that while the initial SkyTem data (or AEM data) supports our prior analysis, our discussion of the SkyTem Data Report will need to be updated once the report is finalized. As explained below, this regional survey and the AEM data of subsurface resistivity values greatly assists the understanding of the presence of freshwater and saltwater in the coastal aquifer system and the type and location of extraction facilities that might effectively target seawater production in a beneficial manner. The AEM data provide a valuable source of information and this type of survey should have been conducted as part of the Cal-Am MPWSP original siting study.

Preliminary Statement Regarding Updated Professional Opinion Regarding Proposed Return Water Settlement Agreement and Cal-Am's Estimates of the Amount of Return Water Needed to Meet Its Estimated Demand.

Cal-Am proposes to return to the SVGB the percentage of the raw water (or feedwater) pumped from the MPWSP intake wells that is determined to be groundwater as opposed to ocean water. Our January 22, 2016, report discussed several options that Cal-Am had proposed to meet its return water obligations because Cal-Am had not selected a return water method at that time. Our report explained why several options under consideration would not satisfy Cal-Am's return water obligations, but concluded that Cal-Am had not provided sufficient information to evaluate its proposed methods for returning groundwater. Subsequent to our report, Cal-Am entered into a proposed return water settlement agreement, which provides in relevant part:

> Pursuant to the terms of this Settlement Agreement, the Parties propose that Cal Am deliver Return Water to the Castroville Community Services District (CCSD) and to the CSIP ***to satisfy Return Water requirements that may arise out of the Agency Act, CEQA, or California groundwater law,*** in accordance with terms and conditions and general principles contained in this Settlement Agreement and separate Return Water Purchase Agreements between Cal Am as seller and CCSD and the Agency, respectively, as purchasers of Return Water.

(Settlement Agreement on MPWSP Desalination Plant Return Water, p. 4 [¶AA].) As explained below, available information indicates the proposed return water settlement agreement will not satisfy the MPWSP's return water requirements under the California Environmental

Quality Act (CEQA) or California groundwater law.[1] As we explained in our original report, it is critical that the return method selected ensure the protective groundwater levels in the Northern Marina Subarea [2] are maintained to prevent increased seawater intrusion and would erase the substantial conservation efforts that have restored this portion of the SVGB. This is corroborated by the recent SkyTem data and Report, which further demonstrates that the aquifers in the Northern Marina Subarea contain substantial groundwater capable of supporting beneficial uses and is not entirely seawater intruded as Cal-Am claims. As we explained in our original report, modeling that correlates actual data—rather than unproven assumptions—from the MPWSP test slant well project (TSW) and monitoring well data from the aquifers within the Northern Marina Subarea affected by the project must be performed to provide any reasonable scientific basis for estimating the MPWSP's return water obligation and the efficacy of the method selected. As explained below, updated modeling to date is inadequate to evaluate the MPWSP's direct and cumulative impacts on water levels in the Northern Marina Subarea aquifers and entirely fails to evaluate how the project or return water method will impact water quality in the Northern Marina Subarea aquifers affected by the project.

Finally, HGC provides its comments regarding Cal-Am's revised demand testimony that estimates the MPWSP source water return water obligation at 7%. (Ian Crooks Direct testimony, dated September 15, 2017, p. 14:25-26.) Our January 22, 2016, report addressed Cal-Am's estimated amount of return groundwater included in its overall demand estimates, which were based on Cal-Am's plant sizing technical memorandum, which assumed that 875 acre-feet per year (afy) of groundwater, representing approximately 3.2 percent of the project's feedwater, would need to be returned to the SVGB for a 9.0 million-gallon-per-day (mgd) desalination plant without the Pure Water Monterey Groundwater Replenishment (GWR) Project.[3] (RBF Consulting, Memorandum from Paul Findley to Richard Svindland, Recommended Capacity for

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[1] / This memorandum does not address the adequacy of the DEIR/EIS or whether the Cal-Am's preferred MPWSP alternative that proposes slant wells as the CEMEX site in Marina, CA complies with California water rights law, the Monterey County Water Resources Agency Act's ("Agency Act"), the Sustainable Groundwater Management Act, pumping limits imposed by Marina Coast's 1996 Annexation Agreement pertaining to the CEMEX property, or other legal requirements. We have attached our comments on the DEIR/EIS for reference as they provide further information and explain why the Settlement Agreement on MPWSP Desalination Plant Return Water is inadequate.

[2] / For purposes of the memorandum, the Northern Marina Subarea is defined as that portion of the 180/400 Foot Aquifer Subbasin located south of the Salinas River and north of the northern boundary of the adjoining Seaside Area Subbasin. The CEMEX property is located in the southwest corner of the Northern Marina Subarea. Six of MCWD's water supply wells are located along the northern boundary of the Seaside Area Subbasin.

[3] / HGC understands that Cal-Am's current proposal includes a 9.6 mgd desalination plant without the GWR Project or a 6.4 mgd desalination plant with the GWR Project.

the MPWSP Desalination Plant, dated January 7, 2013.) The technical memorandum further estimated that 550 afy of groundwater would need to be returned to the SVGB for a 5.4 mgd desalination plant with the GWR Project. Our report concluded that the TSW project monitoring data available at that time demonstrates that Cal-Am's 2014/15 modeling and its estimates regarding the percentage of groundwater that would be pumped by the MPWSP were not accurate and needed to be updated. We further explained that updated modeling using information developed from the TSW field investigations and available from other studies in the Marina Subarea must be used to refine the MPWSP modeling to accurately simulate aquifer conditions and evaluate alternative methods of returning the groundwater pumped by the MPWSP and to provide a reasonable estimate of the amount of return water that will be required for the project to operate.

There is no supporting documentation or explanation as to how Cal-Am estimated the 7% source water return water obligation used to estimate demand in Mr. Crooks testimony. As explained below and our comments on the DEIR/EIS, the updated modeling to date does not estimate or provide any information useful to estimating the amount of groundwater that will need to be returned to the SVGB. The modeling in the 2017 DEIR/EIS bracketed the return water percentage between 0% to 12%, but failed to calculate the amount of return water that would be necessary to replace the groundwater drawn from the SVGB. The DEIR/EIS did not provide any discussion or information to support bracketing the return water percentage between 0% to 12%. As explained below, it is likely that MPWSP's return water obligation would be more than 12%, especially in the initial years of operation. As explained in our original report, until updated modeling correlated with actual data—rather than unproven assumptions—from the MPWSP TSW and monitoring well data from the aquifers within the Northern Marina Subarea affected by the project, there can be no reasonable estimate to inform Cal-Am's demand numbers and the efficacy of the MPWSP.

North Marina Area Geology Differs from the Geology North of the Salinas River.

As discussed in our prior report, the geology in the North Marina Area differs from the geology north of the Salinas River in the main portion of the 180-400 Foot Aquifer Subbasin and has been described in detail by studies conducted for the MPWSP. As shown and as described by previous study (Geoscience, 2014 and 2015, KJC, 2004), the terrace deposits that comprise the 180-Foot Equivalent Aquifer (180-FTE) in the North Marina Area grade into the alluvial deposits that comprise the 180-Foot Aquifer in the main portion of the basin around the present location of the Salinas River. This is illustrated in Figure 1 – Cross-Section A-A', which provides an interpretation of subsurface deposits within this specific coastal area using a portion of a subsurface profile constructed by Geoscience Support Services, Inc. from borehole data collected in the area (Geoscience, 2014). The approximate location of Cross-Section A-A' is shown in Figure 2 – Groundwater Basin Boundary Map.

Figure 1 – Cross-Section A-A'

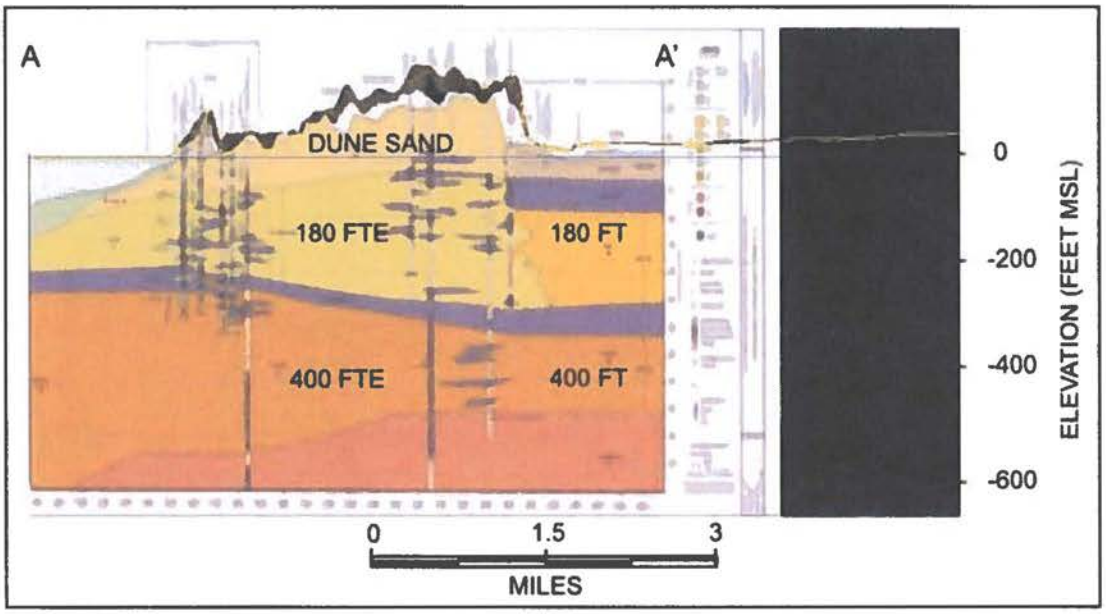
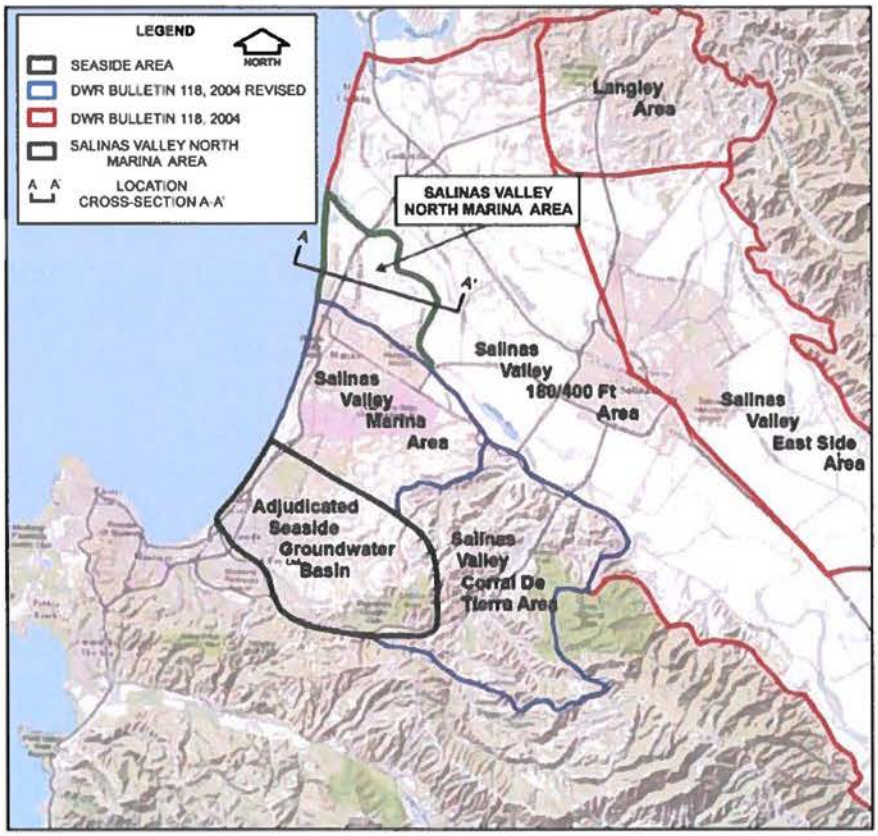


Figure 2 – Groundwater Basin Boundary Map



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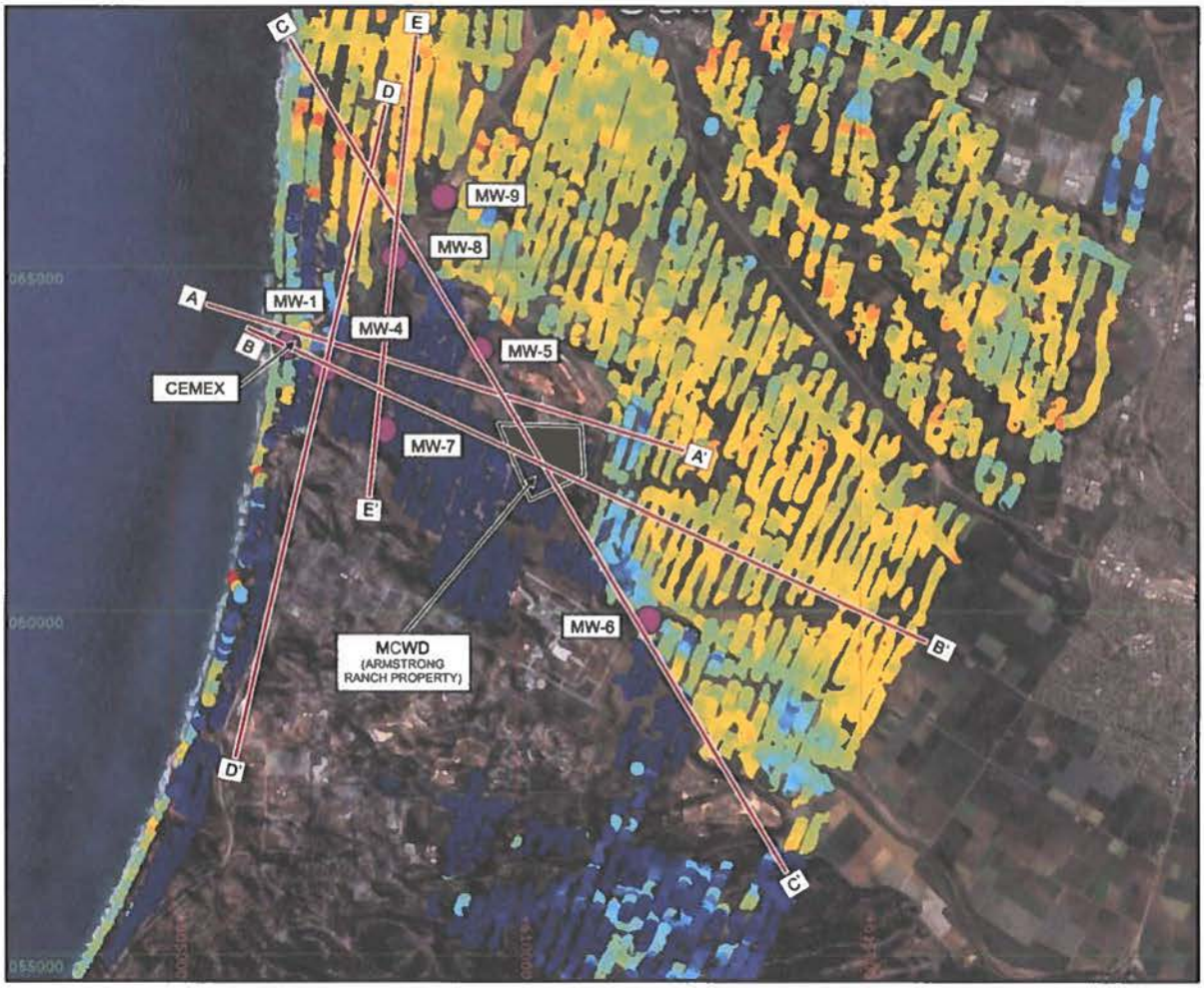
Investigation for the MPWSP includes the installation of a test slant well and multiple monitoring wells in and around the CEMEX property where the MPWSP intake wells are proposed to be located. The monitoring well network is being used to generate background water level and water quality data within the North Marina Area of the 180-400 Foot Aquifer Subbasin. The location of the monitoring facilities is shown on Figure 3 – Well Location, Geophysical Data Lines, and Resistivity Profile Map.[4]

Figure 3 – Well Location, Geophysical Data Lines, and Resistivity Profile Map



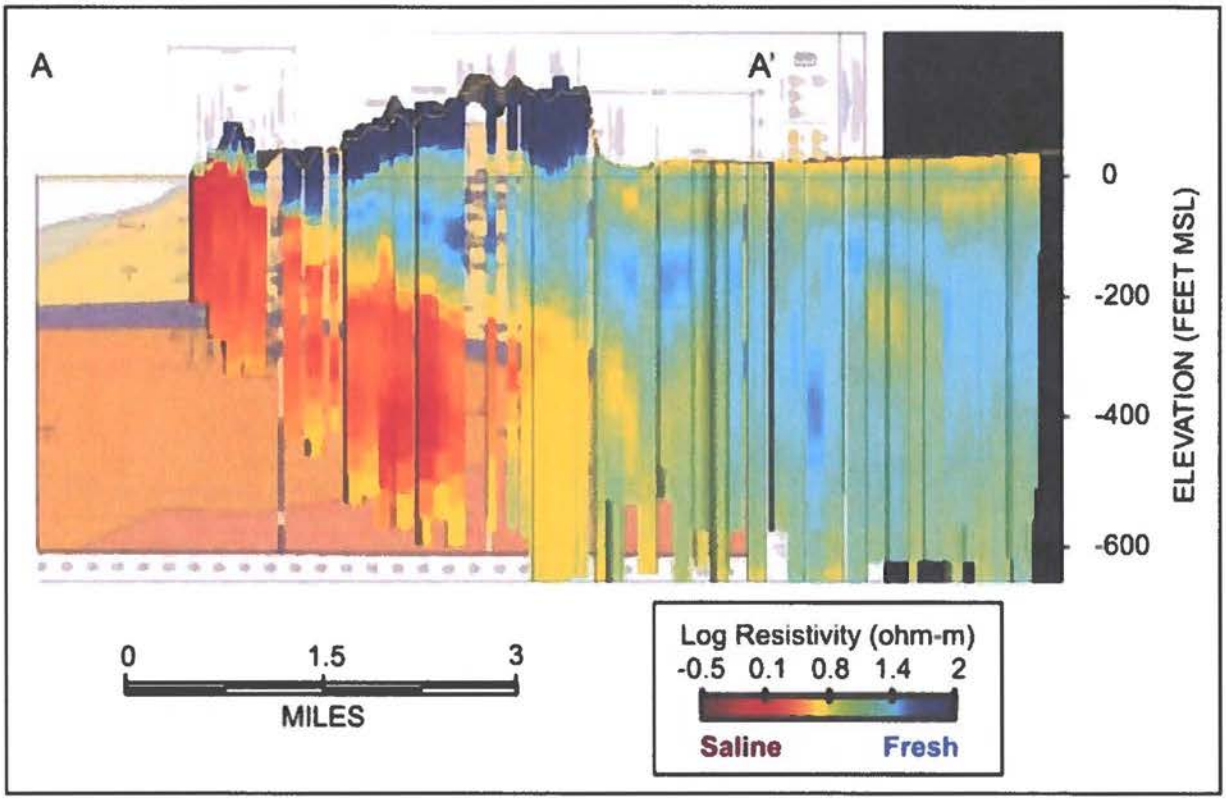
In addition to showing the approximate locations of the MPWSP monitoring wells, Figure 3 above, shows the substantial area of undeveloped land in and around the North Marina

[4] The pre-project studies indicate that MW-1S, MW-3S, MW-4S, and MW-7S likely are connected to the Dune Sand Aquifer zone recognized as the -2-Foot Aquifer that is identified beneath the County landfill site (Geoscience, 2016). The elevation and thickness of this zone indicates it likely has a hydraulic connectivity to the A-Aquifer zone in the main portion of the SVGB located north of the river.

Subarea that the AEM survey was able to target and obtain resistivity data. Each dot represents a location that resistivity data was collected. The color of the dots signifies the uppermost resistivity value at the measurement location where the electrical readings were collected. Figure 3 also shows the location of the hydrogeologic cross-sections/resistivity profiles provided in Figures 4, 6, 8, 17 and 18 below. Each cross-section/profile shows the resistivity by depth along the line shown in Figure 3. The resistivity profiles are presented in subsequent figures to illustrate the study findings at specific locations within the study area. Additional resistivity profiles are included in Attachment A – Regional Resistivity Profiles to further illustrate the changes in groundwater conditions across the entire study area. As explained in the SkyTem Data Report by Dr. Knight, those areas that are blue and green are more resistive where the groundwater is fresher and likely supports beneficial uses. Areas that are yellow, orange, or reddish are less resistive and likely contain more brackish groundwater. Nonetheless, these less resistive areas may still contain groundwater that supports beneficial uses. Additional information is needed to confirm the beneficial users that may be supported in these areas as explained by Dr. Knight in her preliminary report.

An overlay of these AEM survey data on the hydrogeologic cross-section from Figure 1 is provided in Figure 4 – Cross-Section A-A' with AEM Data, which starts along the coastline at the CEMEX site and runs directly inland several miles.

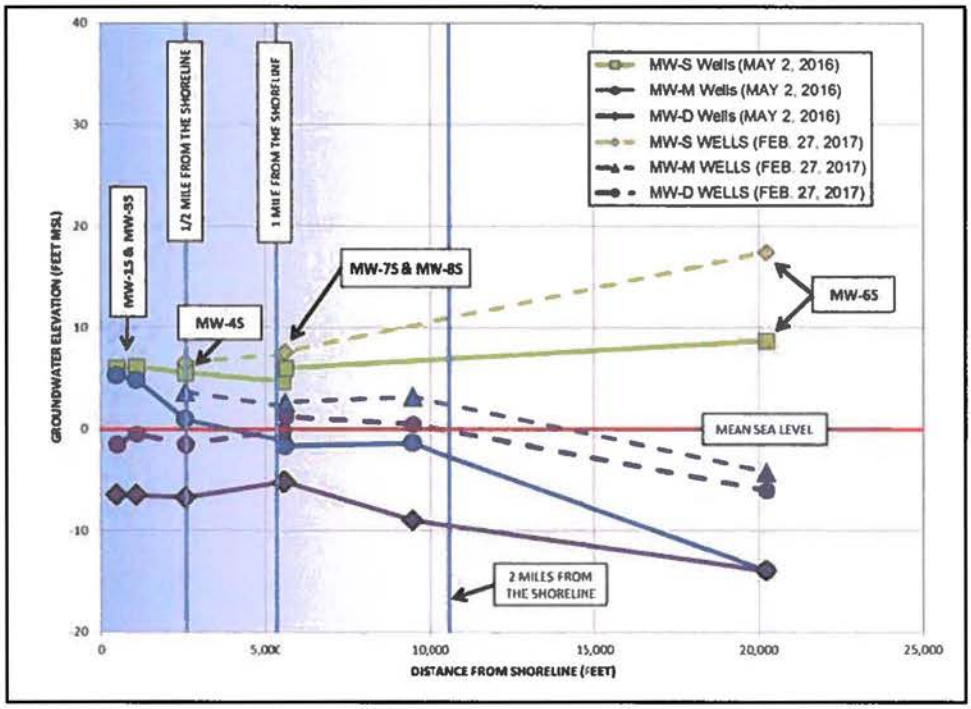
Figure 4 – Cross-Section A-A' with AEM Data



These data from this cross-section indicate a substantial amount of fresh water inland of the coastline and within the Dune Sand and 180-FTE Aquifer zones of the North Marina Subarea. These data further substantiate the opinions we provided in our original report that we noted were based on relatively sparse monitoring well water quality data that indicated this freshwater presence.

Also discussed below, recent data obtained regarding the gradient beneath the landfill (near MW-5) shows recharge from the river that creates a groundwater gradient toward the coastline. Importantly, this is consistent with the elevated heads in MW-6S where it also receives recharge from the river. Figure 5 – Water Level Elevation and Shoreline Proximity compares available data that were collected just prior to restarting the long term pumping test on May 2, 2016, and the high water level conditions observed on February 27, 2017. [5] This diagram shows the wells that are constructed in the Dune Sand Aquifer zone that is equivalent to the -2-Foot Aquifer zone along with MW-6S, which is in the A Aquifer zone (Geoscience, 2016). As shown by these data, there is a groundwater gradient that moves water from the river area of recharge toward the coastline in the Marina Subarea of the SVGB.

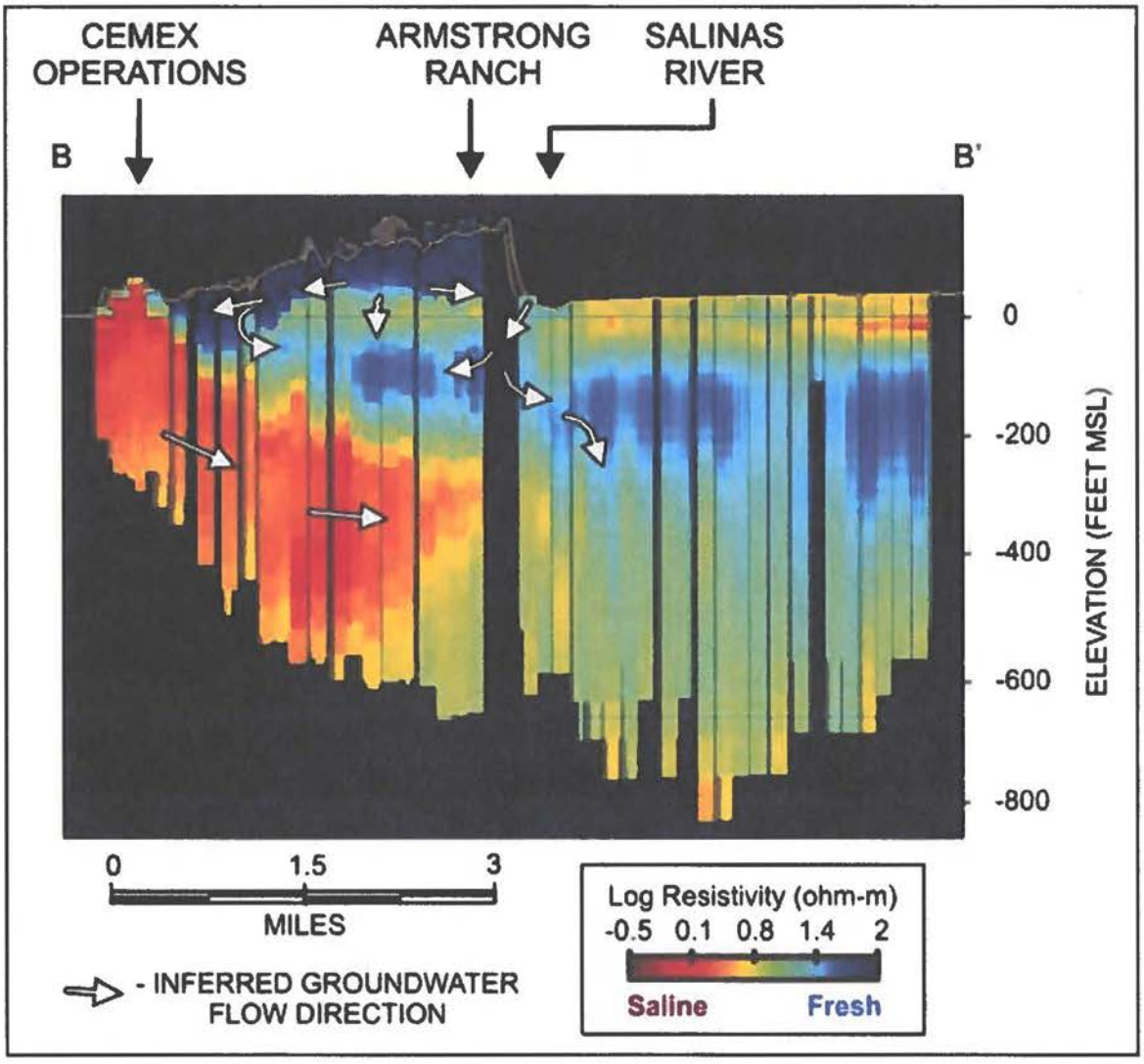
Figure 5 – Water Level Elevation and Shoreline Proximity



[5] Monitoring Well MW-5S data with water levels in excess of 35 feet amsl were not included in Figure 5 because it is now recognized to be screened in a semi-perched dune sand layer on top of the aquitard layer identified as the Fort Ord Salinas Valley Aquitard (FO-SVA). The FO-SVA layer overlies the -2-Foot Aquifer/Dune Sand Aquifer, which is reportedly 30 to 40 feet thick and rests on the Salinas Valley Aquitard near the river in the Marina Subarea northeast of the project site (Geoscience, 2016).

The significance of this condition south of the Salinas River is illustrated by Figure 6 – Resistivity Profile B-B' Groundwater Flow Direction which shows the inferred groundwater flow directions that could create this large area of freshwater. The survey reveals that along the shoreline, seawater is present in varying amounts in almost all aquifer zones but is neither ubiquitous nor present in all aquifer zones away from the coastline in the North Marina Area. These data demonstrate that there is a substantial freshwater resource in the Marina Subarea and that our inference in our original report that were based on the sparse water quality data made available from the project was not a selective manipulation of data or "cherry picking" as Cal-Am has claimed. These data indicate conditions within the aquifer within the North Marina Area are not well understood, but likely have significant effects on the actual occurrence and movement of groundwater.

Figure 6 – Resistivity Profile B-B' Groundwater Flow Direction



The dune sand area south of the river is readily recharged by rain water and storm water detention basins in the developed MCWD area south of the project which recharges the underlying 180-FTE aquifer. The Salinas River appears to provide a substantial source of fresh water recharge around the North Marina Subarea which decreases the effects of the pumping stress from the main portion of the 180/400 Foot Basin located north of the river.

While these freshwater recharge mechanisms in the North Marina Area have not be thoroughly investigated to date, the AEM data indicate they provide a key source of protection to the aquifers in the groundwater basin located inland of the Marina Subarea. The magnitude of pumping proposed by the project will disrupt the natural balance that has controlled seawater intrusion to its present location. It is clear that the modelling preformed for the MPWSP to date does not predict its presence, the protective head it provides, or the impedance to seawater intrusion it provides. In fact, the MPWSP modelling indicates a much faster rate of seawater intrusion than presently indicated by these data. Figure 7 – Particle Tracking 180-FTE Aquifer – shows the simulated movement of groundwater in the 180-FTE Aquifer under assumed historical conditions.

Figure 7 – Particle Tracking 180-FTE Aquifer

Because of the lack of data within the North Marina Subbasin coastal area included in the MPWSP modelling to date, the inferred model conditions simulate movement of seawater in the 180-FTE Aquifer zone(s) from the coastline to MW-5 within 14 to 15 years. Overdraft conditions in the 180-400 Foot Aquifer Subbasin have persisted for decades, if this assumption had been accurate. Both the AEM data and the test well monitoring results show this is not the case. Notably, the rate of movement simulated in the MPWSP modelling would have driven the saltwater front miles further than presently observed if the groundwater model parameters and assumptions were accurate.

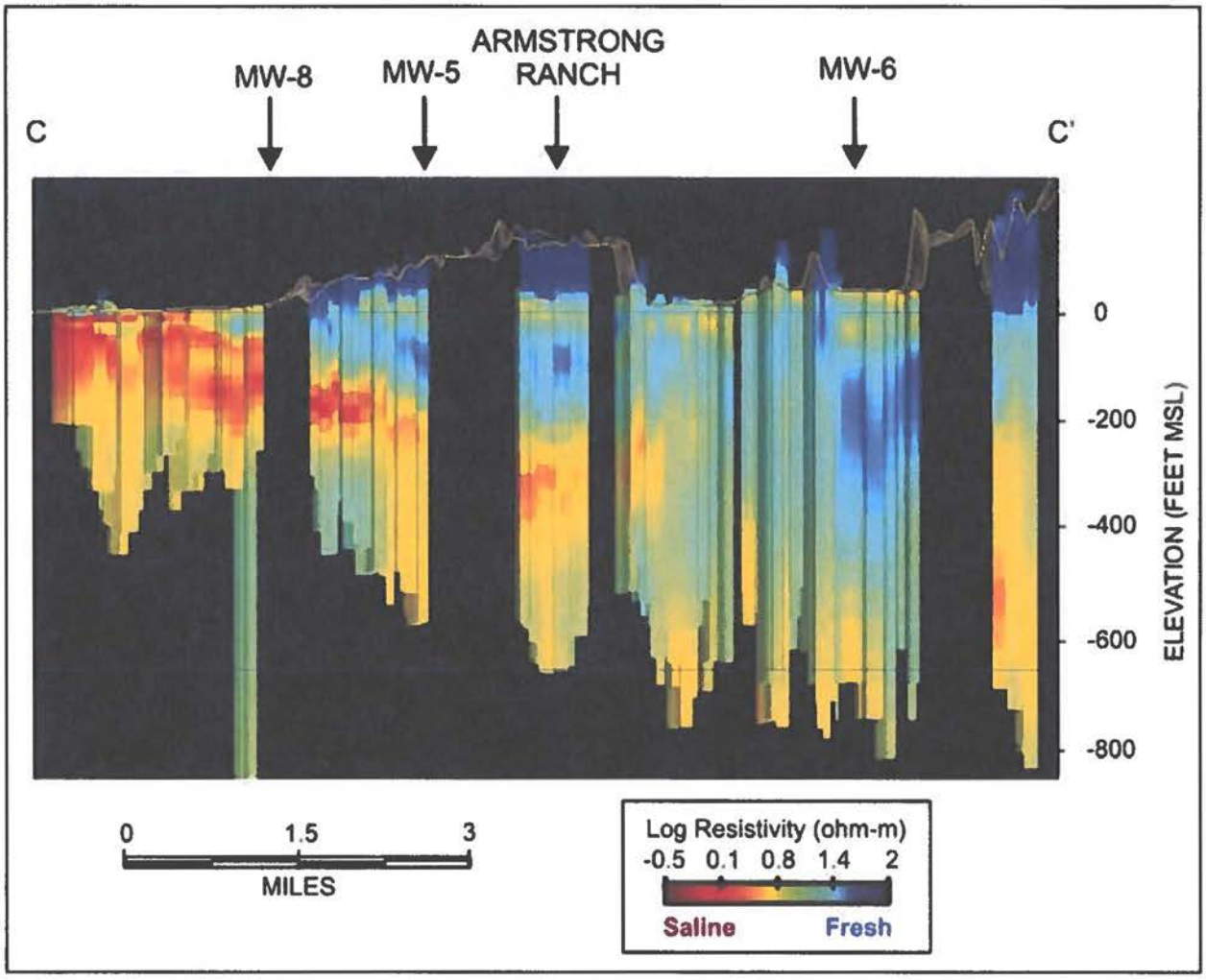
Given the potential magnitude of the increased groundwater production in the Dune Sand Aquifer and the 180-FTE Aquifer, the impacts to the SVGB, in particular the North Marina Subarea are grossly understated by the MPWSP modelling to date. Therefore, a well calibrated model is needed to quantify the project's potential impacts with a reasonable scientific basis to evaluate the mitigation that will be required and to calculate the amount of return water that will be required. Specifically, a model that utilizes all the recharge and discharge components included in the older Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM), and constructed with a level of detail reflecting our present understanding and knowledge of the hydrogeological system in the Marina Subarea is needed. Moreover, because seawater is an issue, a variable density model should be used to allow calculation of the head differences between the ocean water offshore and onshore, and freshwater in the aquifer zones inland and to allow prediction of water quality changes and the concentrations of feedwater that would be produced by the proposed project.

Water Quality in North Marina Area Aquifers.

Water quality data developed as part of the test slant well project are summarized in the tables included in Attachment B – Laboratory Water Quality Test Results. The first table shown in Attachment B provides the only data published for wells other than the test slant well and MW-4 (Geoscience, 2015a). This table includes laboratory results for wells including MW-1, MW-3, MW-4, MW-5, and the test slant well. The second table in Attachment B is a compilation of laboratory data received by MCWD in October 2015 in response to a data request in the CPUC proceedings. This table includes data for monitoring wells MW-6, MW-7, MW-8, and MW-9 that to our knowledge, have not been published in any of the MPWSP documents.

Figure 3 indicates the location of additional subsurface resistivity profiles provided below to show the results of the AEM survey. Figure 8 – Resistivity Profile C-C' shows the subsurface resistivity values for a line drawn past MW-8, MW-5, and MW-6. The significance of these data is that they indicate beneficial conditions have developed (or have always existed) in the shallow aquifer zones in the North Marina Area of the 180-400 Foot Aquifer Subbasin and appear contrary to information published by the Monterey County Water Resources Agency (MCWRA).

Figure 8 – Resistivity Profile C-C'



The recent investigation that is being conducted in and around the North Marina Area as part of the MPWSP has uncovered an occurrence of freshwater within the shallow Dune Sand Aquifer and the underlying 180-FTE Aquifer within the area delineated as seawater intruded by the MCWRA. As previously shown, water level data from wells in the shallow Dune Sand Aquifer indicate that there are protective water levels sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the lack of pumping in the 180-Foot Aquifer in the North Marina Area, appears to have slowed seawater intrusion in the aquifers in this portion of the coastline.

This is further illustrated by the water quality test results for total dissolved solids and chloride concentrations in these two uppermost aquifer zones are shown on Figures 9 and 10 – Average Total Dissolved Solids Concentrations in Groundwater and Average Chloride Concentrations in Groundwater, respectively.

Figure 9 – Average Total Dissolved Solids Concentrations in Groundwater

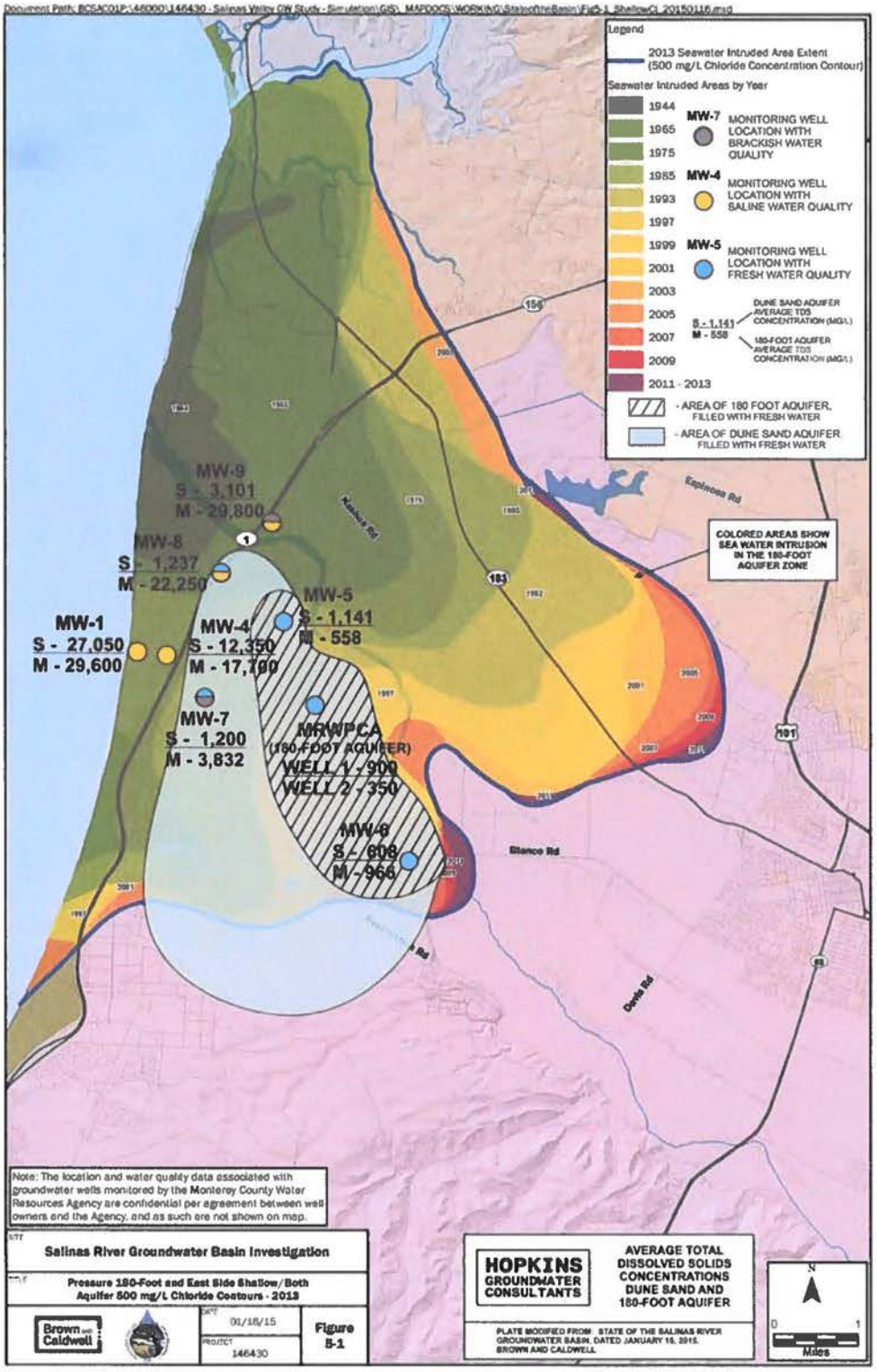
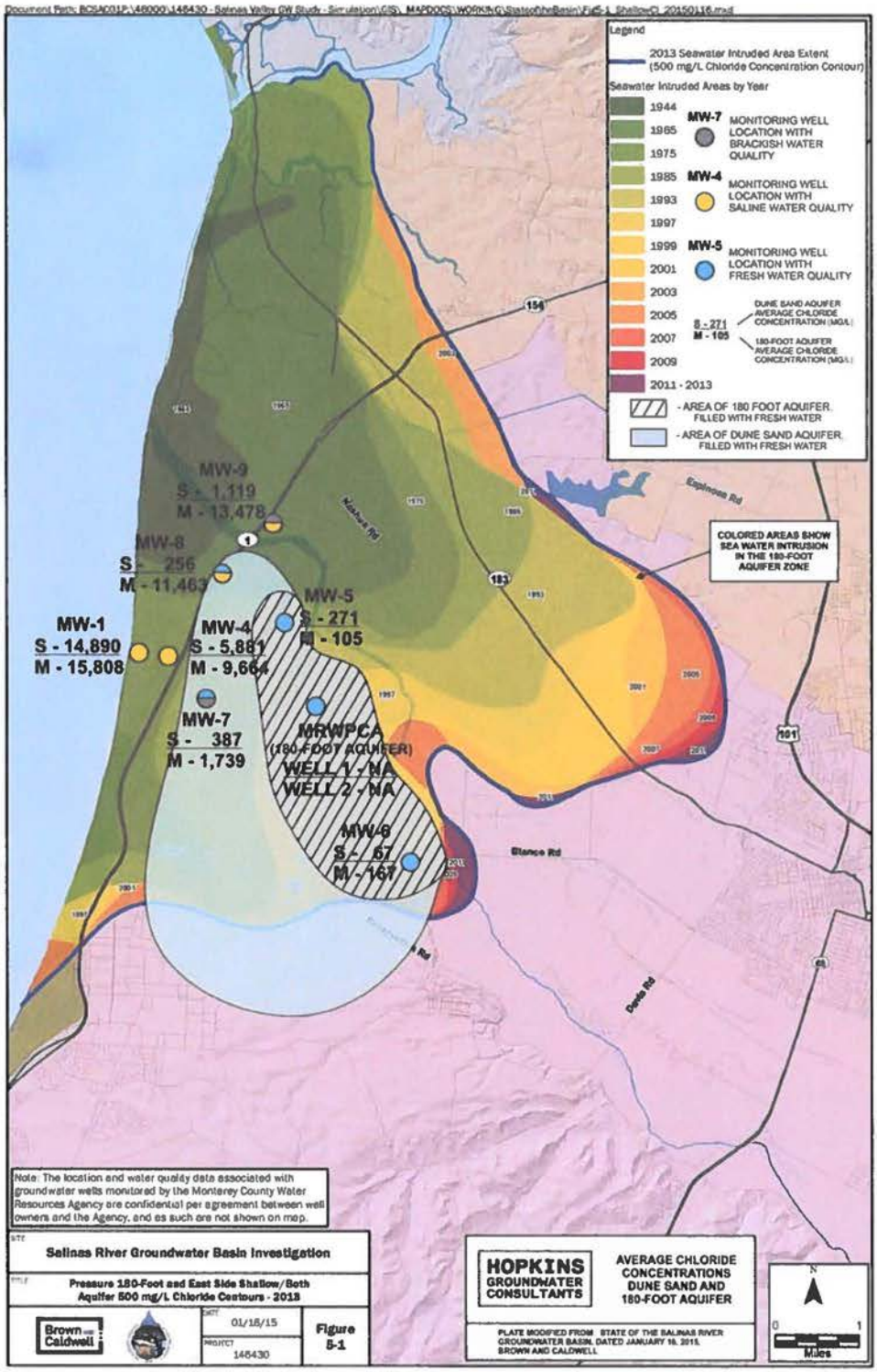


Figure 10 – Average Chloride Concentrations in Groundwater



These data indicate a change of groundwater conditions in this coastal section of the aquifer or alternatively, they may reveal the groundwater conditions that existed in an area largely lacking historical data. While the freshwater in this area contains some salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater intrusion.

Figures 11 and 12 – Stiff Diagrams of Dune Sand Aquifer Groundwater and 180-Foot Aquifer Groundwater, respectively show that the chemical character of groundwater in the new wells away from the coast is predominantly calcium chloride and calcium bicarbonate. Additionally, elevated concentrations of nitrate are present in monitoring wells MW-5S, MW-7S and MW-8S and range from 115 milligrams per liter (mg/l) to 237 mg/l. The concentration of nitrate decreases with depth at all of these sites, and is the highest at MW-5, which is closest to the landfill and the wastewater treatment facilities. While additional investigation is needed to determine the extent to which this area can be used as a direct source of potable groundwater supply, existing conditions show effective abatement of seawater intrusion in these shallower aquifer zones in this coastal portion of the SVGB. As explained in the EKI report, this condition could support the future beneficial uses of the 180-Foot Aquifer zone, including aquifer storage and recovery of highly purified recycled water for indirect potable reuse (EKI, 2017).

These data further substantiate the conclusions in our original report that a unique condition exists in the North Marina Subarea south of the Salinas River that provides a significant degree of protection against seawater intrusion in the shallower aquifers under the present and recent past hydrologic conditions.

Figure 11 – Stiff Diagrams of Dune Sand Aquifer Groundwater

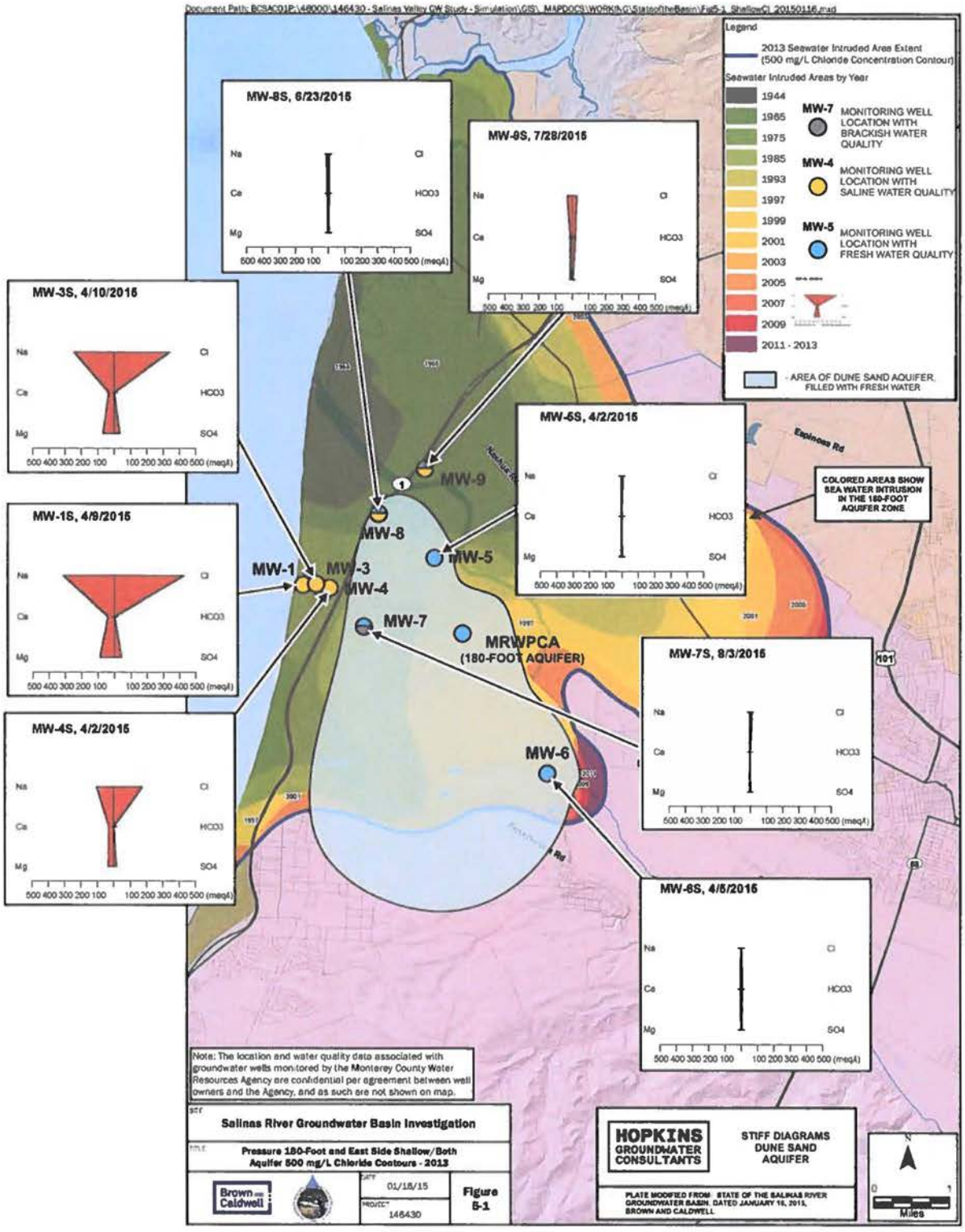


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Figure 12 – Stiff Diagrams of 180-Foot Aquifer Groundwater

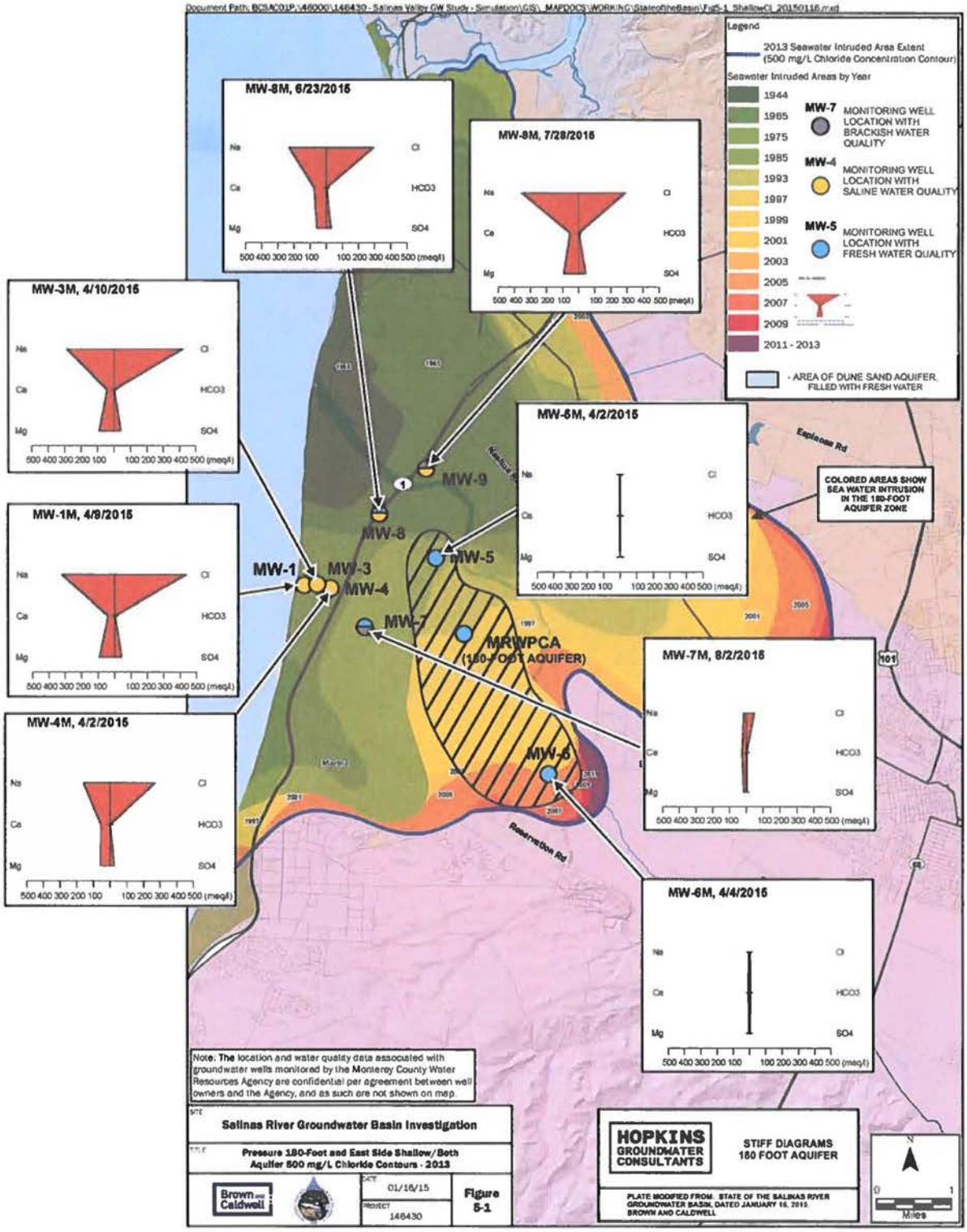


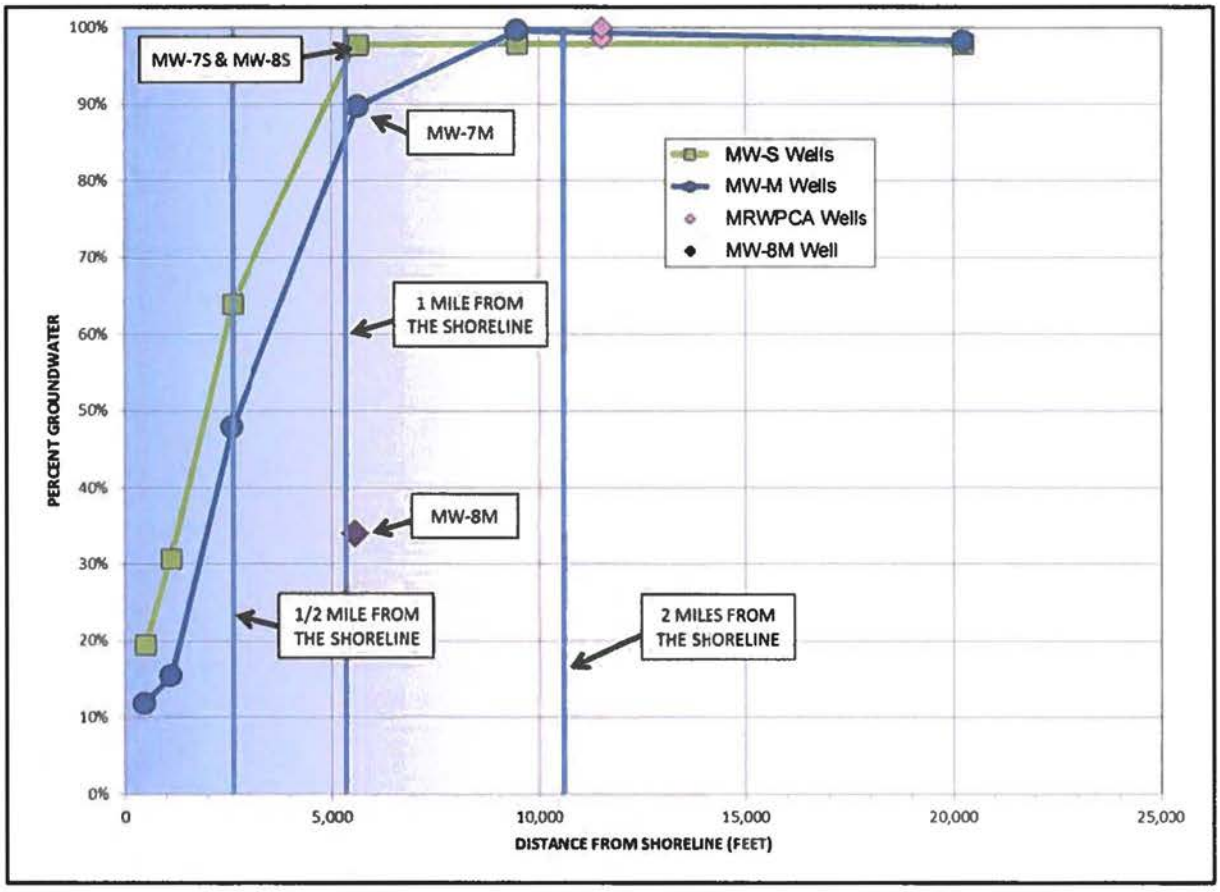
Figure 13 – Percent Groundwater with Distance From the Shoreline provides an updated rudimentary calculation of groundwater percentage versus ocean water percentage in the 180 FTE and 400-foot aquifers in the CEMEX area using the same equation applied to the test slant well discharge. The percentage of fresh groundwater in well water samples was calculated using the following equation:

$$GWP = [1 - (WSS - GWS/OWS - GWS)] \times 100$$

Where:

GWP = Percent Groundwater
WSS = Well Sample Salinity (mg/l)
GWS = Groundwater Salinity (420 mg/l)
OWS = Ocean Water Salinity (33,500 mg/l)

Figure 13 – Percent Groundwater With Distance From the Shoreline



Water quality data used in this analysis were provided by the laboratory test results summarized in Attachment B. These available data show that the percentage of ocean water

decreases significantly within a short distance from the coastline in the North Marina Area and the salinity of groundwater that is comparable to seawater is not up to 8 miles inland in the 180-Foot Aquifer as assumed by previous study and modeled by the project proponent. Calculation of percent ocean water using this method cannot differentiate between salts from overlying land uses and salt from ocean water.

This calculation assumes that all salt in groundwater with a total dissolved solids (TDS) above a concentration of 420 mg/l is from ocean water. As shown in Figure 9, monitoring wells MW-5M and MW-6M along with the Monterey Regional Water Pollution Control Agency (MRWPCA) Wells are located in the 180-Foot Aquifer and the average TDS concentration for samples from these wells ranges from approximately 558 to 966 mg/l and is also considered fresh water (See Figure 9 and Attachment B). However, the TDS concentration for MW-7M (3,832 mg/l) and MW-8M (22,250 mg/l) show that closer to the coast and closer to the main portion of the SVGB north of the river, seawater has impacted the underlying 180-Foot Aquifer as shown in Figures 9 and 10.

Cal-Am's Estimates of Groundwater That Must Be Returned Are Substantially Understated.

As noted above, there is no supporting data or explanation for the 7% return water estimate included in Cal-Am's updated demand number. It does not appear to be based on the DEIR/EIS or any other information that has been made available. As we have previously addressed, the DEIR/EIS failed to disclose the amount of return water that would be necessary to replace the groundwater drawn from the SVGB as proposed in the Project Description. Also, the DEIR/EIS did not provide any discussion or information to support bracketing the return water percentage between 0% to 12%. In fact, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. Even the North Marina Groundwater Model ($NMGWM^{2016}$) calibrated model, which likely underestimates the slant wells production of groundwater, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step.[6]

[6] / Modeling summarized in Appendix E1 of the April 30, 2015 MPWSP Draft EIR (Geoscience, 2014a, Figure 20) indicates that the initial groundwater production would be much greater during the initial production period (50 to 40 percent during the first year) and would decrease over a 4-year period to an estimated 4 percent after 4 years of production. Our review of the $NMGWM^{2016}$ calibrated model results indicates that initially over 25 percent of the production will come from groundwater and that after 5 years, the component predicted to come from the SVGB is approximately 10 percent. The $NMGWM^{2016}$ calibrated model, like the prior modeling, likely underestimates the slant wells production of groundwater (See Comment Nos. 3 and 9,

While it is not stated exactly how the range of 0 to 12 percent estimates were determined in the DEIR/EIS, an analysis of the salinity of the feedwater using ocean water with a TDS concentration of 33,500 mg/l and groundwater with an average TDS concentration of 440 mg/l can yield an estimate. Using these values and the laboratory test results obtained during the MPWSP's TSW production period and included in the water quality report to the Hydrogeologic Working Group (HWG) (Geoscience, 2015p, Table 2), the TSW produced water with an average TDS concentration of 25,033 mg/l and was comprised of 25.6 percent groundwater and 74.4 percent ocean water.

Over the initial period of the long-term pumping test, the TDS concentration had reached approximately 29,100 mg/l prior to cessation of the test in early June 2015. Subsequent laboratory test results indicate that on December 12, 2016, and January 19, 2017, the TDS concentration had reached approximately 30,200 mg/l and 31,700 mg/l, respectively. Using these values along with the average June and July 2017 value of 29,150 mg/l, we can estimate a range of return water quantities by considering the groundwater component produced if a groundwater TDS concentration of 1,000 mg/l (State Drinking Water secondary standard) or 3,000 mg/l (Regional Water Quality Control Board (RWQCB) Water Quality Control Plan (WQCP) for the Central Coast Basin, water quality defined for beneficial uses) were used compared to the reported 440 mg/l average groundwater TDS concentration. Table 1 – Feedwater Composition Based on TDS Concentrations shows a comparison of the results using these values.

As shown in Table 1, approximately 13.3 to 14.4 percent of the feedwater was groundwater when pumping was initiated. While higher salinity feedwater was produced by the TSW in December 2016 and January 2017, the concentration declined by June and July 2017, where approximately 13.2 to 14.3 percent of the groundwater produced would need to be returned. As explained below, the water quality bias of the TSW to be more saline than other comparable wells located away from the CEMEX operations is a result of the dredge pond location and the salt water discharges that occur inland of the TSW location. As discussed below, this bias is unlikely to exist at the proposed slant well locations further south of the current MPWSP test well or continue at the current test well location after CEMEX ceases operations.

Notably, if a greater percentage of groundwater is produced than presently estimated by the DEIR/EIS, which is highly likely, or if usable groundwater salinity increases, the annual amount of return water to the SVGB would increase accordingly. The higher return water volumes required during the initial production period when a greater component of groundwater is pumped is not addressed in the DEIR/EIS return water proposal. Please note that our comment here should not be interpreted to suggest the return of all groundwater to the SVGB as

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Hopkins, 2017) and should not be considered to represent maximum amount of groundwater that may need to be returned to comply with the Agency Act.

proposed MPWSP's return water proposal would mitigate the project's impacts to the North Marina Subarea. The inadequacy of the DEIR/EIS's analysis of the MPWSP's return water proposal and DEIR/EIS's failure to mitigate the project's cumulative impacts on groundwater is still an issue.

Table 1 – Feedwater Composition Based on TDS Concentrations

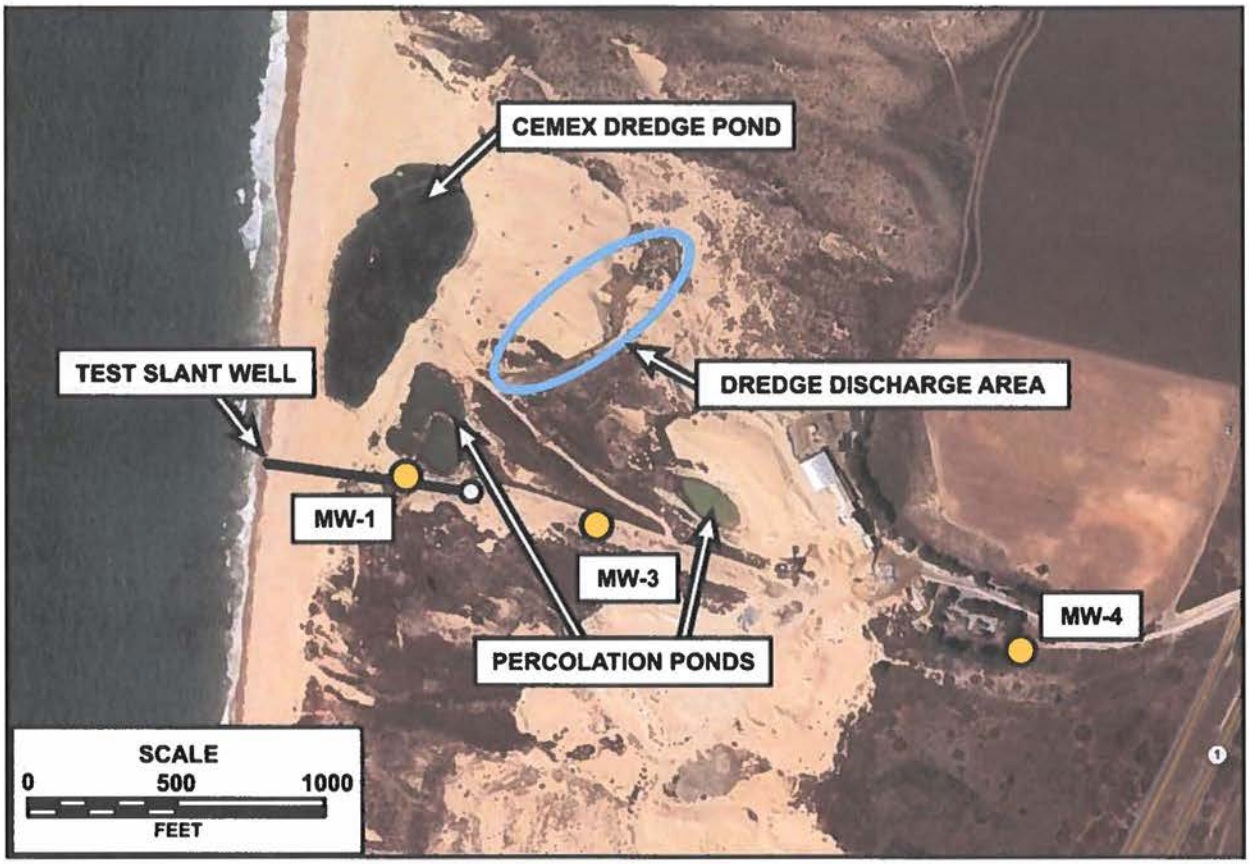
OCEAN WATER SALINITY (MG/L)	GROUNDWATER SALINITY (MG/L)	FEEDWATER SALINITY (MG/L)	GROUNDWATER PERCENTAGE	OCEAN WATER PERCENTAGE
33,500	440	29,085	13.3	86.7
33,500	1,000	29,085	13.5	86.5
33,500	3,000	29,085	14.4	85.6
33,500	440	30,200	10.0	90.0
33,500	1,000	30,200	10.2	89.8
33,500	3,000	30,200	10.8	89.2
33,500	440	31,700	5.4	94.6
33,500	1,000	31,700	5.5	94.5
33,500	3,000	31,700	5.9	94.1
33,500	440	29,150	13.2	86.8
33,500	1,000	29,150	13.4	86.6
33,500	3,000	29,150	14.3	85.7

Cal-Am's return water estimates again fail to address how CEMEX's operations affected the TSW discharge water quality and whether they would have similar effects on the 9 additional slant wells proposed further south and away from the dredge pond, the dredge pond discharges, and wash water containment ponds infiltration. Notably, due to CEMEX operation, the measured values relevant to salinity (specific conductivity, TDS, and practical salinity units (PSU)) provided by the TSW laboratory results and field measurements are not representative of what is expected from the larger MPWSP source wells array. At the time the higher salinity water quality samples were taken, the CEMEX dredge pond, which is in close proximity to the test well and inland of the shoreline, was breached for a significant period of time and directly filled by ocean water. It is likely the significant increase in salinity readings in the TSW during and following this period of time were the result was a large surge of ocean water into the dredge

pond area overlying the inland portion of the beach adjacent to the test well. This condition will not persist throughout the year and is not present at the other proposed MPWSP source well locations.

Additionally, the CEMEX plant operations have influenced shallow groundwater quality in this section of shoreline for decades. As shown on Figure 14 – CEMEX Surface Water Features August 2013, the test slant well is located adjacent to numerous sources of saline water that are not present at other locations along the coast in particular where the other source water wells are proposed.

Figure 14 – CEMEX Surface Water Features August 2013

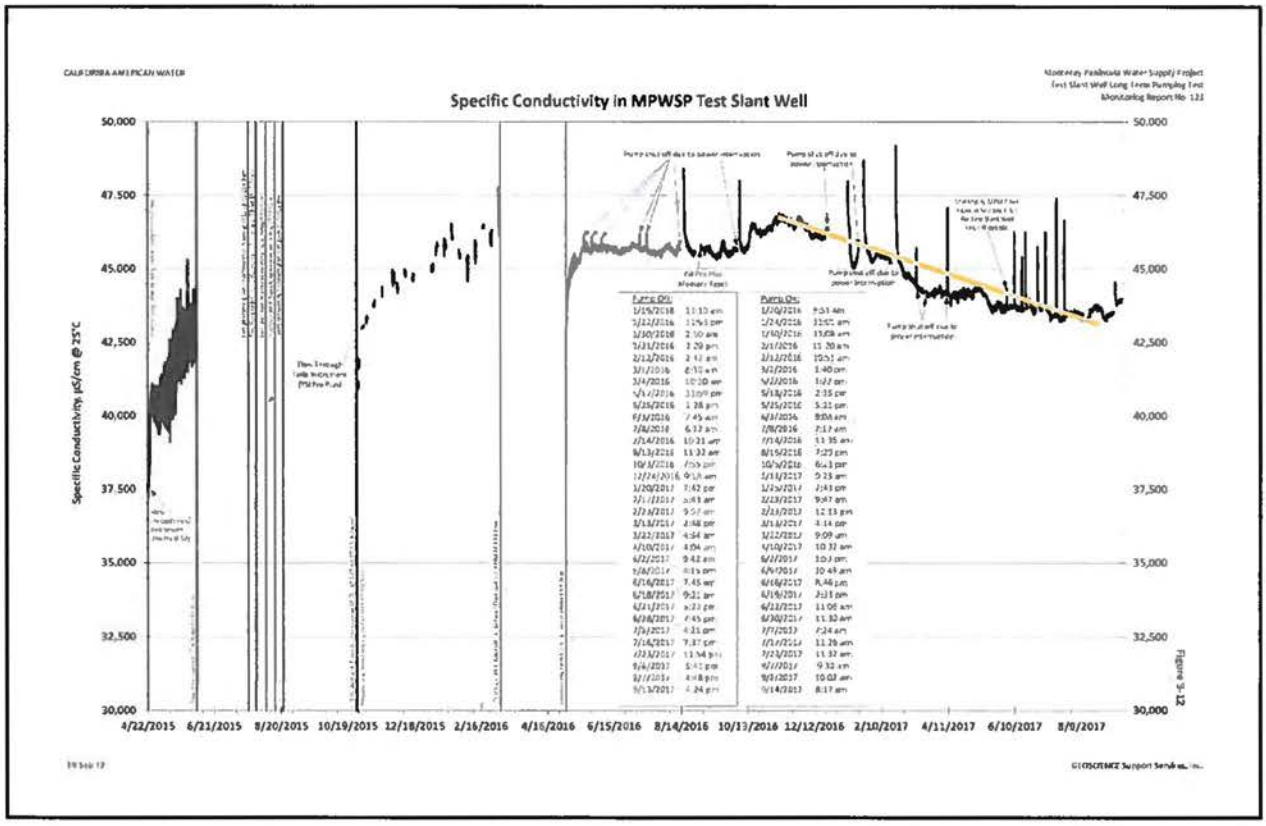


These localized sources of salt water shown in Figure 14 significantly influence the quality of the shallow groundwater that is observed in MW-1, MW-3, MW-4 and produced by the TSW. The result is a substantial overestimation of the seawater component flowing landward from the shoreline and an underestimation of the return water that will be required for mitigation.

The depletion of these landward sources of seawater is evident in Figure 15 – TSW Specific Conductance Values and shown by the declining specific conductance trend for the

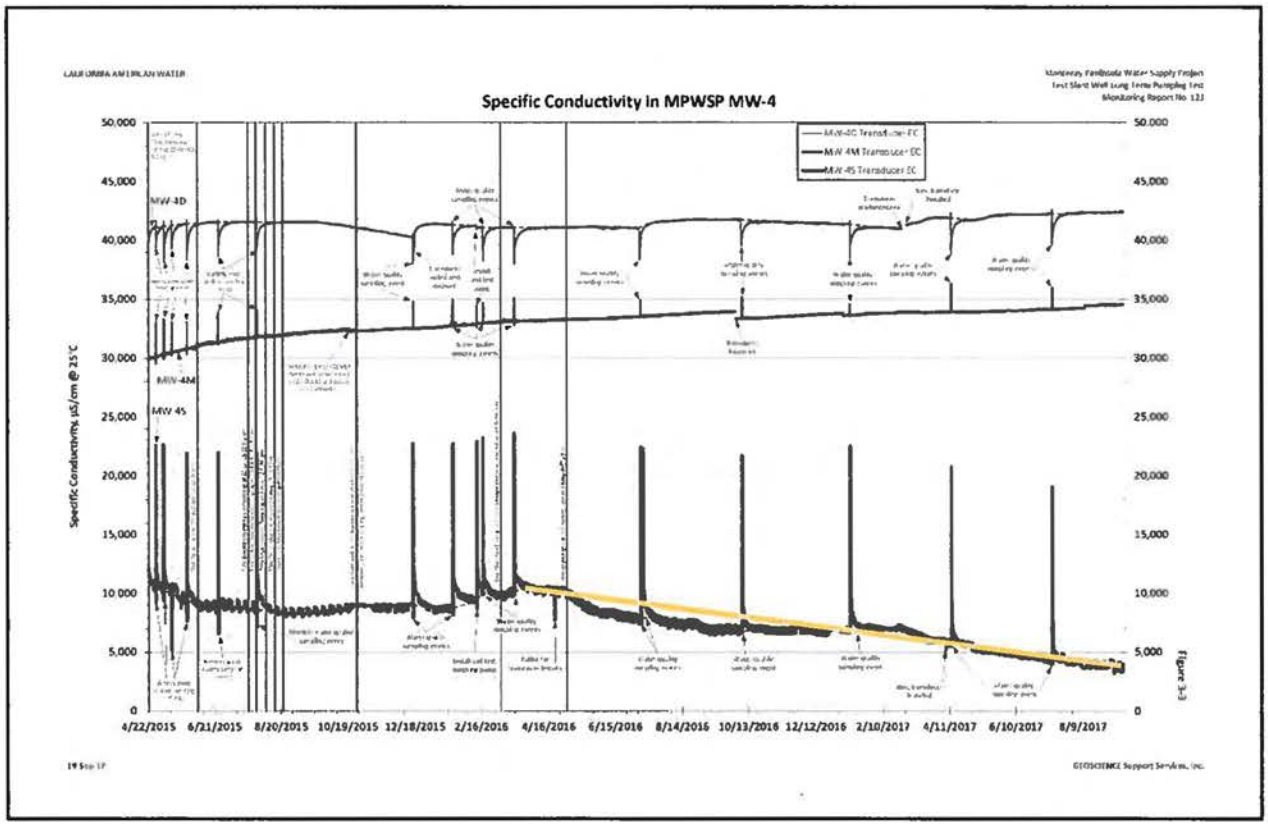
TSW since November 2016 over a period when dredge operations were not active (from Figure 3-12, Geoscience, 2017). Dredge pond operations were observed to be active in early August 2017. If there is a direct correlation between inland salt water discharges and the TSW produced water quality, the specific conductance values should begin to rise again.

Figure 15 – TSW Specific Conductance Values



The overall decline in specific conductance trend in MW-4S since operation of TSW is shown in Figure 16 – MW-4 Specific Conductance Values (from Figure 3-3, Geoscience, 2017) and is an indication of the seaward gradient caused by the mounded fresh water inland of the TSW location. These conditions are also evident in the AEM Survey data that show a mound of saline water at the coast on the CEMEX site (see Figure 6). This localized saline mound has been established by the decades of salt water discharge in the vicinity of the TSW (see Figure 14). Using the TSW data to estimate return water volumes is biased by this anomaly and the fact that the TSW operations were initiated at the end of a drought. Cessation of the CEMEX operations will result in removal of this site specific saltwater influence and in a decline in the TSW salinity. Because this influence is not located further south along the coast where the intake facilities are proposed, the proportion of fresh groundwater contribution to the feedwater supply is expected to be much higher.

Figure 16 – MW-4 Specific Conductance Values



The AEM Survey data confirm that the shallow coastal aquifers in the CEMEX area as far inland as MW-4 are impacted by the saline water discharge operations. Figure 17 – Resistivity Profile D-D' shows the subsurface resistivity values in the vicinity of MW-4 where a conductive mound of salt water is located (also see Figure 6). The increase in fresh/slightly brackish groundwater that is indicated by the available laboratory data, as we move a short distance away from the coastline (see Figure 13) is also shown in the AEM Survey data provided as Figure 18 – Resistivity Profile E-E' which crosses through MW-7 and MW-8. The location of Profiles D-D'and E-E' is shown on Figure 3.

Figure 19 – CEMEX Dredge Barge shows the dredge mining operations that consist of using a barge equipped with a suction pump that literally pulls sand off of the bottom of the pond and pumps it over the sand dunes in a slurry of seawater. Figure 20 – Dredge Slurry Discharge Line shows the pipeline that conveys the saltwater slurry over the sand dunes to the point of discharge as shown in Figure 14. While we do not know the rate of discharge, it must be relatively high (between 1,000 and 2,000 gallons per minute) in order to keep the sand from settling in the pipeline as it makes its way uphill.

Figure 17 – Resistivity Profile D-D'

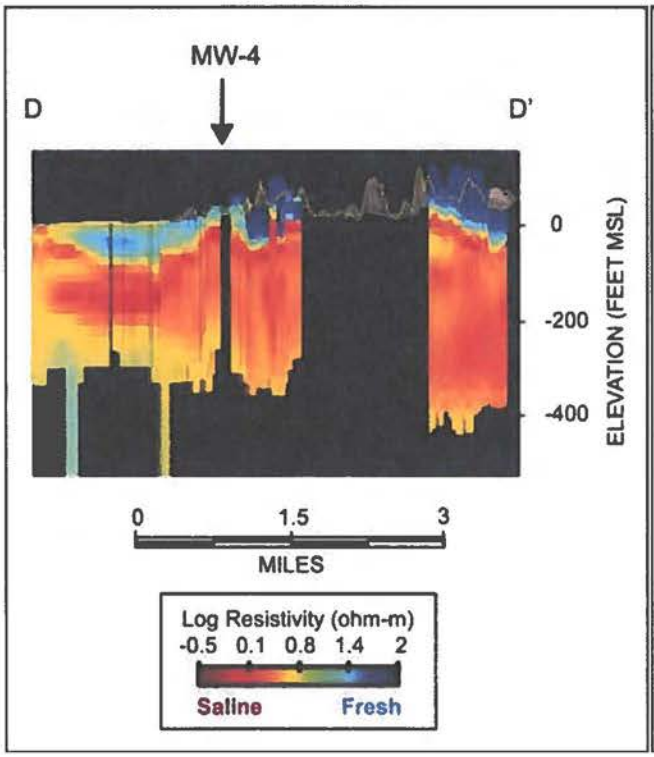


Figure 18 – Resistivity Profile E=E'

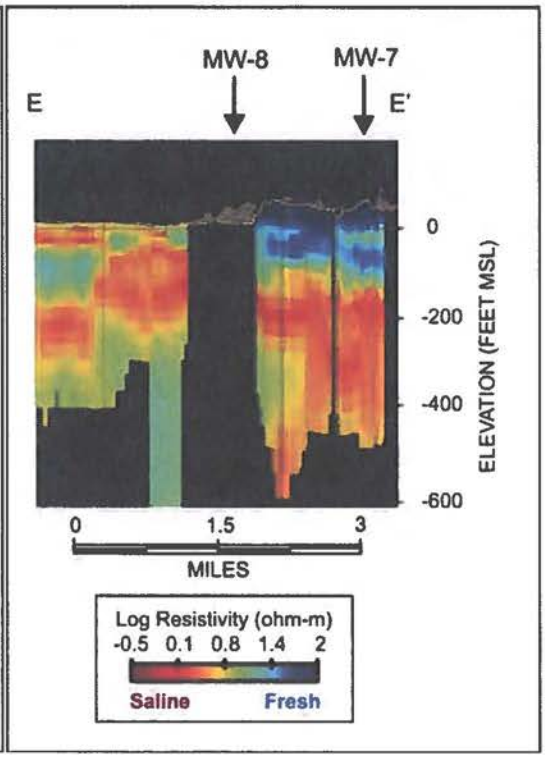


Figure 19 – CEMEX Dredge Barge

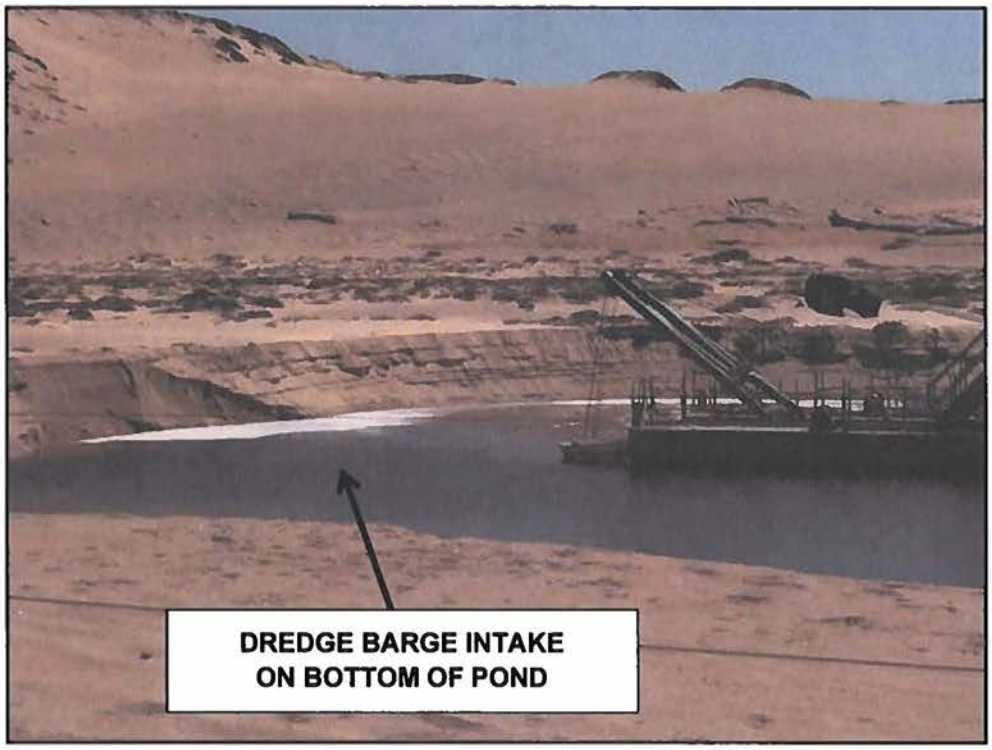
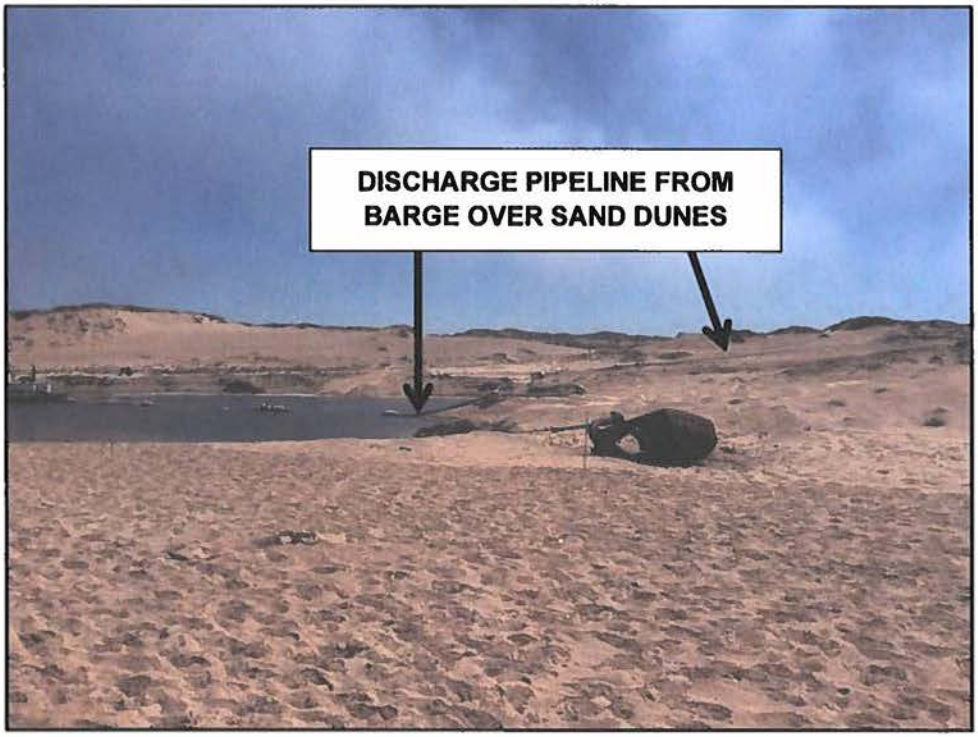


Figure 20 – Dredge Slurry Discharge Line



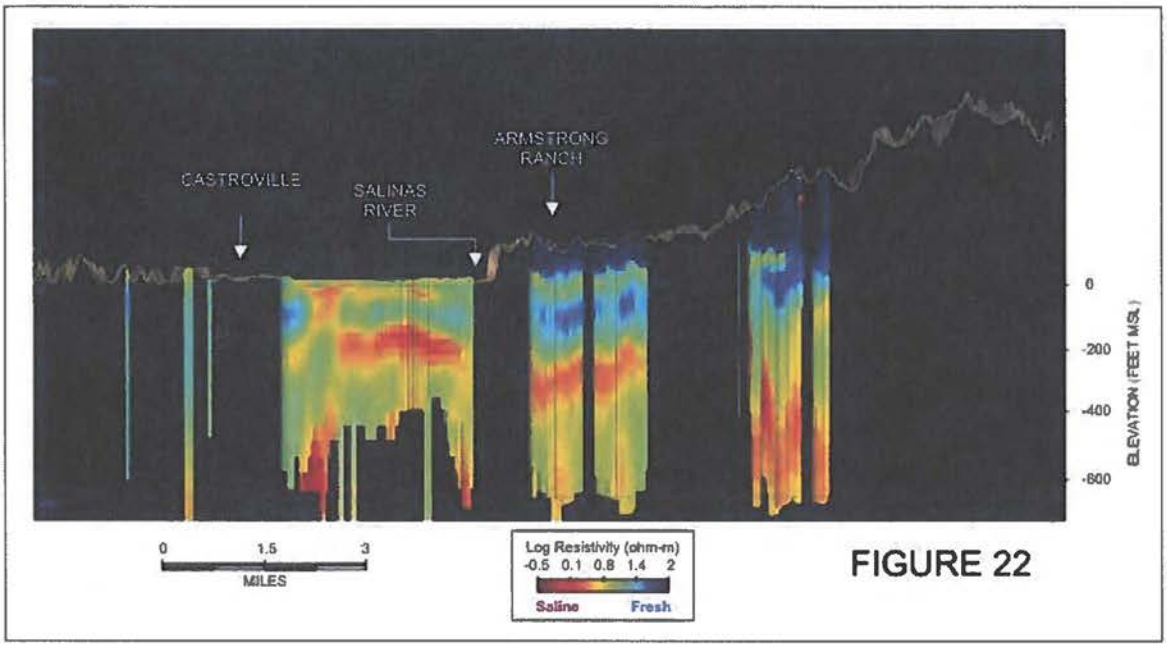
Proposed Return Water Settlement Agreement Does Not Mitigate MPWSP's Adverse Groundwater Impacts to North Marina Area Aquifers.

Under Cal-Am's proposed Return Water Settlement Agreement, all of the groundwater extracted by the MPWSP source wells from the North Marina Area aquifers would be returned to water users north of the Salinas River [i.e, CCSD and Castroville Seawater Intrusion Project (CSIP)]. Notably, the return water is provided ostensibly to reduce groundwater pumping from those users' groundwater wells. The wells that allegedly would not be pumped (or where pumping would be reduced) to mitigate the impacts of the MPWSP source wells, however, are located north of the Salinas River outside of the areas most impacted by the proposed MPSWP supply wells. Cal-Am's demand estimates assume that the "Settlement Agreement on MPWSP Desalination Plant Return Water" will mitigate the project's groundwater impacts to the SVGB and the North Marina Subarea. There is no support for this assumption as explained below. To illustrate this discussion we will use the AEM Survey geophysical data at the locations shown on Figure 21 – Castroville Resistivity Profiles Location Map. The map shows the location of a profile that extends from Castroville through the MCWD Armstrong Ranch property and a profile that extends further inland into the Fort Ord area where there is a greater coverage of geophysical data.

Figure 21 – Castroville Resistivity Profiles Location Map

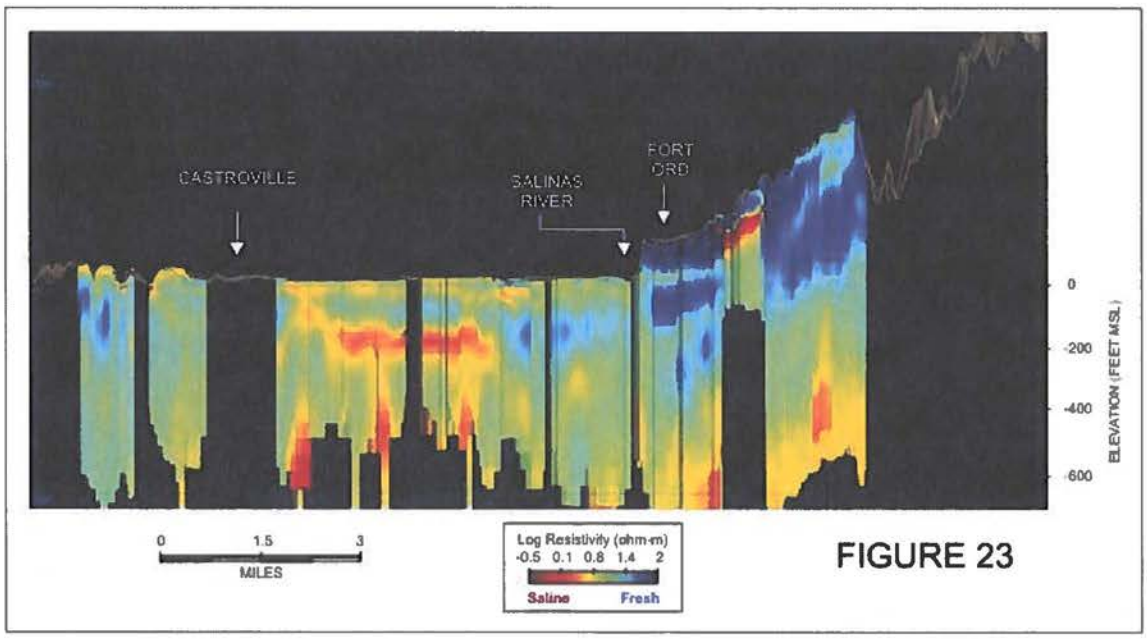
As shown in Figure 22 – Resistivity Profile of North Marina Subarea, the hydrogeological framework and the groundwater quality indicated by the AEM data are substantially different than the subsurface conditions in the vicinity of Castroville where the return water is proposed to be delivered. Impacts from the MPWSP proposed production in the aquifer zones in the upper 300 feet of the North Marina Subarea cannot be mitigated by delivery of return water to Castroville, which is located several miles to the north.

Figure 22 – Resistivity Profile of North Marina Subarea



Likewise, Figure 23 - Resistivity Profile Inland of North Marina Subarea, indicates the difference between the hydrogeology south of the Salinas River from the hydrogeology north of the Salinas River. Return water to CSIP may benefit the main portion of basin, but not mitigate the impacts to the portion of the basin impacted south of the river.

Figure 23 – Resistivity Profile Inland of North Marina Subarea



Initially, the 175-acre feet of return water would be provided to the CSIP at the start-up of the MPWSP grossly underestimates the amount of groundwater that modeling shows will be pumped during the initial start-up period as discussed above.

In addition, Cal-Am's claim that the proposed return water settlement would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas is misleading. While the proposed return water agreement would likely increase groundwater levels in other areas, it would not reduce the area of influence within the North Marina Subarea. Moreover, it fails to acknowledge that it does not address potential harms to present and future legal users in the North Marina Subarea. Perhaps more importantly, the CCSD and CSIP wells where pumping will be reduced (or cease) do not pump water from the Dune Sand or 180-FT Aquifers from which the MPWSP will extract its groundwater supply. This is important for two reasons.

First, as discussed above, groundwater conditions in the Dune Sand or 180-FTE Aquifers inland of the proposed MPWSP intake system create protective heads in the shallow dune sand that is evident by the water levels in monitoring wells MW-4S, MW-6S, MW-7S, and MW-8S and the available water quality data. Downward recharge into the underlying 180-FTE was observed to elevate the groundwater levels above sea level during 2015-2016 winter season, which occurred after a 4-year drought, and subsequently again in the 2016-17 winter season where above average rainfall occurred. The benefits from these unique groundwater recharge conditions creating shallow mounding in the North Marina Area will be removed by the project and delivery of return water north of the Salinas River to reduce pumping will not mitigate the potential impacts realized by the changed conditions.

Moreover, as indicated by water levels in MW-6M and MW-6D (or 6ML), there is direct vertical recharge between aquifers at certain locations with the North Marina Area where aquitard layers are discontinuous. Leakage through these layers can facilitate vertical flow of seawater that is induced into the North Marina Area by the project. Cal-Am's return water proposal does not address the increased seawater intrusion that the project will cause within the North Marina Area by lowering existing protective heads and removing freshwater in storage. Given the groundwater gradients in the North Marina Area, water injected north of the Salinas River simply will not flow towards the North Marina Area, but rather away from it. For this same reason, reduced pumping north of the Salinas River will not mitigate the reduced water levels and induced seawater intrusion in North Marina Area that will result from the MPWSP.

Second, providing water north of the Salinas River as proposed in Cal-Am's Return Water Settlement Agreement will not remedy the harms to the water users in North Marina Area from reduced water levels and water quality caused by the MPWSP source wells. Again, none of the water provided to the CCSD or CSIP will flow towards the North Marina area or lessen the Project's impacts in this area. Thus, the Cal-Am's proposed Return Water Settlement Agreement will not mitigate impacts to the North Marina area or its water users (i.e., MCWD).

Therefore, the water users receiving the offset supply to reduce pumping must be located in the Marina Subarea of the SVGB affected by the project (i.e., south of the Salinas River) in

order mitigate the MPWSP's groundwater impacts and satisfy Cal-Am's return water obligations.

As we noted in our January 22, 2016 memorandum, providing return water though injection wells or percolation basins within the Northern Marina Subarea may provide Cal-Am with a viable option to meet is mitigation requirements and return water obligations. Any such proposal would need be studied to ensure the proposed injection sites will not degrade water quality in the North Marina Subarea or adversely affect the beneficial conditions that exist in the these aquifers discussed above and in our prior comments. We note that placing the wells in the wrong location could actually push groundwater impacted by seawater into aquifer areas that are currently fresh to slightly brackish in quality, but usable (see AEM data in Figures 6 and 8). Additional information and analysis is needed to determine whether these possible options would offset the impacts of the project on the Northern Marina Subarea aquifers and the groundwater users within the subarea. To evaluate such an alternative, we would need know the location where the water is proposed to be injected or percolated, the zones and rates for an injection proposal, and what quality of water would be injected or percolated.

Conclusion.

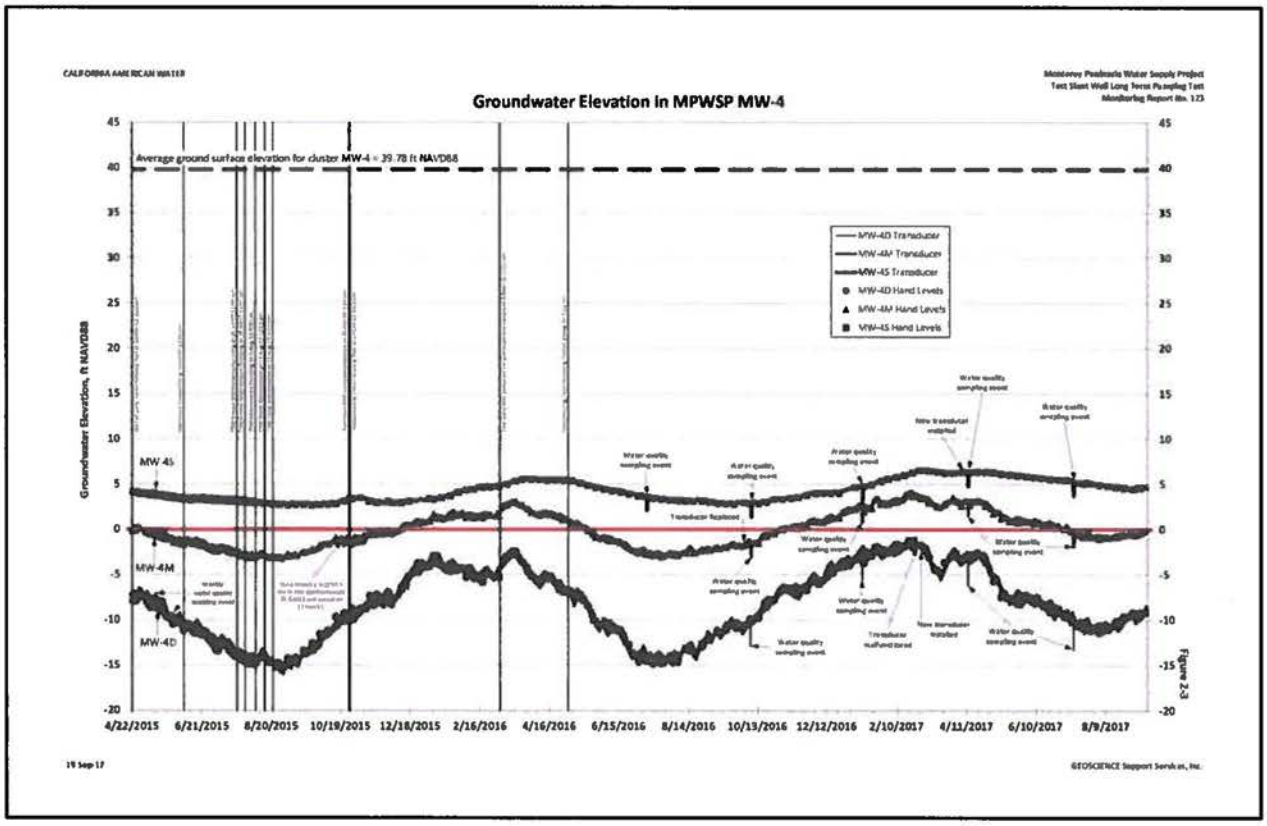
In sum, Cal-Am's Return Water Settlement Agreement does not consider or address the adverse impacts that would result from the MPWSP's source wells. The return water method selected must ensure that the protective water level elevations within the Northern Marina Subarea aquifers are maintained to prevent further seawater intrusion at an accelerated rate within this portion of the SVGB. Unless a return water method ensures that the protective conditions discussed above are not harmed, the MPWSP will induce seawater intrusion into the Dune Sand Aquifer (and will exacerbate seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifer through vertical leakage) in the Northern Marina Subarea and likely result in cumulative impacts to aquifers and wells much further inland. It will also delay (or eliminate benefit from) efforts to reverse the trend of seawater intrusion in the Northern Marina Subarea and throughout the SVGB. The MPWSP will also undercut extensive efforts by MCWD and others to eliminate the long-term overdraft condition and to respond to the serious existing drought conditions.

As indicated in our prior January 22, 2016 memorandum, updated modeling using information developed from the TSW field investigations and available from other studies in the North Marina Subarea must be used to refine the MPWSP modeling to accurately simulate aquifer conditions. Additional analysis regarding a method for returning groundwater pumped by the proposed MPWSP source wells that demonstrates the protective conditions that currently exist in the Northern Marina Subarea are not adversely impacted to the detriment of the groundwater users in and inland of the subarea is still necessary. Without this updated modeling and additional analysis, it is impossible for the public and public agencies to provide meaningful testimony regarding Cal-Am's return water proposal. Nonetheless, it is clear that Cal-Am's Return Water Settlement Agreement will not mitigate the MPWSP's groundwater impacts to the

groundwater aquifers within the North Marina Area where the fresh water conditions have been identified.

Finally, the TSW project was initiated toward the end of a drought cycle when water levels in the North Marina Subarea were depressed from lack of recharge and continued inland pumping stresses. Aquifer conditions that result from multiple years of normal or wet periods with average or above average rainfall have not been observed and are not available as background data to inform the public of pre TSW pumping conditions. Figure 24 – Monitoring Well MW-4 Hydrograph shows the seasonal water level fluctuations in all three aquifer zones relative to mean sea level. The high and low water level elevations in MW-4S were at least 2 feet higher during 2017 compared to the same seasonal time periods in 2015. The high and low elevations in MW-4M and MW-4D were at least 3 feet and 5 feet higher, respectively over this same time period. These water level recoveries from the initial drought conditions that were documented certainly help explain why there is freshwater in the shallower aquifer zones inland of the CEMEX site.

Figure 24 – Monitoring Well MW-4 Hydrograph



Figures 25, 26, and 27 – Monitoring Well MW-7, MW-5, and MW-6 Hydrographs, respectively, show how all the monitoring wells in or inland of the North Marina Subarea show water levels that recovered during the 2016 and 2017 annual water cycles. These data show that

the shallowest aquifer monitored (Dune Sand Aquifer) rose approximately 5 feet in MW-5S and MW-7S over this period, while MW-6S had a huge peak when the Salinas River had substantial flows during the 2017 rainy season. These data also show that between MW-5 and MW-7 the 180-FTE and 400-Foot Aquifers had very similar elevations near mean sea level. It is our professional opinion that it is this type of water level condition, relatively high with a flat gradient, that has impeded seawater intrusion in the shallower aquifer zones in the project area. As shown by the geophysical data (see Figure 4), salt water intruding into the North Marina Subarea is restricted near the coast in the upper 200 to 300 feet and has mostly intruded the 400-Foot Aquifer zone. While the deep 400-Foot Aquifer monitoring wells within the North Marina Subarea have relatively elevated water level, the water levels north of the Salinas River show a significant decline MW-6M and MW-6D (changed to ML).

Figure 25 – Monitoring Well MW-7 Hydrograph

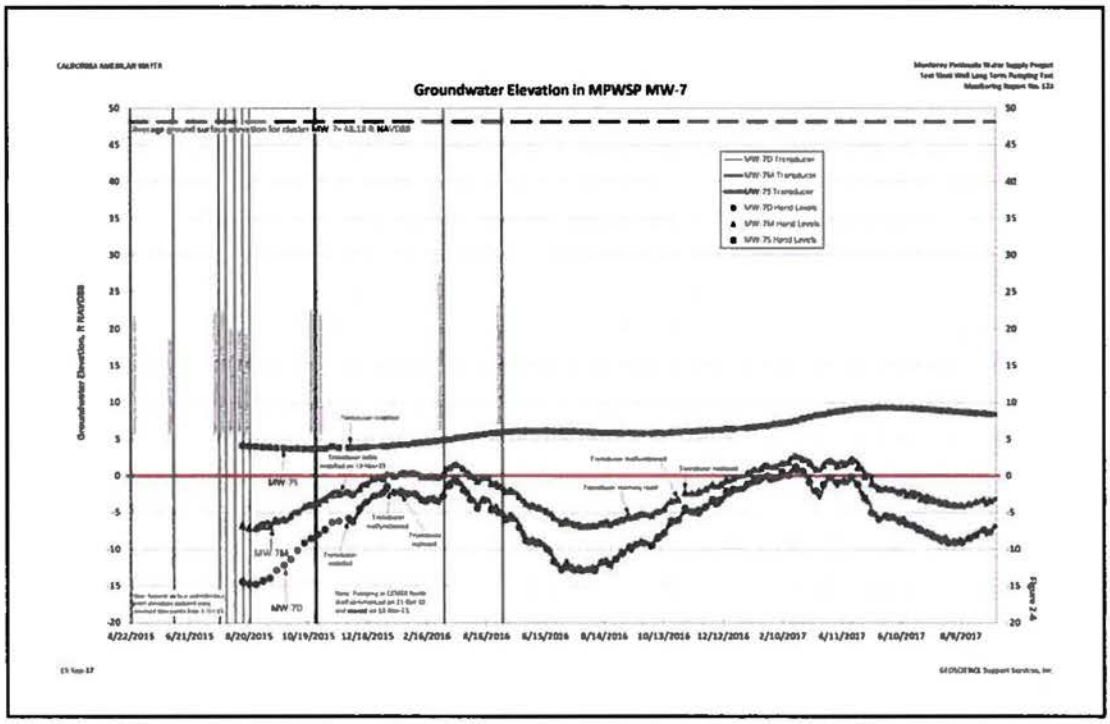


Figure 26 – Monitoring Well MW-5 Hydrograph

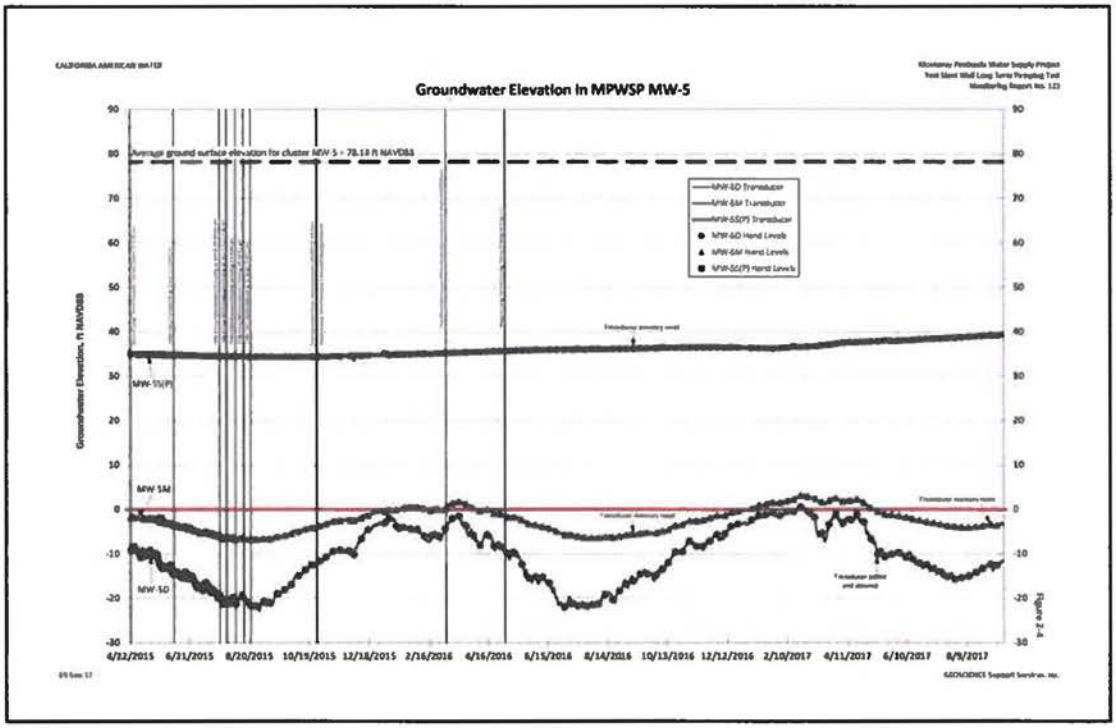
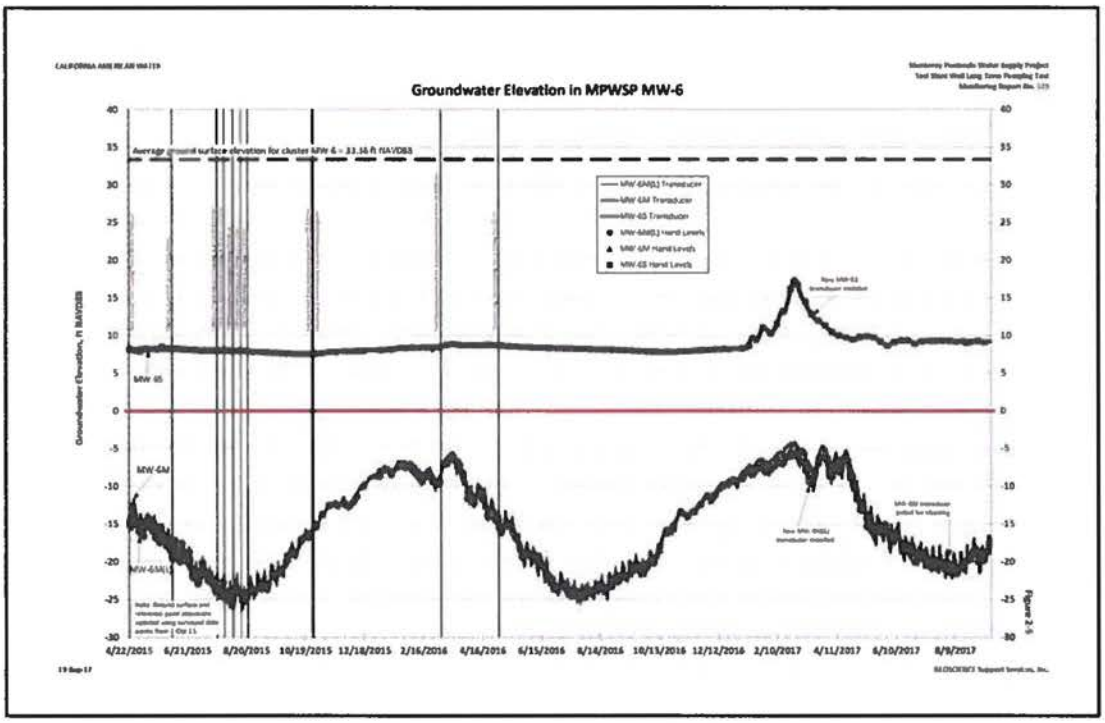


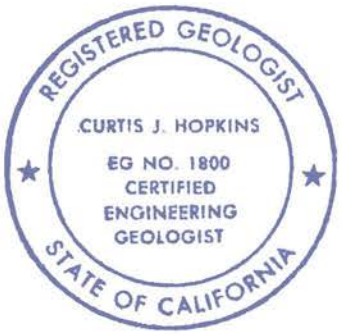
Figure 27 – Monitoring Well MW-6 Hydrograph



From these data we conclude that there is much about the hydrogeology and the mechanisms of groundwater recharge south of the Salinas River that are not well documented and that previous assumptions that this area was the same as the main portion of the 180-400-Foot Basin north of the river are not accurate. The present conditions observed by the AEM Survey and the MPWSP monitoring program indicate that the protective fresh water conditions present in the North Marina Subarea have contributed to the protection of the groundwater basin, which would be adversely impacted by the MPWSP as designed. Cal-Am's proposed Return Water Settlement Agreement would not reduce or lessen these significant impacts. And as explained above, even if it could, Cal-Am's estimate of the required volume of groundwater that would need to be returned is substantially understated.

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.



Curtis J. Hopkins
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Certified Hydrogeologist HG114
Certified Engineering Geologist EG1800

Attachments: Attachment A – Regional Resistivity Profiles
Attachment B – Laboratory Water Quality Test Results

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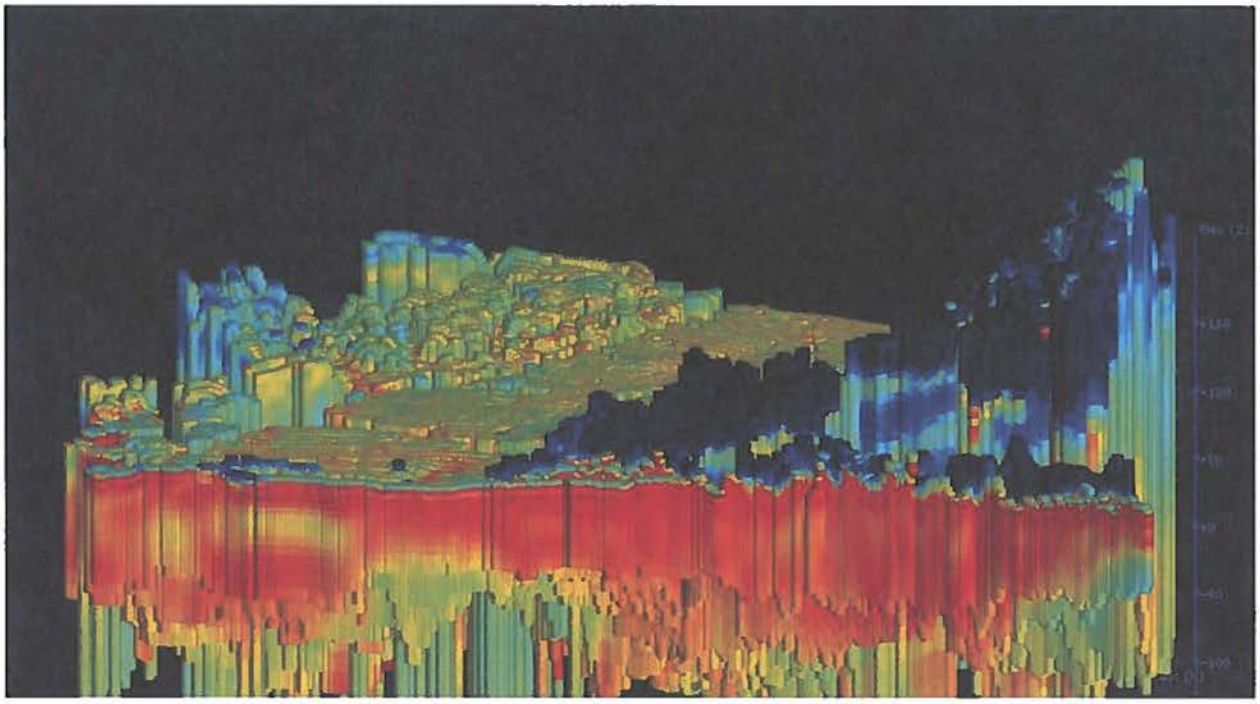
ATTACHMENT A
REGIONAL RESISTIVITY PROFILES

GEOPHYSICAL STUDY AREA OF AEM SURVEY

STUDY AREA WITH AEM SURVEY DATA



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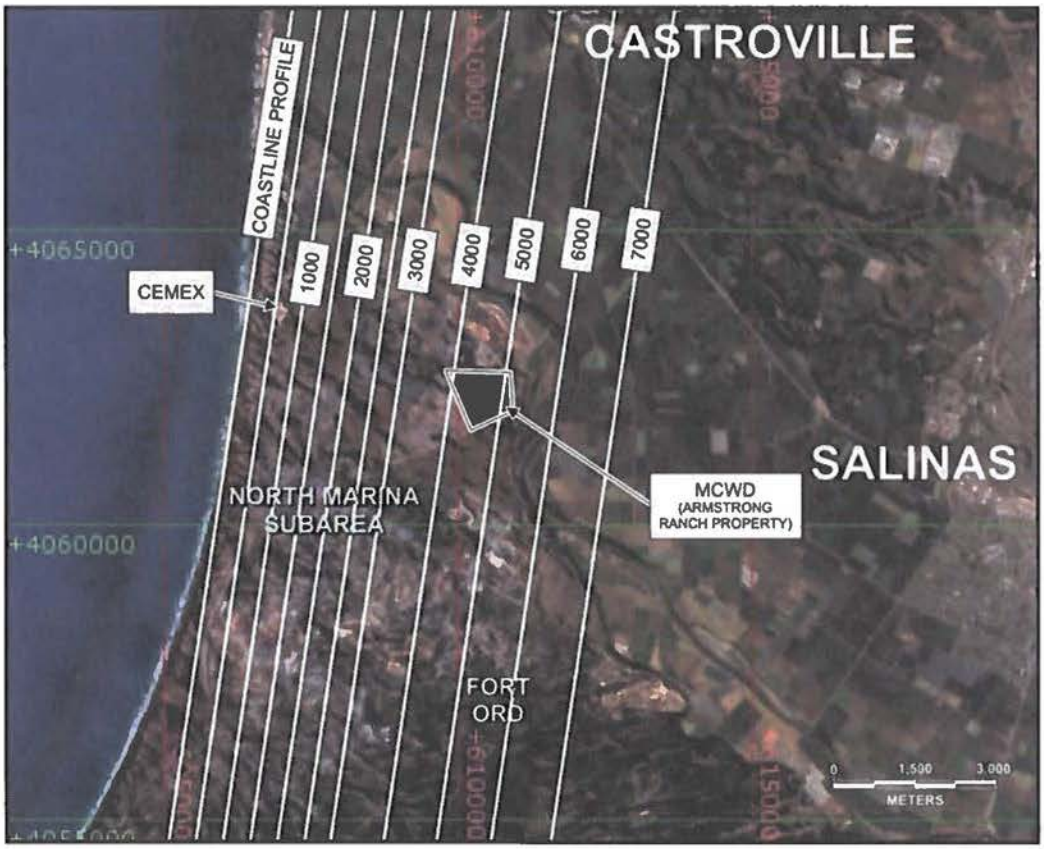
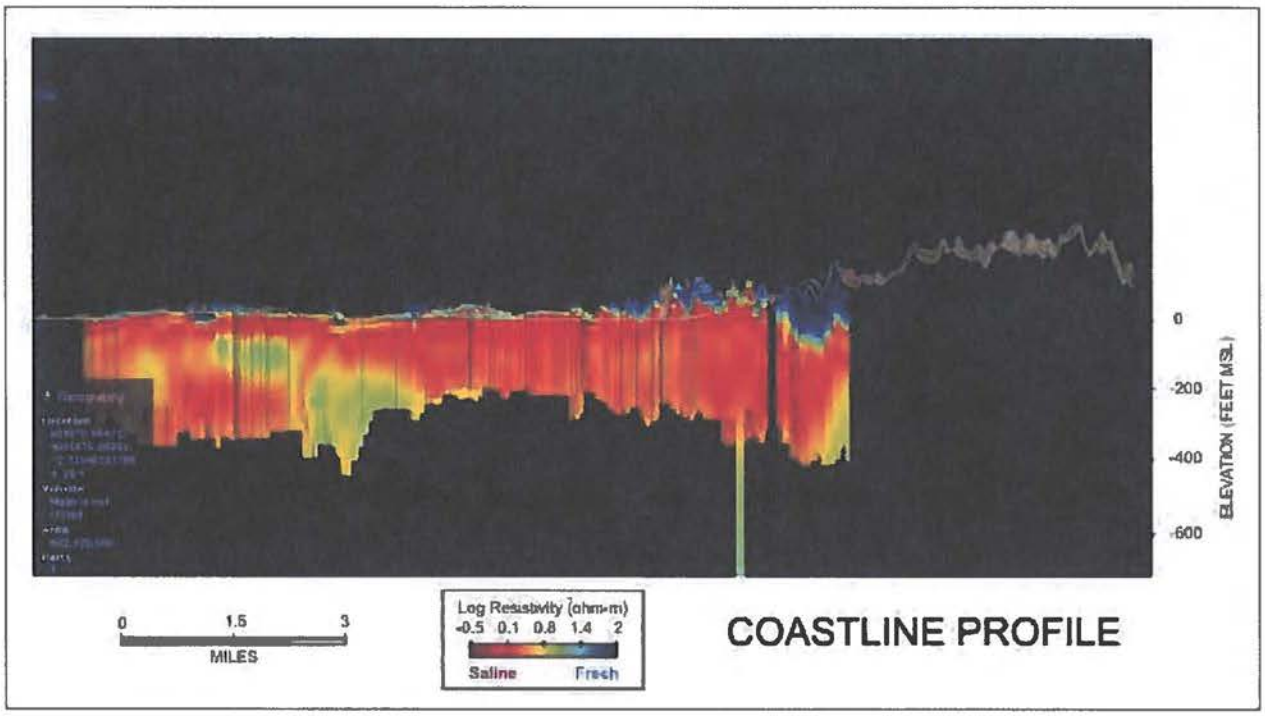


RESISTIVITY PROFILE LINE LOCATION MAP



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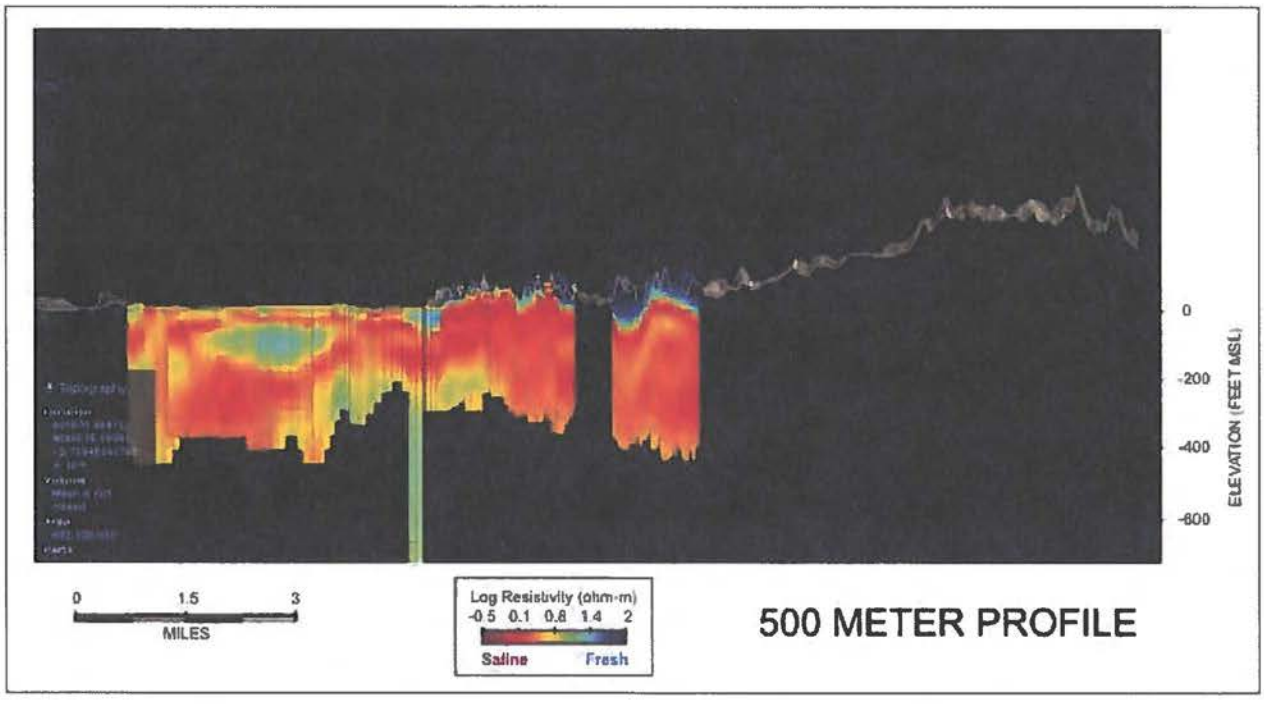

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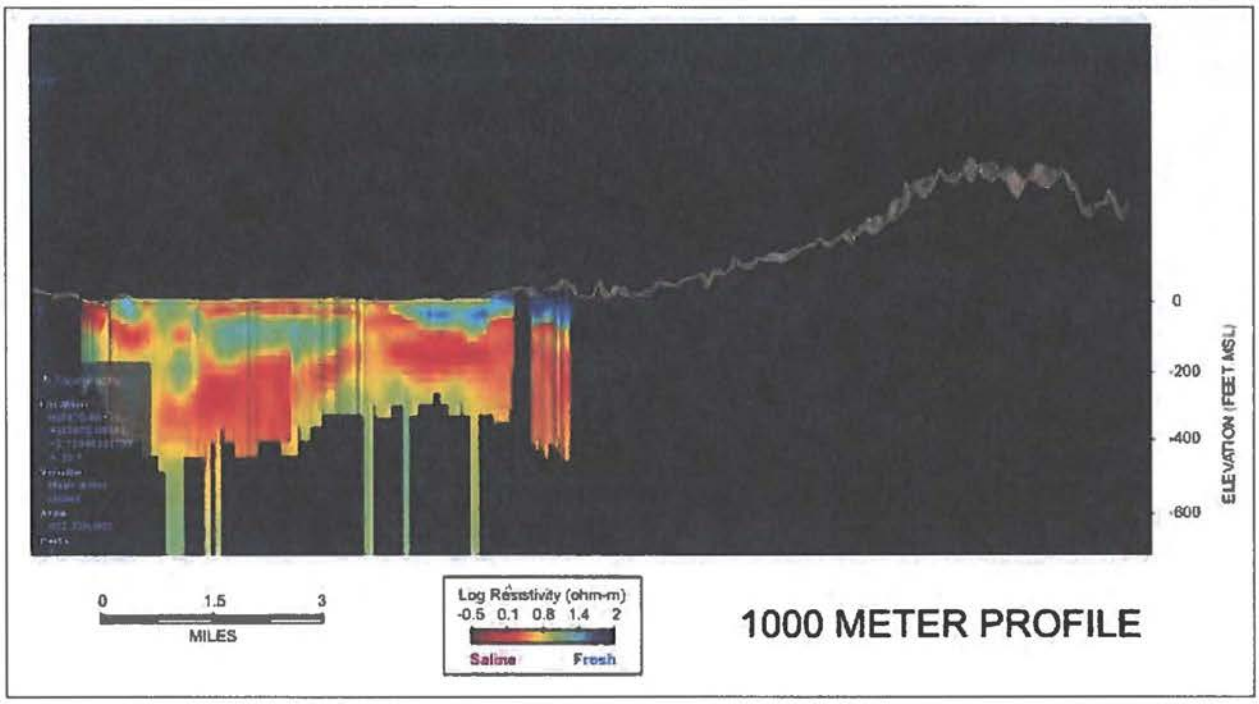
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Saline
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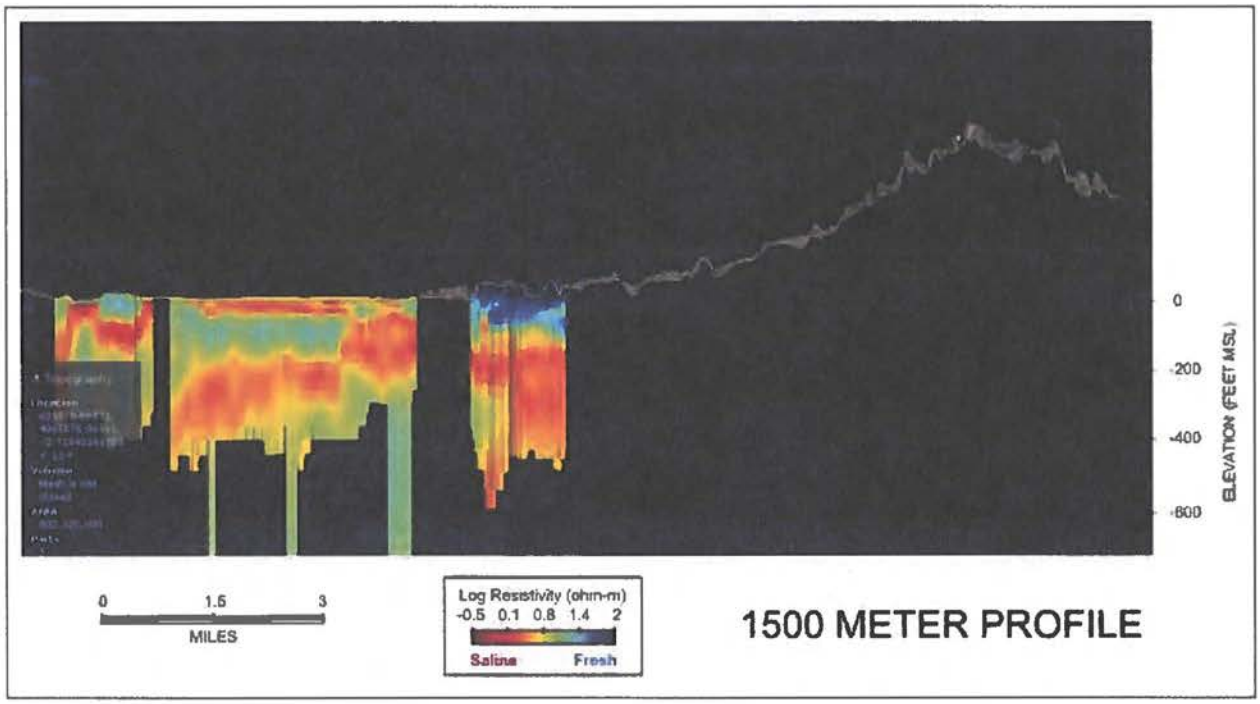
1000 METER PROFILE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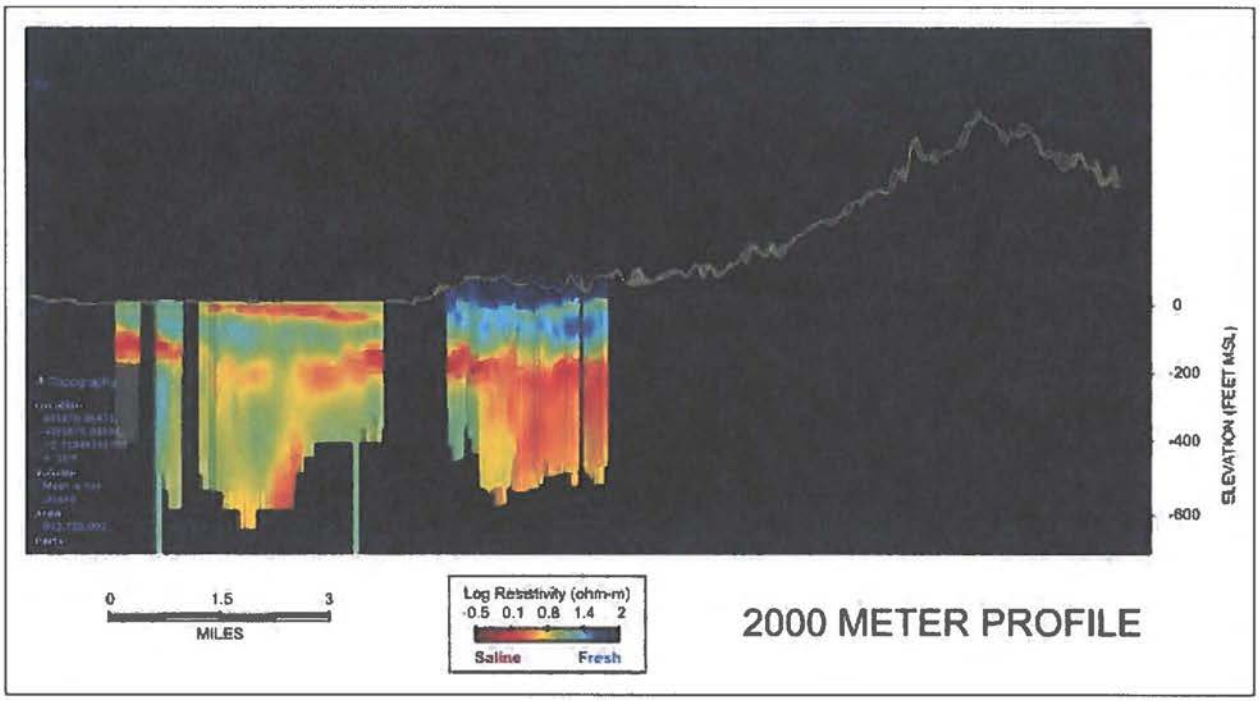
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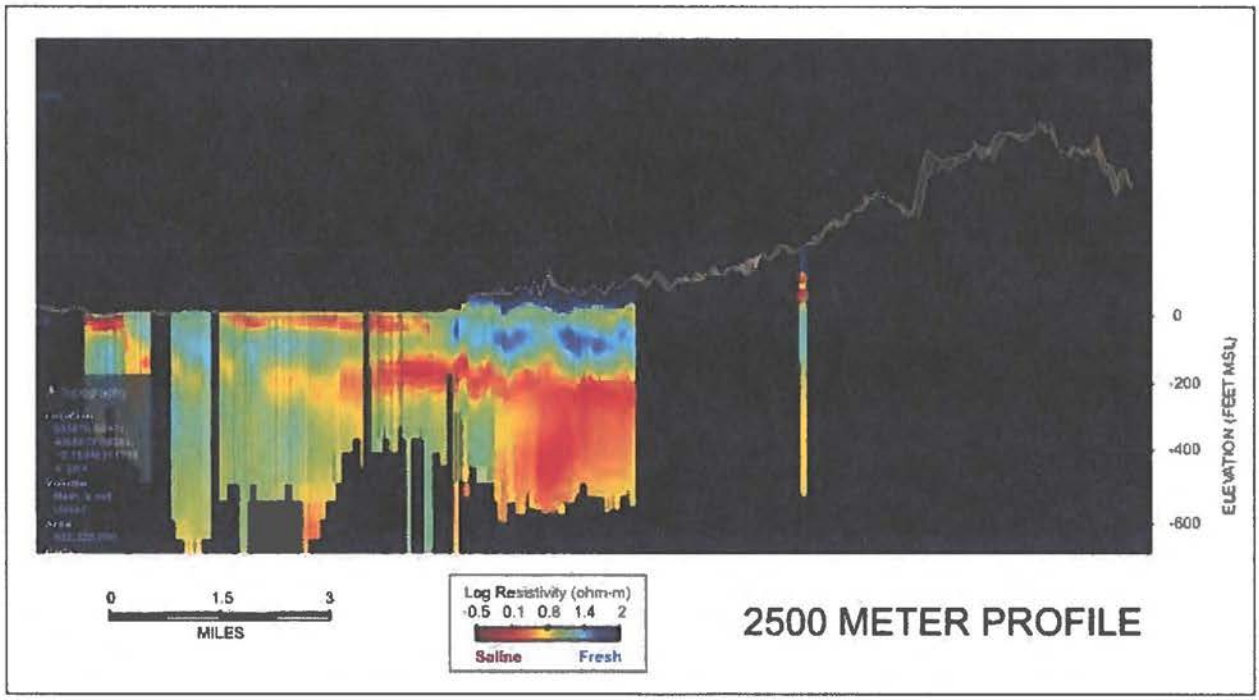
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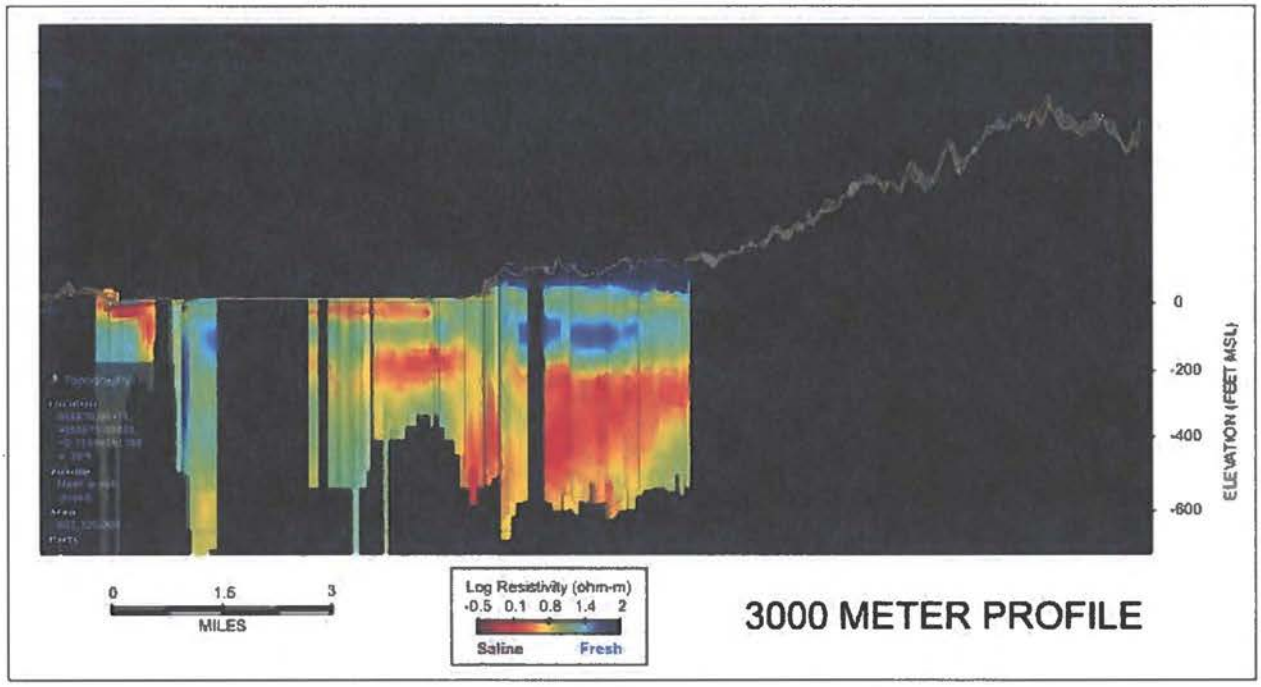
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Fresh
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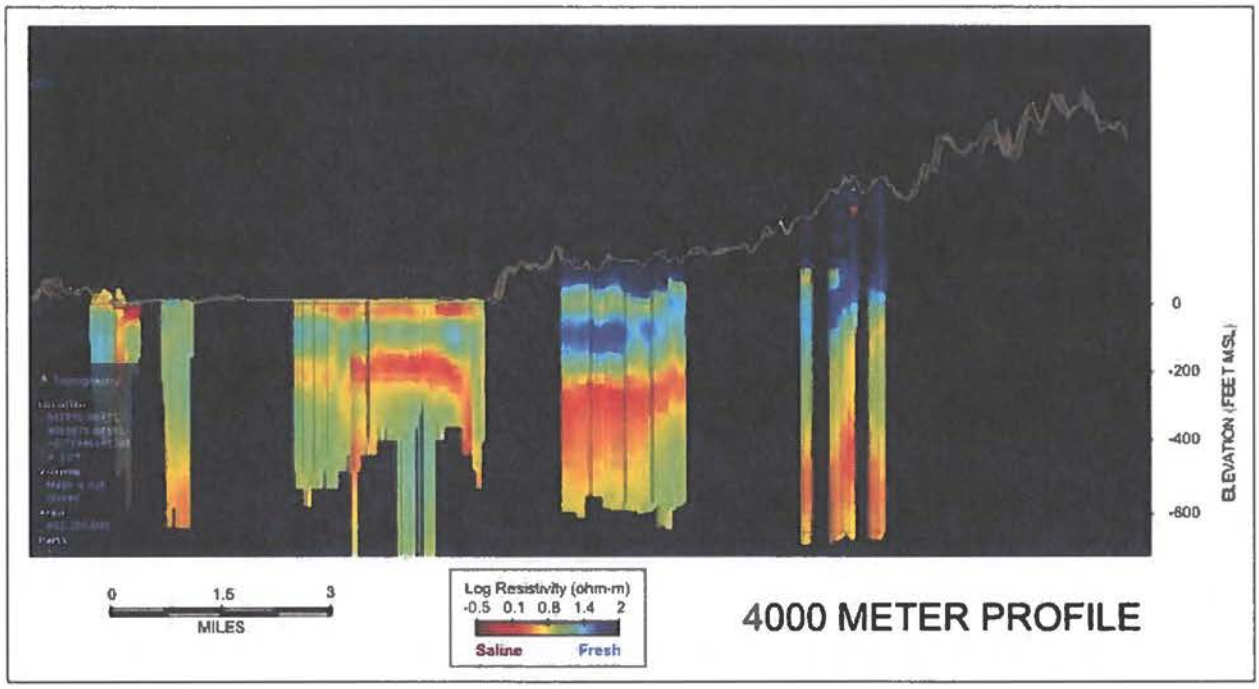
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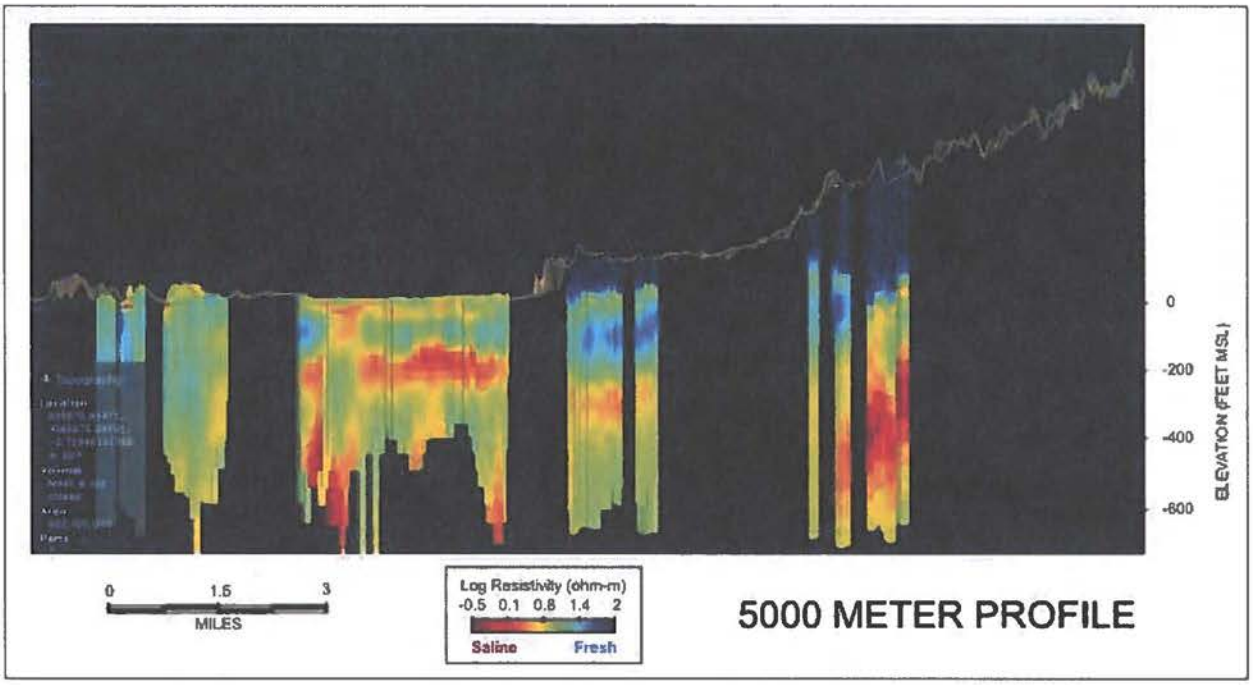
Fresh
4000 METER PROFILE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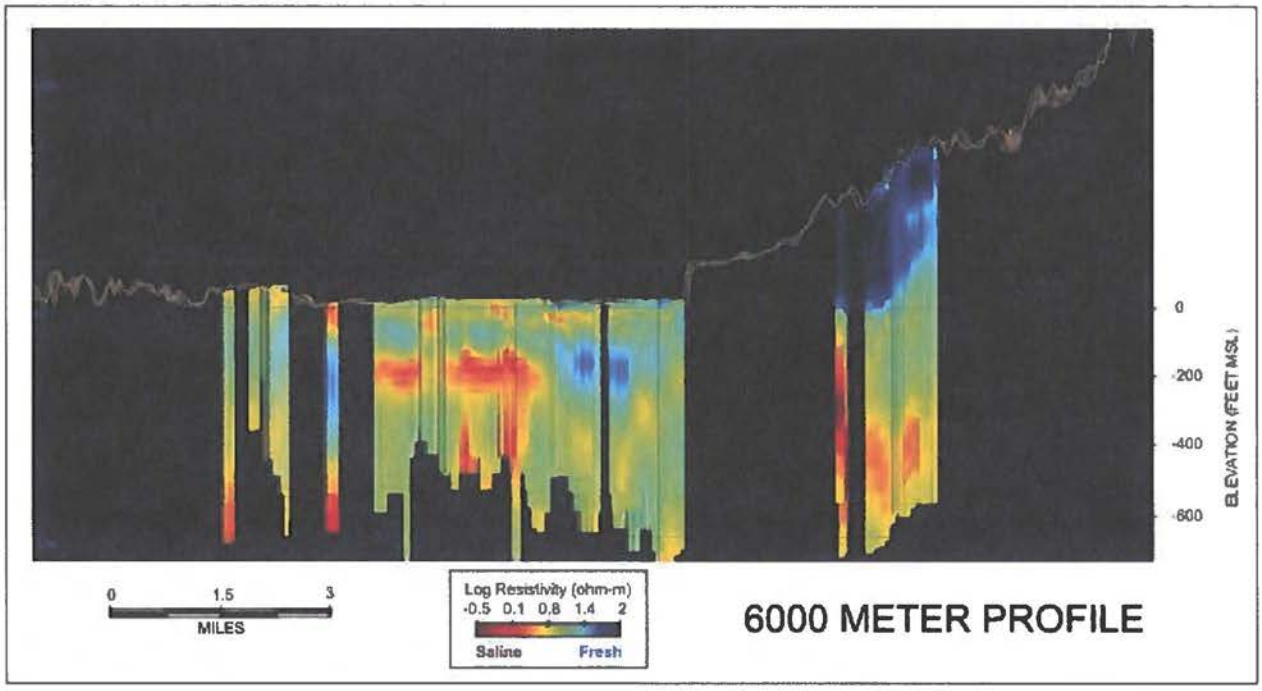
Saline
Fresh
5000 METER PROFILE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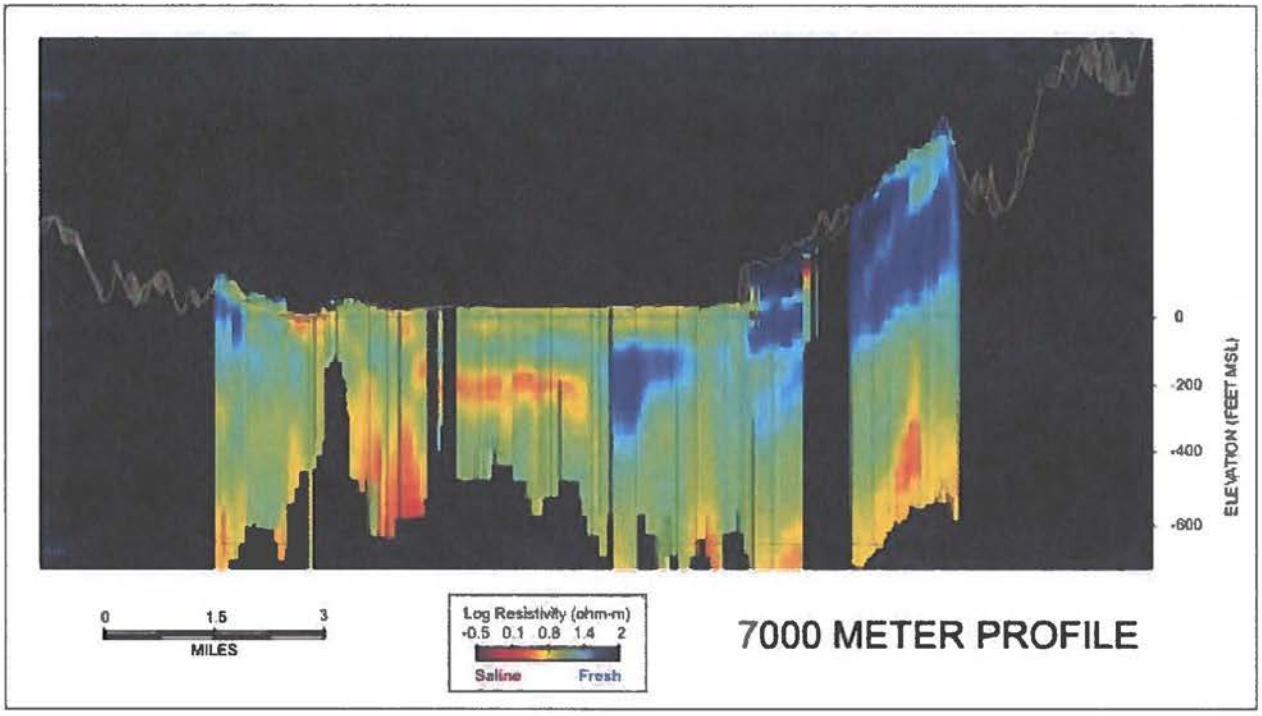
Fresh
6000 METER PROFILE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Log Resistivity (ohm-m)
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Fresh
7000 METER PROFILE

ATTACHMENT B
LABORATORY WATER QUALITY TEST RESULTS

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Alkalinity, Total (as $CaCO_3$)	mg/L	123	124	112	117	105	120	114	118	105	104	97	97	111	124	97	97	80	86	112	117	195	121	50	50	N/A	N/A	117
Aluminum, Total	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	166	18	166	36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	33	N/A	N/A	ND
Ammonia-N	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	ND	N/A
Ammonia-N, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Ammonia-NH_3 (calc) Un-Ionized	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Arsenic, Total	µg/L	46	34	41	33	43	30	44	39	37	34	34	27	40	30	21	22	15	14	4	3	2	3	4	3	N/A	N/A	33
Barium, Dissolved	µg/L	141	143	61	63	68	63	162	157	79	66	97	91	166	176	104	104	92	107	562	466	96	67	173	200	N/A	N/A	95
Bicarbonate (as HCO3-)	mg/L	150	151	137	143	128	146	139	144	128	127	118	118	135	151	118	118	98	105	137	143	238	148	61	61	N/A	N/A	143
Boron, Dissolved	mg/L	0.89	1.16	2.36	2.78	2.27	2.73	1.06	1.03	1.01	2.68	2.2	2.3	0.65	0.75	1.16	1.03	0.79	0.88	0.09	ND	ND	ND	ND	ND	N/A	N/A	2.6
Bromide, Dissolved	mg/L	44	44	46	50	39	49	44.1	44	53.8	49	44.8	38	43.8	47	31	31	16.7	18	3.3	2	0.4	ND	4.4	5.2	N/A	N/A	37
Calcium	mg/L	2,440	2,510	746	805	661	791	2,470	2,350	826	835	628	664	2,980	2,827	1,040	1,131	594	621	360	358	96	62	129	132	N/A	N/A	349
Calcium, Dissolved	mg/L	2,410	2,480	732	781	646	771	2,370	2,360	844	879	666	664	3,070	2,810	1,060	1,100	617	627	363	356	99	63	142	138	N/A	N/A	371
Carbamates by HPLC (EPA 531)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Carbonate as $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Chloride, Dissolved	mg/L	14,905	16,346	16,037	15,580	14,504	15,276	16,069	16,456	14,686	14,964	11,680	12,136	14,142	14,177	9,751	9,587	5,497	6,266	1,168	1,152	120	90	271	272	N/A	N/A	13,830
Chlorinated Pesticides and PCB (EPA 508)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Chlorine Residual,Total (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Coliform, E. Coli (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	N/A
Coliform, E. Coli (Quantitray)-18 Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
Coliform, Total (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	490	N/A
Coliform, Total (Quantitray)-18Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,755	N/A	N/A
Color, Apparent (Unfiltered)	CU	10	20	ND	ND	4	ND	6	ND	ND	ND	ND	7	8	ND	4	ND	3	ND	ND	4	ND	ND	7	8	60	10	4
Copper, Total	µg/L	40	52	61	80	62	52	56	76	62	90	42	78	46	30	42	22	ND	16	13	4	ND	ND	5	ND	N/A	N/A	44
DBCP & EDB	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dioxin	pg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Diquat (EPA 549)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dissolved Oxygen (Field)	mg/L (H)	N/A	0.08	N/A	3.34	N/A	2.64	N/A	0.225	N/A	3.85	4.7	3.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.28	N/A	N/A
Dissolved Oxygen (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.34	8.84	N/A
Endothall	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Fluoride, Dissolved	mg/L	ND	ND	ND	ND	0.3	ND	ND	ND	0.5	ND	0.4	ND	ND	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	0.1	ND	ND	N/A	N/A	0.2
Glyphosate	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Hardness (as $CaCO_3$)	mg/L	10,765	11,338	6,327	6,606	5,678	6,439	12,063	11,140	6,378	6,520	5,044	5,109	11,617	11,021	5,601	5,740	3,176	3,321	1,484	1,429	367	229	561	540	N/A	N/A	4,751
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iodide	µg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iron	µg/L	146	722	ND	ND	25	ND	169	671	ND	ND	ND	ND	77	223	ND	ND	ND	169	39	17	ND	ND	ND	26	N/A	N/A	69
Iron, Dissolved	µg/L	118	726	12	ND	15	ND	142	684	ND	ND	ND	ND	80	215	ND	ND	ND	175	ND	ND	ND	ND	ND	ND	N/A	N/A	65
Kjehldahl Nitrogen, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	0.6	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Lithium	µg/L	254	200	201	155	172	157	250	184	159	115	144	106	222	193	34	25	16	18	75	53	7	3	6	8	N/A	N/A	152
Magnesium	mg/L	1,130	1,230	1,080	1,120	978	1,080	1,430	1,280	1,050	1,080	844	838	1,020	962	730	708	411	430	142	130	31	18	58	51	N/A	N/A	942
Magnesium, Dissolved	mg/L	1,180	1,230	1,100	1,110	979	1,080	1,290	1,310	1,020	1,160	797	859	979	969	752	681	421	437	135	128	31	18	62	54	N/A	N/A	989
Manganese, Dissolved	µg/L	440	1,060	18	ND	41	ND	259	1,080	ND	ND	ND	170	268	1,220	113	ND	ND	248	340	645	ND	ND	ND	ND	N/A	N/A	26
Manganese, Total	µg/L	484	1,100	19	ND	43	ND	289	1,060	14	ND	58	154	276	1,221	90	ND	ND	268	336	653	ND	ND	ND	ND	N/A	N/A	26
MBAS (Surfactants)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Nitrate as NO_3	mg/L	1	2	2	4	3	4	ND	2	5	3	29	6	1	ND	4	3	20	10	3	1	70	64	237	233	N/A	N/A	5
Nitrate+Nitrite as N	mg/L	0.4	0.6	1.1	1	0.7	0.9	0.1	0.6	1.2	0.8	6.5	1.5	0.2	0.1	1	0.9	5.3	2.3	0.8	0.4	16.2	14.6	54	52.7	N/A	N/A	1
Nitrite as NO_2-N, Dissolved	mg/L	0.2	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	0.1	ND	0.1	ND	0.1	0.3	0.3	ND	0.1	N/A	N/A	ND
Odor Threshold at 60 C	TON	1	2	1	2	1	1	3	3	3	1	5	2	3	1	1	1	4	14	3	2	2	1	2	10	N/A	N/A	2
Oil & Grease (HEM)	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
o-Phosphate-P	mg/L	0.03	0.06	0.07	0.09	0.07	0.05	0.06	0.04	0.05	0.06	0.18	0.14	0.06	0.04	ND	0.06	0.06	0.09	0.04	0.05	0.06	0.12	0.05	0.12	N/A	N/A	0.1
pH (Field Test)	pH	6.72	7.24	7.02	7.74	7.15	7.87	6.55	6.84	6.89	7.05	7.25	7.27	6.65	6.56	6.78	6.78	6.77	6.91	7	7.18	7.23	7.44	6.46	6.63	7.53	7.07	7.03
pH (Laboratory)	pH (H)	7.1	7.1	7	7.4	7.2	7.5	6.9	7.2	7.2	7.4	7.2	7.5	7	7.1	7.1	7.2	7	7.2	7.5	7.4	7.3	7.5	6.7	7.1	7.7	7.2	7.2
Phenoxy Acid Herbicides (515.3)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Phosphorus, Dissolved Total	mg/L	0.04	0.03	0.09	0.08	0.05	0.04	0.04	ND	ND	0.06	0.12	0.13	0.11	0.14	ND	0.06	0.06	0.07	0.04	0.04	0.06	0.12	0.08	0.08	N/A	N/A	0.09
Potassium	mg/L	60	61	201	209	228	247	64.4	58	197	214	168	157	51.2	46.2	46	43.9	26	30.2	7.8	6.7	3.4	2.2	2	3.1	N/A	N/A	203
Potassium, Dissolved	mg/L	59	60.9	197	207	224	244	55.7	59.6	197	232	157	161	49.1	46.3	50	43.3	28	31.5	7.1	6.6	3.6	2.2	2.4	3	N/A	N/A	213
QC Ratio TDS/SEC		0.73	0.66	0.7	0.67	0.68	0.67	0.74	0.66	0.69	0.69	0.68	0.68	0.72	0.74	0.68	0.64	0.7	0.68	0.69	0.65	0.6	0.64	0.67	0.64	N/A	N/A	0.67
Reg. Org. Compounds (EPA 525)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Settleable Solids	mL/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Silica as SiO_2, Dissolved	mg/L	33	32	22	21	20	19	32	30	21	18	19	19	36	31	30	27	27	24	45	41	35	32	39	38	N/A	N/A	20
Sodium	mg/L	5,760	5,913	8,011	7,381	7,306	7,211	6,960	5,620	7,232	6,590	5,340	5,632	4,286	4,092	4,079	3,685	2,579	2,399	161	131	71	51	120	116	N/A	N/A	7,606
Sodium, Dissolved	mg/L	6,150	6,340	8,320	7,920	7,500	7,480	6,110	6,180	6,930	7,670	5,550	6,260	4,730	4,090	4,320	3,490	2,750	2,500	136	128	76	51	131	120	N/A	N/A	8,040
Specific Conductance (E.C)	µmhos/cm	40,120	43,440	43,960	42,510	39,090	40,840	44,020	43,570	41,090	41,040	34,180	34,300	38,000	37,390	26,250	27,200	17,050	18,800	3,775	3,729	1,106	714	1,752	1,735	36,890	36,280	37,860
Specific Conductance (E.C) (Field)	µmhos/cm	40,882	43,249	43,788	42,426	39,747	41,557	41,740	43,223	42,340	40,642	33,456	33,798	5,750	37,532	26,779	27,703	16,917	18,376	3,961	3,968	962	796	1,828	1,746	35,270	36,306	38,097
Strontium, Dissolved	µg/L	15,666	16,477	8,689	9,434	7,995	9,084	16,370	16,228	9,500	9,458	7,619	7,287	17,499	17,148	9,637	9,864	5,208	5,455	2,777	2,834	630	435	1,231	1,288	N/A	N/A	7,440

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Sulfate	mg/L	1,950	N/A	2,070	N/A	1,840	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,700	N/A	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate, Dissolved	mg/L	N/A	2,148	N/A	2,048	N/A	2,008	2,058	2,158	1,960	1,967	1,533	1,605	N/A	1,796	1,184	1,205	716	807	N/A	31	110	67	197	192	N/A	N/A	1,840
Temperature	°C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	N/A	N/A
Temperature (Field)	°C	19.2	20.02	17.2	17.89	18.8	17.64	19.6	20.22	16.3	18.74	17.5	19.17	19.9	19.8	18.4	18.3	17.7	18.1	21.3	21.4	16.97	18.2	16.7	18.1	20.9	19.1	17.2
Total Diss. Solids	mg/L	29,100	28,700	30,900	28,300	26,600	27,500	32,600	28,600	28,500	28,300	23,400	23,300	27,500	27,600	17,900	17,500	11,900	12,800	2,616	2,437	663	454	1,166	1,117	25,300	24,400	25,400
Total Susp. Solids	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36	ND	N/A
Turbidity	NTU	1.8	0.15	0.1	0.1	0.1	0.15	1	0.3	0.1	0.16	0.15	0.24	0.65	0.15	0.25	0.05	0.3	0.2	0.25	0.25	ND	ND	0.4	0.75	17	1.6	0.4
Turbidity (Field)	NTU	0.65	0.69	0.41	0.35	0.28	0.43	0.38	0.87	0.42	0.21	0.96	0.55	0.76	0.53	0.71	0.84	0.52	0.17	0.71	0.87	0.47	0.45	1.31	1.26	40.3	0.66	0.74
Volatile Org. Compounds (524)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	N/A	N/A	ND
Zinc, Total	µg/L	ND	ND	ND	ND	413	ND	ND	ND	297	ND	312	ND	ND	ND	211	107	ND	108	51	ND	40	ND	43	ND	N/A	N/A	ND

Notes:

°C	= Degrees Celsius
CU	= Color Units
mg/L	= Milligrams per Liter
NTU	= Nephelometric Turbidity Units
pg/L	= Picograms per Liter
TON	= Threshold Odor Number
µg/L	= Micorgrams per Liter
µmhos/cm	= Micromhos per Centimeter
H	= Analyzed outside of hold time
MPN/100mL	= The most probable number (MPN) of coliform or fecal coliform bacteria per 100 milliliter
ND	= NOT DETECTED at or above the Reporting Limit or Practical Quantitation Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
N/A	= No Lab Results available
RP	= Results to be provided

[1] Laboratory water quality reports will be provided in the Test Slant Well and mornitoring well completion report.
* Laboratory water quality results pending.

CONSTITUENT	UNIT	MW-6D	MW-6M	MW-6S	MW-7D	MW-7M	MW-7S	MW-8D	MW-8D	MW-8M	MW-8M	MW-8S	MW-8S	MW-9D	MW-9D	MW-9M	MW-9M	MW-9S	MW-9S
		4/2/2015	4/4/2015	4/5/2015	9-Aug-15	2-Aug-15	3-Aug-15	5/21/2015	6/23/2015	5/27/2015	6/23/2015	5/28/2015	6/23/2015	25-Jun-15	28-Jul-15	28-Jun-15	28-Jul-15	30-Jun-15	28-Jul-15
ALKALINITY, TOTAL (as $CaCO_3$)	mg/L	117	397	366	109	98	29	152	112	140	155	320	302	170	176	127	128	1,051	1,019
ALUMINUM, TOTAL	µg/L	ND	ND	ND	ND	18	ND	37	128	292	ND	ND	ND	ND	ND	ND	ND	11	ND
AMMONIA-N	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
AMMONIA-N, DISSOLVED	mg/L	ND	0.17	0.45	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	0.12	0.17	2.83	2.86
AMMONIA-NH_3 (CALC) UN-IONIZED	ug/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ARSENIC, TOTAL	µg/L	3	5	16	41	4	1	1	11	28	24	1	1	2	2	39	35	11	12
BARIUM, DISSOLVED	µg/L	255	155	105	110	282	199	88	178	154	119	57	75	59	48	163	141	315	273
BICARBONATE (AS HCO3-)	mg/L	143	484	447	133	120	35	185	137	171	189	390	368	207	215	155	156	1,282	1,243
BORON, DISSOLVED	mg/L	ND	ND	ND	1.71	ND	ND	0.05	0.66	1.83	1.37	0.22	0.29	0.08	0.07	2.93	2.77	0.69	0.64
BROMIDE, DISSOLVED	mg/L	2	0.5	0.2	44.3	6.6	1.3	0.6	11.5	42.1	33.6	0.9	1	0.2	0.2	49.6	47.6	4.2	3.5
CALCIUM	mg/L	341	139	93	1,900	507	120	64	413	1110	1500	149	142	32	34	878	1,060	209	234
CALCIUM, DISSOLVED	mg/L	347	140	92	1,890	520	114	59	416	1140	1500	151	139	35	33	869	1,100	242	235
CARBAMATES BY HPLC (EPA 531)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND		ND		ND	
CARBONATE AS $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLORIDE, DISSOLVED	mg/L	814	167	57	13,589	1,739	387	220	3995	12380	10546	261	251	74	75	16,519	10,436	1,199	1,038
CHLORINATED PESTICIDES AND PCB (EPA 508)	µg/L	ND	A	A	A	ND	ND	ND	ND	ND	ND	A	A	ND		ND		ND	
CHLORINE RESIDUAL, TOTAL (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY)	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY) - 18 HOUR	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY)	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY) - 18 HOUR	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLOR, APPARENT (UNFILTERED)	CU	5	16	20	ND	ND	ND	11	16	ND	7	3	ND	ND	3	6	14	175	60
COPPER, TOTAL	µg/L	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND
DBCP & EDB	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIOXIN	pg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIQUAT (EPA 549)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DISSOLVED OXYGEN (FIELD)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
DISSOLVED OXYGEN (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ENDOTHALL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
FLUORIDE, DISSOLVED	mg/L	0.1	ND	0.2	ND	ND	0.1	0.3	ND	0.4	ND	0.1	ND	0.3	0.3	ND	ND	ND	0.4
GLYPHOSATE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
HARDNESS (AS $CaCO_3$)	mg/L	1222	565	393	9,030	2,044	547	263	2057	6080	6698	578	556	133	138	6,718	7,296	1,218	1,206
HYDROXIDE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IODIDE	µg/L	ND	35	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	500	330
IRON	µg/L	ND	184	315	ND	ND	33	81	274	ND	ND	104	ND	10	ND	670	1,540	6,964	6,878
IRON, DISSOLVED	µg/L	ND	182	315	ND	ND	26	15	ND	ND	ND	99	ND	ND	ND	667	1,520	6,300	1,400
KJEHLDAHL NITROGEN, DISSOLVED	mg/L	ND	0.7	1	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	0.11	0.2	0.19	6.12	2.9
LITHIUM	µg/L	25	17	6	271	29	5	49	157	132	132	ND	6	38	39	289	296	23	20
MAGNESIUM	mg/L	90	53	39	1,040	189	60	25	249	801	717	50	49	13	13	1,100	1,130	169	151
MAGNESIUM, DISSOLVED	mg/L	83	49	37	1,010	192	58	23	250	828	692	51	47	13	13	1,090	1,140	161	152
MANGANESE, DISSOLVED	µg/L	714	821	2090	230	372	476	283	759	353	642	ND	76	247	186	1,120	1,410	4,920	4,830
MANGANESE, TOTAL	µg/L	750	810	1880	232	372	500	310	847	354	668	ND	86	254	188	1,160	1,380	5,140	4,840
MBAS (SURFACTANTS)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NITRATE AS NO_3	mg/L	2	ND	ND	6	15	198	2	6	5	6	123	115	2	2	5	6	ND	ND
NITRATE+NITRITE AS N	mg/L	0.7	0.5	0.5	1.4	3.4	44.8	0.7	1.3	1.5	1.4	28.2	26.8	0.9	0.8	1.2	1.3	2.5	1.2
NITRITE AS NO_2-N, DISSOLVED	mg/L	0.2	0.1	0.5	ND	ND	0.1	0.3	ND	0.4	ND	0.4	0.8	0.3	0.3	ND	ND	2.5	1.2
ODOR THRESHOLD AT 60 C	TON	1	1	2	1	2	2	1	2	1	1	2	1	1	2	1	2	2	5
OIL & GREASE (HEM)	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
o-PHOSPHATE-P	mg/L	0.05	0.32	1.55	0.05	0.016	0.035	0.06	0.04	0.06	0.04	0.1	0.13	0.06	0.13	0.06	0.04	1.34	0.28
pH (FIELD TEST)	pH	7.24	7.43	7.07	6.77	7.17	7.05	7.33	8.17	6.67	6.92	7.13	6.99	7.44	8.03	6.84	7.03	7.06	7.04
pH (LABORATORY)	pH (H)	7.4		7.1	6.9	7.2	7.3	7.6	8.2	7.2	7.2	7.4	7.2	7.5	7.8	6.9	6.9	7.1	7.1
PHENOXY ACID HERBICIDES (515.3)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
PHOSPHORUS, DISSOLVED TOTAL	mg/L	0.06	0.31	1.38	0.02	0.017	0.04	0.06	ND	0.07	ND	0.11	0.07	0.12	0.029	0.06	ND	1.4	0.16
POTASSIUM	mg/L	7.1	6.4	7.6	57	10	5.9	5.1	41	108	55	4.1	5	3.5	6.1	197	168	14	13
POTASSIUM, DISSOLVED	mg/L	8	7	7.2	55	10	5.5	4.6	42	111	50	4.3	4.8	3.6	6	196	167	12.8	13
QC RATIO TDS/SEC		0.67	0.63	0.61	0.69	0.68	0.68	0.56	0.58	0.69	0.7	0.62	0.63	0.59	0.61	0.66	0.69	0.6	0.58
REG. ORG. COMPOUNDS (EPA 525)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
SETTLEABLE SOLIDS	mL/L	NA	NA	NA				NA	NA	NA	NA	NA							
SILICA AS SiO_2, DISSOLVED	mg/L	44	44	34	35	30	37	45	33	30	33	37	40	45	44	35	30	43	40
SODIUM	mg/L	77	140	79	6,834	338	124	148	2192	6106	5310	262	245	68	75	8,407	8,224	732	691
SODIUM, DISSOLVED	mg/L	78	141	79	6,540	342	119	135	2290	6270	4950	265	239	68	74	8,430	8,240	698	692
SPECIFIC CONDUCTANCE (E.C)	µmhos/cm	2758	1545	989	38,800	5,650	1,768	1045	12190	35020	29320	2036	1935	624	617	44,090	44,660	5,330	5,190
SPECIFIC CONDUCTANCE (E.C) (FIELD)	µmhos/cm	2859	1531	869	39,065	5,507	1,762	1113	15312	35040	29888	2004	1932	574	658	44,462	45,724	5,384	5,255
STRONTIUM, DISSOLVED	µg/L	1826	761	561	12,676	3,689	1,327	470	3536	8504	8507	868	855	273	260	8,148	8,301	3,064	1,861
SULFATE	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
SULFATE, DISSOLVED	mg/L	85	175	87	1,882	176	61	32	541	1743	1430	258	239	25	23	2,286	2,207	210	220
TEMPERATURE	°C	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TEMPERATURE, (FIELD)	°C	10.6	16.8	NA	19.7	18.4	18.2	21.2	19.2	17.17	17.2	16.83	17	21.2	20.2	17.2	17.3	17.3	17.1
TOTAL DISS. SOLIDS	mg/L	1840	966	608	26,700	3,832	1,200	583	7100	24000	20500	1260	1214	366	377	29,000	30,600	3,204	2,997
TOTAL SUSP. SOLIDS	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TURBIDITY	NTU	0.2	0.7	2.6	0.2	0.2	0.3	0.55	1.9	0.1	0.2	0.1	0.15	0.1	0.5	1.3	3	55	50
TURBIDITY (FIELD)	NTU	0.59	0.7	0.62	0.85	0.88	0.7	2.48	1	0.56	1	0.92	1	0.86	0.7	0.29	0.3	0.82	0.2
VOLATILE ORG. COMPOUNDS (524)	µg/L	ND	ND	ND	ND	A	ND	ND	ND	ND	ND	A	A	ND		ND		A	
ZINC, TOTAL	µg/L	24	ND	ND	ND	ND	ND	ND	ND	340	ND	636	ND	22	ND	ND	ND	ND	ND

Total Dissolved Solids in Monterey Regional Water Pollution Control Agency Wells

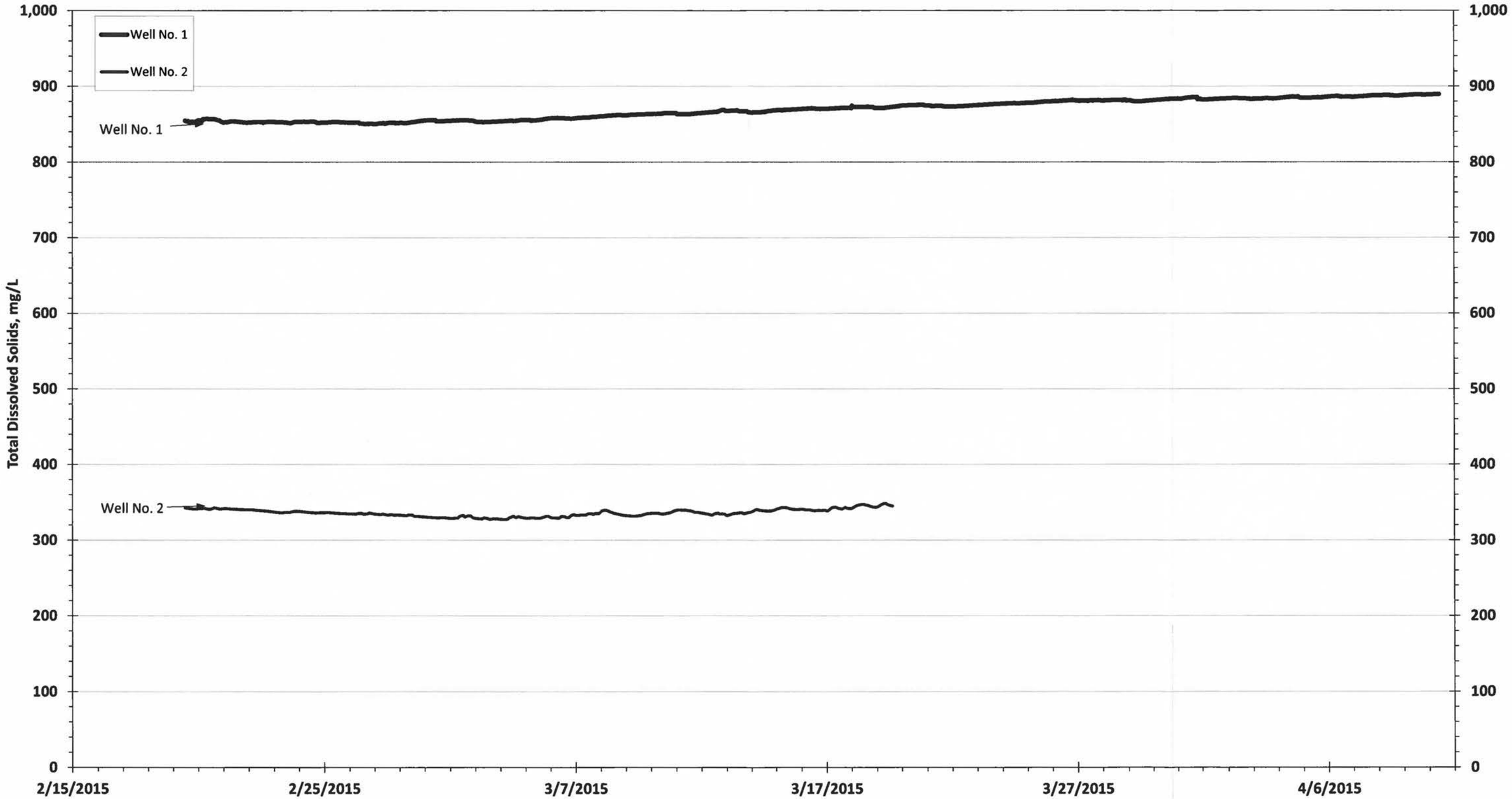

Figure 3-5

ATTACHMENT

Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District

Ian Gottschalk and Rosemary Knight
June 16, 2017

Objective:

Airborne electromagnetic (AEM) data were collected in the Northern Salinas Valley, CA, within and around the Marina Coast Water District (MCWD). The data were processed and inverted with lateral constraints by Aqua Geo Frameworks (AGF), and the resulting resistivity models given to Stanford. The work described in this report focuses on the region of a suspected isolated freshwater lens. Figure 1 shows the region of interest. "Isolated freshwater lens" is defined here as a water-bearing unit with anomalously low concentrations of total dissolved solids (TDS) in an area otherwise known to be saltwater intruded. Figure 2 shows a highly simplified schematic of the current understanding of the hydrostratigraphy and distribution of fresh and salt water in the region of interest. There is considerable interest in the interpreted isolated freshwater lens, which is suspected to lie in the Dune Sand and 180-Ft and 180-Ft Equivalent Aquifer. The objective of this report is to review the resistivity models obtained through inversion of the AEM data to determine whether we see evidence of the presence of freshwater in the area mapped as the freshwater lens.

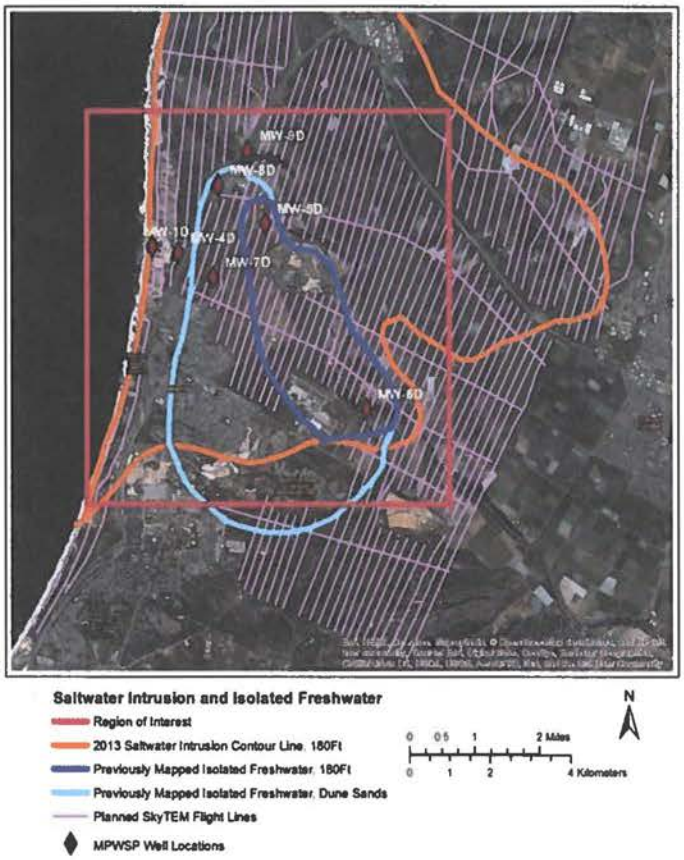

Figure 1: Region of interest (pink box) showing previously mapped saltwater intrusion (orange) extent in the 180-Ft Aquifer and the previously mapped extent of the isolated freshwater (light and dark blue) in the Dune Sand and 180-Ft Aquifers. Also shown are the 7 MPWSP well clusters with geophysical borehole logs as well as continuous data loggers in all screened intervals, and the planned SkyTEM flight lines for the AEM data acquisition

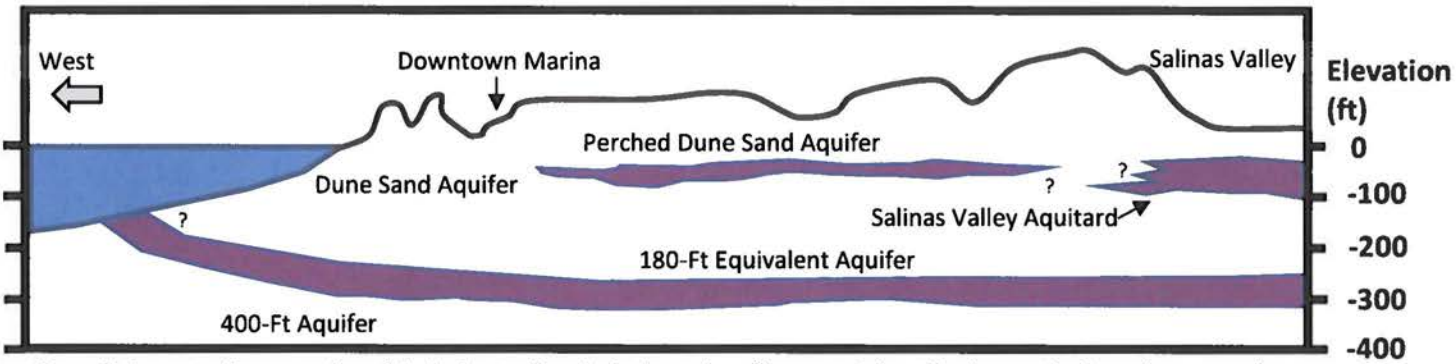

Figure 2: Conceptual cross-section of the hydrostratigraphy in the region of interest. Isolated freshwater has been documented to exist in the 180-Ft/180-Ft Equivalent Aquifers, and in the Dune Sand/Perched Dune Sand Aquifers.

Existing Hydrologic Data:

We have assembled from the study area a database of well location and lithology information. Much of the analysis in this report will use information provided from nine monitoring well clusters drilled by California American Water for its Monterey Peninsula Supply Project (MPWSP), due to the high quality data collected in the wells, and the continuous monitoring within them. These nine MPWSP monitoring well clusters were drilled using a sonic drilling method, with retrieved cores.

Geophysical borehole logs were collected in seven of the monitoring well clusters, shown in Figure 1. Each of the seven well clusters is comprised of three wells, each screened at a different elevation, corresponding roughly to the three aquifers nearest to the ground surface in the region: The Dune Sand Aquifer, the 180-Ft Equivalent Aquifer, and the 400-Ft Aquifer, ranging from highest to lowest elevation. The logs include induction-based resistivity (deep and medium length), spontaneous potential, and gamma radiation. The full geophysical borehole fence diagram for the seven MPWSP well clusters is shown in the Appendix Figure A3. Geophysical logging measurements were collected near the time of drilling which was spring 2015. A baseline geochemical analysis of water from each screened interval was reported approximately 1-2 months after borehole geophysical data collection; wells were bailed before taking a geochemical lab sample. This process has been repeated monthly since then, but the data are not publically available. A continuously logging pressure transducer and electrical conductivity meter was installed in every well in each cluster, and reports submerged pressure, water density, and electrical conductivity every 5 to 15 minutes. Well and transducer specifications are reported by Geoscience Support Services, Inc., shown in the Appendix Table A1. The trend in electrical resistivity on a monthly time scale is negligible, based on the data collected by the continuous data logger in each well; therefore, we consider the lab water quality assessment and the borehole geophysical data to be contemporaneous.

In addition to well lithology (developed from review of the core samples) and geophysical measurements from the MPWSP monitoring wells, previous hydrogeological studies in the area provide a background knowledge of the hydrostratigraphy of the area (Fugro, 1995; Harding, 2001; Kennedy/Jenks, 2004; Geoscience, 2014; Hopkins, 2016).

Overview of SkyTEM Data

635 km of AEM data were acquired in the Marina area May 16-18, 2017, using a SkyTEM 304M system. The locations of the as-flown flight lines are shown in Figure 3, taken from the AGF's QA/QC and Preliminary LCI Report. In this study, we focus on the line-km overlying the study area, shown by the bounding box in the Figure 1.

The inversion of the SkyTEM data by AGF has provided 2-D sections along the SkyTEM flight lines that display the variation in electrical resistivity of the subsurface. The cutaway section in Figure 4 displays data in the region of interest, along with a map of the same area from the 2016 Hopkins Consulting report (Hopkins Consulting, 2016). In all images, we show inverted data considered to be very well determined to determined, with a resistivity standard deviation of <1.5 (Behroozmand et al., 2013). The standard deviation cutoff of 1.5 corresponds to a depth of investigation of nearly 50 mbgs in especially saline regions of the coast, down to over 150mbgs in more resistive inland regions. Inverted resistivities span a wide range in MCWD region of interest, reaching well above 500 ohm-m above the water table in the Fort Ord area, and below 1 ohm-m in zones near the coast.

Figure 3: As-flown flight lines in the MCWD SkyTEM data acquisition. From the AGF "QA/QC and Preliminary Laterally Constrained Inversions Report from the Airborne Electromagnetic Survey of Selected Areas Within the Marina Coast Water District"

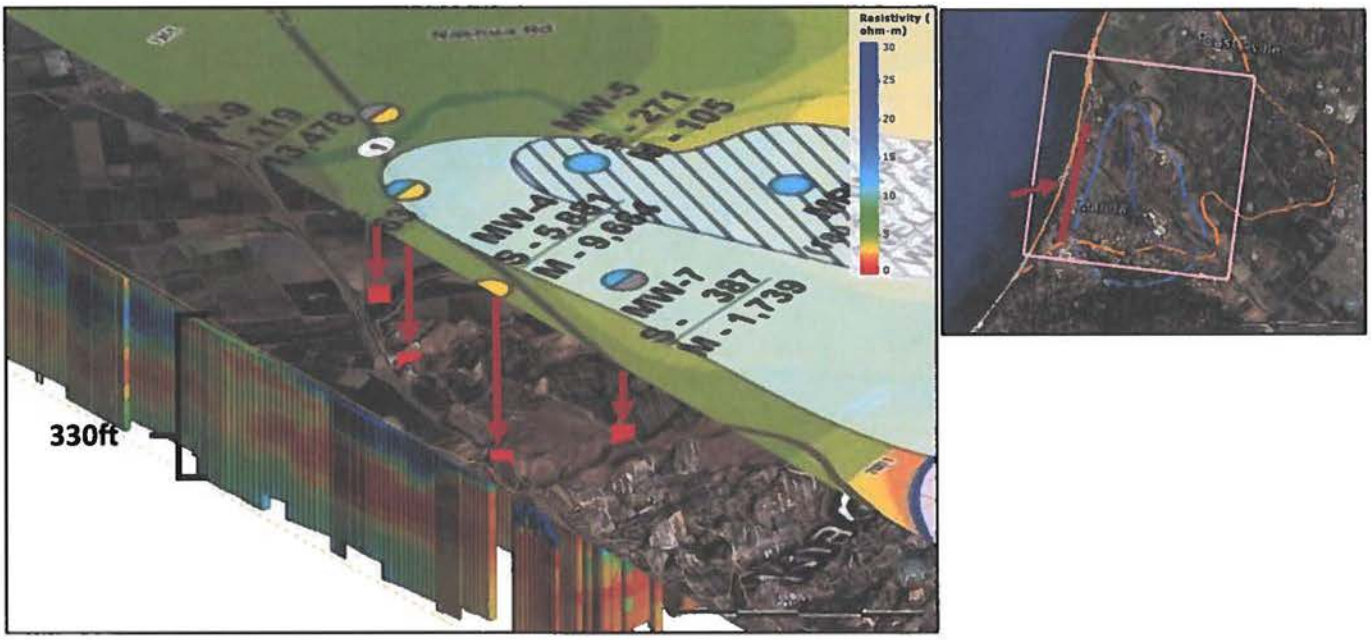

Figure 4: Oblique cutaway view of inverted AEM data in the region of interest, facing northwest from the Monterey Bay. Superimposed above the topography is an image of previously mapped freshwater in the region of interest (Hopkins, 2016). MPWSP wells are shown in red on the topography, and red arrows show the same wells from the superimposed image. The near-surface high-resistivity zone in the Marina area generally extends to the Salinas River.

Figure 5 shows a series of cutaways of the AEM data in the region of interest. Plotted alongside the AEM data are borehole resistivity measurements, for reference. In most locations, borehole resistivity measurements agree very well with the nearest AEM data. This correlation gives us confidence in the AEM data. Although the borehole resistivity measurements were made in 2015, the changes in the subsurface have not made the difference between the datasets very large. Some exceptions are in areas where the pore fluid has changed significantly in the past 2 years (e.g. MW-4 in Figure 5a), which is supported by the trends in EC recorded by the continuous data loggers in the MPWSP wells.

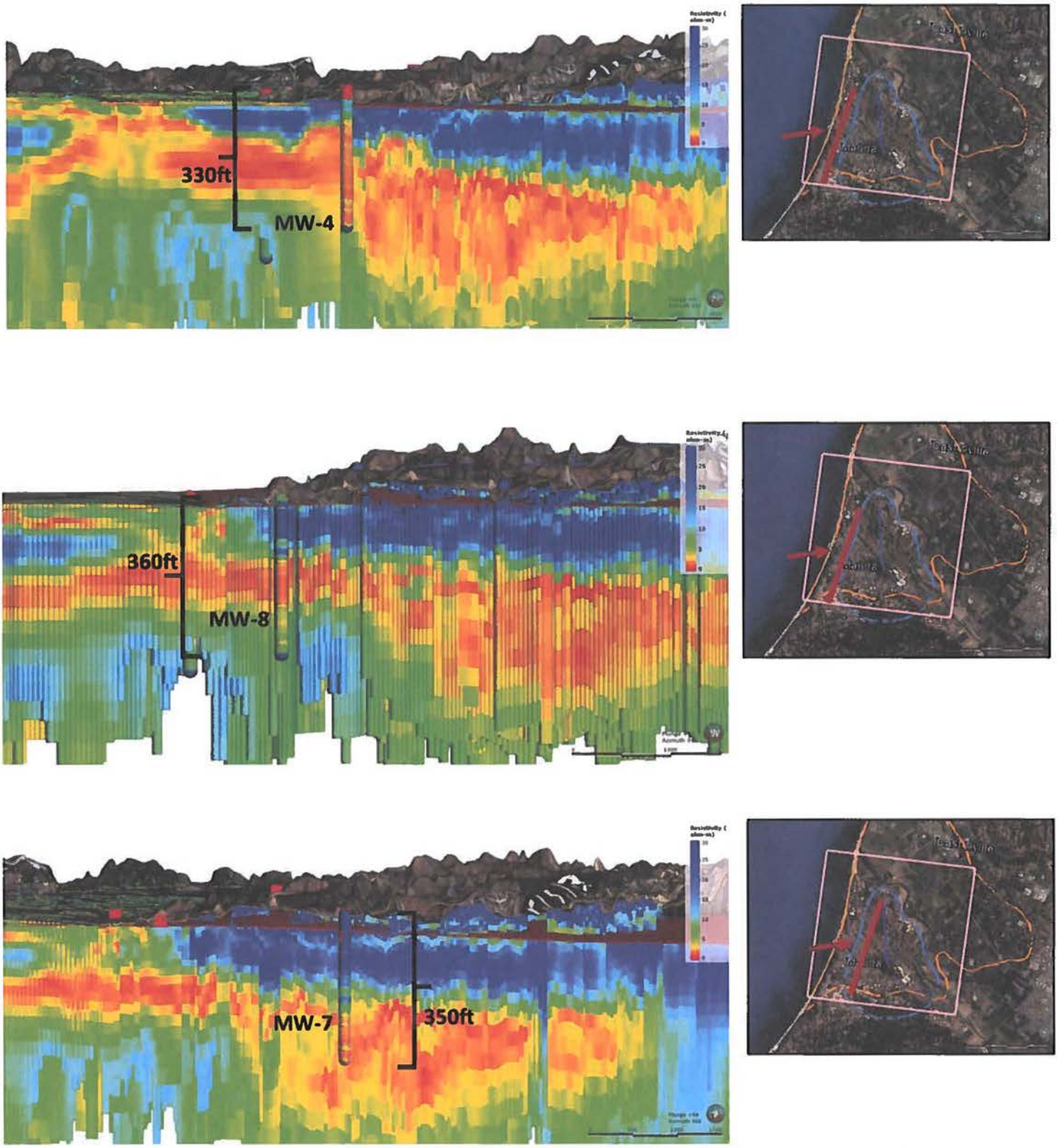

Figure 5: Cutaway slices of AEM data, along with nearby borehole geophysical data (long induction resistivity), and a plan view showing the slice and viewing direction. The top figure shows a notable discrepancy between the geophysical log at the top of MW-4 and the nearby AEM data. This difference emphasizes the changes in water quality since 2015, when MW-4 was logged. The changes observed (increasing in resistivity since 2015) are consistent with the trend of EC in MW-4 since 2015.

Interpretation of the SkyTEM Data

Our objective was review AEM data for the existence of possible freshwater within the region where isolated freshwater had been documented. Resistivity measured by the SkyTEM system is a function of not just water quality, but of sediment mineralogy as well. In order to reliably extract water quality information in the region of interest, our workflow included the following steps:

1) Map the water table in order to separate the unsaturated from saturated zone,
2) Define the resistivity of freshwater and saltwater-saturated zones in order to identify these zones in the AEM data, and
3) Apply the resistivity cut-off values defined above to the data.

1) Mapping the Water Table

1.1) Interpolating a Water Table Surface

In the region of interest, isolated freshwater is suspected to be present in the Dune Sand Aquifer and the 180-Ft/180-Ft Equivalent Aquifer. Since isolated freshwater may be in contact with the unsaturated zone, and both will appear relatively resistive in the AEM data, it is important to delineate between for an accurate assessment of the freshwater resources. Most wells in the region are not screened in the unconfined (Dune Sand) aquifer. However, water table level measurements contemporaneous with the collection of AEM data were available in nine MPWSP wells, recorded by the continuous pressure transducers. A schematic for the conversion used to calculate groundwater elevation from pressure transducer readings is shown in Figure A2 in the appendix, taken from a MPWSP long-term pumping report.

Water table elevations tend to be a muted expression of the surface topography: in high elevation areas, the water table often elevates, and sinks where the topography depresses. In order to model the water table surface to reflect the true water table, control points are needed especially in hilly regions, where the topography changes quickly. In the case of this study, few control points exist in the central and northeastern sections of Marina, where dune deposits create hilly topography (Figure 6b).

Using the available water table data from the MPWSP well measurements, an estimated map of the water table was created with a kriging interpolation. The variogram ranges were calculated automatically from the data, and the groundwater level at the ocean was set at 0m.

Near control points and in regions where topography does not change dramatically, the interpolated water table are expected to reflect the true water table elevation. However, in areas where topography varies quickly, the interpolated water table can be inaccurate. Since the majority of available control points are at lower elevations, the interpolation is biased toward lower elevations. Therefore, in hilly, high elevation regions, the interpolated water table surface is likely to underestimate the elevation of the true water table.

1.2) Applying a Resistivity Cutoff for the Unsaturated Zone

The AEM data itself also helps to define the water table elevation. The absence of water in the subsurface has a profound effect on the resistivity: above the measured water table at control

points, the inverted AEM resistivities are found in the range of 100-1000 ohm-m; however, below the water table at control points, nearly all data are below 50 ohm-m. This stark contrast normally exists at the interface between the unsaturated and saturated zone. By applying a resistivity cutoff to allow only <75 ohm-m data, we can compare the interpolated water table surface with the elevation at which the AEM resistivity spikes. Figures 6c and 6d display the topmost AEM data, between the ground surface and the interpolated water table surface. (In these two figures, the interpolated water table surface is draped with the satellite image of Marina, for spatial reference.) Figure 6c shows data above the interpolated water table, but with no resistivity cutoff. Figure 6d introduces the 75 ohm-m cutoff. With an accurate interpolated water table surface and the appropriate resistivity cutoff, the top of the AEM data in Figure 6d should closely match the interpolated surface. Notice that the areas with few control points and hilly terrain in Figure 6b (e.g. NE of Marina and the coastal dunes) correspond to regions where larger volumes AEM data does not match the interpolated surface.

Because of the dramatic resistivity change between saturated and unsaturated zone in this area, using a resistivity cutoff helps to map out the unsaturated zone in regions where water table data is not available. However, in order not to underestimate the amount of freshwater in the near surface, more water table measurements are critical in hilly, high elevation areas in the region of interest.

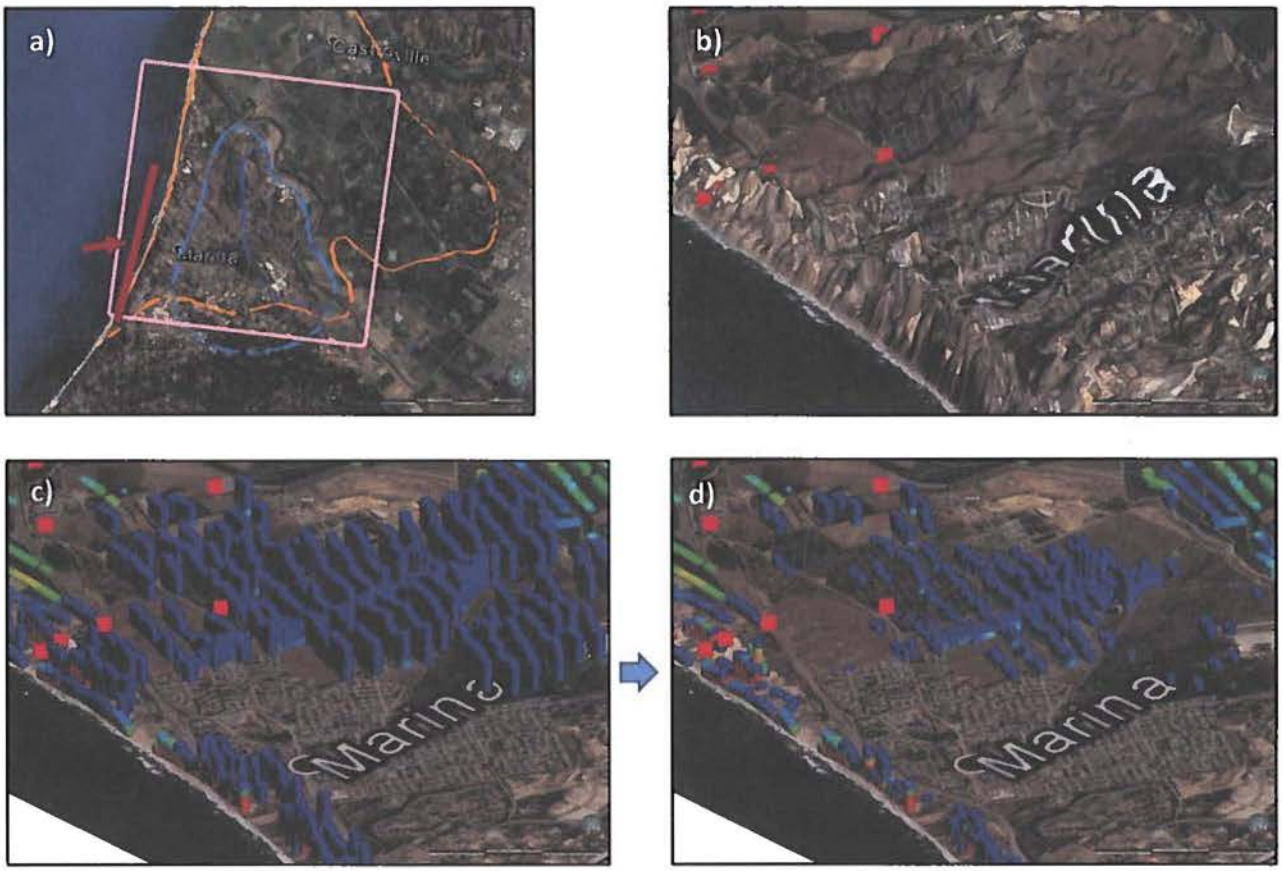

Figure 6: Oblique view of SkyTEM AEM data between the ground surface and the interpolated water table, displaying of few control points on the interpolated water table.
***a)** Plan view showing region of interest, viewed line (red line) and viewing direction (red arrow)*
***b)**Oblique view showing topography of Marina area and control points from which the interpolated water table surface was created (vertical exaggeration x15)*
***c)** All AEM data, bounded beneath by the satellite map of the area set to the elevation of the interpolated water table surface*
***d)** A conservative <75 ohm-m cutoff is applied to the data to remove data which have a high probability of being in the unsaturated zone. Between water table control points, the water table surface smoothly varies. In areas with few control points and hilly terrain (such as in the northern Marina area, the coastal dunes, or the Fort Ord area), the water table surface will deviate from reality.*

Defining the resistivity of freshwater and saltwater-saturated zones

Within the saturated zone, resistivity values vary significantly. In order to use the AEM data to interpolate between and extrapolate beyond water quality information from wells, we need to have information on the bulk resistivity of the various sediments containing water of variable quality; i.e., what is the resistivity of a freshwater-saturated sand unit? What is the resistivity of a saltwater-saturated sand unit? What is the resistivity of a freshwater-saturated clay unit? In a lithologically homogenous subsurface, changes in resistivity can be attributed simply to changes in the pore water resistivity, and therefore to changes in salinity. In the case of this study area, the lithology of the subsurface is documented as being very heterogeneous, where aquifer units contain silt and clay lenses from fluvial and alluvial deposits. The presence of finer-grained—especially clay-bearing —sediment affects the resistivity of the bulk material, and therefore affects the return signal in an AEM survey in the same way that pore water resistivity does.

The ranges of resistivity expected in different sediments and water quality from the coastal Seaside area are reported from a recent study in Table 1 (Goebel et al., 2017). While resistivities vary based on both lithology and salinity, we can conclude that the lowest resistivity values will always correspond to saltwater-saturated sediments and the highest resistivity values will always correspond to freshwater-saturated sediments.

Table 1: Expected resistivities of sediments in coastal Seaside area, CA (adapted from Goebel et al., 2017).

Resistivity (ohm-m)	Sand and Gravel	Silt	Clay
Freshwater Saturated	30–70	N/A	7–12
Saltwater Saturated	0.7–3	1.2–3	1.5–5

We developed the analogous table for the Marina area sediments using the geophysical borehole logs in the seven MPWSP wells and pore water TDS measurements made at the time of the logging, where fresh, brackish and saltwater are defined by total dissolved solids thresholds of <3,000, 3000-10,000, and > 10,000 mg/L, respectively. These thresholds are defined according to the EPA Guidance for the Determination of Underground Sources of Drinking Water. The results are shown in Table 2. Given the quality of the lithology cataloging, data were available for multiple lithology categories, beyond sand, silt, and clay. We see a trend similar to the one found in the Seaside area sediments: saltwater-saturated sediments, regardless of lithology, have the lowest resistivity values. Similarly, freshwater in coarser-grained sediments have a distinctively high resistivity, but freshwater in finer-grained sediments can be convoluted with sediments in brackish water. To make conservative estimate of zones that are freshwater-saturated, we apply a 30 ohm-m cutoff to the data defining all freshwater-saturated sediments. A similar estimate can be made for saltwater-saturated zones by applying a 3 ohm-m cutoff, defining all saltwater-saturated sediments.

Table 2a: Expected resistivities in the coastal Marina area, compiled from MPWSP geophysical well logs (long induction resistivity)

Resistivity (ohm-m)	Gravel/ Boulders	Sand and Gravel	Sand	Silty Sand	Clayey Sand	Silt/Loess	Silty Clay	Clay
Freshwater-saturated	N/A	65.00	31.40	15.37	N/A	N/A	11.58	16.98
Brackish-saturated	N/A	7.36	22.98	N/A	N/A	N/A	N/A	N/A
Saltwater-saturated	1.69	1.58	1.76	1.42	1.58	1.65	N/A	1.68

Table 3b: Summary of expected resistivities in the coastal Marina area

Resistivity (ohm-m)	Range	Average	SD
Freshwater-saturated	11-65	28.06	21.97
Brackish-saturated	7-23	15.17	10.38
Saltwater-saturated	1.4-1.7	1.62	0.11

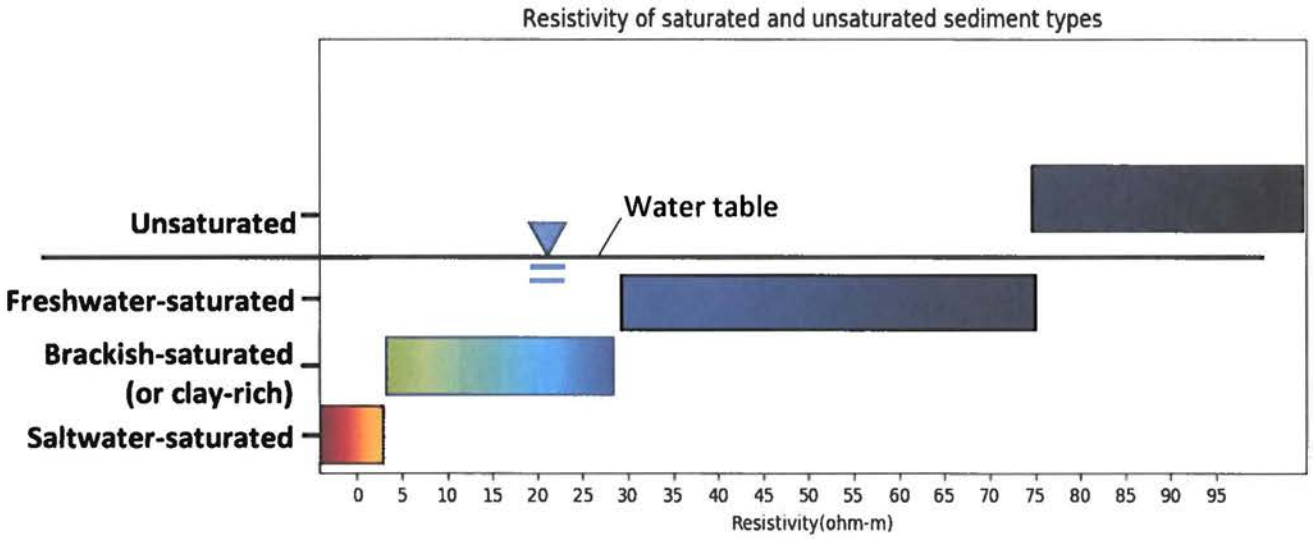

Figure 7: Range of resistivities expected in the region of interest based on Table 2, along with the cutoff values for each classification:
Saltwater-saturated: <3 ohm-m; Freshwater-saturated: 30-75 ohm-m; Unsaturated: > 75 ohm-m.
The range between saltwater-saturated and freshwater-saturated is less certain; sediments could be coarse in brackish water, or clay-rich.

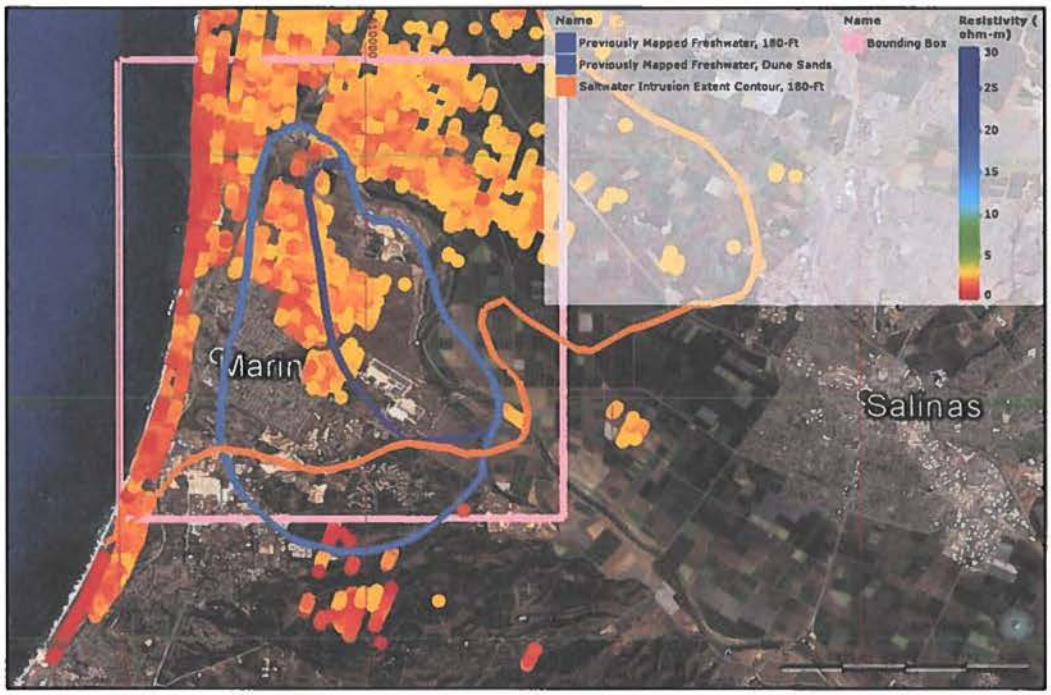

Figure 8a: Plan view showing resistivity below 3 ohm-m to a depth of -150m elevation. Map is shown at -150m elevation

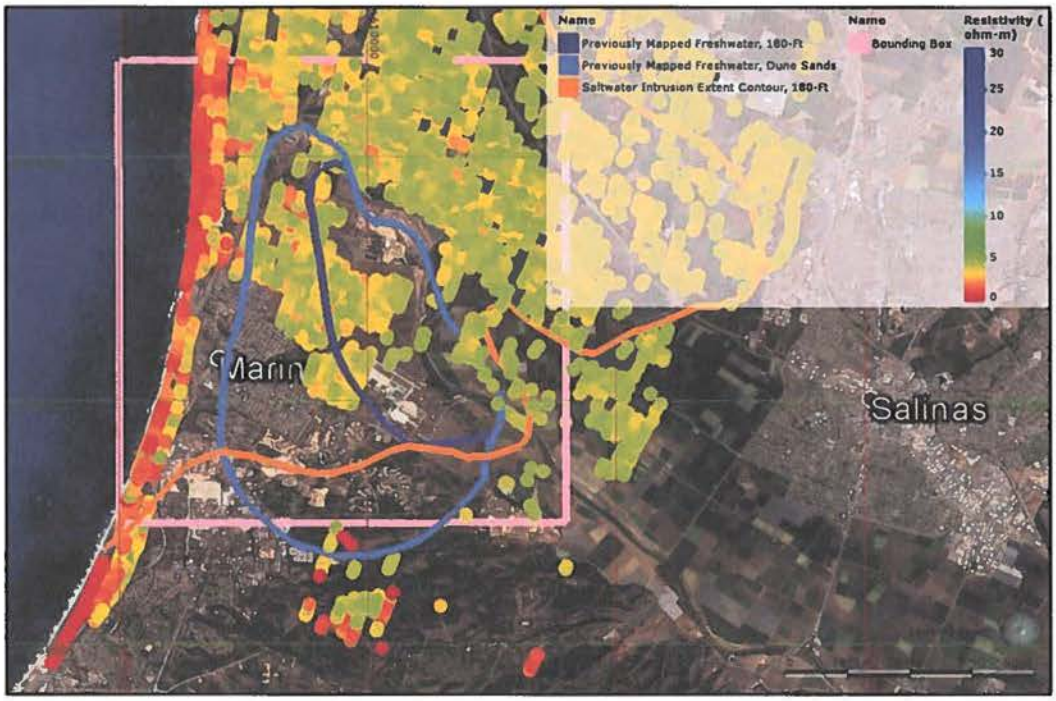

Figure 8b: Plan view showing resistivity below 5 ohm-m to a depth of -150m elevation. Map is shown at -150m elevation

3) Fresh and Saltwater in AEM data

Figure 8 shows the applied saltwater cutoff found from the geophysical well logs (3 ohm-m). Saltwater intrusion tends follow the contours from the previously mapped saltwater intrusion contour in the 180-Ft Aquifer. For comparison, a cutoff of 5 ohm-m is shown in Figure 8b. Figure 9 displays the region of interest with the applied freshwater cutoff found from geophysical well logs (>30ohm-m), and a >20ohm-m cutoff (Figure 9b), for comparison.

It is distinctly clear that areas in the region of interest have a significant volume of freshwater in the near subsurface. In the Marina area, the thickness of freshwater grows, which corresponds to previous water quality measurements in the MPWSP wells, as well as a 2016 report by Curtis Hopkins. The AEM data furthermore show the extension of the isolated freshwater beyond the area formerly thought to contain freshwater in the near surface (in the Dune Sand Aquifer), likely up until near the Salinas River.

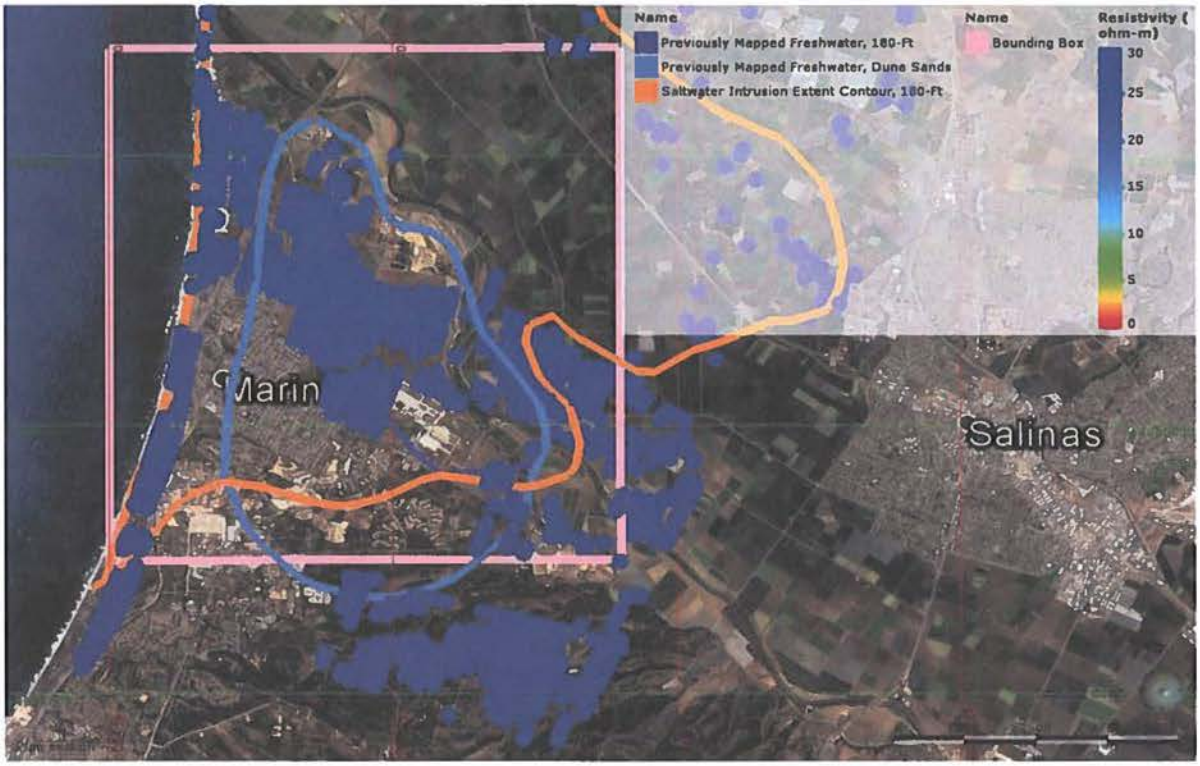

Figure 9a: Plan view showing >30ohm-m resistivities between elevations -100 to 29masl.

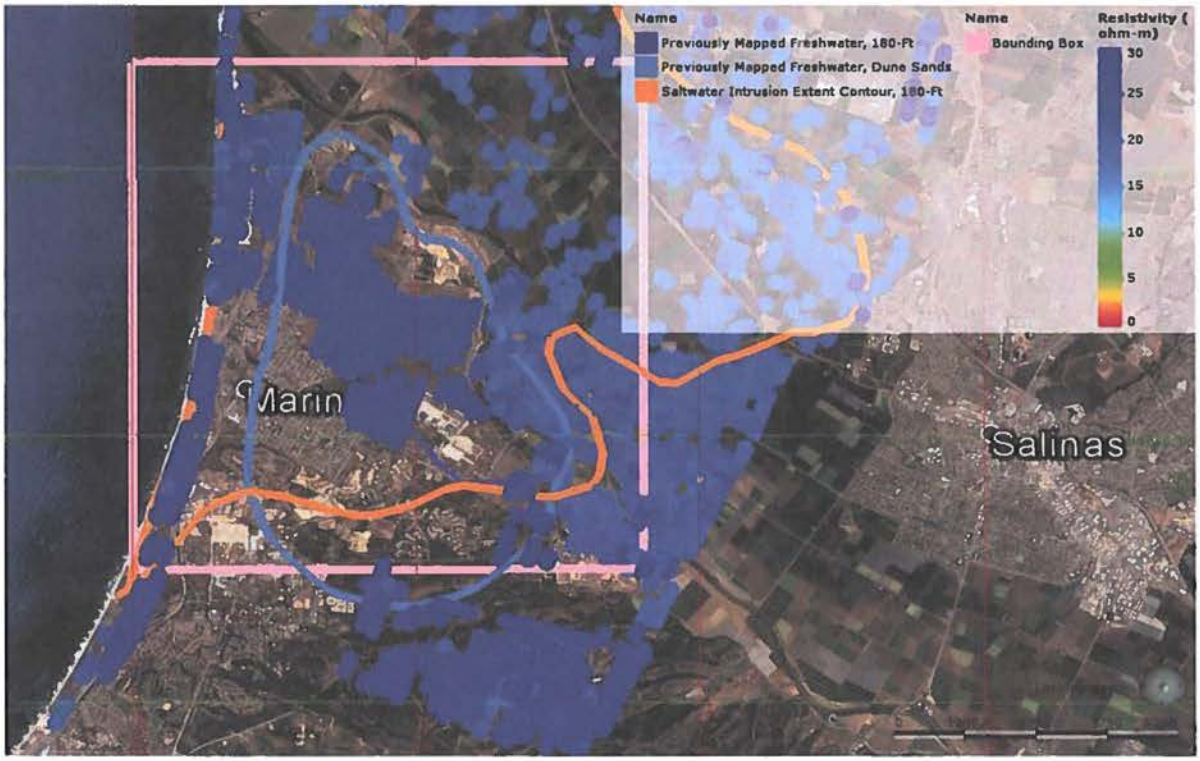

Figure 9b: Plan view showing >20ohm-m resistivities between elevations -100 to 29masl

Summary

We have made a preliminary interpretation of AEM data collected in the Marina region in May 2017. From geophysical logs and water quality measurements, we have conservatively defined an interpolated water table surface, which is likely to underestimate the volume of isolated freshwater in the region of interest. We have compared this interpolated water table, based on few control points, with a conservative resistivity cutoff of <75 ohm-m, to distinguish the saturated zone from the unsaturated zone. Based on borehole geophysical measurements, we defined a lower bound resistivity cutoff of 3 ohm-m to distinguish between freshwater-saturated sediment and saltwater-saturated sediment, considering that saltwater-saturated materials have a uniquely low resistivity range.

The AEM dataset provided by the SkyTEM system and processed by AGF offers an abundance of information into the hydrogeology of the region of interest, in and around the MCWD-operated Salinas Valley Marina Area. The 3-dimensional interactions between fresh and salt water shown by this data can deliver valuable information for groundwater management by MCWD, and offer insight into future action by the District.

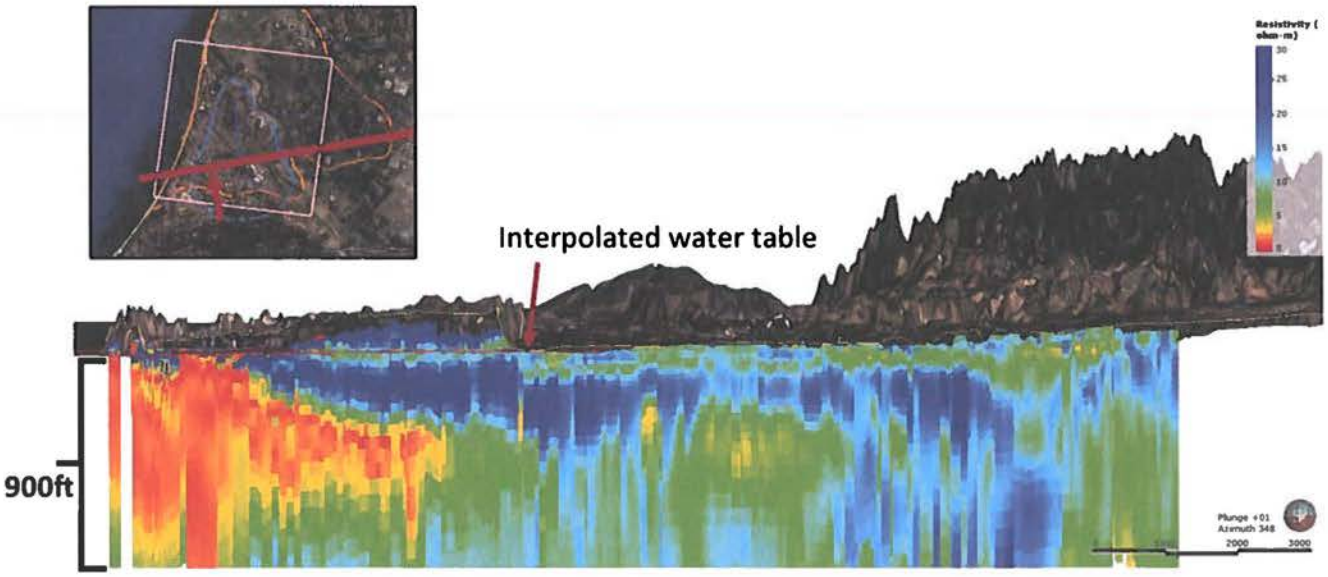

Figure 10: Cross-sectional cutaway view of AEM data, displaying larger-scale structures within the inverted AEM dataset. Interpolated water table surface is shown in red. The large conductive feature on the coast extends inland and downward, while the near-surface resistive body pinches out near the coast.

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Appendix

Figure A1a: Plan view showing occurrence of freshwater between elevations -20 to 29masl. Map elevation is set at -20m elevation. From this angle, it is appears that the region of the Salinas River serves as the northern extent for the shallow isolated freshwater zone.

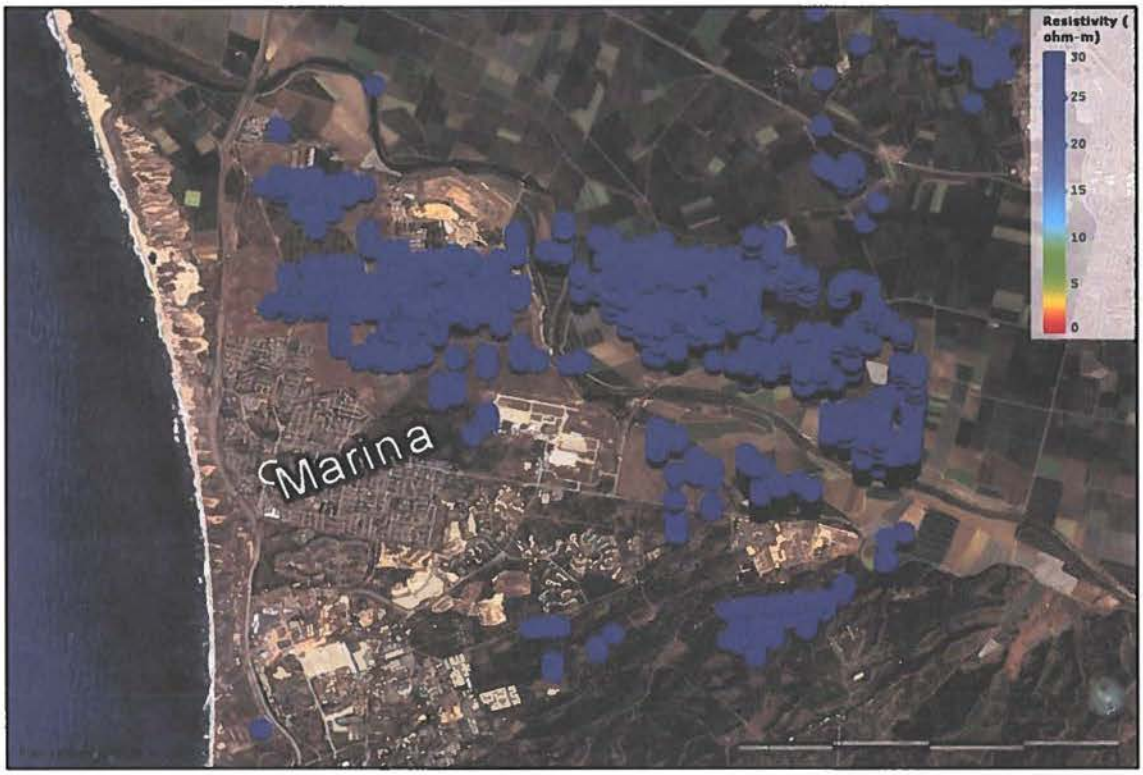


Figure A1b: Plan view between elevations of -20 to -80m. At lower elevations, the isolated freshwater region crosses the Salinas River.

Table A1: Technical specifications for the MPWSP well network. From California American Long Term Pumping Monitoring Report 107

			State Plane Coordinates										
Well Name	Cluster	Reference Point (RP)	Northing	Easting	RP Elevation ft NAVD88	RP Height (ft above GS)	Distance of RP from Slant Well Head (ft)	Top of Screen Interval (ft below GS)	Bottom of Screen Interval (ft below GS)	Transducer Installed Depth (ft below RP)	Survey Date	Data Logging Start Date	Data Collected
MW-1S	MW-1	Top of ABS Transducer Mount	2,154,745.35	5,739,355.82	30.51 [1]	2.65 [1]	211	55	95	76	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1M	MW-1	Top of ABS Transducer Mount	2,154,751.93	5,739,347.94	29.86	2.48	220	115	225	182	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1D	MW-1	Top of ABS Transducer Mount	2,154,753.60	5,739,337.98	29.68 [1]	2.65 [1]	230	277	327	309	26-Mar-15	19-Feb-15	Level, Conductivity
MW-3S	MW-3	Top of ABS Transducer Mount	2,154,599.85	5,739,977.02	37.16	2.66	428	50	90	76	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3M	MW-3	Top of ABS Transducer Mount	2,154,592.96	5,739,988.54	37.35	2.73	441	105	215	182	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3D	MW-3	Top of ABS Transducer Mount	2,154,589.81	5,739,998.68	36.93	2.74	451	285	330	321	26-Mar-15	4-Mar-15	Level, Conductivity
MW-4S	MW-4	Top of ABS Transducer Mount	2,154,170.90	5,741,427.62	41.96	2.26	1,940	60	100	66	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4M	MW-4	Top of ABS Transducer Mount	2,154,172.79	5,741,416.78	41.99	2.15	1,929	130	260	208	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4D	MW-4	Top of ABS Transducer Mount	2,154,174.30	5,741,406.08	41.95	2.15	1,918	290	330	317	26-Mar-15	20-Feb-15	Level, Conductivity
MW-5S(P)	MW-5	Top of ABS Transducer Mount	2,156,239.19	5,748,566.86	80.25 [1]	2.20 [1]	9,135	43	83	71	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5M	MW-5	Top of ABS Transducer Mount	2,156,230.38	5,748,564.26	80.48 [1]	2.31 [1]	9,131	100	310	171	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5D	MW-5	Top of ABS Transducer Mount	2,156,220.77	5,748,560.95	80.06	1.97	9,126	395	435	417	26-Mar-15	19-Feb-15	Level, Conductivity
MW-6S	MW-6	Top of ABS Transducer Mount	2,141,142.87	5,756,164.01	35.89	2.45 [1]	21,436	30	60	54	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6M	MW-6	Top of ABS Transducer Mount	2,141,138.40	5,756,154.35	35.68	2.44 [1]	21,431	150	210	184	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6M(L)	MW-6	Top of ABS Transducer Mount	2,141,133.06	5,756,144.94	35.82	2.42 [1]	21,427	255	325	315	1-Oct-15	22-Apr-15	Level, Conductivity
MW-7S	MW-7	Top of ABS Transducer Mount	2,152,099.25	5,744,148.10	50.64	2.06	5,274	60	80	72	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7M	MW-7	Top of ABS Transducer Mount	2,152,110.46	5,744,146.08	50.29	2.09	5,266	130	220	187	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7D	MW-7	Top of ABS Transducer Mount	2,152,120.50	5,744,144.38	50.24	2.24	5,260	295	345	322	1-Oct-15	13-Aug-15	Level, Conductivity
MW-8S	MW-8	Top of ABS Transducer Mount	2,159,440.33	5,744,871.52	19.96	2.14 [3]	7,116	40	80	61	1-Oct-15	30-May-15	Level, Conductivity
MW-8M	MW-8	Top of ABS Transducer Mount	2,159,430.86	5,744,866.05	19.99	2.17 [2]	7,106	125	215	181	1-Oct-15	30-May-15	Level, Conductivity
MW-8D	MW-8	Top of ABS Transducer Mount	2,159,421.47	5,744,861.04	20.08	2.10 [3]	7,096	300	350	326	1-Oct-15	30-May-15	Level, Conductivity
MW-9S	MW-9	Top of ABS Transducer Mount	2,162,010.77	5,747,345.03	18.42	2.16 [3]	10,677	30	110	71	1-Oct-15	1-Jul-15	Level, Conductivity
MW-9M	MW-9	Top of ABS Transducer Mount	2,162,016.58	5,747,353.64	18.32	2.13 [3]	10,687	145	225	182	1-Oct-15	29-Jun-15	Level, Conductivity
MW-9D	MW-9	Top of ABS Transducer Mount	2,162,022.89	5,747,362.25	18.32	2.15 [3]	10,697	353	393	377	1-Oct-15	26-Jun-15	Level, Conductivity
Well No. 1 [4]	MRWPCA	Well Cover	2,151,622.14	5,750,015.59	114 ft amsl (GS)	1.60	10,898	260	340	299	-	19-Feb-15	Level, Conductivity
Well No. 2 [4]	MRWPCA	Well Cover	2,151,550.18	5,749,987.41	115 ft amsl (GS)	1.65	10,892	260	340	319	-	19-Feb-15	Level, Conductivity
CEMEX Dredge Pond	CEMEX	Top of ABS Transducer Mount	2,155,912.41	5,739,497.26	14.14	8.92*	1,212	-	-	-	26-Mar-15	8-Mar-15	Level, Conductivity
Test Slant Well	CEMEX	Near Ground Surface	2,154,702.56	5,739,561.92	30.86	0	0	46**	231**	305MD	26-Mar-15	1-Apr-15	Level, Conductivity
CEMEX North Well	CEMEX	Well Cover	2,154,284.48	5,741,032.07	39.20	0.25	1,529	244	481	150	1-Oct-15	1-Apr-15	Level, Conductivity
CEMEX South Well [4]	CEMEX	Ground Surface	2,154,213.90	5,740,998.57	31 ft amsl (GS)	0	1,518	400	506	-	-	-	-

Horizontal Datum: NAD83 State Plane Zone 4
Vertical Datum: NAVD88
* RP height above pond water level 5.22 ft NAVD88 (8-11 am 26-Mar-15)
** Top of 18 in. screen = 140 ft x Sin(19) = 46 ft TVD, Bottom of 14 in. screen = 710 x Sin(19) = 231 ft TVD

[1] RP/elevation change on May 17, 2015 - New caps
[2] RP/elevation change on July 17, 2015 - New caps
[3] RP/elevation change on September 24, 2015 - New caps
[4] Estimated - not surveyed.

MD: Measured Depth - lineal feet along the angle of the slant well
GS: Ground Surface - approximate ground surface elevation based on Google Earth

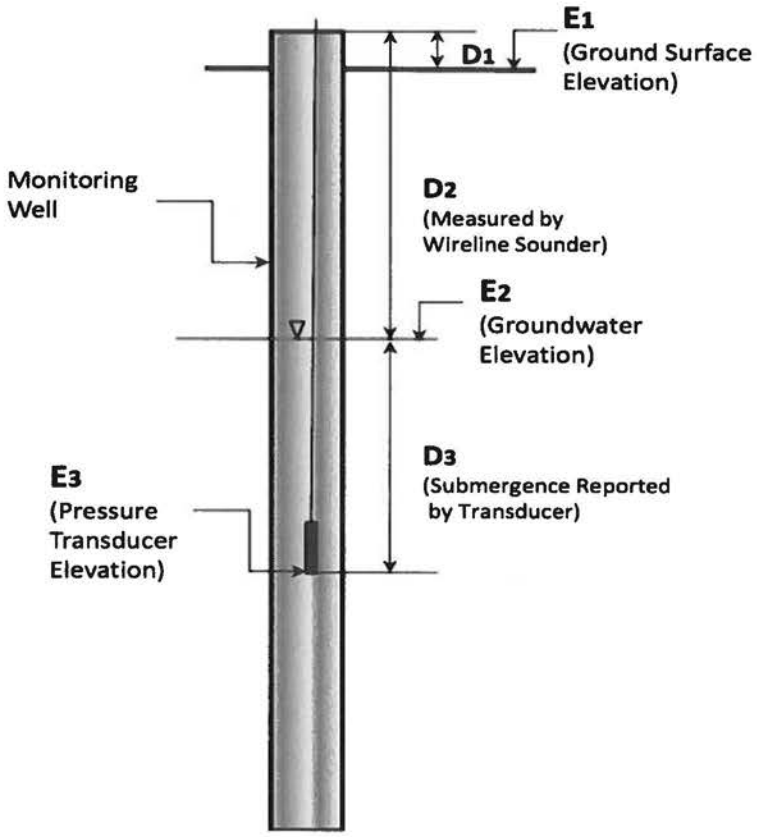


Figure A2: Schematic explaining the measurements taken to convert transducer-reported pressure to groundwater elevation. From California American Long Term Pumping Monitoring Report 107

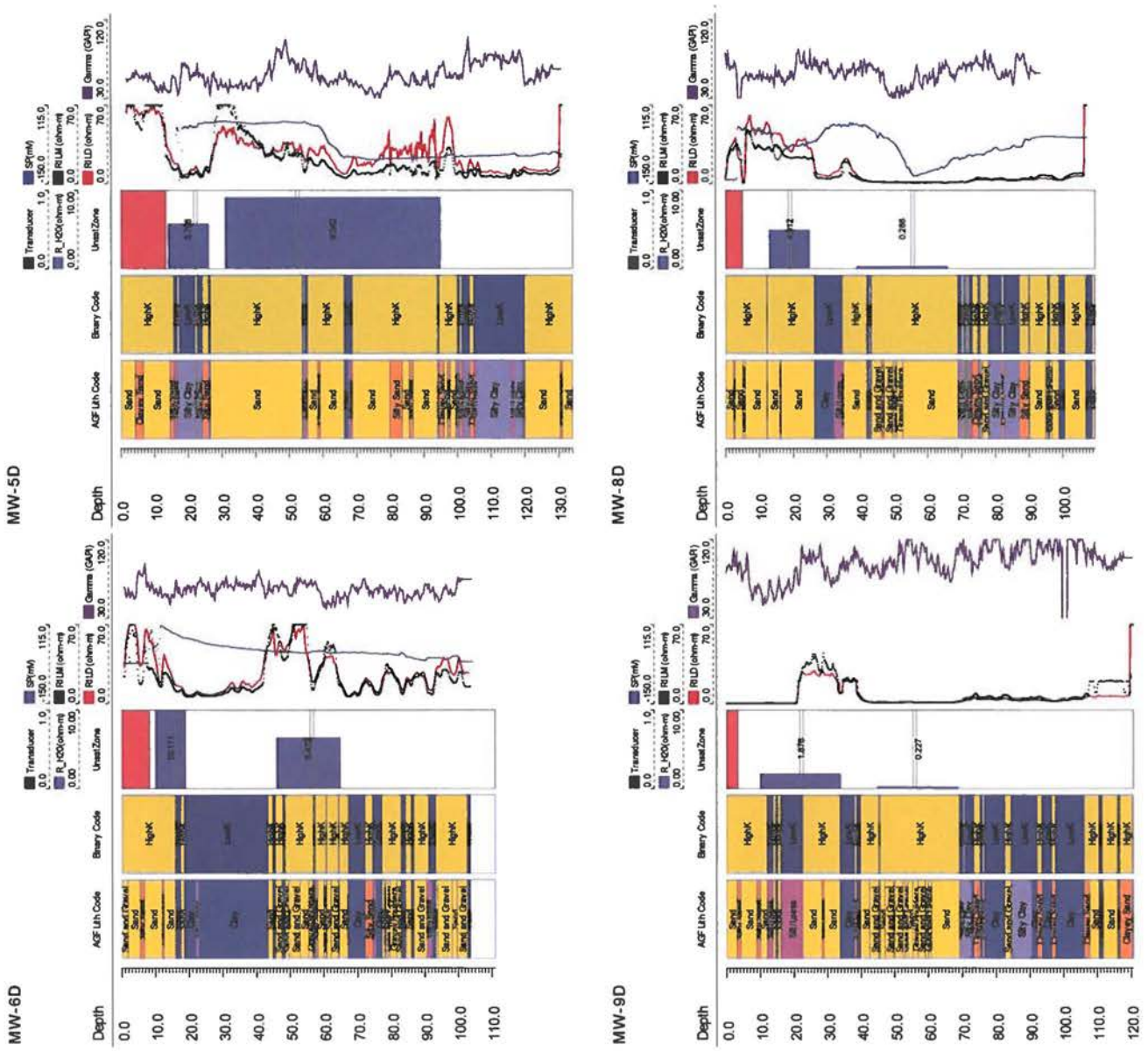
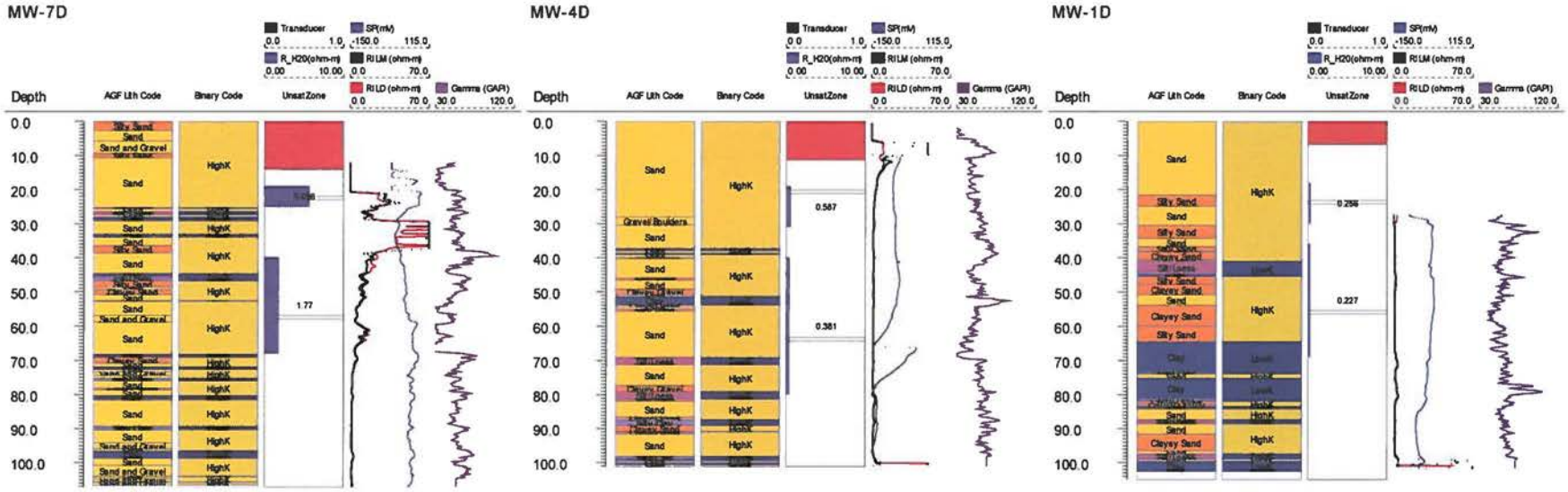


Figure A3: Geophysical borehole logs. Columns from left-to-right: 1) depth (meters below reference point); 2) lithology code; 3) binary lithology classification; 4) top two screened intervals of the well (purple) and the water resistivity from baseline lab samples, unsaturated zone (red block), and the transducer depth (black lines); 5) deep induction resistivity (red), medium induction resistivity (black), and spontaneous potential (blue); 6) gamma radiation (purple).


MW-7D
MW-4D
MW-1D
Depth
AGF Lith Code
Binary Code
UnsatZone
Transducer
SP(mV)
R_H20(ohm-m)
RILM (ohm-m)
RILD (ohm-m)
Gamma (GAPI)
HighK
Sand
Silty Sand
Sand and Gravel
Gravel Boulders
Clayey Sand
Silty Clay
Clay
1.77
0.587
0.381
0.256
0.227

22 June 2017

MEMORANDUM

To: Keith Van Der Maaten, P.E., Marina Coast Water District
Michael Wegley, P.E., Marina Coast Water District

From: Vera Nelson, P.E., EKI Environment & Water, Inc.

Subject: Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord Marina Coast Water District, California (EKI B60094.02)

EKI Environment & Water, Inc. ("EKI"; formerly known as Erler & Kalinowski, Inc.) is pleased to provide Marina Coast Water District ("MCWD") with this memorandum outlining the groundwater remedial actions and establishment of remedial goals in the Dune Sand Aquifer (identified as the A- Aquifer at Fort Ord) and 180-Foot Aquifer at former Fort Ord. These remedial goals are based on drinking water standards and are consistent with the beneficial use designation of groundwater within these aquifer zones articulated in the Central Coast Water Quality Control Plan ("Basin Plan").

SUMMARY

EKI's understands that MCWD and its counsel intend to meet with the Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") and the California State Water Resources Control Board ("State Board") to discuss the potential environmental impacts of the proposed California America Water Monterey Peninsula Water Supply Project ("Cal Am Project" or Project").

The Cal Am Project includes a seawater intake system consisting of 10 subsurface slant wells at the CEMEX sand mining site near the City of Marina. The Cal Am Project has the potential to degrade water quality within the Dune Sand Aquifer and 180-Foot Aquifer that underlie MCWD's service area. The Draft Environmental Impact Report/Environmental Impact Statement, released on 13 January 2017 ("DEIR/EIS") for the Cal Am Project characterizes the Dune Sand Aquifer and 180-Foot Aquifer as having poor water quality and being impacted by salt water intrusion. The DEIR/EIS does not acknowledge that further Project-related degradation of the groundwater quality in these aquifers violates the Water Quality Control Plan for the Central Coastal Basin

("Basin Plan;" RWQCB, 2016), which designates all groundwater within the Salinas Valley Groundwater Basin as a potential drinking water source.[1]

State and Federal agencies have required cleanup of groundwater within the Dune Sand Aquifer and 180-Foot Aquifer at former Fort Ord to drinking water standards, consistent with the Basin Plan's beneficial use designation. Millions of dollars have been, and continue to be, spent to remediate groundwater within these aquifers and to restore groundwater to drinking water standards. The DEIR/EIS findings directly contradict these restoration efforts and the remedial action requirements and remedial action objectives upon which they are based.

The DEIR/EIS implies that Project-related degradation of groundwater within the aquifers is acceptable because they are of "poor quality." The Cal Am Project should be held to the same standards as restoration efforts at Fort Ord, given the potential for the Project to impact the beneficial use of the Dune Sand Aquifer and 180-Foot Aquifer. We believe that the RWQCB should take an active role in reviewing the potential impacts to groundwater quality of the Project and oversee monitoring of baseline conditions within each aquifer. RWQCB oversight will aid in ensuring that the Project does not adversely impact the beneficial uses of the aquifers.

HISTORY AND REGULATORY OVERSIGHT OF ENVIRONMENTAL CONDITIONS AT FORMER FORT ORD

Former Fort Ord is adjacent to Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco. The former military base consists of approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. Former Fort Ord overlies the Monterey Subbasin, the Seaside Subbasin, and a small portion of the 180/400 Foot Subbasin (Figure 1). It is located immediately south of the Cal Am Project proposed seawater intake system at the CEMEX sand mining site near the City of Marina. The base was closed in 1994 and portions of the base have been transferred to various entities and are slated for redevelopment.

Environmental investigations began at former Fort Ord in 1984 at the direction of the Central Coast RWQCB (i.e., Cleanup and Abatement Orders 84-92, 86-86, and 86-315). Initial investigations indicated the presence of organic compounds in soil and groundwater at the Fire Drill Burn Pit (Operable Unit 1 or OU1). In 1986, further investigations were performed at former Fort Ord Landfills (Operable Unit 2 or OU2) and in 1990, former Fort Ord was placed on the EPA's National Priorities List ("NPL"), primarily because of volatile organic compounds ("VOCs") found in groundwater at OU2. A Federal Facility Agreement ("FFA") was signed in 1990 by the Army,

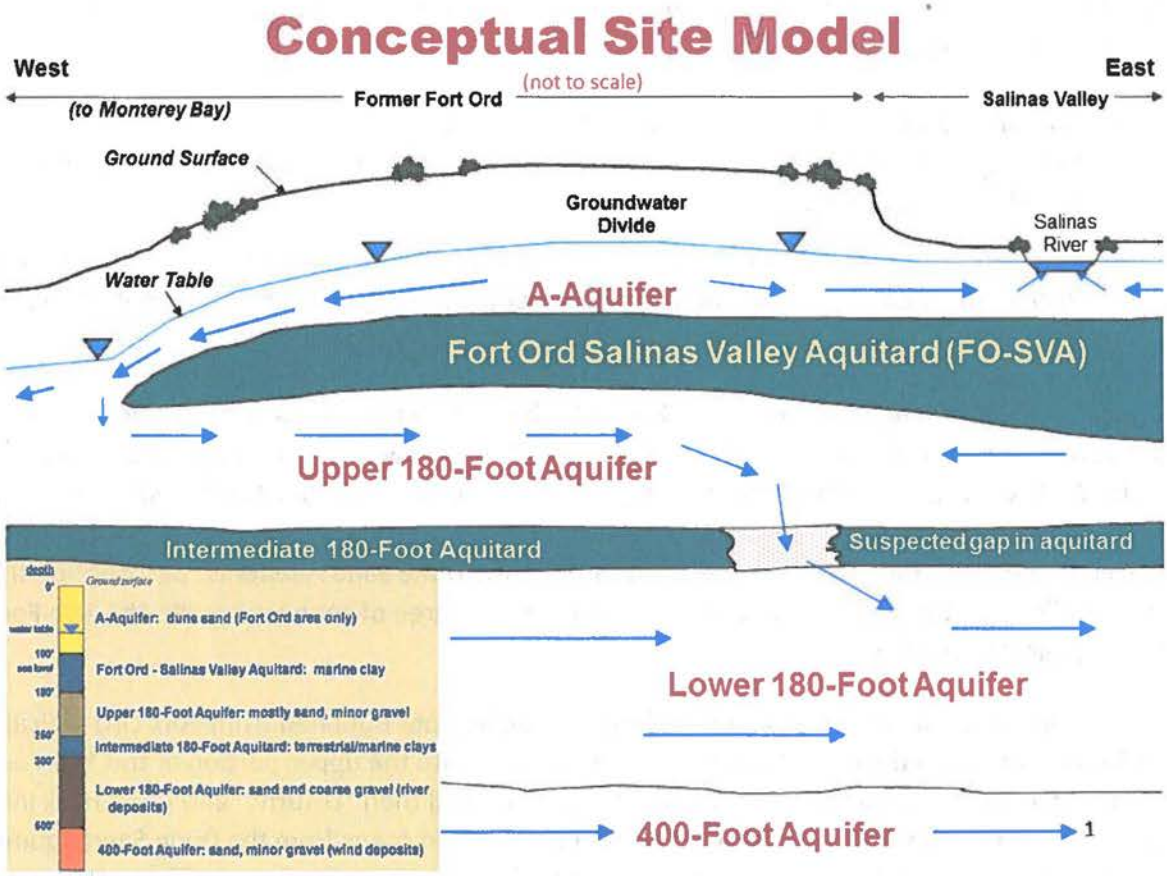
[1] Basin Plan *Chapter 2.I. Present and Potential Beneficial Uses*. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."

U.S. EPA, DTSC (formerly the Department of Health Services or DHS), and the Central Coast RWQCB.

The FFA established schedules for performing remedial investigations and feasibility studies, and required remedial actions be completed as expeditiously as possible. The base wide Remedial Investigation Feasibility Study ("RI/FS") commenced in 1991. The Army performs these activities pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") also known as Superfund.

CHARACTERIZATION OF HYDROGEOLOGY AND GROUNDWATER USE AT FORT ORD

The below diagram depicts the conceptual site model ("CSM") of the hydrogeology for the northern portion of former Fort Ord, which overlies the Monterey Subbasin, as characterized by the Army and endorsed by U.S. EPA, DTSC, and Central Coast RWQCB. The CSM is based upon groundwater investigations conducted by the Army over the last 30 years, during which over 300 monitoring wells have been installed and water levels monitored to assess vertical and horizontal groundwater gradients.



Source: http://fortordcleanup.com/programs/groundwater/

Four aquifers, each separated by an aquitard, have been identified in the northern portion of former Fort Ord. The upper-most, or shallowest, aquifer is called the A-Aquifer. Deeper aquifers consist of the 180-Foot Aquifer, which is split into the Upper and Lower 180-Foot Aquifers, and the 400-Foot Aquifer. The names of these three deeper aquifers relate to their depth below ground surface in the Salinas Valley.

The **A-Aquifer** is encountered between 60 feet and 100 feet deep, and is not used as a public water supply. Sediment within the A-Aquifer is generally composed of ancient dune sand. The A-Aquifer also is referred to as the Dune Sand Aquifer.

The **Upper 180-Foot Aquifer** has been used as a public water supply, but is not currently used as a source of drinking water for either former Fort Ord or the City of Marina. Sediment within this aquifer is composed of mainly sand with some gravel.

The **Lower 180-Foot Aquifer** and the **400-Foot Aquifer** consist of gravel and sand with some clay. Both are major sources of drinking water for Fort Ord and farms in the Salinas Valley.

The CSM is consistent with the hydrogeologic characterization of the aquifer system presented by EKI in the following memoranda:

- Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property, Marina Coast Water District, California, dated 16 January 2017.
- Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017 Marina Coast Water District, California, dated 28 March 2017.

As described in EKI's memoranda, groundwater in the A- or Dune Sand Aquifer in the Monterey Subbasin, (Figure 1) is significantly above sea level and flows west towards Monterey Bay (Figure 2). In contrast, as shown on Figure 3, groundwater in the 180-Foot Aquifer flows eastward towards a regional pumping center in the interior of the Salinas Valley. Based on the head differences between these aquifers it is apparent that the Dune Sand Aquifer is "perched" on the Salinas Valley Aquitard within inland areas but has some degree of connection with the 180-Foot Aquifer nearer to the Bay.

These water level data in combination with water quality data obtained from Fort Ord indicate that fresh water from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer upgradient of Monterey Bay and the Project site and then "U-turns" and flows back into the basin. The exact location and volume of groundwater that seeps from the Dune Sand Aquifer into the Upper 180-Foot Aquifer and makes this "U-Turn" has not been quantified. However,

data from Fort Ord indicates that seepage from the Dune Sand Aquifer near Monterey Bay (where water levels are above sea level) into the underlying 180-Foot Aquifer (where water levels are below sea level) has effectively stopped salt water intrusion in the Upper 180-Foot Aquifer in that area. This natural mounding has maintained freshwater in the upper portion of the 180-Foot Aquifer under much of Fort Ord (see Figures 4 and 5).[2] This natural barrier appears to have been undermined north of Fort Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX sand mining site, and would likely be further disturbed by the Cal Am Project.

Water level and water quality data obtained at Cal Am's recently installed monitoring well clusters MW-5, MW-6, MW-7 and Monterey Regional Water Pollution Control Agency ("MRWPCA") wells 1 and 2, indicate that chloride and TDS concentrations in the Dune Sand Aquifer and the Upper 180-Foot Aquifer meet SWRCB Resolution No. 88-63 criteria as a potential drinking water source and California Secondary Drinking Water Standards for these constituents.[3] Maps depicting TDS and chloride concentrations detected in groundwater samples collected from Fort Ord and Cal Am wells screened in these aquifers over the last 10 years (i.e., 2006 through 2016) are presented on Figures 4 and 5. These figures show that, outside of the immediate area of the CEMEX site, groundwater in these aquifers is not brackish as characterized in the DEIR/EIS.

CHEMICAL IMPACTS, REMEDIAL ACTIONS, AND COSTS TO ADDRESS GROUNDWATER CONTAMINATION AT FORT ORD

The majority of groundwater contamination at former Fort Ord is present in the A-Aquifer, also known as the Dune Sand Aquifer, and the Upper 180-Foot Aquifer. Small amounts of contamination below drinking water standards have been measured in the Lower 180-Foot Aquifer and no contamination has been detected in the 400-Foot Aquifer.

Four areas of groundwater contamination have been identified at former Fort Ord. The most frequently detected chemicals in these areas are trichloroethene ("TCE") and carbon tetrachloride ("CT"). Suspected sources, locations, primary contaminants, affected aquifers, and status of remedial actions are summarized in Table 1. The locations and estimated lateral extent of groundwater plumes in 2006 and 2010 are shown on Plates 3 and 4 in Attachment A.

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[2] The information presented in Figures 4 and 5 is consistent with data collected at Fort Ord in the late 1990's which was presented in Harding ESE's, Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California, prepared for MCWRA dated 12 April 2001. (Harding, 2001).

[3] The recommended and upper secondary maximum contaminant levels for chloride are 250 mg/L and 500 mg/L. The recommended and upper secondary maximum contaminant level for total dissolved solids ("TDS") is 500 mg/L and 1000 mg/L, respectively. (California Code of Regulations, Title 22. Division 4 Environmental Health, Chapter 15. Domestic Water Quality and Monitoring Regulations, Article 16, dated 27 September 2006.

(U.S. Department of the Army, 2012). As indicated by these plates, the lateral extent of the plumes has significantly decreased as a result of remedial actions implemented at Fort Ord.

As indicated on Table 1, remedial actions implemented at Fort Ord to address contaminated groundwater include:

- Capping of the Fort Ord landfill and excavation of chemically impacted soil to limit further leaching of chemicals to groundwater.
- Installation and operation of groundwater extraction and treatment facilities to limit further chemical migration (see Plate 5a, 5b, 6 and 7 in Attachment A).
- Treatment of extracted groundwater using granular activated carbon ("GAC") to remove chemicals and allow groundwater reuse at former Fort Ord for irrigation or reinjection into the aquifer (see Plate 5a, 5b, 6 and 7 in Attachment A).
- Injection of lactate at the Operable Unit Carbon Tetrachloride Plume ("OUCTP") to stimulate in-situ biodegradation of VOCs in groundwater (see Plate 8 in Attachment A).
- Long-term monitoring of water levels and chemical concentrations utilizing wells screened in individual aquifers (i.e., A-Aquifer, Upper 180-Foot Aquifer, and Lower 180-Foot aquifer) to assess groundwater flow directions and the lateral and vertical extent of chemical impacts.

Total estimated cost spent through 2015 to remediate soil and groundwater contamination at former Fort Ord is reported to be **320 million dollars.**[4] The costs specifically related to groundwater contamination versus soil are not identified, but likely represent a significant portion of overall costs given groundwater remedial actions have been ongoing for over 25 years and requirements for soil remediation are often driven by concerns over chemicals leaching to groundwater.[5]

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[4] In the Report to Congress Fiscal Year 2015, is included as Attachment B and was provided by William K. Collins Environmental Coordinator, Fort Ord BRAC Field Office by e-mail on 6/82017. Contaminated groundwater investigation and remediation costs are included in the "IRP" columns but also include the costs for soil and landfill investigations and remedial actions. The munitions investigations and remedial action costs are identified under "MMRP" and are independently tracked and not part of groundwater remedial action costs.

[5] Estimated costs identified as part of feasibility studies completed by the Army to implement selected remedial alternatives for identified groundwater plumes in OU1, OU2, Sites 2/12, and OUCTP are presented in Table 1. These values are based upon estimates presented in the ROD and ESDs for these areas, and in many cases have not been updated since the 1990s, and likely underestimate actual costs.

ESTABLISHMENT OF REMEDIAL ACTION OBJECTIVES AND CONTINUED COMMITMENT TO MEET THESE OBJECTIVES AT FORMER FORT ORD

Groundwater remedial action objectives and aquifer cleanup goals at Fort Ord are established within the *Records of Decision* ("ROD") and subsequent *Explanations of Significant Difference* ("ESD") prepared for each operable unit where groundwater impacts have been detected (U.S. Department of the Army, 1994; 1995a; 1995b; 1996; 1997a; 1997b; 2003; 2006; 2007a; 2007b; 2010; 2012; 2015). These documents are part of the administrative record and have been endorsed by state and federal agencies, including the Central Coast RWQCB. The RODs document all facts, analyses of facts, and site-specific policy determinations considered in the course of selecting a remedial action, and how nine remedy selection criteria were used to decide the remedy (NCP §300.430(f)(5)(i)). The RODs also describes statutory requirements as they relate to the scope and objectives of the remedial action (NCP §300.430(f)(5)(ii)) including:

- How the selected remedy is protective of human health and the environment, explaining how the remedy eliminates, reduces, or controls exposures to human and environmental receptors.
- The federal and state requirements that are applicable or relevant and appropriate ("ARARs") to the site that the remedy will attain.
- The ARARS of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver.
- How the remedy is cost-effective, (i.e., explaining how the remedy provides overall effectiveness proportional to its costs).
- Goals (i.e., cleanup levels) that the remedy is expected to achieve. Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment.

RODs completed for the four areas where chemical releases have impacted groundwater at former Fort Ord are included as Attachment B.

ARARS AND AQUIFER CLEANUP LEVELS AT FORMER FORT ORD

For a remedial alternative to pass into the detailed analysis stage of the RI/FS and thus become eligible for selection under CERCLA, it must comply with ARARs or waivers need to be identified and justifications provided for invoking them. An alternative that cannot comply with ARARs, or for which a waiver cannot be justified, is eliminated from consideration for further discussion as a potential alternative in the Proposed Plan or ROD. ARARs include any federal or state standards,

requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate to a CERCLA site or action.

One of the primary ARARs identified in the Fort Ord RODs that address groundwater contamination is the Basin Plan, which designates all groundwater within the Salinas Valley Groundwater Basin as a potential drinking water source.[6] As such all aquifer cleanup levels at Fort Ord are based on federal or state Maximum Contaminant Levels (MCLs).[7] These cleanup levels have driven the selection of groundwater remedial actions at Fort Ord. ARARS and aquifer cleanup levels identified in RODs completed for the four areas where releases of VOCs have impacted groundwater at Fort Ord are highlighted in Attachment C.

The continued requirement and commitment to achieving these remedial action objectives is reiterated in the 1st, 2nd and 3rd 5-Year Review Reports, prepared by the Army in 2002, 2007, and 2012, respectively (U.S. Department of the Army, 2002; 2007a; 2012). These 5-Year Review Reports provide a statutory review every five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment, until such time as hazardous substances, pollutants, or contaminants remaining on-site are not above levels that allow for unlimited use and unrestricted exposure. The next 5-Year Report for Fort Ord is scheduled for completion in the fall of 2017. The continued commitment/requirement to meet drinking water standards at Fort Ord was recently reiterated in the ESD for Sites 2/12, dated 28 April 2015, where groundwater contamination still exists. This document states:

> The Army's overall cleanup strategy for Sites 2/12 is to return groundwater to a condition that will allow beneficial uses to occur, including potential future use as a drinking water source without unacceptable risks to users... to reduce concentrations of VOCs to levels that will not result in concentrations of VOCs in groundwater that continue to exceed ACLs [Aquifer Cleanup Levels] and thereby prolong the period of unacceptable human health risk due to contamination in groundwater. (U.S. Department of the Army, 2015).

CAL AM PROJECT APPROVAL AND CENTRAL COAST RWQCB OVERSIGHT

The Cal Am project should be held to the same standards as remedial actions at Fort Ord, given the potential for the Project to impact the beneficial use of groundwater within the Monterey Subbasin. Modeling done to date does not adequately assess potential salinity impacts to

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[6] Basin Plan Chapter 2.I. Present and Potential Beneficial Uses. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."

[7] In some cases ACLs but may be lower than the MCLs based on risk calculations, or may be based on Preliminary Remediation Goals where a MCL is not established.

groundwater in the vicinity of the Project.[8] Eight monitoring well clusters screened in the A- or Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer have been installed inland of the CEMEX site to assess pre-pumping conditions and impacts during initial pilot testing of an individual slant well. However, many of those wells are screened over the entire 180-Foot Aquifer (i.e., have 100 to 200 feet well screens) and do not characterize the different salinity characteristics within the Upper 180-Foot Aquifer and Lower 180-Foot Aquifer that are observed at former Fort Ord. No monitoring wells have been installed north and south of the slant wells, where inland groundwater gradients outside of the capture zone of the slant wells are likely occur. It is also unclear what, if any, additional monitoring wells will be installed if the Project goes forward.

Given the potential for the Project to disrupt the complex hydrogeologic conditions and increase salt water intrusion, more extensive monitoring of current and potential future water quality conditions is required. We believe that the Central Coast RWQCB should take an active role in reviewing the potential impacts to groundwater quality of the Project and oversee monitoring of baseline conditions within each aquifer. RWQCB oversight will aid in ensuring that the Project does not adversely impact beneficial uses of the aquifers that have been the focus of extensive groundwater restoration efforts at former Fort Ord.

ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
Basin Plan	Water Quality Control Plan for the Central Coastal Basin
CalAm	California American Water
ROD	Record of Decision
DEIR/EIS	Draft Environmental Report/Environmental Impact Statement
EKI	EKI Environment & Water, Inc.
ESD	Explanation of Significant Difference
FFA	Federal Facilities Agreement
MCL	Maximum Contaminant Level
MCWD Service Area	Collectively refers to the Central Marina service area, MCWD sphere of influence ("SOI"), and Ord Community Service Area
MCWD	Marina Coast Water District or District

[8] Inadequacies of the modeling done to date are described in EKI's Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017 Marina Coast Water District, California, dated 28 March 2017

SWRCB 2013. State Water Resources Control Board Final Review of California American Water Company's Monterey Peninsula Water Supply Project, dated 31 July 2013.

RWQCB, 2016. Water Quality Control Plan for the Central Coast Basin, Regional Water Quality Control Board Central Coast Region, State Water Resources control Board, California Environmental protection Agency, March 2016 Edition.

Schaaf & Wheeler, 2016. Marina Coast Water District, 2055 Urban Water Management Plan, dated June 2016.

Stalle, Gardner & Dunne, Inc., 1991. Ground Water Quality Assessment-District Well No. 5., released 3 July 1991.

Todd Engineers, 2008. Phase I Investigation Armstrong Ranch Groundwater Storage Project. Marina Coast Water District, Marina.

U.S. Department of the Army, 1994. Record of Decision, Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 15 July 1994.

U.S. Department of the Army, 1995a. Record of Decision, Operable Unit 1, Fritzsche Army Airfield, Fire Drill Area, Fort Ord, California, dated 25 July 1995.

U.S. Department of the Army, 1995b. Explanation of Significant Differences, Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 3 August 1995.

U.S. Department of the Army, 1996. Explanation of Significant Differences, Area A, Operable Unit 2 Landfill, Fort Ord, California, dated 13 August 1996.

U.S. Department of the Army, 1997a. Record of Decision, Basewide Remedial Investigation Sites, Fort Ord, California, dated 13 January 1997.

U.S. Department of the Army, 1997b. Explanation of Significant Differences, Consolidation of Remediation Waste in a Corrective Action Management Unit (CAMU), Operable Unit 2 Landfill, Fort Ord, California, dated 13 January 1997.

U.S. Department of the Army, 2002. 1st Five-Year Review Report, Fort Ord Superfund Site, Monterey, California, dated 23 August 2002.

U.S. Department of the Army, 2003. Explanation of Significant Differences, Excavation and Segregation of Spent Ammunition From Soil, Site 39, Former Fort Ord, California, dated 31 October 2003.

U.S. Department of the Army, 2006. Explanation of Significant Differences, No Further Action for Munitions and Explosives of Concern, Landfill Gas Control, Reuse of Treated Groundwater, Designation of Corrective Action Management Unit (CAMU) Requirements as Applicable for Relevant and Appropriate Requirements (ARARs), Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 15 August 2006.

U.S. Department of the Army, 2007a. Final Second Five-Year Review Report, Fort Ord Superfund Site, Monterey, California, dated 10 September 2007.

U.S. Department of the Army, 2007b. Record of Decision, Operable Unit Carbon Tetrachloride Plume, Former Fort Ord, California, dated 2 November 2007.

U.S. Department of the Army, 2010. Explanation of Significant Differences No.1, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California, dated June 2010.

U.S. Department of the Army, 2012. Final Third Five-Year Review Report, Fort Ord Superfund Site, Monterey County, California, dated September 2012.

U.S. Department of the Army, 2015. Explanation of Significant Differences No. 1, Basewide Remedial Investigation Sites 2 and 12, Former Fort Ord, California, dated 28 April 2016.

8.5.3 Monterey Bay Air Resources District (MBARD)

Monterey Bay Air Resources District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

February 27, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Email: MPWSP-EIR@esassoc.com

SUBJECT: DEIR/EIS for Cal-Am Monterey Peninsula Water Supply Project

Dear CPUC/MBNMS:

Thank you for providing the Monterey Bay Air Resources District (Air District) the opportunity to comment on the above-referenced document.

The Air District has reviewed the document and has the following comments:

1. Table ES – 2 Air Quality, Mitigation Measures, Page ES-40 – The table indicates significant and unavoidable impacts due to excessive emissions during construction. A suite of mitigation measures are presented which include using high tiered engines, idling restrictions, a fugitive dust control plan and paving the reservoir access road. While the District supports these measures we would further encourage the use of clean construction equipment powered by electricity or natural gas whenever feasible. This would have the added benefit of reducing diesel exhaust emissions which would be particularly beneficial when working near sensitive receptors, such as day care centers, schools and residential neighborhoods. MBARD-1

2. 3.3.4 Pipeline Installation, Page 3-49 – This section indicates that approximately 21 miles of pipelines will be installed near the Monterey Peninsula Recreational Trail, mostly using conventional open-trench methods. Please note, if older asbestos containing pipes or materials are encountered during the trenching operation, the requirements of Air District Rule 424 National Emissions Standards for Hazardous Air Pollutants could be triggered. Rule 424 contains the investigation and reporting requirements for asbestos. If you have questions about District Rule 424, please contact Mike Sheehan, Air District Compliance Inspector III, at (831)647-9411 x 217. MBARD-2

3. Table 4.10-5 Estimated Maximum Daily Construction Emissions, Page 4.10 - 22 – The table shows maximum unmitigated daily NO_x emissions estimated at 384 lb/day. Mitigation Measure 4.10-1a **Equipment with High Tiered Engine Standards** is proposed which reduces estimated emissions by about 60 lbs/day to 324 lbs/day, still nearly 2½ times the Air District's 137 lb/day significance threshold for NO_x. MBARD-3

In order to limit the extent of this Significant and Unavoidable impact, the Air District suggests that the following measures be considered:

- Upgrade to Tier 4 engines which can produce significant emission reductions over Tier 3 engines.
- Use non-diesel or non-gasoline powered equipment wherever feasible. This could include electric powered equipment as well as equipment powered by natural gas or propane.
- Avoid scheduling the highest emitting activities simultaneously, particularly during the May-October ozone season.

MBARD-3 cont.

MBARD-4

MBARD-5

Alternatively, in order to mitigate excess NO_x emissions, the applicant may consider:

- Working with the Air District to fund an off-site mitigation program to reduce NO_x emissions from other NO_x sources in the area not associated with the project.
- Developing an on-site mitigation program to reduce NO_x from sources within the operation. For example, the motor vehicle fleet associated with the operation could be replaced with electric vehicles. Partial funding for such a fleet conversion may be available through the Air District. Please contact David Frisbey, Planning and Air Monitoring Division Manager if you would like to consider that option. His number is 831-718-8016.

MBARD-6

MBARD-7

4. Mitigation Measure 4.10-1c: Construction Fugitive Dust Control Plan, Page 4.10-25 – The Air District appreciates inclusion of Mitigation Measure 4.10-1c as a starting point for the Fugitive Dust Control Plan as well as Measure 4.10-1d which will pave the Terminal Reservoir access road. However, given the high level of unmitigated PM_{10} emissions (279 lbs/ton per Table 4.10-5) and the finding that mitigated emissions (75 lbs/day) are only slightly below the threshold, additional actions may be needed to maintain compliance with the California air quality standard for PM_{10} as well as Air District Rule 402, Nuisances. These could include more frequent watering and modulating activity when dust producing operations are being conducted, particularly when working along populated corridors.

MBARD-8

Feel free to contact me if you have any questions. I can be reached at (831) 718-8027 or bnunes@mbard.org.

Best Regards,

Robert Nunes

Robert Nunes
Air Quality Planner

cc: David Frisbey, Manager Planning and Air Monitoring Division
Alan Romero, Air Quality Planner III
Mike Sheehan Mike Sheehan, Air District Compliance Inspector III

MONTEREY COUNTY
RESOURCE MANAGEMENT AGENCY
Carl P. Holm, AICP, Director

Building Services / Environmental Services / Planning Services / Public Works & Facilities
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Salinas, California 93901 www.co.monterey.ca.us/rma

February 27, 2017

CPUC/MBNMS
c/o ESA
550 Kearney St., Suite 800
San Francisco, Ca 94108

Subject: Comments on Draft EIR for MPWSP (SCH#2006101004)

Dear CPUC/MBNMS,

The Monterey County land use departments have reviewed the subject Draft EIR and have the following comments:

RMA-Planning

1. The Draft EIR does not address visual impacts, in particular with regard to the proposed desalinization plant located in the unincorporated area north of Marina off Charles Benson Road. The Draft EIR should include a visual analysis of the facility and discuss consistency with applicable Monterey County General Plan policies. — MCRMA-1

2. Page 4.8-19 (Monterey County Local Coastal Program). The discussion incorrectly states that "The five land use plans stand alongside the 2010 Monterey County General Plan ...." It should say the "1982 General Plan." — MCRMA-2

3. Page 4.8-25. The discussion of Policy LU-1.11 incorrectly states that the desalinization plant site may need to be redesignated to accommodate the plant. The applicant has applied for a Use Permit which, if approved, would not require that the land use designation or zoning of the site be changed. — MCRMA-3

4. Page 4.8-26. The discussion of North County LUP Policy 4.3.4 does not indicate whether or not the project is consistent with this policy. — MCRMA-4

Agricultural Commissioner's Office

The elements of the project description with the potential for impacts to farmland are numerous and not clear in the analysis. For example, in the "Consistency with Regulatory Requirements" section of the document, it states that the proposed project would not be subject to FPPA requirements because the *project would not irreversibly convert farmland to nonagricultural use (emphasis added)*. However, this statement contradicts other portions of the analysis in the Agricultural Resources section. — MCRMA-5

No mitigation for the conversion of the 25-acre MPWSP Desalination Plant site, designated as Permanent Grazing, has been proposed. The DEIR states:

> ....the land has been vacant since 1913 (RBF Consulting, 2012). Therefore, construction of the MPWSP Desalination Plan would not temporarily disrupt agricultural activities, as none currently are conducted on the site, and would have a less-than-significant impact with respect to conversion of land zoned for agricultural use to non-agricultural uses because no agricultural uses currently are present in this location.

MCRMA-5 cont.

Regardless of the land's current or historic fallowness, the loss of agricultural land to development must be addressed in the analysis and mitigation. Specifically, the Ag Land Trust should be consulted to determine what the estimated value of the loss of this type of agricultural land would cost, and appropriate mitigation funds should be required to acquire like lands elsewhere in the region to compensate for the permanent loss of agricultural land. Other projects have been partially mitigated by moving topsoil to avoid the loss of that resource in addition to contributing to a mitigation bank, which the Ag Land Trust has also assisted with.

Additionally, this project must be reviewed by the County Agricultural Commissioner's Ag Advisory Committee for input on the best way to mitigate the impacts of construction, maintenance, and operation of the site. For example, although construction will take place in existing farm roads for some portions of the project, the remaining land will be potentially impacted during construction and plantings and access to planted crops may be impacted. Individual landowners must be consulted to determine what the best schedule for construction is and to determine how to minimize temporary and/or permanent impacts to agricultural land.

MCRMA-6

Sincerely,

Bob Schubert, AICP
Senior Planner

MONTEREY COUNTY

WATER RESOURCES AGENCY

PO BOX 930
SALINAS , CA 93902
(831)755-4860
FAX (831) 424-7935

DAVID E. CHARDAVOYNE
GENERAL MANAGER

STREET ADDRESS
893 BLANCO CIRCLE
SALINAS, CA 93901-4455

March 21, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny St., Ste. 800
San Francisco, CA 94108

Subject: **Comments on the Draft EIR/EIS for the Monterey Peninsula Water Supply Project dated January 2017 (SCH# 2006101004)**

Dear CPUC/MBNMS:

The Monterey County Water Resources Agency (MCWRA) has received the DEIR/EIS for the Monterey Peninsula Water Supply Project (MPWSP). This letter conveys correspondence and recommendations concerning issues that are relevant to the MCWRA's areas of responsibility.

The MCWRA has reviewed the DEIR/EIS, particularly with respect to any potential impacts the proposed project may have on the Salinas Valley Groundwater Basin (SVGB). The DEIR/EIS Chapter 2, Water Demand, Supplies, and Water Rights, adequately describes the concept and need to provide return water to the SVGB. The DEIR/EIS adequately considers the effect of the return water in section 4.4, Groundwater Resources. Furthermore, the 2015 Draft EIR included a groundwater analysis which has since been updated by a new groundwater modeling consultant. MCWRA has reviewed the updated groundwater analysis made available in Appendix E. The updated groundwater analysis in the DEIR/EIS demonstrates that the proposed project will not harm or cause injury to other basin users. It is the opinion of the MCWRA that the concerns regarding groundwater modeling, SVGB impacts, and water rights have been adequately addressed throughout the DEIR/EIS. Additionally, MCWRA is developing an independent groundwater monitoring program, per the Settlement Agreement and Mutual Release (executed Dec 4, 2012). MCWRA-1

The MCWRA has reviewed Chapter 4, sections 4.3 Surface Water Hydrology and Water Quality and 4.4 Groundwater Resources and the associated mitigation measures. With respect to these sections, the DEIR/EIS adequately evaluates and describes any potential environmental impacts associated with the construction, operation and maintenance of the project, and identifies those impacts that could be significant. MCWRA has only a few general comments in regards to these sections which should be addressed for the Final EIR/EIS: MCWRA-2

From Section 4.2 Geology, Soils, and Seismicity,

- Pages 4.2-23 states that Nacimiento Dam was completed in 1961, but it was actually

completed in 1957. Also, on this same page, the text indicates that San Antonio dam was completed in 1965; it was actually completed in 1967. MCWRA-2 cont.

From Section 4.4 Groundwater Resources:

- With regard to groundwater basin nomenclature, I would suggest that Figure 4.4-1 be updated to reflect the basin boundary spatial definitions and names as published by DWR in October 2016. MCWRA-3
- Discussion of the Seaside Groundwater Basin should be carefully reviewed and, when appropriate, clarification added as to whether the text is referring to the "Seaside Groundwater Basin" as defined by the Seaside Watermaster and MPWMD or the "Seaside Area Subbasin," which is defined by DWR and is a subbasin of the Salinas Valley Groundwater Basin. Page 4-4.12 contains an example of where this is relevant. Since DWR published new groundwater basin/subbasin boundaries in October 2016, the geographic boundaries of both are the same, however, DWR does not further subdivide the Seaside Area Subbasin as is described on page 4-4.12. MCWRA-4
- On page 4.4-5 there is a reference to the Pressure Area being bounded on the south by the Seaside basin. This should refer to the Monterey Subbasin, as this portion of the groundwater basin is now known. MCWRA-5
- Page 4.4-19 references the 2015 Brown and Caldwell report as being "conducted for the MCWRA". The State of the Salinas River Groundwater Basin report, as it is titled, was actually conducted for the County of Monterey Resource Management Agency, not MCWRA. MCWRA-6
- The Salinas Valley Reclamation Project (SVRP) operates in tandem with CSIP to deliver recycled water, but SVRP is not mentioned in the discussion of CSIP on page 4.4-20. MCWRA-7
- Page 4.4-28 they are confusing TDS and chloride. Chloride concentrations from that of seawater (19,000 mg/L) down to 500 mg/L near the leading edge... The MCWRA define the leading edge of inland seawater intrusion a groundwater containing CHLORIDE at 500 mg/L. The following paragraph also has two places were TDS is used but it should be chloride. MCWRA-8

MCWRA finds the DEIR/EIS demonstrates that any water resources related impacts associated with the project can be sufficiently mitigated. MCWRA looks forward to reviewing the Final EIR/EIS. If you have any questions regarding this response, please contact me at 831-755-4860 or by email at chardavoyneDE@co.monterey.ca.us. Please send the Final EIR/EIS to the address above.

Sincerely,

David F. Chardavoyne

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8.5.6 Monterey Peninsula Regional Water Authority (MPRWA)

MONTEREY PENINSULA REGIONAL WATER AUTHORITY

Directors:
Bill Kampe, President
Ralph Rubio, Vice President
David Pendergrass, Secretary
Jerry Edelen, Treasurer
Steve Dallas, Director
Clyde Roberson, Director

Executive Director:
Jim Cullem, P.E.

February 27, 2017

Mary Jo Borak, CEQA Lead
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue
Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Regional Water Authority Comments on the Monterey Peninsula Water Supply Project Draft EIR/EIS

Dear Ms. Borak and Ms. Grimmer:

The Monterey Peninsula Regional Water Authority (Water Authority) is a joint powers authority comprised of the six cities of the Monterey Peninsula with a board of directors consisting of the six respective city mayors. The Water Authority generally supports the Monterey Peninsula Water Supply Project (Project) proposed by California American Water Company (Cal-Am) in Application 04-09-019.

The Water Authority contracted with Separation Processes, Inc. and its sub-consultant Geosyntec Consultants to conduct a technical review of the Draft EIR/EIS with respect to the intake structures (including modeling) and brine discharge. With the input of Geosyntec Consultants and the Water Authority's Technical Advisory Committee, we find the Draft EIR/EIS to be well done and commend the lead agencies and **Environmental Science Associates** for their excellent work.

MPRWA-1

The Water Authority offers the following comments and recommendations in the interest of further strengthening a few sections of the analysis for the Project's Final EIR/EIS.

I. Brine Discharge Analysis

Dr. Preston of Geosyntec Consultants reviewed the brine discharge analysis and has informed the Water Authority that the analysis is well done, thorough, and appears to be conservative in its estimation of the amount of brine dilution that is likely to occur. Dr. Preston did, however, offer two recommendations to further improve the analysis, which we request that you incorporate into the Final EIR/EIS. They are as follows:

1. We recommend that you update the temperature of the brine discharge to reflect its source from groundwater (not the ocean) and to also include the increase in temperature of the brine due to waste heat in the desalination process. The original near-field analysis by Flow Science (2014) that was presented in the April 2015 Draft EIR assumed that the temperature of the brine discharge was equal to the temperature of the ocean. The Revised Draft EIR/EIS (January 2017) updated the temperature profiles of the ocean water using site-specific data collected from February 2014 to December 2015, which were up to approximately 3°C warmer than the temperature profiles used previously. However, the Draft EIR/EIS does not include an update of the assumed temperature of the brine discharge in its dilution calculations. The assumption of using the same temperature for the brine discharge as the ocean water is potentially inaccurate on two accounts: (1) the source water is from the groundwater and not from the ocean water, and (2) the desalination process produces waste heat that will likely increase the temperature of the brine discharge. We recommend that you include these effects by using temperatures of water taken from the test slant well (e.g., *Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping Test Monitoring Report No. 48*, April 5, 2016) and add some increase in temperature attributable to the desalination process (e.g., it has been noted that the temperature of the brine may increase approximately 1.5 to 2°C [IDE, personal communication, February 2017]). Geosyntec Consultants anticipates that these corrections will have minimal effect on the near-field dilution calculations because the density of the brine (which is important to the mixing/dilution processes) is dominated by the salinity differences, rather than the temperature differences. However, for the sake of utmost accuracy, we recommend that the brine temperature assumptions be updated as discussed. It is likely only necessary to assess the effects of corrected brine temperature on a few select calculations and demonstrate negligible impact, rather than revising all of the calculations in the Draft EIR/EIS. MPRWA-2

2. We recommend that you revise the analysis of the potential for hypoxia. The Draft EIR/EIS cites a mass-balance analysis provided by Geosyntec (2015) to indicate that hypoxia is unlikely. However, that analysis used far-field modeling results that were provided in the April 2015 Draft EIR, but are not in the January 2017 Draft EIR/EIS. While the hypoxia mass-balance analysis is likely still valid, it should be revised so that it does not rely on the far-field analysis that is no longer provided. Additional analysis could range from calculations assessing potential for vertical mixing (i.e., Richardson number considerations) coupled with discussions of the favorable surrounding topology (i.e., flat slope with no depressions) that will limit potential brine pooling to more sophisticated far-field modeling. MPRWA-3

II. Greenhouse Gas Emissions

The analysis of operational greenhouse gas emissions at section 4.11.4.2 and in Appendix G2 calculates CO2 emissions from brine degassing. However, it does not take into account the reduction in CO2 emissions that will result from a reduction in groundwater production by both the Castroville Community Services District (CCSD) as a result of the receipt of Project water as "return water" to offset its groundwater production, and from Cal-Am's reduced extractions from the Seaside Groundwater Basin and from the Carmel River Valley. The reductions in CO2 emissions stem from both avoided energy that would otherwise be used to power CCSD's wells and other production and conveyance facilities and the avoided degassing from the groundwater that would otherwise be produced.[1] In other words, the analysis of operational greenhouse gas emissions should incorporate the aspects of reduced emissions as a result of the Project alongside the aspects of increased emissions and thereby provide a net emissions analysis. MPRWA-4

The analysis of operational greenhouse gas emissions should also incorporate a discussion of the local Community Choice Energy program known as Monterey Bay Community Power. A joint powers agreement to create a joint powers authority has been approved, or will soon be submitted for approval, by 19 local member agencies partnering in the program. One goal of the program is to source more of the Monterey Bay area's power supply from renewable energy. This will reduce the CO2 emissions resulting from the Project's operations. MPRWA-5

III. Other Comments

In Table 3-1, "60 inch diameter pipe" is repeated twice. One of the pipes should be "48 inch". MPRWA-6

In Appendix D-1, caption to figure 10 indicates "buoyant". It should read "negatively buoyant". MPRWA-7

In the last bullet on page 4.3-73 it states, "Estimate regions within the BMZ where salinity would exceed 2 ppt." It should be modified, since the 2 ppt limit applies to the *difference* from background salinity, not the absolute salinity. MPRWA-8

The Water Authority hopes these comments will be helpful in preparing a thorough Final EIR/EIS for the Project. Thank you for your consideration.

Sincerely,

Bill Kampe

Bill Kampe, President
Monterey Peninsula Regional Water Authority

[1] It appears that the analysis already does a net power consumption analysis for Cal-Am's groundwater production, but it does not appear to back-out the CCSD's avoided energy consumption nor the avoided CO2 degassing associated with CCSD's and Cal-Am's existing groundwater production.

8.5.7 Monterey Peninsula Water Management District (MPWMD)

March 20, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800, San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

SUBJECT: Draft Environmental Impact Report/Environmental Impact Monterey Peninsula Water Supply Project State Clearinghouse No. 2006101004

Dear Sir or Madam:

This letter from the Monterey Peninsula Water Management District (MPWMD or District) is written in response to the joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/E1S) issued in January 2017 for the California American Water Company (Cal Am) application to develop a replacement water supply for CalAm's Monterey District service area. The District serves as a Responsible Agency under the California Environmental Quality Act for this project because a MPWMD Water Distribution System (WDS) Permit Amendment is needed to amend the current water system to serve water within the District boundary (MPWMD Rule 20-A). MPWMD-1

ES.5 The Proposed Project: All references to a Terminal Reservoir should be removed. This is no longer a part of the Project.

p. 1-9, Section 1.4.2, item 3: CalAm has elected to forego the "Terminal Reservoir" but increase the storage at the desalination facility. It would be useful to conform the MPWSP description to the actual elements in this chapter and in the project description in Chapter 3, especially Section 3.23.5 and related Figures 3-2 and 3-9b. If any changes are required to the description of "Treated Water Storage Tanks" in Chapter 3 and Figure 3-5b, they should be made. All impacts, mitigations, or other discussion related to the Terminal Reservoir could be removed throughout. MPWMD-2

p. 2-2, Section 1 Introduction, 1st full paragraph: In the first sentence, the Monterey Airport District should be included in the description. The Monterey Peninsula Airport District was created in 1941 and is not incorporated into the city or the county. MPWMD-3

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"CalAm is proposing this project to replace part of its existing water supplies, which have been constrained by legal decisions affecting CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. State Water Resources Control Board (State Water Board) Order 95-10, State Water Board Order 2009-0060 (also referred to as the Cease and Desist Order, or CDO), **State Water Board Order 2016-0016,** and the Monterey County Superior Court's adjudication …" MPWMD-4

p. 2-3, Section 2.2.1.1: In the paragraph following the bullet points under "Facility Overview" the statement is made that "CalAm's Carmel River supplies are supplemented, especially during the summer high-demand season, by groundwater production wells in the Seaside Groundwater Basin." This statement is not true. Due to the "hydraulic trough" near the Naval Support Activity (Naval Postgraduate School), as described at the top of page 2-4, there always exists a portion of customer demand in the north part of the service area that cannot be served by the Carmel River, must be served from the Seaside Basin, therefore the supply is not "supplemented." MPWMD-5

p. 2-4 to 2-5, Section 2.2.2.2: There is no emergency intertie between Hidden Hills and the CalAm main system. There is a connection between Toro and Hidden Hills. Theoretically, this intertie could result in water from the MPWSP being used in the Toro system unless it is removed, but it means Carmel River water cannot be provided to Hidden Hills during "fires and emergencies" from the Crest Tank.

In this section, it would be useful to state, just before the last sentence of the first paragraph on page 2-5, that the MPWSP facilities include permanent interconnections to the CalAm Main System as described in Section 3.2.3.9 and shown in Figures 3-2, 3-10a, and 3-10b. MPWMD-6

p. 2-4, footnote 6: Add "In January 2017, the MPWMD approved a contract for preparation of an alternatives study for Los Padres Dam and sediment management in the reservoir." MPWMD-7

p. 2-5, Section 2.2.2.3: There is an inaccurate explanation of the MPWRS. MPWRS is not only CalAm sources of supply, but includes supplies for non-CalAm pumpers in the Seaside Basin and in the Carmel Valley Alluvial Aquifer. MPWMD-8

p. 2-5, Section 2.2.2.4 Carmel River Flow Agreements: The text should also include State Water Board Order 20016-0016. MPWMD-9

p. 2-7, Section 2.2.3: In the third paragraph it states "If CalAm fails to meet a milestone, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy." However, the Revised CDO states, "If the State Water Board determines that the cause is beyond Applicants' control, it may suspend any corresponding reductions" in the effective diversion limit due to a missed milestone. MPWMD-10

p. 2-12, Table 2.3: For reasons cited in our comments on pages 6-13, 6-14, and 6-18 below, we do not believe the Pebble Beach entitlements or legal lots of record should be considered as "future demands." MPWMD-11

p. 2-14, Section 2.3.3.3: Estimates are outdated and unsupported. There has been development based on the Paralta and pre-Paralta allocations since the early 2000's. There was new connection (i.e. vacant lot) development pre-CDO. There is development from the Sand City, Malpaso, and Pebble Beach entitlements. The vacant lot study included vacant buildable lots on existing parcels, including developed parcels (such as in Pebble Beach and Carmel Valley) that may never be split apart from the main property and developed. Hence, new analysis may be warranted. MPWMD-12

p. 2-16, Section 2.3.4.2: Non-revenue water is discussed in the second paragraph. It should be noted that the direct testimony of CalAm's Eric Sabolsice filed July 1, 2016 stated the total water loss for the Monterey Main System was 250 AF for Calendar year 2015. By Cal-Am's calculation the NRW percentage is 2.7%. MPWMD-13

p. 2-18 Aquifer Storage and Recovery: MPWMD has recently revised its estimate of the average annual yield from the ASR Project to 1,600 acre-feet per year. Please see **Attachment 1 – Effects of Monterey Pipeline on ASR Yields by Water Year Type**. With additional improvements to the Cal Am system, MPWMD estimates that the yield from ASR will be 920 afy from Phase 1 and 1,080 afy from Phase 2 for a combined total long-term average of 2,000 afy. MPWMD-14

p. 2-20 and 2-21: Water rights Permits 20808A and 20808C are incorrectly numbered. This is also repeated in Section 4.4 and should be corrected. In addition, MPWMD owns the ASR Phase 1 site and Cal Am owns the ASR Phase 2 site. MWPMD and Cal-Am jointly hold water rights Permits 20808A and 20808C to divert Carmel River water to the ASR Project. MPWMD-15

p. 2-21, Section 2.4.6.2: The term "Water Use Permit subscriber" is used in several places. A Water Use Permit has a specific meaning at MPWMD and is used incorrectly here. For clarity, we suggest you simply use the word "subscriber." In the third paragraph, change "water use permit" to "Water Permit". MPWMD-16

p. 2-23, Section 2.5.2.1 Los Padres Reservoir: A recent resurvey of Los Padres Reservoir showed that the reservoir can hold 1,810 AF at the spillway level (see **Attachment 2 – Final Los Padres Reservoir Survey Study Report**). The actual safe usable storage at this facility is less than 1,400 af due to concerns about releasing anoxic water or water with hydrogen sulfide from the lowest portion of the reservoir. MPWMD now estimates the long-term sedimentation rate to be between about 11 afy to 19 afy, depending on how the effects of the Marble-Cone fire on sedimentation are treated. In addition, releases from Los Padres Dam were originally intended to flow approximately five miles through the Carmel River to San Clemente Dam and Reservoir, where water was re-diverted into the Cal-Am delivery system. When Los Padres Reservoir was operated this way, a relatively small amount of the releases were lost due to evapotranspiration and channel losses along the interdam reach, which is a narrow channel flanked in most places by steep, rocky slopes. MPWMD-17

Cal-Am has changed its operations in Carmel Valley to divert Carmel River flows through its downstream wellfield. Thus, flow releases from Los Padres Dam must travel at least 11 miles and up to about 22 miles through the river channel before being diverted. In practice, it is unlikely that a significant portion of the releases from Los Padres Reservoir are actually diverted into the Cal Am system. Even if the releases are beneficial to the downstream riparian corridor, it is a very inefficient method of delivery to the Cal Am system. This may call into question whether Cal-Am can continue to divert as much as it releases from storage in the future. A replacement supply of 510 af for these considerations appears to be low; however, because of the potential long-term nature of a change in supply available from Los Padres Reservoir, it is conceivable that the water supply freed up in the Seaside Groundwater Basin after 25 years of in-lieu replacement could help offset any losses in supply from Los Padres Dam and Reservoir. MPWMD-17 cont.

p. 2-25, Section 2.5.3.1: The completion date in the 7th line of the first paragraph should be 2017. MPWMD-18

p. 2-26, Section 2.5.3.3: See comment above for p. 2-16. MPWMD-19

p.2-27, Section 2.5.3.4: The County General Plan planning area titled "Greater Monterey Peninsula" contains the City of Marina and vast swaths of land south and east of Carmel Valley, none of which are connected to the CalAm system and should not be reflected in future demand. Further, even the 2030 estimates overstate future population and per capita water demand. Hence, these numbers are overstated. MPWMD-20

p. 2-29 and 2-30, Section 2.5.4 Assumptions about the Allocation of MPWSP Water: When it becomes clear that Cal Am will complete construction of replacement supplies, MPWMD will update the original 1990 Allocation Program EIR and evaluate the impacts to the environment from allocation of water from the Monterey Peninsula Water Resources System, including new supply projects built since 1990. The considerations that formed the basis of the 1990 allocation may or may not be the same in a future analysis. Environmental analysis will be based on the conditions present or foreseeable at the time MPWMD makes a determination about allocating new supplies.

Need the acronym "AFY after the numbers 16,294 and 16,994 on page 29. On page 30 it states, "any water left over would be allocated in general proportion to projected growth in the CalAm service area jurisdictions." That is unlikely true, MPWMD may not allocate all water, may choose to retain water to be allocated later as general plans change over time, retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations. The future allocation process has not been defined. MPWMD-21

p. 2-35, Section 2.6.1: In footnote 34 "Salinas Valley Growers Association" should be changed to "Salinas Valley Water Coalition." MPWMD-22

p. 3-3, Figure 3-1: The segment labelled "Ambler*" includes a bigger portion that should be labelled "Toro*" MPWMD-23

p. 3-34, Figure 3-9b: Indicates "water produced during development of ASR-5 and ASR-6 Wells would be conveyed to this natural depression and infiltrated into the ground." This is further described in Sections 3.3.2.2 and 4.3.5.1. No other disposal methods are analyzed. This is the District's preferred method such that the water recharges the Seaside Basin and is not discharged outside of the Monterey Peninsula Water Resource System. MPWMD-24

p. 4.1-16, Table 4.1-2: Project No. 6 City of Sand City Coastal Desalination Plant is presently being reconfigured. The description should be changed in the Table after consulting with CalAm. MPWMD-25

p. 4.1-18, Table 4.1-2: Project No. 17 Monterey Downs. This project is no longer being considered. MPWMD-26

p. 4.3-63: The San Pablo Depression was not used for the spreading of development water from ASR Well 3. MPWMD-27

p. 4.4-3 Figure 4.4.1: This figure does not reflect the Bulletin 118 boundary adjustments approved by the California Department of Water Resources for the Seaside Area and the Corral De Tierra Area in 2016, and is therefore incorrect. The DEIR should reflect the 2016 Bulletin 118 Interim Update and should be updated with the newly modified shapefile from the DWR SGMA website. MPWMD-28

p. 4.3-11: At the top of the page, the capacity of Los Padres Reservoir has been reduced to about 60% of original capacity – not 2% as stated in the text. MPWMD-29

p. 4.4-12: Seaside Groundwater Basin is separated into sub regions not sub basins. The Seaside Groundwater Basin is a sub-basin of the Salinas Groundwater Basin. MPWMD-30

p. 4.4-25: Please cite the reference for the 22-30% estimate of injected potable water at Well PCA E. MPWMD-31

p. 4.4-28 top of the page: ASR extracted water will not be treated at the Ord Grove Ozone Plant, but rather will be treated at the Santa Margarita Chemical Building. MPWMD-32

p. 4.8-32, Section 4.8.2.4: Please delete the two references to the term "a Water System Expansion Permit" and replace with "an amendment to its Water Distribution System Permit". MPWMD-33

p. 4.4-34: RWQCB regulates ASR operations throughout California under SWRCB Order 2012-0010 General Waste Discharge Requirements for Aquifer Storage and Recovery Projects That Inject Water Into Groundwater. MPWMD operates the Seaside Basin ASR wells under an agreement with RWQCB that pre-dates issuance of Order 2012-0010. MPWMD-34

p. 4.4-36 Division of Water Rights Permit 20808C Amended Permit for Diversion and Use of Water: The description of Permit 20808 should be updated. This permit was split into three parts – 20808A, 20808B and 20808C. Please see **Attachment 3 – Genealogy of Water Rights Permit 20808**. MPWMD and Cal Am jointly own Permits 20808A and 20808C, which total 5,326 afy that are subject to instream flow requirements based on NMFS 2002 recommendations. The ASR Project to divert excess Carmel River water operates under these permits.

The requirement to limit recovered water to 1,500 af in a given year is associated with a side agreement between MPWMD, Cal Am, and CDFW concerning recovery of water injected into the Seaside Basin under Permit 20808A. The Quarterly Water Budget Group set up to determine how the Cal Am system should be operated can decide to extract less. This agreement does not include water recovered under Permit 20808C; however, Condition 7 in CDO 2016-0016 requires that all water injected under either Permit 20808A or Permit 20808C be recovered in the same year, unless CDFW and NMFS agree to an alternate recovery plan. Under the CDO, the first 600 afy of water diverted to ASR in any water year must go toward offsetting Carmel River diversions in the water year it is diverted in. MPWMD-35

These requirements and others placed by the SWRCB on ASR recovery will be lifted once the CDO is met, thus these limits will not be an operational or budgetary limit after replacement supplies are operational and Cal Am has reduced its Carmel River diversions to authorized amounts.

MPWMD owns Permit 20808B for 18,674 afy, which is referred to as the "remainder" permit and is associated with a project to build a new main stem reservoir on the Carmel River downstream of the existing Los Padres Dam. That permit has a different set of instream flow requirements that was fixed to the permit by the SWRCB in 1995 prior to NMFS listing steelhead as a threatened species. No water has been diverted under this permit.

p. 4.4-48 Return Water Considerations: This section states

> "…it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin."

The "Settlement Agreement on MPWSP Desalination Plant Return Water" dated June 14, 2016 states: MPWMD-36

> "J. For Project planning and engineering purposes, Cal Am submits that the Project source water wells have been designed so that approximately 4% of the source water produced by the Project will originate as brackish groundwater from the SRGB."

Data from "Test Slant Well Long Term Pumping Monitoring Report No. 93 (8-Feb. to - 15Feb.),"

and available on the MPWSP web site indicate that the amount of fresh water (as indicated by total dissolved solids) in samples taken during the period 21 January 2016 to 26 January 2017 averaged about 8% with a maximum of 11% and a minimum of 4%.[1]

It is MPWMD's understanding from Cal Am that the Hydrologic Working Group (HWG) has some confidence that design changes and long-term drawdown associated with production wells will result in the salinity of intercepted water exceeding 96% (i.e., 4% "fresh water" intercepted). MPWMD recommends that the analysis or opinion of the HWG be presented and/or referenced in the FEIR. The amount of fresh water intercepted by the slant wells is an issue of great importance to the success of the project and should be fully explained.

Instead of presenting a theoretical range concerning the composition of brackish source water, the Final EIR and EIS should describe a likely freshwater content with an upper and lower bound and should explain the rationale for determining this. The amount of fresh water intercepted at the beginning of the project and the long-term expected composition of the source water should also be described.

MPWMD-36 cont.

p. 4.4-49, Section 4.4.4.2: There is insufficient discussion to show the feasibility of delivery and use by CSIP of water in excess of the needs of CCSD.

MPWMD-37

p. 4.4-51: SEAWAT is not a component of the Seaside Basin Modflow Model. The Pacific Ocean boundary is simulated through freshwater equivalent head constant head boundary. The SEAWAT modeling effort was a separate effort completed with several 2D cross-sectional models extending offshore in order to determine the protective water levels at the coastal monitor wells.

MPWMD-38

p. 4.4-53: Who will prepare the groundwater contour maps and what time of year will the data be collected? Who is responsible for collecting the water levels? Is this a Quarterly Water Budget Process as these rules will affect how the group decides which sources to use for supply?

MPWMD-39

4.3-63: The San Pablo Depression was not used for the spreading of development water from ASR3.

MPWMD-40

p. 4.4-68, Section 4.4.5.2: In the last paragraph on the page, the sentence which starts with, "Although the program has not achieved 2,426 afy, …" should be revised to say, "Although, due to weather and constraints in the existing CalAm transmission system, the program has not achieved 2,426 afy, …"

MPWMD-41

Also, there is contradictory information concerning which aquifer desalinated water would be injected into. Initially, the text states that water would be injected into the Santa Margarita

MPWMD-42

[1] Testing began in April 2015 when the fresh water content at the well was about 23%. The total dissolved solids in the tests appear to stabilize in a range of approximately 30,000 to 32,000 ppt starting as early as February 2016 and continuing through January 2017. Ocean salinity at the site is presumed to be about 33,500 ppt.

Sandstone, which is the deeper of the potable aquifers. The text then goes on to state that water would be injected into the "Shallow Zone Aquifer."

It is MPWMD's understanding that ASR 5 and ASR 6 wells are to be screened in the Santa Margarita Sandstone. P.4.4-83 also states that desalinated water will be injected into the Santa Margarita Sandstone. If the intent is to describe injection of desalinated water into the vadose zone, please state this.

It should be noted that other water supply wells in the vicinity of the ASR wells are screened in both the Paso Robles and Santa Margarita formations.

Please clarify this section concerning where in the aquifer system injection and extraction will occur.

MPWMD-42 cont.

p. 4.4-69: The additional ASR wells 5 and 6 are not listed as places of use on any existing Carmel River water rights permits and therefore these wells will not help to improve the Carmel River ASR program unless these points of injection are added on to the water rights permits. A Petition for Change would have to be submitted to the SWRCB for approval to use these points of injection.

MPWMD-43

p. 4.4-69, Section 4.4.5.2: In paragraph 3 and 4 the CalAm recharge of the basin is described. However, CalAm is not actually returning 700 afy, rather it is not extracting 700 afy. While not extracting water to which it is legally entitled to is similar, it is not the same as delivering actual water. Unless natural inflow from precipitation delivers a like amount, in lieu recharge delivers paper water instead of wet water. This section could more adequately describe this as an in lieu recharge program.

MPWMD-44

p. 4.4-82, Section 4.4.5.2: The second paragraph refers to Figure 4.7-2 regarding location of contaminated sites. However, Figure 4.7-2 does not show any of the referenced sites. It may have intended to refer to Figure 4.7-1, but that figure does not show the ASR location.

MPWMD-45

p. 4.11-13 to 14, Section 4.11.4.2: Wouldn't CO2 be released from the 57% seawater component at the brine equalization basin which is open to the atmosphere, rather than once diffused back into the ocean?

MPWMD-46

p. 4.19-2, Table 4.19-1: California Department of Finance estimates included approximately 1,000 new housing units in the CAW system between 2010 and 2015. That is impossible given that there is a moratorium on setting new water meters. This should be corrected to reflect a more reasonable number.

MPWMD-47

p. 5.2-6, Section 5.2.5: Paragraph 2 on this page states that the Monterey County Agency Act has a "prohibition on out-of-basin transfers." Section 21 of the Act only refers to export of groundwater from the Salinas River Basin, not surface water.

MPWMD-48

p. 5.4-6, Section 5.4.2.3: The "Supply Shortages" first paragraph states that the No Project Alternative "assumes that potential demands associated with Pebble Beach water entitlements, hospitality industry rebound, and legal lots of record could not be served, and thus are not counted among demands under the No Project Alternative." This is an incorrect assumption in two regards: (i) the Pebble Beach build-out has been approved under a separate EIR and the entitlements, by agreement, are to be honored from existing supplies whether a project is built, or not; and (ii) economic rebound occurs in existing properties at existing service connections, hence could occur whether a project is built, or not. Those demands cannot be assumed away. MPWMD-49

p. 5.4-7, Section 5.4.2.3: In the discussion of 1,000 afy reductions for missed milestones, you fail to mention the Revised CDO states, "If the State Water Board determines that the cause is beyond Applicants' control, it may suspend any corresponding reductions" in the effective diversion limit due to a missed milestone (see comment for page 2-7, above.) Hence, the No Project Alternative with the reductions in effective diversion limits must presume that CalAm is at fault and "chooses" not to execute a project. The description should clarify its assumptions. MPWMD-50

p. 5.5-366, Section 5.5.21.2: The middle paragraph on the page states , "1,755 afy would support new development." This is a specious argument for two reasons: (i) the Pebble Beach build-out has been approved under a separate EIR and the entitlements, by agreement, are to be honored from existing supplies whether a project is built, or not; and (ii) a legal lot of record has already undergone environmental review by a local land use authority and its growth inducing impacts already analyzed. In both of these cases, the provision of water should not be considered "growth inducing." This impact should be revised to LS, Less Than Significant Impact. MPWMD-51

p. 5.5-368, Section 5.5.21.3: The conclusion that there are no indirect growth inducing effects from the No Project Alternative should be revised to reflect the likelihood of a contraction due to penalty rates and rationing, i.e. negative growth, which would be significant and unavoidable. MPWMD-52

p. 5.6-19, Table 5.6-1: Impacts 6.3-1 and 6.3-C should be changed to LS for the Proposed Action and SU↑ for the No Action alternatives, based on previous comments, above. MPWMD-53

p.6-3, Section 6.1: Revise the last bullet pursuant to comment on p.5.5-366, above. MPWMD-54

p. 6-5, Section 6.3.1: See comment for page 2-2 above MPWMD-55

p. 6-10, Section 6.3.2.3: The third sentence should read: "The MPWMD manages surface and groundwater resources within its jurisdictional boundary"

Revise the second set of bullets under "The MPWMD's responsibilities also include:" MPWMD-56

- computer modeling of water resources systems;
- hydrologic monitoring;

- issuing water ~~connection~~ permits ***for new connections and remodels***;
- allocating water to jurisdictions ***and tracking its use***;
- ~~adopting water conservation ordinances and performing inspections~~ ***developing, implementing, and enforcing water efficiency programs and ordinances***~~;~~
- determining when ~~drought~~ ***water supply*** emergencies exist and then imposing ***and enforcing*** rationing programs;

MPWMD-56 cont.

p. 6-13, Section 6.3.5.1: The District believes that the DEIR has errs in its evaluation of growth inducement. Previously, our comments have stated the following:

(i) The Pebble Beach build-out has been approved under a separate EIR, hence its impacts have already been analyzed and are, in effect already "in the system". The entitlements are to be honored from existing supplies whether a project is built, or not, and that has been recognized by the State Water Board and in written agreement between CalAm, the Pebble Beach Company, and MPWMD. The proposed action does nothing to change the effect of the Pebble Beach Entitlements.

(ii) Economic rebound occurs in existing properties at existing service connections, hence could occur whether a project is built, or not. Furthermore, this effect is broader than just restaurants and lodging, rather include all commercial, industrial, and institutional (CII) revival under an improved economy, much of which is ancillary to tourism. The proposed action does nothing to change the effect of an improved economy.

(iii) A legal lot of record has already undergone environmental review by a local land use authority and its growth inducing impacts already analyzed. It is a slippery slope to infer already approved projects are "induced" by the proposed action. While we recognize that the meter moratorium can only be lifted when the project or something similar occurs, an alternative approach might be a class-action lawsuit by such property owners, who should already have been served years ago.

In each of these cases, the provision of water should not be considered "growth inducing."

MPWMD-57

p. 6-14, Section 6.3.5.1: The section on Pebble Beach Entitlements and Hospitality Industry Rebound should be revised pursuant to the comments made above.

MPWMD-58

p. 6-16, Section 6.3.5.1: the last paragraph says, "For simplicity's sake, this analysis assumes that about 250 afy of supply designated for rebound of the hospitality industry would likely be used for this purpose and 250 afy would be available for new development." However, your own discussion in Section 2.3.3.2 showed that CII demand was 440 afy greater in the period prior to the recession. That discussion also indicated that MPWMD's direct testimony to the CPUC in February 2013 concluded the estimate of demand related to economic rebound (500 afy) was

MPWMD-59

reasonable. We find your assumption made for simplicity's sake is, in and of itself, growth-inducing. MPWMD-59 cont.

p. 6-18, Section 6.3.5.1: Top of 6.18 states, "That is, for purposes of this EIR/EIS, it is assumed that supply provided by the proposed project would be allocated to meet existing demand within the CalAm service area, and that water service capacity beyond that would be allocated to the jurisdictions in general proportion to an estimate – which the MPWMD has not yet developed – of their future water supply needs."

Existing demand would not result in an "allocation." As stated in our comment on page 2-29, MPWMD may not allocate all water, may choose to retain water to be allocated later as general plans change over time, retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations. The future allocation process has not been defined.

This Section also states, "This analysis also recognizes that the MPWMD could choose not to allocate to the County the approximately 325 afy proposed to serve Pebble Beach water entitlement-holders, to ensure that adequate water supply would be available when development associated with those entitlements was proposed. If, on the other hand, the MPWMD did allocate this water to the County, the County could then elect to allocate at least a portion of the 325 afy to other development – if, for example, other development was proposed first or the County determined that the entitlement holders were unlikely to use the full amount. In either case, this portion of the proposed MPWSP supply would be used to serve new development." We believe that the DEIR incorrectly evaluates the Pebble Beach entitlements, which should be treated as existing demand or demand to be served irrespective of the source of supply, not "new development." Therefore, this is not plant capacity to serve new development, rather is plant capacity to further reduce diversions from the Carmel River, Pure Water Monterey, the Seaside Basin, or the Sand City desalination plant to serve the entitlements. MPWMD-60

An "Entitlement" is different from an "Allocation". Therefore, the above scenario would not happen. The Pebble Beach Entitlement is not recognized in the County's Allocation. It is a separate commitment of water to specific sites. Please see other comments earlier regarding the Pebble Beach Entitlement.

The third paragraph on the pages says, "Similarly, because there is no guarantee that the 500 afy proposed to meet demand associated with hospitality industry rebound will actually go to that use, this analysis assumes that either the MPWMD or the local jurisdictions could elect not to set aside 500 afy exclusively for use by existing businesses. Therefore, some portion of this 500 afy could actually serve new development within the service area." The top of the page uses MPWMD analysis to support this.

If 500 AF is not needed to "cover" CII water use as a result of recovery from the recession, the water would be subject to the MPWMD Allocation program. It would not be automatically available to the jurisdictions, nor could a local jurisdiction elect how to use it. As indicated in earlier comments, your decision to assume the 500 afy is in excess is an unprovable assumption. To fully allocate water designed to provide a buffer against a revived economy would be unlikely. MPWMD-60 cont.

p. 6-25, Table 6.3-7: AMBAG made projections on housing units and population. As the number of housing units in CalAm shown increases by approximately 3,000 between 2010 and 2020, one can assume that AMBAG did not anticipate the CDO and moratorium on new connections, and the data is of marginal value. MPWMD-61

p.6-36, Section 6.3.5.3 and Table 6.3-8: Reference is made to the 20x2020 water conservation requirement and the author notes that the 2006 MPWMD estimate may need to be reduced by 20%. And Table 6.3.8 reduced needs to 2,820 using this suggestion. However, the factors used by MPWMD in 2006 assumed water efficient plumbing fixtures that would meet or exceed the requirements of 20x2020. Water needs should stay at the revised 3,526 afy and the 2,820 afy value should be stricken. MPWMD-62

Other: In Appendix K Water Conservation and Demand Management, please note the following: MPWMD-63

1. Need to add that MPWMD requires retrofit upon change of ownership ***and remodel or change of use.*** (Pg K-3, last paragraph)

2. Table K-1 is missing MPWMD's CII mandatory retrofit requirement.

My staff and I are available to meet if further coordination is needed. I can be reached at dstoldt@mpwmd.net or 831/658-5650 if you have questions.

Sincerely,

David J. Stoldt
General Manager

Cc: David Laredo, MPWMD Counsel
Jon Lear, Stephanie Locke, Larry Hampson, MPWMD staff

Attachments: 1 – Effects of Monterey Pipeline on ASR Yields by Water Year Type
2 – Final Los Padres Reservoir Survey Study Report
3 – Genealogy of Water Rights Permit 20808

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8.5.8 Monterey Regional Waste Management District (MRWMD)

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MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Home of the Last Chance Mercantile

March 29, 2017

Via Electronic Mail (https://www.regulations.gov/comment?D=NOAA-NOS-2016-0156-000)

RE: Comments to Monterey Peninsula Water Supply Project
January 13, 2017 Draft Environmental Impact Report/Statement (DEIR)/(DEIS)

Dear Madam/Sir:

Please find below the comments to the Monterey Peninsula Water Supply Project's January 13, 2017 Draft Environmental Impact Report/Statement (DEIR)/(DEIS) as prepared by the Monterey Regional Waste Management District (MRWMD). These comments are submitted for your review and consideration during the project approval process. Thank you for the opportunity to submit these comments.

1. Figure 3-5a on Page 3-20 illustrates three (3) of the proposed new pipelines to be located in relatively undeveloped land to the north of the Monterey Regional Waste Management District's (MRWMD) property for the Charles Benson Road. The "Optional Alignment" for the three pipelines is located on MRWMD property under and/or along approximately one mile of Charles Benson Road. MRWMD supports the alignment of these three proposed new pipelines to be located in the relatively undeveloped land to the north of the MRWMD property containing Charles Benson. MRWMD-1

2. Figure 3-5a on Page 3-20 illustrates three (3) of the proposed new pipelines to be located in relatively undeveloped land to the north of the Monterey Regional Waste Management District's (MRWMD) property for the Charles Benson Road. The "Optional Alignment" for the three pipelines is located on MRWMD property under and/or along approximately one mile of Charles Benson Road. Charles Benson Road is used by MRWMD employees (>100), MRWMD customers carry non-hazardous waste materials (permitted for 2,000 waste carrying vehicles per day), several third-party lease operations employees at MRWMD, the Monterey Regional Pollution Control Agency (MRWPCA), deliveries to MRWMD and MRWPCA facilities, and several of the agricultural entities operating in the vicinity. Along the proposed "Optional Alignment" of the three pipelines, Charles Benson Road is two lanes wide. Given that Charles Benson Road is the main access to both the MRWMD and MRWPCA facilities and due to the volume of traffic associated with the two facilities, conventional 'cut and cover construction installation methods with one-way traffic control' does not appear to be an acceptable option to MRWMD. MRWMD anticipates that it would be necessary to construct a third traffic lane in order to provide two-way traffic to the MRWMD and MRWPCA facilities at all times during the construction installation of the proposed pipelines along Charles Benson Road. The construction of a third lane along one side of Charles Benson Road would require the removal of more than 150 trees (primarily Monterey cypress Hesperocyparis macrocarpa and secondarily, Eucalyptus globulus 'Compacta'). MRWMD anticipates that appropriate mitigation would be required should tree removal occur. MRWMD-2

8.5.9 Monterey Regional Water Pollution Control Agency (MRWPCA)

Monterey Regional Water Pollution Control Agency

"Dedicated to meeting the wastewater and reclamation needs of our member agencies, while protecting the environment."

Administration Office:
5 Harris Court, Bldg. D, Monterey, CA 93940-5756
(831) 372-3367 or 422-1001, FAX: (831) 372-6178
Website: www.mrwpca.org

March 28, 2017

California Public Utilities Commission/Monterey Bay National Marine Sanctuary
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Monterey Bay National Marine Sanctuary
c/o Project Lead for CalAm Desalination Project
99 Pacific Ave, Bldg. 455a
Monterey, CA 93940

SUBJECT: Comments on the joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the Monterey Peninsula Water Supply Project (MPWSP)

To whom it may concern,

Monterey Regional Water Pollution Control Agency (MRWPCA) owns and operates the outfall facilities that would be used by the Monterey Peninsula Water Supply Project for desalination brine disposal. As the owner and operator of the facility, MRWPCA is a responsible agency for the proposed project, and any use of the outfall must meet standards specified by MRWPCA. MRWPCA hereby submits the following comments on the Draft EIR/EIS for the MPWSP to identify analysis and mitigation that MRWPCA will need for its decision whether to approve use of its outfall facilities. Attached to this letter are more detailed comments on specific sections of the EIR/EIS (**Enclosure 1**).

1) The Draft EIR/EIS analysis of the impacts of the proposed project (a 9.6-million gallon per day desalination plant and associated source water intake and distribution) and most alternatives does not assume operation of MRWPCA and Monterey Peninsula Water Management District's (MPWMD's) Pure Water Monterey Project (PWM). PWM is an approved project that is moving forward through design and implementation, with groundbreaking scheduled for May 5, 2017. **Enclosure 2** provides a summary of the status of project implementation and a list of entitlements, permits, and authorizations received to date. The project is expected to be operational in late 2018, and therefore, will be operating for over a year before the desalination

MRWPCA-1

plant becomes operational. In particular, the effects analyses of brine discharge from the desalination plant through the MRWPCA's outfall facilities should reflect that PWM reverse osmosis concentrate will be a consistent component of flows in the outfall. In addition, secondary-treated effluent flows from the MRWPCA Regional Wastewater Treatment Plant through the outfall will be lower with PWM than has been assumed in the project analysis. For MRWPCA to be able to rely on the EIR/EIS to support its approval of use of the outfall facilities, the EIR/EIS must analyze project impacts under conditions that include PWM.

MRWPCA-1 cont.

2) MRWPCA has identified several improvements that must be completed prior to MRWPCA allowing use of the outfall for disposal of desalination brine to the ocean. Recent reports have been prepared assessing the integrity and materials of the outfall including the land portion from the beach junction structure inland (Land Outfall) and the ocean portion that extends from the beach structure out into the ocean (Ocean Outfall). The environmental impacts of constructing and operating each improvement must be described and evaluated in the EIR/EIS so that MRWPCA can rely upon the EIR/EIS as a responsible agency when it considers whether to allow use of the outfall. The improvements include the following:

   a. *Land Outfall Protection.* The Land Outfall must be lined to protect it from corrosion by the brine which can substantially shorten the useful life of the outfall. MRWPCA contracted with Brown and Caldwell at the expense of, and with input from, California American Water Company (CalAm) to prepare a detailed analysis of the current outfall condition and recommendations for corrosion protection. **Enclosure 3** (Brown and Caldwell, *Technical Memorandum: Land Outfall Pipeline Evaluation and Protection Measures,* January 9, 2017) describes the two most promising and feasible options for ensuring that the land outfall is protected from corrosion for the life of the project. The EIR/EIS includes a description and impact analysis of a third option that is no longer being considered for engineering reasons. The EIR/EIS should include a description and impact analysis of the two most promising and feasible options to enable MRWPCA to rely upon the EIR/EIS for the required CEQA compliance to approve accepting MPWSP desalination brine into the existing ocean outfall.

MRWPCA-2

   b. *Brine Mixing Structure*. This structure is required to properly mix and monitor the water quality of brine and treated wastewater flows to be discharged via the MRWPCA outfall in compliance with MRWPCA's NPDES permit requirements. A brine mixing structure is not required for discharge of PWM reverse osmosis concentrate alone or in combination with municipal wastewater or trucked brine. It is being designed by E2 Consulting Engineers at the expense of and with input from Cal Am because it is necessitated by the proposed Water Supply Project when the proposed project is operating in combination with MRWPCA's operations including PWM. A value engineering study that describes this facility is contained in **Enclosure 4**. Although the EIR/EIS describes the need for the brine mixing structure, the EIR/EIS should include a description of the brine mixing structure and its environmental impacts to enable MRWPCA and the RWQCB to rely upon the EIR/EIS for associated approvals.

MRWPCA-3

   c. *Beach Structure Erosion Protection*. The EIR/EIS identifies the need to protect the first 100 feet of the Ocean Outfall pipe; however, the EIR/EIS should also recognize that MRWPCA will be undertaking a Beach Junction Structure and Outfall Protection Project that will affect the same pipe segment. MRWPCA's beach junction structure that

MRWPCA-4

connects the Land Outfall to the Ocean Outfall was recently exposed due to coastal erosion during high wave storm events in December 2015 through March 2016. The Draft EIR/EIS should be updated to reflect the need to replace, remove, and/or modify the Ocean/Land Outfall junction structure and adjacent 650 to 1,000 feet of Land Outfall pipe due to the potential for coastal erosion to damage these structures within the life of the desalination plant. **Enclosure 5** (Technical Memorandum: Beach Structure Evaluation and Protection Measures) contains a technical memorandum by Brown and Caldwell that evaluates alternative design concepts and feasibility of these improvements and recommends a preferred project construction method. The project could also be designed to include pipe material that would not corrode. It would be preferable for the improvements to the junction structure and westernmost portion of the Land Outfall be completed prior to accepting brine discharges into the outfall to ensure that the ability to discharge brine and other treated wastewater effluent is not interrupted for project construction.

MRWPCA-4 cont.

d. *WEKO Seal Band Replacement*. After the Loma Prieta earthquake, MRWPCA identified cracks in the Ocean Outfall pipe and they were repaired from the inside. The metal bands hold neoprene seals in place to stop leaking. The bands are expected to be Type 316/316L stainless steel, an alloy known to be susceptible to chloride corrosion. The seals and metal bands, or at a minimum, just the metal bands, must be replaced prior to operation of the desalination plant to ensure the integrity of the joint connections are maintained for the life of the project, and such that the outfall can be continuously used for discharging brine, PWM reverse osmosis concentrate, and secondary-treated effluent. A discussion of this issue is provided in **Enclosure 3** at page 2 and **Enclosure 5** at page 2. MRWPCA requests that the EIR/EIS describe these improvements and analyze their environmental effects given that MRWPCA will require completion of these improvements prior to operation of the desalination project to ensure that the joints do not fail during the life of the project.

MRWPCA-5

e. *Ocean Outfall End Gate Modification*. The end of the Ocean Outfall has an approximately 2-inch opening below the End Gate that allows sediments and water to flow out into the ocean. With secondary effluent discharges, this end gate configuration provides additional mixing with ocean water because secondary effluent is buoyant. When desalination brine will be the main or only discharge, brine containing little to no dilution by other waters in the outfall pipeline would flow through this opening onto the seabed without the velocity and associated dilution afforded by the duckbill diffusers. **Enclosure 3,** page 2, provides a discussion of this improvement. The end gate may need to be modified to comply with California Ocean Plan and permitting requirements of the Regional Water Quality Control Board. The EIR/EIS should describe the improvements to the end gate, and identify any associated environmental impacts of constructing and operating the improvements.

MRWPCA-6

3) The EIR/EIS approach states that the discharge to the ocean (brine, concentrate, trucked brine, and secondary effluent) may not meet Ocean Plan requirements. If Ocean Plan compliance cannot be achieved with the present design of the project, then Cal Am would build additional facilities (such as modifying the outfall or adding treatment processes at the desalination plant and/or the Regional Treatment Plant) or would make operational changes (such as pulsing flows

MRWPCA-7

of brine to increase velocity, and thus dilution, of discharge at the diffusers on the outfall). MRWPCA requests that the additional facilities or operational protocols needed for Ocean Plan compliance be thoroughly described in the EIR/EIS and their impacts evaluated in the EIR/EIS. It is unclear if the information in the EIR/EIS will be adequate to enable MRWPCA and the RWQCB to rely upon the EIR/EIS for their approvals as responsible agencies. The EIR/EIS must present and evaluate the indirect effects of the implementation of feasible mitigation measures. MRWPCA urges the CPUC to improve the analysis of this issue in the EIR/EIS to ensure that the project can feasibly comply with the Ocean Plan and be permitted, and to enable use of the EIR/EIS by MRWPCA and the RWQCB as responsible agencies for their subsequent project approvals. Several specific concerns about the mitigation measures presented as methods to meet Ocean Plan compliance requirements include:

MRWPCA-7 cont.

a. Adding up to 5 mgd of wastewater into the outfall to dilute the brine is not feasible. MRWPCA does not have rights to bypass secondary treated wastewater to the outfall to meet CalAm's needs for Ocean Plan compliance and does not expect those entities holding the rights to authorize that use.

b. Installation of a 20-inch pipe within MRWPCA's land and ocean outfall, with an extension of the 20-inch pipeline through the side of the Ocean Outfall to a dedicated brine outfall near one of the Angle Points, would result in an ocean discharge into the "Zone of Prohibition" and would require MRWPCA to pump secondary effluent to the existing ocean diffusers during high flow events rather than let it flow by gravity as it currently does. This solution appears to be infeasible and MRWPCA would not support pursuing this physical change to the outfall.

Thank you providing us the opportunity to comment on this environmental review document. We look forward to reading your response. Please contact Bob Holden if you have any questions at bobh@mrwpca.com or (831)645-4634. We would like to meet with you at your earliest convenience to assist you with responding to these comments to ensure that MRWPCA's future actions can rely upon the final document for its decision whether to approve use of its ocean facilities.

Sincerely,

Paul A. Sciuto, P.E.
General Manager

Enclosures:

1. Detailed Comments to Specific Section of the EIR/EIS
2. PWM Project Implementation Status with list of Entitlements, Permits, and Authorizations Received to Date
3. Land Outfall Pipeline Evaluation and Protection Measures
4. Brine Mixing Structure Value Engineering Report and Process Flow Diagram
5. Beach Structure Evaluation and Protection Measures

CC: Bridget Hoover, Karen Grimmer, Eric Zigas, Paul Sciuto, Dave Stoldt, Bob Holden

NOTE: MRWPCA comments are shown in *bold/italics and proposed text inserts are shown in bold/italics/underlined.*

1. Section 3.3.9 Construction Schedule (Page 3-55). Construction July 2018 through June 2020. Construction of the slant wells would be over 15 months. Section 3.3.2.1 Subsurface Slant Wells (Page 3-47) states that slant wells construction (15 months) can be anytime during the 24-month overall construction project. The section goes on to say (Page 3-48) that after each well is drilled that it would be pumped for 2 to 6 weeks for well completion and initial well testing and discharge into the MRWPCA ocean outfall.

   Comment: CalAm would need to obtain MRWPCA's agreement to accept seawater into its outfall. Use of the outfall may be precluded during construction of the Ocean Outfall Erosion Protection Project, WEKO Seal Protection, and End Gate Protection improvements (described in the letter).

MRWPCA-8

2. Section 3.4.1 Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges (Pages 3-56 through 3-58). The section states that after a shutdown, CalAm might operate the plant with all RO modules in service (11.2 mgd versus Proposed Project capacity of 9.6 mgd).

   Comment: A higher brine flow may increase outfall diffuser dilution when brine was the only water going to the ocean. However, when other waters must be discharged together with the brine (including 24 hours per day, 7 days per week when the AWPF is operating), the outfall dilution will be reduced. MRWPCA requests that the EIR/EIS include brine modeling to show how dilution would be affected by these high flow events.

MRWPCA-9

3. Table 4.1-1 Overview of Alternatives Evaluated in Detail (Pages 4.1-3 and 4.1-4)
   a. Proposed Project.

   Comment: **For column "Brine Discharge/Outfall Discharge Facilities" *add:***
   - ***Brine Mixing Structure***
   - ***Land Outfall Corrosion Protection {discussed in Section 4.13 (Page 4.13-1) and Impact 4.13-5 (Pages 4.13-25 through 4.13-17) Mitigation Measure 4.13-5a: Installation of Protective Lining, Periodic Inspections and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall (Pages 4.13-27 and 4.13-28 plus Secondary Impacts Page 4.13-29), and Mitigation Measure 4.13-5b: Access Land Segment of MRWPCA Ocean Outfall and Install Protective Lining, If Needed (Pages 4.13-28 and 4.13-29 plus Secondary Impacts Page 4.13-29 through 4.13-31)}.***
   - ***Outfall Erosion Protection Modifications***
   - ***WECO Seal Band Replacement***
   - ***Ocean Outfall End Gate Modification***

   All five facility upgrades and construction improvements would need to be completed before the start of MPWSP operation that is estimated to be June 2020 (Section 3.3.9, Page 3-55).

   For column "Groundwater Replenishment Project Water Purchase Agreement", ***add The CalAm/MPWMD/MRWPCA Water Purchase Agreement, SWRCB Cease and Desist***

MRWPCA-10

Order Amendment (Order 2016-0016), and pending implementation of Pure Water Monterey (per Enclosure 2) would be in effect and operating under all proposed project and alternative scenario.

b. No Project Alternative: ***No comments.***

c. Alternatives 1-4.
Comment: For column "Groundwater Replenishment Project Water Purchase Agreement", ***add The CalAm/MPWMD/MRWPCA Water Purchase Agreement, SWRCB Cease and Desist Order Amendment (Order 2016-0016), and pending implementation of Pure Water Monterey (per Enclosure 2) would be in effect and operating under all proposed project and alternative scenarios.***

d. Alternatives 51 and 5b. ***No comments.***

MRWPCA-10 cont.

4. Table 4.1-2 Cumulative Projects (Pages 4.1-14 through 4.1-24)

a. Pure Water Monterey Groundwater Replenishment (GWR) Project.

Comment: Please list under MRWPCA (not MPWMD), but you should mention "with Monterey Peninsula Water Management District". All projects except the first (No. 59) will be required as part of CalAm's Outfall Lease Agreement with MRWPCA.

- ***Project No. 59. MRWPCA believes that PWM needs to be included as part of the assumed background conditions under all desal alternatives because of MRWPCA's Water Purchase Agreement with CalAm and MPWMD and SWRCB Cease and Desist Order Amendment (Order No. 2016-0016).***
- ***Brine Mixing Structure (Project No. 59a?). See Kennedy/Jenks Consultants and E2 Consulting Engineering Value Engineering describing changes to the brine mixing structure and the E2 Consulting Engineering Process Flow Diagram that shows the new configuration at the new site at the Regional Treatment Plant front gate both in Enclosure 4.***
- ***Land Outfall Protection (Project No. 59b?). See report "Land Outfall Pipeline Evaluation and Protection Measures", dated January 9, 2017, by Brown and Caldwell, Enclosure 3, describing the current anticipated project.***
- ***Ocean Outfall Manhole Protection (Project No. 59c?). See report "Beach Structure Evaluation and Protection Measures", dated January 30, 2017, by Brown and Caldwell, Enclosure 5, which describes the current anticipated project and primary construction methodology options.***
- ***WECO Seal Protection (Project No. 59d?). See Section 2.4.2.2, Page 5, of Brown and Caldwell January 30, 2017 report, Enclosure 5, and Section 2.2.3, Page 2, of Brown and Caldwell January 9, 2017 report, Enclosure 3)***
- ***Ocean Outfall End Gate Correction (Project No. 59e?). See Section 2.2.2, Page 2, of Brown and Caldwell January 9, 2017 report, Enclosure 3.***

MRWPCA-11

b. Regional Urban Water Augmentation Project (RUWAP) Desalination Element (Project No. 31).

Comment: Remove "/Salinas Valley Reclamation Plant" from "Planning Jurisdiction/Location".

MRWPCA-12

c. Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (Project No. 35).

Comment: Change to one pump station and a 2 million gallon storage tank. Project will be built in two parts. Remove "/Salinas Valley Reclamation Plant" from "Planning Jurisdiction/Location". Expect construction from August 2017 through September 2018.

d. Monterey Pipeline and Pump station (Project No. 60).

Comment: Include location: Cities of Seaside, Monterey, and Pacific Grove. Include other environmental reviews undertaken, namely approval of the Water Distribution System Permit and Pipeline Alignment modifications by MPWMD that included approval of two Addenda to the PWM EIR.

MRWPCA-12 cont.

5. Table 4.3-9 Monthly Average Flows of Secondary Treated Wastewater from the MRWPCA Regional Wastewater Treatment Plant (MGD) (1998-2012).

Comment: MRWPCA provided these data to ESA and the CPUC in 2013. We believe it would be more appropriate to use average flows from 2011 through 2016 or even more recent averages. In 1998, 1999, and the start of 2000, growers were still connecting to the CSIP system resulting in higher values for flow to the ocean than after those years. The crops grown in CSIP have been evolving since the beginning. The increased farming of strawberries increases the amount of water used during the winter and thus reduces ocean discharge. Cost of potable water and increased conservation has been reducing overall sewage flow to the Regional Treatment Plant with a downward trend since 2002 resulting in less ocean discharge. The net result is that the more recent flows to the ocean are probably the most relevant for ocean discharge estimates. PWM, currently out to bid, will further reduce ocean discharge, especially during the winter. The reduced ocean flows may affect Table 4.3-10 Proposed Project Discharge Scenarios Modeled.

MRWPCA-13

6. Table 4.3-10 Proposed Project Discharge Scenarios Modeled.

Comment: MRWPCA believes, as stated for Table 4.3-9, above, that more recent ocean flows should be used. As stated in Table 4.1-1, above, we believe PWM should be assumed to be operational under all proposed project and alternatives scenarios. As such, it would be appropriate to conduct modeling based on PWM concentrate and correspondingly reduced effluent flow to the ocean. In addition, previous studies included trucked brine as one of the constituents of ocean discharge in all situations. It is not present in the analysis and should be. The modeling in the EIR/EIS Appendix D1includes the Ocean Outfall having an opening underneath the End Gate at the termination of the outfall. As the Ocean Outfall exists now, it will allow 5% of all the brine discharge water (per Appendix D1 Page 52) onto the seafloor with minimal dilution during negative buoyant conditions. The End Gate must be closed for MRWPCA to accept brine. All dilution calculations should be revised accordingly.

MRWPCA-14

MRWPCA-15

7. Section 4.3.5.3 Results and Impact Discussion.

Comment: MRWPCA objects to this section and the appropriate appendices (D1, D2, and D3)

MRWPCA-16

that support this section. MRWPCA believes that due to its signed Water Purchase Agreement that the PWM project must be assumed to be operating under all proposed project and alternative scenarios. Data in this section was not calculated with that assumption. Thus Tables 4.3-15 and 4.3-16 do not reflect any contribution from the Advanced Water Purification Facility and thus do not evaluate the actual environmental impact. And as stated above, they do not reflect closing the opening under the End Gate. MRWPCA cannot rely on the EIR/EIS for approval of use of its outfall facilities unless the analsis includes operation of PWM and reflects closing the opening under the End Gate.

MRWPCA-16 cont.

Table 4.3-16 MPWSP Operational Discharge Scenarios: Estimated Concentrations at the edge of the ZID expressed as percentage of Ocean Plan Objective for Ocean Plan Constituents (Page 4.3-99 through 4.3-101).

Comment: MRWPCA believes that the discharge scenarios modeled (Table 4.3-10, Page 4.3-70) should be increased to also include the potential higher flows described after an outage (Section 3.4.1, Pages 3-56 through 3-58). Also, there is a large range between scenario 4 (2 mgd secondary effluent and 13.98 mgd brine) and scenario 6 (19.78 mgd secondary effluent and 13.98 mgd brine). In Table 4.3-16, scenario 5 (9 mgd secondary effluent and 13.98 mgd brine) has a very high (68%) value for ammonia. No data is shown to determine if a higher percentage might be found between scenarios 5 and 4 (2 to 9 mgd) or between scenarios 5 and 6 (9 to 19.78 mgd). Especially when PWM is considered as part of this calculation, it is likely that percentages will be over 80% and may even reach 100%. MRWPCA will need assurance that the project will meet Ocean Plan (and NPDES permit) requirements from the beginning and in all conditions in which PWM is operating.

MRWPCA-17

Mitigation Measure 4.3-5 Implement Protocols to Avoid Exceeding Water Quality Objectives (Pages 4.3-103 through 4.3-106). Impact 4.3-5: Violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving water in Monterey Bay as a result of brine discharge from the operation of the MPWSP Desalination Plant. Section 5.5.3.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)-(Pages 5.5-59 through 5.5-78). In particular, Table 5.5-11 (Page 5.5-76) shows expected violation of Ocean Plan.

Comment: MRWPCA requests that the EIR/EIS provide more description and impact analysis of feasible mitigation measures to allow MRWPCA to accept desalination brine from CalAm. The EIR/EIS should determine and present analysis to indicate whether effluent will meet the Ocean Plan requirements. If it will not, then additional mitigation measures should be included in the EIR/EIS to enable an analysis of indirect impacts of the mitigation and consideration of feasibility by CalAm and the decision-makers.

MRWPCA-18

The Mitigation Measure 4.3-5 measures to ensure Ocean Plan compliance include four separate approaches (pages 4.3-104 and 4.3-105) and Section 4.3.5.4 Secondary Impacts of Mitigation Measure 4.3-5, (Pages 4.3-106 through 4.3-110).

1) Additional pretreatment of source water to the Desalination Plant.
    a. Additional filtration at desalination facility
    b. Granular activated carbon (GAC) at desalination facility

Comment: Both options are acceptable to MRWPCA but do not improve Ocean Plan

MRWPCA-19

compliance for all constituents.

2) Treatment of discharge.
The three options provided include:
   a. GAC at desalination facility
   b. Advanced oxidation with ultraviolet light with concurrent addition of Hydrogen peroxide at desalination facility
   c. Biologically Active Filtration (BAF) at Regional Treatment Plant.

Comment: The two desalination facility options (GAC and Advanced Oxidation) are acceptable to MRWPCA but do not improve Ocean Plan compliance for all constituents of concern. The third option, BAF, could be acceptable to MRWPCA if it were for reverse osmosis concentrate but can no longer be located where it was shown within the PWM FEIR. MRWPCA's plans for the Advanced Water Purification Facility do not accommodate space or utility/operational demands of a BAF process. Also regarding the third option, the heading says Biologically Active Filtration System to Treat the Brine. Is it to treat the brine? MRWPCA is not aware of a BAF system for brine. MRWPCA's BAF system within its PWM FEIR was for AWPF concentrate and not for brine. This option is not acceptable as stated.

MRWPCA-19 cont.

3) Retrofitting the existing outfall to increase dilution. This would be accomplished through retrofitting the outfall diffusers to be inclined upward to increase dilution.

Comment: This option is not acceptable to MRWPCA as currently defined. This option might prevent MRWPCA from meeting its NPDES discharge requirements whenever the desalination facility was offline. MRWPCA could be agreeable to other mitigation measures to increase dilution such as reducing the number of open diffuser ports and/or reducing the size of the diffusers, and/or changing the Tideflex duckbill diffuser nozzles to a different type or removing them altogether.

MRWPCA-20

4) Flow augmentation. This would be accomplished through addition of up to 5 mgd of flows near the density of fresh water.

Comment: This option is not considered to be feasible, unless an additional/new secondary effluent or water having better quality that would not require treatment were identified and proposed. Secondary effluent is mentioned as possible water in Appendix D1 but neither CalAm nor MRWPCA has rights to use that water for diluting brine.

MRWPCA-21

8. Section 4.4.5.2 Operational Impacts and Mitigation Measures (Pages 4.4-57 through 4.4-87). Figure 4.4-15 (Page 4.4-62).

Comment: MRWPCA's two wells in the 180-foot aquifer should be shown.

Figure 4.4-16 (Page 4.4-63).

Comment: Two MRWPCA wells in the 180-foot aquifer are shown but are incorrectly shown as being located in the 400-foot aquifer. One additional well is in the 400-foot aquifer.

MRWPCA-22

Table 4.4-10.

Comment: The MRWPCA portion of the table incorrectly shows wells 14S/02E-20B01 and 14S/02E-20B02 as being in the 400-foot aquifer when they are in 180-Foot aquifer. Well14S/02E-20B03 is shown in the 900-foot aquifer when it is in the 400-Foot aquifer.

MRWPCA-22 cont.

9. Section 4.5.5.2 Operational and Facility Siting Impacts (Pages 4.5-51 through 4.5-66).

Comment: Please see MRWPCA comments on this issue as discussed under Section 4.3.5.3, above.

MRWPCA-23

10. Impact 4.13-5: Increased corrosion of the MRWPCA outfall and diffuser as a result of brine discharge associated with project operation (Page 4.13-25 through 4.13-31). There are two mitigation measures 4.13-5a for the Ocean Outfall (lining 100 feet of the pipeline) and mitigation measure 4.13-5b for the Land Outfall (line the entire length).

Comment: Protection of the Ocean Outfall will be ensured by the improvements identified in the MRWPCA comment letter of March 2017 not by the Ocean Outfall Lining described:

- ***a. Ocean Outfall Protection (See report "Beach Structure Evaluation and Protection Measures", dated January 30, 2017, by Brown and Caldwell, Enclosure 5).***
- ***b. WECO Seal Replacement (See Section 2.4.2.2, Page 5, of Brown and Caldwell January 30, 2017 report in Enclosure 5 and Section 2.2.3, Page 2, of Brown and Caldwell January 9, 2017 report in Enclosure 3).***
- ***c. End Gate Protection (See Section 2.2.2, Page 2, of Brown and Caldwell January 9, 2017 report in Enclosure 3). This is not a corrosion issue but is included here as it is an essential improvement for use of brine and essential to allow dilution of the brine before it reaches the ZID or BMZ. It is shown here as it is part of an ongoing corrosion study.***

Protection of the Land Outfall.

Comment: The Land Outfall lining project has been defined more fully.

- ***a. Land Outfall Protection (See report "Land Outfall Pipeline Evaluation and Protection Measures", dated January 9, 2017, by Brown and Caldwell, in Enclosure 3). MRWPCA would like last sentence of Section 4.13.5.2 to read, "<u>However, CalAm shall enter into an agreement whereby MRWPCA would obtain all necessary RWQCB approvals and permits to temporarily run the pipe along or below the ground surface</u>."***

Comment: MRWPCA requests that the EIR/EIS include a description and analysis of the construction and operation of a Brine Mixing Structure in accordance with the information in Enclosure 4.

MRWPCA-24

11. Table 5.3.2 Outfall Options Screening Results (Page 5.3-19 and 5.3-20) and Section 5.3.4.1 Outfall Option 1 – Modified MRWPCA Outfall and New Diffuser. Table 5.3-5 Outfall Options Evaluation – Preliminary Environmental Impacts Comparison (Pages 5.3-38 through 5.3-43)

Comment: The Outfall-1 Alternative proposes to suspend a 20-inch pipe within the existing outfall with a new diffuser section for use during wet-weather flows only. This option was "retained for Further Analysis". This is similar to a previous proposal, which is not considered

MRWPCA-25

to be feasible by MRWPCA due to restricting the outfall pipe's usefulness and removing the ability to repair the pipeline from the inside. In addition, this alternative would result in extreme disruption to the ocean outfall for the pipe insertion and the new diffuser construction. Ocean flow disruption might be limited to 0.5 acres if sheet piling is used. We think a well planned construction contract might only discharge undiluted effluent into the Zone of Prohibition for two or three days, and might be feasible. However we believe it would be very difficult, if not impossible, to achieve regulatory approval to discharge diluted brine into the Zone of Prohibition on a continuous basis.

MRWPCA-25 cont.

Typos (various locations):

- Change all use of the phrase "Ground Water Replenishment Project" to "Groundwater Replenishment Project"
- Change all use of the phrase "CSIP Pond" to the "Salinas Valley Reclamation Project (or SVRP) Storage Pond"
- Change all spellings of "Trussel" to Trussell

MRWPCA-26

Enclosure 2 - Pure Water Monterey Implementation Status as of March 17, 2017

Designs for the Pure Water Monterey first phase project components are complete and bids are being solicited for construction of those facilities. The first phases of construction are scheduled to being in May 2017 and conclude in the fall of 2018 with commissioning and start-up testing. Thus, the Pure Water Monterey project is on schedule to provide 3,500 acre-feet per year of water and approximately 4,000 to 5,000 acre-feet per year of agricultural irrigation water starting at the end of 2018. These new water supplies will allow CalAm to reduce Carmel River diversions and improve the conditions of local groundwater basins.

The Pure Water Monterey project has also received most entitlements needed to be constructed. By the end of April, all entitlements are anticipated to be in place to enable construction of the primary phases of facilities (Source Waters – Surface Diversions, Advanced Water Purification Facility, Product Water Conveyance, and Injection Facilities).

- MRWPCA approval of the project and certification of the EIR (October 8, 2015)
- California Public Utilities Commission approval of a Water Purchase Agreement with California American Water Company (September 22, 2016)
- State Water Resources Control Board (SWRCB) Division of Drinking Water approved the project's Title-22 Engineering Report with conditions (November 7, 2016)
- National Marine Fisheries Service Endangered Species Act Section 7 Consultation completed with a Letter of Concurrence (December 5, 2016)
- U.S. Fish and Wildlife Service Endangered Species Act Section 7 Consultation completed with Biological Opinion (December 20, 2016)
- Monterey County approved the Minor Use Permit Amendment for construction of the Advanced Water Purification Facility (February 22, 2017)
- Central Coast Regional Water Quality Control Board issued a Waste Discharge Requirement for the Advanced Water Purification Facility and the injection of purified recycled water into the Seaside Basin (March 9, 2017)
- SWRCB Division of Water Rights issued the water rights to use surface waters in Blanco Drain and Reclamation Ditch for recycling and reuse (March 17, 2017)

Other key approvals are anticipated in March or April, including the following:

- SWRCB Division of Water Rights issuance of a Water Quality Certification for components in riparian areas and waterbodies (expected March 31, 2017)
- SWRCB grant and loan initial funding agreements under Proposition 1 and the Clean Water State Revolving Fund (expected mid-April 2017)
- U.S. Army Corps Reissuance of Nationwide Permit for construction in waters of the United States (expected April 14, 2017)
- California Department of Fish and Wildlife Lake and Streambed Alteration Agreement for components in riparian areas and waterbodies (estimated April or May 2017)
- State Lands Commission - Land Lease approval (on the commission agenda for consideration on April 22, 2017)
- Various land owner lease and right of way agreements (ongoing)

8.5.1 Responses to Comments from City of Marina

8.5.1.1 Responses to Comments from City of Marina – Main Letter

Marina-A This comment provides an introduction to the fact that the City of Marina is a Responsible Agency for the proposed project under CEQA due to its authority to issue a Coastal Development Permit (see EIR/EIS Section 1.5.4.3), and that the City is providing comments on the CEQA adequacy of the Draft EIR/EIS on behalf of the citizens of Marina, and on the adequacy of the Draft EIR/EIS under NEPA. The comment explains who prepared the comments on behalf of the City and provides an overview of the organization of the expressed concerns, which include water demand, water rights, conflicts with the Sustainable Groundwater Management Act (SGMA), legal prohibitions, adequacy of the project description, the baseline, impacts on groundwater, adequacy of the groundwater modeling, impacts from brine discharge, impacts on coastal ecosystems, greenhouse gas emissions, impacts on historic resources, adequacy of the analysis of environmental justice and of alternatives. The concerns expressed in this comment are subsumed within the following, more detailed comments and responses.

Marina-1 CEQA Guidelines Chapter 3, Article 9 ("Contents of EIRs" §§ 15120-15132) does not require that a Draft EIR include a Mitigation Monitoring and Reporting Program (MMRP). Specifically, CEQA Guidelines Section 15126.4 ("Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects") requires that a Draft EIR describe proposed mitigation measures, but does not include mention of an MMRP. Further, CEQA Guidelines Section 15132 ("Contents of Final Environmental Impact Report") does not require the inclusion of an MMRP in a Final EIR. Rather, an MMRP is required to be prepared and adopted at the time a lead agency makes findings in preparation for approving a project (CEQA §21081.6; CEQA Guidelines §§15091(d) and 15097). The absence of an MMRP in the Draft EIR/EIS does not trigger a need to recirculate the Draft EIR/EIS (CEQA Guidelines §15088.5), nor does CEQA mandate that responsible agencies and other interested parties be given an opportunity to comment on the MMRP. Rather, CEQA Guidelines Section 15097(d) states that (at the time the MMRP is being prepared and considered for adoption), "Lead and responsible agencies should coordinate their mitigation monitoring or reporting programs where possible," but clarifies that "Generally, lead and responsible agencies for a given project will adopt separate and different monitoring or reporting programs." The Guidelines list several reasons that may occur, including that "each agency has the discretion to choose its own approach to monitoring or reporting."

The contents of an MMRP depend on what project or alternative is approved by the lead agency and which mitigation measures are being adopted by the agency to mitigate or avoid significant environmental effects. Those decisions have not yet been made and it would, therefore, be speculative to prepare an MMRP for public review at this stage. All mitigation measures that are currently proposed and that

would, at the time of preparing findings, be incorporated into an MMRP if relevant to the project or alternative being selected were included in full in the Draft EIR/EIS and are included, as revised, in the Final EIR/EIS as required by CEQA and NEPA. Nothing in this comment letter or the associated responses triggers a need for recirculation per CEQA Guidelines Section 15088.5. Furthermore, the Draft EIR/EIS was itself a revised, updated and enhanced version of the Draft EIR that was published by the California Public Utilities Commission for the MPWSP in April 2015. The environmental review for the MPWSP has entailed a lengthy process with multiple opportunities for public review and comment.

The comment states generally that many of the EIR/EIS mitigation measures lack sufficient detail to establish feasibility and methods of implementation. This comment lacks specificity needed to enable a substantive response; however, the Lead Agencies have carefully crafted the mitigation measures to be clear, comprehensive, feasible and to include performance standards for implementation.

Marina-2 The project objectives listed in EIR/EIS Section 1.3.1 were developed by the Lead Agencies; further discussion of the water needs associated with vacant legal lots of record, water supplies to pay back the Seaside Basin, and conveyance capacity is provided in EIR/EIS Section 2.3.3.3, Section 2.4.2, and Section 6.3.5.2. See also Master Response 13, Demand (Project Need) and Growth, specifically, Section 8.2.13.2. Objective and need statements provided by CalAm are included in Appendix H of its March 14, 2016 Amended Application, which is referenced in Chapter 2 as CalAm, 2016a.

Marina-3 See Master Response 13, Demand (Project Need) and Growth, regarding the estimate of existing annual demand and other service area demands proposed to be served by project water and CalAm's other supply sources. Two of the factors that have resulted in the decline in water use in recent years have been the "Great Recession" and the recent five-year drought, as discussed further in Master Response 13 and in EIR/EIS Section 2.3.

The meaning of the phrase "even after anticipated litigations and restrictions" is not clear. A purpose of the project is to replace Carmel River and Seaside Groundwater Basin water that CalAm had historically used because its use of those sources was reduced – not eliminated – by State Water Board and Superior Court decisions. This background is discussed in EIR/EIS Section 2.2. CalAm's other supply sources are discussed in Section 2.4 and in Master Response 13, Section 8.2.13.3.

As stated in the first paragraph of Chapter 2, the chapter describes the water demand, supply information and assumptions included in CalAm's application, and provides supplemental information about factors affecting water supply and demand and in the CalAm service area. The information on supplies and demands (Sections 2.1 through 2.5) is essentially descriptive and augments the Project Description. Section 6.3, Growth Inducing Impacts, analyzes the demand CalAm

anticipates and proposes to meet, to ensure that the growth inducing impact of the project is adequately disclosed and analyzed. The analyses presented in Chapters 4 through 6 evaluate the impacts of the project proposed to meet the demand, and the amount of water proposed to be pumped, treated, and delivered to the CalAm service area (immediately or via the ASR system). If it turns out that less water is needed, it is anticipated that CalAm would operate the desalination plant at a lower level, and impacts related to pumping and treatment would be somewhat less than presented in the EIR/EIS analysis. See also the discussion under "Water Available for Growth" in Master Response 13.

Marina-4 The EIR/EIS discussion of demand for and supply of water did not form the basis for the CEQA project objectives or the NEPA project purpose and need statement. The project objectives are set forth in full in EIR/EIS Section 1.3.1. As indicated there, the primary purpose of the proposed project is "to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources." The list of project objectives includes nine primary objectives and two secondary objectives. Of those, only three contain set levels of water that the project seeks to satisfy, but these are not based on supply and demand. They are based upon the need for CalAm to meet clear legal requirements:

1. Replace existing Carmel River diversions in excess of CalAm's legal entitlement of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2009-0060;
2. Reduce pumping from the Seaside Groundwater Basin from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality, and;
3. Pay back the Seaside Groundwater Basin by approximately 700 afy over 25 years as required of CalAm by the Seaside Groundwater Basin Watermaster.

None of these numeric goals is based upon demand assumptions. Master Response 13, Demand (Project Need) and Growth, discusses a variety of ways to view current and future supply and demand, and project alternatives that could be pursued under differing scenarios. See also EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, concerning water rights issues, and EIR/EIS Section 4.4, Groundwater Resources, with respect to water supply and water quality impacts.

Marina-5 The commenter is correct that a water supply project needs to identify that it can obtain water from an identified source. However, so long as it is clear where the source water will come from (as is the case here), the subject of the rights to the source water is one of project feasibility because, without rights to the source water, the project would not be viable. See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, for details on this topic.

The cases cited by the commenter arose in different contexts and did not involve water supply projects. The issue in both *Santa Clarita Org. for Planning the Env't v. City of Los Angeles*, 106 Cal, App, 4th 715 (2003) and *Save Our Peninsula Comm. V. Monterey Cty. Bd. Of Supervisors*, 87 Cal. App. 4th 99 (2001) was whether there would be enough water to serve a housing development project, with the concern that if such water were not physically available, the homes would be built and occupied and there would be insufficient water for those homes and for the remainder of the community. The case of *Cadiz Land Co. v. Rail Cycle, L.P.*, 83 Cal. App. 4th 74 (2000) involved an EIR for a landfill project, with the concern being accurate baseline characterization of the aquifer over which the landfill would lie in order to fairly ascertain the risk posed by a landfill to a groundwater source. EIR/EIS Section 4.4, Groundwater Resources, describes the potentially affected aquifers in detail and examines possible impacts to them, including risks of exacerbating contamination. None of the cases cited in the comment involve water rights issues.

See Master Response 6, The Sustainable Groundwater Management Act, for discussion of the applicability and effect of this law on the project. See Master Response 8, Project Source Water and Seawater Intrusion, concerning project effects within the groundwater basin. With respect to Marina being a minority community, see EIR/EIS Section 4.20, Socioeconomics and Environmental Justice, where this is acknowledged and environmental effects are addressed accordingly.

Marina-6 See Master Response 3, Water Rights. Note that the cited SWRCB Report (EIR/EIS Appendix B2) does not discuss cumulative effects, but EIR/EIS Section 4.4.6 contains an analysis of cumulative effects on groundwater resources. See also Master Response 4, The Agency Act and Return Water; Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin; Master Response 11, CalAm Test Slant Well, and; Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-7 The project's consistency with SGMA (concluding that the project would not result in the undesirable results addressed by SGMA) is addressed in Master Response 6, The Sustainable Groundwater Management Act, and in Section 4.4, Groundwater Resources. Water rights are addressed in Master Response 3, Water Rights. The commenter notes that Water Code section 10720.5 "bars the use of groundwater extraction after January 1, 2015 in high-priority basins (like the SVGB) to establish prescriptive water rights." While this is correct, the proposed project would not rely upon prescriptive water rights, but rather would expect to use appropriative water rights pursuant to California common law. Water Code section 10720.5(b) provides "Nothing in [SGMA], or in any groundwater management plan adopted pursuant to [SGMA], determines or alters surface water rights or groundwater rights under common law. . . ." It thus does not appear that SGMA would impair the ability of CalAm to possess water rights for the project under common law appropriative rights. Marina-8 See Master Response 3, Water Rights, and Master Response 4,

The Agency Act and Return Water. The EIR/EIS analyzes inconsistencies with applicable plans and policies within each topical section in Chapter 4. The Agency Act's statements of its general purposes do not constitute legal requirements, but set forth the underlying policies behind the requirements, which are themselves analyzed in the EIR/EIS. Furthermore, the topic of project effects on seawater intrusion is explored in EIR/EIS Section 4.4, Groundwater Resources, and in Master Response 8, Project Source Water and Seawater Intrusion, concluding that the project would not adversely impact, and may retard, the inland migration of seawater.

As to Ordinance 3709, whereby the County precludes the establishment of new wells within the 180-Foot Aquifer, the EIR/EIS has been updated in Sections 2.6.3 and 4.4, Groundwater Resources, to reflect the fact that the CEMEX property where project slant wells would be located does not lie within the area subject to the Ordinance. Thus, feasibility and operations of the proposed project would not be affected by Ordinance 3709.

Marina-9 See Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement. Also see Master Response 4, The Agency Act and Return Water, and Master Response 8, Project Source Water and Seawater Intrusion. Changes have been made to Section 2.6, Water Rights, in response to this comment.

Marina-10 The project description in EIR/EIS Chapter 3 provides factual information about the proposed project location in text and figures. The wells are described in EIR/EIS Section 3.2.1.1 as being located in the City of Marina. EIR/EIS Table 3-1 explains that each slant well would extend beneath the coastal dunes, sandy beach, and the surf zone, terminating seaward of the Mean High Water (MHW) line within MBNMS, except #10 which would not extend past the MHW line.[1] The EIR/EIS also explains that each well would be screened for approximately 400-800 linear feet at depths corresponding to both the Dune Sands Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. However, in response to comments about the characterization of the source water in the Draft EIR/EIS, the EIR/EIS has been revised to include in Section 3.1.1.1, definitions of the components of source water that are used throughout the EIR/EIS and the EIR/EIS text has been revised accordingly for clarification. For example, Table 3-1 now explains the wells would draw ~~sea~~water from groundwater aquifers that extend beneath the ocean floor…for use as source water.

Furthermore, EIR/EIS Figure 3-3a presents an accurate, to-scale, geo-referenced plan view of the location of the proposed wells within the City of Marina relative to the MHW line, and Figure 3-3b (there is no Table 3-3b) is labeled "illustrative." While the EIR/EIS acknowledges the wells would be located in the groundwater aquifers and explains that the source water would be primarily seawater drawn through those aquifers, it does not represent that the groundwater aquifers

[1] Numbering in Figure 3-3a has been revised; this is now labeled Slant Well #10.

underlying the City of Marina contain ocean water. See also Master Response 2, Source Water Component and Definitions, for further explanation, and Master Response 8, Project Source Water and Seawater Intrusion. The legal references in the comment for definitions of groundwater are consistent with the geographic, locational definition of groundwater that is provided in Master Response 2. However, such groundwater may comprise seawater, brackish water, or fresh water, as those terms are defined by their chemical constituency in Master Response 2. These more specific definitions focus on the usability/functionality of the water and are more pertinent to the key analyses within the EIR/EIS of whether the project would adversely alter groundwater quality or adversely impact groundwater users (see Section 4.4, Groundwater Resources) and whether the project would cause harm to legal water users within the SVGB (see Section 2.6, Water Rights, and Master Response 3, Water Rights). For instance, it is only by considering the chemical constituency of water drawn into the project capture zone and water otherwise within the SVGB that the EIR/EIS could conclude that the project may help retard the rate of seawater intrusion within the area.

Marina-11 Text in EIR/EIS Section 3.2.1.1 has been revised as follows to reflect the evolving technology of slant wells:

> When compared to vertical wells, slant wells <u>are a new and evolving technology that</u> allow<u>s</u> for a substantially increased screen length in the target water source, resulting in higher production rates <u>than vertical wells</u>.

The Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP) *Phase 1 Final Report* noted -- not concluded -- that based on the experience at Dana Point, "the long term performance of the [slant well] technology has yet to be confirmed." See Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, where this document is cited as HB ISTAP, 2014.

The March 2016 Santa Barbara Subsurface Desalination Intake Feasibility Study Technical Memorandum No. 1 cited by the comment (Carollo, 2016) does not have a page 3-19, nor does it contain the presented quotes. However, the 2017 Final Feasibility Study (Carollo, 2017) does contain the presented quotes, the full context of which follows: "At present, no full-scale desalination plants exist that employ slant wells for source seawater collection. As discussed previously, the slant wells have been tested for over six years at the Dana Point test site and are currently being evaluated at a test site near Monterey, CA. The overall experience with Dana Point was positive, but results indicated the system did not collect only seawater but instead a mix of seawater and fresh water from the alluvial aquifer in the vicinity of the intake location." (Carollo, 2017, p. 3-19)

See Master Response 11, Section 8.2.11.8 for further discussion of this study and the Dana Point Test Slant Well. Furthermore, the construction of the Dana Point slant well did not take an unusually long time; the drilling of the slant well

borehole was initiated on February 4, 2006 and the well casing reached final depth on February 25, 2006 (USBR, 2009). Additionally, as discussed in Master Response 4, The Agency Act and Return Water, and Master Response 8, Project Source Water and Seawater Intrusion, the indication that the Dana Point test system collected both seawater and aquifer water is consistent with expectations for and analyses of the proposed intake system for the MPWSP. See also Master Response 2, Source Water Components and Definitions.

The alternatives analysis in EIR/EIS Section 5.3 evaluated 13 separate intake options, including alternative subsurface well locations, alternative subsurface well technology, and open water intake facilities and locations. The comparative evaluation is presented in Table 5.3-4 and conclusions of that evaluation are included in Section 5.3.6.

Nothing presented in this response meets the CEQA threshold for recirculation as defined in CEQA Guidelines Section 15088.5.

Marina-12 The test slant well is an existing project that underwent separate CEQA and NEPA review, described in Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2 and 8.2.11.3. As such, its installation and ongoing operation were evaluated in this EIR/EIS as a cumulative project and is identified as project No. 47 in EIR/EIS Table 4.1-2. It is not part of the proposed MPWSP and thus extensive details of its construction and implementation are not appropriate for inclusion in Chapter 3, Description of the Proposed Project. For clarification, the estimated construction schedule shown for the test slant well in that table has been revised as follows:

> "April 2015 Construction completed, pilot program currently underway."

The test slant well data was employed to assess the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) performance, and results presented in EIR/EIS Appendix E2, Section 4.2 indicate that, "There is generally good agreement between the model-calculated and measured timing of drawdown and recovery" of the test slant well data. The results of the test well pumping are presented in a technical memo prepared by the HWG; see Final EIR/EIS Appendix E3.

Marina-13 The "acceptable level" was described in Draft EIR/EIS Section 3.2.2.5 on page 3-27: "The brine storage and disposal system would consist of … a brine aeration system to maintain dissolved oxygen concentrations in the brine at 5 mg/L." As described in EIR/EIS Section 4.3.1.3, Surface Water Quality, ambient dissolved oxygen levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 mg/L to 8.00 mg/L, and explains that dissolved oxygen in the range of 5 to 8 mg/L is considered protective of fish and marine biota depending on the species and life-stage.

Marina-14 See Draft EIR/EIS page at 4.17-3: "Active sand mining operations no longer occur in the southern portion of the CEMEX property, and this area is retired and under reclamation." See also Master Response 14, CEMEX Settlement Agreement, for an updated discussion of the status of the CEMEX site.

Marina-15 The text in Table 3-1 and Section 3.2.1.1 has been revised as follows:

> The wellheads (surface components) for the ten slant wells would be located at six sites ~~along the back~~ inland ~~side~~ of the dune~~s~~ face.

This change does not affect any analyses or conclusions of the EIR/EIS.

Marina-16 See Final EIR/EIS Section 1.5.3; Terminal Reservoir is no longer part of the proposed project, and has been removed from the project description and impact analyses.

Marina-17 The graded road at CEMEX shown on EIR/EIS Figure 3-3a would provide access to the slant well sites for maintenance activities and it would be accessed from the source water pipeline easement. CEMEX uses a graded access from the existing access road to the retired mining area that CalAm would use to access the wells. See Master Response 14, CEMEX Settlement Agreement, Section 8.2.14.2. EIR/EIS Section 3.4.1 explains that maintenance activities would disturb roughly 6-acres every 5 years. Since mining no longer occurs in this area (see response to Marina-14), there would be no conflict with mining operations. Potential long-term impacts on the 6 acres of dune complex from operations and maintenance activities at the slant wells were described in the Draft EIR/EIS starting on page 4.6-234, at page 4.6-244, and again at page 4.6-247 and some of these temporary acres of disturbance are conservatively considered to be permanent acres, because of the frequency of disturbance. Therefore, the potential impact from having to grade the road more frequently has been addressed and mitigation identified.

Marina-18 The text in EIR/EIS Section 3.2.1.2 has been revised to reference "well sites" instead of "well clusters."

The Source Water Pipeline Optional Alignment has been evaluated throughout the EIR/EIS in each Chapter 4 resource section. This analysis was included within the Draft EIR/EIS, so no changes are needed. The Project Area Boundary on Figures 3-4 and 3-5a has been revised to include this component.

Marina-19 Public tours of the desalination plant are not part of the proposed project. The 20-foot by 20-foot Overlook Tour Stop shown on EIR/EIS Figure 3-5b would include benches and landscaping and would accommodate desalination plant employee use, as well as occasional private tours for individuals or small groups of regulators, researchers, etc.

Marina-20 The temporary storage described in Section 3.2.2.5 is not intended to address longer-term brine storage in the event that outfall repairs may be needed. As described in Section 4.13, Public Services and Utilities (see Draft EIR/EIS page 4.13-24), "…the brine stream, when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant, could exceed the capacity of the outfall and diffuser during large storm events. Based on previous studies prepared by Trussell Technologies…six hours of storage capacity would provide more than adequate storage during periods of peak effluent flow (Trussell Technologies, 2012). The 3-million-gallon brine storage basin described in Section 3.2.2.5 has sufficient capacity to detain flows from approximately 6 hours of desalination plant operations." Therefore, Section 3.2.2.5 has been revised to reflect 6, not 5, hours of storage time.

Section 3.4.1 describes operation of the desalination plant in the event of a shutdown, and such operational conditions are analyzed as appropriate throughout the EIR/EIS.

Marina-21 The last paragraph of Section 3.2.2.5 explains that the "ports are approximately 6 inches above the ballast rock and nominally 54 inches above the seafloor, although this varies." See Draft EIR/EIS Section 4.3, Surface Water Hydrology and Water Quality, at page 4.3-68; also Appendix D1, Section 3, Outfall Hydraulics, and Figure 6, where the outfall and dilution assumptions are further described.

The brine discharge modeling and analysis included several conservative assumptions, such as the height of the ports above the seafloor. The modeling results indicate that at 48 inches above the seafloor, the densest brine plume evaluated would contact the seafloor well within regulatory limits. If the ports were in fact at 54 inches above the seafloor, the additional height would allow for increased dilution before the plume makes contact. The impact summary and conclusion in Draft EIR/EIS Section 4.3.5.2 starting on page 4.3-85 includes a discussion of the conservative approach taken to the analysis. No new information is being provided in response to this comment; there is no cause for recirculation of the Draft EIR/EIS. See also response to comments from MRWPCA in Section 8.5.9.

Marina-22 Figure 3-6 is correct and matches the text in EIR/EIS Section 3.2.3.3. The New Desalinated Pipeline is described in Section 3.2.3.3 as running parallel to Lapis Road until it meets Del Monte Boulevard, at which point it would be built under the Monterey Peninsula Recreational Trail and Transportation Agency for Monterey County (TAMC) right-of-way.

The new Desalinated Water Pipeline was evaluated in the Draft EIR/EIS consistent with the description in Section 3.2.3.3. To be consistent with the text, the Project Area Boundary on Figures 3-4 and 3-5a has been revised to include this component. No further change to the EIR/EIS is required.

Marina-23 The EIR/EIS identifies seven paved parking lots and one sandy area that are proposed as construction staging areas in Table 3-4 and describes them in Section 3.3.1.2. All resource sections evaluate the staging areas as appropriate. Figures 3-6 through 3-8 have been revised to reflect a more accurate footprint for the trenchless pipeline ingress/egress locations; however, the EIR/EIS analysis for the use of these sites accurately addresses their size and location. There are no trenchless construction ingress/egress pits proposed within the area covered by Figure 3-9, and this figure has not been revised in response to this comment.

Marina-24 The engineering constraints mentioned in the discussion of the Pipeline to CSIP Pond in Section 3.2.3.8 are associated with the proposed Castroville Pipeline connection to CSIP, not the Castroville Pipeline. The issue is related to where in the CSIP system the return water is introduced: in the middle of the system as proposed with the Castroville Pipeline or at the head of the system via the Pipeline to CSIP Pond. The EIR/EIS provides coverage for both pipeline options in each topical section of Chapter 4. For example, see the tables in each section that present the regional and local land use plans, policies, and regulations pertaining to each applicable resource that were adopted for the purpose of avoiding or mitigating an environmental effect.

Marina-25 EIR/EIS Table 3-1 and the text in Section 3.2.1.1 explain that the five new well sites (i.e., those accommodating the nine new slant wells) would each include a 5,250- to 6,025-square-foot concrete pad for the aboveground facilities. Details of these pads are shown as an inset on Figure 3-3a. However, as a result of CalAm's comments on the Draft EIR/EIS (see Section 8.6.3), only the 18-foot by 11-foot (approximately 200 square feet) electrical enclosure would be on a concrete pad, eliminating approximately 25,000 square feet of impervious surfaces from the proposed project. Therefore, the table, the text and the figure in Section 3.2.1.1 have been revised accordingly in the Final EIR/EIS. Section 3.3.2.1 explains that construction activities at CEMEX would temporarily disturb approximately 9 acres of land within the project area boundary shown in Figure 3-3a, and Section 3.4.1 explains that slant well maintenance would disturb roughly 6 acres every 5 years. Potential impacts on the 9 acres of dune complex from the slant well construction were accurately described in the Draft EIR/EIS starting on page 4.6-124, at page 4.6-186, and again at page 4.6-209.

Aboveground facilities, including the wellheads, are described in EIR/EIS Section 3.2.1.1, and again in Section 3.3.2.1. Potential impacts on the 6 acres of dune complex resulting from operations and maintenance activities at the slant well sites are described starting on Draft EIR/EIS page 4.6-234, at page 4.6-244, and again at page 4.6-247.

Marina-26 The slant wells would be drilled into the Dune Sands, the Older Dunes Sands and the Terrace Deposits, all of which are composed of sand and some gravels, and described in the Draft EIR/EIS on page 4.2-8. The sand and gravel from the drilling

would be spread within the 9-acre construction area. See also response to comment Marina-73 and -89.

Marina-27 See Final EIR/EIS Section 1.5.3. The Terminal Reservoir is no longer a component of the proposed project.

Marina-28 The text in EIR/EIS Section 3.3.9 has been revised; the word "active" has been replaced with "retired."

Marina-29 Water Rights Permit 20808C limits the injection period of Carmel River supplies to December through May. Desalinated water does not have the same limitation. See EIR/EIS Section 3.4.2.

Marina-30 See response to comment MCWD-79 in Section 8.5.2.

Marina-31 The text in EIR/EIS Section 3.4.1 has been revised as follows:

> "All disturbance would occur on the ~~back~~ inland side of the dune~~s~~ face . . ."

Marina-32 EIR/EIS Section 3.4.2 describes the operation of the ASR system. Because the Terminal Reservoir is no longer a component of the MPWSP, the text in Section 3.4.2 has been revised accordingly. See EIR/EIS Section 4.4 for a description of the northern subbasin.

As described in EIR/EIS Section 3.2.4.1, the two proposed new wells, ASR-5 and ASR-6, would operate in conjunction with the existing Phase 1 and Phase II ASR wells (ASR-1 and ASR-2, and ASR-3 and ASR-4), which are described in EIR/EIS Section 2.4.3. With implementation of the MPWSP, any of the six ASR injection/extraction wells could be used to inject desalinated product water and Carmel River supplies.

Marina-33 The large use of energy is analyzed in EIR/EIS Section 4.18. The analysis assumed all electrical power needed for the project would be provided by the local PG&E power grid. As described on Draft EIR/EIS page 4.18-17, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). An option for CalAm to use methane gas as an alternative energy source is described in Section 4.18.4.3 for information purposes and is discussed in Section 4.11.5 as a renewable energy option. Section 4.11.5 also presents the secondary impacts of the proposed mitigation measure.

Marina-34 See Master Response 10, Environmental Baseline under CEQA and NEPA. Regarding reference to requirements to analyze the No Project alternative, the No Project/No Action alternative was analyzed in compliance with both CEQA and NEPA (see EIR/EIS Section 5.5).

Marina-35 The cited statement in EIR/EIS Section 4.1.5 provides an incomplete summary of the requirements in 40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10), which the Draft EIR/EIS cites as the basis for the NEPA evaluation of potential inconsistencies. The statement has been revised to read:

> Also, per NEPA, the analysis includes a discussion of the possible conflicts between the proposed project and ~~the objectives of~~ federal, regional, state, and local land use laws, requirements, policies, and/or plans for the area concerned that are imposed for the protection of the environment (40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10)).

This revision accurately represents 40 CFR §1508.27(b)(10), and is consistent with the language in 40 CFR §1506.2(d), cited in the comment. Responses to City of Marina comments about specific instances of alleged inconsistency with federal, regional, state, and local laws, requirements, plans, and policies are provided below, where enough specificity is provided by the comment to allow a substantive response.

Marina-36 The EIR/EIS did not fail to analyze the MPWSP's potential to accelerate or exacerbate coastal erosion and dune retreat. Section 4.2.1.3, Geologic Hazards, discusses erosion in general, and then provides a specific discussion of sea level rise and coastal erosion, including the four existing mechanisms that combine to affect coastal retreat in Monterey Bay: long-term erosion, sea level rise, storm events, and rip embayments. Section 4.2.4.5, Coastal Retreat Study, discusses the results of the site-specific studies conducted to quantify the anticipated level of sea level rise and the resulting coastal erosion that would occur from 2012 through 2073.

Because of the anticipated rate of coastal retreat, the originally-proposed locations of the slant wells were relocated further inland specifically to avoid being exposed and thus accelerating or exacerbating erosion. In addition to the usual CEQA Guidelines Appendix G significance criteria, EIR/EIS Section 4.2.5, Direct and Indirect Effects of the Proposed Project, added the following additional significance criterion to specifically address the issue of coastal retreat: Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment. The Draft EIR/EIS concluded on page 4.2-70 that, "If exposed, the subsurface slant well could contribute to accelerated and/or exacerbated natural rates of coastal erosion, scour, and dune retreat that could alter the natural coastal environment." The potential for erosion to occur as a result of any other proposed project component is discussed in Section 4.2.5 and was determined to be less than significant.

To ensure that the slant wells would not accelerate or exacerbate coastal erosion and dune retreat, Mitigation Measure 4.2-10, Slant Well Abandonment Plan, requires CalAm to monitor the rate of coastal retreat, and to remove the slant wells

at risk of exposure in accordance with state well destruction standards, prior to their exposure. The implementation of this mitigation measure would ensure that the risk of exposure is eliminated, and the slant wells therefore would not accelerate or exacerbate coastal erosion and dune retreat. No revisions were made in response to this comment, but Mitigation Measure 4.2-10 was revised as a result of response to comment Surfrider-5.

Marina-37 As discussed in EIR/EIS Section 3.4.1, the source water supply system is designed to have 8 of the 10 slant wells operational at any given time, with 2 slant wells out of service for routine maintenance or on stand-by. Therefore, the project could operate with one well out of service. If CalAm needs to replace a slant well after abandonment, it will need to apply for a Coastal Development Permit to do so, with associated environmental review under NEPA and CEQA, as warranted.

The slant well abandonment procedures are discussed in Mitigation Measure 4.2-10, Slant Well Abandonment Plan. The slant wells would be removed in accordance with state well destruction standards, and prior to their exposure. The slant well casing would be pressure grouted such that the screened section is sealed. The sections of well casing and pipelines at risk of exposure would be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study cited in Impact 4.2-10 or as directed by any permit condition. The installation of replacement wells is not part of this MPWSP, and since the closure of sand mining operations at CEMEX (see Master Response 14, CEMEX Settlement Agreement), the rate of erosion at the slant wells will be less than projected in the EIR/EIS. It is therefore unlikely that the slant wells will need to be replaced because of coastal erosion, but if and when they do need to be replaced, that would be a separate project subject to NEPA/CEQA review and new discretionary approvals.

Marina-38 EIR/EIS Section 4.3.2.2 provides a description of the California Coastal Act, including reference to the relevant Public Resources Code Section, and summary of the specific policies and requirements of the Act relevant to and sufficient for the assessment of impacts from the proposed project related to surface water hydrology and water quality. Additional discussion of the Act is provided in other resource chapter regulatory setting sections as relevant to those topics. See for example EIR/EIS Section 4.5.2.2, where a detailed description of the California Coastal Act, policies, and requirements is provided in the context of marine biological resources.

To provide more specificity to the description of the California Coastal Act, the description of the Act provided in EIR/EIS Section 4.3.2 has been revised as follows:

> The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal

> zone boundary. The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone. Of primary relevance to surface water hydrology and water quality are Coastal Act policies concerning protection of the biological productivity and quality of coastal waters. For example, Article 4 of the Act details policies related to the marine environment, such as biological productivity and water quality. Specifically, and relevant to surface water hydrology and water quality, the Act requires the quality of coastal waters, streams, wetlands, estuaries appropriate to maintain optimum populations of marine organisms and for the protection of human health be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges, controlling runoff, and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams (Cal. Pub. Res. Code §§ 30231).

A preliminary assessment of project consistency with these priorities is provided in the EIR/EIS. Final determinations regarding project consistency are necessarily reserved for the Coastal Commission. Operational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds. Exceedances of these thresholds would be potentially inconsistent with Coastal Act policies. This issue is discussed further in Impact 4.3-5.

The evaluation criteria described in EIR/EIS Section 4.3.3 are appropriate and adequate for assessing the potential impacts related to surface water hydrology and water quality from implementation of the MPWSP. These evaluation criteria comprehensively apply and consider the applicable regulations discussed in the regulatory setting section (EIR/EIS Section 4.3.2). As detailed in EIR/EIS Section 4.3.4, Approach to Analysis, the evaluation and disclosure of environmental impacts determines if, and to what degree, the MPWSP would change the existing hydrology and water quality conditions (described in Section 4.3.1) based on the evaluation criteria (presented in Section 4.3.3) and whether it would comply with the relevant regulatory requirements, which are comprehensively described in Section 4.3.2.

Marina-39 The EIR/EIS assesses and discloses the potential environmental impacts of the MPWSP as described in Chapter 3. As described in EIR/EIS Section 3.2.2.5, the project proposes to discharge brine from the reverse osmosis process via the existing MRWPCA ocean outfall, comingling the brine with secondary treated wastewater when available. The potential for the proposed project to impact water quality or to violate water quality standards or waste discharge requirements is comprehensively evaluated in EIR/EIS Section 4.3.5.

As discussed under Impacts 4.3-4 and 4.3-5, the proposed project would not exceed or violate the Ocean Plan numeric water quality standards or degrade water quality

in terms of salinity and other constituents for which data is available. Because water quality data is unavailable for a limited number of constituents for which the Ocean Plan defines a numeric water quality objective, the EIR/EIS conservatively concludes that the MPWSP could result in exceedances of Ocean Plan objectives, resulting in a significant impact related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. Such impacts would be reduced to a less-than-significant level by implementing Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives), which ensures that discharges would not occur if they would not conform to the Ocean Plan water quality objectives.

Mitigation Measure 4.3-5 specifies implementation of additional design features, engineering solutions (including but not limited to inclined diffusers), and/or operational measures to be implemented to reduce the concentration of water quality constituents in the operational discharges and/or to increase dilution at the outfall diffuser such that they conform with Ocean Plan water quality objectives.

EIR/EIS Appendix D1 provides detailed descriptions of the various model analyses conducted to assess potential water quality impacts for operational discharges that utilize the MRWPCA outfall diffuser. The model analyses described in Appendix D1, and discussed in detail as part of the impact analyses presented in Chapters 4 and 5 of the EIR/EIS relevant to surface water hydrology, water quality, and marine biological resources, assess operational discharges associated with the proposed project as well as Alternative 1, Alternative 2, and Alternatives 5a and 5b, which all propose use of the existing MRWPCA outfall diffuser. Modeling analyses at a comparable level of detail, described in EIR/EIS Section 5.5.3.6, was conducted for Alternative 3 (Monterey Bay Regional Water Project or Deep Water Desal), which proposes a new brine discharge structure that would discharge a higher volume of brine than the proposed MPWSP. As described in EIR/EIS Section 5.5.3.7, Alternative 4 (People's Moss Landing Desalination Project or People's Project) proposes to discharge brine through a rehabilitated existing outfall. As discussed in Section 5.5.3.7, the design of the Alternative 4 outfall diffuser is not yet advanced enough to conduct detailed model analyses comparable to the other alternatives. However, an impact analysis for Alternative 4 consistent with the requirements of CEQA and NEPA was conducted using the information available at the time of preparing the Draft EIR/EIS. Further, a detailed comparison of proposed alternatives was provided to facilitate public understanding of the impacts related to operational discharges (as well as other impacts) for all alternatives (see EIR/EIS Table 5.3-5).

Marina-40 The Draft EIR/EIS is not required to include a MMRP (see response to comment Marina-1) and Mitigation Measure 4.3-4 does not defer mitigation nor does it lack performance standards. Response to comment Marina-41 addresses issues of deferral related to updating water quality and marine biological resource data required by Mitigation Measure 4.3-4. The performance standards of Mitigation

Measure 4.3-4 are described as those outlined in Appendix III of the *Water Quality Control Plan – Ocean Waters of California*, also known as the Ocean Plan, prepared by the State Water Resources Control Board (SWRCB, 2016). The primary performance standard within this mitigation measure is clearly described as "compliance of operational discharges with the Ocean Plan receiving water salinity limitation, which specifies discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity, as measured no further than 100 meters (328 ft) horizontally from the discharge point" (see Draft EIR/EIS page 4.3-90). Response to comment Marina-42 further addresses performance standards. Response to comment Marina-1 addresses the requirements for preparing and circulating an MMRP.

Marina-41 Surveys conducted as part of Mitigation Measure 4.3-4 do not constitute deferral under CEQA of either a characterization of baseline conditions or the analysis of potential impacts from implementation of the proposed project or alternatives. A comprehensive and detailed characterization of baseline conditions relevant to the project area and adequate for assessing the potential environmental impacts of the proposed project and alternatives consistent with the requirements of CEQA and NEPA is presented in EIR/EIS Chapters 4 and 5. Specifically, baseline conditions in the marine environment of Monterey Bay relevant to the discharge of brine at the MRWPCA outfall diffuser are presented in Sections 4.3.1 and 4.5.1 for water quality and marine biological resources, respectively. As described in Sections 4.3.1 and 4.3.5, detailed and project-specific water quality and biological surveys were conducted and the results of these surveys are presented along with relevant information from a comprehensive literature review. A detailed analysis of the potential impacts of implementing the proposed project and alternatives on water resources and marine biological resources is presented in Sections 4.3.5, 4.5.5, and Chapter 5.

As described in EIR/EIS Sections 4.3.1 and 4.5.1, conditions relevant to water quality and marine biological resources, especially benthic community diversity and abundance, are dynamic over time and may be influenced by factors unrelated to the proposed project, such as other regional projects or long-term water quality trends. For this reason, existing baseline conditions related to water quality and marine biological resources have been characterized within the context of typical observed ranges and regional trends (such as species presence and abundance, seasonal ocean conditions, habitat conditions, and long-term water quality trends). Within that context, a detailed and comprehensive assessment of impacts to receiving ocean water quality from operational discharges and associated impacts to marine biological organisms is presented in EIR/EIS Sections 4.3 and 4.5 of the Draft EIR/EIS. Section 4.3.1 and Appendix D presents detailed baseline water quality information specific to Monterey Bay, including site specific water quality data for the area immediately surrounding the MRWPCA outfall diffuser, sufficient for assessing the potential impacts from implementation of the MPWSP. Under Impact 4.3-5, baseline water quality data is utilized to conservatively assess

impacts from a wide range of water quality constituents present in operational discharges (see Table 4.3-15 for a comprehensive list of constituents assessed). As described in Section 4.3.5, because implementation of the project may not occur for several years, Mitigation Measure 4.3-4 would, in part, ensure that adequate water quality and marine biological resources data are gathered at least one year prior to construction of the project to confirm conditions at the time of construction. Due to the dynamic nature of water quality and marine biological resource conditions, it is appropriate and scientifically defensible to confirm and/or re-establish ambient conditions, especially benthic community diversity and abundance, in the vicinity of the outfall diffuser in order to assess potentially adverse deviations from long-term trends in community diversity and abundance that may occur from implementation of operational discharges.

Marina-42 The conditions under which the RWQCB and MBNMS may, following detailed assessment, authorize CalAm to terminate the long-term monitoring of salinity compliance at the outfall diffuser required under Mitigation Measure 4.3-4 are defined and described in EIR/EIS Section 4.3.5. Specifically, Mitigation Measure 4.3-4 states, in part, that "[I]f at the end of five complete years of monitoring operational discharges, the 24-hour average salinity measured at the edge of the BMZ is less than 75 percent of the salinity performance standard for 45 days without interruption under all discharge scenarios representative of typical operations (i.e., irrigation season and non-irrigation season operations), and with approval by the RWQCB and MBNMS, the discharger(s) may terminate the monitoring and reporting specified as part of this mitigation measure (but not terminate monitoring and reporting required as part of compliance with NPDES permit conditions or Ocean Plan monitoring and reporting requirements for discharges into California ocean waters)."

Therefore, CalAm could not be authorized to terminate such monitoring unless at some point after five years of monitoring and assessment have occurred (i.e., a minimum of five years of monitoring must be completed), the salinity standard required under Mitigation Measure 4.3-4 is met for a continuous 45-day period for all discharge scenarios that occur under standard operations. If the terms described above are not met, the monitoring required as part of Mitigation Measure 4.3-4 will not cease. However, additional mitigation would not be required as the clearly defined standard for salinity under Mitigation 4.3-4 has conservatively been set at 75 percent of the salinity performance standard required in the California Ocean Plan. Failure to meet the conservative 75 percent threshold defined in Mitigation Measure 4.3-4 would not represent an exceedance of the Ocean Plan salinity requirement and would not, as discussed in Sections 4.3.5 and 4.5.5, result in additional impacts not previously disclosed in the EIR/EIS for discharges associated with desalination facilities.

Marina-43 As described in EIR/EIS Section 5.5.3.7, as for operational discharges associated with the proposed project and other alternatives, operational discharges from

Alternative 4 could locally increase salinity levels and could potentially exceed Ocean Plan water quality objectives, resulting in violation of water quality standards, waste discharge requirements and/or the degradation of water quality in Monterey Bay. Implementation of Mitigation Measures 4.3-4 and 4.3-5 would reduce water quality impacts to receiving ocean waters from desalination facility operational discharges to less than significant for Alternatives 1, 2, 3, 5a and 5b. It is acknowledged and disclosed in Section 5.5.3.7 that application of measures substantially consistent with Mitigation Measures 4.3-4 and 4.3-5 would reduce impacts to a less-than-significant level for Alternative 4. However, while the applicant for Alternative 4 may agree to comply with such measures or provide model analyses to demonstrate compliance with Ocean Plan objectives, the proposed "two new 16-inch-diameter diffuser ports" are not multi-port as preferred by the Ocean Plan. The effectiveness of the Alternative 4 diffuser design is currently unknown and, therefore, feasible mitigation and the effectiveness of that mitigation cannot be fully assessed at this time, without additional information related to facility design, operational protocols, and diffuser dynamics. Until such information is developed by the applicant (such as for analysis under CEQA and NEPA when Alternative 4 facility and operations are more fully developed) and shared with the Lead Agencies, it is logical to assume that Alternative 4 would result in an increased impact related to operational discharges and water quality for other Ocean Plan constituents compared to the proposed project and that such impacts would be significant and unavoidable.

Marina-44 Resolution No. 88-63 adopted by the SWRCB on May 19, 1988, and amended on February 1, 2006, provides that surface waters and groundwater that are considered to be suitable or potentially suitable for municipal or domestic water supply (MUN) should be so designated by regional boards in their water quality plans.

The Resolution presumes that surface water and groundwater are suitable for MUN designation except where:

a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Resolution No. 88-63 at page 2. This standard was incorporated into the Water Quality Control Plan for the Central Coast Basin (latest edition, March 2016, see page 2-1 of the Basin Plan) for all groundwater resources. The Salinas River Groundwater Basin (a sub-basin of the Central Coast Basin, see Basin Plan

Figure 2-2), a groundwater resource within the Central Coastal Basin, is designated as suitable for MUN, agricultural water supply, and industrial use. See Basin Plan at page 2-1.

The Basin Plan and the beneficial use of groundwater resources, including the MUN designation, were discussed in the Draft EIR/EIS on page 4.4-35, such that it was not necessary to cite to the Resolution that informed the Basin Plan. The EIR/EIS provides in pertinent part:

> The Basin Plan for the Central Coast, originally adopted in 1971 and last amended in 2011, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Central Coast of California. The listed beneficial uses for groundwater resources are:
>
> - Agricultural water supply (AGR)
> - Municipal and domestic water supply (MUN)
> - Industrial use (IND)
>
> . . . The RWQCB has established water quality objectives for selected groundwater resources; these objectives serve as a basis for evaluating water quality management in the basin. Specific water quality objectives have been defined for the 180-Foot Aquifer and 400-Foot Aquifer for the SVGB.

The Basin Plan's Total Dissolved Solids (TDS) water quality objective for the 180-Foot Aquifer is 1,500 mg/L TDS, and the water quality objective for the 400-Foot Aquifer is 400 mg/L TDS. The Basin Plan acknowledges that groundwater in the Salinas River Sub-basin has average TDS concentrations that range from 300 mg/L to over 3,000 mg/L. Basin Plan at page 3-12. The analysis conducted for the EIR/EIS also demonstrates that the groundwater within the capture zone for the project (where the water is projected to be derived) exceeds the 3,000 mg/L TDS requirement for MUN designation; see EIR/EIS Section 4.4, Groundwater Resources, and Master Response 8, Project Source Water and Seawater Intrusion. Therefore, groundwater that could be withdrawn from the 180-Foot Aquifer by project supply wells does not currently meet the Basin Plan objective of 1,500 mg/L TDS, nor would it be considered suitable for MUN designation under Resolution No. 88-63.

That alone, however, does not de-designate the MUN designation of the Salinas River Groundwater Basin, but it is instructive given that such groundwater is not considered suitable for municipal or domestic water supply. The Basin Plan states that if groundwater is beyond the levels or limits established as water quality objectives, controllable conditions shall not cause further degradation of water quality. (Basin Plan at page 3-1.) As demonstrated in EIR/EIS Section 4.4, Groundwater Resources, and Master Response 8, Project Source Water and Seawater Intrusion, the project would not cause further degradation of the water quality in the sub-basin. Therefore, the project does not conflict with and is consistent with the Basin Plan.

Marina-45 See Master Response 2, Source Water Components and Definitions, for definitions of brackish water, seawater, source water, and fresh water. EIR/EIS Section 4.4, Groundwater Resources, has been updated to be consistent with these terms. Brackish water is defined in EIR/EIS Sections 3.1.1.1 and 4.4.1.4 as water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L.

The text in EIR/EIS Section 4.4.5.2 states that groundwater in the inland area of influence of the proposed MWSP slant wells is brackish with elevated TDS attributable to seawater intrusion; the groundwater in the Dune Sand, 180-FTE and 400-Foot Aquifer is, therefore, unsuitable for potable supply. That is a true statement based on the understanding that groundwater within the capture zone of the slant wells far exceeds 3,000 mg/L TDS and there are currently no groundwater extraction wells in that area. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2, for a description of water quality conditions in the slant well capture zone. See Master Response 3, Water Rights and response to comment Marina-44 for further clarification on the use of the term brackish water. The commenter indicates that it is a discrepancy to state that the groundwater in the project capture zone is unsuitable for potable supply when such water would be part of the project source water. However, the point of such text in the EIR/EIS is that the water in its existing form is not suitable for potable supply and could only become suitable through desalination, as proposed by the project.

EIR/EIS Figures 4.4-10 and 4.4-11 are the 2015 seawater intrusion maps that are produced annually by Monterey County Water Resources Agency; they are used in the EIR/EIS to illustrate the extent of seawater intrusion in the Salinas Valley Groundwater Basin, inland from the coast. This is considered the best available information showing the inland advance of the seawater intrusion front. Hydrostratigraphic and water chemistry data obtained from the CalAm test slant well and groundwater monitoring wells provide adequate information to characterize the hydrogeologic conditions in the region that would be affected by the slant wells. See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.3, for information on the applicability and use of ERT/AEM in the EIR/EIS. The MPWSP would extract highly brackish to saline water for use as desalination feedwater from a coastal adjacent capture zone in the Dune Sand and 180-FTE Aquifers without negatively impacting the water supplies in the Salinas Valley Groundwater Basin. Refer Master Response 3, Water Rights, Section 8.2.3.5 regarding CalAm's right to extract water from this source.

Marina-46 Refer to Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1 through and 8.2.8.4 for additional clarity on the slant well feedwater source. See Master Response 4, Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2, for detailed information on the proposed project's compliance with the Agency Act and return water requirements, and Section 8.2.4.3, which presents the

results of the Hydrogeologic Working Group (HWG) evaluation of return water estimates. The HWG concluded that the anticipated actual annual volume of return water could be 10 percent in the first few months of project pumping (approximately 2,700 afy), but would be no more than 5 percent (approximately 1,350 afy) within 5 years of project pumping. See EIR/EIS Appendix E3. The 0 to 12 percent range used in the EIR/EIS and the NMGWM^{2016} is consistent with these conclusions, and no edits to the analysis relevant to return water presented in the Draft EIR/EIS are necessary. See also response to Marina-44; groundwater that could be withdrawn from the 180-Foot Aquifer by project supply wells does not currently meet the Basin Plan objective, nor would it be considered suitable for MUN designation under Resolution No. 88-63 adopted by the SWRCB on May 19, 1988, and amended on February 1, 2006.

Marina-47 EIR/EIS Sections 2.6.3 and 4.4.2.3 describe the MCWRA Agency Act and Ordinance 3709; Section 2.6.4 presents the effect of the Annexation Agreement on the proposed project. Master Response 2, Section 8.2.4.1 also addresses compliance with the Agency Act and Ordinance 3709. Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 through and 8.2.8.4 provide additional context to understand the relationship between the projected slant well capture zone at the coast, which is a highly brackish to saline environment, and the projected area of influence of the slant pumping, which has more variable ranges of seawater intrusion.

Marina-48 Refer to Master Response 3, Water Rights, Section 8.2.3.5, for additional clarity of water rights and use of the seawater intruded groundwater. The EIR/EIS does not state that the water in the Dunes Sand, 180-Foot Aquifer and 400-Foot Aquifer *cannot* be extracted for domestic, agricultural, or industrial uses. Further, the EIR/EIS bases its conclusion of the existing extent of seawater intrusion in these aquifers on data publicly available from the MCWRA. The EIR/EIS correctly states in Section 4.4.5.2 that current groundwater production in those aquifers is limited to minor irrigation and dust control and that there are no water supply wells pumping potable water. Most of the wells in this area are no longer active because of seawater intrusion.

Marina-49 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Marina-50 See Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.3, for a discussion of consistency of the proposed project with SGMA. A summary of the analyses to address each undesirable result identified in SGMA has been added to Final EIR/EIS Section 4.4 in Impacts 4.4-3 (groundwater supplies and recharge) and 4.4-4 (groundwater quality). The scientific information presented in EIR/EIS Appendix E2 indicates that the proposed project would not contribute to additional seawater intrusion or significantly lower groundwater levels. Figures 5.3 and 5.4 show drawdown contours due to slant well pumping at

the CEMEX site. The contour maps show the area where project pumping is expected to lower groundwater levels by 1 foot or more relative to groundwater levels in the absence of the project. Slant well pumping effects on the continued inland movement of saltwater due to background pumping were also assessed using the NMGWM^{2016} and MODPATH. Results show that slant well pumping would slow future saltwater intrusion in the southern portion of the 180-Foot/FTE Aquifer; slant well pumping would have little to no effect on the continuation of saltwater intrusion in the 400-Foot Aquifer.

Marina-51 See response to comment Marina-50.

Marina-52 See response to comment Marina-50.

Marina-53 The EIR/EIS states that the proposed project would extract groundwater that is highly brackish to saline from a capture zone along the coast at CEMEX where no other groundwater users are currently pumping groundwater from the Dunes Sand Aquifer or the 180-Foot Aquifer. The source of the slant well feedwater and the capture zone from where the feedwater originates is described in detail in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1 through and 8.2.8.4. The amount of return water is based on the ocean water percentage (OWP), which is the amount of seawater that contributes to the source water supply. In other words, the return water amount would be all source water that is not classified as ocean water but rather is characterized as groundwater, as explained in Master Response 2, Source Water Components and Definitions. The OWP is projected to increase with time as seawater replaces the highly brackish ambient groundwater in the coastal Terrace Deposits. See Master Response 4, Agency Act and Return Water, Section 8.2.4.3 for clarity regarding the OWP and calculation of return water. See also EIR/EIS Appendix E3.

Marina-54 See Master Response 12, The North Marina Groundwater Model (v. 2016). The NMGWM^{2016} is a MODFLOW model, which is a widely utilized groundwater modeling program accepted by the hydrologic community. It has been extensively tested and verified, making it state-of-the-art. The NMGWM^{2016} is a complex three dimensional flow model comprising 8 layers, and each layer has one or more zones that represent the distribution of aquifers and aquitards (see Table 2.1 in Appendix E2). The NMGWM^{2016} was employed in superposition mode to isolate the calculated water level decline (drawdown) in response to proposed project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information. Specifically, the model was primarily employed to estimate the cone-of-depression, which was defined as the area where the difference between model-calculated pumping and non-pumping water levels is greater than or equal to one foot. The NMGWM^{2016} was not employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The specified pumping stress and modeled aquifer properties have a much larger effect on the model-calculated drawdown than variations in water

quality and density. The specified pumping rates, return water volumes, projected sea level, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production have a greater influence on the extent of model-calculated drawdown than a contrast in groundwater density, and the effects of these factors on the uncertainty in the model-calculated cone of depression was rigorously tested and conservatively quantified for the NMGWM[2016].

Marina-55 EIR/EIS section 4.4.3 lists the thresholds of significance (referred to in this document as Evaluation Criteria) that are consistent with the questions set forth in Appendix G of the CEQA Guidelines. The two criteria listed pertain to groundwater supply and water quality and are published in Appendix G under the impact questions for Hydrology and Water Quality. As lead agencies frequently do, the EIR/EIS adapted these questions as significance criteria for the analysis of impacts in the Groundwater Resources section. Due to the complexity of the project, the criteria were expanded into several descriptions that were intended to elaborate on the CEQA Appendix G questions and clarify the significance thresholds for the reader. The phrase "net deficit in aquifer volume," precise language taken directly from Appendix G of the CEQA Guidelines, describes the potential for the project to interfere with recharge and draw down the aquifer (thus experiencing a net deficit in aquifer volume) to a point that it could cause harm to the well yields and wells of other users. This is an appropriate application of the CEQA Guidelines in developing a significance threshold.

The project impacts on the aquifer volume were adequately analyzed under Impact 4.4-3 in EIR/EIS, Section 4.4.5.2. The impact analysis evaluated whether the project would deplete supplies in the aquifer and appropriately concluded that the project would continue to extract only brackish, degraded groundwater from the coast and to a lesser extent from the inland portion of the aquifer, but would not deplete the supply in the aquifer to the extent that other groundwater users would be impacted. The analysis also evaluated the project's impact on water levels in local wells and determined that some wells would experience drawdown of 1 to 5 feet, but that such degree of drawdown would not reduce well yield or cause physical damage to the wells.

Master Response 8, Project Source Water and Seawater Intrusion, provides additional clarity regarding the hydrogeologic and water quality effects of the proposed project pumping. The information in Master Response 2, Source Water Components and Definitions, provides supplemental technical information but does not change the conclusion in the EIR/EIS. The return water component was also evaluated and it was determined that, under certain circumstances, water levels in the 400-Foot aquifer would increase due to in-lieu recharge; see EIR/EIS Section 4.4.5.2.

Marina-56 Given the location of the slant wells and characteristics of the groundwater capture zone, which is further discussed in Master Response 8, Project Source Water and

Seawater Intrusion, and the results of the NMGWM^{2016} groundwater modeling, the EIR/EIS, Section 4.4.5.2, Impact 4.4 concluded that: 1) localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users, and 2) MPWSP pumping would be expected to retard future inland migration of the seawater intrusion front and provide a benefit for the basin. The EIR/EIS did not, as the comments states, "condense this water quality degradation inquiry into a narrow analysis of whether the extractions will move the 'seawater/freshwater interface' in the 180/400 Foot Aquifers." Rather, the water quality analysis presented in EIR/EIS Section 4.4.5.2, Impact 4.4-4: 1) considered potential water quality impacts to groundwater users in the slant well pumping area of influence; 2) evaluated the project's effects on SVGB seawater intrusion; 3) assessed water quality impacts associated with groundwater remediation systems; and 4) analyzed water quality impacts of the ASR wells. The EIR/EIS adequately addressed the potential groundwater quality impact associated with the MPWSP on current legal users; to opine on impacts to future legal users would be speculative and is not the focus of or required by CEQA and NEPA.

Marina-57 See Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.3 and response to comment Marina-55. EIR/EIS Section 4.4.5 evaluates the short- and long-term impacts of the proposed project on current legal users; to opine on impacts to future legal users would be speculative and is not the focus of or required by CEQA and NEPA.

Marina-58 For SGMA related issues, see Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.3. Information on the 900-Foot Aquifer is provided in Master Response 7, Deep Aquifers of the Salinas Valley Groundwater Basin. See response to comment Marina-56 for additional information on the water quality analysis. Contrary to the claims in the comment, EIR/EIS Section 4.4.5.2, Impact 4.4 provides a complete analysis of the potential water quality effects that could impact or harm other groundwater users, otherwise degrade groundwater resources, and exacerbate seawater intrusion. Supplemental discussion of the hydrogeological characteristics, graphic representation of the slant well capture zone, and supplemental discussion of water quality impacts are provided in Master Response 8, Project Source Water and Seawater Intrusion.

The coastal location of the slant wells, the inland gradient, and the capture zone created during slant well pumping would confine water quality changes to the capture zone. The water quality impacts at the slant wells would be localized at the capture zone and thus limited in areal extent. There are no groundwater users with active wells within the capture zone. Groundwater storage would not be substantially reduced because most of the water removed by the pumping slant wells would be recharged with seawater. Under steady state conditions, the slant wells would begin to capture seawater that would have otherwise flowed inland and contributed to seawater intrusion, resulting in a beneficial but localized water

quality effect. For this reason, the EIR/EIS concluded that the slant wells would not harm other groundwater users. The analysis employed particle tracking to assess changes to the MCWRA-defined seawater intrusion front. Results of the groundwater modeling indicate that slant well pumping would retard the migration of saltwater into the southern portion of 180-Foot Aquifer that would have otherwise contributed to the advancement of the seawater intrusion front; slant well pumping would have little to no effect on future saltwater intrusion in the 400-Foot Aquifer.

Marina-59 The "900-Foot Aquifer" is discussed in Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin. The EIR/EIS has been revised to incorporate additional environmental setting information (see Section 4.4.1.2) and pertinent impact analysis regarding the deep aquifers (see Section 4.4.5.2). See also response to comment Marina-JJ&A-2. The additional information does not change the impact conclusions in the Draft EIR/EIS.

Marina-60 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), for a complete discussion of the relevance of ERT and AEM to the EIR/EIS analysis. The preliminary results of the 2017 ERT/AEM survey presented a distribution of groundwater chemistry that is generally consistent with the findings of the hydrogeologic investigation conducted for the EIR/EIS and is generally consistent with the salinity mapping for the 180-Foot and 400-Foot Aquifers published by the MCWRA. The Stanford study also provides data to help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area. While the ERT/AEM data is useful, it does not offer new information that would cause a change in the EIR/EIS conclusions regarding the proposed project's impacts on groundwater resources. See also response to comment Marina-61 and Marina-JJ&A-1 through -4.

Consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined, and the 180/400-Foot Aquitard, although shown as inferred within dashed lines on EIR/EIS Figure 4.4.3, is most certainly present and restricts vertical flow from the 180-FTE aquifer above it. The EIR/EIS groundwater modeling (EIR/EIS Appendix E2) did in fact consider, model and evaluate potential effects to the 900-Foot Aquifer (Model Layer 8) from pumping of the proposed slant wells. See EIR/EIS Appendix E2, Figures 5.3a, 5.3b, 5.4a, and 5.4b and Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, Section 8.2.7.2. The modeling indicates that pumping of the MPWSP would not affect the 900-Foot Aquifer.

Marina-61 The NMGWM^{2016} does analyze the effects of slant well pumping on the Deep Aquifer (Model Layer 8), and results indicate the drawdown would be less than 1 foot everywhere within the model domain. See Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin.

The NMGWM^{2016} was employed to calculate the water level decline and cone of depression, which is defined as the area where the differences between pumping and non-pumping water levels (the drawdown) would be greater than or equal to 1 foot. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping. Particle-tracking methods were employed to show areas from which seawater recharge is extracted by the wells (the capture zone), and the retardation of existing saltwater intrusion.

The geophysical study prepared by Professor Knight provides a 2-D cross sectional resistivity map that also relied on modeling and inversion codes to visually plot the field collected data. Electro Resistivity Tomography (ERT) captures a static image – a point in time – and relies on actual conditions provided by monitoring well data for calibration. As outlined in Lucius et al., 2007, geophysical resistivity techniques are limited in that supplemental geologic information (such as borehole data or well logs) is needed to interpret the differences in resistivity observed within lithologic units. Additional limitations include the spacing of arrays required and avoiding potential sources of noise, such as pipelines or buried utility cables. Indeed, Professor Knight's work reports on the substantial vertical noise introduced into the ERT salinity cross-section by a pipe (Watsonville Wastewater ocean outfall pipe), which without knowledge of the interference could be inferred as indicating vertical saltwater flow (Goebel et al., 2017). Therefore, the ERT data will not necessarily produce greater certainty for a 3-D model because of the uncertainty in the ERT methodology; it is spatially limited because results presented to date represent a 2-D plane within the 3-D groundwater-flow system; it represents a single point in time rather than the time-series simulated by the model, and; it requires ground-truthing using much of the same data that is used by the groundwater model (well data) (Goebel et al., 2017). See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2.

The model is not "too simplified" to fully evaluate potential effects. Substantial care was exercised to incorporate the available lithologic and hydraulic conductivity data. Also, a range of parameter values was used to determine the uncertainty in model output and thus a range of values for drawdown. For example, (see EIR/EIS Appendix E2, Table 2-1), Model Layer 2 represents the shallow water-bearing sediments referred to as Dune Sand Aquifer, A-Aquifer, Perched Aquifer, Perched 'A' Aquifer, 35-Foot Aquifer, and -2 Foot Aquifer. Similarly, Model Layer 4 represents the 180-Foot Aquifer, 180-Foot Equivalent (FTE) Aquifer, Upper and Lower 180-Foot Aquifer, and Pressure 180-Foot Aquifer. The geographic and hydrogeologic characteristics of these water bearing units are not equivalent, and they are represented in the NMGWM^{2016} by different zones, and each zone is assigned a unique value for its water transmitting and storage property values. The NMGWM^{2016} is a MODFLOW model developed by the USGS, and is a widely utilized groundwater modeling program that is accepted by the hydrologic community. It has been extensively tested and verified, making it state-of-the-art. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more

information as well as response to comment Marina-JJ&A-4. Consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined and the 180/400-Foot Aquitard restricts vertical flow from the 180-FTE aquifer above it.

Marina-62 The inland movement of groundwater is driven by regional inland recharge and pumping patterns. Locally-focused efforts implemented near the coast by MCWRA and others to reduce groundwater pumping cannot reverse the effect of these regional gradients. To place this concept in perspective, locally-focused efforts would have to provide sufficient recharge to mitigate the inland pumping responsible for historical overdraft and seawater intrusion.

The slant wells would access subsurface water at and west of the shoreline, and rising sea levels are expected to increase the movement of seawater toward the wells. Seawater intrusion was first mentioned for the Salinas Valley in the early 1930s (see EIR/EIS Section 4.4.1.3), and even prior to that and before intense inland pumping for agriculture (for example, the 1920s), there was almost certainly a salt water wedge that dipped landward such as is described in Todd.[2] It is therefore unlikely that "most and possibly all of the water pumped by the slant wells would be groundwater from the Basin rather than seawater" because even if the seawater intrusion in the SVGB is reversed, the slant wells would draw in seawater because the brackish groundwater at CEMEX would be recharged from the ocean. See Master Response 8, Project Source Water and Seawater Intrusion.

Additionally, the water transmitting properties of aquifer materials near the coast are insufficient to supply the majority of the water extracted by slant wells. For example, the modeled horizontal conductivities of the inland A-Aquifer (2-4 feet/day) are one- to two-orders of magnitude smaller than the modeled Dune Sand Aquifer tapped by the slant wells (150-625 feet/day). Clearly, the water supplied to the slant wells that would originate as inland recharge to Model Layer 2 would necessarily be less than the water derived from the Dune Sand Aquifer at the coast and beneath the ocean. The combination of this hydraulic conductivity contrast and ample recharge available from the ocean make it implausible for the inland gradients to reverse and "strand" the project.

Marina-63 The National Marine Sanctuaries Act (NMSA; 16 USC §§1431-1445c) does not specifically list discharge of brine effluent as a prohibited activity in marine sanctuaries (16 USC §1436). Each sanctuary has unique regulatory prohibitions codified within a separate subpart of Title 15, Code of Federal Regulations, Part 922. The regulations implementing the NMSA in MBNMS (15 CFR 922, Subpart M) prohibit discharging or depositing from within or into the Sanctuary any material or other matter, except as otherwise specified in the section, and prohibit discharging or depositing from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a

2 Todd, David Keith, 1976, Groundwater Hydrology, John Wiley and Sons

Sanctuary resource or quality, except as otherwise specified in the section. 15 CFR 922.132(a)(2)(i and iii). However, under NMSA regulations at 15 CFR 922.49, a person may conduct an otherwise prohibited activity in a Sanctuary if specifically authorized by a valid permit that is subsequently authorized by the Sanctuary. Regarding authorizations in MBNMS, 15 CFR 922.132(e) provides, "The prohibitions in paragraphs (a)(2) through (a)(8) of this section … do not apply to any activity authorized by any lease, permit, license, approval, or other authorization issued after the effective date of Sanctuary designation (January 1, 1993) and issued by any Federal, State, or local authority of competent jurisdiction, provided that the applicant complies with 15 CFR 922.49 … ."The term "authorization" in this context, and the specific authorizations MBNMS is considering relevant to the proposed project, are described in EIR/EIS Section 1.3.2.1. Additionally, the Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary (cited as MBNMS, 2010 in EIR/EIS Section 6.4) provide that all desalination plants should be designed to minimize impacts from brine discharge, and that the project proponent should evaluate the short and long-term impacts of discharge on marine organisms. EIR/EIS Section 6.4 contains a detailed discussion of the consistency of the MPWSP with the Guidelines. Finally, EIR/EIS Section 4.5.2.1 describes the NMSA provisions and MBNMS regulations that are relevant to the construction and operation of desalination plants, including restrictions on discharging material or other matter into the sanctuary and restrictions on activities that alter the submerged lands (aka seabed) as a result of the installation of desalination facility structures on or beneath the ocean floor (e.g. an intake or outfall pipeline).

With respect to their applicability to marine biological resources, other laws, regulations, policies, and guidance mentioned in the comment are discussed in the EIR/EIS as follows: the Magnuson-Stevens Fishery Conservation and Management Act, MBNMS Desalination Guidelines, Marine Mammal Protection Act, and Federal Endangered Species Act are discussed in Section 4.5.2.1. The California Endangered Species Act, Marine Life Protection Act, Marine Life Management Act, and California Ocean Plan are discussed in Section 4.5.2.2. Consistency with these and other components of the marine biological resources regulatory framework is discussed throughout Section 4.5.

Marina-64 The project study area for Marine Biological Resources is described in the first paragraph of EIR/EIS Section 4.5: "The marine biological resources study area encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from the Salinas River southward to the northern limits of Sand City." It was established by delineating a region of the coastal marine environment that was several orders of magnitude greater than an area of potential impact resulting from the proposed project, consistent with CEQA Guidelines Section 21060.5. This paragraph in EIR/EIS Section 4.5 goes on to explain, "This area encompasses the ocean waters adjacent to the proposed subsurface slant wells site at the CEMEX sand mining facility and surrounding the Monterey Regional Water Pollution

Control Agency's (MRWPCA) existing ocean outfall…" There is no need or justification for the study area to extend further north, or south since the project has no potential to generate impacts at such distance. While the study area extends outward from the shoreline for five miles, the EIR/EIS demonstrates that project effects would be confined to a much smaller range.

Marina-65 Baseline conditions relevant to marine biological resources, especially benthic community diversity and abundance, are dynamic over time and may be influenced by factors unrelated to the proposed project, such as other regional projects or long-term water quality trends. For this reason, existing baseline conditions have been characterized within the context of typical observed ranges and regional trends (such as species presence and abundance, seasonal ocean conditions, habitat conditions, and long-term water quality trends). See response to comment Marina-41.

There are abundant scientific articles, reports and studies of the marine biological communities and habitats present in MBNMS to characterize the project study area. In fact, more than 130 scientific studies and reports are cited in Section 4.5, Marine Biological Resources, to support the impact assessments. Additionally, the assessment of project activities assumed that a specific marine taxa or species is present unless clearly known and documented not to be present in the project study area.

The EIR/EIS dismisses the presence of cold water seeps in the second page of EIR/EIS Section 4.5, since water depths in the project study area are less than 500 feet, and cold water seeps are located at depths greater than 3,000 feet.

As described in EIR/EIS Section 4.3.5, Mitigation Measure 4.3-4 would ensure that adequate marine biological resource data are gathered at least one year prior to construction of the project to confirm conditions at that time, and that the discharge would continue to meet Ocean Plan water quality objectives that are protective of marine biological resources.

The purpose of the plankton sampling was not to establish an environmental baseline. Because potential effects of shear stress associated with the brine discharge are related to organism size, with smaller organisms being most affected, the sampling was conducted to determine, at a single point in time, the relative proportions of organisms of different sizes. The plankton data were incorporated into the description of baseline conditions because they contribute to the available data gathered for this purpose. Nevertheless, in order to avoid further confusion, the text on page 4.5-6 has been revised, as follows:

> Small zooplankton was sampled near the MRWPCA outfall in the spring of 2016, to ~~characterize~~ provide an example of the assemblages that could be affected by the proposed discharge of desalination brine (AMS, 2016).

Moreover, the determination that impacts due to shear stress are less than significant was based on the small volume of pelagic habitat that would be affected by shear stress from the brine discharge and the very small percentage of organisms in the size range that would potentially be affected. Even if the plankton sampling included much larger organisms, as suggested by the commenter, this would cause the percentage of organisms affected to decrease even further.

EIR/EIS Section 4.5.1 establishes that the existing MRWPCA outfall is associated with rocky habitat in the form of ballast rock that supports a rich hard-substrate assemblage and that the majority of the seafloor habitat surrounding the outfall is soft substrate with associated infaunal and megafaunal species. EIR/EIS Figure 4.5-2 clearly indicates, to scale and with an arrow, the hard substrate habitat at the "MRWPCA Outfall (Existing)" and the text, as indicated above, indicates that the outfall consists of artificial hard substrate habitat and references the figure to illustrate the extensive areas within Monterey Bay that contain hard substrate habitat. Additionally, experienced marine biologists who routinely conduct diver and submersible assessments of hard and soft substrate habitats and assemblages reviewed the video footage (referenced in the EIR/EIS as Ballard, 2014) of the MRWPCA outfall inspection as part of the EIR/EIS preparation and provided the information on species composition of sessile and motile marine species inhabiting the ballast rock along the outfall, thereby negating the need to conduct additional field investigation to gather already available information. Furthermore, the potential impact analysis of project activities considered the species that make up both soft and hard substrate communities inhabiting the Monterey Bay near shore region.

Marina-66 EIR/EIS Table 4.5-2 lists all of the State and Federal special status species known and documented to have any potential to be present within MBNMS. The basis for determining their potential occurrence within the study area is provided for each species within the table notes as well as within the table itself, and is based on multiple scientific sources, all of which are listed in EIR/EIS Table 4.5-2. Merely because a specific marine species is known to occur within MBNMS, it is not necessarily present in the Study Area. MBNMS stretches between Rocky Point, located north of the Golden Gate to Cambria in San Luis Obispo County and 30 miles offshore, encompassing approximately a quarter of the California coast; the project study area encompasses less than 0.1 percent of MBNMS. Consequently, individual species may occur within MBNMS but not within the project study area. Employing scientifically established and documented natural life history and behaviors of an individual species, including geographic occurrence, is an acceptable and well-established methodology for determining the potential presence of an individual species to be present in a given location along the California coast. NOAA, CDFW and multiple universities and research institutes already extensively monitor the marine mammal population within MBNMS.

The studies and information presented in the EIR/EIS are referenced in Table 4.5-2 and demonstrate the scientific integrity of the analysis of species distributions. For example, MBNMS, 2016b, cited in the Table, explains that the Minke whales in Monterey Bay are typically observed inshore of 100 nautical miles and on occasion have been observed within 1.9 nautical miles (2.1 statute miles) of shore. They are normally observed as single individuals and not in groups. Typically, Minke whales are observed near and over natural hard bottom habitat where they typically feed on juvenile rockfish, which does not occur within the project study area. Although both resident and migrating Minke whales occur offshore in California, the only apparent sightings of resident Minke whales in Monterey Bay have been dozens of miles south of the project area along the Big Sur Coast. Sightings of Minke whales in Northern Monterey Bay by whale watching boats out of Santa Cruz occur less than 10 percent of the time, indicating limited presence in Northern Monterey Bay where the Project area is located. For all of these reasons, the determination that the likelihood of occurrence of a Minke whale in the project study area was assessed at Low to Moderate. Additional studies were not required for this EIR/EIS assessment. No changes have been made to the potential for any of the special status species listed in EIR/EIS Table 4.5-2 to occur within the study area.

Furthermore, any special status species with any potential to occur within the study area was included in the impact assessment, even if a specific species of fish, marine mammal, or reptile is identified as only having a low or moderate potential for occurrence in the Project Study Area, or not specifically cited in the text. The commenter correctly identified an inconsistency between Table 4.5-2 and the text on Draft EIR/EIS page 4.5-23; the text is in error and has been revised as follows:

> Chinook salmon, depending on the run, is State endangered or threatened, federally endangered or threatened and has a low to moderate ~~to high~~ potential to occur in the study area.

Finally, the commenter expressed concern about the EIR/EIS consideration of the white shark and tidewater goby in the impact assessment. Both species are presented in the EIR/EIS Table 4.5-2. The tidewater goby only occurs in Elkhorn Slough, Bennett Slough and the Salinas River, all of which are outside the designated project study area. Hence, its potential for occurrence in the context of the proposed project analysis alone would have been "not present." However, because the cumulative impact analysis included the DeepWater Desalination Project, which has elements within Moss Landing and the Elkhorn Slough, its potential for occurrence was increased to Low. As indicated above, all species with the potential to occur within the project study area were considered in the impact analysis, or in the cumulative analysis as applicable.

Marina-67 The commenter's assertion that the discharge of brine "will cause significant adverse impacts on the environment" is not consistent with the results of the extensive discharge modeling and analysis that is presented in EIR/EIS Section 4.3and

Appendix D1, and with the implementation of Mitigation Measures 4.3-4 and 4.3-5 which are also discussed in Section 4.3. The assertion that the project "would result in the decimation of 2,010 - 5,900 square meters of market squid habitat" is not a conclusion in the EIR/EIS. Examination of the text in question (Draft EIR/EIS pages 4.5-60 and 4.5-61) reveals no use of the word "decimation," and the impact analysis was based on brine discharge modeling, which found that brine >2 ppt above ambient salinity would not contact the seafloor. The calculation of the area greater than 2 ppt above ambient levels, as explained on Draft EIR/EIS page 4.5-61, was compared to the "area of suitable spawning habitat in Monterey Bay south of Monterey Submarine Canyon, ***which is the greatest focus of commercial fishing activities associated with spawning***" (emphasis added) and was intended to provide a worst-case assessment, should the area of brine >2 ppt above ambient happen to contact the seafloor, which the modeling demonstrated it would not. As explained on Draft EIR/EIS page 4.3-81, "The area where salinity exceeds the 2 ppt threshold under the worst case scenario (brine only) around each of the 129 outfall diffuser jets is a conical area with a volume on the order of 8.5 cubic feet (approximately 8 feet long by 2 feet in diameter), located approximately 2 feet above the seafloor (Figure 4.3-10)." Consequently, the conclusion that the proposed project would not violate water quality standards and would, therefore, be consistent with the MLMA, remains valid.

EIR/EIS Section 4.5.5.2 discusses the potential effects of elevated salinity from brine discharge, the potential effects of other brine discharge contaminants, and a discussion of the potential effects of brine discharge shear stress; all marine biological species were considered in the analysis. The public and decision-makers have been provided with a meaningful analysis (see response to comment Marina-61 regarding baseline) and have not been deprived of relevant information. As the EIR/EIS states in the conclusion of Impact 4.5-4, "Impacts on marine biological resources, including MBNMS resources, during operations of the proposed MPWSP would be less than significant."

Marina-68 The EIR/EIS conclusion that "… construction and operational impacts of the Project are not expected to result in the degradation of essential fish habitat within Monterey Bay" is supported with data and analysis. EIR/EIS Tables 4.5-3 and 4.5-4 list MSA managed fish species, and their potential to occur within the project study area in various life stages. EIR/EIS Figures 4.5-3 and 4.5-4 provide illustrations of rockfish conservation areas and designated EFH areas within Monterey Bay near the project study area. Additionally, EIR/EIS Section 4.5.1.3 presents the special status marine species and specifically discusses managed fish and invertebrate species. As designated special status species (Section 4.5.1.3), all the MSA listed species were considered in assessing Impacts 4.5-1 through 4.5-6, and 4.5-C (EIR/EIS Sections 4.5.5.1, 4.5.5.2 and 4.5.6).

Marina-69 Underwater noise levels measured in San Francisco Bay were not used in the EIR/EIS analysis. The only ambient underwater noise levels used in the analysis were those from a study located offshore Fort Ord and within the project study

area; the identified underwater ambient noise from these studies was on average 138 dB (see EIR/EIS Section 4.5.5.1, Impact 4.5-1).

The potential risk for discharge of drilling fluids into the marine environment was presented and evaluated in EIR/EIS Section 4.3.5.1 under Impact 4.3-2; the potential threat to marine biological resources would be negligible to non-existent because drilling fluids would consist of water, bentonite mud, and/or environmentally-inert biodegradable additives. Regardless, the use of any slant well drilling fluids would require mandatory compliance with NPDES Construction General Permit requirements that would involve the implementation of erosion and stormwater control measures so as to prevent substantial adverse effects on water quality during construction.

There was no underwater noise monitoring conducted during the test slant well drilling.

Marina-70 The EIR/EIR has been revised based on guidance from the CCC, and is based on the definition of primary habitat provided in the City of Marina's LCLUP and the definition of ESHA provided by the CCC and in other Local Coastal Plans (e.g., North County and City of Seaside). These revisions are consistent with the findings from the CCC staff report for the test slant well and assume that the entire subsurface slant well project area would be considered primary habitat by the City of Marina, and ESHA by the CCC.

Consistent with the comment, the EIR/EIS acknowledges that the project would result in impacts to primary habitat in Impacts 4.6-2 and 4.6-7. As described in these impact statements, impacts to primary habitat and ESHA would be reduced to less than significant with implementation of prescribed mitigation measures. The EIR/EIS adequately analyzes the proposed project's consistency with the City of Marina's LCLUP in Impact 4.6-4 and acknowledges, as the commenter describes, that the project would be inconsistent "with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact." See also response to comment Marina-94.

The EIR/EIS does not suggest that the project's conflict with the City of Marina's LCLUP would be circumvented by relying on Section 30260 of the Coastal Act. The EIR/EIS simply states that, for the test slant well, the CCC was ultimately able to approve the project consistent with the Coastal Act by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned. CalAm will apply to the City of Marina for a Coastal Development Permit during the permitting process, which is separate from this CEQA/NEPA process. The City of Marina will need to decide whether or not to issue a Coastal Development Permit for this project. See EIR/EIS Section 3.5, Table 3-8. See also the response to MCWD-130 in Section 8.5.2.

Marina-71 As the commenter states, the Terrestrial Biological Resources study area includes a 50-foot buffer around the project area. The study area for the evaluation of Noise and Vibration impacts is described in EIR/EIS Section 4.12.2 as encompassing the project area and the nearest potentially affected sensitive receptors to the proposed facilities.

As stated in EIR/EIS Section 4.6.1.1, the Terrestrial Biological Resources study area was established as the anticipated area where direct and indirect impacts to sensitive biological resources may occur. The majority of the length of the project would include the installation of pipelines (approximately 6-inch to 42-inch in diameter) within a narrow linear work area. Due to the general duration, the project area, and the anticipated impacts, a 50-foot buffer of the project area was determined to provide an adequate analysis of existing conditions and to evaluate potential direct and indirect impacts on sensitive biological resources. Mitigation measures include pre-construction survey areas beyond 50 feet of the project area to ensure that indirect impacts to special-status species are avoided and/or minimized. For example, Mitigation Measure 4.6-1i requires that preconstruction "surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds" and Mitigation Measure 4.6-1j requires a survey for American badger within 100 feet of the project area.

Marina-72 The electrical control panel and electrical control building at the slant well site at CEMEX are no longer part of the proposed project and were inadvertently mentioned in Impact 4.6-1. In response to this comment, the reference to these facilities in Impact 4.6-1 has been removed. This revision does not affect the impact analysis and conclusions, which remain relevant to the subsurface slant wells, and does not result in a need to recirculate the Draft EIR/EIS because it does not disclose a new or substantially more severe impact.

The EIR/EIS accurately describes the location of the proposed slant wells as mainly in the eastern side of the vegetated sand dunes. The majority of the wells would be located within largely unvegetated areas east of the heavily vegetated areas of the sand dunes. However, in response to this comment, the following text in Section 4.6.1.10, Sensitive Terrestrial Biological Resources in the Study Area has been clarified as follows:

> The <u>majority of the</u> remaining well clusters would be installed on the eastern side of the <u>heavily</u> vegetated <u>area of the</u> sand dunes.

Similarly, the following text in Impact 4.6-1 has been revised:

> The <u>majority of th</u>e remaining nine wells (Sites 2 through 6) would be installed on the eastern side of the <u>heavily</u> vegetated <u>area of the</u> sand dunes and constructed on concrete pads.

Although Impact 4.6-1 describes that some of the impacts of construction of the subsurface slant wells on western snowy plover and central dune scrub habitat would be temporary, such impacts are not "dismissed" because of the temporary nature of slant well construction. Rather, as indicated on Draft EIR/EIS pages 129 and 130, temporary loss of 8.0 acres and permanent loss of 1.0 acre of western snowy plover habitat, direct and/or indirect impacts on individual plovers, and several other construction-period impacts on special-status species, such as causing "temporary flight of breeding birds, nest abandonment, or nest failure," would be significant because of potentially lasting effects on nesting behavior in a particular area. These impacts have been qualified as temporary because the direct cause of the impacts (i.e., construction activities and disturbance of habitat) would be temporary, but for the reasons described in EIR/EIS Section 4.6.4 have been determined to be significant, because of the intensity and duration of the impact, rarity and context of the species, and susceptibility of the species to disturbance (i.e., including the potential for longer-term harm to result from temporary disturbance, such as in the event of nest failure). Impact 4.6-1 has been revised to clarify that construction-period impacts described above may have lasting effects on behavior that would be significant. This impact discussion analyzes these potential impacts and includes mitigation measures that would reduce such impacts to less than significant through implementation of avoidance and minimization measures, such as directing work to be done outside of the nesting season or requiring visual separation and/or noise reduction measures.

The terrestrial biological resources section of the Draft EIR/EIS states that portions of some project facilities may overlap with portions of other project facilities. The Draft EIR/EIS was structured so that potential impacts were analyzed for each project facility. However, discrete work limits for portions of these facilities that would overlap with each other have not been defined. During construction these overlapping work areas would not be divided into work areas for each project component, but would be treated as one work area. The Draft EIR/EIS quantifies the impact area of each project facility throughout the document. For example, Impact 4.6-2 on page 4.6-192, states "Earthmoving activities associated with installation of the Castroville Pipeline could result in the temporary loss of approximately 0.004 acre of central dune scrub, 0.15 acre of northern coastal scrub, and 0.06 acre of riparian woodland and scrub." The impact area and required mitigation for the entire project would be based on the total impact area within the entire project footprint, which would account for areas of overlap. Impacts 4.6-1, 4.6-2, 4.6-3, and Section 4.6.6, Cumulative Effects of the Proposed Project in the Final EIR/EIS have been revised to include the total acreage of sensitive biological resource habitat that would be impacted by the entire project.

Marina-73 Other than the portion that would be off-hauled (approximately 100 cubic yards), spoils returned from drilling the slant wells (approximately 1,600 cubic yards) would be composed of sand, and would form a layer less than 2 inches thick when spread within the 8-acre permanent disturbance area. Although this sand would

initially contain salts, the salinity of the sand spread within the construction disturbance area would be reduced after rains wash the salts from this layer, and would not permanently impact this area. Spoils would not be placed on top of the topsoil because topsoil would be salvaged and replaced after disturbance as required by Mitigation Measure 4.6-2b. Impact 4.6-1 in Section 4.6 has been revised to include this information; however, because this impact would be less than significant, this information does not trigger a need to recirculate the Draft EIR/EIS.

Marina-74 Impact 4.6-C does not conclude that the project's contribution to cumulative impacts on western snowy plover would be less than significant for the reasons that the commenter describes. Rather, Impact 4.6-C states that while the project's contribution would be significant, the residual effects of the project on western snowy plover after mitigation would not have a significant contribution because mitigation would avoid the potential impacts or minimize them to a degree that is not cumulatively significant. In response to this comment, Impact 4.6-C has been revised in the Final EIR/EIS to clarify the effects of the mitigation measures and how residual impacts would be minimized, as well as to describe the availability of western snowy plover habitat within the Monterey Bay Area. The cumulative impact analysis does account for the permanent, ongoing disturbance impacts related to project maintenance. Further, as described in Master Response 14, CEMEX Settlement Agreement, the closure of the CEMEX plant and planned restoration of the site now offers opportunities to implement compensatory mitigation for the project within adjacent, potentially high-quality habitat areas.

Marina-75 Impacts from slant well maintenance are evaluated in EIR/EIS Section 4.6.5.2. Slant well maintenance would disturb roughly 6 acres every 5 years (see Section 3.4.1). This would include access to and maintenance of the slant wells. Slant well operational impacts, including maintenance activities, are described in Impact 4.6-6 on Draft EIR/EIS page 4.6-235 and Impact 4.6-7 on Draft EIR/EIS page 4.6-244.

Marina-76 The biological resource information described in Section 4.6, Terrestrial Biological Resources, is based on surveys conducted by ESA, Arcadis, and AECOM between 2012 and 2016; see EIR/EIS Section 4.6.1.2.

Impact 4.6-6 explains that coast buckwheat, the host plant for Smith's blue butterfly, occurs at the site and that, "maintenance activities have potential to impact up to approximately 1.6-acre of Smith's blue butterfly habitat." The 1.6-acre impact area is the area of coast buckwheat mapped during surveys conducted by ESA, Arcadis, and AECOM between 2012 and 2016 within the slant well maintenance area. This impact assessment is based on multiple surveys conducted at the site and provides an accurate assessment of impacts based on baseline conditions.

Impact 4.6-6 identifies the mitigation measures that would be implemented and describes how they would ensure that operational impacts to sensitive biological resources are reduced to a less-than-significant level for each project facility. Mitigation Measure 4.6-1n states that CalAm shall develop and submit a Habitat Mitigation and Monitoring Plan (HMMP, not a Hazardous Materials Management Plan) to the appropriate resource agencies for approval. It will be up to each of the permitting agencies (i.e., CCC, CDFW, CCRWQCB, USACE, USFWS, MBNMS, local agencies) to determine if it expects the HMMP to be revised for each maintenance cycle or if one umbrella HMMP would suffice.

Marina-77 The mitigation measures cited in the comment are adequate and appropriate. Mitigation Measure 4.6-1c includes a list of several general measures that would be implemented to avoid and minimize impacts to sensitive biological resources, including a measure to remedy erosion. As described in Mitigation Measure 4.6-1a, a qualified biologist and/or qualified biological monitor would be onsite during all fencing and ground disturbance activities and would identify erosion as they monitor these activities. Mitigation Measure 4.6-1a also includes definitions of qualified biologist and qualified biological monitors. The term "qualified biologist" or "qualified Lead Biologist" for surveys is defined as an individual who shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology or closely related field and has demonstrated prior field experience using accepted resource agency techniques for the survey prescribed, and who possesses all appropriate USFWS, NMFS, and CDFW permits.

The term "biological monitor" or "qualified biological monitor" is defined as someone holding similar educational credentials to those of a qualified biologist and who has functioned as an environmental inspector or monitor on at least two construction projects within the preceding two years. This terminology is commonly employed in permits issued by the regulatory agencies; therefore, the use of it anticipates requirements that are likely to be incorporated into conditions of project approval. Erosion is a common term and a process familiar to those experienced with construction monitoring activities. A qualified biologist or qualified biological monitor has the capability to identify erosion, determine how the erosion shall be remedied, and to determine if it has been remedied.

Similarly, for Mitigation Measure 4.6-1j, a qualified biologist would conduct the preconstruction survey to determine whether the dens are inactive. As described in Mitigation Measures 4.6-1a, the qualified biologist would have the appropriate qualifications to conduct preconstruction surveys for badgers and to identify whether a den is inactive.

Regarding the use of the phrases "to the extent feasible" and "when feasible" in Mitigation Measure 4.6-2b and others, the mitigation measures include a two-tiered approach to mitigate impacts. If the first option is not feasible, then the mitigation measure provides a second option that would fully mitigate the impact. For

example, Mitigation Measure 4.6-1f, Avoidance and Minimization Measures for Smith's Blue Butterfly, states, "Construction of project elements shall be planned to avoid mapped host plants for Smith's blue butterfly whenever feasible" then "If it is not feasible to avoid disturbance to host plants during project construction, the following shall be implemented…" If it would not be feasible to avoid the host plant, then CalAm would implement measures to fully mitigate the impact.

In response to this comment, the Mitigation Measures 4.6-1c, 4.6-1e, 4.6-1h, 4.6-1i, 4.6-1k, 4.6-2b, and 4.6-6 have been revised to either include or to clarify this two-tiered approach.

Marina-78 Mitigation Measure 4.6-1i requires the implementation of avoidance and minimization measures for nesting birds. This measure requires that if work is conducted during the nesting season, then preconstruction surveys would be conducted within 14 days prior to site clearing and/or ground disturbance. In the response to comments from the California Department of Fish and Wildlife (CDFW), the measure has been revised from 14 days to 10 days. See the response to CDFW-6 in Section 8.4.2 for additional information. Mitigation Measure 4.6-1i follows the guidelines requested by CDFW, the agency responsible for enforcing California Fish and Game Code policies protecting special-status bird species. The measure adequately reduces impacts on nesting birds to less than significant for the purposes of CEQA and NEPA and follows the request by CDFW.

Similarly, Mitigation Measure 4.6-1 h, which requires implementation of avoidance and minimization measures for western burrowing owl, follows the guidelines established by CDFW in its Staff Report on Burrowing Owl Mitigation (CDFG, 2012). This report is the standard guidance report prepared and approved by CDFW to mitigate impacts to western burrowing owl. The measure adequately reduces impacts to western burrowing owl to less than significant for the purposes of CEQA and NEPA because it requires implementation of measures for avoidance of take, including establishing disturbance buffers and exclusion from burrows as outlined in standard CDFW guidance, and compensatory mitigation for loss of breeding and/or wintering habitat. See the response to comment Marina-77 regarding the commenter's statement that this measure is vague and fails to guarantee any effective mitigation.

In response to this comment, Mitigation Measure 4.6-6 has been revised to change "should" to "shall."

Marina-79 The Draft EIR/EIS did quantify the amount of permanent and temporary impact on special-status species habitat and sensitive natural communities for each facility throughout Impact 4.6-1 and Impact 4.6-2. For example, on page 4.6-132 of Impact 4.6-1, the Draft EIR/EIS states, "construction of the MPWSP Desalination Plant would result in the temporary loss of 10 acres and permanent loss of 15 acres of potential California red-legged frog and California tiger salamander upland

habitat." On page 4.6-189 of Impact 4.6-1, the Draft EIR/EIS states, "earthmoving activities associated with installation of the Source Water Pipeline could result in the temporary loss of approximately 6.7 acres of central dune scrub." Impacts 4.6-1, 4.6-2, and 4.6-3, and Section 4.6.6, Cumulative Effects of the Proposed Project have been revised to include the total project impact acreages. The amounts of permanent and temporary impact are reported in the Final EIR/EIS to the level of detail available at the preliminary design stage and include a reasonably conservative estimate of the extent of impacts. Further project refinements will occur, which are expected to reduce the impact area because preliminary estimates of areas impacted were intended to be conservatively large, and more detailed quantification of impact areas will be incorporated into the permitting process and implementation of mitigation measures, which provide that compensation acreage would be based on final design and construction specifications.

The commenter inaccurately states that "the HMMP is supposed to address the need for compensatory mitigation." Rather, Mitigation Measure 4.6-1n states that the HMMP would "outline measures to be implemented to, depending on the mitigation requirements, restore, improve, or re-establish special-status species habitat, sensitive natural communities, and critical habitat on the site." The HMMP itself would not address the need for compensatory mitigation. Compensatory mitigation requirements and ratios for permanent impacts on special-status species and sensitive natural communities are described in the species and sensitive natural community specific mitigation measures in Impact 4.6-1 and 4.6-2. The performance standards and monitoring duration are included in the revised special-status species and sensitive natural community-specific mitigation measures included at the end of this response. Mitigation Measure 4.6-1n states that the HMMP shall incorporate the performance standards described in the revised special-status species and sensitive natural community specific mitigation measures.

The project proponent is not required under CEQA or NEPA to already own or otherwise have rights to available mitigation lands to satisfy the requirements of proposed mitigation measures. Although proposed mitigation measures must be demonstrated to be feasible, at this time, the project or an alternative has not yet been approved, and mitigation measures for the project or an alternative have not yet been adopted or been required by any regulatory agency, that would result in the need for CalAm to acquire these lands. To confirm the feasibility of implementing measures requiring compensatory mitigation, ESA and AECOM biologists have spoken with Jacob Martin at USFWS and Kriss Neuman from Point Blue on July 20, 2017, to discuss potential lands that may be available and that would be suitable for mitigation. Representatives from CDFW were unavailable for the July 20, 2017 meeting. During that conference call, the existing CEMEX property, which will be required to end the mining operations in the near future (see Master Response 14, CEMEX Settlement Agreement), was identified as the most likely site that could be restored, enhanced, or preserved to provide appropriate compensatory mitigation for project impacts on coastal species.

Other potential specific lands identified by ESA biologists that may be available and suitable for compensatory mitigation land include Sparling Ranch Conservation Bank (for California tiger salamander and California red-legged frog) and the Monterey Regional Park District (special-status plants). CalAm would be held to any compensatory mitigation measures described in the Draft EIR/EIS and would be required to secure or acquire any necessary compensatory mitigation as a condition of project implementation.

In response to this comment, Mitigation Measures 4.6-1d, 4.6-e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-2b, and 4.6-3 have been revised to clarify mitigation ratios, methods for mitigating the impacts, and performance standards. These revised measures have been developed based on measures that are feasible, available, and typically included in CEQA/NEPA documents and in regulatory permit authorizations and that have been vetted by state and federal regulatory agencies with jurisdiction over the affected resources in the past. Therefore, no contingency measures are necessary given the evidence that the proposed measures are feasible and available and will be effective.

These revisions do not result in a need to recirculate the Draft EIR/EIS. As described in CEQA Guidelines Section 15088.5, "New information added to an EIR is not 'significant' unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon … a feasible way to mitigate or avoid such an effect … *that the project's proponents have declined to implement*" (emphasis added). Revised Mitigation Measures 4.6-1d, 4.6-e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-2b, and 4.6-3 do not disclose any new or more severe impacts and are not considerably different from those analyzed in the Draft EIR/EIS because they merely clarify or amplify the requirements of the measures analyzed in the Draft EIR/EIS, and the project proponent (CalAm) has not declined to implement these measures as revised (to the contrary, the Lead Agencies would enforce these measures if and when adopted in support of approval of the project or an alternative).

Marina-80 CEQA and NEPA do not require that mitigation measures refer to specific permits. The requirement to obtain an Incidental Take Permit is not required to be listed in Mitigation Measure 4.6-1o. Mitigation Measure 4.6-1o does state that "if California red-legged frog or California tiger salamander are observed within the construction area, a qualified biologist shall relocate the individual according to the relocation plan above and only with authorization from USFWS and CDFW." Authorization would include an Incidental Take Permit from CDFW for take of California tiger salamander as the commenter describes. EIR/EIS Section 3.5 explains that the proposed project would be subject to various regulations and could require discretionary permits from federal, state, and local jurisdictions. EIR/EIS Table 3-8 summarizes the permits and authorizations that would likely be required to build, operate, and maintain the proposed project, and includes the CDFW Incidental Take Permit.

Mitigation Measure 4.6-1a specifies that the qualified biologist that would implement surveys would possess all appropriate permits, including any CDFW permits that would be required of an ITP.

Mitigation Measure 4.6-1o was drafted to include conditions that would be consistent with CDFW's ITP requirements. In response to comments from CDFW, this measure has been revised. See the response to comment CDFW-8 in Section 8.4.2. If take of state listed species, including California tiger salamander, cannot be avoided, CalAm would apply for an ITP from CDFW prior to project implementation during the permitting process, which is separate from this CEQA/NEPA analysis.

In regard to Mitigation Measure 4.6-1g, the commenter correctly states that possession of a CDFW Scientific Collection Permit does not authorize an individual to capture and/or relocate sensitive species for CEQA compliance and, therefore, this measure does not adequately mitigate impacts to black legless lizard, silvery legless lizard, and coast horned lizard. However, Mitigation Measure 4.6-1g provides measures that describe survey methods and development of a relocation plan, in addition to the measure that the commenter lists, to adequately mitigate potential impacts to these lizards.

Marina-81 See the response to comment Marina-79.

Marina-82 Response to comment Marina-79 addresses the commenter's statement that the "Draft EIR/EIS fails to identify the lack of comparable areas suitable for compensatory mitigation …" and "fails to identify appropriate performance standards for 'success' or the duration of annual monitoring"

Impacts from periodic maintenance of the subsurface slant wells are analyzed in Section 4.6.5.2, Operational Facility Siting Impacts. As described in Impacts 4.6-6 and 4.6-7, continual disturbance of the approximately 6-acre slant well area every five years is considered a permanent impact loss of western snowy plover habitat and central dune scrub habitat. The compensatory mitigation requirement included in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, and 4.6-2b would only be applied once.

In response to this comment, Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, and 4.6-2b have been revised to clarify this point.

Marina-83 As stated in Section 4.6.5.1 on Draft EIR/EIS page 4.6-171, "Mitigation Measure 4.6-1e applies to: the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance

Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Terminal Reservoir, Ryan Ranch-Bishop Interconnection Improvements, Main System–Hidden Hills Interconnection Improvements, and staging areas." This measure applies to all project components where special-status plant species have the potential to occur, as summarized in Table 4.6-6, and not just to the Terminal Reservoir. Mitigation Measure 4.6-2b addresses impacts to sensitive communities.

Marina-84 Compliance with regulations, statutes, ordinances, and the law is required of contractors, and is not optional. The relevant regulations are summarized in Section 4.7.2, Regulatory Framework, and contractors are legally required to know and comply with all details of the relevant regulations. Reprinting the entire text of the relevant regulations is not reasonable or necessary.

The source water pipeline would carry slant well feedwater, not potable water. The feedwater would not become potable until after treated at the desalination plant and then distributed through other pipelines not located adjacent to the outfall pipeline. Therefore, the placement of the source water pipeline near the MRWPCA outfall would not violate 22 CCR 64572.

In response to this comment, the Project Consistency with Plan, Policy, or Ordinance entry has been revised as follows:

> ~~Potentially Inconsistent~~ Consistent: Some of the project components would result in excavation in areas within the Former Fort Ord. Although cleanup activities have removed known contamination, previously-unknown contamination may be discovered. This issue is addressed in Impact 4.7-2, which requires compliance with relevant regulations.

As stated in Table 4.7-3, there would be no facilities within the City of Marina, including the slant wells, that would store hazardous materials. Further, the construction of the slant wells would not use hazardous materials, as defined in Chapter 6.5 of the California Health and Safety Code. In addition, City Municipal Code Section 8.12.070 exempts small quantities of less than 500 pounds or 55 gallons a month, whichever is less, of a hazardous material. The construction and maintenance of the slant wells would not use hazardous materials above reportable quantities. Therefore, this code would not apply.

Marina-85 EIR/EIS Section 4.7 (Hazards and Hazardous Materials), concludes in Section 4.7.3 that impacts related to hazards or hazardous materials will not impair the implementation of an adopted emergency response plan, during construction or operation. However, the analysis for potentially significant and unavoidable traffic and circulation impacts during project construction due to potentially concurrent construction of the project and other foreseeable cumulative projects is evaluated in EIR/EIS Section 4.9.6, Cumulative Effects of the Proposed Project. The analysis

notes that the schedules of the cumulative projects are unknown and it is not possible to determine whether a number of cumulative projects would occur at the same time and adversely impact traffic, thus resulting in the conservative conclusion that the cumulative impact could be significant and unavoidable. To address this, the EIR/EIS provides Mitigation Measure 4.9-C, Construction Traffic Coordination Plan, which would require CalAm to coordinate with the appropriate planning agency within each affected jurisdiction to develop and implement a Construction Traffic Coordination Plan to reduce the impact to less than significant. However, the conclusion of significant and unavoidable is retained because there is no guarantee that local agencies would participate in such coordination efforts during construction. While local and regional traffic and roadway capacity disruptions could contribute to a cumulative impact during construction, none of the roadways would be completely closed, the mitigation provides for alternative routes and this impact would therefore, not necessarily impair implementation of, or physically interfere with an adopted emergency response plan.

Marina-86 The analysis for encountering unknown hazardous materials sites is addressed in Impact 4.7-2. The text notes that "… although previous site cleanup activities have remediated known contamination at some sites, it is still possible that undiscovered contamination may be present, given the land use history in the project area." Implementation of Mitigation Measures 4.7-2a (Health and Safety Plan) and 4.7-2b (Soil and Groundwater Management Plan) would reduce this potential impact to less than significant. Because the potential for encountering unknown contamination has been addressed, no revisions were made to the EIR/EIS in response to this comment.

Marina-87 As explained in Impact 4.7-1, the well drilling methods would not use pressurized drilling techniques and frac-out events are not anticipated. Neither of the drilling methods would use fracking techniques or the chemicals used in fracking.

Marina-88 Mitigation Measures 4.7-2a and 4.7-2b do contain adequate performance standards. Mitigation Measure 4.7-2a, which is required by 29 CFR 1910.120 to include "a summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals." The maximum exposure limits in accordance with 29 CFR 1910.120 are specifically designed to meet both public and construction worker safety standards.

Mitigation Measure 4.7-2b states that "CalAm or its contractor shall develop and implement a Soil and Groundwater Management Plan that includes a materials disposal plan specifying how the construction contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner." The RWQCB or Cal EPA human health screening levels are discussed in Section 4.7.2.2 in the subsection titled Screening Levels for Hazardous Materials in Soil or Groundwater. "Compliance in a lawful manner," as stated in Mitigation Measure 4.7-2b, includes using the cited screening levels.

Marina-89 Mitigation Measure 4.7-2b would not apply to the slant wells and the spreading of drilling spoils at the slant well location because, as discussed in EIR/EIS Section 4.7.1, there would be no hazardous materials sites at the slant well locations and none would be expected on this dune sand location. As discussed in Section 3.3.2.1, Subsurface Slant Wells, the sand-bentonite mud slurry generated during the drilling of the first 100 feet or so of the dry dune sands would be containerized and transported offsite for disposal as non-hazardous waste at a facility permitted to accept the material. The drilling spoils generated below the first 100 feet or so would consist of sand and seawater and possibly some potable water; no bentonite mud or other additives would be used to drill this portion of the slant wells. The water and sediment mixture generated during the lower portion of slant well drilling and construction would be placed in settling tanks, as necessary, to allow sediment to settle out. The volume of water produced during this drilling phase would be small enough that the construction contractor would dispose of the clarified effluent by percolating it into the ground at the CEMEX active mining area and not in sensitive dune areas. Drilling spoils generated during the lower portion of slant well drilling would consist of sand and would be spread within the construction disturbance area, not in sensitive dune areas, and would not require offsite disposal.

Marina-90 As discussed in EIR/EIS Section 4.7.1.1 in the subsection on Fort Ord Military Base Seaside Munitions Response Area (MRA), including Site 39 Inland Ranges and Former Fort Ord York School, most of the project components are located outside of MRAs and would not have the potential to encounter UXO. Those project components located within an MRA are located in areas that have already been cleared by the U.S. Army and are within areas disturbed after the closure of Fort Ord. The UXO has already been removed from the proposed areas of disturbance.

Marina-91 See response to comment Marina-90.

Marina-92 EIR/EIS Section 4.7.5.2 discusses the hazards associated with disinfection by products in the Seaside Basin, and presents the history of the ASR water quality analysis. The location of the old test injection well is not relevant since the recent and ongoing operation of the four existing ASR wells offers more contemporary information; see also response to comment USARMY-14 through -16 in Section 8.3.2. EIR/EIS Section 4.4.1 presents the Environmental Setting (see subsections titled Groundwater Quality in the Santa Margarita Sandstone and the Seaside Groundwater Basin, and Water Quality and the Existing ASR System), and Section 4.4.5 presents an analysis of the proposed injection of water into Wells ASR-5 and ASR-6 (see Impact 4.4-4, Impacts Associated with ASR Injection/Extraction Wells). The analysis evaluates the chemical reactions documented from the current injection of treated (and chlorinated) water and concludes that the continued injection of treated water would have the same short-term less than significant reaction. As explained in EIR/EIS Section 4.4.1.4, Pueblo Water Resources prepares annual Summary of Operations reports that document

the ASR system's well performance and water quality, and analyzes the water quality annually to monitor and re-evaluate the degradation rate of the disinfection byproducts every year. Therefore, no revisions were made to the EIR/EIS in response to this comment.

Marina-93 Impaired emergency access as a result of the proposed project is addressed in Section 4.9, Traffic and Transportation, Impact 4.9-4. Cumulative impacts on traffic and transportation, is addressed in Section 4.9.6. See response to comment Marina-85.

Marina-94 EIR/EIS Section 1.5.4.3 discusses other agencies' consideration of the EIR/EIS and identifies the City of Marina's authority in the issuance of a Coastal Development Permit for the slant wells, consistent with its certified local coastal plan. EIR/EIS Table 3-8 lists the anticipated permits and approvals required for the MPWSP and the City of Marina's responsibility under the Coastal Act (Cal. Pub. Res. Code §30000 et seq.) is shown on Draft EIR/EIS page 3-65.

EIR/EIS Section 4.8 addresses the potential impacts of the MPWSP on land use, land use planning and recreation. Section 4.8.2.2 presents the relevant state regulations, in this case the California Coastal Act; and Section 4.8.2.3 presents the local coastal program. The City of Marina's LCLUP is specifically presented on Draft EIR/EIS page 4.8-20, at which point Table 4.8-2 is introduced. Each resource section in EIR/EIS Chapter 4 includes a similar table that summarizes the pertinent regional and local land use plans, policies and regulations that were adopted for the purpose of avoiding or mitigating environmental effects, and indicates project consistency or inconsistency with such plans. Table 4.8-2 presents the applicable regional and local land use plans and policies relevant to land use and recreation from the City of Marina's Local Coastal Land Use Plan, and concludes the proposed project would be consistent with those land use and recreation policies. The text on Draft EIR/EIS page 4.8-29, however, identifies an inconsistency with a policy related to biological resources in Impact 4.6-4.

Impact 4.6-4, which begins on Draft EIR/EIS page 4.6-222, addresses the potential inconsistencies of the proposed project with the City of Marina LCLUP and concludes on page 4.6-224 that construction of the slant wells, the Source Water Pipeline, the new Desalinated Water Pipeline, the new Transmission Main and the staging area at Beach Road "would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact." See also responses to comments Marina-70 and MCWD-150.

Marina-95 It would be premature to evaluate pre-project road conditions, and by extension to identify potential roadway rehabilitation measures, because the roads that would be used for project-related construction access and haul routes are not yet known. As stated in Mitigation Measure 4.9-6, "[t]he construction routes identified in the rehabilitation program must be consistent with those identified in the construction

traffic control and safety assurance plan developed under Mitigation Measure 4.9-1." And as stated in the second paragraph of Mitigation Measure 4.9-1, "[t]he traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project."

Marina-96 The commenter's point that the Walmart parking lot is privately-owned is noted, and Mitigation Measure 4.9-7 is revised as follows:

> **Mitigation Measure 4.9-7: Construction Parking Requirements.**
>
> Prior to commencing project construction, the construction contractor(s) shall coordinate with the affected jurisdictions (i.e., Monterey County, Cal State Monterey, and the cities of Marina and Seaside), and affected parties (i.e., the Walmart Superstore at 150 Beach Road), to design the staging areas to avoid or minimize parking impacts in the publicly used parking lots.

Marina-97 To further reduce construction exhaust emissions of NOx, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards. In addition, Mitigation Measure 4.10-1a has been revised to include requirements for construction equipment powered by electricity or natural gas as well as for the use of other non-diesel powered equipment where feasible. See responses to comments MBARD-1, MBARD-3, and MBARD-4 in Section 8.5.3 for discussion of these revisions. In addition, Mitigation Measure 4.10-1e (Off-site Mitigation Program) has been added to the Final EIR/EIS to require CalAm to work with the Monterey Bay Air Resources District (MBARD) to put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NOx (see response to comment MBARD-6).

Because the availability of high-tiered and non-diesel-powered construction equipment at the commencement of construction of the project is currently unknown, and the Lead Agencies cannot substantiate at this time that off-site mitigation in the form of emissions offsets is feasible (see response to comment MBARD-6), it is acknowledged that the mitigated emissions could be higher than those disclosed in the Draft EIR/EIS. To add clarity to this point, the discussion of Gaseous Criteria Pollutant Emissions in Impact 4.10-1 has been revised as follows (note that the change in mitigated pounds of NOx per day reflects the addition of the Brine Mixing Box and removal of Terminal Reservoir to/from the project subsequent to the release of the Draft EIR/EIS):

> Although the exact amount of mitigated emissions cannot be substantiated at this time due to the uncertainty in equipment availability and unknown feasibility of the off-site mitigation program, ~~F~~for ~~the~~ informational purposes ~~of estimating mitigated construction emissions of NO_x~~, if ~~it is assumed that~~ compliance with Mitigation Measure 4.10-1a would result in equipment emissions that would be equivalent to those that would be associated with

use of engines that comply with Tier 3 engine standards~~.~~ ~~.~~ ~~I~~mplementation of this mitigation measure would decrease maximum daily construction emissions of NO_x to approximately 316~~324~~ pounds per day, which would continue to result in a significant impact with respect to contributing to an exceedance of an ozone and/or NO_2 ambient air quality standard.

With regard to the City of Marina's mitigation suggestions associated with limiting the quantity and types of construction equipment, limiting construction hours of operation, and limiting fuel consumption, as well as the suggestion to undertake construction during the non-ozone season, such measures designed to reduce the daily NOx emissions to a less-than-significant level are infeasible because they would extend the construction period substantially. See response to comment MBARD-6. With regard to stationary sources of construction equipment (or other off-road exhaust emission sources), off-road construction equipment 50 horsepower or more would be covered with implementation of Mitigation Measure 4.10-1. Tier 4 emission standards are the most stringent standards available for off-road construction equipment; therefore, additional requirements to apply RACT or BACT to those sources are not warranted.

Marina-98 Implementation of Mitigation Measures 4.10-1a through 4.10-1c (revised to specify that replanted vegetation would be native, drought-tolerant) would reduce maximum daily construction emissions of PM10 to approximately 68 pounds per day, which would be below the MBARD PM10 significance threshold of 82 pounds per day. Therefore, with implementation of these mitigation measures, it can be concluded that short-term emissions associated with construction of the project would not contribute to an exceedance of a PM10 state or federal standard, and the associated impact would be mitigated to a less-than-significant level. As the impact would be less than significant with mitigation, inclusion of the additional suggested mitigation measures to control fugitive dust is not warranted.

Marina-99 Mitigation Measure 4.10-1c is referenced in Impact 4.10-3 due to its potential to control spore-containing dust from becoming airborne. The measure requires application of fugitive dust control measures to ensure that fugitive dust (which could contain coccidioides immitis spores) would be controlled to the maximum extent feasible.

Valley Fever-related less-than-significant impacts identified in the Draft EIR/EIS are discussed in terms of increased risk to public health in general (see Impact 4.10-3). It is acknowledged that people who have jobs where dirt and soil are disturbed, including construction workers that would be associated with the project, may have a higher risk of getting infected than others. It is important that workers understand the potential hazards related to their work and how to protect themselves. Employers also have responsibilities to control workers' exposure to hazardous materials, including spores that cause Valley Fever. Regulations governing Valley Fever protection and exposure are in the California Code of

Regulations regarding reporting work-connected fatalities and serious injuries, injury and illness prevention, control of harmful exposures, respiratory protection, and employer records-log 300 (8 Cal. Code Regs. §§342, 3203, 5141, 5144, 14300). Compliance with these requirements is compulsory, and failure to protect workers from exposure to spores that cause Valley Fever can result in enforcement actions.

Enforceable federal health standards also apply. The Occupational Safety and Health Administration (OSHA)'s Hazard Communication Standard (29 CFR §1910.1200) requires employees to be informed and trained about potential work hazards and associated safe practices, procedures, and protective measures. Requisite actions taken to comply with the Hazard Communication Standard could include, for example, training workers and supervisors on how to recognize symptoms of Valley Fever and identifying ways to minimize exposure, such as washing hands and changing clothes at the end of shifts. Washing facilities could be provided nearby for washing at the end of shifts. National Institute of Occupational Safety and Health (NIOSH)-approved respiratory protection with particulate filters could be made available to workers who request them. OSHA's respiratory protection standard describes the components of a comprehensive respiratory protection program (29 CFR §1910.134). Because as little as one spore may transmit the disease, the employer should assess the associated risk when potential exposure to dust is unavoidable and determine the level of respiratory protection needed based on the effectiveness of the various types of respirators for spores and particles of dusts. If a half-mask respirator with a particulate filter or a filtering face piece respirator is determined not to provide sufficient protection, e.g., because of a beard or other factor that prevents a close fit, loose-fitting powered air-purifying respirators could be an alternative.

Independent of worker safety laws, air districts also have authority to enforce compliance with air district rules and regulations that control dust and, thereby, have the effect of protecting workers and members of the public from dust-born concerns. The Antelope Valley Air Quality Management District, for example, issued notices of violation in 2013 for uncontrolled dust emissions from a construction project in a Valley Fever endemic area (Trabish, 2013). There is no indication that the MBARD would be any less aggressive in the monitoring and enforcement of the rules and regulations governing dust control in the project area.

Because these worker protection obligations are required, compliance with worker safety, health, and air quality requirements are enforceable independent of the CEQA and NEPA processes, and oversight agencies have demonstrated a willingness to enforce these obligations specifically with respect to exposure to spores that cause Valley Fever, the Lead Agencies have elected not to amend the project Health and Safety Plan to require specific avoidance measures.

Marina-100 See responses to comments Marina-97 and Marina-98, above.

Marina-101 See response to comment USEPA-4 in Section 8.3.5 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS. Revisions to Mitigation Measure 4.11-1 address the comment's concerns about improper deferral by providing specific measures CalAm must take to achieve the GHG emissions performance standard outlined in the measure.

There is currently not enough project design information available to allow the Lead Agencies to describe in detail the carbon footprint for all operational components of the project in the EIR/EIS. Thus, the estimates provided in EIR/EIS Section 4.11 are based on best available information. However, Mitigation Measure 4.11-1 requires that a qualified professional prepare detailed carbon footprint information for project operation based on design specifications, and this would provide the basis for GHG emissions reductions and offsets required in this revised measure.

Marina-102 EIR/EIS Impact 4.12-4 addresses the proposed project's consistency with construction time limits established by the local jurisdictions and discusses the construction time limits allowed by local noise ordinances. This impact analysis explains that the cities of Seaside, Marina and Monterey all have ordinances that prohibit work outside of the allowable hours of construction and specifies the hours and conditions that apply for each jurisdiction. The Marina Municipal Code, Chapter 15.04, Section 15.04.055, limits outdoor construction activities that produce noise adjacent to residential uses, to the hours of 7:00 am to 7:00 pm. Project components in the city of Marina include subsurface slant wells, portions of the Source Water Pipeline, portions of the new Desalinated Water Pipeline, and portions of the new Transmission Main; portions of the new Transmission Main would be located in the city of Seaside. Mitigation Measure 4.12-4, Nighttime Construction Restrictions in Marina, specifically states that "[o]pen trench pipeline construction work within 500 feet to residential uses or transient lodging shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m."

There are other project components (i.e. MPWSP Desalination Plant, Castroville Pipeline) that would require nighttime construction, but these components are not located within a jurisdiction with established construction time limits.

Marina-103 EIR/EIS Impact 4.12-4 addresses the proposed project's consistency with construction time limits established by the local jurisdictions and discusses the construction time limits allowed by local noise ordinances. As indicated in EIR/EIS Impact 4.12-4, no impact associated with conflicts with local construction time limits would occur from implementation of pipelines north of Reservation Road

because these components would not require nighttime construction and/or are not located within a jurisdiction with established construction time limits.

Marina-104 See response to comment USARMY-6 in Section 8.3.2.

Marina-105 See response to comment USARMY-6 in Section 8.3.2.

Marina-106 Mitigation Measure 4.12-1a states in part that, "The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem." It does not include the phrase, "could be implemented." Methods of addressing noise complaints are discussed in Mitigation Measure 4.12-1b, General Noise Controls for Construction Equipment and Activities. The commenter's suggestion of providing an estimated response time for addressing noise complaints is acknowledged as reasonable, and Mitigation Measure 4.12-1a has been revised to include the following a response time requirement:

> CalAm and/or its contractor shall return all calls within 24 hours to answer noise questions and handle complaints. Documentation of the complaint and resolution shall be submitted to the CPUC weekly.

Marina-107 Mitigation Measure 4.12-1c addresses noise controls for nighttime pipeline construction and requires CalAm to submit a Noise Control Plan that "shall identify all feasible noise control procedures to be implemented during nighttime pipeline installation in order to reduce noise levels to the extent practicable at the nearest residential or noise sensitive receptor." Mitigation Measure 4.12-1c requires that at a minimum, "the Noise Control Plan shall require use of moveable noise screens, noise blankets, or other suitable sound attenuation devices be used to reduce noise levels during nighttime pipeline installation activities below 60 dBA L_{eq}." Consistent with CEQA Guidelines Section 15126.4(1)(B), Mitigation Measure 4.12-1c specifies a performance standard that would mitigate the significant effect of the project and which may be accomplished with "other suitable sound attenuation devices." The EIR/EIS does not need to specify why other controls have not been included.

The EIR/EIS contains all of the feasible mitigation measures suggested by the comment. Mitigation Measure 4.12-1d, Additional Noise Controls for ASR-5 and ASR-6 Wells, identifies that barrier blankets are available with a sound transmission class rating of 32, providing 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014). These barriers are also referred to as shrouds that are suggested by the comment. Additionally, see response to comment Marina-102 regarding Mitigation Measure 4.12-4, Nighttime Construction Restrictions in Marina.

Mitigation Measure 4.12-1b, General Noise Controls for Construction Equipment, requires muffled exhaust systems on all combustion engines for construction

equipment. Construction contractors are required to assure that construction equipment with internal combustion engines have sound control devices at least as effective as those provided by the original equipment manufacturer and no equipment is permitted to have an un-muffled exhaust. This measure also requires construction contractors to locate staging areas and stationary noise sources as far from nearby receptors as possible, and shall muffle and enclose them in temporary sheds, incorporate noise barriers, or implement other noise control measures, to the extent feasible.

Engine idling during construction is addressed in Mitigation Measure 4.10-1b, Idling Restrictions.

Electrically powered construction equipment is still in development and only a few equipment types are commercially available. Consequently, electrically powered construction equipment make up a negligible, if any portion of the contracting equipment fleet and are not considered to be a feasible mitigation strategy at present. Mitigation Measure 4.18-1 identifies specific measures that CalAm and its construction contractors would be required to implement as part of a Construction Equipment and Vehicle Efficiency Plan. The measures include a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators.

See also response to comment USARMY-6 in Section 8.3.2.

Marina-108 A significant and unavoidable impact determination was identified with respect to construction and drilling activities associated with the ASR-5 and ASR-6 wells because, due to the proximity of sensitive receptors to this activity, it could not be demonstrated that attainment of a 60 dBA, Leq performance standard would be attainable using shielding techniques. As discussed in the response to comment USARMY-6, continuous 24-hour drilling is a requirement of constructing the ASR-5 and ASR-6 wells to prevent the borehole from potentially collapsing in on itself, filling the borehole with the surrounding geologic materials, and/or binding up the drill bit and trapping it in the borehole and seizing of the drill bit. Therefore, drilling during daytime hours only is not a feasible mitigation.

Marina-109 The closest sensitive receptors to the Desalination Plant site are residences on Neponset Road in unincorporated Monterey County; they are located 2,200 feet and 3,900 feet to the west. Construction of the Desalination Plant would be subject to the *Monterey County General Plan*. Monterey County General Plan Policy S-7.9 restricts evening construction activities within 500 feet of a sensitive land use. Because the nearest sensitive receptors are all greater than 500 feet away from the proposed Desalination Plant site, such construction activities would be consistent with Policy S-7.9. Consequently, construction activities at the Desalination Plant site would occur during times allowed by ordinance.

Marina-110 In response to this comment, the last sentence of Mitigation Measure 4.12-5, Stationary-Source Noise Controls, has been revised to specify that compliance monitoring would be based on post-construction operation of the stationary source and based on a single long-term (24-hour) measurement:

> … Once the stationary noise sources have been installed, the contractor(s) shall conduct a single long-term (24-hour) monitoring of noise levels to ensure compliance with local noise standards. CalAm shall submit a compliance monitoring report to the CPUC.

Marina-111 See responses to comments USARMY-6, Marina-106, and Marina-107.

Marina-112 Impact 4.13-2 addresses the potential for non-hazardous project construction waste to exceed landfill capacity or conflict with the California Integrated Waste Management Act provisions to reuse or recycle nonhazardous construction and demolition waste. Standard procedure for spoils disposal in the quantity that the proposed project is estimated to generate would involve coordination between CalAm or its contractor with the disposal site regarding soils testing for potential hazardous contamination. This requirement is discussed in Impact 4.7-2 in Section 4.7, Hazard and Hazardous Materials. Mitigation Measure 4.7-2b includes a requirement that CalAm or its contractor develop a Soil and Groundwater Management Plan, one required component of which is to "identify protocols for soil testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste. Contract specifications shall mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent." To provide clarification that Impact 4.13-2 addresses non-hazardous construction waste and Impact 4.7-2 addresses potentially hazardous construction waste, a cross-reference to Impact 4.7-2 has been added to the first paragraph under Impact 4.13-2.

Marina-113 The 10 constituents for which a compliance determination with the Ocean Plan water quality objectives cannot be drawn are listed in footnote 37 on Draft EIR/EIS page 4.3-101. The constituents are chlorinated phenolics, 2,4 dinitrophenol, tributyltin, aldrin, benzidine, bis(2-chloroethyl)ether, 3,3-dichlorobenzidine, 1,2-diphenylhydrazine, heptachlor, 2,4,6-trichlorophenol.

As stated on Draft EIR/EIS page 4.3-56, "the reported ambient water quality parameters and constituent levels described in Section 4.3.1.3… are considered to be representative of baseline concentrations; these are used, in part, to assess the proposed project's impacts on water quality." Section 4.3.1.3 describes the existing water quality setting and affected environment of the Monterey Bay, including salinity and temperature, dissolved oxygen, and other constituents such as pesticides, chemicals, and permitted point source discharges.

The proposed project is designed so that the MPWSP Desalination Plant would discharge brine through a multiport diffuser of the existing MRWPCA outfall and would be commingled with wastewater that is currently discharged through the outfall whenever the wastewater is available. As stated on Draft EIR/EIS page 4.3-27, the Ocean Plan requires an owner or operator of a desalination plant to first evaluate the availability and feasibility of diluting brine by commingling it with wastewater. Under Mitigation Measure 4.3-5, Implement Protocols to Avoid Exceeding Water Quality Objectives, the permittee shall complete a water quality assessment to ensure compliance with such Ocean Plan requirements and as part of the MRWPCA NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551), because in the absence of a water quality assessment, the brine may exceed water quality objective thresholds of the Ocean Plan. Implementation of Mitigation Measure 4.3-5 would ensure that data collection of source water and operational discharge quality are undertaken to establish compliance with the Ocean Plan and NPDES permit requirements. Implementation of Mitigation Measure 4.3-5 also would ensure that if the event arises where operational discharges do not meet the NPDES requirements, then operational discharges would not be released as proposed and additional design features, engineering solutions, and/or operational measures (such as additional pretreatment, additional treatment of discharge, retrofitting the existing outfall to increase dilution, and flow augmentation) would be implemented to reduce the concentration of non-conforming water quality constituents. See also response to comment Marina-41 and the discussion of the additional discharge and Ocean Plan Compliance modeling in Section 4.3.5.2 and Appendix D1.

Marina-114 As the owner and operator of the existing beach junction box and outfall, the MRWPCA was granted an Emergency Coastal Development Permit (EDCP No. G-9-16-0031, dated March 14, 2016) from the California Coastal Commission (CCC) to perform emergency protection work following the winter storms. See response to comment MRWPCA-4 in Section 8.5.9. MRWPCA sought approval from the CCC to leave the temporary protection measures in place to allow MRWPCA to conduct feasibility and alternatives analyses of a permanent protection solution (i.e., the Ocean Outfall Beach Erosion Protection Project). The permanent solution will be evaluated separately from this EIR/EIS (but included in the cumulative scenario relevant to the MPWSP; see Table 4.1-2) and would include an analysis of potential wave run-up/storm surge/coastal erosion. Studies conducted by Brown and Caldwell that were submitted by MRWPCA as comments on the Draft EIR/EIS indicate that the capacity of the outfall was not reduced as a result of the winter storms or emergency repairs.

The beach junction box relocation project would involve moving the junction box out of the surf zone and reinstalling it inland by approximately 650 to 1,000 feet. New, pre-lined 60-inch diameter outfall pipe would be installed on the westward side of the junction box, which would connect to the existing ocean outfall. The pipe diameter would match the existing outfall diameter of 60 inches, and the

overall length of the outfall pipeline would not change; therefore, the components would be sized to maintain the current outfall capacity of 81.2 mgd (Brown and Caldwell, 2017). The 2012 Trussell Technologies Outfall Capacity Evaluation is still an accurate assessment and the outfall would continue to be capable of supporting the proposed project's discharge when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant. For these reasons, the replacement of the junction box and outfall would not change the siting or design of the proposed project.

Regarding the outfall's capacity to service the MPWSP and future wastewater flows, refer to response to comment Marina-151.

Marina-115 See response to comment Marina-114 regarding status of the beach junction box, and response to comment MRWPCA-5 for revisions to Impact 4.13-5 and Mitigation Measure 4.13-5a. The new junction box and outfall pipe segment would be pre-lined with material that would protect the components from corrosion. Therefore, the 2015 E2 Consulting Engineering evaluation of the junction box and the first 100 feet of the offshore portion of the outfall are outdated, but the conclusion that anaerobic conditions past the first 100 feet of the offshore outfall would preclude the introduction of oxygen into the concrete/steel interface of the outfall pipe, thereby preventing corrosion, remains accurate. However, as part of the *Beach Structure Evaluation and Protective Measures Technical Memorandum* (2017) Brown and Caldwell recommended that MRWPCA replace all of the WEKO seal clamps inside the nearshore area of the ocean outfall prior to the relocation of the junction box since the existing clamps could be susceptible to chloride corrosion (Brown and Caldwell, 2017).

Marina-116 In its comment letter on the Draft EIR/EIS, the MRWPCA provided additional studies on the condition of the outfall. The *Land Outfall Pipeline Evaluation and Protective Measures Technical Memorandum* (Brown and Caldwell, 2017) concluded that brine effluent would likely cause the land segment of the outfall to deteriorate and recommended the installation of a liner ahead of adding brine to the outfall. Two types of liners were recommended: a Vylon slip liner and a spiral wound HDPE liner. See response to comment MRWPCA-2 in Section 8.5.9, and the resulting revisions to Impact 4.13-5 and Mitigation Measure 4.13-5b.

Marina-117 The RUWAP Desalination Element is listed as cumulative Project No. 31, and the RUWAP Recycled Water Element is included as cumulative Project No. 35 in EIR/EIS Table 4.1-2. If the brine flow of about 1.5 mgd from the RUWAP Desalination Element were added to the 13.98 mgd of brine from the proposed MPWSP, the blended salinity would not be expected to change substantially, because according to the MCWD RUWAP Draft EIR (2004), the brine from the proposed RUWAP desalination process would have an estimated total dissolved solids (TDS) level of 47,600 mg/L, or 47.6 ppt salinity, which is lower than the estimated salinity of the brine that would be generated by the proposed MPWSP

(58.23 ppt, see EIR/EIS Table 4.3-11). As explained in response to comment MRWPCA-9, the dilution analyses presented in Appendix D1 of the Draft EIR/EIS were revised and expanded to include a wider array of flow scenarios. Discharge scenarios involving higher volumes of desalination brine were modeled to assess impacts on water quality and regulatory compliance. As noted in Final EIR/EIS Table 4.3-12, when the brine from the proposed project is blended with 0.1 mgd of trucked brine (see Note a in Table 4.3-10), the combined effluent would have a salinity of 58.1 ppt (Scenario No. 2). If an additional 2.3 mgd of desalination brine (58.23 ppt) was added to the flow (Scenario 15) the combined effluent (58.12 ppt) would increase in salinity by 0.02 ppt; not a substantial change.

As noted in Table 4.1-2, the GWR Project is currently proposed by MRWPCA to include 600 afy of advanced treated water for irrigation use on Fort Ord by MCWD. This 600 afy would replace some of the recycled water that would have been delivered by the RUWAP Recycled Water Element. The expanded GWR project, as currently proposed, has been considered in the cumulative analysis of Alternative 5a and 5b. See response to comment MRWPCA-14 in Section 8.5.9.

Final EIR/EIS Section 4.13.6.2, Cumulative Impacts during Project Operations, has been revised to include the clarifying information in this response.

Marina-118 EIR/EIS Section 4.14.1.2 explains that consideration of visual quality, visual sensitivity and landscape exposure yields a qualitative measure of the aesthetic resource value of a given area, and the meanings of these terms as they are used in the EIR/EIS are defined. EIR/EIS Section 4.14.1.2 explains that landscape units represent combinations of physical and cultural features that contribute to varying degrees of visual quality, and that landscape units are “aesthetic delineations” based upon factors such as land use, location, degree of urbanization, and boundaries of vegetation communities. The EIR/EIS does not use landscape units to represent parcel-specific characterization of land use. Hence, the landscape unit classifications do not necessarily, nor are they intended to “identify existing on-site land uses, visual characteristics, and existing levels of development” for each parcel.

The landscape units described in EIR/EIS Section 4.14.2.2 (titled Landscape Units) are general characterizations intended to describe the “regional landscape” of the project area. In comparison, EIR/EIS Section 4.14.2.3 (titled Visual Setting of the Project Area) presents the on-site land uses, visual characteristics, and existing levels of development of each proposed project facility site. These characterizations are supported by photographs, taken by the preparer of this section, of specific sites for which MPWSP components are proposed.

For example, the site of the desalination plant[3] is depicted in Figure 4.14-3a, Photograph 2, and described on Draft EIR/EIS page 4.14-13. The EIR/EIS explains the site's visual quality is low considering the industrial development surrounding the site (the Dole and Budweiser processing facility, the Monterey County landfill and the regional wastewater treatment plant and drying beds). The visual exposure is low because this site is only seen for short durations by travelers along Charles Benson Road and is screened by rows of trees to the south and west. The visual sensitivity of the site is also rated low, as the area is not located within a vista or view corridor and is not valued for recreational uses.

Further, as presented in EIR/EIS Section 4.14.5, the aesthetic resources analysis is based upon field observations conducted by the author in September 2013 and April 2016, along with a review of project maps and drawings, analysis of aerial and ground-level photographs, and a review of a variety of data available in public records. For these reasons, the visual setting and baseline conditions have been properly established, no changes have been made to the EIR/EIS in response to this comment and a need for recirculation of the Draft EIR/EIS has not been triggered.

Marina-119 EIR/EIS Figure 4.14-2 was previously presented in the April 2015 Draft EIR. The acronyms have not been identified on the figure, they do not add any value, and they have been removed from the Figure; their removal has no bearing on the analysis or impact conclusions. While not identical in each instance, the titles of the photographs in Figure 4.14-2 generally correspond with the landscape units used in Figure 4.14-1, and are sufficiently detailed to allow the reader to determine which photograph corresponds with which landscape unit or units. The similarities between photographs depicting similar landscape units is precisely due to the similarities in the landscape units the photographs are intended to represent.

EIR/EIS Section 4.14.2.2 explains that Figure 4.14-2 presents photographs that are "representative" of the landscape units shown in Figure 4.14-1. Further, EIR/EIS Section 4.14.2.3 notes that the Figure 4.14-2 photographs are intended to represent the "general setting" of the project area. EIR/EIS Section 4.14.2.3 notes that Figures 4.14-3a and 4.14-3b depict specific sites for which MPWSP components are proposed.

Marina-120 The first sentence in EIR/EIS Section 4.14.2.3 explains that "this subsection describes the existing visual character of the areas in which MPWSP components would be constructed." See the Project Area Boundary at the CEMEX property on EIR/EIS Figure 3-3a. The proposed components would be located within the disturbed area associated with prior sand mining activities within the 376-acre CEMEX site.

[3] Pursuant to CEQA Guideline Section 15096(d), in commenting on a Draft EIR, responsible agencies shall limit their comments to those project activities which will be subject to the exercise of power by the agency. The desalination plant is located in unincorporated Monterey County, and not within the City of Marina.

EIR/EIS Section 4.14.2.3 explains that "the visual quality of the Beaches and Coastal Dunes landscape unit is generally high but due to extensive alterations to the natural features at the CEMEX facility, the visual quality of the site is considered moderate. The site's visual sensitivity is high because of its location along the coast and proximity to Highway 1, which is an eligible state scenic highway. The visual exposure of the site is low, since the site is partially screened by dunes and trees and is mainly visible only from automobiles traveling along Highway 1 at speeds of 60 miles per hour. Based on the above-described factors, the site for the proposed subsurface slant wells has a moderate aesthetic resource value."

Figure 4.14-3a, Photo 1, is introduced in the Draft EIR/EIS on page 4.14-10, where it is said to represent the "Beaches and Coastal Dunes landscape unit at the CEMEX sand mining facility" which has high visual quality. The comment is correct to point out that Photo 1 was taken from within the CEMEX facility, as noted in the photo's caption. The second sentence of EIR/EIS Section 4.14.2.3 has been revised to read:

> "In addition, photographs taken from representative ~~public~~ vantage points portray~~s~~ the visual character of these locations."

See also the photo on the cover of the EIR/EIS of the southern portion of the CEMEX property, looking east, which includes the disturbed area inland of the vegetation that would be the location of the proposed slant wells. The existing test slant well is also visible on the cover photo.

Nothing in this response to comment triggers a need for recirculation of the Draft EIR/EIS.

Marina-121 See response to comment Marina-118.

Marina-122 See responses to comments Marina-118 and Marina-120.

Marina-123 EIR/EIS Figure 4.15-1, Culturally Sensitive Areas, points to the "Lapis Mining HD" and Section 4.15.2.3 clearly states that the direct and indirect Area of Potential Effects (APE) of the Source Water Pipeline would traverse the Lapis Sand Mining Plant Historic District. As noted on Draft EIR/EIS page 4.15-21, SWCA, as a consultant to the City of Marina in the evaluation of the test slant well (SWCA, 2014), recommended that the project be redesigned to avoid direct impacts on the Lapis Siding in adjacent areas that do not contain structures associated with the Lapis Sand Mining Plant. In order to avoid the Lapis Siding (see EIR/EIS Section 3.2.1.2), the proposed Source Water Pipeline would follow the CEMEX access road. Therefore, the Lapis Siding would not be impacted by the proposed project.

In addition, since publication of the Draft EIR/EIS, the California State Historic Preservation Officer (SHPO) has concurred with the finding of *No Adverse Effect*

to Historic Properties, including adverse effects to contributors to the Lapis Sand Mining Plant Historic District; see EIR/EIS Section 7.1.3.

Marina-124 In response to this comment, Section 4.16.1.1, Farmland Classifications, and Table 4.16-1, Monterey County Agricultural Land Summary and Conversion by FMMP Land Use Category, have been revised to reflect 2012-2014 agricultural conversion data for Monterey County rather than 2010-2012 data. Section 4.16.1.1 acknowledges that between 2012 and 2014, Monterey County experienced a net loss of Prime Farmland.

Marina-125 As stated in EIR/EIS Section 4.16, Agricultural Resources, the MPWSP Desalination Plant would be located on 25-acres of land that is zoned by the County of Monterey as Permanent Grazing and that is designated in FMMP maps as grazing land; however, the land has not been used for grazing or any other agricultural use since at least 1956, based on review of aerial photography of the site from 1956 through 2006, and confirmed in part based on an interview with a property manager with knowledge of the site dating to 1980 (RBF Consulting, 2012).

According to 2012-2014 California Department of Conservation Land Use Conversion data, 1,062,699 acres of grazing land were inventoried in Monterey County (CDC, 2014), and the removal of 25 acres would account for 0.0023 percent of such grazing land. In addition, a total of 739 net acres of grazing land were lost from 2012-2014, and the MPWSP Desalination Plant would account for only 3.38 percent of this net loss. For these reasons, the EIR/EIS correctly evaluated the potential impact in Impact 4.16-1, which assesses changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use, and correctly concluded that the conversion of 25 acres of grazing land for the MPWSP Desalination Plant would be a less-than-significant impact.

The 75-day public comment period for the Draft EIR/EIS provided ample opportunity for the public to review and comment on the proposed conversion. With respect to the gradual conversion of undeveloped, grazing, and/or agricultural lands that provide a buffer from more urbanized uses within the City of Marina and surrounding areas, the site of the proposed MPWSP Desalination Plant is located in unincorporated Monterey County, and is bordered on the west by agricultural fields, to the north by vacant land zoned for grazing, and to the south by Armstrong Ranch; to the east, the MRWPCA Regional Wastewater Treatment Plant and the MRWMD's landfill and recycling facilities are situated between the proposed desalination plant and the City of Marina. The 25-acre site does not act as a buffer from more urbanized uses within the City of Marina and surrounding areas.

Marina-126 The EIR/EIS adequately identifies the potential for proposed project operations to result in changes in the existing environment that, due to their location or nature,

could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use; see EIR/EIS Section 4.16.5.

Operational impacts related to groundwater resources are analyzed in Section 4.4, Groundwater Resources, under Impacts 4.4-3 and 4.4-4, which conclude that impacts on groundwater quantity and quality would be less than significant, which in turn means that agricultural users would not be significantly impacted by adverse effects on groundwater quality. As explained in Impact 4.4-4 on Draft EIR/EIS page 4.4-77, which relates to impacts on seawater intrusion, the MPWSP would incrementally contribute to redirecting or retarding the inland advance of seawater intrusion by capturing a portion of the seawater currently migrating inland. Figure 4.4-17 illustrates the anticipated reversal of seawater intrusion that would be due solely to the MPWSP. In addition, potential impacts on groundwater supply analyzed in Impact 4.4-3, on Draft EIR/EIS pages 4.4-57 through 4.4-68, are found to be less than significant because when desalinated water is returned to the basin, groundwater levels in the 400-Foot Aquifer underlying the Castroville Seawater Intrusion Project (CSIP) and Castroville Community Services District (CCSD) and adjacent areas would improve. Water levels could decline in the 180-FTE Aquifer by between 1 and 5 feet, but that would not expose screens, cause damage, or reduce yield in the existing, active groundwater supply wells.

Although potential impacts on groundwater supply are determined to be less than significant, the project applicant has proposed to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. Applicant Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage), described on Draft EIR/EIS pages 4.4-74 through 4.4-75, is not required to reduce a potential impact to less than significant, but if it were determined that the project was causing groundwater levels to damage local active wells, this measure would ensure that active wells would be repaired or replaced.

In response to this comment, a cross-reference to Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources has been added to the Impact Conclusion subsection of Impact 4.16-2 in Section 4.16, Agricultural Resources, as follows:

> Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources describe the potential impacts on groundwater quality and quantity due to operation of the proposed project. As described therein, the proposed project would result in less-than-significant impacts on groundwater quality and levels. That analysis identifies less-than-significant impacts on existing users of wells that may be affected by the proposed project, including agricultural users. Because the proposed project would not affect groundwater quality or levels in a way that would adversely affect existing agricultural users, it would not result in a change in the existing environment that would indirectly result in

> the permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Regarding the topic of groundwater pumping from the basin, water rights issues are addressed in Section 8.2.2, Master Response 3, Water Rights.

Marina-127 As stated in Impact 4.16-1 in Section 4.16.5.1, Construction Impacts, the analysis assumes that agricultural land that is adjacent to, but outside of, the project area boundary would not be subject to construction disturbance. The impact analysis focuses on project facilities within the project area boundary that would require construction on agricultural land or parcels that are zoned for agricultural uses. Therefore, potential construction effects on 1.7 acres of Prime Farmland that are on the northern portion of the 46-acre parcel shared by the MPWSP Desalination Plant site are not included in the analysis of direct impacts because the Prime Farmland is not adjacent to and is not within the project boundary of the MPWSP Desalination Plant; there would be no impact.

As stated in Impact 4.16-3 in Section 4.16.5.2, Operational and Facility Siting Impacts, proposed development of the MPWSP Desalination Plant on the 25-acre upper terrace of the 46-acre parcel would be allowed with a use permit from Monterey County (Monterey County Zoning Code, Section 21.34.050). The use permit would not convert the entire 46-acre parcel to an industrial use, but would allow for a "public and quasi-public land use, including public utilities" on the 25-acre portion of the parcel. Therefore, siting and operation of the MPWSP Desalination Plant would not limit, constrain, and/or prevent any future agricultural uses within the 1.7-acre portion of the parcel that is designated as Prime Farmland.

Finally, CEQA and NEPA do not require an analysis of impacts on speculative future uses of a particular property. This parcel hasn't been used as productive farmland in several decades, and there is no evidence that suggests that the use of a portion of the parcel for the Desalination Plant would preclude the productive use of an unattached piece of Prime Farmland elsewhere on the parcel. It is inaccurate to state that this piece of land would "fallow" as a result of the project because it already has been uncultivated for decades independent of this project.

Marina-128 See response to comment Marina-125 and Marina-127. The entire 46-acre parcel, with the exception of the unconnected 1.7 acres of Prime Farmland that would not be affected by the proposed project, has not been used for grazing or any other agricultural use since at least 1956. In response to this comment, the following text has been revised in Impact 4.16-3, under the MPWSP Desalination Plant heading:

> Current and recent uses of a property can provide a practical measure of its suitability for agriculture. The 46-acre MPWSP Desalination Plant parcel is zoned for Permanent Grazing, but with the exception of the unconnected 1.7 acres of this parcel that form a portion of a neighboring farm and which

would not be affected by the proposed project, the property has ~~been idle for five or more years~~ not been used for grazing or any other agricultural use since at least 1956 (RBF Consulting, 2012). Section 21.34.050 of the Monterey County Zoning Ordinance allows for public and quasi-public land uses including public utilities on land zoned for Permanent Grazing (Monterey County, 2011). Therefore, the proposed development of the 25-acre upper terrace of the parcel for the MPWSP Desalination Plant site would be allowed with a use permit from Monterey County. The 200-foot buffer between farmland and new development that is required by the Monterey County Municipal Code has been accounted for in the preliminary site plan for the MPWSP Desalination Plant (see Figure 3-5b in Chapter 3, Description of the Proposed Project. Therefore, the proposed desalination facilities on the upper terrace would not conflict with the existing zoning for agricultural uses.

Marina-129 See response to comment USEPA-4 in Section 8.3.5 for revisions to Mitigation Measure 4.11-1, which would require the use of renewable energy, including from the LFGTE facility expansion if available, as a primary method of reducing or offsetting operational electricity demand. The City of Marina's comments regarding the necessity of the project to meet water demand (i.e., comments on Sections 2.1 through 2.5) are addressed in detail above. As described in Impact 4.18-2, while the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. The design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand. Electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the energy conservation impact related to the use of fuel and energy during project operations would be less than significant. CEQA does not require "inclusion of all feasible energy conservation technologies/measures," even for large projects, if no significant unnecessary, wasteful, or inefficient use of energy would occur.

Although not required to reduce an energy conservation impact, implementation of Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, would require CalAm to have a qualified professional prepare a GHG Emissions Reduction Plan that must include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and must include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible.

Regarding the specific suggested mitigation in the comment, the EIR/EIS addresses these as follows:

Construction

1. Mitigation Measure 4.10-1b already included a requirement to notify construction vehicle and equipment operators of State-required idling time limits in order to ensure enforcement of these requirements. Further, in response to comment CURE-Fox-15, the idling time limit for off-road diesel engines has been lowered from the State-required 5 minutes to 2 minutes.

2. See response to comment Marina-97 regarding the use of Tier 4 equipment.

3. Construction and demolition waste is addressed in Mitigation Measure 4.13-2: Construction Waste Reduction and Recycling Plan.

4. This suggestion is unrelated to the topic of energy conservation, and GHG emissions are addressed and mitigated in EIR/EIS Section 4.11.

5. The use of alternative fuels for construction equipment (including, as applicable, electric equipment) is addressed in Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards and would apply to generators used during construction.

6. The use of alternative fuels for construction equipment is addressed in Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.

7. See response to comment Marina-97 regarding the use of Tier 4 equipment; which conform to the most stringent standards available for off-road construction equipment. It would be infeasible to require that the diesel equipment fleet exceed the current highest tier; such equipment cannot reasonably be expected to be available.

Operations

1. Senate Bill 743, which pertains to transit oriented infill projects, is not relevant to the proposed project.

2. It is unclear to what "jurisdiction-wide EV proliferation goals" the comment refers; none are known to apply to the proposed project.

3. Local (i.e., Monterey County) parking requirements are not relevant to the proposed project.

4. It is unclear whether the comment refers to vehicles of employees who may carpool to the site, carsharing services, or another type of "shared vehicle;" however, the small number of operational employees contributes only marginally to the anticipated operational energy use, and the Lead Agencies cannot compel project employees to share vehicles when accessing the site; therefore, the usefulness of providing parking for shared vehicles is speculative.

5. The proposed project does not include multi-family residential projects or non-residential projects.

6. Operation of the proposed project would not impact bicycle, pedestrian, or transit connections, and no such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

7. The use of on-site renewable energy production is addressed in Mitigation Measure 4.11-1.

8. The proposed project includes no wood-burning fireplaces or developments that may contain wood-burning fireplaces.

9. The proposed MPWSP Desalination Plant would not be located in an area that experiences urban heat island effect; therefore, measures designed to reduce such an effect are not relevant to the proposed project.

10. The use of on-site renewable energy production is addressed in Mitigation Measure 4.11-1.

11. Organic collection would not be relevant to operation of the proposed project.

12. The proposed project is not a new development and landscaping at project facilities would be minimal.

13. Operational energy performance targets are discussed in Mitigation Measure 4.11-1.

14. See Mitigation Measure 4.11-1 for a discussion of the GHG Emissions Reduction Plan that must include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and must include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies.

15. The proposed project does not include the design of bike lanes, nor do the Lead Agencies have the ability to require CalAm to develop bike lanes on Charles Benson Road, a private roadway.

16. Operation of the proposed project would not significantly alter drainage patterns; therefore, green infrastructure would not be a necessary mitigation measure for the proposed project.

17. The proposed project does not include public parking areas, and no such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

18. The proposed project is not a specific plan.

19. The proposed project would not create or be located near a major employment center.

20. No such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

21 through 23. The proposed project is not a residential development.

24. The small number of operational employees contributes only marginally to the anticipated operational energy use, and it would be speculative to assume energy use reductions could be achieved by requiring the provision of charging stations, because it cannot be known whether individual employees would own electric vehicles.

25. The proposed project is not on a park or public/quasi-public land.

26 and 27. The proposed project is not a residential development.

28 through 30. The proposed project is not a residential or commercial development.

31. See item 14, above.

32. The small size of the Desalination Plant parking lot would not create adverse energy impacts; therefore, tree cover would not be required.

33. See item 16, above.

34 through 36. See Mitigation Measure 4.11-1 for a discussion of the GHG emissions reduction plan and subsequent offsets of operational energy use.

Marina-130 Although Impact 4.18-3 would be less than significant independent of the implementation of Mitigation Measure 4.11-1, the measure would reduce energy consumption. Mitigation Measure 4.11-1 has been revised in the Final EIR/EIS to include measures that would further reduce the project's energy consumption and reduce GHG emissions. Therefore, PG&E's conclusion in the personal communication that it has adequate capacity and infrastructure to support the proposed project remains valid, even more so, since revised Mitigation Measure 4.11-1 would reduce energy consumption more than initially proposed in the Draft EIR/EIS. A written record of the communication with Jose Saldana at PG&E was included in the reference materials for the Draft EIR/EIS that were made available during the public review period.

Marina-131 See responses to comments Marina-129 and Marina-130. No significant impact related to energy consumption would occur during project operation; therefore, no mitigation is required. Nothing in these comments or responses triggers a need to recirculate the Draft EIR/EIS.

Marina-132 Both NEPA and CEQA requirements for analyzing environmental justice impacts are addressed in Section 4.20, Socioeconomics and Environmental Justice. This section also describes and cites CEQ's 1997 environmental justice guidance document.

With respect to impacts on coastal habitats and the coastal ecosystem in Marina, see responses to comments Marina-65 through Marina-83. With respect to impacts on coastal erosion in Marina, see responses to comments Marina-36 and Marina-37.

Responses to comments Marina-39 and Marina-113 address water quality impacts from brine discharge, and responses to comments Marina-5 through Marina-10 and Marina-45 through Marina-61 address groundwater impacts. Each of these categories of impacts would be less than significant, in some cases with implementation of mitigation measures. Thus, no "wide range of severe environmental impacts" as described in the comment would occur in relation to these resources; the conclusions in the EIR/EIS that no significant adverse impacts on these resources would occur is the basis for the Section 4.20 determination that no disproportionately high and adverse impacts related to these resources would occur. Similarly, cumulative impacts are analyzed based on the potential for the project to contribute to significant cumulative impacts; for these resources, the EIR/EIS found no potential for significant cumulative impacts that could result in disproportionately high and adverse environmental justice impacts. Sections 4.2 through 4.19 do not address environmental justice impacts.

Marina-133 As described in EIR/EIS Section 4.20, to determine whether there would be any proposed project environmental impacts that could disproportionately affect communities of concern, all of the individual resource issue area analyses in EIR/EIS Sections 4.2 through 4.19 were evaluated. Individual physical effects, cumulative effects, and potential aggregate or additive effects among different issue areas were reviewed. Only Section 4.10, Air Quality, described impacts that could result in a disproportionately high and adverse impact on minority and/or low-income populations.

In compliance with Federal Council on Environmental Quality (CEQ) guidance, the Lead Agencies have evaluated the land-based impacts in the context of environmental justice impacts; e.g., with respect to air pollutant emissions. As stated in EIR/EIS Section 4.20.4.2, the potential for disproportionately high and adverse impacts on minority and low-income populations was assessed applying USEPA's Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analysis (USEPA, 1988). EIR/EIS Section 4.20 identified and applied criteria for evaluating these air pollutant emissions in the context of environmental justice, including reference to maximum daily emissions scenarios and significance thresholds. Based on this analysis, EIR/EIS Section 4.20 concludes that the project would not result in a disproportionately high and adverse impact on minority and/or low-income communities. Section 4.20.6 also analyzed the potential for cumulative impacts with respect to environmental justice, and concluded that the potential cumulative impact in the identified regions would be less than significant.

The comment is unclear regarding what "multiple interrelated" project impacts it refers to or how the impacts discussed in response to comment Marina-132 might be additive. Consistent with CEQ guidance that requires consideration of cumulative or multiple adverse health or environmental hazard exposures (Council on Environmental Quality, 1997), the EIR/EIS considers those resource impacts

that could affect health issues such as air quality, GHG emissions, noise, and hazardous materials exposure. Review of these impact topics in Chapter 4 does not indicate that there would be a substantial aggregate effect of resource impacts or disproportionately high and adverse impacts on minority and/or low-income communities. The less than significant (and thus, not "high and adverse") impacts on separate types of resources identified in Chapter 4 would not combine with one another to result in greater impacts from an environmental justice perspective. For more information, see EIR/EIS Section 4.20, which considers the potential cumulative environmental justice impacts of emissions, project construction and siting, and water rates increases within the context of the cultural, social, historical, and economic factors in the Monterey District, and considers that these impacts would be less than significant.

The EIR/EIS does in fact quantify potential disproportionately high and adverse impacts spatially – see Table 4.20-6 which quantifies emissions near specific minority and low-income communities and compares them to emissions near specific communities not identified as minority or low-income, consistent with the approach suggested in the USEPA guidance document.

The environmental justice analysis is not segmented – EIR/EIS Section 4.20 includes a complete analysis of environmental justice issues, in compliance with federal requirements. The analysis necessarily relies on individual physical resource impacts identified in Chapter 4, but evaluates these impacts from the perspective of environmental justice issues, including assessment of aggregate effects.

Although all resource topics were considered in the analysis and determination of the environmentally superior/NOAA preferred alternative, the differing conclusions with respect to environmental justice impacts of alternatives (which are based on the air quality conclusions related to PM_{10} emissions) were inadvertently excluded in the discussion of the environmentally superior alternative in Draft EIR/EIS Section 5.6. This section has been revised to acknowledge that Alternatives 3 and 4 would have potentially significant and unavoidable impacts related to PM_{10} emissions, which could result in significant and unavoidable environmental justice impacts. This revision does not change the conclusions of the EIR/EIS, but simply restates conclusions in Section 5.6.

With respect to the comment that the EIR/EIS "dismisses without evaluation" potential depletion and degradation of Marina's water supply, see responses to comments Marina-5 through Marina-10, Marina-45 through Marina-61, Master Response 3, Water Rights (particularly Section 8.2.3.7) and Master Response 8, Project Source Water and Seawater Intrusion.

Finally, mitigation specific to environmental justice impacts is not required because appropriate mitigation already is provided in EIR/EIS Section 4.10, Air Quality, to

address potential disproportionately high and adverse impacts. See discussion in EIR/EIS Section 4.20.5.2. Also, there are many other mitigation measures in individual resource areas in Chapter 4 that reduce the overall physical impacts of the proposed project and therefore reduce the project's aggregate effects on communities of concern.

Marina-134 See responses to comments Marina-5 through Marina-10 and Marina-45 through Marina-61 and Master Response 8, Project Source Water and Seawater Intrusion. Because the proposed project would not exacerbate seawater intrusion or cause other adverse groundwater quality impacts, no socioeconomic effect is expected to stem from such physical impacts.

Marina-135 CEQA and NEPA require that an EIR/EIS analysis of cumulative environmental impacts focus on those impacts to which the project would contribute. Except with respect to emissions of criteria pollutants from pesticides, fertilizers, or other soil amendments (addressed below), the proposed project would not contribute to cumulative impacts related to use of pesticides, fertilizers, or other soil amendments from agricultural operations because it does not propose to use any of these materials. Additionally, the project would not contribute to impacts related to offensive odors (see EIR/EIS Section 4.10, Air Quality, Impact 4.10-5). Therefore, while the Lead Agencies acknowledge the concerns regarding existing environmental burdens caused by these impacts, the evaluation of the proposed project properly focuses on other types of impacts to which the project could or would contribute.

See Footnote 2 in Section 4.1, which states, "While a cumulative analysis includes past, present and reasonably foreseeable future projects, the category of past projects is captured within the existing setting, or baseline, against which impacts are judged throughout the EIR/EIS, including the cumulative analysis. However, where projects were implemented after 2012 (the baseline year), those projects are set forth within Table 4.1-2 and included in the cumulative analysis." Accordingly, air pollutant emissions from the existing Monterey Regional Water Pollution Control Agency (MRWPCA) facilities, existing Monterey Peninsula Regional Waste Management District (MPWMD) facilities, livestock ranching and other agricultural activities, and other facilities and activities that have existed in the Marina area since before 2012 are reflected in baseline conditions. Section 4.10, Air Quality, describes baseline criteria air pollutant concentrations based on data from the nearest ambient air quality monitoring station, which has not recorded any violations of the state or federal criteria air pollutant standards from 2011 through 2015.

In addition, as described in Section 4.10.6, in developing thresholds of significance for air pollutants, MBUAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable; therefore, if individual project emissions would exceed the identified significance thresholds, a significant cumulative air quality impact would occur and the project's contribution to the cumulative impact would be considered significant. Thus, it would be inappropriate

to quantify the emissions from baseline facilities and activities and cumulative projects and add these to the proposed project's emissions estimates to analyze cumulative effects, because there are no relevant numeric emissions thresholds that would apply to such a total.

In response to this comment, a description of the above-mentioned existing sources of air pollution in and near the City of Marina and other communities identified in the environmental justice analysis has been added to Section 4.20.6. Because the analysis already accounted for baseline air quality, and because project-level criteria air pollutant significance thresholds remain relevant to the proposed project's emissions regardless of other past, present, and reasonably foreseeable future projects, this information does not result in a change in the conclusions regarding the project's potential to contribute to cumulative impacts.

Relevant numeric emissions standards used in the Impact 4.20-2 analysis are provided in Table 4.20-6 and discussed in Impact 4.20-2.

Marina-136 The Lead Agencies acknowledge the City of Marina's concerns regarding its discretionary approval authority with respect to the Coastal Development Permit that would be required in order for the project to proceed. The Lead Agencies understand that certain City of Marina decisions under its Local Coastal Program may be appealed to the California Coastal Commission (CCC), potentially resulting in a CCC decision that is inconsistent with the City's decision and preference. Both CPUC and MBNMS will consider the City of Marina's comments in their respective decision-making processes. Specific concerns related to water supply, coastal resources, traffic, and noise are addressed in above responses.

Marina-137 See response to comment Marina-4.

Marina-138 See Master Response 8, Project Source Water and Seawater Intrusion, for more information on the capture zone, the cone of depression, seawater intrusion and project effects on groundwater resources. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the NMGWM. See also responses to comments Marina-55 through Marina-62 regarding the analysis of the proposed project's impacts on groundwater in the EIR/EIS. Contrary to the comment, the discussion of groundwater impacts was not dropped from the EIR/EIS analysis of alternatives in Chapter 5. EIR/EIS Table 5.6-1 presents the comparison of the impacts on groundwater resources for all alternatives, and concludes that the impacts for all alternatives would result in a decreased severity (shown by the down arrow) for operational groundwater impacts and the impact conclusions are either the same as the proposed project (less than significant) or No Impact (No Action alternative).

Marina-139 The EIR/EIS describes a total of eight alternatives, including the proposed project, the No Project alternative, and Alternatives 1 through 5b in EIR/EIS Section 5.4,

and evaluates these alternatives in Section 5.5. The extensively detailed screening of components is provided in EIR/EIS Section 5.3, and includes the screening and evaluations of 13 intake options, 7 outfall options, and 3 desalination plant site options in Sections 5.3.3, 5.3.4, and 5.3.5, respectively.

Marina-140 The commenter is incorrect that the EIR/EIS does not analyze an alternative of a size that would produce less water than the proposed project (the proposed project being either a 9.6 mgd desalination plant or a 6.4 mgd desalination plant that would be combined with a water purchase agreement whereby CalAm would procure water from the GWR project for its customers). Both Alternatives 5a and 5b are described in EIR/EIS Section 5.4 and are evaluated in EIR/EIS Section 5.5 with a 6.4 mgd desalination plant alone (at the CEMEX location and Potrero Road locations, respectively). Thus, the environmental impacts of these alternatives, as presented in the EIR/EIS and compared to the other alternatives, do not include effects of the GWR project. Alternatives 5a and 5b would produce approximately 3,500 afy less water than the proposed project; as such, each of these alternatives would produce only two-thirds the water of a 9.6 mgd desalination plant.

Clearly, the EIR/EIS analyzes alternatives that would avoid or minimize some of the project's environmental effects though they would impair attainment of the project objectives to some degree.[4] This is explained as to Alternative 5a, for example, in Section 5.4.7.3, Ability to Meet Project Objectives, where the EIR/EIS explains that implementation of Alternative 5a on its own and without the GWR project and associated water purchase agreement, would only partially meet the project objectives because the 6.4-mgd project would not develop enough supply to serve the existing land uses and water entitlements [12,845 afy] baseline or associated peak demands in CalAm's Monterey District. The 6.4 mgd desalination plant in combination with other existing sources (Carmel River legal entitlement, Seaside Basin, ASR, and Sand City Desalination) would achieve compliance with Order 95-10 and the Seaside Groundwater Basin Adjudication. However, Alternative 5a would not provide water supply reliability; and would not provide supply to fully serve Pebble Beach water entitlements or anticipated economic recovery at existing businesses. It would not provide enough supply to enable development of vacant legal lots of record. Assuming that the GWR Project is constructed (which is assumed in the cumulative analysis for this alternative), it would provide 3,500 afy of potable supply for the CalAm service area. Alternative 5a in combination with the GWR Project supply would meet the project objectives.

The GWR project is evaluated in the context of Alternatives 5a and 5b as a cumulative project. For further information on project objectives, see response to comment MCWD-2 in Section 8.5.2. Also see Master Response 13, Demand (Project Need) and Growth, concerning projected water needs in CalAm's service

4 Because the EIR/EIS does evaluate these two smaller-sized options, the cases cited by the commenter are inapplicable.

territory and to satisfy the project objectives. As explained in Master Response 13, if the Lead Agencies determine, based upon the evidence in the record, that project objectives could be satisfied with a lesser amount of water than would be supplied with either the proposed 9.6 mgd desalination plant or the 6.4 desalination plant, then the Lead Agencies could opt to approve a smaller project.

Marina-141 See response to comment Marina-11, MCWD-168, and MCWD-170 through MCWD-175.

Marina-142 See response to comment Marina-140 and MCWD-168. Alternatives 5a and 5b, at about two-thirds the size desalination plant as the proposed project, are designed to lessen or avoid environmental effects. While Alternatives 5a and 5b as to many resource areas have the same classification of impact as the larger plant (e.g., significant or less than significant), the EIR/EIS plainly sets forth the comparative volume or quantity of the effect, which is generally less than that of the proposed larger plant. For example, as to energy impacts, EIR/EIS Section 5.5.18.8 provides, "Alternatives 5a and 5b would have a decreased desalinated plant capacity; therefore, the total operational electricity demand would be reduced compared to the proposed desalination plant; approximately 3.7 MW, which is equivalent to approximately 63 percent of that for the proposed project."

Marina-143 See response to comment Marina-4 and Marina-140 and Master Response 13, Demand (Project Need) and Growth.

Marina-144 See response to comment Marina-123; the proposed project would not cause a significant impact to historic resources. See response to comments Marina-55 through MCWD-62 regarding the EIR/EIS analysis of the proposed project's impacts on groundwater resources.

As noted on Draft EIR/EIS page 5.5-83, "Proposed project slant well pumping would not exacerbate seawater intrusion because the slant wells would capture seawater as it crosses the coast and proposed project pumping is therefore, expected to retard future inland migration of the seawater intrusion front. The impact on seawater intrusion would be less than significant." But the EIR/EIS does not draw the same conclusion for alternatives with screened open water intakes. In fact, the EIR/EIS concludes that an alternative with an open water intake "would not extract source water from groundwater aquifers, and would not include in-lieu recharge of the 400-Foot aquifer because Salinas Valley return water would not be required; the open water intake would not deplete groundwater supplies or interfere with groundwater recharge. Operation of Alternative [. . .] would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project." See EIR/EIS Sections 5.5.4.5 for that conclusion about Alternative 2 (Open Water Intake at Potrero Road), Section 5.5.4.6 for Alternative 3 (DeepWater Desal) and Section 5.5.4.7 for Alternative 4 (People's Project). Thus, while some options would have a less than significant impact on groundwater resources, other options would have no impact on groundwater

resources. These comparative impacts will be taken into account in the decision-making process.

Marina-145 See response to comment Marina-4, regarding project objectives and purpose and need. EIR/EIS Section 5.6, provides 20 pages of discussion on the environmentally superior alternative, including an introduction, an overview of assumptions (Section 5.6.1.1), a summary of the significant impacts of the proposed project (Section 5.6.1.2), a discussion of the key differences between alternatives (Section 5.6.1.3) and a determination of the environmentally superior and NEPA-agency preferred alternative (Section 5.6.2); Table 5.6-1 provides an Alternatives Impact Summary.

The selection of the environmentally superior (CEQA) and environmentally preferred (NEPA) alternative did not downgrade any alternative with an open water intake because of permitting complexities and potential delays. The EIR/EIS explains in Section 5.6.1.3 that, "Three of the alternatives would use screened, open water intakes, which would reduce or avoid several proposed project impacts but result in new significant impacts." Section 5.6.1.3 further explains that the key differences in impacts pertaining to open water intakes include: the use of barges for construction and the placement of ballast rock on the seafloor within MBNMS which could result in temporary and permanent direct and indirect effects on marine habitat and associated marine biological resources, as well as historical resources (i.e., shipwrecks) in Monterey Bay; construction and operation of new facilities within a ravine of the Monterey Submarine Canyon could result in temporary and permanent effects due to unstable slopes; and the operation of screened open water intakes would result in long term effects on marine biological resources within MBNMS.

Two of the screened open water intake alternatives (Alternative 3, DeepWater Desal, and Alternative 4, People's Project) were determined not to be the environmentally superior alternative because, based on current information, each would produce more water than the proposed MPWSP and while they would each meet most of the project objectives and purpose and need, these alternatives would not generally reduce or avoid the potential significant environmental impacts of the proposed MPWSP. Alternative 2, the other open water intake alternative, was determined not to be the environmentally superior alternative because construction of the new intake structure would result in greater impacts on the seafloor than the proposed project, and operation of an open water intake would result in long-term marine biological impacts from impingement and entrainment. See EIR/EIS Section 5.6.2.

Marina-146 EIR/EIS Section 5.6.2 explains, "The impacts of the subsurface intakes at Potrero Road (Alternative 1), however, would have a greater impact on groundwater levels in the Dune Sands, 180- and 400-Foot aquifers, resulting in greater impacts on marine and terrestrial biological resources at Elkhorn Slough than pumping at CEMEX (proposed project). Therefore, neither Alternative 1 nor Alternative 5b

would offer overall environmental advantages over the proposed project or reduced-size alternative (Alternative 5a)." This conclusion is supported by the analysis in EIR/EIS Section 5.5.4.4 and Figure 5.5-2: "The extent of modeled drawdown in the Perched "A" Aquifer is almost twice the inland distance modeled at CEMEX for the proposed project because: 1) the Perched "A" Aquifer is not as thick as the Dune Sand Aquifer underlying the CEMEX site, and 2) the ocean water capture zone is restricted at Potrero Road to the Perched "A" Aquifer (the wells would not be screened in the 180/180-FTE Aquifers) because the underlying Salinas Valley Aquitard separates the Perched "A" Aquifer from the 180-Foot Aquifer."

EIR/EIS Section 5.5.4.4 further explains, "Modeling indicates that pumping under Alternative 1 would influence the Perched "A" Aquifer north of Potrero Road and the cone of depression would encompass the mouth of the Elkhorn Slough and about 1-mile inland up the slough (a portion of which is within MBNMS). This effect is shown by the 1-foot drawdown contour lines on Figures 5.5-2 and 5.5-3 and these results suggest a direct or indirect effect of project pumping at Potrero Road on the surface water/groundwater interaction in the Elkhorn Slough." Section 5.5.4.4 concludes that, "Alternative 1 would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB … and would result in the same impact conclusion as the proposed project, less than significant."

While minimal data are available for the Potrero Road site to assess the historical model calibration, borehole data collected at the Potrero Road site and at nearby Moss Landing helped confirm the modeled hydraulic conductivity in the Perched "A" Aquifer. EIR/EIS Appendix E2, Attachment 2, presents an Expanded Model which included Elkhorn Slough and the lower portion of the Pajaro Valley. The expansion was based on the USGS Pajaro Valley Hydrologic Model. The Expanded Model results indicate that the cone of depression due to slant well pumping at the Potrero Road site would extend northward into the Pajaro Valley by approximately one-half mile in the Perched "A" Aquifer, and approximately three-quarter mile for the 180-Foot/FTE Aquifer. While the amount of the groundwater that would otherwise flow into Elkhorn Slough cannot be quantified, the groundwater-surface water interaction at Elkhorn Slough is not speculative and a cone of depression from pumping at the well sites would have an effect on flows in Elkhorn Slough.

As described in Marine Biological Resources, EIR/EIS Section 5.5.5.4, based on the predicted areal extent of the drawdown, slant well pumping operations at Potrero Road could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an ***increased impact conclusion*** on marine species,

natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

As explained in Terrestrial Biological Resources, Section 5.5.6.4, Alternative 1 would also avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough, but instead may affect steelhead habitat in Elkhorn Slough. "While the modeling cannot predict the amount of water diverted from Elkhorn Slough, it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect steelhead habitat in Elkhorn Slough due to reduced surface water flow and volumes."

The comment criticizes the EIR/EIS for making conservative assumptions as to impact conclusions when the precise amount of the impact is not known. This approach, however, is typical in NEPA and CEQA analyses and consistent with the standard approach of the Lead Agencies.

Marina-147 The analysis of alternatives in EIR/EIS Section 5.5 includes a reduced sized desalination plant with fewer slant wells: Alternatives 5a and 5b. The selection of the environmentally superior alternative is presented in detail in EIR/EIS Section 5.6, and as stated therein, the smaller desalination plant in Alternative 5a would be the environmentally superior alternative; if the GWR project were implemented, this alternative would be the environmentally superior alternative that meets the basic project objectives. Otherwise, the proposed project would be the environmentally superior alternative for the reasons stated in EIR/EIS Section 5.6.2. Further, see responses to comments Marina-137 and Marina-138 through Marina-146 regarding the fully adequate, legal, and detailed analysis of alternatives provided in Chapter 5 of the EIR/EIS.

Marina-148 See responses to comments Marina-97 through Marina-100 (Air Quality), Marina-101 (Greenhouse Gas Emissions) and Marina-129 through Marina-131 (Energy Conservation). EIR/EIS Section 6.1 has been revised accordingly.

Marina-149 See responses to comments Marina-3 and Marina-4, as well as Master Response 13, Demand (Project Need) and Growth, regarding the estimates of existing annual demand and other service area demands proposed to be served by the project; available supplies; and water available for growth. See also Appendix L, which was prepared to test whether the project could be smaller if different supply and demand numbers were considered, and Section 8.2.13.5 of Master Response 13, which summarizes the results of that inquiry.

Marina-150 An essential purpose of the proposed project is to provide replacement water supply that would enable CalAm to cease diverting Carmel River water in excess of CalAm's water rights and to cease pumping from the Seaside Groundwater Basin in excess of CalAm's adjudicated right. Project implementation is, therefore, assumed to enable CalAm to "stop illegal pumping on the Carmel River and

Seaside Basin." The prospect that CalAm's adherence to its Carmel River water rights and adjudicated groundwater rights in the Seaside Groundwater Basin would result in greater use of the same resources by others to serve urban growth is speculative. The SWRCB's explicit concern expressed in Order 95-10 and the subsequent CDOs has been the effect of CalAm's unlawful diversions on *instream* beneficial uses of the Carmel River (see, e.g., Section 5 of Order 95-10).

As described in EIR/EIS Section 2.2.3, Order 95-10 established CalAm's legal rights to the Carmel River, and the SWRCB directed CalAm to take actions to terminate its unlawful diversions; one potential action specified in the order was to obtain appropriative rights to the Carmel River water that was being unlawfully diverted, and another was to contract with other agencies that had appropriative rights to divert and use water from the Carmel River. In the years since, other than SWRCB Water Right Permit 21330 to divert "Table 13" water (see EIR/EIS Section 2.4.6.1), CalAm has been unable to obtain appropriative rights and CalAm's ability to contract with others that have appropriative rights has been extremely limited (a contract with Malpaso Water Company and temporary forbearance agreement with the Trust for Public Land, described in EIR/EIS Section 2.4.6).

CalAm's use of water to which the Malpaso Water Company has rights is limited to the quantity of water not needed by Malpaso. CalAm's cessation of unlawful diversions would not change Malpaso's rights or the rate at which Malpaso is using them. Much of the Trust's land with water rights subject to the forbearance agreement will be converted to riparian habitat, and much of the water associated with that property is, therefore, expected to remain in the River. Other ways the Trust may use that water right are unknown to the Lead Agencies. The extent to which CalAm's adherence to the Carmel River rights established in Order 95-10 would allow increased diversions by others, such as those holding Carmel River water rights that are subject to minimum flow requirements, is not known; nor is it known whether the SWRCB would issue additional permits to water users listed in Table 13 of SWRCB Decision 1632 when CalAm's unlawful river diversions cease.

As noted above, the SWRCB's expressed concern about the unlawful diversions has been effects on instream uses, not potential constraints imposed by the unlawful diversions on existing or future water rights holders. It is also speculative to assume that any increased diversions by others, if they did occur when CalAm's unlawful diversions cease, would be used for urban development. The Seaside Groundwater Basin is an adjudicated basin. CalAm has been adhering to the schedule of decreasing pumping from the basin established by the Watermaster. Given that rights to the basin have been adjudicated, CalAm's adherence to its adjudicated right will not create new rights by others to basin groundwater.

Marina-151 As described in EIR/EIS Section 6.3.5.3, the amount of water provided by the MPWSP that would be available for growth is consistent with growth anticipated by the jurisdictions in CalAm's service area. EIR/EIS Section 6.3.6 identifies the impacts of growth based on impacts identified in the general plan CEQA documents of service area jurisdictions. No significant impacts have been identified related to increased wastewater flows from growth anticipated in CalAm's service area jurisdictions.

In addition, since these plans and CEQA documents were prepared, the Pure Water Monterey Groundwater Replenishment Project (GWR) was approved, in 2016, which will recycle more wastewater flows than MRWPCA already recycles for irrigation by users of the CSIP. Increasing the use of recycled water is expected to be a continuing trend, and is a stated goal of MRWPCA (MRWPCA, 2016); increased wastewater recycling will further reduce the outfall capacity used by wastewater discharges. In Draft EIR/EIS Comment MRWPCA-13, the MRWPCA states that the "[c]ost of potable water and increased conservation has been reducing overall sewage flow to the Regional Treatment Plant with a downward trend since 2002 resulting in less ocean discharge… [The Pure Water Monterey GWR project], currently out to bid, will further reduce ocean discharge, especially during the winter." Therefore, consistent with the findings of the General Plan CEQA documents reviewed for the EIR/EIS, the impact on outfall capacity of growth in service area jurisdictions is not expected to be significant.

Marina-152 EIR/EIS Section 6.3.6 and Table 6.3-9 summarize the environmental impacts of growth that water supply provided by the MPWSP would, to an extent, support. Also refer to the discussion under "Impacts of Growth" in Master Response 13, Demand (Project Need) and Growth. As stated on Draft EIR/EIS pages 6-40 to 6-41, Table J2 in Appendix J2 presents a more detailed summary of those impacts and summarizes the identified mitigation measures. As stated on page 6-26 under "Growth Trends and Projections in Jurisdiction Land Use Planning Documents, "[a]ll of the jurisdictions cite limited water supply as a key factor limiting planned development within their boundaries." This is confirmed in the individual city and county summaries presented in the same section. The EIR/EIS growth analysis is predicated upon the assumption that the MPWSP would indeed remove a constraint to growth.

In 2006, in consultation with service area jurisdictions, the MPWMD prepared a comprehensive assessment of water supply needs associated with growth anticipated in the jurisdictions' general plans (see Section 2.5.3.4, General Plan Buildout, and Section 6.3.5.3, Growth Trends and Planning Agency Projections). At the time, CalAm had proposed the Coastal Water Project. The EIR prepared for the Coastal Water Project also analyzed a Regional Project, the second phase of which included water to meet the future water needs identified in MPWMD's 2006 analysis (see EIR/EIS Section 1.4.1, The Coastal Water Project). The Regional Project was not constructed. As noted in EIR/EIS Section 1.4.2, CalAm withdrew its support for the Regional Project in 2012 and subsequently submitted an

application to the CPUC for the MPWSP. Thus, a water supply has yet to be developed to meet demand associated with general plan buildout identified by MPWMD. The limited amount of water supply available from the Malpaso Water Company to its subscribers in Carmel and the Carmel Valley area, discussed in EIR/EIS Section 2.4.6.2, does not change this conclusion. Since the MPWMD prepared its analysis, the estimates of some jurisdictions have been revised, reducing the total estimated demand from 4,545 afy to 3,526 afy, as discussed in EIR/EIS Section 2.5.3.4, General Plan Buildout, and shown in Table 2-5.

The 2nd column from the right in Table J2-1 in EIR/EIS Appendix J2, shows two levels of significance for the Monterey County General Plan EIR. As the column heading indicates, the significance levels shown are for general plan development "To 2030" and "To 2092." Table note "a" at this column heading explains: "The Monterey County General Plan EIR evaluated impacts anticipated to occur by the General Plan's 2030 planning horizon, as well as impacts anticipated to occur under full General Plan buildout, which is assumed to occur in 2092. The column shows both significance conclusions (impacts to 2030 are shown on the left and Impacts to 2092 on the right)." The table shows the significance level with mitigation.

Marina-153 The MPWSP has been proposed in response to SWRCB Order 95-10 and the revised 2016 Cease and Desist Order, which direct CalAm to terminate its unlawful diversions from the Carmel River. CalAm is obligated to comply with these orders as a matter of law, and EIR/EIS Section 4.6 concluded on Draft EIR/EIS page 4.6-2 that "since a primary purpose of the proposed project is to reduce pumping from the Carmel River to restore and increase flows, the effect of this project would be a beneficial effect on stream flows in the Carmel River and the river's aquatic and riparian biological resources." No infrastructure would be removed from the Carmel River, no decommissioning of facilities would be necessary and none is proposed. There is no reason to expect that implementation of the proposed MPWSP would result in any adverse impacts to the aquatic and riparian biological resources of the Carmel River.

8.5.1.2 Responses to Comments from City of Marina – Jacobson James & Associates Letter

Marina-JJ&A-1 The EIR/EIS did not rely only on the two-dimensional MCWRA maps to assess water quality degradation in the Dune Sand and 180-FTE Aquifer. Other sources included the water quality data obtained from the eight monitoring well clusters that CalAm installed to monitor the effects on the SVGB from test slant well pumping at CEMEX. These well clusters are screened discretely in the Dune Sand Aquifer, the 180-Foot/FTE Aquifer, and the 400-Foot Aquifer, and provide that "third dimension" needed to evaluate groundwater degradation, with depth and the vertical distribution of seawater intrusion in the underlying aquifers inland from the coast. In addition, the EIR/EIS used the pumping and water quality data obtained

from the test slant well to monitor aquifer response from pumping and changes in capture zone water quality. A description of the groundwater data reviewed and applied to the EIR/EIS groundwater analysis is provided in EIR/EIS Section 4.4.4, Approach to Analysis and in EIR/EIS Appendix E3. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM); Mater Response 8, Project Source Water and Seawater Intrusion; and Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-2

EIR/EIS Section 4.4.5.2 presents the impacts of proposed project pumping on nearby production wells. Pursuant to significance criteria established by the Lead Agencies in Section 4.4.5, an impact is considered significant if the proposed project would lower groundwater levels in a nearby municipal or private groundwater production well enough to cause a substantial reduction in well yield, or to cause physical damage due to exposure of well screens and well pumps. The nearby production wells that could be affected by MPWSP pumping at the CEMEX site, including the MCWD wells, are shown on EIR/EIS Figure 4.4-14 and listed in Table 4.4-10. As noted in Table 4.4-10, the City of Marina's Wells 10, 11, and 12 are located over 2 miles to the southeast, and are screened in the 900-Foot/Deep Aquifer. The Ord Community Wells 29, 30, and 31 are located over 5 miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. See Master Response 3, Water Rights, Section 8.2.3.7, and Master Response 8, Project Source Water and Seawater Intrusion.

The transient North Marina Groundwater Model ($NMGWM^{2016}$) comprises eight different layers representing the depth distribution of aquifers and aquitards, and thus simulates three-dimensional groundwater flow (see Final EIR/EIS Appendix E2, Section 2.2, Model Construction). Model analyses assess the potential effects of changing vertical gradients between aquifers and across aquitards and were not limited to lateral flow within principal aquifers. For example, a range of values for the depth distribution of the relative volume of groundwater extracted by the slant wells from different aquifers was assessed as part of the sensitivity and uncertainty analysis. Analysis of potential impacts of vertical flow was implicit in the determination of water level changes in the 900-ft (Model Layer 8) and 400-ft (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4.; see Final EIR/EIS Appendix E2, Section 6, and Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-3

See Master Response 9; specifically, Section 8.2.9.1 discusses recent geophysical studies and Section 8.2.9.2 discusses correlation with actual subsurface data. Section 8.2.9.3 describes how the ERT/AEM data was used in the EIR/EIS. EIR/EIS Appendix E3, Section 3.1.8 discusses the evaluation of Stanford University's AEM data survey. In short, Dr. Knight's recent AEM survey provides data to help interpolate between control points provided by the MPWSP

monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area. See also EIR/EIS Section 4.4.1.4, Groundwater Quality.

Marina-JJ&A-4 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM). EIR/EIS Section 4.4.1.4 and Table 4.4-4 explain that both the Dune Sand Aquifer and the 180-FTE Aquifer in this area already contain highly brackish groundwater. All data collected to date (see EIR/EIS Appendix E3) confirm that the Dune Sand Aquifer contains very transmissive materials and directly overlies and is in hydraulic continuity with the underlying 180-FTE Aquifer in the project area. Contrary to the comment and consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined and the 180/400-Foot Aquitard, although shown as inferred within dashed lines on EIR/EIS Figure 4.4.3, is most certainly present and restricts flow from the 180-FTE aquifer above it. The assertion that movement of seawater intruded groundwater from the 180-FTE Aquifer to the 400-Foot Aquifer is likely to continue and be exacerbated by the MPWSP is inconsistent with the analysis in EIR/EIS Section 4.4.5, and Appendix E2 (see also Master Response 12, The North Marina Groundwater Model (v. 2016)). The 400-Foot Aquifer in the CEMEX area is already intruded with seawater as shown by the TDS concentrations on EIR/EIS Figure 4.4.3. The proposed slant wells would only draw groundwater from the Dune Sands Aquifer and the 180-FTE Aquifer. As discussed in EIR/EIS Section 4.4.5.2, the only drawdown response from the slant well pumping in the 400-Foot Aquifer would occur with 0 and 3 percent return water with current sea level conditions, but this would not result in a significant impact. The 6 and 12 percent return water scenarios with current sea level conditions would cause groundwater levels to increase in the 400-Foot Aquifer and after 63 years, there would be no drawdown response in the 400-Foot Aquifer. In response to the comment's assertion that the EIR/EIS did not consider the entirety of Dr. Knight's work in its analysis, see EIR/EIS Section 4.4.1.4, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Marina-JJ&A-5 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), for a discussion of the use and applicability of the May 2017 AEM survey data in the EIR/EIS; see also EIR/EIS Appendix E3.

Marina-JJ&A-6 The inland movement of groundwater is driven by regional recharge and pumping patterns. EIR/EIS Section 4.4.1.3 describes the groundwater flow and occurrence in the SVGB, and describes how groundwater in the Pressure and East Side Areas flows northwest from the upper reaches of the SVGB until it reaches the city of Salinas, at which point groundwater in both the 180-Foot and 400-Foot Aquifers flows towards a groundwater depression north of the city; see EIR/EIS Figures 4.4-5 and 4.4-6, as well as Figures 3-1 through 3-4 in the 2015 State of the Salinas River

Groundwater Basin report (Brown and Caldwell, 2015). Along the coast, flow in both the 180-Foot and 400-Foot Aquifers is towards the east, or landward, and has resulted in seawater intrusion; see EIR/EIS Figures 4.4-10 and 4.4-11.Local conservation efforts implemented near the coast cannot alone reverse the effect of these regional inland gradients; to be successful and to place this concept in perspective, local conservation efforts would have to provide sufficient recharge to mitigate the inland pumping that is responsible for the historical overdraft and seawater intrusion. For example, ongoing groundwater enhancement programs in the SVGB (including the Castroville Seawater Intrusion Project (CSIP) and the Salinas Valley Water Project (see EIR/EIS Section 4.4.1.3), have been effective at reducing groundwater extraction in those areas. However, the objective of SVWP Phase 1 was to stop (not reverse) seawater intrusion and to provide adequate water supplies and flexibility to meet current and future (year 2030) needs (MCWRA, 2001, Section 3.0).

As reported in Brown and Caldwell 2015, Section 4.3.1, groundwater flows out of the Pressure Subarea into the East Side Subarea because of large groundwater elevation declines in the East Side Subarea that have reversed the natural groundwater head gradient. The large storage declines that have occurred in the Basin in the past, especially in the East Side Subarea, have created a significant landward groundwater head gradient that must be reversed before seawater intrusion can be halted. Pumping would have to be decreased by about 30 percent in the Pressure and East Side Subareas to decrease seawater intrusion to about 8,100 afy after 20 years. Specifically, based on 2012 actual extractions, pumping would have to decline from about 114,000 afy to 80,000 afy in the Pressure Subarea and from about 96,000 afy to 67,000 afy in the East Side Subarea. This would be a total pumping reduction of about 63,000 afy in both Subareas affected by seawater intrusion.

Phase II of the SVWP would put to beneficial use the water right allocated to MCWRA by Water Right Permit #11043[5] by further developing surface water resources that will be used to offset groundwater pumping in the Pressure Area and East Side. However, see response to comment Beech 3-3 and Beech 3-4 regarding the status of Water Right #11043. Both SVWP Phase I and Phase II are addressed in the cumulative impacts analysis in EIR/EIS Section 4.4.6. Actions that may be developed or required as a function of SGMA are too speculative to opine about in the EIR/EIS. Nonetheless, as demonstrated above, substantial actions would be needed merely to arrest seawater intrusion, without consideration of more dramatic actions that would be needed to reverse such intrusion.

The inland gradient imposed on the NMGWM[2016] is based on real-world measurements and is not artificial. As outlined in Final EIR/EIS Appendix E2, Section 5.3, the average observed regional gradient (0.0007) represents Fall 2015

5 Available online at http://www.co.monterey.ca.us/home/showdocument?id=19020.

groundwater elevations based on water level contour maps provided by Geoscience Support Services, Inc. (2016). As part of sensitivity testing of the NMGWM^{2016} (see EIR/EIR Appendix E2, Section 5.4), average regional gradients of 0.0004 and 0.0011 were also superimposed on the superposition model. If the inland regional hydraulic gradient decreases over time as a result of successful actions by MCWRA or as a result of actions resulting from SGMA, the capture zone would be slightly larger and would more resemble that from the minimum gradient examined for this analysis (0.0004), shown in Final EIR/EIS Appendix E2, Figure 5.6. However, the expectation that the groundwater depression on the East Side will be resolved within a reasonable timeframe and the inland gradient would be dramatically decreased is speculative for the reasons explained above, and the impact conclusion on groundwater resources remains unchanged.

Marina-JJ&A-7

See response to comment Marina-JJ&A-06 regarding the potential capture zone. The assumption in the comment that future groundwater conditions will cause reduced or flat gradients fails to recognize that sea level is projected to rise, continuing to exacerbate the difference between coastal water levels and inland water levels. Therefore, any increases in inland groundwater elevations would be partially offset by future sea level rise. Sea level is one of the inputs for which a range of values was used to assess NMGWM^{2016} uncertainty and was reported in Final EIR/EIS Appendix E2. See Master Response 8, Project Source Water and Seawater Intrusion; Figures 8.2.8-1 and Figure 8.2.8-2 show the modeled capture zone for the Dune Sands Aquifer and the 180-FTE Aquifer, respectively, and resemble the commenter's Figure 6a.

The water transmitting properties of the aquifer materials inland near the coast are insufficient to supply the majority of the water extracted by the slant wells. For example, the modeled horizontal conductivities of the inland A-Aquifer (2-4 ft/d), are one to two orders of magnitude smaller than the modeled Dune Sand Aquifer that would be tapped by the slant wells (150-625 ft/d); see EIR/EIS Appendix E2, Figure 3.4a. The water supplied to the slant wells in Model Layer 2 would, therefore, originate more readily from the Dune Sand Aquifer at the coast and beneath the ocean, than from inland. The combination of this contrast in hydraulic conductivity and ample recharge available from the ocean make it implausible for the inland gradients to reverse and "strand" the project.

Marina-JJ&A-8

See Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, for a discussion of the deep aquifer system (inaccurately referred to as the 900-Foot Aquifer). The text in EIR/EIS Section 4.4.1.2 and Section 4.4.5.2 has been revised to provide additional information on the deeper aquifers of the SVGB and to clarify the discussion of the impact of the MPWSP on those aquifers.

Marina-JJ&A-9 See response to comment Marina-JJ&A-8. Final EIR/EIS Appendix E2, Figure 3.3a shows that the horizontal hydraulic conductivity specified for Model Layer 8 (the 900-Foot/Deep Aquifer) falls at the midpoint of reported values from other sources, and therefore, the NMGWM^{2015} values were reasonable and not modified in the NMGWM^{2016}. Moreover, hydrographs for four 900-Foot Aquifer wells with historical water level data from 1979 to 2011 are reported in Appendix E2 Figure 4.1, and show good agreement between measured and model-calculated water levels. All of the model runs reported in Appendix E2 show a substantially decreasing cone of depression with depth, confirming that uncertainty in model results attributed to uncertainty in parameter values (for example, variable values for horizontal and vertical conductivity) becomes less significant for the deeper model layers.

Marina-JJ&A-10 See responses to comments Marina-JJ&A-2, Marina-JJ&A-8 and Marina-JJ&A-9. See also Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin. Analysis of potential impacts of vertical flow was implicit in the determination of water level changes in the 900-Foot/Deep (Model Layer 8) and 400-Foot (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4 in Final EIR/EIS Appendix E2, Figures 5.3, 5.4, 5.9 and 5.10. The model results that consider return water also included all four model layers. Hydrographs presented in Final EIR/EIS Appendix E2, Figure 4.1, show the water-level declines ranging from 10 to 50 feet associated with seasonal pumping in Model Layer 8 (the 900-Foot Aquifer). As noted in EIR/EIS Section 4.4.1.3, Groundwater Flow and Occurrence, there is a groundwater divide along the north side of the SGB separating groundwater flow paths between the SGB and the SVGB in both the shallow and deep aquifers, as illustrated on Figures 4.4-7 and 4.4-8. Impacts on the SGB are described in EIR/EIS Section 4.4.5.2.

Marina-JJ&A-11 The proposed length and placement of the MPWSP slant wells are described in EIR/EIS Section 3.2.1.1 and in Table 3-1, and are shown on Figure 3-3a; the City of Marina City Limits and Mean High Water are both shown on the figure. EIR/EIS Table 3-1 explains that the slant wells would draw water "from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant."

EIR/EIS Table 3-2 presents the total length of each slant well extending seaward of the 2020 MHW line, and EIR/EIS Figure 3-3b presents an Illustrative Cross-Sectional View of the Subsurface Slant Wells, so the distances onshore and offshore are fully disclosed. Contrary to Footnote 11 in the comment, the design details of the proposed slant wells that are noted in Footnote 79 on page 28 of Appendix EIR/EIS

were made publicly available with all of the other references cited in the EIR/EIS: see https://tinyurl.com/MPWSPRefs.

The notes in EIR/EIS Table 3-2 reference Appendices C1 (Coastal Water Elevations and Sea Level Rise Scenarios) and C2 (Analysis of Historic and Future Coastal Erosion with Sea Level Rise). The basis for determining the 2020 mean high water line is provided in the Coastal Erosion Study (EIR/EIS Appendix C2), and it is discussed in EIR/EIS Section 4.2.5.4. Appendix C2 examined coastal processes to determine the likelihood for the slant wells and their well heads to become exposed before the end of their usable lifespan. The study estimated coastal retreat both laterally and vertically. The lateral extent of erosion was evaluated using coastal erosion hazard zones; the vertical extent was evaluated using coastal profiles. As explained in EIR/EIS Section 4.2.4.5, the future vertical profile is the current profile eroded at the historic rate, with added erosion caused by sea level rise. The lower profile envelope represents a highly eroded condition, which could occur from a combination of localized erosion (rip currents), a large winter storm, and seasonal changes.

As explained in EIR/EIS Section 3.3.1.1, the nine new permanent slant wells would be approximately 900 to 1,000, while keeping the well screen above the 180/400-Foot Aquitard. Based on EIR/EIS Table 3-2 and Figure 3-3b, the commenter's calculation that an average 82 percent of the individual well casing lengths would be landward of the projected 2020 MHW line in the City of Marina is not unreasonable. As explained in EIR/EIS Appendix E3, while placement of production well screens closer to or under the ocean may achieve the maximum ocean water percentage (OWP) in the first few months and a very slight increase in the medium-term, a difference of a few hundred feet in screen placement relative to the ocean boundary would have minimal overall effect on OWP.

Marina-JJ&A-12

As explained in Final EIR/EIS Appendix E2, Section 1, the NMGWM was developed in 2008 to evaluate proposed groundwater extraction projects for the Monterey Peninsula area. The NMGWM was updated for the April 2015 Draft EIR (herein referred to as $NMGWM^{2015}$) and again for the current EIR/EIS (herein referred to as $NMGWM^{2016}$). See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

As of this writing, the U.S. Geological Survey (USGS) model for the Salinas Valley (i.e., the Salinas Valley Integrated Hydrologic Model, or SVIHM) is not available nor has a release date been published. The initial hydraulic conductivity and storage values implemented in the SVIHM were also taken from the SVIGSM and refined based on sub regions (USGS, 2016), similar to the EIR/EIS Appendix E2 analysis where the Fort Ord layering and parameters were modified to better match the smaller-scale conceptual model, and to be consistent with the available data for these model inputs.

The NMGWM^{2016} is a more accurate representation of the hydro-stratigraphic framework in the Fort Ord area than SVIGSM and the NMGWM^{2015}, since it includes the "A-Aquifer" and "Fort Ord Salinas Valley Aquitard" ("FO-SVA"). The inclusion of these geologic features is consistent with, but was implemented independently from, the Lawrence Berkeley National Laboratory (LBNL) peer review of NMGWM^{2015} and recommendations; see EIR/EIS Appendix E1.

Marina-JJ&A-13 As explained in EIR/EIS Appendix E2, Section 1, the NMGWM was developed in 2008 to evaluate proposed groundwater extraction projects for the Monterey Peninsula area (Footnote 12 in the comment letter is a link to the April 2015 Draft EIR) and was updated for the current EIR/EIS (see response to comment Marina-JJ&A-12). Contrary to the comment, EIR/EIS Appendix E2 does not claim on page 7 – or anywhere – that the NMGWM was developed to evaluate regional scale impacts. In fact, Appendix E2, Section 2.2 explains that the SVIGSM represents the entire Salinas Valley Groundwater Basin, whereas the NMGWM represents only a 149 square mile portion of the over 650 square mile SVIGSM area. The NMGWM^{2016} was employed to calculate the water level decline (drawdown) and changes in groundwater flow directions in response to proposed project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

Marina-JJ&A-14 Slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH. As explained in EIR/EIS Appendix E2, Section 5.4, the MODFLOW computer code post-processer MODPATH was employed to simulate groundwater-flow paths. MODPATH utilizes the output from MODFLOW simulations to simulate paths for "particles" of water moving through the modeled groundwater system. In addition to delineating particle paths, MODPATH computes the time-of-travel for the simulated particles to reach their ending locations. The superposition NMGWM^{2016} was utilized without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping.

The spatial resolution of the NMGWM^{2016} is sufficient for its intended purpose – to estimate the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to one foot. EIR/EIS Appendix E2 reports that, "Under 2012 sea level conditions, the maximum distance from the well field to the 1-foot drawdown contour in Model Layer 2 is about 15,000 feet, and in Model Layer 4 the distance is about 20,000 feet." To place these distances in perspective relative to model resolution, there are 75 to 100 model cells between the well field and the 1-foot contour. If the distance to the 1-foot contour were actually one model cell further than estimated by the model, it would represent an error of 1 percent at most. Additionally, any error in the distance to the 1-foot contour owing to uncertainty in aquifer parameter values, sea level, pumping rate,

and so forth is much greater than the error introduced by model discretization and is, therefore, rigorously quantified and accounted for by the model sensitivity analysis. See EIR/EIS Appendix E2, Section 6, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-15 EIR/EIS Section 4.4.3, Evaluation Criteria, explains that implementation of the proposed project would have a significant impact on groundwater resources if it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, or violate any groundwater quality standards or otherwise degrade groundwater quality. EIR/EIS Section 4.4.4 explains that four primary sources of data and information were used to guide the impact analysis: 1) information obtained through subsurface investigations commissioned by CalAm; 2) groundwater modeling; 3) the SWRCB Final Review of CalAm's MPWSP; and 4) CalAm operating rules for injection and extraction of desalinated water by ASR.

EIR/EIS Section 4.4.4.2 explains that groundwater modeling was a primary analytical tool used to evaluate proposed project impacts on groundwater resources, which are summarized in EIR/EIS Table 4.4-9 and evaluated in EIR/EIS Section 4.4.5.1 and 4.4.5.2. The $NMGWM^{2016}$ was employed to estimate the cone-of-depression, which is defined in EIR/EIS Section 4.4.4.2 as the area where the difference between pumping and non-pumping water levels (the drawdown) would be greater than or equal to one-foot. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping. Overlying jurisdictional or political boundaries were not considered. The model employs eight layers to represent the depth distribution of water-bearing and non-water-bearing sediments in the basin and the 149-square-mile model domain includes the City of Marina. Model Layer 8 represents the 900-Foot/Deep Aquifer (see Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, regarding the name of this aquifer and for more information about the deeper aquifers of the SVGB), which is one of the source aquifers for the City of Marina water supply. Therefore, while the degradation of groundwater quality in the City of Marina (or any overlying jurisdiction) resulting from the MPWSP was not an explicit objective of the groundwater modeling, the model evaluates the potential for drawdown and changes to groundwater flow (and quality) within the City of Marina. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-16 EIR/EIS Section 4.4.5.2, Impact 4.4-3 addresses groundwater supplies and groundwater levels, and explains that the first step in the analysis was to determine the pumping scenario that would have the most profound aquifer response surrounding the slant wells at the CEMEX site in order to conservatively judge

potential impacts. EIR/EIS Figure 4.4-13 shows the cone of depression and the extent of pumping influence in the 180-FTE Aquifer; it assumes that no water would be returned to the SVGB, and sea level would be consistent with current levels. Since this scenario would generate the most pronounced cone of depression with the largest area of influence because groundwater would not be returned to the basin, and because current sea level would not increase groundwater levels and gradients at the coast, this scenario is used to represent the maximum area of pumping influence. In other words, Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project. The proposed project was appropriately modeled using the superposition approach because drawdown due solely to project pumping is independent of other stresses in the basin (including variations in weather patterns) and depends primarily on the pumping rate, and the water transmitting and storage properties of the aquifers.

EIR/EIS Section Impact 4.4.5.2, Impact 4.4-4 addresses changes in water quality, and explains that water quality considerations associated with the project operations include the exacerbation of seawater intrusion and the potential for the proposed project to cause new contamination, or to extend the limits of existing groundwater contamination through pumping at the subsurface intake system. The impact analysis considers the effect of continuous pumping at the CEMEX site on local groundwater quality in the Dune Sand and 180-FTE Aquifer. See Also response to comment Marina-JJ&A-14.

The cumulative drawdown is determined from the superposition results; the superposition results depicting the change resulting from the project's contribution to cumulative effects are simply added to the drawdown determined for other projects. The resulting total represents the overall cumulative effects and then the project's incremental contribution to the total is judged as to level of significance as warranted; see EIR/EIS Appendix E2, Attachment 1, and response to comment LWMC-15.

Marina-JJ&A-17

EIR/EIS Section 4.4.4.2 acknowledges that the MPWSP pumping will never be the only stress on the aquifers in the vicinity of the proposed project, and the effects from proposed project pumping would be additional to the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. However, the superposition modeling approach simplified the complex problem of quantifying groundwater level changes and fluxes due to geographically and temporally varying recharge and discharge processes occurring within the Salinas Valley Groundwater Basin since the CEQA/NEPA analysis is required to evaluate the change in these groundwater elevations and fluxes as a result of a new stress – groundwater extraction by the proposed slant wells – against baseline conditions. Rather than employ a model to simulate the complex problem (i.e., attempt to quantify the effects of all recharge and discharge processes occurring within the

basin and then subtracting the effects of the other stresses to isolate the effects of the proposed project to comply with CEQA/NEPA), superposition is employed to determine the incremental drawdown against baseline, due solely to the proposed groundwater extraction by the proposed slant wells. In other words, superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the slant wells and these impacts are presented in EIR/EIS Section 4.4.5.2. These changes would be additive to future changes that occur as the net result of all other recharge and discharge processes in the basin.

See response to comment Marina-JJ&A-14 (regarding the migration of degraded water quality) and response to comment Marina-JJ&A-15 (regarding impacts to Marina); see also Master Response 3, Water Rights, Section 8.2.3.7.

EIR/EIS Section 4.1.7.1 explains the approach to the analysis of cumulative impacts. For each resource or issue considered, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then considers existing conditions (which are the combination of natural conditions and the effects of past projects) and describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. EIR/EIS Section 4.4.6 evaluates the cumulative effects of the proposed project in combination with other stress factors on groundwater resources.

Marina-JJ&A-18 See responses to comments Marina-JJ&A-6 and Marina-JJ&A-7.

Marina-JJ&A-19 See responses to comments Marina-JJ&A-1 and Marina-JJ&A -2 regarding the NMGWM and seawater intrusion. See also response to comment Marina-JJ&A-14 regarding the EIR/EIS analysis of slant well pumping effects on the inland movement of saltwater. The model does include system heterogeneity by using spatially varying conductivity zones. For example, Model Layer 2 represents the shallow water-bearing sediments referred to as Dune Sand Aquifer, A-Aquifer, Perched Aquifer, Perched ‘A’ Aquifer, 35-Foot Aquifer, and -2-Foot Aquifer. Similarly, Model Layer 4 represents the 180-Foot Aquifer, 180-FTE Aquifer, Upper and Lower 180-Foot Aquifer, and Pressure 180-Foot Aquifer.

Marina-JJ&A-20 The Fort Ord SVA and the transition zone west of the Fort Ord SVA are shown on EIR/EIS Appendix E2, Figures 3.2b, 3.2c, and 3.2f. However, Model Layer 3 is thin relative to Model Layer 2 and Model Layer 4, and not easily viewable in the cross sections.

Marina-JJ&A-21 EIR/EIS Appendix E2, Section 4.1 explains that "steep vertical gradients" refer to vertical gradients that are greater than 1.0 (see Footnote 67) and indicative of perched groundwater conditions (Belitz and Heimes, 1990). Perched groundwater occurs when an unsaturated zone separates an upper saturated zone from a deeper saturated zone. Vertical groundwater movement between upper and lower saturated zones must pass through the unsaturated zone. Water movement between saturated and unsaturated zones is referred to as flow under "variably saturated" conditions. MODFLOW simulates groundwater flow under saturated conditions only; it does not simulate water movement in unsaturated or variably saturated conditions. Hence, MODFLOW is limited for simulating steep vertical gradients. See Master Response 12, The North Marina Groundwater Model (version 2016), for more details.

EIR/EIS Appendix E2, Table 3.1 presents the modifications implemented in the $NMGWM^{2016}$; model layers were modified from $NMGWM^{2015}$, but model layers were not added.

Marina-JJ&A-22 The acceptance or rejection of a model depends not only on the evaluation of model error but also the intended application for which the model was created. The $NMGWM^{2016}$ does include system heterogeneity; see the second part of response to comment Marina-JJ&A-19.

The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15. Finally, model-calculated drawdown due to test slant-well pumping was compared to measured drawdown and validated model predictions (EIR/EIS Appendix E2, Figure 4.6 shows measured versus model calibrated drawdown in CEMEX monitoring wells during slant well pumping). The $NMGWM^{2016}$ is capable of adequately supporting the impact conclusions in EIR/EIS Section 4.4.5 and 4.4.6 for the reasons explained in response to comment Marina-JJ&A-12 through Marina-JJ&A-22. See also Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-23 The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. As noted by the comment, EIR/EIS Appendix E2, Section 4.3, presents the comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) and indicates only slight differences in calculated water levels. Slant well pumping effects on the inland movement of saltwater was assessed using the $NMGWM^{2016}$ and MODPATH, as noted in response to comment Marina-JJ&A-14. Response to comment Marina-JJ&A-2 explains that an analysis of potential impacts of vertical

flow was implicit in the determination of water level changes in the 900-ft (Model Layer 8) and 400-ft (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4. See Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-24 Downward vertical gradients are addressed in response to comment Marina-JJ&A-2. The model represents the various hydrogeologic features using spatially varying conductivity zones; see the second part of response to comment Marina-JJ&A-19. The reliability of the specified aquifer parameters for these zones was determined by comparing NMGWM^{2016} values to the measured or estimated values for similar materials. These comparisons indicated general agreement with values from previous hydrogeological and model studies (see EIR/EIS Appendix E2, Section 3.3, Aquifer Parameter Zones). The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15.

See also response to comment Marina-JJ&A-19 regarding parameterization of hydraulic conductivity, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the assignment of hydraulic conductivity values to the model layers.

Marina-JJ&A-25 The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15 for further explanation. See also response to comment Marina-JJ&A-9 for a discussion of the zone approach for the deeper aquifers. See response to comment JJ&A-26 concerning model calibration.

Marina-JJ&A-26 EIR/EIS Appendix E2 explains that the model layering and parameterization of the NMGWM^{2015} was revised based on new borehole data and analysis of the test slant well data. Additionally, the A-Aquifer, FO-SVA, and clay transition parameter zones were added and their parameter values based on reported aquifer tests. The resulting NMGWM^{2016} did not need to be recalibrated because the reliability of the specified aquifer parameters for these zones was determined by comparing NMGWM^{2016} values with the measured or estimated values for similar materials. Model error was assessed using six (6) tests widely used and accepted within the groundwater modeling community. The acceptance or rejection of a model depends on the evaluation of model error and also the intended application for which the model was created (in this application, the model is employed to calculate drawdown and changes in groundwater flow directions). Model-calculated drawdown due to test slant well pumping was compared to measured drawdown and validated model predictions and the adequacy of model parameterization and parameter values (EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model

calibrated drawdown in CEMEX monitoring wells during slant well pumping). See also Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-27 Automated parameter estimation was not used to update the $NMGWM^{2015}$ to the $NMGWM^{2016}$ and, therefore, is not discussed in EIR/EIS Appendix E2. Parameter sensitivity identifies the parameters that have the greatest influence on model calculations. In model calibration, the sensitivity analysis identifies the parameters that have the greatest influence on the comparisons between model-calculated and measured values (parameter calibration sensitivity). As noted in response to comment MarinaJJ&A-26, the $NMGWM^{2016}$ was not re-calibrated. When employing a model to predict future conditions, the sensitivity analysis identifies the parameters that have the greatest influence on the predictions (parameter prediction sensitivity).

EIR/EIS Appendix E2, Section 6.0, Uncertainty, explains that both sensitivity to assumed project operations and sensitivity to modeled aquifer parameters were considered. In the case of modeled aquifer parameters, the sensitivity assessment used "extreme values relative to the calibrated values and values reported by other sources, and therefore, using these values essentially brackets the range in possible drawdowns." Extreme values were employed to test uncertainty in the conceptual model and choice of parameters and provided a conservative answer to the question "would the model predictions change so as to change the conclusions regarding proposed slant well operation?" See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-28 The model was employed to estimate the cone of depression and changes in groundwater flow directions; see responses to comments Marina-JJ&A-15 regarding the $NMGWM^{2016}$ spatial resolution approach to assessing impacts to groundwater quality. Model heterogeneity is addressed in response to comment Marina-JJ&A-19, and model calibration is addressed in response to comment Marina-JJ&A-27.

Marina-JJ&A-29 As stated in EIR/EIS Appendix E2, Section 7, "[d]ue to the complex nature of simulating recharge and discharge processes in the Salinas Valley Groundwater Basin, *and identified problems with specified initial water levels and boundary conditions that were derived from SVIGSM results* (emphasis added), we employed the theory of superposition to remove these deficiencies. We converted the $NMGWM^{2016}$ into a superposition model and ran 34 future scenarios representing variable project operations and sea levels (2012 and 2073)." The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping and it overcomes the influence of deficiencies in

quantifying initial conditions, pumping and recharge inherent in the SVGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model. As noted in response to comment MCWD-GeoHydros-16, a key advantage of the superposition approach is the simulation of effects of one stress when other stresses are not well quantified. Thus, superposition is a superior approach because the simulation of these other stresses is unnecessary and the superposition approach can provide reliable information about the effects due solely to project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details. The use of superposition and the approach to cumulative drawdown effects are addressed in responses to comments Marina-JJ&A-16 and Marina-JJ&A-17. Model results at the CEMEX site of potential effects of proposed project pumping on the capture zone and seawater intrusion are presented in EIR/EIS Appendix E2, Section 5.4

Marina-JJ&A-30 It is not necessary to correct the SVIGSM because the use of superposition removed the dependency of the NMGWM^{2016} on the SVIGSM. Additionally, superposition is a more efficient approach for calculating drawdown and changes in groundwater flow directions due to proposed slant well pumping. See also Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-31 See response to comment Marina-JJ&A-12 regarding the availability of the USGS model for the Salinas Valley.

Marina-JJ&A-32 The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping. It also overcomes the influence of deficiencies in quantifying initial conditions, pumping and recharge inherent in the SVIGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model. The technical approach to evaluating the MPWSP's impacts on groundwater impacts has been thoroughly documented in EIR/EIS Section 4.4 and Appendix E2. Specifically:

- EIR/EIS Section 4.4.5.2, Impact 4.4-3 addresses groundwater supplies and groundwater levels.
- EIR/EIS Section Impact 4.4.5.2, Impact 4.4-4 addresses changes in water quality, and explains that water quality considerations associated with the project operations include the exacerbation of seawater intrusion and the potential for the proposed project to cause new contamination, or to extend the limits of existing groundwater contamination through pumping at the subsurface intake system. Slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH.

- Appendix E2 summarizes and provides extensive technical detail about the $NMGWM^{2016}$ in relation to the hydrogeology, model construction, assessment of model inputs and output, revisions to the $NMGWM^{2015}$ and its application to calculate drawdown using superposition.
- Model inputs are based on thorough scientific review of available data.
- The applicability of the equivalent fresh-water heads is well documented in Appendix E2, Master Response 12, The North Marina Groundwater Model (v. 2016), and the scientific literature.
- Comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) indicated slight differences in calculated water levels.
- The model adequately simulates measured water levels and seasonal trends, which demonstrates scientific validity.
- The model adequately simulates measured drawdown in response to test slant well pumping, which demonstrates its scientific validity.
- RMSE comparisons and evaluation of other model performance criteria demonstrate that the $NMGWM^{2016}$ is an improvement relative to the $NMGWM^{2015}$ and model errors and uncertainty minimally influence model output.
- The use of sensitivity analysis to provide a range of water-level drawdown is well documented and based on extensive data for hydraulic conductivity.

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8.5.2 Responses to Comments from Marina Coast Water District

By letter dated March 29, 2017, the Marina Coast Water District (MCWD) provided comments on the Draft EIR/EIS. Responses to comments from MCWD are provided in Section 8.5.2.1. Attached to the MCWD letter, were comment letters from Hopkins Groundwater Consultants (MCWD-HGC, dated March 29, 2017), GeoHydros (MCWD-GH, dated March 27, 2017), EKI (MCWD-EKI, dated March 28, 2017), and IntakeWorks (MCWD-IW, dated March 28, 2017). Responses to these comments are provided in Sections 8.5.2.2 through 8.5.2.5. With its comment letter, MCWD submitted a flash drive containing voluminous materials (e.g., the April 2015 MPWSP Draft EIR and 2017 Draft EIR/EIS reference documents, and PRA-requested materials). The Lead Agencies reviewed and considered all such data in responding to comments and preparing the Final EIR/EIS. Due to the substantial volume of documents on the flash drive (25 GB), they are not reprinted within the Final EIR/EIS, but a copy of the flash drive will be made available upon request to either of the Lead Agencies.

Subsequent to the close of the Draft EIR/EIS comment period, MCWD sent the Lead Agencies additional information to consider in the MPWSP environmental review process. By letter dated November 9, 2017, the MCWD provided the following; a Preliminary Interpretation of SkyTEM Data Acquired in the MCWD (Gottschalk and Knight, June 16, 2017); a memo report by Hopkins Groundwater Consultants titled, Monterey Peninsula Water Supply Project Return Water (MCWD-HGC2, dated September 29, 2017), and; a memo report by EKI titled, Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord MCWD, CA (MCWD-EKI2, dated June 22, 2017). Responses to MCWD-HGC2 and MCWD-EKI2 are provided in Sections 8.5.2.6 and 8.5.2.7, respectively. Gottschalk and Knight (2017) presents a preliminary interpretation of the Airborne Electromagnetic (AEM) imaging data that was conducted for the MCWD, and is referred to by MCWD, HGC and others in the comments. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) as well as EIR/EIS Appendix E3.

8.5.2.1 Responses to Comments from MWCD – Main Letter

MCWD-1 Consistency with regulations, plans and policies is addressed in each relevant topic area in EIR/EIS Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures. As explained in EIR/EIS Section 4.1.5, Project Consistency Analysis, the EIR/EIS includes a discussion of any inconsistencies between the project and applicable general plans, specific plans, and regional plans and any conflicts between the project and applicable plans, policies, and regulations of agencies with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect (CEQA Guidelines §15125 and Appendix G). Also, per NEPA, the analysis includes a discussion of the possible conflicts between the proposed project and the objectives of federal, regional, state, and local land use plans and policies for the area concerned that are imposed for the protection of the environment (40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10)).

The Sustainable Groundwater Management Act (SGMA) is described in EIR/EIS Section 4.4.2.2 and also in Master Response 6, The Sustainable Groundwater

Management Act. The MCWRA Agency Act is described in EIR/EIS Section 2.6.3, Section 4.4.2.3 and Master Response 4, The Agency Act and Return Water. The Federal and State Endangered Species Acts are discussed in EIR/EIS Sections 4.6.2.1 and 4.6.2.2, respectively, of Section 4.6, Terrestrial Biological Resources. The Coastal Act is addressed in multiple places in the EIR/EIS, as is the City of Marina's Local Coastal Land Use Plan (LCLUP) (see Final EIR/EIS Chapter 9, Index). The City of Marina's LCLUP is specifically addressed in Section 4.6, Terrestrial Biological Resources, in Section 4.6.5.2, which identifies a project conflict with the Marina LCLUP. Therefore, Impact 4.6.4 is determined to be significant and unavoidable. Monterey County Code of Ordinances Section 10.72.030(B) is addressed in the land use regulatory discussion in EIR/EIS Section 4.8.2.3. Water rights are addressed in EIR/EIS Section 2.6 and Master Response 3.

MCWD-2 The project that is proposed by CalAm, and described in Appendix H of its March 14, 2016 Amended Application to the CPUC (CalAm, 2016a), is the 9.6 mgd project, described in EIR/EIS Chapter 3, Description of the Proposed Project, and analyzed in Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures. EIR/EIS Section 1.1, Introduction, explains that the Amended Application for the proposed project also includes a second option that would meet the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. This second capacity option in CalAm's application is reflected in Alternative 5a. While both of these options were proposed by CalAm (in an "either/or" fashion) and thus represent the project proposed by the applicant, the larger desalination plant was selected to be analyzed as the "Proposed Project" in Chapter 4 of the EIR/EIS since it is larger and thus was expected to have greater impacts than the smaller capacity option.

Chapter 5, Alternatives Screening and Analysis, provides detailed descriptions of two reduced-sized alternatives (Alternatives 5a and 5b, see Sections 5.4.7 and 5.4.8, respectively) and Section 5.5, Alternatives Impact Analysis, presents an analysis of the environmental impacts of all alternatives, including Alternatives 5a and 5b. See response to comment Marina-140 concerning the EIR/EIS's evaluation of the smaller desalination plant options in Alternatives 5a and 5b. Under CEQA and NEPA, an alternative need not be analyzed unless it would meet most of the basic objectives of, or the purpose and need for, the project. See CEQA Guidelines Section 15126.6(a) and 40 CFR 1502.13 and 1508.9(b). The primary objective of the proposed project is to supply in a timely manner water for CalAm customers to replace certain existing supply sources, such that a smaller desalination plant than those considered in the EIR would not meet the basic project objectives. However, see Master Response 13, Demand (Project Need) and Growth, concerning demand and supply assumptions and the possible consideration of alternate scenarios in which lessened demand would allow for a smaller desalination plant. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the basic objectives of the project.

MCWD-3 As noted in EIR/EIS Section 1.1, this EIR/EIS has been prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3, §15000 et seq.), and with NEPA (42 U.S.C. §4321 et seq.,) and its implementing regulations (40 CFR Parts 1500-1508). The potential effects that the proposed project (described in Chapter 3) and Alternatives (described in Section 5.4) may have on the environment are evaluated and disclosed in EIR/EIS Sections 4.2 through 4.20 (proposed project), and in Section 5.5 (Alternatives Impact Analysis). EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis. As stated EIR/EIS Section 5.1.1, Alternatives Analysis – CEQA/NEPA Requirements, the selection of alternatives followed CEQA Guidelines Section 15126.6 and NEPA requirements in 40 CFR Sections 1502.13 and 1502.14, including identifying the feasibility of the various alternatives selected for analysis; see response to comments MCWD-168, below, and Marina-140, in Section 8.5.1. Furthermore, as stated in EIR/EIS Section 5.1.1, CEQA Guidelines Section 15126.6(a) acknowledges that an EIR need not consider every conceivable alternative to a project; see response to comment MCWD-170.

The federal actions proposed by MBNMS are presented in EIR/EIS Section 1.3.2 and consist of: 1) authorization of a Coastal Development Permit to be issued by the City of Marina for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface intake system; 2) authorization of a Central Coast Regional Water Quality Control Board (RWQCB) issued National Pollutant Discharge Elimination System (NPDES) permit or other discharge authorization to allow for the discharge of brine into the Pacific Ocean and MBNMS via an existing ocean outfall pipe; and 3) issuance of a special use permit to CalAm for the continued presence of a pipeline[1] transporting seawater to a desalination facility in MBNMS.

Responses to comments from Hopkins Groundwater Consultants (HGC), GeoHydros, EKI, and Intake Works have been provided following responses to MCWD's main letter. EIR/EIS Chapter 3 presents a detailed description of the proposed project (see response to comments MCWD-78 through MCWD-85); Chapter 4 presents the environmental baseline (setting), impacts, mitigation and cumulative effects of the proposed project (see response to comments MCWD-86 through MCWD-167); and Chapter 5 provides a robust and comprehensive alternatives analysis (see response to comments MCWD-168 through MCWD-185).

See response to comments MCWD-2 regarding the 9.6 mgd versus the 6.4 mgd project.

[1] The Applicant proposes to use subsurface intakes (slant wells) to supply the desalination plant with source water. The well casings, or pipes, would extend seaward of MHW and would require a special use permit to be present within MBNMS.

MCWD-4 Response to comment MCWD-HGC1-3 and Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.2, discuss the "Marina Subarea" and the "Pressure Area."

MCWD-5 EIR/EIS Section 1.4 presents the project setting and background, and describes the water supply challenges facing CalAm and its Monterey District Service Area customers; Section 1.4.1 presents the history of the Coastal Water Project (CPUC Proceeding A.04-09-019), the CPUC approval of implementation of the Regional Project alternative in Decision D.10-12-016 as well as the CPUC decision to close Proceeding A.04-09-019 in Decision D.12-07-008. The SWRCB orders are introduced in EIR/EIS Section 1.3 and are further explained in Section 2.2.3. The Sustainable Groundwater Management Act (SGMA) is discussed in EIR/EIS Section 4.4.2.2 and SGMA's relationship to the proposed project is further clarified in Master Response 6. Climate change, sea level rise and coastal erosion are discussed in EIR/EIS Section 4.2.4.5 (Coastal Retreat Study) and Appendices C1 and C2. Assembly Bill 1182[2] (Keely) is discussed in EIR/EIS Sections 5.2.2 and 5.2.3.

MCWD-6 It is correct that one of the actions required for the project is an authorization by MBNMS; see EIR/EIS Section 1.3.2. However, there is not a specific regulation requiring MBNMS to consider public versus private ownership prior to issuing an authorization, and ownership is not specifically addressed in the MBNMS Desalination Guidelines. The reference to consideration of ownership comes from MBNMS Management Plan Desalination Action Plan Strategy 1, which lists numerous activities including: "In collaboration with the California Coastal Commission, consider the ramifications of public versus private ownership of desalination facilities."

In 2006, MBNMS staff partnered with the Association of Monterey Bay Area Governments (AMBAG) in comprehensively identifying the potential environmental, economic, and social impacts, both positive and negative, associated with seawater desalination, if conducted in the Monterey Bay area. The Desalination Guidelines and the Desalination Feasibility Study for the Monterey Bay Region (AMBAG, 2006) were intended to address Desalination Action Plan Strategies 1 and 2 in the Management Plan. The MBNMS Desalination Guidelines (NOAA, 2010) were developed to specifically address the potential impacts that were identified during this initial investigation. As noted in the introduction to the MBNMS Desalination Guidelines, the guidelines were developed by MBNMS staff, in close collaboration with staff from the California Coastal Commission, the Central Coast Regional Water Quality Control Board, and NOAA's National Marine Fisheries Service (NMFS). During this collaborative process, many factors were considered, including private versus public ownership. Furthermore, the

[2] The state legislature passed Assembly Bill 1182 in 1998, ordering the CPUC to identify alternatives to the Carmel River Dam which was the subject of CPUC Proceeding A.97-03-052.

EIR/EIS considers both private and public alternatives in Sections 5.4 and 5.5. See Section 6.4 regarding compliance with the MBNMS Desalination Guidelines.

Regarding the MBNMS Guideline stating that desalination plants should only be pursued when other economically and environmentally preferable alternative water sources are infeasible and should be sized not to induce growth, the EIR/EIS fully evaluates alternatives in Section 5.5, Alternatives Impact Analysis, including the No Project alternative (described in EIR/EIS Section 5.4.2) and reduced size desalination facilities (described in Sections 5.4.7 and 5.4.8). EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, considered other supply alternatives, but determined that these other alternatives were not feasible to achieve the project objectives. The purpose, need and objectives for the proposed project are established in EIR/EIS Section 1.3. Growth inducement is discussed in Section 6.3 and in Master Response 13, Demand (Project Need) and Growth.

The obligations of the Lead Agencies in the decision-making process is described in EIR/EIS Section 1.5.4. If the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity (CPCN) for the MPWSP, as proposed or modified, or an alternative. In addition to environmental impacts addressed during the CEQA/NEPA process, the CPCN process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, the need for the project, the SWRCB Orders on the Carmel River, and any and all current laws and regulations.

MCWD-7 See responses to comments MCWD-4 and MCWD-84. The locations of MCWD's water supply wells are presented in EIR/EIS Section 4.4.5.2 in Table 4.4-10, which explains that MCWD's wells are too far from the project capture zone to be affected by the proposed project pumping. The City of Marina's Wells 10, 11, and 12 are over 2 miles to the southeast, and are screened in the 900-Foot Aquifer and the Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. See also Master Response 8, Project Source Water and Seawater Intrusion, and Master Response 3, Water Rights, specifically, Section 8.2.3.7.

The "Marina Subarea" has not been the only source of water that MCWD has used since its founding to serve its ratepayers. Between early 1997 and February 2003, MCWD operated a 300-afy desalinated plant at its facility on Reservation Road for its Central Marina customers; the plant has remains idle.

MCWD-8 The Regional Project is described in EIR/EIS Section 1.4.1 and the decision to close Proceeding A.04-09-019 (D.12-07-008) is discussed in Section 1.4.2. This current environmental review process, however, is *different* in several key respects to the prior MPWSP and the prior Regional Project; EIR/EIS Section 1.4.3 provides context for the environmental review of the currently proposed project

and the environmental review associated with this EIR/EIS, while Section 1.4.4 describes the revisions made in this EIR/EIS, and distinguishes between the current EIR/EIS and the prior April 2015 Draft EIR.

MCWD-9 See Master Response 3, Water Rights.

MCWD-10 The text quoted in the comment is in the introduction to EIR/EIS Section 5.2. Section 5.2.1 provides an overview of the alternatives not evaluated in detail, and Sections 5.2.2 through 5.2.6 provide a summary of five different projects (including the Coastal Water Project, see Section 5.2.4) that were considered and rejected in earlier environmental review documents because the projects were determined to be politically, legally, economically, or technically infeasible; others are concepts that were speculative or technically or economically infeasible.

The discussion of the Coastal Water Project, and therefore the North Marina Project and the Regional Desalination Project in Section 5.2.4, explains the history of the Coastal Water Project, and the CPUC's closing of proceeding A.04-09-019 with Decision D-12-07-008, and explains that certain elements of the three projects evaluated in the Coastal Water Project EIR (e.g., intake, plant location and brine discharge components) have been carried into the alternatives analysis presented in this EIR/EIS. The EIR/EIS does not explicitly call out the Regional Project as infeasible; rather the EIR/EIS explains the evolution of the MPWSP, of which the Regional Project was an earlier configuration. Yet, ongoing litigation and disputes between the two former proponent/partner parties over the Regional Project may well make it infeasible, and besides, it would not appear to have environmental advantages so as to lessen any significant effects of the proposed project. See also response to comment MCWD-4 which addresses the Marina Subarea, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), which addresses the availability and use of ERT/AEM data for assessing aquifers.

MCWD-11 See Master Response 4, The Agency Act and Return Water.

MCWD-12 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation; see responses to comments MCWD-172 and MCWD-IW-6 for details on why this component was eliminated from full analysis. The Regional Project did propose vertical wells; six wells pumping 2,800 gallons per minute (gpm) (equivalent to 4 mgd per well[3]) would have been located at least 500 feet apart along the coast in an area approximately 0.25 mile wide (starting on the inland side of the coastal dunes) by 3 miles long (an area south of the Salinas River and north of Reservation Road) and the water pumped from the wells would have included

[3] This is an unrealistic pumping rate. As noted in Draft EIR/EIS Appendix I1 on page I1-4, source water yield from a vertical well typically ranges between 0.1 and 1.5 mgd (Hunt, 2008). The 300 afy Sand City Desalination Plant utilizes two vertical wells (and two on standby). In order to supply 24 mgd of feedwater for a 9.6 mgd desalination plant, the project would need 24 vertical wells, not six. To provide 15.5 mgd of feedwater for a 6.4 mgd desalination plant, the project would need approximately 16 vertical wells.

approximately "15 percent of intruded groundwater from the SVGB" (Coastal Water Project Final EIR, SCH No. 2006101004, Section 5.2.2.1, page 5-21). The reliability of modeling slant wells is no different from modeling vertical wells because all groundwater models simulate subsurface water movement in porous media. They are approximations because a model cannot quantify exactly the spatially variable properties that exist in the real world; see Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.2.

MCWD-13 Groundwater modeling was conducted for the Coastal Water Project EIR (which included the Regional Project as well as the North Marina Project; see EIR/EIS Section 5.2.4) prior to approval of that project, not after its approval. The January 2009 CWP Draft EIR and the October 2009 CWP Final EIR both included an Appendix E titled "North Marina Ground Water Model Evaluation of Potential Projects," prepared for CalAm by Geoscience Support Services, dated July 25, 2008 (Geoscience, 2008). The July 2008 groundwater modeling concluded that "after 56 years of operating the Regional Project, the inland groundwater elevations in the 180-Foot Aquifer would be higher than under No Project conditions. The area around the Project wells would have lower groundwater elevations due to the trough developed by continuous pumping. Groundwater flow directions would be similar to normal hydrologic year flow directions."

As noted in D.10-12-016 at Findings of Fact 175: "Based on the analysis of hydrology and groundwater modeling in the FEIR, we are persuaded that the volume of water available for desalination and delivery to CalAm will not be diminished, although the water that originates from the Salinas Valley Groundwater Basin may well become purer, because pumping the wells (whether vertical or slant wells) will not only draw seawater towards the coast, but the saline-intruded groundwater will also be drawn towards the coast, which in essence reverses the seawater intrusion dynamic, and reduces the salinity of the groundwater portion of the intake supply but does not change the volume." (CPUC Decision D.10-12-016)

A version of the groundwater model that was used to evaluate the Regional Project was also used in the April 2015 Draft EIR to evaluate the proposed MPWSP. That 2015 version of the model (referred to as $NMGWM^{2015}$) was peer reviewed by Lawrence Berkeley National Laboratories, and HydroFocus independently advanced and revised the model for use in the current EIR/EIS, as $NMGWM^{2016}$. See Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to EIR/EIS, Section 8.2.5.6.

The $NMGWM^{2016}$ employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments in the basin. The 149-square-mile model domain includes the City of Marina, and Model Layer 8 represents the 900-Foot/Deep Aquifer. Hence, the model clearly evaluates the potential for drawdown and changes to groundwater flow within the City of Marina. See Master Response 12, The North

Marina Groundwater Model (v. 2016), for more details, including the manner in which the test well data was indeed used in the modeling effort.[4]

Model-calculated drawdown due to test slant well pumping was compared to measured drawdown and was used to validate model predictions. EIR/EIS Appendix E2, Figure 4.6 shows measured versus model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

Superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the proposed slant well pumping. These changes would be additive to future changes that occur as the net result of all other recharge and discharge processes in the basin. Therefore, the project drawdown is added to the drawdown determined for other cumulative projects and the results represent the overall cumulative effects; see EIR/EIS Section 4.4.6.

Conducting the modeling as part of the EIR/EIS process, and making the modeling results (as well as the model itself) available for public review, provides the public with ample opportunity to review and make comments, resulting in a transparent process that provides for full and open disclosure. Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage, proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer, the 180-FTE and the 400-Foot Aquifer as a result of project pumping, and would, therefore, be included in the Mitigation Monitoring and Reporting Plan that gets adopted with any project approval decision. Therefore, any further MPWSP evaluation, testing, and modeling for groundwater impacts would proceed within a regulatory framework that would be open to full public scrutiny, consistent with CEQA, NEPA, the Public Utilities Code and due process.

MCWD-14 SGMA is discussed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-15 As demonstrated in Master Response 13, Demand (Project Need) and Growth, CalAm's objective of meeting peak demands of existing customers means meeting peak monthly demands, which are approximately 30 percent greater than average, not the 10 percent referenced in the comment; see the discussion of "Supply for Peak Demands" in Section 8.2.13.3 of Master Response 13.

See Master Response 13 Sections 8.2.13.1 and 8.2.13.2 regarding the demand and supply assumptions underlying the proposed MPWSP. Note that the supply sources CalAm has historically used were reduced by the Seaside Groundwater Basin

[4] The comment includes Footnote 4, which introduces litigation initiated by MCWD against the CCC with respect to the test slant well, and refers to an attached brief filed as part of that case. Indeed, MCWD has brought three lawsuits challenging aspects of the test slant well for the Project. See Response to Comment MCWD-89.

adjudication as well as by State Water Board orders on the Carmel River. Please see Marina-140, in Section 8.5.1, concerning Alternatives 5a and 5b.

Regarding alternative supply sources, the consideration and evaluation of numerous project alternatives over the years, described in EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, supports the conclusion that viable alternatives have not been identified that would supply sufficient water without a desalination plant. Indeed, an alternative source suggested in the descriptions of "Scenarios A and B" (see response to comment MCWD-31 through 42) includes a "small desalination plant." Refer to responses to comments MCWD-42 through MCWD-49 regarding alternative sources of supply. MCWD's contention that adequate alternative sources are available also relies on an arguably unrealistic assumption that demand in 2016 represents service area demand in non-drought periods (discussed under "Existing Annual Service Area Demand" in Master Response 13, Section 8.2.13.2) and further supposes that the other demands that the project proposes to serve need not be served.

See also the discussion in "Supply Provided by the Desalination Plant" in Master Response 13, Section 8.2.13.3, and "Alternative Supply and Demand Scenarios" in Section 8.2.13.4, which explains that the desalination plant could be operated at a somewhat lower capacity if long-term demand were to decline, and explores the potential to reduce the size of the desalination plant under alternative demand and supply scenarios, respectively. As described in EIR/EIS Section 1.5.4, the CPUC will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, and the need for the project.

MCWD-16 The CPUC has properly exercised independent judgment under Public Resources Code section 21082.1(c)(3). A lead agency has the discretion to adopt materials that it chooses, such as those drafted by the applicant or its consultants, so long as the lead agency independently reviews, evaluates, and exercises judgment over that documentation and issues it raises and addresses. (*Friends of La Vina v. County of Los Angeles* (1991) 232 Cal.App.3d 1446; Pub. Resources Code, §21082.1, subd. (c); Cal. Code Regs., tit. 14, §15084, subd. (e).) The lead agency also has the discretion to resolve factual issues and to make policy decisions. As an example, "[i]f the determination of a baseline condition requires choosing between conflicting expert opinions or differing methodologies, it is the function of the agency to make those choices based on all of the evidence." (*Save Our Peninsula Committee v. Monterey County Board* (2001) 87 Cal.App.4th 99, 120; citing *Barthelemy v. Chino Basin Municipal Water District* (1995) 38 Cal.App.4th 1609, 1617.) Even if an entire study or technical document is initially prepared by the project applicant or a third party (such as the NMGWM^{2015} prepared by Geoscience as CalAm's consultant) and subsequently adopted by the lead agency, that does not mean that the lead agency failed to exercise its independent judgement. (*City of Poway v. City of San Diego* (1984) 155 Cal.App.3d 1037, 1042.) Under NEPA regulations, materials

may also be prepared by the applicant or a third-party contractor as long as the agency independently evaluates the information submitted and the agency is responsible for its accuracy (40 CFR §1506.5).

See also Master Response 5, The Role of the Hydrogeology Working Group and its Relationship to EIR/EIS, Section 8.2.5.5. The CEQA/NEPA consultants, under contract to the CPUC, prepared the EIR/EIS independent from the HWG, using professional judgment in evaluating the information provided by the HWG. The CEQA/NEPA consultants considered and incorporated information and data generated by the HWG to inform the EIR/EIS, only as appropriate. The EIR/EIS impact analysis conclusions and mitigation measures prepared by the CEQA/NEPA consultants were not shared or discussed with the HWG prior to publication of the Draft EIR/EIS.

Extensive documentation in EIR/EIS Appendix E2 (Section 3) demonstrates the reliability, authenticity, and genuineness of the NMGWM^{2016}. Responses to model-related comments provided by Hopkins, GeoHydros, EKI, and Dr. Abrams further demonstrate the soundness of the modeling approach and trustworthiness. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details. See responses to comments MCWD-168 through MCWD-174 for responses to comments addressing the CEQA/NEPA approach to alternative intake technologies and alternatives that was performed by the EIR/EIS preparers.

See also Master Response 5, The Role of the Hydrogeology Working Group and its Relationship to EIR/EIS, where the HWG members are discussed in Section 8.2.5.3 and the potential conflicts of interest are addressed in Section 8.2.5.6.

MCWD-17 EIR/EIS Section 1.5.4 describes the CPUC decision making process for the MPWSP; it is identical to the processes employed by the CPUC for other projects subject to CEQA. Before making a decision on the project, the Commission will consider all of the evidence in its record (including parties' testimony and briefs, all evidentiary hearings and the entire CEQA/NEPA review record, including the Final EIR/EIS). On the basis of all such evidence, the Commission will reach a decision on whether to issue a Certificate of Public Convenience and Necessity, all in accord with the Public Utilities Code and due process.

MCWD-18 The Lead Agencies appreciate the unique position of the commenter. Each comment presented in the comment letter and attachments has been addressed in this set of responses. See responses to comments MCWD-HGC, MCDW-GeoHydros, MCWD-EKI and MCWD-Intake Works, which follow these responses to MCWD's main letter.

MCWD-19 This comment is addressed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-20 The EIR/EIS preparers independently considered the reasonableness of the proposed demand, supply, and operations assumptions submitted by CalAm for its Monterey District Service Area, in the context of other water supply planning projections; Section 2.3 thoroughly describes the CalAm service area demand assumptions, and the "other demand" assumptions included in project sizing, while Section 2.4 describes the available supplies. EIR/EIS Section 6.3.5.1 evaluates the demand and supply assumptions to determine if the provision of water proposed by the project appears reasonable, and if it would directly or indirectly induce growth, and concludes that supply not used to meet existing demand, demand of existing business customers under more robust economic conditions, or the SVGB return water obligation would be available to support new development. New development might include improvement of existing vacant lots of record. Water supply capacity to serve new development would remove water supply limitations as an obstacle to such development and would be considered growth-inducing under CEQA and NEPA.

CalAm is under SWRCB orders to manage its current water supplies as efficiently as possible; the MPWMD presents monthly water supply reports and CalAm production reports at its monthly Board of Directors meetings and these reports are available at the MPWMD website.[5] Table 8.2.13-2 in Master Response 13, Demand (Project Need) and Growth, presents typical monthly operations to meet project demands assuming a 9.6 mgd desalination plant and 6 percent Salinas Valley Groundwater Basin (SVGB) return water obligation; see also EIR/EIS Appendix L. The comments about the relative complexity of CalAm's current and future water supply portfolio and similarities between operating an electric utility and a water utility are noted. Regarding peak demand, see the discussion under "Supply for Peak Demands" in Section 8.2.13.2 of Master Response 13.

MCWD-21 The information provided regarding reserves required of electric utilities and the comment about CalAm's objective of meeting peak demand are acknowledged. As stated in EIR/EIS Section 1.3.1, the fourth primary objective of the proposed project is to "[d]evelop a reliable water supply for the CalAm Monterey District service area, accounting for the peak month demand of existing customers." Peak demands ("reserve margins") are discussed in EIR/EIS Section 2.3.2, Peak Demands. Also see the discussion under "Supply for Peak Demands" in Master Response 13, Section 8.2.13.3.

MCWD-22 The reduction in CalAm's Carmel River supply pursuant to SWRCB orders is a key driver of the proposed MPWSP (see EIR/EIS section 2.2.3), as is the Seaside Groundwater Basin (SGB) Adjudication (see EIR/EIS section 2.2.4). EIR/EIS Table 2-1 presents the SGB adjudicated operating and natural safe yields, including CalAm's pre-adjudicated production, while Table 2-4 presents the legal and/or contractual limits of the portfolio of water supply sources available to CalAm's

5 http://www.mpwmd.net/who-we-are/board-of-directors/bod-meeting-agendas-calendar/

Monterey District, with the proposed MPWSP. Table 2-4 presents available supplies assuming construction of the proposed 9.6 mgd desalination plant or a 6.4 mgd plant combined with purchase of GWR Project water (Alternative 5a). As used in the EIR/EIS, in lieu replenishment of the Seaside Groundwater Basin – to replenish the amount of groundwater CalAm has pumped in excess of its adjudicated right – would occur when CalAm pumps only 774 afy of its 1,474 afy adjudicated right from the Basin, leaving the other 700 afy in the ground, as discussed in EIR/EIS Section 2.2.4. See also response to comment MCWD-28.

Since the SGB has been adjudicated, the amount of groundwater CalAm can pump from the Basin is limited by court order, as discussed in EIR/EIS Section 2.2.4 and presented in Table 2-1; this represents supply available under the No Action Alternative, and would not change with the proposed project. Under the adjudication, CalAm is able to augment storage, and withdraw water that it puts into the SGB via aquifer storage and recovery; the MPWSP proposes to enhance and increase ASR in the Seaside Basin. If purchased GWR water were added to CalAm's supply portfolio, CalAm would also be able to withdraw its portion of GWR that had previously been put into the Basin. The EIR/EIS subtracts the service area demand presented in EIR/EIS Table 2-3 from the available total supplies presented in Table 2-4, to determine how much supply provided by the proposed MPWSP would be in excess of current uses and would, therefore, be available for other uses (i.e., growth). Water produced by the proposed project in excess of CalAm's needs is assumed to induce growth, and the indirect impacts of that growth are evaluated in EIR/EIS Section 6.3.

An EIR/EIS is required to evaluate the effects of a proposed project against baseline (existing) conditions and not against a future scenario of demand and supply in 2022 – the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant (CEQA Guidelines 15125(a)). Sections 8.2.13.2 and 8.2.13.3 of Master Response 13 summarize the EIR/EIS demand and supply assumptions, respectively, and document why they are reasonable. However, questions have been raised as to whether the proposed project is necessary or could be smaller if one considered different supply and demand assumptions.

EIR/EIS Appendix L was prepared to test that possibility by considering different supply and demand numbers. The primary consideration is whether facts exist to support a smaller desalination plant (e.g., having one or more fewer reverse osmosis [RO] units) such that either a smaller plant or a phased plant could be approved for the 9.6 mgd proposed project or the 6.4 mgd Alternative 5a. The results of this sensitivity analysis could inform and affect the ultimate project decision.

Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2. As stated in response to comment MCWD-20, Table 8.2.13-2 in Master Response 13 shows typical monthly operations to meet project demands; as

discussed there, this table was provided to the EIR/EIS preparers by CalAm, but it was independently reviewed and subsequently revised by the EIR/EIS preparers. The table shows that available supplies from the multiple sources would be used to meet demand that varies each month over the course of the year. The table shows that operations would meet the supply and demand related objectives for the project. The first page of the table shows when and how much of the injected desalinated water would be extracted from the ASR system each year. As the table shows, this water would be injected in wetter months and withdrawn in drier months. The second page of the table shows how supplies provided by the desalination plant would be distributed.

EIR/EIS Appendix L presents a sensitivity analysis to test the possibility that the proposed project could be downsized, and examines whether the proposed project is necessary or could be smaller if one considered different supply and demand numbers that some commenters believe are more reasonable than those used in the Draft EIR/EIS. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the primary objectives of the project.

MCWD-23 See the discussion under "Existing Annual Service Area Demand" in Master Response 13, Section 8.2.13.2; see also the discussion of Pebble Beach Entitlements, which are considered part of existing demand, under "Other Demands." Master Response 13, Section 8.2.13.2 explains that two other factors that influenced demand in recent years were the recession that began in late 2007 to early 2008 and the recent five-year drought.

MCWD-24 EIR/EIS Section 2.4.3 describes CalAm's supply sources; see also Master Response 13, Section 8.2.13.3. Regarding the use of 2016 demand to represent annual service area demand, see the discussion of Existing Annual Service Area Demand in Master Response 13, Section 8.2.13.3. An average of 3,500 afy of GWR Project water would be available to CalAm, assuming the GWR Project is constructed and becomes operational, as also discussed in Section 8.2.13.3. Regarding the ASR system yield and CalAm's water rights permits to divert water to aquifer storage and recovery, see response to comment MCWD-30. EIR/EIS Section 5.4.2.4, Ability to Meet Project Objectives, includes a discussion on the ability of the No Project Alternative to meet project objectives assuming implementation of the GWR Project.

MCWD-25 The CalAm Monterey District Service Area overlies a small portion of the Seaside Groundwater Basin, as shown in EIR/EIR Figure 3-1, but MCWD's Ord Community overlies a substantial portion of the Basin. While CalAm used to pump upwards of 4,000 afy from the Seaside Basin CalAm's adjudicated allocation from the Seaside Groundwater Basin is 1,474 afy, as explained in EIR/EIS Section 2.2.4 and Table 2-1. As explained in response to comment USARMY-16, the volume of

water that CalAm could inject into the ASR system in a given year could be a combined maximum of about 7,426 acre-feet from all sources.

See also response to comment MCWD-22. Since the Seaside Basin Adjudication Decision (Monterey County Superior Court, 2007) Section II.C.2 acknowledges that " . . . the public interest is served by augmenting the total yield of the Seaside Basin through artificial groundwater recharge, storage, and recovery," and since CEQA Guideline Section 15126.2 states that " . . . an EIR shall identify and focus on the significant environmental effects of the proposed project," the EIR/EIS did not analyze the synergistic benefits of the increased groundwater storage in the Seaside Groundwater Basin because it would be a benefit, and not a potentially adverse significant impact. However, given that NEPA does consider beneficial effects, it is acknowledged that the enhanced ASR aspect of the project could provide beneficial effects to the groundwater resources within the Seaside Basin.

MCWD-26 EIR/EIS Chapter 3 provides a general description of the technical and environmental characteristics of the proposed facilities, consistent with CEQA Guidelines Section 15124(c). On March 23, 2017, CalAm provided to MCWD an assessment of estimated pipeline capacities, including pressure assumptions, for proposed uses of the MCWD-CalAm joint pipeline in General Jim Moore Boulevard, including future supply from CalAm's proposed desalination facility (CalAm, 2017). The assessment shows there would be ample capacity in the joint pipeline for projected future uses: up to 11,081 gallons per minute (gpm) on an average day, and up to 9,996 gpm at peak hour. Since the shared pipeline is part of a pressurized system, whatever source water that is permitted to use the pipeline would become blended in the pipeline. Regardless of the source or the destination, appropriate volumes associated with each source would share the pipeline during different times of the year. See also responses to comment MCWD-27 and MCWD-157.

MCWD-27 The purpose and need for the expansion of the existing Seaside Groundwater Basin ASR system is described in EIR/EIS Section 3.2.4. As noted in that section, the ASR expansion would provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies in order to increase system reliability. The proposed new ASR injection/extraction wells would be used to inject Carmel River supplies and desalinated water into the Seaside Groundwater Basin for storage, and during periods of peak demand, the stored water would be extracted and delivered to customers; see EIR/EIS Table 3-1. As shown in Table 8.2.13-2 in Master Response 13, the MPWSP desalinated supplies would be extracted from the Seaside Groundwater Basin and delivered to customers between May and October. As proposed, the 2,100 afy of desalinated water that would be injected each winter into the Seaside Groundwater Basin when customer demands are lower means that CalAm would be able to extract that amount in the summer months when demands are higher, thus meeting a primary objective (see EIR/EIS

Section 1.3.1) of developing a reliable water supply for CalAm's Monterey District service area, accounting for the peak month demand of existing customers.

In addition, as discussed in EIR/EIS Section 2.2.4, CalAm is entitled to 1,474 afy from the Seaside Groundwater Basin as a result of adjudication but has agreed with the Seaside Groundwater Basin Watermaster to leave 700 afy of its entitlement in the Seaside Groundwater Basin for 25 years, as repayment for its previous overdrafting. Both the stored desalinated water and the Seaside Groundwater Basin water are assumed to be available supplies to meet the peak month demand. See Master Response 13.

MCWD-28 The GWR Project water to which MCWD is entitled would provide an in-lieu recharge of the adjudicated Seaside Groundwater Basin if there were subscribers/irrigators/customers who would use the water in exchange for the potable water they currently receive, or pump directly from the Seaside Groundwater Basin themselves. If the Bayonet and Blackhorse Golf Courses were to receive GWR Project water in exchange for their current use of an equal amount of groundwater from the Seaside Groundwater Basin, 400 to 500 afy of water could remain in the Seaside Groundwater Basin. If an additional 200-300 afy of GWR Project water could also be provided to other Seaside Groundwater Basin users in exchange for their existing use of potable water from the Seaside Groundwater Basin, and if CalAm could affect such an agreement to do so with the Watermaster, the court and other stakeholders, then that 700 afy (0.625 mgd) would not be required to be produced at the desalination plant. Since each desalination treatment module is sized at 1.6 mgd, this 700 afy reduction would represent less than one-half of a treatment module and would not alone be enough of a savings to justify downsizing the project. This and other possible reductions in demand will be considered by the Lead Agencies in their decision-making process. The magnitude of any potential adverse impacts resulting from the implementation of a desalination plant that is reduced in size from Alternative 5a and 5b would be reduced from what was evaluated for Alternatives 5a and 5b in EIR/EIS Section 5.5. However, it is expected that the classifications of all such impacts would remain the same as set forth in the EIR/EIS, as would the suggested mitigation measures. An average of 3,500 afy of GWR water (as opposed to 3,700 afy noted in the comment) would be available to CalAm from MRWPCA; see Master Response 13, Section 8.2.13.3.

MCWD-29 See Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3, regarding supply assumed to be available to CalAm from the Sand City desalination plant. EIR/EIS Section 5.4.2 has been revised to clarify that 230 afy represents supply assumed to be available to CalAm from the Sand City plant at the end of the Cease and Desist Order (CDO) extension period, and that CalAm's eventual, longer term supply from that desalination plant would be 94 afy. CalAm has a long term right only to the 94 afy so the Lead Agencies cannot reasonably assume any greater number would be available for CalAm's use. For the No Project Alternative, the estimate of 230 afy was assumed in order to characterize

available supply at the end of the CDO extension period; at that time, a portion of Sand City's share of Sand City desalination plant production is assumed to not yet be needed by the City and therefore would continue to be available to CalAm. Over time, it is assumed that Sand City will need more of its 206 afy share of the plant's production to serve Sand City development, and supply available to CalAm will be reduced to CalAm's long term share of 94 afy. The third bullet under "Supply Shortages" in EIR/EIS Section 5.4.2.3 has been revised as follows:

> Continued use at the end of the Revised CDO extension period of approximately 230 afy provided by Sand City's existing desalination plant (*eventually decreasing to CalAm's long term supply from the Sand City desalination plant of 94 afy, same as proposed project*) . . .

MCWD-30 SWRCB-issued water rights permits for diversion of Carmel River supplies are discussed in EIR/EIS Section 2.4.3, Section 3.4.2, and Section 4.4.2.2. The combined diversion limits of the two permits (20808A and 20808C) is set at 5,326 afy (2,426 afy and 2,900 afy, respectively) and is contingent upon hydrology/rainfall and, therefore, meeting certain instream flow requirements based on NMFS 2002 recommendations and the physical attributes of the wells; the permits do not, as the comment states, include an estimated annual average yield. Nor does the MPWMD website describing the ASR project "report" average yields; rather the website explains that "[t]he Phase 1 ASR project *entails* [emphasis added] a maximum diversion of 2,400 afy from the Carmel River and an average yield of about 920 afy" and further explains that "[t]he average yield of the Phase 2 ASR project is *estimated* [emphasis added] at approximately 1,050 AFY of additional water supplies." (http://www.mpwmd.net/water-supply/aquifer-storage-recovery/). As noted by SWRCB Order WR 2016-0016, the ASR project diverted just over 1,110 afy of water in Water Year 2009-2010 and Water Year 2010-2011, and between 0 and 210 afy in the drier water years from Water Year 2011-2012 through Water Year 2014-2015. The 1,920 afy and 1,970 afy estimates cited in the comment are just that, whereas the historical values cited in Order 2016-0016 represent actual diversions that have been available as a result hydrology/rainfall.

In its comments on the EIR/EIS, the MPWMD provided Attachment 1 (see comment MPWMD-14, in Section 8.5.7), which calculates the ASR project yield with the new Monterey Pipeline (which is under construction) to be 1,600 afy under "normal" hydrology, compared to 918 afy without the new Monterey Pipeline in the same water year type. Taking all water year types into consideration, the estimated annual yield from ASR with the capacity of the new Monterey Pipeline would average 1,641 afy. The EIR/EIS is using 1,600 afy as a long-term average and not the 1,920 afy or 1,970 afy estimates, because the 1,600 is a more current and realistic value that has been provided by MPWMD, the agency formed under California Water Code with a mission "to promote or provide for a long-term sustainable water supply, and to manage and protect water resources for the benefit of the community and the environment." See also Master Response 13.

MCWD-31 The recycled water supplies anticipated by MCWD from the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project are described in EIR/EIS Table 4.1-2 as a cumulative project (Project No. 31), as is the Pure Water Monterey GWR (Project No. 59), through which MCWD will now receive the recycled supplies identified by the RUWAP Recycled Water Project. The full size of the GWR project, regardless of who administers or serves the supply (MCWD or MRWPCA), is fully considered in the cumulative analysis of Alternative 5a and 5b in Section 5.5. See also response to comment MCWD-28 regarding the use of GWR water and Seaside Basin in-lieu recharge.

MCWD-32 In assessing the No Project alternative, the Lead Agencies used a different set of supply assumptions from what is presented in the No MPWSP Option cited in the comment; see the first five rows of EIR/EIS Table 2-4, which are based on the best available information. For example, the Carmel River supply is not available equally in all months due to instream flow requirements (see EIR/EIS Section 2.2.3); the available Seaside Basin supplies are dictated by the adjudication and an agreement between CalAm and the Watermaster (see EIR/EIS Section 2.2.4); long term supply from the Sand City desalination plant is only 94 afy (see EIR/EIS Section 2.4.4); ASR is reliable at 1,600 afy (except in drought years when the yield would be zero, see EIR/EIS Section 2.4.3); and GWR will only supply CalAm with 3,500 afy -- the additional 200 afy is a drought reserve. Also see responses to comments MCWD-27 through MCWD-30 and Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3. See Master Response 13, Section 8.2.13.2, regarding EIR/EIS demand assumptions. EIR/EIS Section 5.4.2.4, Ability to Meet Project Objectives, includes a discussion on the ability of the No Project Alternative to meet project objectives assuming implementation of the GWR Project.

MCWD-33 The EIR/EIS utilized a different supply assumption than the commenter's No MPWSP Option Scenario A. For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through MCWD-30, MCWD-32, and Master Response 13, Section 8.2.13.3. Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2.

MCWD-34 For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through 30, MCWD-32, and Master Response 13, Section 8.2.13.3. For an explanation of existing annual service area demand used for sizing the proposed project, see EIR/EIS Section 2.3.1 and Master Response 13, Section 8.2.13.2; the EIR/EIS does not assume 2016 demand. Regarding the ability of the No Project Alternative to meet project objectives, see EIR/EIS Section 5.4.2 and response to comment MCWD-37. The analysis presented by the comment assumes an annual average demand and supply scenario when, in fact, the demand of customers and the availability of supplies varies by month; customer demand in the peak summer months is approximately 130 percent of normal, and supplies in a drought (specifically, water stored in ASR) may not be available. See also EIR/EIS Appendix L.

MCWD-35 The underlying supply and demand assumptions included in the commenter's No MPWSP Option Scenario A are not supported by the EIR/EIS. For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through 30, MCWD-32, and Master Response 13, Section 8.2.13.3. Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2.

MCWD-36 The underlying supply assumptions regarding the commenter's No MPWSP Option Scenario B are not supported by the EIR/EIS. For a discussion of existing annual service area demand and other demands the project proposes to meet, see EIR/EIS Section 2.3.1, and Master Response 13, Section 8.2.13.2. See also the discussion of "Alternative Supply and Demand Scenarios" in Master Response 13, Section 8.2.13.4, which explores the potential to reduce the size of the desalination plant under alternative demand and supply scenarios; see also EIR/EIS Appendix L. Regarding the ability of the MPWSP No Project Alternative to meet project objectives, see response to comment MCWD-37.

MCWD-37 The conclusions presented in the comment about the No MPWSP Option Scenario B assumes an annual average demand and supply scenario, when in fact, the demand of customers and availability of supplies varies by month; customer demand in the peak summer months is approximately 130 percent of normal, and supplies in a drought (specifically, water stored in ASR) may not be available. See also EIR/EIS Appendix L.

EIR EIS Section 5.4.2.4 describes the ability of the No Project Alternative to meet project objectives, with and without the GWR Project. The EIR/EIS analysis concludes that the No Project Alternative would achieve compliance with the Revised CDO and the Seaside Groundwater Basin adjudication but would not provide sufficient supply to allow for replenishment of water that CalAm previously pumped in excess of its adjudicated rights from the Basin; would not provide water supply reliability; and would not provide supply for the development of vacant legal lots of record or supply to meet demand resulting from economic recovery of the hospitality industry. See also responses to comments MCWD-15 and MCWD-27.

MCWD-38 The supply assumptions presented in the commenter's No MPWSP Option Scenario A and Scenario B are not supported by evidence presented in this EIR/EIS. See responses to comments MCWD-32 through MCWD-37, MCWD-39, and Master Response 13.

MCWD-39 See the discussion under "Existing Annual Service Area Demand" in Master Response 13, Section 8.2.13.1 regarding CalAm's estimate of existing service area demand, consistent with project objective number 4. Refer to the discussion of Pebble Beach Entitlements under "Other Demands" in Master Response 13, Section 8.2.13.1 regarding CalAm's obligation to serve properties with these entitlements. Meeting existing demand, existing obligations to supply water, and

demand of existing customers under improved economic conditions, and having the capacity to serve existing lots of record is consistent with the objective of providing a reliable water supply.

CalAm's March 2016 amended Project Description states, regarding the project variant (a 6.4 mgd plant combined with GWR water purchase), that the "primary objectives of the MPWSP Variant are the same as those for the proposed project [which are to provide additional water supplies] to meet the estimated total annual demand in the Monterey District of 15,296 afy…." That total, originally provided in CalAm's January 2013 supplemental testimony, includes the demand components described in EIR/EIS Chapter 2 and Section 6.3. The more specific objectives described in the EIR/EIS are consistent with the scope of the more general objectives stated in the project description of the amended application, including "diversify and create a reliable drought-proof water supply" and "protect the local economy from the effects of an uncertain water supply." The more specific objectives described in EIR/EIS Section 1.3.1 were indeed provided by CalAm, the project applicant; this information was presented in testimony and similar formal submittals during the CPUC's application proceedings. The existing annual demand assumed in the EIR/EIS was revised to 12,270 afy in supplemental testimony provided by CalAm in April 2016 (Svindland, 2016). The CEQA project objectives set forth in the EIR/EIS were compiled by the CPUC to reflect CalAm's application and other submittals.

MCWD-40 EIR/EIS Section 4.20.5.1 addresses socioeconomic impacts of the proposed project, and Section 4.20.5.2 addresses the environmental justice issues pursuant to NEPA requirements. As noted in EIR/EIS Section 4.20.2.2, and consistent with CEQA Guidelines Section 15131(a), "Economic or social effects of a project shall not be treated as significant effects on the environment" and the focus of the analysis in the EIR/EIS was on the physical changes caused by the proposed project. As noted in EIR/EIS Section 1.5.4, ". . . the Certificate of Public Convenience and Necessity process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts . . . and the need for the project."

MCWD-41 Regarding existing annual demand, other demands, and supplies available to CalAm, refer to responses to comments MCWD-32 through MCWD-40 and Master Response 13; regarding the proposed ASR wells, see response to comment MCWD-27; regarding the commenter's suggested alternative to replenishing the Seaside Groundwater Basin, see response to comment MCWD-28.

Contrary to the comment, the EIR/EIS does not use the 690 afy as a return water obligation. As discussed in EIR/EIS Section 2.5.1, Salinas Valley Groundwater Basin Return Water, groundwater modeling simulated operating scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources). EIR/EIS Table 5.5-19 shows the

amount representing 6 percent return water for the larger 9.6 mgd project (1,620 afy) and Table 5.5-24 shows the amount representing 6 percent return water for the smaller 6.4 mgd project (1,042 afy), and neither discussion makes a distinction or an assumption as to whether it is delivered to CCSD or the CSIP. See Master Response 4 regarding the Agency Act and SVGB return water. Because EIR/EIS Section 4.4 concluded the impacts of proposed project pumping at the CEMEX property on groundwater resources would be less than significant, there is no obligation to mitigate for environmental, groundwater, and SGMA direct, indirect, and cumulative impacts from slant well pumping; see also Master Response 6, The Sustainable Groundwater Management Act.

MCWD-42 Regarding alternative supply sources, see response to comment MCWD-15 and responses to comments MCWD-43 through MCWD-49. Regarding existing annual demand, including the suggestion of using 2015 or 2016 as a reliable estimate of service area demand, see the discussion of Demand Assumptions in Master Response 13, Section 8.2.13.2. See also the discussion of Alternative Supply and Demand Assumptions in Master Response 13, Section 8.2.13.4. Regarding the ability of the commenter's proposed No MPWSP Option Scenario A and Scenario B to meet project objectives, see response to comment MCWD-38.

MCWD-43 The Interlake Tunnel project is described in EIR/EIS Section 5.2.5 and has been under consideration by Monterey County Water Resources Agency (MCWRA) since the late 1970s. But the recent drought renewed interest in this project, which would involve building a tunnel between the Nacimiento Reservoir, and the larger capacity San Antonio Reservoir, to preserve approximately 50,000 afy of water that would otherwise spill from Nacimiento Reservoir because it is too small to capture all the watershed drainage. The project would provide additional flood control and water supply benefits to existing users and beneficiaries of the MCWRA Zone 2C, and would be funded through a Proposition 218 assessment of Zone 2C property owners; however, CalAm's service area is not within Zone 2C and, therefore, CalAm customers would not be direct beneficiaries of the Interlake Tunnel project.

A new Salinas River diversion and conveyance facility to convey water to near Salinas is proposed under the unexercised SWRCB-issued water right referenced in the comment; but the SWRCB issued a Notice of Proposed Revocation of Water Right Permit #11043 in 2010. The future availability of water under Permit #11043 is extremely uncertain. See response to comment Beech3-3 in Section 8.7.2.

It would be speculative to assume a Salinas River surface water right could be obtained and would be a component of a reliable water supply portfolio; without it, and considering the implementation concerns described in this response below, this scenario would not meet the project objectives. However, if a project could secure a water right to appropriate and divert 10,000 to 20,000 afy when there are excess surface water flows in the Salinas River, then:

1. The existing diversion facility (rubber dam) could be expanded to move the surface water to an expanded advanced water treatment facility (e.g., Pure Water Monterey) and then conveyed to the Seaside Groundwater Basin. If the treated surface water were blended with other GWR source waters, either during treatment or conveyance, additional injection/extraction wells would need to be constructed in the Seaside Groundwater Basin so the water could be stored and "polished" in the ground (retention time) before it is made available for extraction in the high demand months.

2. The surface water could be treated in a desalination plant, although it would be more cost-effective to use a standard surface water treatment plant. However, the excess stormwater would only be available for diversion and treatment in the winter months, and not the high demand months of summer, so storage would be necessary.

3. Under the scenario described by the comment, Salinas River flows would be available for diversion from November through March. Groundwater recharge in the Castroville area would need to occur through injection and not in-lieu recharge, because winter demands would be low. The CSIP was developed as an initial response to stopping seawater intrusion by raising groundwater levels at the coast through in-lieu recharge, and the implementation of SVWP Phase I met the objective of stopping seawater intrusion. However, the groundwater depression on the east side of Salinas persists; SVWP Phase II was meant to provide water to fill the depression and would have utilized new Salinas River diversions and conveyance facilities to deliver water from Water Right Permit #11043 to do so. See response to comment Beech3-4.

4. It is not clear how any portion of the excess Salinas River water stored at the Armstrong Ranch would help meet any of the objectives of the proposed project.

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) will decide what projects get implemented to remedy the critically overdrafted SVGB. The implementation of a Salinas River Excess Flow Capture project would be speculative for the reasons presented in this response.

MCWD-44 See response to comment MCWD-27 and 28.

MCWD-45 Since MCWD does not represent the agricultural community within the Salinas Valley, it is not clear whether such growers are concerned over the GWR project. Indeed, the GWR Project will provide an additional 1,000 afy to the growers who subscribe to the CSIP. See response to comment MCWD-43 for a discussion on stormwater capture/groundwater recharge.

MCWD-46 An analysis of the increased availability of ASR water as of January 1, 2022 has not been conducted because the Phase I and Phase II ASR projects correspond to MPWMD and CalAm's existing Water Rights Permits 20808A and 20808C, which authorize and limit the diversion of up to 2,426 afy for ASR Phase I, and up to 2,900 afy for ASR Phase II; see also response to comment MCWD-30. Carmel

River water in excess of CalAm's legal right to 3,376 afy would stay in the River when the CDO expires in 2022, and would not be available for diversion to use, or storage by CalAm.

Response to comment MPWMD-14 in Section 8.5.7 includes a table prepared by the MPWMD that presents the increased storage capacity of ASR, resulting from the increased conveyance capacity provided by the new Monterey Pipeline. The analysis by the MPWMD indicates that, in a normal precipitation year, an additional 682 af could be available for storage in ASR with the new Monterey Pipeline, and this EIR/EIS is using that assumption; in an above normal precipitation year, that incremental increase could be 1,016 af.

MCWD-47 See responses to comments MCWD-43 and MCWD-44. If MCWD has an unused entitlement of 727 afy from the GWR Project for use in the Ord Community, it is not clear why MCWD would need 1,000 afy from a Salinas River Water Treatment Plant; furthermore, it does not seem reasonably foreseeable that MCWD would build a 5,000 afy water treatment plant, of which MCWD would make 4,000 afy available to CalAm.

MCWD-48 As stated on Draft EIR/EIS page 4.4-89, Table 4.1-2 explains it is not reasonably foreseeable that MCWD would build a 2,700 afy desalination plant at its Armstrong Ranch[6] property if the MCWD need for Ord Community water is only 973 afy (unless some of the GWR Project entitlement were sold to CalAm). As noted by MCWD in response to a California Public Records Act request, the water source for a MCWD desalination facility has not been determined, but it could be seawater-intruded groundwater from the 180-Foot Aquifer, or it could be seawater from shallow wells located along the coast (MCWD, 2016). However, neither the timing or the capacity of a MCWD-proposed desal project would meet the objectives of the proposed project. Horizontal wells had not previously been mentioned or proposed, but have been addressed in response to comment MCWD-171.

MCWD-49 See response to comments MCWD-15, MCWD-39, and MCWD-43 for information on supply and demand.

MCWD-50 See responses to comments MCWD-HGC, Master Response 3, Water Rights, Master Response 4, The Agency Act and Return Water, and Master Response 6, The Sustainable Groundwater Management Act; the source water that originated in the SVGB is not required to be returned to the Marina Subarea. See also EIR/EIS Appendix E3; the return water percentage is likely to be no more than 10 percent within the first 2 years of project slant well pumping, decreasing to no more than 5 percent within 6 months to roughly 3 years. Longer term, it appears that the return water percentage would be between 1 percent and 4 percent, well within the

6 It is unclear how a desalination plant of this size at the Armstrong Ranch and a groundwater recharge and augmentation project at the same general location would operate or what the inter-relationship would be. Neither project is well defined nor appears to be reasonably foreseeable.

0 to 12 percent range studied in the EIR/EIS. Because EIR/EIS Section 4.4 concluded the impacts on groundwater resources from proposed project pumping at CEMEX would be less than significant, there is no obligation to provide return water to mitigate for impacts to the Marina Subarea.

EIR/EIS Table 5.5-19 shows water supplies that would be available with the MPWSP, compared with the service area demands shown in Table 5.5-18, as well as two estimates of the SVGB return water obligation associated with operating the proposed 9.6-mgd desalination plant. Table 5.5-19 illustrates available and surplus supply (or deficit) during the SGB replenishment period, assuming a 6 percent or 12 percent return water obligation. As shown, under either of these return water scenarios, the available supply would meet demand associated with existing land uses and water entitlements (12,845 afy), with a surplus of 209 or 1,829 afy depending on the return water obligation. EIR/EIS Tables 5.5-20 through 5.5-24 present similar analyses for Alternative 1 through Alternative 5, respectively. See also response to comment MCWD-IW-11 (regarding HDD wells) and MCWD-IW-12 (regarding Ranney wells).

The EIR/EIS assumed an alternative that did not include a Salinas Valley Return Water commitment (i.e., one that would utilize an open water intake) would result in more water available for growth; see EIR/EIS Section 5.5.21.5 (Alternative 2), Section 5.5.21.6 (Alternative 3), and Section 5.5.21.7 (Alternative 4).

MCWD-51 See Master Response 3, Water Rights, Section 8.2.3.7, Effect on MCWD.

MCWD-52 See Master Response 3, Water Rights, and responses to comments MCWD-53 and MCWD-56.

MCWD-53 The EIR/EIS analyzes the subject of water rights to be sure the decision-makers are reasonably informed as to the feasibility of the project in order to minimize the possibility that they approve a project that cannot, in the end, be implemented. There is no legal imperative concerning this feasibility issue, and thus no legal standard is required to be applied. See Master Response 3, Water Rights, Section 8.2.3.1.

MCWD-54 See Master Response 3, Water Rights, and response to comment MCWD-53.

MCWD-55 See Master Response 3, Water Rights.

MCWD-56 CalAm's right to use water for the project would be an appropriative right. The EIR/EIS text referred to by the comment concerning use of water beyond the boundaries of the CEMEX property pertains to overlying rights, not to appropriative rights. See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, for additional details.

MCWD-57 See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights.

MCWD-58 The locations of MCWD's water supply wells are presented in EIR/EIS Table 4.4-10 in Section 4.4.5.2, which explains that MCWD's wells are too far from the capture zone to be affected by the proposed project pumping. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2, for a description of the capture zone. While the MPWSP would draw water from the sediments of the Dune Sand Aquifer and the 180-Foot Aquifer (referred to locally as the 180-FTE Aquifer), the capture zone would be recharged primarily by seawater and would not extend inland to impact inland groundwater users.

MCWD-59 See Master Response 3, Water Rights, Master Response 4, The Agency Act and Return Water, Master Response 8, Project Source Water and Seawater Intrusion, and responses to comments MCWD-50 and MCWD-HGC.

MCWD-60 The onsite technical information sought by the SWRCB has been provided in EIR/EIS Section 4.4 and is supported by Appendices C3 and E3. See also responses to comments MCWD-59, MCWD-87, MCWD-EKI and MCWD-GeoHydros.

MCWD-61 See Master Response 2, Source Water Components and Definitions. This EIR/EIS uses 500 mg/L total dissolved solids (TDS) as the fresh water standard consistent with the recommended standard in 22 Cal. Code Regs. 64449, in Table 64449-B. Furthermore, the cited portion of the Basin Plan excepts groundwater from being suitable for municipal or domestic water supply where water exceeds 3,000 mg/l TDS and the area is not reasonably expected by the regional water board to supply a public water system. Monitoring well data concerning existing TDS levels within the area of the capture zone for the proposed project indicates that groundwater already greatly exceeds 3,000 mg/L TDS. In addition, there is no indication that the seawater-intruded portion of the SVGB is reasonably expected by the regional water board to supply a public water system.

MCWD-62 See Master Response 6, The Sustainable Groundwater Management Act, regarding the "Marina Subarea," which is not a DWR-recognized groundwater basin.

The comment refers to California Water Code section 10780, the Groundwater Quality Monitoring Act, but that act does not apply to the proposed project. Rather, its purpose was to establish and implement groundwater monitoring and oversight for well stimulation treatment activities in areas of oil and gas operations. (Wat. Code § 10783.) Since the project does not propose to engage in any well stimulation treatment activities for oil and gas operations, the Groundwater Quality Monitoring Act does not apply to the proposed project.

The commenter also cites to 40 CFR section 144.3(a) for the definition of "Underground Source of Drinking Water," and criticizes the State Board Report for not addressing it. The Lead Agencies did not author the State Board Report. SWRCB is the expert agency concerning water in California so presumably took

federal law and regulations into account in preparing the Report. In addition, to the extent that such federal regulations pertain to the project, CalAm would be required to comply with them. Even if the SVGB were classified as an Underground Source of Drinking Water under federal regulations, that would not appear to preclude CalAm from having rights to the project source water under the common law "developed water" legal construct addressed in the State Board Report.

MCWD-63 See responses to comments MCWD-61 and MCWD-62.

MCWD-64 See response to comment MCWD-60, and Master Response 3, Water Rights, for a discussion of the potential injury to legal water users resulting from the proposed MPWSP. See also Master Response 6, Sustainable Groundwater Management Act, which explains that the "Marina Subarea" is not a DWR-recognized groundwater basin.

MCWD-65 See Master Response 8, Project Source Water and Seawater Intrusion, and Master Response 3, Water Rights.

MCWD-66 See Master Response 8, Project Source Water and Seawater Intrusion, Master Response 4, Agency Act and Return Water, and Master Response 3, Water Rights.

MCWD-67 See Master Response 4, Agency Act and Return Water, and Master Response 3, Water Rights.

MCWD-68 See Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement.

MCWD-69 See Master Response 3, Water Rights.

MCWD-70 See Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water.

MCWD-71 See Master Response 3, Water Rights.

MCWD-72 See Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2 for clarification on the Agency Act, MPWSP compliance with the Act, and the relationship between the proposed project and return water. As discussed in the EIR/EIS Section 4.4.5.2, the EIR/EIS did not identify significant impacts on groundwater resources from the proposed slant well pumping. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1, 8.2.8.2, and 8.2.8.4 for additional clarification on the MPWSP effects on groundwater resources at the CEMEX site and in the SVGB.

MCWD-73 This comment is addressed in Section 8.2.6 of Master Response 6, The Sustainable Groundwater Management Act.

MCWD-74 This comment is addressed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-75 See Master Response 3, Water Rights, and responses to comments MCWD-61 and MCWD-62.

MCWD-76 See Master Response 3, Water Rights, and Master Response 6, The Sustainable Groundwater Management Act.

MCWD-77 EIR/EIS Section ES.8 addresses private (versus public) ownership of the desalination plant, specifically Monterey Country Health and Safety Code Section 10.72.030. EIR/EIS Table 3-1 lists the Monterey County Health Department Permit to Construct a Desalination facility as an anticipated permit or approval.

With respect to the Monterey County Code provisions governing desalination plants, including a requirement that they be publicly owned, on October 25, 2012, the CPUC issued a decision (Decision 12-10-030) with a ruling summarized as follows:

> This decision determines that the authority of the Commission in regard to this application preempts Monterey County Code of Ordinance, Title 10, Chapter 10.72, concerning the construction, operation and ownership of desalination plants. This decision further determines that the findings, conclusions and orders herein are an exercise of jurisdiction that is paramount to that of a county Superior Court concerning the same subject.

The Coastal Commission report referred to by the comment does state that the issue of whether a proposed desalination plant is owned by a public versus private entity is a factor to be considered and addressed by the Coastal Commission because privately owned facilities would be subject to less government oversight and different economic incentives. Of course, given that CalAm is a regulated utility, albeit an investor-owned private entity, there is a layer of oversight by virtue of the CPUC requirements that would not apply to a purely private entity. The Coastal Commission report notes that there may need to be additional conditions of approval placed upon privately owned plants in order to ensure coastal resource protection. No doubt, the factors noted in the Coastal Commission report will be considered and applied as warranted if the project is approved by the Lead Agencies and CalAm seeks a coastal development permit. Similarly, MBNMS can consider the effect of public versus private ownership in its action on the MPWSP. See also response to comment MCWD-6.

MCWD-78 The EIR/EIS discloses the proposed project's technical, economic and environmental characteristics of all proposed project components, facilities and any and all anticipated activities. The useful life of each component is usually considered in the amortization of project costs (see CDM, 2014, Table 2-2) and with a routine maintenance schedule, the useful life can be exceeded and is not necessarily a reason

alone for decommissioning. Components of large-scale infrastructure projects are typically decommissioned when a lease expires on the property (e.g., a solar project on federally owned property) or when the resource is exhausted (e.g., mining of aggregate ore) or when technology becomes obsolete (e.g., San Onofre Nuclear Generating Station). In this case, CalAm owns the property at the desalination plant and will have a deeded easement on a portion of the CEMEX property, the seawater resource is not finite, and the EIR/EIS discloses the impacts associated with a potential range of Salinas Valley Return Water volumes. The EIR/EIS provides project description information that allows for the evaluation and review of the potential environmental impacts of the proposed project, and nothing in this comment or response meets a threshold in CEQA Guidelines Section 15088.5 that would trigger a need to recirculate the Draft EIR/EIS. See responses to comments MCWD-79 through MCWD-85, below, for specific responses to the desalination plant, slant wells, and the return water obligation.

MCWD-79 Not unlike most large, capital-intensive infrastructure projects (e.g., the MCWD RUWAP, the Sand City Desalination Plant, the Salinas Valley Water Project, the MCWD 300 af Desalination Project, or the Pure Water Monterey GWR Project), the MPWSP EIR/EIS did not include a temporal length of the proposed project components, because the operational impacts of a capital project of this magnitude are assumed to occur indefinitely. There is no anticipated or planned end to the project. The analysis of GHGs conservatively used a 40-year project lifetime to amortize the project construction emissions (see EIR/EIS Section 4.11.4.1), but all other topical sections evaluated and disclosed the ongoing impacts resulting from maintenance activities described in EIR/EIS Section 3.4.1, particularly at the slant wells. See response to comment Marina-25 in Section 8.5.1.

MCWD-80 CalAm proposes as part of the project to forego decommissioning the test slant and to convert the test slant well into a project slant well. The EIR/EIS examines that proposal. Special Conditions 6 and 17 of the Coastal Development Permit (CDP), which address decommissioning of the test slant well and posting a bond to ensure that it is carried out, do not foreclose the possibility of CalAm converting the test slant well to a permanent well (see Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, for general information regarding this proposed conversion). Notably, in its Summary of Staff Recommendation included on page 2 of the CDP Staff Report, the CCC stated:

> If the data collected from this proposed test well demonstrates that this well design and location would provide the necessary amount of water and not cause unacceptable adverse effects, CalAm may choose to apply for additional coastal development permits to convert the test well to a production well and/or construct additional similar wells, subject to certification of an Environmental Impact Report ("EIR") by the California Public Utilities Commission, which is preparing the document for the above-referenced water supply project.

Further, in its Findings and Declarations included on page 16 of the CDP Staff Report, the CCC stated:

> These Findings, and any coastal development permit issued pursuant to these Findings, apply only to the proposed test slant well and its associated monitoring wells and do not authorize development that may be associated with long-term use of the well, including converting the well to use as a water source for the separately proposed MPWSP. Any such proposal will require additional review and analysis for conformity to relevant Local Coastal Programs and the Coastal Act and will be conducted independent of any decision arising from these Findings. Further, the Commission's decision regarding these Findings exerts no influence over, and causes no prejudice to, the outcome of those separate future decisions.

Accordingly, and as described in EIR/EIS Table 3-8, CalAm intends to apply for a Coastal Development Permit(s) for the proposed project (including conversion of the test well) from the City of Marina and/or CCC, as applicable.

Finally, the EIR/EIS is not tiering from the CCC CEQA-equivalent analysis; the EIR/EIS independently evaluates the conversion of the test slant well to a permanent well, as described in EIR/EIS Section 3.2.1.1 in Table 3-1. See Master Response 11, CalAm Test Slant Well, Section 8.2.11.2.

MCWD-81 The test slant well is being operated under a CDP that was issued by the CCC (see Master Response 11, Section 8.2.11.2) and its ongoing operation under that permit is not part of the proposed project; the conversion of the test slant well to a permanent well is part of the proposed project and is described in EIR/EIS Section 3.2.1.1; see also Master Response 11, Section 8.2.11.7, and response to comment MCWD-80.

MCWD-82 EIR/EIS Section 3.4.1 describes the 5-year maintenance schedule for the proposed intake system and Impact 4.2-10 describes the potential for the intake wells to be influenced by coastal erosion. As noted in response to comment MCWD-78, the useful life of a component is not a reason alone for decommissioning. For clarification and consistency of terms, however, the text at page 4.2-70 has been revised as follows,

> The proposed slant wells would not be exposed during the ~~operational~~ useful life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment.

Slant wells are indeed a new, evolving technology[7] and the test slant well at CEMEX appears to be demonstrating that the technology does work at this location, under the pertinent hydrogeologic conditions, for this application. As shown in EIR/EIS

[7] See response to comment Marina-11. See also Master Response 11, Section 8.2.11.8 for a discussion of the Dana Point slant well and the feasibility of evolving slant well technology.

Figure 4.2-7, coastal erosion could expose the test slant well in a 100-year storm event by the year 2060 and Mitigation Measure 4.2-10 is a Slant Well Abandonment Plan. Mitigation Measure 4.2-10 has been revised in the Final EIR/EIS and now includes additional details within the measure, as well as the identification of secondary impacts resulting from implementation of Mitigation Measure 4.2-10. All of the other proposed slant wells would be located further inland of the 2060, 100-year flood event envelope as shown on Figure 4.2-8. If CalAm needs to replace a slant well, it will need to apply for a Coastal Development Permit to do so.

MCWD-83 See Master Response 4, The Agency Act and Return Water, Section 8.2.4.3 for clarification on the Agency Act and the quantity of return water. See also EIR/EIS Appendix E3.

MCWD-84 There is no requirement that water be returned to the "Marina Subarea." See Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.2, for a discussion of SGMA Basin designations. The Agency Act requires that no groundwater from the Salinas Basin may be exported for any use outside the Basin, but makes no specific mention of subdivisions in the Basin. EIR/EIS Section 4.4.4.2 describes the return water considerations and CalAm et al, 2016b, is the Return Water Settlement Agreement that includes the proposed formula for calculating the actual annual return water obligation, and explains "the volume of Annual Return Water Obligation shall be determined by the [Monterey County Water Resources] Agency based on the methodology set forth in Exhibit A" to the Agreement; see also Master Response 4, The Agency Act and Return Water, Section 8.2.4.3.

MCWD-85 The Final EIR/EIS will allow for informed decision-making to occur because the scope of the proposed project and the associated environmental consequences of the proposed project have been fully disclosed. Nothing in these comments or responses meets a threshold in CEQA Guidelines Section 15088.5 that would trigger a need to recirculate the Draft EIR/EIS.

MCWD-86 The potential impacts on the groundwater resources of SVGB are fully evaluated and presented in Section 4.4. See also response to comments MCWD-87 through MCWD-90.

MCWD-87 The onsite technical information sought by the SWRCB has been provided in EIR/EIS Section 4.4 and is supported by Appendices C3 and E3. The Dune Sand and 180-Foot Aquifers are described in EIR/EIS Section 4.2.1.1 (geologic setting), Section 4.4.1.2 (local and regional hydrogeology), Section 4.4.1.3 (groundwater flow and occurrence), and Section 4.4.1.4 (groundwater quality), as well as in EIR/EIS Appendix C3, Section 4.4.4 (regional geologic setting), Section 4.6.6 (hydrostratigraphy), Section 5.2 (groundwater quality, CEMEX area), and EIR/EIS Appendix E3, Section 1.2 (hydrogeologic conceptual model).

See Master Response 11, CalAm Test Slant Well, Section 8.2.11.4 (monitoring wells and baseline report), Section 8.2.11.5 (long-term pump test) and Section 8.2.11.6 (use of the test well data in the EIR/EIS). How "extracted fresh water is replaced" is addressed in EIR/EIS Section 3.2.3.7 (Castroville Pipeline) and Section 4.4.4.2 (groundwater modeling).

EIR/EIS Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH. Particles were placed along the edge of the inferred 2013 seawater intrusion front in the 180-FT Aquifer (Model Layer 4) and 400-FT Aquifer (Model Layer 6), as reported by MCWRA. Forward particle-tracking was then employed to show the change in front location after 63 years of slant well pumping. Without slant well pumping, the particles representing saltwater would continue to migrate inland. With slant well pumping, the movement of saltwater would be in response to the regional background gradient and drawdown created by slant well pumping. The superposition NMGWM^{2016} was thus used without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping. The change in particle locations initially placed at the seawater intrusion interface represent the change in saltwater location relative to its inland location due to continued background recharge and pumping (e.g., the acceleration or retardation of existing saltwater intrusion).

EIR/EIS Appendix E2 Section 4.3 explains that the NMGWM^{2016} was developed using the MODFLOW computer code, which does not consider variable density effects. The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. Comparisons between MODFLOW calculated water level changes and calculations using a variable density flow model (SEAWAT) indicated slight differences in calculated water levels (approximately one foot). These differences exist nearest the coast, where there is a measured difference in groundwater salinity ranging from seawater to freshwater. Near the coast, and where density effects are greatest, slant well pumping would have a much greater influence on water level changes and flow than the spatial differences in salinity and water density. However, as the salinity concentration decreases with increasing distance from the coast, the differences in model calculated water levels would diminish and become insignificant. The effects of variable density flow on NMGWM^{2016} model results were therefore considered negligible and a dual density model is not necessary.

See response to comment MCWD-HGC, and MCWD-GH-26 through MCWD-GH-30, and; Master Response 12, The North Marina Groundwater Model (v.2016) and EIR/EIS Appendix E3.

MCWD-88 The data from the test slant well was indeed used in the groundwater modeling, as explained in EIR/EIS Appendix E2, Sections 3.2 and 4.2. The comment misrepresents the capabilities of a superposition model; see Master Response 12,

The North Marina Groundwater Model (v. 2016), Section 8.4.12.4. See also responses to comments MCWD-HGC and MCWD-GeoHydros.

MCWD-89 See response to comment MCWD-88 and Master Response 11, CalAm Test Slant Well, Section 8.2.11.6. The Lead Agencies for the EIR/EIS agree with the CCC statement provided in the comment that, "… pumping and water quality testing to be conducted during the slant well test is necessary to inform the design of a potential full-scale facility. Other actions, such as drilling additional boreholes or conducting additional modeling, would not be sufficient to characterize the site and its potential to provide source water."

The comment refers to litigation initiated by MCWD against the CCC with respect to the test slant well, and refers to an attached brief filed as part of that case. Indeed, MCWD has brought three lawsuits challenging aspects of the test slant well for the Project. A summary of the lawsuits and their status as of publication of the EIR/EIS is as follows:

1. *Marina Coast Water District v. California Coastal Commission*, Santa Cruz County Superior Court Case No. CISCV180839, California Court of Appeal, Sixth District, Case No. H042742.

In this action filed December 11, 2014, MCWD challenged the CCC's approval of Coastal Development Permit ("CDP") Nos. A-3-MRA-14-0050 and 9-14-1735 allowing CalAm to construct and operate the test slant well and associated infrastructure and development, MCWD alleged that approval of the two CDPs violated procedural and substantive requirements of the CEQA and the California Coastal Act. Following a hearing on the merits on July 23, 2015, the Honorable Judge Rebecca Connolly of the Santa Cruz County Superior Court denied MCWD's petition in its entirety. A judgment in favor of the CCC and CalAm was entered on August 24, 2015. MCWD appealed the judgment to the Sixth Appellate District of the California Court of Appeal. On October 26, 2016, the Court of Appeal affirmed the Superior Court's decision in full in an unpublished decision. On November 22, 2016, the Court of Appeal denied MCWD's petition for rehearing of that decision. On December 5, 2016, MCWD filed a Petition for Review in the California Supreme Court, which was denied on January 11, 2017. On January 12, 2017, the Court of Appeal issued its remittitur, closing the case.

2. *Marina Coast Water District v. California State Lands Commission*, Santa Cruz County Superior Court Case No. CISCV180895

In this action filed January 15, 2015, MCWD challenges the California State Lands Commission's (CSLC) approval of a lease to allow CalAm to construct and operate a portion of the test slant well on State-owned land. MCWD alleges that CSLC's approval of the test well lease violated procedural and substantive

requirements of CEQA. On September 29, 2015, the Honorable Judge Rebecca Connolly of the Santa Cruz County Superior Court approved a stipulation staying all proceedings in this action until issuance by the Sixth Appellate District of its remittitur in the appeal of Marina Coast Water District v. California Coastal Commission, Case No. CISCV180839. This case remains pending before the Superior Court.

3. *Marina Coast Water District v. California Coastal Commission*, Santa Cruz County Superior Court Case No. 15CV00267

In this action filed November 5, 2015, MCWD challenges the Coastal Commission's October 6, 2015, approval of a permit amendment to CDP Nos. A-3-MRA-14-0050 and 9-14-1735 to clarify how certain operational performance standards are applied to the test well. MCWD alleges that the CCC's approval of the CDP permit amendment violated procedural and substantive requirements of CEQA and the California Coastal Act. On February 19, 2016, CalAm moved to stay the suit pending appeal of *Marina Coast Water District v. California Coastal Commission*, Superior Court Case No. CISCV180839, Sixth Dist. Court of Appeal Case No. H042742 (discussed above). Two of MCWD's four causes of action were heard on the merits by the Honorable Judge Paul Burdick in Santa Cruz County Superior Court on September 20, 2016. At the hearing, the Superior Court denied MCWD's petition as to those two causes of action. The remaining two causes of action were heard on August 30, 2017. The Superior Court denied the remaining two causes of action at a hearing on October 3, 2017. A judgment in favor of the CCC and CalAm on all causes of action was entered on January 11, 2018.

On January 12, 2018, MCWD appealed the Superior Court's judgment to the Sixth Appellate District of the California Court of Appeal. That appeal is pending.

MCWD-90 See responses to comments MCWD-HGC, MCWD-EKI, and MCWD-GeoHydros. See also responses to comments MCWD-92 through MCWD-106 regarding baseline, consistencies with applicable laws and regulations, the analysis of impacts on groundwater resources and cumulative impacts.

MCWD-91 Response to comment MCWD-HGC, and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See Master Response 10, Environmental Baseline under CEQA and NEPA. EIR/EIS Section 4.2.1.1 presents the existing regional geology and describes the geologic units of the Salinas Valley Groundwater Basin and the area around North Marina. EIR/EIS Section 4.4.1 presents the setting/affected environment for groundwater resources and includes a discussion of terminology and concepts (Section 4.4.1.1), local and regional hydrogeology (Section 4.4.1.2), groundwater flow and occurrence (Section 4.4.1.3), and

groundwater quality (Section 4.4.1.4). See also response to comments MCWD-92 through MCWD-99.

MCWD-92 EIR/EIS Section 4.4.1.2 presents the local and regional hydrogeological conditions in the SVGB, including a description of the Dune Sands Aquifer. The 13-year old citation on Draft EIR/EIS page 4.4-8 represented the best available information on the Dune Sands Aquifer until CalAm started drilling boreholes in 2015, and began sampling water quality from the monitoring wells. The latest CalAm data has been incorporated into the conceptual model of the groundwater basin as well as into the NMGWM^{2016} and EIR/EIS Section 4.4; therefore, the more contemporary data was included and considered in the EIR/EIS analysis. The text in Section 4.4.1.2 has been revised to explain that,

> ". . . most of the water in the Dune Sand Aquifer along the coast has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004 and Appendix C3 Section 5.2)."

General water quality conditions are discussed in EIR/EIS Section 4.4.1.4 and water quality results from test slant well sampling is presented in Table 4.4-4; see also EIR/EIS Appendix C3, Table 5-3.

The EIR/EIS sections present a description of the Dune Sand Aquifer, which has been developed and agreed upon by experts in hydrogeology with specific knowledge of the SVGB. The environmental setting for hydrogeology fulfills the requirements of CEQA/NEPA and was developed through subsurface investigations, review of available literature, data from groundwater monitoring wells and an evaluation of test slant well data (see EIR/EIS Section 4.4.4). As discussed in EIR/EIS Section 4.4.5.2, the proposed slant wells would be extracting water from the coastal region in an area with documented seawater intrusion and the impacts on neighboring production wells and water quality would be less than significant. See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1, 8.2.8.2, and 8.2.8.4 for clarification regarding the MPWSP source water capture zone, its water quality conditions, and potential impacts on inland water users. Also refer to response to comment MCWD-HGC, which responds to claims made by HGC on the water quality of the Dune Sands Aquifer and 180-Foot Aquifer.

MCWD-93 The environmental setting description of the 180-Foot/180-FTE Aquifer presented in EIR/EIS Section 4.4.1 fulfills the requirements CEQA/NEPA and was developed through subsurface investigations, review of available literature, data from groundwater monitoring wells, and an evaluation of test slant well data (see EIR/EIS, Section 4.4.4).

The NMGWM^{2016} simulates the 180-FTE aquifer (Model Layer 4) as confined. However, beneath the CEMEX site, well logs from monitoring well borings do not

show a confining clay bed above the 180-FTE Aquifer. The degree of confinement within the 180-FTE Aquifer, therefore, varies spatially with distance inland and away from the coast. In the NMGWM[2016], the modeled vertical conductivity decreases over seven orders of magnitude at the coast to areas less than 2 miles inland (see EIR/EIS Appendix E2, Figure 3.3b). The text in the EIR/EIS Section 4.4.1 has been revised to provide additional clarity regarding the degree of confinement in the 180-FTE Aquifer underlying the CEMEX site relative to the inland portions of the aquifer. The added text does not represent new information that would change the conclusions of the impact analysis presented in the Draft EIR/EIS.

See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.2, and response to comment MCWD-HGC for additional information and discussion regarding water quality in the capture zone of the proposed MPWSP slant wells and the purported areas of "fresh" groundwater near the project site.

MCWD-94 The description of the 400-Foot Aquifer presented in EIR/EIS Section 4.4.1 provides the necessary basis for conducting an analysis of impacts, and is sufficient to fulfill the environmental setting/affected environment requirements of CEQA and NEPA. See response to comment MCWD-HGC regarding the purported "fresh" groundwater present in the 400-Foot Aquifer underlying the project site. See also Master Response 10, Environmental Baseline under CEQA and NEPA.

MCWD-95 EIR/EIS Section 4.4.1.3 discussing Groundwater Elevations and Flow Direction has been updated based on supplemental groundwater flow data provided through CalAm's recent hydrogeologic investigation for the MPWSP; see EIR/EIS Appendix E3, TM-2. Contrary to the comment, groundwater in the Dune Sands Aquifer flows inland from the Monterey Bay, as discussed in response to comment MCWD-HGC.

MCWD-96 The EIR/EIS uses water quality data provided by MCWRA and applicable groundwater data from CalAm's hydrogeologic investigation to represent the current effects on seawater intrusion. These sources were considered the best available information at the time the EIR/EIS was prepared. The EIR/EIS is designed to report information to the public, and by law should not mislead the public. The EIR/EIS has been updated to reflect current information on groundwater quality; see EIR/EIS Appendix E3. See response to comment MCWD-HGC regarding inconsistencies in the use of the monitoring data and areas of purported "fresh" groundwater in the MPWSP project area. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary MCL for TDS is 500 mg/L and as explained in response to comment MCWD-61, this EIR/EIS uses 500 mg/L TDS as the fresh water standard consistent with the recommended standard in 22 Cal. Code Regs. § 64449, in Table 64449-B.

MCWD-97 EIR/EIS Section 4.4.4.1 explains that, "Special Condition 11 of the Coastal Development Permit, Protection of Nearby Wells, requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long term pumping tests." The Draft Technical Memorandum, Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area, April 15, 2015, [8] is referenced in EIR/EIS Section 4.4 as Geoscience, 2015b, and continues to be publicly available with all of the other EIR/EIS references. EIR/EIS Section 4.4.4.1 explains that the long-term pumping test began in mid-April 2015, and results (of the long-term pump test, not the baseline report) are available at http://www.watersupplyproject.org/#!test-well/c1f1l. See also Master Response 11, CalAm Test Slant Well, Section 8.2.11.4, for a discussion of monitoring wells and the baseline report.

The Geoscience technical memorandum was prepared in compliance with this provision of Special Condition 11, and included the results of five weekly monitoring reports. Chapter 6.0 of the Geoscience technical memorandum presents baseline water levels and TDS concentrations for the period from February 19, 2015 to April 10, 2015; the baseline water and TDS levels are shown on Figures 2-1 through 2-5 and 3-1 through 3-5, respectively. As discussed in Master Response 11, Section 8.2.11.4, the test slant well was shut down because, as required of CalAm by Special Condition 11, groundwater levels were approaching the maximum allowable water level decrease of 1.5 feet. The CCC then recommended that CalAm develop a proposed amendment to Special Condition 11 that better incorporated the local and regional trends in water levels and salinity. Special Condition 11 was revised in October 2015. The revised Special Condition 11 stated that if drawdown exceeds 1.5 feet at Monitoring Well-4 (MW-4) from *regional groundwater elevation trends*, or if TDS levels increase more than two thousand parts per million *from regional TDS level trends*, CalAm would shut down the slant well. Special Condition 11 also required CalAm and HWG to review weekly monitoring data and prepare a monthly report to document the regional/background groundwater elevation trends and TDS level trends. Long term pumping of the Test Slant Well resumed on October 27, 2015. Since that time, CalAm has collected and publicly reported groundwater level and water quality (TDS) data from the Test Slant Well and Cal Am monitoring wells. These data integrate the regional groundwater levels trends and thereby establish both water levels and water quality baseline.

The EIR/EIS relied upon the baseline water level and water quality data that have been collected from the test slant well and CalAm monitoring wells since October 2015. The CalAm clustered monitoring wells are screened across the Dune Sands,

8 The Draft EIR/EIS references Geoscience, 2015b, which is the Draft Geoscience *Technical Memorandum Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area,* dated *April 15, 2015*. In that draft document, Section 6.0 was titled, "*Recommended Monitoring of Baseline and TDS Levels,*" which is incorrect and was subsequently revised in the final version of the document with the correct heading of "*Summary of Baseline and TDS Levels.*" The correct heading for Chapter 7.0 is "*Recommended Monitoring of Baseline and TDS Levels."* The EIR/EIS has been revised to cite the final version of Geoscience's *Technical Memorandum Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area, April 20, 2015.*

180-Foot/180-FTE Aquifer, and the 400-Foot Aquifer to provide groundwater levels in the discrete water bearing zones. As these water level and water quality data consider the regional pumping and climatic trends and have been collected for over 2 years, they were considered viable baseline for the analysis of groundwater draw down and water quality impacts.

In regard to refining the groundwater models, groundwater levels from the monitoring wells at the CEMEX site were used to determine measured drawdown in response to test slant well pumping, and the measured drawdown was compared to model-calculated drawdown for test slant well pumping. See EIS/EIS Appendix E2 Section 4.2, Figure 4.6 which shows improvement of the $NMGWM^{2016}$-calculated water levels compared to those of the $NMGWM^{2015}$, indicating that modifications to the aquifer parameter zones and conductivity values improved model performance at the CEMEX site.

MCWD-98 See response to comment MCWD-97. EIR/EIS Impact 4.4-4 explains the approach to, and impact of, the proposed project on groundwater quality within the slant well pumping area of influence, and presents the impact on seawater intrusion. Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the $NMGWM^{2016}$ and MODPATH. Baseline water levels for the aquifers are presented in the April 15, 2015 report titled *Baseline Water and Total Dissolved Solids Levels*. However, water quality measured as TDS was not used to refine the $NMGWM^{2016}$ because the model was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water.

MCWD-99 See response to comment MCWD-87 regarding studies recommended by the SWRCB, and Master Response 8, Project Source Water and Seawater Intrusion, regarding the source water capture zone and the existing brackish to saline groundwater within that zone. The MPWSP would not extract potable groundwater, but would extract brackish-to-saline ambient groundwater at first, which would be replaced by seawater infiltrating through the coastal sediments. See response to comment MCWD-HGC for a discussion of the purported "fresh" groundwater in the Dune Sands, 180-FTE and 400-Foot Aquifers. Contrary to HGC's claims, it is unlikely that any large volume of low TDS (usable) water exists in the area that would be impacted (the capture zone) by the MPWSP slant wells. As discussed in response to comment MCWD-97, baseline water elevations and groundwater quality have been established based on over two years of groundwater monitoring data that includes regional pumping and climatic trends. See Master Response 4, The Agency Act and Return Water, Section 8.2.4.3, for clarity on the projected ocean water percentage and return water requirement. See response to comment MCWD-HGC for a discussion of the Dune Sands Aquifer and its role as an alleged "protective layer against seawater intrusion." See Master Response 3, Water Rights, Section 8.2.3.3 and 8.2.3.5, for additional discussion of the beneficial use of the groundwater.

MCWD-100 EIR/EIS Section 4.4.2.4 refers to Table 4.4-7 for regional and local land use plans and regulations, not state regulations. As explained in EIR/EIS Section 4.1.5, the analysis of project consistency with federal and state regulations and plans, such as the Basin Plan (see EIR/EIS Section 4.4.2.2) and the Agency Act and Ordinance 3709 (see EIR/EIS Section 4.4.2.3), are addressed in the Regulatory Framework subsection of each topical section rather than in the table that occurs at the end of each Regulatory Framework subsection, which is reserved for regional and local plans and policies. See Master Response 4, The Agency Act and Return Water, regarding consistency with the Agency Act and MCWRA Ordinance 3709.

MCWD-101 See response to comment Marina-44.

MCWD-102 HydroFocus used the best available data to quantitatively represent the water transmitting and storage property values of the water-bearing and non-water bearing units represented by the model (parameter values). The sensitivity analysis evaluated the uncertainty in model results to the potential variability in the specified parameter values. The analysis demonstrated reasonable and acceptable levels of uncertainty in model outputs, and provided conservative estimates of possible error (in other words, using extreme values, the sensitivity analysis identified similarly extreme estimates of error). Hence, whether the uncertainty is "tolerable" is irrelevant, and what is relevant is that the effect of that uncertainty was quantified and thus made transparent to analysts and reviewers, thereby allowing the information to be considered as part of their assessments. See EIR/EIS Appendix E2, Section 6.0, Uncertainty.

Prior modeling efforts (i.e., the $NMGWM^{2015}$) were not abandoned. Rather, the prior modeling effort was improved by using new information to update the model (i.e., the $NMGWM^{2016}$), and EIR/EIS Appendix E2 shows that the performance of the updated model is superior to the prior modeling effort. As described in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3, the "superposition model" is not a different model, but rather an application of the $NMGWM^{2016}$. The superposition approach calculated the information required to analyze the impacts of project pumping directly – the changes in water levels and flow – and, therefore, is actually more transparent rather than an attempt to "mask problems." Indeed, GeoHydros employed the same approach of superposition to calculate changes in water levels and flow; however, its analysis was flawed as described in Section 8.2.12.3 in Master Response 12 (see "Water Levels" subheading).

Superposition does not preclude identification of the source of feedwater for the MPWSP slant wells. The $NMGWM^{2016}$ was employed to calculate the water level decline (drawdown) in response solely to proposed project pumping. Drawdown due solely to proposed project pumping is dependent primarily on the pumping rate, the water transmitting and storage properties of the aquifer, and any change in groundwater recharge or discharge that occurs solely as a result of that drawdown.

For example, if pumping causes coastal water levels to decline below sea level, ocean water will percolate into the underlying aquifer and move inland to replace the extracted water. This increase in ocean water recharge induced by the new pumping reduces the drawdown relative to that which would have occurred in the absence of the ocean-water recharge. EIR/EIS Appendix E2, Figures 5.6 and 5.12, show the ocean capture zones that would be created by slant well pumping and its effect on recharge from the ocean. These capture zones reveal the likely source water extracted by the wells. See also Figures 8.2.12-1 and 8.2.12-2 in Master Response 12.

Further, superposition model results do not preclude prediction of measurable groundwater elevations associated with the proposed slant well pumping. Model-calculated drawdown due to slant well pumping can be compared to measured drawdown. For example, EIR/EIS Appendix E2, Figure 4.6, shows how the drawdown from measured water levels is compared with the drawdown calculated by the model using the superposition approach. See Master Response 12, Section 8.2.12.3. for more detail describing why superposition helps validate future drawdown projections compared to other methods.

The NMGWM^{2016} provides substantial benefits over the NMGWM^{2015}: it resolves discrepancies with initial water levels, boundary conditions, and uncertainties in predicted future background recharge and pumping. Further, the approach is more efficient because it calculates the change in water levels and drawdown directly, rather than relying on two model runs and performing a subtraction to isolate the change. The superposition approach described in EIR/EIS Appendix E2 is, therefore, more transparent.

The cone of depression is defined as the area where groundwater levels change as a result of a new stress; see Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1. In this analysis, it is the area where the water level change is more than 1 foot in response to proposed slant well pumping. As explained in detail above, this area is calculated most directly and reliably using superposition.

MCWD-103 The text in the EIR/EIS has been revised to clarify the degree of confinement in the 180-Foot Aquifer. The NMGWM^{2016} simulates the “180-FTE Aquifer” (Model Layer 4) as confined, as discussed in response to comment MCWD-93. The NMGWM^{2016} therefore addresses the “180-FTE Aquifer” semi-confinement by the absence of a clay layer at the CEMEX site and the addition of the transition zone between the site and the mapped extent of the FO-SVA.

Regarding the comment’s assertion that the EIR/EIS does not recognize the “protective water levels” in the Dune Sands Aquifer along the coast, see response to comment MCWD-HGC.

The groundwater in the capture zone of the proposed MPWSP slant wells would be a combination of highly brackish groundwater and seawater, well above the 3,000 milligrams per liter of TDS beneficial use standard in the California RWQCB Basin Plan for the Central Coast; see response to comment Marina-44, in Section 8.5.1. For this reason, and because brackish groundwater outside the MPWSP capture zone would not be impacted, there is no need to consider this threshold when determining production from the MPWSP slant wells.

Neither CalAm nor the Lead Agencies have proposed returning water to the basin as a mitigation measure needed to reduce a significant groundwater impact under CEQA or NEPA; rather, it is proposed by CalAm to ensure compliance with the Agency Act. This is discussed in detail in Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2.

Applicant-Proposed Measure 4.4-3 would expand the current groundwater monitoring program by including nearby active production wells and new wells to monitor changes in groundwater elevations, and ensures that if neighboring groundwater production wells are damaged or made unusable due to the project, they would be repaired or replaced by CalAm. However, it should be noted that implementation of this measure is not necessary to address a significant environmental impact. Applicant-Proposed Measure 4.4-3 would provide continued verification that the MPWSP does not negatively impact water quality or water levels to such a degree that wells are damaged or made unusable. This mitigation measure adequately fulfills (indeed, goes above and beyond given the finding that impacts are not significant) the requirements of CEQA and NEPA because it provides a mechanism to regularly monitor groundwater levels, and if drawdown occurs in a nearby well that damages or otherwise renders the well unusable, CalAm would restore or replace the supply.

MCWD-104 Refer to Master Response 12, North Marina Groundwater Model (v. 2016), Section 8.2.12.2, for further information on the construction and capabilities of the NMGWM. As stated in response to comment MCWD-HGC, the $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The use of equivalent freshwater head to represent seawater, and the constant groundwater density assumption to calculate the drawdown extent is a reasonable and appropriate approach because the error these approximations introduce is small relative to the uncertainty in other more influential factors like the specified pumping rates, return water volumes, projected sea levels, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production (see EIR/EIS Appendix E2, Section 6.0 “Uncertainty”).

The NMGWM’s consideration of the groundwater confinement of the Dune Sand Aquifer and 180-FTE/180-Foot Aquifer is discussed in response to comment MCWD-93.

Mitigation Measure 4.4-4 does not defer mitigation. As discussed in the EIR/EIS Section 4.4.5.2, Mitigation Measure 4.4-4 provides an adequate mechanism to monitor changes in groundwater levels near the Fort Ord remediation plumes and to reduce groundwater quality impacts by requiring CalAm to take necessary actions to ensure that the plumes do not expand or change direction due to groundwater flow by MPWSP. As described in Mitigation Measure 4.4-4, CalAm would incorporate groundwater elevation monitoring at the two plumes into its well monitoring program. This would provide continuous groundwater monitoring data, which CalAm would make available to the public and the U.S. Army. In response to the comment, the text of Mitigation Measure 4.4 has been revised to clarify that CalAm would continuously coordinate with the U.S. Army during the groundwater data evaluation stages. See also responses to comments from the U.S. Army in Section 8.3.2.

MCWD-105 See responses to comments MCWD-92 through MCWD-104.

MCWD-106 See responses to comments LWMC-14 through LWMC-19 for discussion of the approach to the cumulative analysis of groundwater resources.

MCWD-107 See response to comment Marina-71. Response to comment MCWD-108 and 109 explain that the project area boundary did not extend under the area of drawdown from project pumping because the groundwater effects would be isolated from surface water wetlands and other waters, such as ponds and streams, due to the depth of groundwater accessed by the slant wells and the lack of hydraulic connectivity between those aquifers and surface waters. As a result, the ecosystems are not groundwater dependent.

MCWD-108 EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in Master Response 8, Project Source Water and Seawater Intrusion show the area where operation of the slant wells would result in drawdown of the Dune Sand Aquifer and the 180-FTE Aquifer (see also response to comment MCWD-141). The analysis demonstrates that these effects would be isolated from surface water wetlands and other waters, such as ponds and streams, due to the depth of groundwater accessed by the slant wells and the lack of hydraulic connectivity between those aquifers and surface waters. As indicated by the groundwater level measurements of the groundwater underlying the CEMEX area (see Appendix E3), the brackish groundwater in the Dune Sand Aquifer that would contribute to the MPWSP slant well feedwater is 20 to 35 feet below the surface of the dunes. The perched freshwater that supports shallow wetland features is not hydraulically connected to the Dune Sands Aquifer, and water surface fluctuation in the aquifer would not translate to the upper perched freshwater.

MCWD-109 The EIR/EIS provides a thorough analysis of the proposed project's effects on groundwater and concludes that no effects on shallow groundwater would result from the project (see EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in

Master Response 8, Project Source Water and Seawater Intrusion; see also response to MCWD-141). The analysis does demonstrate project effects on the Dune Sands Aquifer and the deeper 180-FTE Aquifer, which are not hydraulically connected to surface water features, such as the jurisdictional wetlands and other waters regulated by state and federal agencies (see EIR/EIS Section 4.4.4). For coastal wetlands and other waters to be affected by drawdown of these two aquifers, there would need to be an unconfined hydraulic connection between the surface water wetlands and other waters, and the aquifer that would be accessed by the slant well intakes; the groundwater analysis in the EIR/EIS shows that not to be the case. In the absence of effects on coastal wetlands and other waters, the proposed project would not conflict with the relevant portions of the guidelines for desalination plants in the Monterey Bay National Marine Sanctuary.

MCWD-110 See response to comment Marina-71.

MCWD-111 Responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134, below, describe in detail how the existing measures do not defer mitigation, or how mitigation has been revised in the Final EIR/EIS to ensure that mitigation would not be improperly deferred.

MCWD-112 See response to comment Marina-77.

MCWD-113 Responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134, below, describe in detail how the existing measures do not rely on future agency coordination or permits, or how mitigation has been revised in the Final EIR/EIS to ensure that mitigation would not rely on future agency coordination or permits.

MCWD-114 For each proposed facility that would result in less-than-significant impacts on terrestrial biological resources with incorporation of mitigation, the EIR/EIS identifies all applicable mitigation measures and includes a discussion of how the mitigation measures would reduce the impact to less than significant. For example, on Draft EIR/EIS page 4.6-131 in Impact 4.6-1, the Draft EIR/EIS lists the applicable mitigation measures and then describes in detail how the measures would reduce impacts on special-status species (e.g., by requiring installation of exclusion fencing to ensure special-status species do not occur within the construction area). The explanation of the effects of specific mitigation measures on reducing specific impacts follows the list of applicable mitigation measures.

MCWD-115 CPUC and MBNMS, as the Lead Agencies, will have oversight responsibilities to ensure that the project is implemented as disclosed in the CEQA/NEPA documents, including by way of a Mitigation Monitoring and Reporting Plan (MMRP) and the National Marine Sanctuaries Act (NMSA) permit process that would be adopted along with approval of the project or an alternative. Although CalAm would be responsible for hiring the Lead Biologist, Mitigation Measure 4.6-1a identifies the

minimum requirements of a Lead Biologist: an individual who shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology or closely related field and has demonstrated prior field experience using accepted resource agency techniques for the survey prescribed, and who possesses all appropriate USFWS, NMFS, and CDFW permits. CalAm would be required to hire a Lead Biologist that meets those minimum requirements and who would therefore have the experience and capability to oversee and/or implement the proposed mitigation measures, and as noted in the measure "[t]he Lead Biologist, qualified biologists, and qualified biological monitors shall be subject to approval by resource agencies with jurisdiction over the special-status species with potential to occur at the project site (and local agencies, if required)."

Further, the monthly monitoring reports will be submitted to the regulatory agencies upon request. The CPUC and/or MBNMS, and not the public, will be responsible for overseeing and ensuring successful implementation of the mitigation measures by CalAm and/or its designee(s). Consistent with its pattern and practice, the CPUC Energy Division will contract with an independent third-party construction monitoring provider to ensure that a neutral third party will oversee the Applicant's implementation of all mitigation measures. Further, any monitoring reports that are submitted to the CPUC and/or MBNMS will be public records and will be accessible to the public upon request.

Moreover, while Mitigation Measure 4.6-1a states, "[t]he monthly report shall also document the effectiveness and practicality of the prescribed avoidance and minimization measures and recommend modifications to the measures if needed," it does not suggest that the mitigation measures might not be practical or effective. This statement does not undermine the effectiveness of the measures; rather, it ensures that any ineffective or impractical measures and suggested modifications to the measures are documented, and that further actions are taken to ensure that the performance standards are met.

MCWD-116 Mitigation Measure 4.6-1c does not include language that allows for improper deferral or diminishes the effectiveness of the measure. This measure limits work to the delineated construction boundary, and any work outside of the area will be prohibited unless approved by the Lead Biologist. The comment states that the measure needs to include performance standards to determine what activity could occur outside of the construction boundary and require that an impact assessment is conducted in these areas. The experienced and qualified Lead Biologist will be able to discern whether any work implemented outside of the project boundary would impact sensitive biological resources and, per Mitigation Measure 4.6-1a, would oversee compliance with the proposed mitigation measures.

Due to the size of the project area and varying site conditions, it is impractical to describe the exact type or method of best management practices (BMPs), referenced in Subpart 5, that would be employed. As Subpart 5 of Mitigation

Measure 4.6-1c requires, CalAm will implement the BMPs that would be required to prevent loss of habitat due to erosion caused by project related impacts. The Lead Biologist would oversee compliance with this measure. See also See response to comment Marina-77.

MCWD-117 Mitigation Measure 4.6-1d does describe under what circumstances the USFWS might approve work during the breeding season and describes the steps to obtaining USFWS approval during the breeding season in subpart 3. In response to this and other comments, this measure has been revised to clarify the performance standards that CalAm must meet to implement this measure. The revised measure includes enforceable criteria to be implemented if nests are discovered and stipulates that work may proceed, subject to USFWS approval, if the work would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young, or as allowed within the take provisions authorized by USFWS. With respect to wintering plovers, the revised measure clarifies that the appropriate performance standard is to ensure that wintering plovers are not directly impacted by construction activities.

Additionally, in response to this and other comments, Mitigation Measure 4.6-1d has been revised to include performance standards for restored habitat. The revised measure no longer includes the option of contributing to an "in lieu" fee program or a mitigation bank. See the response to Marina-72 for the full text of the revised measure. See the response to MCWD-127 regarding the timing for preparation of the Habitat Mitigation and Monitoring Plan required under Mitigation Measure 4.6-1n.

MCWD-118 Although Mitigation Measure 4.6-1e describes that project facilities shall be sited to avoid impacts on special-status plants if feasible, the measure then describes what would be required if avoidance is not feasible. See response to comment Marina-77 for additional discussion.

In response to this comment, Mitigation Measure 4.6-1e subpart 2 has been revised to include the success criterion to be used to ensure that the site would be returned to pre-construction conditions. The exact methods by which the site would be returned to pre-construction conditions cannot be determined at this time because the project is still in the preliminary design phase. Once the plans have progressed beyond the preliminary design phase, and focused botanical surveys for special-status plants have been completed per the requirements in Mitigation Measure 4.6-1e, then the appropriate methods would be determined and the success criterion used to ensure the site is returned to pre-construction conditions.

EIR/EIS Impact 4.6-1 acknowledges that direct impacts, which would include take, would result in a significant impact. This is described for the subsurface slant wells on Draft EIR/EIS page 4.6-124. The EIR/EIS concludes that implementation of the entire Mitigation Measure 4.6-1e, not just obtaining an Incidental Take Permit as stated in subpart 3, would reduce impacts to less than significant. The measure

discloses that an Incidental Take Permit may be required and provides several measures to reduce impacts to special-status plant species to less than significant.

In response to this comment, this measure has been revised to clarify the applicable success criterion and compensation ratios in subpart 5. The HMMP describing this compensation and success criteria is required in Mitigation Measure 4.6-1n.

See response to comment CDFW-4 regarding Mitigation Measure 4.6-1e.

MCWD-119 Mitigation Measure 4.6-1f does not "only" require that construction activities avoid impacts where feasible. Although the measure describes that construction activities shall be planned to avoid host plants for Smith's blue butterfly, the measure then describes what would be required if avoidance is not feasible, including the implementation of pre-construction surveys and relocation of host plants outside of the project area. See response to comment Marina-77 for additional discussion.

The mitigation measure does not improperly defer development of a relocation plan, including the scope of the survey area and identification of appropriate relocation sites, until after the project has been approved. It is impractical to develop a relocation plan at this time because the project is still in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, then the study area would be determined. Additionally, a floristic botanical survey would need to be conducted, as required in Mitigation Measure 4.6-1f, during project design and prior to project implementation to document the location of Smith's blue butterfly host plants within or adjacent to the project area. The exact impacts, and thus the exact location and dimension of appropriate relocation sites would be determined once the project has progressed beyond the preliminary design phase and required surveys have been conducted.

In response to the comment regarding the performance standards and compensation ratio in subpart 5, Mitigation Measure 4.6-1f has been revised. See the response to Marina-79 for additional discussion.

MCWD-120 Mitigation Measure 4.6-1g does not improperly defer mitigation. It is impractical to prepare this relocation plan at this time because the project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, the exact area of black legless lizard, silvery legless lizard, and coast horned lizard habitat that would be impacted would be determined. Once that area is determined, the potential relocation sites can be determined. Mitigation Measure 4.6-1g requires that surveys be conducted at the relocation sites prior to relocation, and includes a performance standard that only relocation sites that are not overpopulated and that have suitable habitat conditions (e.g., soils, moisture content, vegetation, aspect) shall be used to ensure relocation is feasible. There are large expanses of central dune scrub, which provide suitable habitat for these species, located in the vicinity of the proposed project area and lizards may be

relocated to these areas as long as relocation performance standards have been met. Mitigation Measure 4.6-1g has been revised to change the use of the word "should" to "shall."

Obtaining a Scientific Collecting Permit from CDFW would not authorize an individual to relocate black legless lizard, silvery legless lizard, and coast horned lizard. Obtaining a Scientific Collecting Permit from CDFW for these species would demonstrate that an individual has knowledge and experience with these species, which is necessary to implement this measure.

MCWD-121 Mitigation Measure 4.6-1h does not improperly defer mitigation. This mitigation measure requires development of a Burrowing Owl Exclusion Plan and, if compensatory mitigation is necessary, a Burrowing Owl Habitat Mitigation Plan that would be incorporated into the Habitat Mitigation and Monitoring Plan. It would be impractical to develop either of these plans at this time because the project is still in the preliminary design phase; the exact project area, and impacts on suitable burrowing owl habitat and potential areas where owls may need to be excluded can't be determined until the design has progressed The elements that would be included in and performance standards for the Burrowing Owl Exclusion Plan are described in Mitigation Measure 4.6-1h. The Burrowing Owl Habitat Mitigation Plan would detail the required compensatory mitigation. Compensatory mitigation would be required if burrowing owls are found on-site, which according to Mitigation Measure 4.6-1h would be determined during protocol surveys and pre-construction surveys of the project area. The compensatory mitigation requirements would not be determined until these surveys have been conducted, so the Burrowing Owl Habitat Mitigation Plan cannot be prepared at this time; however, Subpart 9b of Mitigation Measure 4.6-1h specifies the performance standards that conservation lands must meet.

Subparts 5 and 6 of Mitigation Measure 4.6-1h state that a minimum buffer distance, as included in Table 4.6-8, shall be maintained unless otherwise authorized by CDFW. In response to this comment, the measure has been revised to include a performance standard to ensure that even if the buffer is reduced, it shall be sufficient to avoid significant impacts on burrowing owls (with authorization from and as determined by CDFW). CalAm and CDFW may agree to modify the buffer depending on site conditions where an owl is observed and the type of construction activities, so the exact buffer cannot be determined at this time.

Mitigation Measure 4.6-1h provides buffer distances to be established based on the level of disturbance. Table 4.6-8 in this measure includes the buffer distance depending on the time of year and level of disturbance. As included in the table footer, this information was derived from the Staff Report on Burrowing Owl Mitigation prepared by the California Department of Fish and Game in March 2012, which, as stated in the Staff Report, "is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers,

California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls." This document is the guiding document for determining mitigation for western burrowing owl. As described in Mitigation Measure 4.6-1a, the Lead Biologist would oversee this measure and implement it in consultation with CDFW to determine the level of disturbance.

Subpart 8 of Mitigation Measure 4.6-1h requires that "site monitoring shall be conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided." Contrary to the comment, this measure does not state that take is a threshold of significance for impacts on burrowing owls. Subpart 8 is just one measure that would be implemented in Mitigation Measure 4.6-1h. Implementation of all measures in Mitigation Measure 4.6-1h would reduce impacts to less than significant.

In response to this comment, the measure has been revised to remove qualifying language such as "if feasible" and to change the use of "should" to "shall."

MCWD-122 Mitigation Measure 4.6-1i does not improperly defer mitigation. The measure stipulates a no-disturbance buffer for nesting birds, but allows for the buffer to be modified as determined in consultation with CDFW. In response to this comment, this measure has been revised to include performance standards to ensure that even if the buffer is modified, it would not cause significant impacts to nesting birds. The buffer may be modified depending on the exact location of the nest, species sensitivity to construction disturbance, and the type of construction, so the exact buffer cannot be determined at this time. Additionally, in response to comment CDFW-6 in Section 8.4.2, Mitigation Measure 4.6-1i has been revised to incorporate CDFW recommendations to monitor behavior before and during the project, consult with CDFW, and use a 250-foot no disturbance buffer around active nests of non-listed bird species and a 500-foot no disturbance buffer around the nests of unlisted raptors.

As described in EIR/EIS Section 4.6.18, special-status species include species protected by the federal Migratory Bird Treaty Act and Fish and Game Code. The Migratory Bird Treaty Act protects any part, nest, or egg, or any migratory bird, California Fish and Game Code 3503 protects nests or eggs of any bird, and California Fish and Game Code 3503.5 protects hawks, owls, and their nests and eggs. Mitigation Measure 4.6-1i addresses impacts on nesting birds protected under these regulations, not non-nesting birds, so the measure does not include pre-construction surveys or avoidance measures for non-nesting birds. Subpart 10 of Mitigation Measure 4.6-1c addresses impacts to special-status species that are within the work area to avoid and minimize direct impacts to these species.

MCWD-123 In response to this comment, Mitigation Measure 4.6-1j has been revised to include a buffer distance of 200 feet from an active natal badger den. CalAm and CDFW

may agree to reduce this buffer as long as it continues to meet the performance standard of ensuring that construction does not alter the behavior of the adult or young in a way that would cause injury or death to those individuals. The buffer was selected based on the biological requirements and sensitivity of the species, best professional judgement, and a review of typical buffer distances that have been included in other CEQA documents. This buffer distance would ensure that the project would not result in injury or death to badgers, which would reduce potential impacts to badgers to less than significant. The impact analysis, as described in EIR/EIS Section 4.6.4, is based on the rarity and context of the resources and magnitude of the impact, among other criterion. Based on the status of the American badger, a species of special concern, and the magnitude of impact, it was determined that the proposed mitigation would be sufficient to reduce impacts to less than significant. All temporarily impacted areas would be returned to pre-construction conditions, as required in Mitigation Measure 4.6-1c, and no additional compensatory mitigation has been proposed.

MCWD-124 In response to this comment, subpart 3 of Mitigation Measure 4.6-1k has been revised to include a minimum 50-foot buffer. The buffer was selected based on the biological requirements and sensitivity of the species, best professional judgement, and a review of typical buffer distances that have been included in other CEQA documents.

In response to this comment, subpart 4 of Mitigation Measure 4.6-1k has been revised to remove "to the extent feasible" and to add an effective and enforceable measure to implement when young woodrats are encountered in the nest.

MCWD-125 In response to this comment, Mitigation Measure 4.6-1l has been revised to clarify that bat roosts that begin during construction would be unaffected by the continuation of the same type of construction.

The EIR/EIS acknowledges in Impact 4.6-1 that direct impacts, which would include take, would be a significant impact. Mitigation Measure 4.6-1l states that "take of individual bats will be avoided." This measures provides for the avoidance of take as well as several other required measures, such as removing trees or structures when bats are active, and if this is not feasible, to remove trees and structures in a manner that would avoid and/or minimize impacts on roosting bats. Implementation of the all of the measures in Mitigation Measure 4.6-1l, including the measure for take avoidance, would ensure that impacts on special-status bats are reduced to less than significant.

MCWD-126 See the response to comment Marina-77 which describes the use of "to the extent feasible." Additionally, the commenter notes that performance standards must be established in the measure. In response to this comment, Mitigation Measure 4.6-1m has been revised to include a performance standard that replacement trees shall have a minimum of 70 percent survival in the fifth monitoring year to ensure success.

MCWD-127 See the response to comment Marina-79. Mitigation Measure 4.6-1n does not include compensatory mitigation requirements and performance standards, but the HMMP would summarize the compensatory mitigation requirements and performance standards from the revised special-status species and sensitive natural community specific mitigation measures in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1o, and 4.6-2b. These measures have been revised and/or clarified to include compensatory mitigation requirements and performance standards. The revised special-status species and sensitive natural community measures do not include an "in lieu" fee program option for compensation.

It is impractical to prepare the HMMP at this time. The HMMP would include a summary of special-status species and sensitive natural community compensation requirements. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, the exact area of special-status species and sensitive natural community habitat that could be impacted would be determined. Once this area is determined, then the exact amount, location, and type of appropriate mitigation would be identified. Additionally, the HMMP would outline a planting plan and identify appropriate planting material, which would be determined closer to restoration and enhancement implementation and based on site needs and the availability of local container stock at that time. Further, this plan would need to be approved by all appropriate agencies (*i.e.*, CCC, CDFW, CCRWQCB, USACE, USFWS, and local agencies that require a habitat mitigation and monitoring plan), which would be done as part of the permitting process, separate from this CEQA/NEPA analysis.

MCWD-128 In response to this comment, Mitigation Measure 4.6-1o has been revised to include performance standards for restoration or compensation sites. It is impractical to prepare this relocation plan at this time. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, then the exact area of California red-legged frog and California tiger salamander habitat that would be impacted would be determined. Once that area is determined, then suitable "nearby" relocation sites, as required in the measure, can be determined. Mitigation Measure 4.6-1a has been revised to include a performance standard that states that the animal would be relocated to a similar or better type of habitat. There are large expanses of grassland and other suitable habitat types for California red-legged frog and California tiger salamander in the project vicinity and individuals may be relocated to these areas as long as relocation performance standards have been met.

The California red-legged frog is a federal listed species and California tiger salamander is both a federal and state listed species. CalAm will need to obtain take authorization from the USFWS for take, including relocation, of both California red-legged frog and California tiger salamander from CDFW for take, including relocation, of California tiger salamander; see EIR/EIS Table 3-8. If either of these species is within the work area, the agencies would likely stipulate

relocation out of harm's way rather than authorize injury or death of an individual. This is a typical provision of Biological Opinions and Incidental Take statements that are issued to authorize projects where there is potential for take.

See the response to comment CDFW-8 for a response to the CDFW's comment on Mitigation Measure 4.6-1o.

MCWD-129 In response to this comment, Mitigation Measure 4.6-1q has been revised to include a performance standard to avoid frac-outs, and if a frac-out occurs it is properly cleaned-up. It is impractical to prepare the frac-out plan at this time. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, with locations and construction methods at crossings of wetlands or streams specified, then the frac-out plan can be prepared as part of the permit process.

MCWD-130 EIR/EIS Section 4.6.1.8 describes that various habitat areas "may" be considered primary or secondary habitat areas by the City of Marina's LCLUP and Environmentally Sensitive Habitat Areas (ESHA) by the CCC because a formal determination of the extent of primary and secondary habitat in the project area has not been made by the City of Marina and a formal determination of the extent of ESHA in the project area has not been made by the CCC. The extent of these areas would be determined as part of the permitting process, which is separate from this CEQA/NEPA analysis. In the absence of a formal determination from the City of Marina and the CCC, the EIR/EIS includes a conservative assumption that these areas would be considered primary habitat within the City of Marina's LCLUP jurisdiction, and ESHA in the project area for the purposes of the impact analysis.

The City of Marina defines primary habitat to include "habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species. These species will be collectively referred to as 'rare and endangered.'" The LCLUP (City of Marina, 1982) includes "preliminary" maps of habitat for rare and endangered plants "to provide a guide to the locations where more intensive study is required." The LCLUP includes a policy that "before any use or change in use, areas identified as potential habitat for rare and endangered plant or animal species shall be investigated by a qualified biologist to determine the physical extent of the primary habitat areas for the specific rare and endangered plants and animals on that site." So while these areas have been preliminarily mapped, they require site specific surveys to confirm these boundaries. The extent of these areas need to be confirmed by the City of Marina.

ESA and AECOM biologists met with staff from the CCC and a biologist from SWCA contracted to the City of Marina at the proposed project site on May 19 and July 19, 2017, to review and confirm the boundaries of ESHA and primary and secondary habitat within the project area. While the boundaries were not confirmed during these meetings, the CCC provided guidance that the approach taken in the

EIR to analyzing primary and secondary habitat was likely too conservative and that additional areas of non-sensitive habitat (i.e. dune topography, even where currently covered with iceplant) may also be considered ESHA. In response to this guidance, and based on the definition of primary habitat provided in the City of Marina's LCLUP and the definition of ESHA provided by the CCC and in other local coastal plans, the EIR/EIS has been revised to assume that all undeveloped areas within the coastal zone would be considered primary habitat (within the City of Marina's LCLUP jurisdiction) and ESHA in all other jurisdictions. Although the limits of these jurisdictional boundaries have changed in the Final EIR/EIS, the impact conclusions remain the same as in the Draft EIR/EIS. The new areas that are now assumed to be primary habitat and/or ESHA are areas that are largely ruderal or dominated by non-native plant species such as iceplant and their general function and value (as low quality, non-sensitive vegetation communities) has not changed since publication of the Draft EIR/EIS. See also the response to comment Marina-70.

MCWD-131 The EIR/EIS does analyze impacts from construction of the subsurface slant wells, including conversion of the temporary test slant well to a production well; see EIR/EIS Section 3.2.1, Table 3-1 and Section 4.6.1.10. As described on Draft EIR/EIS page 4.6-70, "the subsurface slant wells include ten subsurface slant wells (the converted test slant well and nine new wells)." The EIR/EIS does state that the exact limits of primary habitat would be determined through the Coastal Development Permit (CDP) process, but does not defer consideration of these impacts to the CDP application process. The EIR/EIS fully evaluates potential impacts to ESHA, including primary habitat as defined by the City of Marina's LCLUP, in Impacts 4.6-2 and 4.6-7. The response to comment MCWD-130 describes why the EIR/EIS includes conservative assumptions for the limits of ESHA and primary habitat in the absence of formal determinations by the CCC and City of Marina.

The EIR/EIS does not rely on conformance to Coastal Act policies to ensure impacts to ESHA are reduced to less than significant. The EIR/EIS states that implementation of Mitigation Measure 4.6-2a, as well as other measures such as Mitigation Measure 4.6-2b would ensure that if ESHA is affected by the proposed project, then this impact would be reduced to less than significant.

In response to the comment, Mitigation Measures 4.6-2a has been revised to state that the project would conform to ESHA policies or other policies of the Coastal Act, instead of only ESHA policies. Although the project would result in a less than significant impact on ESHA, as discussed in Impacts 4.6-2 and 4.6-7, the project would have a significant and unavoidable impact as it would be inconsistent with the City of Marina's LCLUP, as discussed in Impact 4.6-4. These findings are not inconsistent as they are both describing impacts to different resources. Impacts 4.6-2 and 4.6-7 evaluate impacts to ESHA as a sensitive natural community and Impact 4.6-4 evaluates the project's consistency with local plans

and policies. Although the project would mitigate impacts to the ESHA, it would still conflict with a local plan or policy.

In regards to the test slant well, this structure currently exists at the project site and impacts from installation of the test slant well were evaluated in the CEQA document for the test slant well project. Its installation and operation as a test slant well is not a part of the proposed project. See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2, 8.2.11.3, and 8.2.11.7

Consistency with the policies in the City of Marina's LCLUP, and consistency with these policies protecting biological resources, is evaluated in Impact 4.6-4 under the heading "City of Marina LCLUP."

Each impact statement includes an explanation for how the mitigation measures would mitigate impacts to a less than significant level. See the response to MCWD-114.

In response to the comment regarding Mitigation Measure 4.6-2a, see the response to MCWD-130. Additionally, as described in Impact 4.6-2 and Impact 4.6-7, CalAm would be required to implement Mitigation Measure 4.6-2a, as well as other mitigation measures, including Mitigation Measure 4.6-2b, to reduce impacts to less than significant. The EIR/EIS does not rely solely on implementation of Mitigation Measure 4.6-2a to reduce impacts to less than significant.

See the response to comment Marina-77 in response to the "to the extent feasible" language in Mitigation Measure 4.6-2b. In response to this comment, this measure has been revised to include performance standards and clarify compensatory mitigation requirements.

The EIR/EIS evaluates the potential impacts of the proposed project on ESHA as a sensitive natural community in accordance with CEQA requirements. Impact 4.6-2 and Impact 4.6-7 describe potential impacts of the proposed project on ESHA and proposed mitigation measures to reduce the potential impacts to less than significant. Nonetheless, it is acknowledged that Section 30240 of the Coastal Act states that ESHA shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. However, Section 30260 of the Coastal Act does encourage coastal-dependent industrial uses provided, among other measures, that adverse environmental effects are mitigated to the maximum extent feasible.

MCWD-132 See responses to comments MCWD-117, MCWD-121, and MCWD-122, as well as responses to comments CDFW-6 and CDFW-7.

MCWD-133 The EIR/EIS' analysis of impacts on federal wetlands, federal other waters, and/or waters of the state evaluates the potential for direct or indirect effects on these features as a result of construction activities. See response to comment Marina-71 for

explanation of the study corridor that was evaluated. CEQA and NEPA require analysis of reasonably foreseeable effects; for wetlands and other waters, reasonably foreseeable effects are confined to resources within proximity to the proposed project. Furthermore, federal and state laws regulate the placement of fill within wetlands and other waters, which was considered as a potential direct effect of the project at locations where that would occur within the project study area. While state laws also regulate indirect effects on fish and wildlife habitat (California Fish and Game Code Section 1600 et seq.) and beneficial uses (Porter Cologne Water Pollution Control Act), the EIR/EIS concludes that the project would not result in lowering of groundwater such that wetlands and other waters would be adversely affected (see responses to comments MCWD-108 and MCWD-109).

MCWD-134 A formal delineation of waters of the U.S. has not been verified by the U.S. Army Corps of Engineers (USACE) and a delineation of waters of the State has not been verified by the Regional Water Quality Control Board (RWQCB) and the CCC. These formal determinations are not required for the CEQA/NEPA analysis. The EIR/EIS used the best available knowledge based on surveys conducted within the study area. As described in EIR/EIS Section 4.6.1.6, wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC were mapped in the project's study area during field surveys. A wetland delineation report, based on some of these field surveys, has been prepared and is referenced in the Final EIR/EIS. In the absence of a formal determination by these agencies, the EIR/EIS conservatively assumes that areas mapped during field surveys, included in the wetland delineation report, and included in the USFWS National Wetland Inventory, would be considered potentially jurisdictional by these agencies. Impacts to wetlands and waters were evaluated in Impact 4.6-3 and Impact 4.6-8 based on these assumptions. In response to this comment, Mitigation Measure 4.6-3 has been revised and clarified to include performance standards and compensatory mitigation requirements.

In response to this comment, and to clarify the assumptions in the EIR/EIS, the following text has been added to Section 4.6.1.6, Wetlands and Other Waters:

> <u>In the absence of a verified wetland delineation by the USACE, RWQCB, and CCC, this document assumes that all potential jurisdictional features identified in the surveys described above and by the NWI may be considered jurisdictional by the USACE, RWQCB, and CCC.</u>

MCWD-135 As described in EIR/EIS Section 4.6.5.2 on Draft EIR/EIS page 4.6-234, "because the location, nature, and extent of disturbance associated with future pipeline repairs cannot be predicted, it would be too speculative to analyze the potential site-specific adverse effects associated with future pipeline repairs at this time. However, certain pipeline repairs may be subject to future CEQA/NEPA review. For these reasons, only known, reasonably foreseeable, operational impacts are evaluated below." The EIR/EIS evaluates known, reasonably foreseeable impacts.

There is no possible way to predict the location or extent of work that may be required for possible future pipeline repairs and therefore no possible way to evaluate impacts on this unknown level of work. However, as the EIR/EIS states, certain pipeline repairs may be subject to future CEQA/NEPA review, which would be separate from this analysis, but many of the pipeline repairs would result in impacts similar to pipeline construction; those impacts and associated mitigation measures are addressed in this EIR/EIS, and the impacts would be less than significant.

MCWD-136 The analysis of potential impacts on western snowy plover in Impact 4.6-6 acknowledges that noise or disturbance from maintenance activities could significantly impact wintering plovers. The discussion of the nature of such impacts was provided in the subsection titled "Overview of Potential Construction Effects on Wildlife" in Impact 4.6-1 (see Draft EIR/EIS page 4.6-123). In response to this comment, the referenced text in Impact 4.6-6 has been revised to clarify that detailed discussion of the types of impacts that could result from maintenance-related noise and disturbance is provided under Impact 4.6-1.

MCWD-137 In response to this comment, Mitigation Measure 4.6-6 has been revised to change "should" to "shall."

As described in Impact 4.6-6, "Although it is unlikely that many birds would become sick or die at the brine storage basin annually, over the life of the project, some migratory waterfowl could become sick or die from use of the brine storage basin, a significant impact." As demonstrated at the adjacent MRWPCA Regional Wastewater Treatment Plant, use of bird deterrents has deterred most birds from its ponds. As described in Mitigation Measure 4.6-6, CalAm would be required to implement a monitoring and adaptive management approach to deter most birds from the Brine Storage Basin. If during monitoring, bird or wildlife deaths are detected at the Brine Storage Basin, then the type of bird deterrent shall be modified to ensure most birds are deterred from the Brine Storage Basin and thus the risk of death to migratory waterfowl is reduced to less than significant.

MCWD-138 In response to this comment, Mitigation Measure 4.6-1c has been revised to prohibit the use of photodegradable and other plastic mesh erosion control products. See the response to comment CDFW-9; also see response to Marina-77, in Section 8.5.1, for the revised mitigation measure.

MCWD-139 See responses to MCWD-108 and MCWD-109 and response to comment CURE-Owens-19 in Section 8.6.2.

MCWD-140 Responses to comments on the adequacy of the mitigation measures in Section 4.6 are provided in the responses to comments MCWD-111 through MCWD-113, MCWD-115 through MCWD-128, MCWD-131, MCWD-134, MCWD-137, and MCWD-142.

See the response to comment MCWD-114 regarding where the EIR/EIS describes how specific mitigation measures would reduce impacts to less than significant.

MCWD-141 As discussed in EIR/EIS Section 4.4.5.2, the slant wells proposed at the CEMEX site would draw groundwater levels down in the Dune Sand Aquifer and in the underlying 180-FTE Aquifer. The drawdown would be greatest (up to 29 feet) close to the coast surrounding a zone of groundwater capture created by pumping (see EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in Master Response 8, Project Source Water and Seawater Intrusion) and would be less pronounced (1 to 5 feet) in the area of influence that is projected to extend inland up to 3 miles beyond the capture zone (see EIR/EIS Figures 4.4-14 and 4.4-15). In order for the drawdown induced by MPWSP pumping to impact jurisdictional surface water features or wetlands, the groundwater in either the Dune Sand Aquifer or the 180-FTE Aquifer would have to interact with the ground surface such that a change in the groundwater level induces a response in the surface water feature/wetland.

The Dune Sand Aquifer is the unconfined, uppermost water-bearing unit and is the aquifer with the greatest likelihood of a hydraulic connection with the surface, while the 180-FTE Aquifer is deeper and semi-confined with water levels at even lower elevations. A groundwater-surface water interaction with the Dune Sand Aquifer would be evident if a surface water feature was created as an expression of the groundwater surface. This condition does not exist in the study area as evidenced by groundwater levels in eight Dune Sand and 180-FTE Aquifer monitoring wells measured by Cal Am since early 2015 (see EIR/EIS Section 4.4.4). If a groundwater-surface water interaction did exist with the Dune Sand Aquifer, water levels in the monitoring wells would be at or slightly below the ground surface. Nearly two years of groundwater monitoring has revealed that the groundwater surface of the Dune Sand Aquifer ranges in depths between 10 and 43 feet below the ground surface, with an average depth to water of 26 feet, depending on the location. Water levels in the 180-FTE Aquifer are consistently lower than those in the Dune Sand Aquifer. These groundwater surface depths only fluctuate by a few feet throughout the year. Lithologic logs of the monitoring well borings verify that there is a defined vadose (unsaturated) zone composed of sand and/or silty-clayey sand between groundwater of the Dune Sand Aquifer and the ground surface. EIR/EIS Appendix E3 provides water levels monitoring data and lithologic logs of monitoring well borings.

Hydrogeologic conditions demonstrate that the surface water features and wetlands of concerns are clearly perched at or just below the ground surface and likely fed, not by groundwater in the Dunes Sand Aquifer, but by sources of surface water that include precipitation, fog drip, surf spray, irrigation runoff, or seepage from locally perched saturated lenses in the younger sand dunes. Therefore, the Dune Sand and 180-FTE Aquifers are not in hydraulic connection with surface water features and the degree of their separation precludes direct surface drawdown effects and water quality changes (i.e., increased salinity in the capture zone) near the CEMEX site and throughout the area projected to be influenced by MPWSP pumping.

MCWD-142 According to the Fort Ord Reuse Authority (FORA) website, the HCP was expected to be released for public review by the end of 2017. At the time of publication of the Final EIR/EIS, the Installation-Wide Multispecies Habitat Conservation Plan (HCP) is currently in a draft form, and has not yet been released or adopted. Impact 4.6-8 analyzes whether the proposed project would "be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan during construction or operations." The EIR/EIS is not required to analyze whether the project would be inconsistent with a draft document. It is unknown exactly what measures would be included in the HCP once it is finalized and adopted, so it would be speculative to analyze potential inconsistencies with a document that has not been finalized and adopted.

Mitigation Measure 4.6-8 only applied to the Terminal Reservoir. Since the Terminal Reservoir has been removed from the proposed project, this comment is no longer applicable and Mitigation Measure 4.6-8 has been deleted.

MCWD-143 As explained in EIR/EIS Section 4.1.7.1, Approach to the Analysis of Cumulative Effects, the EIR/EIS engaged in a two-step process. The first step describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. Where the analysis finds that the cumulative effects of past, present and future projects plus the proposed project would be significant and adverse, the second step of the cumulative impact process identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature (referred to as a "cumulatively considerable contribution" under CEQA) such that the project's contribution to cumulative effects in that area is deemed significant. In essence, it is only if the answer is affirmative in both steps of the analytical process that the project's contribution to the overall significant and adverse cumulative effect is deemed a significant effect associated with the project.

In response to this comment, Impact 4.6-C has been revised to clarify that, with implementation of the proposed mitigation measures, the residual project impacts would be minimal and would not be cumulatively considerable. The only exception is that the proposed project would conflict with the City of Marina's LCLUP, which would be a significant and unavoidable contribution to a significant cumulative impact.

The adequacy of the proposed mitigation measures is described in responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134.

MCWD-144 As the commenter states, the Reclamation Plan for the CEMEX site requires reconstruction and revegetation of the "southerly slopes." Portions of the subsurface slant well site may result in temporary or permanent impacts to a small portion of the southern slope revegetation area. The EIR/EIS describes the majority

of this area as central dune scrub, a sensitive natural community, and the entire subsurface slant well site as primary habitat as defined by the City of Marina's LCLUP. As described in Impact 4.6-2 and 4.6-7, impacts to sensitive natural communities and primary habitat will be reduced to less than significant by implementing various mitigation measures including Mitigation Measure 4.6-2b. The revised Mitigation Measure 4.6-2b requires that any temporarily impacted areas are restored to pre-construction conditions and any permanent impacts are compensated at a 2:1 ratio. With implementation of this measure, any areas that have been reclaimed and would be impacted would either be restored to their current condition or mitigated at an offsite location to ensure no net loss of this habitat.

MCWD-145 The list of cumulative projects described in EIR/EIS Section 4.1.7.2 includes projects for which detailed descriptions and expected impacts are known, as well as projects that have less defined impacts but may contribute to regional impacts. Therefore, the exact acreage and extent of all cumulative projects is unknown. In response to this comment, Impact 4.6-C has been revised to include a general description of the amount of sensitive habitat that may be disturbed by the cumulative projects. This analysis is based on a review of the environmental documents that have been prepared for some of the cumulative projects. Additionally, Impact 4.6-C has been revised to include the total acreage of impacts that the proposed project may have on sensitive habitat types.

MCWD-146 No citation or reference was provided to support the comment's assertion that the rate of erosion at the coastline at the CEMEX facility nearly doubled from 2014 to 2016 from 220,000 to 380,000 cubic yards per year. Nonetheless, as explained in EIR/EIS Section 4.2.1.3, Section 4.2.4.5, and Appendix C2, Sections 1 and 2, the rate of erosion varies each year and is the net result of seasonal changes, localized erosion (rip currents), long-term erosion, and sea level rise, relative to the annual sand supply (sand supplied from inland sources by rivers and streams and sand supplied from ocean sources during surges, which both supply the coastal sand drift). As explained in Appendix C2 on page 4, the modeling used a conservative approach that applied historic erosion rates, anticipated sea level rise and a 100-year storm event. The historic erosion rates used in the model input are linear erosion rates, not volume rates. This is because the modeling was conducted to estimate the year when the coastline is anticipated to have retreated back towards the well, not the volume of sand removed. The results are provided as erosion profiles showing the cross sectional view of coastal profiles at various times in response to coastal retreat. Over the modeled time period from 2012 to 2073, the annual *linear* rate of erosion varies from 7 to 9 feet per year.

The commenter asked if the 15 feet of scour observed around the outfall pipe during the winter storm surge in early March 2016 is consistent with the 2014 coastal retreat projections. It is important to note that the 15 feet of scour is an individual winter event *with a solid object (the outfall pipe) exposed on the beach,*

followed by some backfill of the beach once the storm had passed. It is more important to note that the amount of scour was exacerbated because the outfall pipe was exposed. The presence of a solid object on the beach causes scour to increase as wave forces are concentrated around the solid object. As shown on EIR/EIS Figures 4.2-7 and 4.2-8, the amount of scour due to a 100-year storm event *without a solid object exposed on the beach* ranges from about 8 to 14 feet. The 15 feet of scour is not consistent with the modeled coastal retreat because of the presence of the outfall pipe.

In addition, the coastal retreat projections are the accumulation of the previously discussed multiple causes of coastal retreat. The existing test slant well head and the proposed slant well heads are located further inland behind the existing sand dunes. As discussed in Section 4.2.1.3, and in Appendix C2, the scour experienced at a given location is the result of several causes with a net result also controlled by the sand supply. Nonetheless and as shown on Section 4.2 Figure 4.2-7, coastal retreat is not anticipated to reach the test slant well until about 2060; the other proposed slant well locations would not be reached until well after 2060. Therefore, because Mitigation Measure 4.2-10 would result in monitoring coastal retreat and decommissioning of the well prior to exposure on the beach, the well would never be exposed to scour and would not exacerbate or accelerate coastal erosion.

The commenter states the coastal retreat modeling did not use "available computer-aided modeling as identified in Appendix C2." The commenter is referring to text on Page 7 of Appendix C2 that states: "Alternative estimates could be developed by computer-aided modeling of sand transport. For example, XBEACH and other available software can provide estimates of storm-induced profile erosion (USGS, 2009). Also, GENESIS and other available software can provide estimates of future shoreline positions. Such further analysis may enhance the ability to assess the likelihood of shore recession estimates presented herein."

However, as stated on Appendix C2, Page 4: "The potential inland shoreline retreat caused by sea level rise and the impact from a large storm event was estimated using the geometric model of dune erosion originally proposed by Komar et al (1999) and applied with different slopes to make the model more applicable to sea level rise (Revell et al, 2011). This method is consistent with the FEMA Pacific Coast Flood Guidelines (FEMA, 2005)."

While other modeling methods are available, the modeling method is consistent with FEMA guidelines. Furthermore, the model uses a conservative approach that maximizes the potential coastal retreat. As explained on Page 4 of Appendix C2, the representative coastal profiles conservatively used "…an extremely eroded profile (lower envelope) for each future time horizon."

In addition, to be conservative, the accretion of sand on to the beach was not included in the model, as noted on Page 6: "The overall linear regression shows

accretion, but the shorelines have fluctuated historically, and the most recent shoreline (spring 2010) is more eroded than the spring 1998 post-El Nino LiDAR. For this reason, we conservatively do not include the accretion signal" and "North of the Salinas River, the shore is accreting and dune growth appears to be occurring but accretion was neglected in these locations as well."

In other words, an acceptable model was used with conservative input parameters to maximize the potential amount of coastal retreat.

MCWD-147 EIR/EIS Figure 4.2-7 accurately represents that the well head for the test slant well is about 30 feet above Mean Lower Low Water (MLLW) of the intertidal zone. Figure 4.2-8 shows the proposed slant well location at Profile 4b, which would pass just north of the well head for Proposed Slant Well Site WS-2 (see Figure 3-3a); Slant Well Sites WS-2 through WS-6s would all be located about the same distance from the shoreline. As discussed in EIR/EIS Section 4.2, Impact 4.2-10, the test slant well location would be the most likely to be affected by coastal retreat.

MCWD-148 The coastal retreat modeling described in EIR/EIS Section 4.2.4.5 was conducted to estimate the year when the coastline is anticipated to have retreated back towards the wells, and the potential for the exposed wells to exacerbate scour of the beach. The results are provided as erosion profiles showing the cross-sectional view of coastal profiles at various times in response to coastal retreat; see EIR/EIS Figures 4.2-7 and 4.2-8. The analysis indicates the test slant well could become exposed on the beach sometime around the year 2060; that would be about 45 years after the well was installed. Therefore, while 20 to 25 years as useful life for the slant wells may be inconsistently used in the EIR/EIS, the useful life of the slant wells is not relevant to Impact 4.2-10 and has no bearing on the significance conclusion. See also responses to comments MCWD-78, MCWD-79 and MCWD-82.

MCWD-149 Impact 4.2-10 explains that based on projections of sea level rise and anticipated coastal retreat, abandonment procedures are anticipated to begin prior to 2060 for the converted test slant well and after 2060 for the other nine slant wells, but would occur as needed based on monitoring required under Mitigation Measure 4.2-9, Slant Well Abandonment Plan. The implementation of this mitigation measure would eliminate, not merely reduce any erosion impact, by ensuring the slant well(s) would be decommissioned prior to exposure.

Mitigation Measure 4.2-9 has been revised to include annual reporting of the erosion rate to the agency that issues the Coastal Development Permit. The mitigation measure, and therefore, the annual reporting requirement, would be enforced by the CPUC as a component of its Mitigation Monitoring and Reporting Plan (MMRP) that the CPUC would adopt if and when it approves a project or alternative that includes slant wells (CEQA Guidelines Section 15091(d)). Thus, the revised mitigation measure and the third-party monitoring of the MMRP by the CPUC will provide for the appropriate public reporting requirements.

Special Condition 6 of the test slant well CDP states that the "Permittee shall cut off, cap, and bury the slant well head at least 40 feet below the ground surface, and shall completely remove all other temporary facilities approved by this coastal development permit." Since EIR/EIS Figure 4.2-7 accurately represents that the well head for the test slant well is located at 30 feet above MLLW, this permit condition requires the well to be cut off 10 feet below MLLW.

With the implementation of Mitigation Measure 4.2-9, the section of well casing and pipelines at risk of exposure would be cut and removed to a depth of 5 feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (Appendix C2). Since the 2060, 100-year lower profile envelope would be at 10 feet below MLLW (see EIR/EIS Figure 4.2-7), that would require the casing to be removed to a depth of 15 feet below MLLW or 45 feet below the ground surface. This is consistent with, and in fact more aggressive than the Special Condition 6 that was placed on the test slant well by the CDP. See also Master Response 14, CEMEX Settlement, Section 8.2.14.2; with the closure of the Lapis Sand Plant in 2020 as a result of the Settlement Agreement, ongoing coastal erosion at this location is expected to slow compared to erosion rates that have occurred with sand mining. Therefore, the erosion profiles in the EIR/EIS likely overestimate the rate of future shoreline change, and the test slant well is likely to be exposed later than the EIR/EIS projects. The analyses and conclusions related to coastal erosion in the EIR/EIS have not been revised, and instead have been retained as conservative estimates of potential erosion-related impacts.

MCWD-150 EIR/EIS Section 4.1.5 explains the approach taken to the project consistency analysis. See response to comment Marina-94.

The Draft EIR/EIS concludes on page 4.6-224 that construction of the slant wells, the Source Water Pipeline, the new Desalinated Water Pipeline, the new Transmission Main and the staging area at Beach Road "would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact." As further explained on Draft EIR/EIS page 4.6-224, the CCC reached a similar conclusion in its review of the test slant well Coastal Development Permit application, on appeal. The CCC staff report noted that development of the test slant well in the proposed location would conflict with Coastal Act policies related to protection of ESHA (Coastal Act Section 30240). The CCC staff report for the test slant well states: "Although the project is proposed to be located in portions of the CEMEX site that have been subject to disturbance, the entire area in which the project would be located is primary habitat and ESHA under the LCP. The proposed project is not a resource dependent use, so it cannot be approved consistent with the LCP's habitat protection policies." (CCC, 2014)

The CCC was ultimately able to approve the project consistent with the Coastal Act, however, by relying upon Coastal Act Section 30260, which encourages

coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned.

EIR/EIR Table 4.8-3 presents a summary of land use and recreation impacts, and Impact 4.8-1 states, "Consistency with applicable plans, policies, and regulations *related to land use and recreation* that were adopted for the purpose of mitigating an environmental effect" (emphasis added). As stated in the second paragraph under Impact 4.8-1, "This section evaluates overall project consistency with applicable plans, policies, and regulations *pertaining to land use and recreation*" (emphasis added). Therefore, to be consistent with Table 4.8-3 and with the intent of the analysis in this section, the impact statement on Draft EIR/EIS page 4.8-34 has been revised as follows:

> **Impact 4.8-1: Consistency with applicable plans, policies, and regulations <u>related to land use and recreation</u> that were adopted for the purpose of mitigating an environmental effect.**

As noted above, the required analysis has disclosed that the proposed project, because it would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, would result in a significant and unavoidable impact. Nothing in this response to comment has triggered a need to recirculate the Draft EIR/EIS.

MCWD-151 As listed in EIR/EIS Table 4.7-1, there are no known active hazardous materials sites that are directly beneath any of the proposed project components. Nonetheless, the discussion in EIR/EIS Section 4.7.1 notes that the area has a long history of chemical use from commercial, industrial, agricultural, and military land uses, and various investigations and cleanups have been undertaken to address the releases. Consequently, although not expected, it is recognized that previously undiscovered chemical releases could be present and construction activities might encounter hazardous materials of previously undetected chemicals at unknown concentrations.

To address this possibility, Mitigation Measures 4.7-2a, Health and Safety Plan, and 4.7-2b, Soil and Groundwater Management Plan were identified in the EIR/EIS. Together, these mitigation measures are clear, enforceable and include appropriate performance standards as they would ensure that workers are apprised of the potential for soil and groundwater contamination, trained in the recognition of such possible contamination, and trained in the use of personal protective equipment and decontamination procedures, as needed. Further, upon discovery of contamination construction workers are required to stop work and notify the Monterey County Department of Environmental Health, followed by the retention of a qualified environmental firm to perform sampling and remediation. Construction workers would not perform the cleanup; cleanup would be conducted by environmental professionals trained to investigate, manage, and remediate hazardous materials. The environmental professionals would conduct sampling to identify risks, respond with

the appropriate safety procedures and protective equipment, and remediate the site using screening levels, as discussed in EIR/EIS Section 4.7.2.

As discussed above, the specific kinds and concentrations of hazardous materials of previously undiscovered hazardous materials, if any, obviously remain unknown until construction activities uncover their presence. Because the known hazardous materials sites in the region have previously been cleaned up, construction activities are not expected to encounter contaminated soil or groundwater, or unexploded ordnance (UXO). However, the previous investigations and cleanups have identified the overall nature of historical chemical and hazardous materials used in the regional area, which is known to have included fuels, lubricants and oil, solvents, various volatile organic compounds (e.g., carbon tetrachloride, trichloroethene), pesticides and herbicides, metals (e.g., cadmium, chromium, copper, nickel, and lead), wood preservatives (e.g., creosote and less commonly copper, chrome, arsenic, and pentachlorophenol), or UXO. Consequently, the Health and Safety Plan and the Soil and Groundwater Management Plan would include procedures to address these specific hazardous materials.

Upon certification of the EIR/EIS and the approval of the various permits, CalAm would commence construction of the proposed project. Contractors engaged in work that would disturb soil or conduct dewatering of excavations would be required to prepare a Health and Safety Plan and the Soil and Groundwater Management Plan relevant to the work they are contracted to perform. The contract specifications would mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent. This compliance would include notifying the appropriate regulatory agency of the release and acquiring the agency's concurrence that the newly discovered hazardous materials have been remediated to their satisfaction before work would continue in the affected location.

MCWD-152 The analysis under Impact 4.7-4 does not simply state; it explains that the risk of a release of hazardous materials near a school would be low, *because of the performance standards* imposed by the permitting requirements on the construction activities, *as discussed under Impact 4.7-1* [emphasis added]. EIR/EIS Section 4.7.2.2 addresses the Hazardous Materials Release Response Plans and Inventory Act - Health and Safety Code, Section 25500 et seq. Section 25532 of the Health and Safety Code (Pub. Resources Code, § 21151.4) states that: "An environmental impact report shall not be certified or a negative declaration shall not be approved for any project involving the construction or alteration of a facility within one-fourth of a mile of a school that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code, that may pose a health or safety

hazard to persons who would attend or would be employed at the school… .” The code continues by providing conditions and exemptions. Hazardous air emissions are toxic air contaminants identified by the California Air Resources Board. Construction would result in the short-term emissions of diesel particulate matter (DPM), a toxic air contaminant, within 0.25 mile of schools. The risk of the handling or emissions of hazardous materials near a school or any other site is analyzed for Impact 4.7-4; based on a screening-level analysis discussed in EIR/EIS Section 4.10, Air Quality, DPM emissions would be less than the Monterey Bay Unified Air Pollution Control District’s increased cancer risk threshold. Therefore, the proposed project would be in compliance with this code.

MCWD-153 As discussed above, Mitigation Measures 4.7-2a and 4.7-2b are not improperly deferred mitigation and adequately address the potential to encounter previously unknown soil and/or groundwater contamination. As discussed in Impact 4.7-C, cumulative projects would be subject to the same regulatory requirements as the MPWSP. These regulations would require cumulative projects that would include soil excavation and/or dewatering to prepare and implement health and safety plans, and soil and groundwater management plans to address the potential to encounter hazardous materials. These plans would be similar to the plans required under Mitigation Measures 4.7-2a and 4.7-2b, and would be subject to the same regulatory action levels. Implementation of these plans would reduce the risks from encountering hazardous materials to less than significant. No revisions were made in response to this comment.

MCWD-154 See response to comment USEPA-4 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS. Revisions to Mitigation Measure 4.11-1 address the comment’s concerns about improper deferral by providing specific measures CalAm must take to achieve the GHG emissions performance standard outlined in the measure, including the potential purchase and retirement of carbon offsets. With regard to MCWD comments on Mitigation Measure 4.18-1, see responses to comments MCWD-164 and MCWD-167.

MCWD-155 As explained in EIR/EIS Section 4.1.7.2 and Table 4.1-2, Project No. 31, RUWAP Desalination Element, it is speculative to assume that MCWD will implement a 2,700 afy desalination facility, or what the size, timing or configuration of that facility would be. Therefore, the EIR/EIS does not generally include the RUWAP Desalination Plant in the cumulative analysis. Making conservative assumptions, however, EIR/EIS Section 4.4.6 does analyze the development of a 1,000 afy desalination plant on MCWD land as a cumulative project, in the event that such an option is chosen to make up the shortfall needed to provide water to support the FORA Base Reuse Plan.

Regarding the comment that modeling based upon best available information is needed, see response to comment MCWD-102. As discussed in EIR/EIS Impact 4.4-4, the MPWSP would have a less-than-significant impact on groundwater quality, with regard to salinity, since the slant well pumping would retard the inland migration of the seawater intrusion front. This is further presented in EIR/EIS Figure 4.4-17. In addition, Table 4.4-10 presents the known active supply wells within vicinity of the proposed MPWPS slant wells. The table includes the MCWD municipal wells, but only in mention because the Wells 10, 11, and 12 are over 2 miles to the southeast, and are screened in the 900-Foot Aquifer, and the Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. While the proposed location of the RUWAP Desalination Element wells is speculative at this time, EIR/EIS Section 4.4.6, discusses the potential cumulative groundwater effects if MCWD were to construct a 1,000 afy desalination plant. In this scenario, the MCWD wells would be located south of the CEMEX site at the MCWD property at Reservation Road. Groundwater at this location is already degraded by seawater intrusion/high salinity. The EIR/EIS concludes that if the MPWSP and RUWAP Desalination Element were to operate concurrently, there would be no significant cumulative impact to groundwater quality and the two projects could in fact, contribute to a beneficial effect to reduce seawater intrusion. Overall, the proposed project would not cause increased salinity levels at the proposed RUWAP Desalination Element wells, nor would it cause MCWD to install additional infrastructure for the treatment of source water or increased energy requirements.

MCWD-156 EIR/EIS Section 4.13, Table 4.13-4, includes average monthly flows of treated wastewater effluent from the MRWPCA Regional Treatment Plant, which includes treated effluent from MCWD's vested usage of the facility. Table 4.13-4 shows that the brine stream from the MPWSP when combined with the highest monthly effluent flows from the MRWPCA would be an estimated 34 mgd. The MRWPCA outfall has an overall capacity of 81.2 mgd, therefore there would be ample capacity for proposed discharges from a 1,000 afy RUWAP Desalination Element. In addition, the MPWSP would not adversely affect the 2009 Memorandum of Understanding between the MRWPCA and MCWD for the Planning for Use of MRWPCA Outfall for Brine Disposal, which provides priority right to the MCWD for the use of unused outfall capacity of up to 25 mgd of brine.

MCWD-157 See response to comment MCWD-26. Per the 2009 Wheeling Agreement between CalAm and MCWD, CalAm is permitted to use a portion of the capacity of MCWD's water conveyance facility for CalAm's ASR Project. The subject of the agreement is the conveyance that extends southwards from the inter-tie location within General Jim Moore Boulevard just south of Coe Avenue and includes all appurtenant devices and fittings on the main transmission pipe itself. The Wheeling Agreement is intended to provide the terms and conditions for construction, financing, operation and maintenance, scheduling, quality requirements, term, priorities, and fair compensation for CalAm's joint use of the Subject Facility. The

Subject Facility is the same pipeline that the New Transmission Main would connect to in order to convey MPWSP water to CalAm's existing water supply distribution system. The Wheeling Agreement would need to be revised to include MPWSP water. Pursuant to Water Code Sections 1810 through 1813, CalAm and MCWD are to determine the unused capacity required and available capacity in the Subject Facility for CalAm's and MCWD's proposed uses. On March 23, 2017, CalAm provided to MCWD an assessment of estimated pipeline capacities, including pressure assumptions, for proposed uses of the Subject Facility, including future supply from CalAm's proposed desalination facility. The assessment shows that there is ample capacity in the Subject Facility for projected future uses (CalAm, 2017). The Subject Facility is a pressurized system, in which all the water that is permitted to use the facility would mix and reach the intended destinations, regardless of the location of the source.

In response to this comment, EIR/EIS Table 3-1 has been revised to include the following description of the New Transmission Main:

> "This pipeline would convey desalinated water between the new Desalinated Water Pipeline at Reservation Road, crossing U.S. Army-owned property along General Jim Moore Blvd. to the existing Phase I ASR Facilities <u>where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection</u>."

In addition, EIR/EIS Section 3.2.3.4, New Transmission Main, has also been revised:

> "The new Transmission Main would continue east along Lightfighter Drive for approximately 0.4 mile to General Jim Moore Boulevard, turn south along the east side of General Jim Moore Boulevard to Normandy Road. South of Normandy Road the pipeline would be located along the west side of General Jim Moore Boulevard <u>for approximately 1.9 miles</u>, ending at the existing Phase I ASR Facilities ~~near General Jim Moore/Coe Avenue~~ (see **Figures 3-7** through **3-9a**) <u>where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection</u>."

MCWD-158 EIR/EIS Section 4.13, Impact 4.13-1 states that construction of the MPWSP could damage or interfere with existing water, sewer, stormwater drainage, natural gas, electric, or communication utility service lines, and construction could require the permanent relocation of these utility lines, potentially interrupting service if the relocation could not be avoided. Such impacts on utilities and utility services during project construction would be potentially significant. Therefore, implementation of Mitigation Measures 4.13-1a (Locate and Confirm Utility Lines), 4.13-1b (Coordinate Final Construction Plans with Affected Utilities), 4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities), 4.13-1d (Emergency Response Plan), 4.13-1e (Notify Local Fire

Departments), and 4.13-1f (Ensure Prompt Reconnection of Utilities) are required to reduce the impact to a less-than-significant level. Such impacts and mitigation measures would apply to any existing/planned MCWD utilities that may be within the MPWSP project area.

MCWD-159 As described in EIR/EIS Section 4.18.3, the evaluation criteria used to determine if the proposed project would result in a significant impact related to energy conservation are based on Appendix F of the CEQA Guidelines. The remainder of this introductory statement summarizes comments on the EIR/EIS energy conservation analysis conducted for the proposed project. Responses to MCWD-160 through MCWD-167 are provided below.

MCWD-160 EIR/EIS Mitigation Measure 4.11-1 for greenhouse gas (GHG) emissions has been revised to require CalAm to achieve net zero GHG emissions from operational electricity use through adherence to a specific loading order of four options, the first of which is to secure renewable energy from on-site solar photovoltaic (PV) panels and/or the adjacent Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility (see response to comment USEPA-4, in Section 8.3.5, for the revised text of Mitigation Measure 4.11-1). Implementation of this revised mitigation measure would ensure that renewable energy resources are incorporated into the design of the project to the extent feasible.

For consistency with revised Mitigation Measure 4.11-1, EIR/EIS Section 4.18.4.3, *Landfill-Gas-to-Energy Option*, has been revised as follows:

4.18.4.3 Landfill-Gas-to-Energy Option

~~Information regarding the potential use of methane gas as an alternative energy source is provided here for informational purposes only; t~~This EIR/EIS conservatively assumes that all proposed operational power requirements would be met via the existing PG&E power grid. ~~Although not evaluated in this EIR/EIS~~However, CalAm is actively pursuing a renewable energy source option with Monterey Regional Waste Management District (MRWMD) that would allow CalAm to meet a portion of the MPWSP Desalination Plant operational energy requirements with methane gas from the existing MRWMD landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site. The MRWMD LFGTE facility produces 5.07 Megawatts (MW) of continuous electricity that is sold to PG&E. MRWMD plans to increase the electric generation capacity of the LFGTE facility by 3.2 MW in two stages; the first phase of improvements would increase the capacity by 1.6 MW, followed by an additional 1.6-MW increase in six to eight years. Once the expansion is complete, the total generation capacity of the LFGTE facility would be 8.27 MW (ESI, 2014).

> If this renewable energy source option is implemented, about half of the MPWSP Desalination Plant operational energy requirements could be met with methane gas from the LFGTE facility~~; the remainder would come from the local PG&E grid~~. Overhead powerlines, electrical transformers, metering devices, and switchgear would be needed to connect the MRWMD LFGTE facility with the MPWSP Desalination Plant. Implementation of this option and the construction of the associated interconnection improvements would require separate environmental review ~~and are not evaluated in this EIR/EIS~~.

MCWD-161 In the context of the EIR/EIS Energy Conservation analysis, indirect energy use refers to the energy used for extraction, manufacturing, and transportation of raw materials to make construction materials that would be used for the project (refer to the first paragraph of EIR/EIS Impact 4.18-1). Evaluation of these energy sources is outside the scope of this CEQA/NEPA review because the types, amounts, and processes associated with those energy sources is unknown. Nonetheless, the fourth paragraph of the EIR/EIS Impact 4.18-1 discussion contained an error in that it should not have indicated that the amounts of indirect energy that would be used associated with the extraction, manufacturing, and transportation of raw materials to make the construction materials for the project would not be expected to be substantial because information to make that determination is not available. However, compared to the direct energy consumption that would occur under the project, electricity use during construction would not be expected to be substantial because electric powered equipment would be a small fraction of the overall equipment used to construct the project. Therefore, the fourth paragraph of the EIR/EIS Impact 4.18-1 discussion has been revised as follows:

> The amount of electricity ~~and indirect energy~~ consumption that would be associated with construction of the project is unknown and cannot be estimated as it would be too speculative given existing data; however, the amount~~s~~ would not be expected to be substantial.

MCWD-162 The energy usage associated with the Monterey Main System, Aquifer Storage and Recovery, Sand City Coastal Desalination Plant, and the Subsurface Intake System components of the proposed project were estimated by multiplying energy use factors [kilowatt-hours/acre-feet (kWh/af)] by the average annual water production (afy). It should be noted that CalAm also provided additional detailed data regarding how the energy use factor for the Monterey Main System was estimated. Those data showed a slightly lower average annual energy use factor of 913 kWh/af compared to 915 kWh/af as shown in the power table spreadsheet. Since the energy use factor is used to estimate both the existing conditions and future with project conditions, and the existing conditions involve a higher water production rate than future with-project conditions for the Monterey Main System, the lower energy use factor was used for a more conservative analysis. This explains why the energy usage disclosed in the EIR/EIS for the project is slightly higher than shown in the power table spreadsheet (i.e., CalAm, 2016b) referenced

in the comment. That spreadsheet, which was available for review along with all materials referenced in the Draft EIR/EIS during the public comment period, includes notes that describe how the energy use factors were estimated.

MCWD-163 As described in Impact 4.18-2, while the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. The design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand (e.g. variable speed pumps, energy recovery devices). Electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the energy conservation impact related to the use of fuel and energy during project operations would be less than significant.

Although not required to reduce an energy conservation impact, implementation of Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, would require CalAm to have a qualified professional prepare a GHG Emissions Reduction Plan that shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and shall include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible.

For discussion of the project's potential use of electricity from the LFGTE expansion, refer to response to comments MCWD-160 and USEPA-4.

MCWD-164 Mitigation Measure 4.18-1 requires CalAm to prepare a Construction Equipment and Vehicle Efficiency Plan. The mitigation measure identifies several specific performance standards for the measures that CalAm and its construction contractors must implement to increase the efficient use of construction equipment to the maximum extent feasible and to ensure that construction activities are conducted in a fuel-efficient manner (see EIR/EIS Section 4.18, Impact 4.18-1). Therefore, Mitigation Measure 4.18-1 is not deferred mitigation. See also response to CURE-Fox-123. The amount of electricity and indirect energy consumption that would be associated with construction of the project is currently unknown and cannot be estimated as it would be too speculative given existing data (see Draft EIR/EIS, p. 4.18-15). More important, the precise plan of construction as to timing of elements, sequencing, and the precise exact types of construction equipment to be employed, etc., cannot be known until the project is approved, a contractor is hired, and construction-level plans are available. Therefore, although it is premature to prepare a fully-developed construction equipment efficiency plan at this time, preparation of the plan prior to implementation of construction would be

feasible and implementation of the approved plan would ensure construction activities are conducted in a fuel-efficient manner for construction equipment and vehicles.

Since implementation of Mitigation Measures 4.18-1 and 4.10-1b, which limits equipment idling, would increase the efficient use of construction equipment to the maximum extent feasible and would ensure that construction activities are conducted in a fuel-efficient manner, the impact would be mitigated to a less-than-significant level. In addition, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards (refer to response to comment MBARD-6). Tier 4 emission standards are the most stringent and efficient standards available for off-road construction equipment.

MCWD-165 As described in the Impact 4.18-2, the amount of gasoline and diesel required to fuel vehicles and equipment during operation and maintenance of the project would be relatively small. The vehicle trips would be necessary to support operation and maintenance of the proposed project and would be equivalent to approximately 0.01 percent of the total amount of gasoline and 0.02 percent total diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). The overall transportation energy use requirements during operation and maintenance would not be significant relative to the overall sales of transportation fuels in the county. Regardless, Mitigation Measure 4.18-1 has been revised to include a requirement that CalAm provide options for worker carpooling.

MCWD-166 Operation of the proposed project would rely on electrical power supplied from Pacific Gas and Electric Company (PG&E)'s existing regional power grid. It is generally not possible to determine the exact generation source(s) of electricity on the power grid that would supply the proposed project regardless of its location relative to existing power generation plants, or whether or not the electricity would even be generated within Monterey County. Therefore, it is not reasonable to assume that the electricity required for the project would be generated at Moss Landing Power Plant.

The personal communication referred to in the comment was a phone call that occurred on September 9, 2016, between a PG&E Project Manager with Distribution Services, and the Environmental Science Associates EIR/EIS Energy Analyst. During that call, PG&E indicated that it is moving forward in its planning to service CalAm with 6 megawatts (MW) of electricity for the MPWSP. The project would be serviced by nearby distribution circuits and no electrical transmission upgrades would be needed. PG&E does not consider the MPWSP to be a large electrical load, and a "large load process" would not be necessary for PG&E to service the project. The large load process is designed to determine how PG&E customers with large energy requirements will be fed electricity. When asked if there is a specific MW threshold that triggers the large load process, the PG&E representative said that there is not and that it is based on the project

location and what infrastructure is available to support the project in the area. From the perspective of serving electricity to the MPWSP, PG&E considers the MPWSP to be a "typical new service." Therefore, implementation of the proposed project could be accommodated by the existing local and regional energy supplies and the impact would be less than significant.

MCWD-167 As described in EIR/EIS Impact 4.18-C, Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan) and 4.10-1b (Idling Restrictions) would be implemented to ensure construction activities would be conducted in a fuel-efficient manner. Even if project construction were to occur simultaneously with other cumulative projects, the cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies and codes intended to address cumulative energy consumption statewide, such as the California Integrated Energy Policy and the California Green Building Standards Code (refer to EIR/EIS Section 4.18.2.2). As explained in EIR/EIS Section 4.1.7.1, Approach to the Analysis of Cumulative Effects, the EIR/EIS engaged in a two-step process. If the first step of the analysis finds that the cumulative effects of past, present and future projects plus the proposed project would be significant and adverse, the second step identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature such that the project's contribution to cumulative effects in that area is deemed significant. Therefore, after mitigation, project construction would not have a cumulatively considerable contribution to a significant cumulative impact on the supply and/or availability of these fuel sources during construction. Further, Mitigation Measure 4.18-1 is not deferred mitigation (see response to comment MCWD-164).

EIR/EIS Impact 4.18-C also discloses that the anticipated increase in electricity consumption for the proposed project would represent approximately 2 percent of Monterey County's annual usage, and an even smaller percentage of PG&E's overall service area usage (0.05 percent). And given that PG&E purchases wholesale electric energy and capacity from generators and suppliers and periodically conducts solicitations / requests for offers for additional supplies of conventional and renewable electricity, in the event that many other cumulative projects would be high demand electricity users and would request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E and it would be received through its existing electricity grid. There may need to be local distribution line upgrades to connect some of the cumulative projects to the electricity grid (e.g. DeepWater Desal), but any such upgrades would be minor. Therefore, the proposed project would not have a cumulatively considerable contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy during operation, and the operational cumulative impact would be less than significant.

MCWD-168 See responses to comments MCWD-2 and Marina-140. As stated in EIR/EIS Section 5.1.1, the selection of alternatives followed the CEQA Guidelines Section 15126.6 and NEPA requirements in 40 CFR Sections 1502.13 and 1502.14, including identifying the feasibility of the various alternatives selected for analysis, as defined in CEQA Guidelines Section 15126.6(f) as alternatives capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. An extensively robust and detailed screening of components was provided in EIR/EIS Section 5.3, and included the screening and evaluation of intake, outfall, and desalination plant site options in Sections 5.3.3, 5.3.4, and 5.3.5, respectively. The EIR/EIS also evaluates a total of eight whole alternatives, including the proposed project, the No Project Alternative, and Alternatives 1 through 5b in EIR/EIS Section 5.5.

With the revisions to GHG Mitigation Measure 4.11-1 (see response to comment USEPA-4, in Section 8.3.5), and the related revision to the conclusion of Impact 4.11-1 (incremental contribution to climate change from GHG emissions) to less than significant with mitigation, the EIR/EIS does not identify any unavoidable significant impact for any resource that would require inclusion of a downsized alternative as mitigation. See also response to comment Surfrider-6.

MCWD-169 No new significant impacts or substantially more severe significant impacts have been identified as a result of these comments or the associated responses that would trigger a requirement to recirculate the Draft EIR/EIS.

MCWD-170 EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis. See response to comment MCWD-168. CEQA Guidelines Section 15126.6(a) acknowledges that an EIR "need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."[9] Here, EIR/EIS Section 5.2 first considers alternatives not evaluated in detail, including the New Los Padres Dam and Reservoir, Plan B, the Coastal Water Project, the Interlake Tunnel, and Pure Water Monterey GWR. EIR/EIS Section 5.3 then discusses and considers intake, discharge and plant location options. As noted in Section 5.3.3, thirteen intake options were identified and screened for fatal flaws; six of the thirteen were not carried forward. The seven intake options that were determined to be feasible were carried forward for evaluation (see EIR/EIS Section 5.3.3.14). The next step in the alternatives process (see EIR/EIS Section 5.3.6) compares the impacts of each intake option against the proposed slant wells at CEMEX to determine if any adverse impacts would be reduced. Of the seven intake options evaluated, for reasons

[9] The point behind the case holding cited by the commenter, *Watsonville Pilots Assn. v. City of Watsonville* (2010) 183 Cal. App. 4th, 1059, 1087, is that even if an alternative considered in an EIR is ultimately determined by the decision-makers to be infeasible, that alternative may still be counted as within the reasonable range of alternatives required by CEQA to be included in an EIR. Thus, the case does not advance the commenter's position or undermine the validity of the EIR/EIS alternatives analysis.

described in Table 5.3-4, two intake options -- Option 3, Slant Wells at Potrero Road, and Option 9, Open-water Intake at Moss Landing -- were carried forward into the development of whole alternatives that are described in Section 5.4 and analyzed in Section 5.5.

The Lead Agencies did not use the scoping process to narrow the range of potential alternatives. While additional intake options were originally considered, EIR/EIS Appendix I2 describes the facts and rationale for rejected component options.

MCWD-171 The EIR/EIS Appendix I explains that horizontal wells were not evaluated further for the reasons cited by the comment. Nothing in this comment letter or the associated responses has caused the Lead Agencies to revise that conclusion. No revisions were made to the conclusion in EIR/EIS Appendix I1 regarding HDD wells.

CEQA Guidelines Section 15126.6(a) states "there is no ironclad rule governing the nature or scope of the alternatives to be discussed." Furthermore, CEQA Guidelines Section 15126.6(f) states: "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." Furthermore, Lead Agencies do not need not to consider every conceivable alternative to a project and this EIR/EIS provides a robust and comprehensive analysis of component options as well as whole alternatives, as described in response to comment MCWD-170.

However, as noted by the Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP, 2014): "The performance of the HDD systems will be suboptimal in granular materials (sands) as opposed to lithified strata (limestone) . . . and . . . [t]here is inadequate data on the long-term reliability and maintainability of the HDD wells/drains at this time. This subsurface intake design option is considered technically infeasible at the Huntington Beach site because of a high performance risk. There is too great uncertainty that a system could be constructed that would reliably provide the required water volume over the operational life of the desalination facility." The HB ISTAP 2014 further explains that "The largest capacity system in Spain is currently not operating at its original design capacity."

See also response to comment MCWD-IW-9, MCWD-IW-10 and MCWD-IW-11. Note that the possible use of HDD wells was not dismissed on the basis of comparative cost concerns. While cost was mentioned in the EIR/EIS, HDD wells were eliminated on other feasibility grounds, including technological, ability to meet the project objectives and failure to reduce significant impacts.

MCWD-172 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation. Because vertical wells would have to be located at the same location or farther inland than the proposed slant wells at CEMEX to avoid

coastal erosion, they would likely have a greater effect on SVGB water quality and groundwater levels than the proposed slant wells, given the more inland locations of the well screens within the aquifers. Furthermore, while the CPUC approved vertical wells as part of the Regional Project, see response to comment MCWD-12, specifically, Footnote 2 which explains that 24 vertical wells would be needed over a linear distance of at least one mile to support a 9.6 mgd desalination plant, and 16 vertical wells would be needed over a linear distance of almost one mile to support a 6.4 mgd desalination plant. The reverse osmosis system proposed by CalAm, described in EIR/EIS Section 3.2.2.2, would be modular and would comprise six active and one standby module, each capable of producing 1.6 mgd of desalinated water. The EIR/EIS did not identify any impacts that would need to be lessened or avoided by using packaged desalination systems.

MCWD-173 While the Huntington Beach ISTAP Phase 1 Feasibility Report (HB ISTAP, 2014) concluded that an infiltration gallery was a feasible subsurface option, the Phase II Feasibility Report (HB ISTAP, 2015) concluded that the beach infiltration gallery is infeasible at the Huntington Beach location and several factors led to that conclusion. First, the additional engineering design assessment concluded that a substantially larger gallery would likely be required compared to the considerations in Phase 1. Second, the ISTAP further considered the periodic beach re-nourishment schedule, which means that the surf zone migrates following nourishment cycles, reducing the effectiveness of the intake filtration through the sand. Third, construction of a larger-than-anticipated gallery would require many years to construct due to construction constraints on a highly used public beach.[10]

In Monterey, the concern is exacerbated. EIR/EIS Appendix I1 explains that approximately 222,000 square feet (or about 5 acres) of the seabed in Monterey Bay would need to be excavated at a depth of 6 to 8 feet to install an active infiltration bed for the 9.6 mgd desalination plant; a 6.4 mgd plant would require approximately 145,000 square feet or about 3.3 acres. An infiltration gallery would have a greater impact on marine biological resources in MBNMS than slant wells. Based on the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and marine habitat in MBNMS, this technology is considered infeasible at this location. Furthermore, the EIR/EIS concludes that the project would not have significant impacts on groundwater resources, including the SVGB, so no such option is necessary to ensure less than significant groundwater impacts.

MCWD-174 Slant wells are indeed a new, evolving technology. See response to comment Marina-11 and Master Response 11, CalAm Test Slant Well, Section 8.2.11.7. The HB ISTAP's 2014 conclusions were made for subsurface intake technologies at the

[10] On October 4, 2017, the CA State Lands Commission issued a Notice of Availability and Intent to Consider Certification of the Final Supplemental EIR for the Seawater Desalination Project at Huntington Beach. The Final EIR considered a lease modification that would allow Poseidon to install wedgewire screens on an existing open water intake that would provide almost 107 mgd of feedwater.

Huntington Beach site for a potential 100 to 127 mgd desalination project. The test slant well at CEMEX today is demonstrating the technology works at this location under these conditions for this application. See EIR/EIS Appendix E3.

The CPUC does not have a representative on the HWG; Dr. Williams and Geoscience represent CalAm; see Master Response 5, The North Marina Groundwater Model (v. 2016), Section 8.2.5.2. Both the HB ISTAP 2014 and Geosciences 2012 reports were included as references to the EIR/EIS.

See responses to comments MCWD-HGC. The commenter presents a speculative condition predicated on unsubstantiated risk that speaks to the project's feasibility and not an environmental impact of the proposed project. CEQA Guidelines Section 15370 defines mitigation as avoiding, minimizing, rectifying, reducing or eliminating, or compensating for impacts, and the EIR/EIS found no impacts from operation of the slant wells that would require the mitigation described in the comment. The project includes the return water component as an integral element of the project; thus, even if the MPWSP were less efficient than expected, the fresh water component of the source water would be subject to return. See also response to comment MCWD-82. Alternatives to slant wells are discussed in EIR/EIS Section 5.3.6.1.

MCWD-175 EIR/EIS Section 5.2.1 explains that the MPWSP is the result of a multi-year planning effort. Since 1989, various entities have proposed several options intended to meet the water supply needs of the Monterey Peninsula and address the impacts on the Carmel River that are underlying SWRCB Order 95-10. Several of those options generated their own environmental review documents, which in turn contained many alternatives, some of which are still relevant here. As part of the 2009 Coastal Water Project EIR, the CPUC reviewed these previously prepared documents, including the Monterey Peninsula Long-Term Water Supply Contingency Plan (Plan B) Component Screening Report and the CPUC Carmel River Dam Alternative Plan B Project Report (see Section 5.2.1 for citations of these reports), to determine what projects and alternatives had already been considered and eliminated since SWRCB Order 95-10 was issued. The conclusion that no viable alternatives have been identified that would supply water without a desalination plant is consistent with the history of the multi-year planning effort.

The Coastal Water Project, a prior iteration of the MPWSP, is discussed in EIR/EIS Section 1.4. See also responses to comments MCWD-5, MCWD-10, and MCWD-170.

MCWD-176 See responses to comments MCWD-5, MCWD-10, MCWD-12, and MCWD-170; Master Response 3, Water Rights; and Master Response 4, The Agency Act and Return Water. See also EIR/EIS Section 4.4.5.2 for Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage.

MCWD-177 See response to comment MCWD-15 regarding CalAm's objective of meeting peak monthly demand. See also response to comments MCWD-20 through MCWD-49 for a discussion of alternatives and project objectives.

EIR/EIS Section 5.2.6 explains that the CPUC authorized CalAm to enter into a Water Purchase Agreement in Decision 16-09-021 on September 15, 2016, which provides that the MRWPCA will sell purified water from its advanced treated Pure Water Monterey GWR Project to the MPWMD, which in turn will sell it to CalAm for distribution to ratepayers in the Monterey District service area. The GWR Project is also, therefore, included in the No Project/No Action alternative described in EIR/EIS Section 5.4 because it is not reliant upon approvals considered in this EIR/EIS and could (and likely would) become operational under the No Project/No Action alternative. Essentially, the comment advocates consideration of the No Project/No Action Alternative, which is indeed thoroughly evaluated in the EIR/EIS. The GWR Project would not be relevant in the context of the proposed project or any alternative that includes a 9.6 mgd or greater desalination plant (i.e., Alternatives 1, 2, 3, and 4) because, if the GWR Project is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would propose to construct the 6.4 mgd plant as described in Alternatives 5a and 5b, or enter into a purchase agreement with an alternative desalinated water provider for an amount equivalent to the output of a 6.4 mgd plant (i.e., under Alternatives 3 or 4). Therefore, the analysis of a 9.6 mgd desalination plant is predicated on an assumption that the GWR Project would not be successfully implemented and, therefore, this water would not become available to CalAm. The Lead Agencies acknowledge that as the GWR Project progresses in its implementation, this scenario will become more remote. The analyses of Alternatives 5a and 5b in combination with the GWR Project adequately address the increasingly likely outcome that the GWR Project will deliver water for CalAm use. See also EIR/EIS Table 5.5-1 and Master Response 15, Alternative Desalination Project – Status, Information Sources, and Cumulative Scenario, Section 8.2.15.3.

MCWD-178 EIR/EIS Appendix I2 evaluated Intake Option #11, Ranney Wells in Seaside/Sand City because this intake option was included in public comments received during the MPWSP EIR scoping process, requesting that the CPUC consider subsurface intakes located outside of the Salinas Valley Groundwater Basin; the Monterey Peninsula Water Management District 95-10 Project Constraints Analysis (referred to herein as the 2008 Constraints Analysis) (ICF et al., 2008) was attached to the comment.

As explained in Appendix I2, the "preferred" wells identified in the 2008 Constraints Analysis are located within the Salinas Valley Groundwater Basin, since they are located north of the northernmost extent of the divide between the Seaside and Salinas Valley Groundwater Basins. Since the former Fort Ord Wastewater Treatment Plant site and former Stillwell Hall site are both located in

the Salinas Valley Groundwater Basin, the investigation focused on the Bunker site, to be true to the scoping comment, because the Bunker site is located in the Seaside Groundwater Basin.

Subsurface investigation of the Bunker site (ICF et al., 2008) revealed the presence of clay layers in some of the borings and not in others. Low-permeability strata encountered were discontinuous and occurred at differing elevations. The investigation concluded that even if there were evidence of an extensive low-permeability layer between the shallow aquifer system and the underlying aquifers, the siting constraints of both the CCC and the CA State Parks, combined with the relatively low-permeability sands at this site, limit the potential amount of feedwater that could be developed from a subsurface intake at the Bunker site to about 2,000 afy (Feeney, 2009). Therefore, Intake Option #11 was eliminated from further consideration.

EIR/EIS Section 5.3.3 did consider Ranney Wells at CEMEX. As described in EIR/EIS Section 5.3.3.13, each caisson would be 12 feet in diameter, and would be buried approximately 50 feet into the sand, with the top of the caisson flush with the beach surface. Each of the four Ranney wells would be equipped with five screened laterals that would draw groundwater from the shallow Dune Sands Aquifer, and not from the deeper aquifers as claimed by the comment. EIR/EIS Table 5.3-4 provides preliminary environmental impacts comparisons of the intake alternatives that were carried forward, against the proposed project slant wells. EIR/EIS Section 5.3.6.1 concludes that, "Ranney wells (Intake Option 13) were shown to result in similar environmental effects compared to the proposed slant wells, resulting in neither increased or decreased impacts; Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary."

See also response to comment MCWD-170 and MCWD-IW-12.

MCWD-179 The EIR/EIS does analyze the potential effects of the No Project Alternative based on what is reasonably expected to occur. See, for example, Sections 5.5.3.3 and 5.5.6.3, which describe the beneficial effects of increased streamflows in the Carmel River. The decommissioning of the test slant well would be a reasonably foreseeable occurrence under this scenario, but already has been analyzed in the separate CEQA and NEPA documents prepared for the test slant well. The EIR/EIS did not revise its conclusion about Stage 4 Water Rationing not being needed if the No Action Alternative with GWR meets 89 percent of estimated demand, because as stated in Section 5.4.2.4 and reiterated in the comment, the No Action alternative could meet "89 percent of estimated demand after implementation of foreseeable demand management and offset programs described in Section 5.4.2.3, ***including*** [emphasis added] Stage 3 Water Conservation, and possibly Stage 4 Water Rationing to meet the supply shortfall. Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3 explains the GWR Project will make 3,500 afy

available to CalAm, not 3,700 afy. Therefore, the total with the GWR Project supply under the No Project Alternative would be 9,880 afy, as stated in the EIR/EIS, and not 10,080 afy as claimed in the comment. See Master Response 13 regarding the demand that needs to be met by feasible project alternatives.

MCWD-180 Alternative 1 (Slant Wells at Potrero Road) is described in detail in EIR/EIS Section 5.4.3, which explains, as does Table 5.4-1, that Alternative 1 would produce the same amount of desalinated water as the proposed project, 9.6 mgd. The conclusion in EIR/EIS Section 5.4.3.4 that Alternative 1 would not provide sufficient supplies to serve existing legal lots of record is described in EIR/EIS Section 5.5.21.4: In the event that the return water obligation is determined to be 12 percent (the highest return value simulated), after meeting existing demand and entitlements, only 209 afy would be available for other uses, and, therefore, Alternative 1 would not fully meet the project objective/need for water, some of which was to support limited growth (e.g., legal lots of record).

The analysis of impacts on groundwater resources from slant wells located at Potrero Road is provided in Section 5.5.4.4and provides a summation of the groundwater modeling results from operation of the slant wells and figures of the resulting cone of depression predicted by the NMGWM^{2016}. Details of the modeling approach and results are presented in EIR/EIS Appendix E2. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the adequacy of the NMGWM.

As stated in the analysis, the operation of Alternative 1 could result in drawdown in the SVGB aquifers so as to require the return of up to 12 percent of the source water that originated in the SVGB, to the SVGB. Different drawdown areas were shown for the three aquifers on EIR/EIS Figures 5.5-2 through 5.5-4, based on the amount of return water and sea level rise. While the cone of depression is much larger for Alternative 1 than for the proposed project, the impact conclusion would be the same as the proposed project impact on groundwater: less than significant. In addition, as stated in EIR/EIS Section 5.5.4.4, Alternative 1 would include Applicant-Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage) to provide continued verification that project pumping would not adversely impact neighboring wells or contribute to seawater intrusion within the SVGB. However, the cone of depression associated with Alternative 1 would extend to Elkhorn Slough, unlike the proposed project's cone of depression that does not intersect either the Salinas River or the Tembladero Slough. Potential impacts on marine biological resources in Elkhorn Slough that could result from Alternative 1 and Alternative 5b are presented in EIR/EIS Sections 5.5.5.4 and 5.5.5.8, respectively. Potential impacts on terrestrial biological resources in Elkhorn Slough that could result from Alternative 1 and Alternative 5b are presented in EIR/EIS Sections 5.5.6.4 and 5.5.6.8, respectively.

MCWD-181 As explained in EIR/EIS Section 5.4.7.1, CalAm is seeking authorization to implement Alternative 5a (reduced size desalination system) if it becomes clear that the GWR Project will be completed and on line in a timeframe that can supply water to meet the proposed project's objectives. If the GWR Project cannot supply water within that timeframe, then CalAm seeks authorization to implement the proposed project. The other 9.6 mgd-equivalent alternatives analyzed in Chapter 5 also could be downsized (e.g., through a smaller water purchase agreement from the DeepWater Desal Project under Alternative 3) if GWR Project water becomes available. Presenting two alternatives as environmentally superior under these possible outcomes provides the decision-makers with options to choose from during the project approval process. The presentation of two reasonable environmentally superior alternatives, the choice between which is reliant on actions not within the scope of this EIR/EIS (i.e., successful implementation of the GWR Project), is not inconsistent with CEQA or NEPA.

In addition, CalAm's project application was submitted, and the EIR/EIS was begun, long before the GWR Project was approved by MRWPCA and the associated Water Purchase Agreement for CalAm to secure GWR water was subsequently approved by the CPUC. The framing of the EIR/EIS structure and alternatives analysis was reasonable and logical at the outset, and remains so in light of continued uncertainties and to ensure flexibility for the decision-makers.

MCWD-182 See responses to comments Surfrider-6, MCWD-171 (HDD wells) and MCWD-178 (Ranney wells).

MCWD-183 See response to comment MCWD-180.

MCWD-184 See response to comment Surfrider-6. Response to comment MCWD-HGC and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See also Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water. See responses to comments MCWD-168 through MCWD-173 regarding alternative components, response to comment MCWD-171 regarding HDD wells, and response to comment MCWD-178 regarding Ranney wells. No alternatives were deemed infeasible solely on the basis of cost. Response to comment MCWD-150 explains the inconsistency of the proposed project with Marina's LCLUP and how the CCC was ultimately able to approve the slant test well project by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned; the Marina LCLUP did not need to be amended. Response to comment MCWD-190 addresses the issue of recirculation.

MCWD-185 This comment offers the commenter's opinion and preference, and does not address the adequacy of the EIR/EIS. Decision-makers will consider this comment during the project approval process.

MCWD-186 Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.2 provides a discussion of Supply for Peak Demands. The analysis in EIR/EIS Section 5.5 assumes that both the 6.4 mgd desalination plant and the GWR project would be implemented under Alternatives 5a or 5b; see response to comment MCWD-15. MBNMS is the NEPA Lead Agency for this EIR/EIS, consistent with actions identified in the MBNMS Final Management Plan, to ensure opportunity for input from local jurisdictions and the interested public regarding implementation of desalination plants and facilitating assessment and analysis of the potential growth inducing impacts of desalination plants, among other actions described under Strategy DESAL-1: Develop and Implement Regional Desalination Program in Section 2, Coastal Development, of the Management Plan. EIR/EIS Section 6.3 evaluates the impacts of growth that would be induced by the proposed project. See also Master Response 13, Section 8.2.13.3. As described in EIR/EIS Section 6.3, the impacts of growth have been evaluated in the general plan CEQA documents of jurisdictions in CalAm's service area. Those jurisdictions located in the coastal zone have also adopted local coastal program land use plans to guide development in coastal areas. Growth provided for in general plans would be required to be consistent with provisions of local coastal programs and plans. The demand estimates provided by CalAm and others throughout this CEQA/NEPA process have been independently reviewed and assessed by the Lead Agencies. Spreadsheet models of various supply and demand scenarios have been prepared and are included in the Final EIR/EIS as Appendix L.

MCWD-187 EIR/EIS Section 4.4.5.2, Impact 4.4 provides an analysis of the potential water quality effects that could impact or harm other groundwater users, otherwise degrade groundwater resources, and exacerbate seawater intrusion; the impacts were determined to be less than significant. The analysis employed groundwater modeling particle tracking to assess changes to the MCWRA-defined seawater intrusion front. Results of the modeling indicate that slant well pumping would retard the migration of saltwater into the southern portion of 180-Foot Aquifer that would have otherwise contributed to the advancement of the seawater intrusion front; slant well pumping would have little to no effect on future saltwater intrusion in the 400-Foot Aquifer. Supplemental discussion of the hydrogeological characteristics, graphic representation of the slant well capture zone, and supplemental discussion of water quality impacts are provided in Master Response 8, Project Source Water and Seawater Intrusion. See also response to comment MCWD-141. Response to comment MCWD-HGC and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See also response to comment MCWD-EKI.

EIR/EIS Section 6.4, the assessment of project conformity with guidelines for desalination plants in MBNMS, accurately summarizes the Guidelines for Entrainment and Impingement contained in Section D.3, page 6 of the Guidelines for Desalination Plants in the MBNMS (NOAA, 2010). The conclusion that the proposed project would be consistent with this guideline has not changed.

MCWD-188 See response to comment MCWD-6 regarding the issue of public versus private ownership. EIR/EIS Section 6.4 lists the NOAA Guideline (page 4 of the MBNMS Desalination Guidelines) stating that, "Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project," and it has been determined to be addressed by the scope of the overall EIR/EIS analysis. Furthermore, the CalAm project would be considered regional because it addresses the needs of multiple cities and has been coordinated with other agencies (MRWPCA). The MBNMS Management Plan (see page 82) refers to the CalAm project as a "larger multi-city regional project."

The comment does not include the full NOAA Guideline (from page 4), which states that proponents "should include an evaluation of other potential desalination locations and alternatives, as well as other forms of water supply." EIR/EIS Sections 5.1 through 5.3 screen and analyze a thorough selection of intake, outfall, and desalination plant options and include analyses of several different intake locations, desalination plant locations, larger projects and reduced project sizes (see also EIR/EIS Section 5.4). Each alternative, regardless of whether the intakes and desalination plant would be operated by CalAm, would provide water to CalAm's service area, and in some instances, would provide water to an extended regional water supply area (e.g., see Alternative 3 in EIR/EIS Section 5.4.5). Furthermore, Alternatives 5a and 5b would include a reduced capacity desalination plant of 6.4 mgd, with an additional 3,500 afy of recycled water from the GWR Project purchased by CalAm. These alternatives represent collaboration with other water suppliers; furthermore, Alternative 5a was determined to be the Environmentally Superior Alternative/Preferred Alternative in the EIR/EIS. Thus, the EIR/EIS has considered more than just the CalAm "go-it-alone" or open water intake.

MCWD-189 Figure 5.1 in Appendix E2 represents the cells of the $NMGWM^{2016}$ that were modified to include the re-distribution of constant head values associated with sea level rise, and is not presented to indicate impacts from flooding; EIR/EIS Figure 4.3-3 presents the areas subject to flooding from sea level rise in the year 2100. See also response to Shriner-6.

MCWD-190 As noted in several responses, nothing in the Final EIR/EIS represents significant new information that would trigger recirculation of the Draft EIR/EIS. As noted in Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, for example, the Marina Subarea is not a DWR-recognized designation, and the hydrogeological conditions do not justify this designation. See response to comment MCWD-84.

The commenter refers to CEQA's requirements to recirculate a draft EIR for an additional round of public review and comment, and urges that the Draft EIR/EIS be recirculated. While some new information has indeed been added to the EIR/EIS in order to amplify or clarify the data within the Draft EIR/EIS, none of such new

data implicates new or substantially more severe significant environmental impacts than were shown in the Draft EIR/EIS, nor does it indicate that there are feasible alternatives or mitigation measures available that would minimize significant effects but that the project proponent declines to embrace. In addition, the Draft EIR/EIS was comprehensive and robust, and the Lead Agencies do not believe that it was fundamentally flawed in any way. For these reasons, recirculation of the Draft EIR/EIS is not required. Furthermore, the Draft EIR/EIS was itself a revised, updated and enhanced version of the Draft EIR that was published by the California Public Utilities Commission for the MPWSP in April, 2015. The environmental review for the MPWSP has entailed a lengthy process with multiple opportunities for public review and comment.

MCWD-191 See all the previous responses to comments MCWD-1 through MCWD-190 that address the comment.

8.5.2.2 Responses to Comments from MWCD – Hopkins Groundwater Consultants (HGC)

These responses address comments provided by Hopkins Groundwater Consultants, Inc. (HGC) on the Groundwater Resources section of the MPWSP EIR/EIS, dated March 29, 2017. Due to the organization and format of the HGC Technical Memorandum, and the amount of repetition in the HGC comments, these responses have been arranged thematically based on several primary topic areas. The HGC-identified comment numbers that pertain to the topic area, are listed within the response to each relevant topic area.

MCWD-HGC-1 ***Water Rights, Return Water, SGMA***

HGC submitted several comments on CalAm water rights, return water, Agency Act, the method that return water was calculated, and the Ocean Water Percentage (OWP) in the feedwater. Supplemental information to clarify these topics has been prepared and is available in several Master Responses and in EIS/EIR Appendix E3, as listed below:

- **Master Response 3, Water Rights,** among other topics, addresses comments regarding the legal framework of return water, harm and injury, effects of the proposed MPWSP on MCWD, the Annexation Agreement, Agency Act/Ordinance 3709, surplus water, and legal considerations regarding the quality of basin water. Pertains to HGC comments 1, 2, 4-6, 8-10, 12, 24, 30, and 40;
- **Master Response 4, The Agency Act and Return Water,** provides further clarification regarding the Agency Act and location of return water, return water quantities, the Ocean Water Percentage (OWP) calculations, and legal aspects of the return water. Pertains to HGC comments 3, 4, 10, 11, and 22;
- **Master Response 6, The Sustainable Groundwater Management Act (SGMA)**, provides clarification regarding the SGMA and its application to

the MPWSP. Pertains to HGC comments 1, 7, 8, 22, 27, 35, 36, 39, and 42, and;

- **EIR/EIS Appendix E3, Hydrogeologic Investigation Report**, provides a description and technical justification for the calculation of the OWP as it applies to return water. Pertains to HGC comments 1, 3, 9, 22, and 29**.**

MCWD-HGC-2

Existing Seawater Intrusion in the Salinas Valley Groundwater Basin (SVGB)

Pertains to HGC comments 3, 16, 20, 29, and 41. HGC repeatedly asserts that the EIR/EIS mischaracterizes the existing seawater intrusion in the SVGB that was identified in the 1940s and has been monitored for many years by the Monterey County Water Resources Agency (MCWRA). Contrary to HGC's assertion (Page 2 of HGC TM), the EIR/EIS does not suggest that "the shallow aquifers along the coastline around the CEMEX site are fully intruded by seawater and the groundwater in the project area of the SVGB consists almost entirely of highly saline seawater that extends up to 8 miles inland." EIR/EIS Section 4.4.1.4 describes current seawater intrusion in the coastal area of the SVGB and explains that brackish to saline groundwater can contain concentrations of total dissolved solids (TDS) that range from 33,500 milligrams per Liter (mg/L) at the coast to 500 mg/L near the inland seawater intrusion front and that brackish water in the 180-FTE aquifer near the proposed MPWSP ranges from 5,000 mg/L to 29,000 mg/L. These ranges of TDS concentration do not describe "fully intruded" shallow aquifers with "highly saline seawater that extend up to 8 miles inland." The analysis of seawater intrusion in the EIR/EIS is based on the annual MCWRA monitoring program and resulting seawater intrusion maps that show the inland advance of the seawater intrusion front. These maps are provided in the EIR/EIS as Figures 4.4-10 and 4.4-11. The analysis recognizes that localized areas of lower TDS concentrations would be expected in areas predominantly intruded by seawater due to the heterogeneity of the water transmitting and storage properties of the sediments. EIR/EIS Section 4.4.5.2, correctly concludes that the MPWSP would extract primarily seawater and a smaller volume of brackish groundwater from a zone that has been degraded by seawater intrusion (over 23,000 mg/L) and therefore, would not be suitable as a potable supply due to the high salinity. This topic is discussed further in the section below that discusses the purported areas of fresh groundwater in the Dune Sand and 180-FTE Aquifer.

Additional clarification of this topic is in Master Response 8, Project Source Water and Seawater Intrusion, which discusses the water chemistry in the feedwater capture zone. Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.3, provides additional discussion regarding the findings from the May 2017 AEM survey conducted for MCWD by Stanford University's Dr. Rosemary Knight. AEM survey results help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the MPWSP hydrogeologic investigation. EIR/EIS

Appendix E3, Hydrogeologic Investigation Report, Section 1.4.5, provides additional discussion of the seawater intrusion and use of intruded groundwater as feedwater for the MPWSP slant wells.

MCWD-HGC-3

"Marina Sub Area"

MCWD and HGC make repeated references to the "Marina Subarea." HGC acknowledges in its comment letter that this is not a DWR-recognized designation but claims that the hydrogeological conditions justify such designation for their discussion purposes: while the physical boundaries of the "Marina Subarea have not been mapped, in MCWD's characterization, it is the combined area that includes portions of the 180-Foot and 400-Foot Aquifer Subbasin (DWR Basin 3-004.01) located south of the Salinas River and the northwest portion of the Salinas Valley Monterey Subbasin (Basin 3-004.10)." MCWD and HGC claim that the "Marina Subarea" is the coastal subarea north of the over-drafted SVGB and the area that would be directly impacted by the MPWSP slant well pumping. However, the hydrogeological conditions of the area potentially affected by the MPWSP, as described in EIR/EIS Section 4.4, Groundwater Resources, do not justify or support this designation. The term "Marina Subarea" as defined by HGC is not based on or consistent with the accepted definitions of basins in the SVGB and its identification as a distinct groundwater basin appears to have originated with HGC. In a hydrogeologic sense, the area identified as the Marina Subarea is simply part of a continuous, hydraulically connected portion of the 180/400-Foot Aquifer subbasin of the SVGB. The "Marina Subarea" and its relationship to the MPWSP project are discussed further in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-HGC-4

Slant Well Screen Length

Pertains to HGC comments 11, 12, 14, and 23. HGC asserts that the proposed MPWSP slant wells would need to extend under the ocean to be effective at extracting a high percentage of seawater. HGC attributes the length of the test slant well, which was shorter than planned, to drilling problems. Both assertions are incorrect. The well screens beneath the beach would be as effective in extracting a high percentage of seawater as wells screened a couple of hundred feet further under the ocean. As explained in EIR/EIS Appendix E3, while placement of production well screens closer to or under the ocean may achieve the maximum OWP in the first few months and a very slight increase in the medium-term OWP, a difference of a few hundred feet in screen placement relative to the ocean boundary would have minimal overall effect on OWP because of the volume of seawater at the recharge boundary. The proposed MPWSP slant wells would extend as far offshore as possible, while keeping the well screen above the 180/400-Foot Aquitard; see EIR/EIS Section 3.2.1.1, Table 3-2 and Figure 3-3b. In the Dune Sand Aquifer, the slant wells would be placed at 14 degrees below

horizontal through a vertical saturated thickness of 60 feet and would penetrate about 250 lineal feet. Assuming a well efficiency of 70 percent and a drawdown of 35 feet below static level, the Dune Sand Aquifer screen interval should produce 600 to 1,000 gallons per minute (gpm). The proposed MPWSP slant well screens in the 180-FTE Aquifer would transect a vertical thickness of approximately 100 feet in the 180-FTE Aquifer, achieving a completion length of over 400 feet, with an anticipated production rate of 1,200 gpm at a 70 percent well efficiency (HWG, 2017). This is discussed in detail in EIR/EIS Appendix E3, Section 4.0.

CalAm initially proposed to drill the test slant well a total length of 1,000 lineal feet at an angle of 19 degrees below the horizontal. The drilling methodology selected was appropriate and capable of reaching the target depth. A decision was made by CalAm to end the pilot hole drilling at a final target length of 724 feet, to allow enough time to complete well construction and development before equipment was required to be removed prior to the Snowy Plover nesting season. It is important to note that at 724 feet, the dual-rotary drilling and casing advancement was proceeding smoothly and could have continued, barring environmental permit scheduling constraints (EIR/EIS Appendix E3). Details of the test slant well permitting, construction and operation are provided in Master Response 11, CalAm Test Slant Well.

MCWD-HGC-5

"Protective" Groundwater Flows

Pertains to HGC comments 5, 15, 16, 18, 24, and 29. Inherent in the comments presented by HGC is the claim that the MPWSP would interfere with and negatively impact the ability of "fresh" groundwater to continue to "protect" the Dune Sand and 180-Foot Aquifers from seawater intrusion. HGC proposes the theory that shallow perched/mounded "freshwater" that flows atop the Fort Ord-Salinas Valley Aquifer and waterfalls into the Dune Sands Aquifer and 180-Foot Aquifer provides fresh groundwater that protects these aquifers from seawater intrusion. However, this is unsupported because these freshwater flows from the shallow perched/mounded aquifers have been occurring for many years and seawater intrusion has continued to advance inland, regardless. Secondly, the shallow groundwater perched/mounded in the Fort Ord area is high in Total Dissolved Solids (TDS), high in nitrate, and is in limited quantity in terms of water supply. Furthermore, the claim by HGC that the proposed MPWSP pumping at the CEMEX site would hinder the ability of this "protective flow" to reduce seawater intrusion is unfounded because the area where these freshwater flows enter the Dune Sand Aquifer and/or the 180-FTE Aquifer is 1.5 miles inland of the MPWSP slant wells; too far inland to be affected by the slant well capture zone of the proposed MPWSP. See Master Response 8, Project Source Water and Seawater Intrusion.

MCWD-HGC-6

Conservation and Restoration Efforts in 180-Foot Aquifer

Pertains to HGC comments 3 and 29. HGC refers to conservation and groundwater restoration efforts in the 180-Foot Aquifer in what it refers to as the "Marina Subarea" (discussed above) and suggests that groundwater quality has been restored with protective groundwater levels due to the "prohibition of pumping along the coastal portion of the SVGB." Ceasing groundwater pumping in the 180-Foot Aquifer and transferring MCWD pumping to the deeper aquifers was done out of necessity (see Master Response 7, Deep Aquifers of the SVGB, Section 8.2.7.1) and was not, as HGC suggests, a deliberate effort by MCWD to restore that aquifer. MCWD began pumping the 180-Foot Aquifer, but stopped when those wells became intruded by seawater. It then tapped into and pumped from the 400-Foot Aquifer until those wells became intruded by seawater. MCWD was then forced to explore the water bearing sediments of the deeper aquifers to find a fresh groundwater source (Feeney and Rosenberg, 2003). The proposed MPWSP would extract highly brackish to saline water from the slant well capture zone at the coast, which would be recharged by seawater infiltrating through the coastal terrace deposits. The slant wells would not draw groundwater from inland groundwater sources beyond its capture zone.

MCWD-HGC-7

Cone of Depression versus the Capture Zone

Pertains to HGC comments 5-7, 15, 29, 30, 34, and 36. HGC incorrectly compares water quality impacts of the MPWSP with the area exhibiting groundwater level changes within the cone of depression (also referred to as the area of influence), as projected by the NMGWM^{2016}. The cone of depression created by the proposed slant well pumping, as discussed in EIR/EIS Section 4.4.5.2, is the area delimited by groundwater level draw down of 1-foot or more. There is a considerable difference between the cone of depression and the "capture zone" of the project, as explained in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1. Groundwater level impacts depend on the size and geometry of the cone of depression, while groundwater quality impacts are dependent on the capture zone. The MPWSP would be drawing source water through the slant wells from an area close to the coast. The extent of the capture zone would be confined to an area adjacent to the coast of Monterey Bay (generally west of Highway 1), as discussed in Master Response 8 and shown in Figures 8.2.8-1 and 8.2.8-2. No negative groundwater quality impacts would occur within the portion of the cone of depression that is beyond and inland of the capture zone because incoming seawater would be providing the majority of the feedwater to the MPWSP slant wells.

HGC incorrectly suggests that drawdown in the onshore portion of the aquifer beyond and inland of the MPWSP slant well capture zone would be a cumulative effect that would contribute to a greater onshore gradient and increase the seawater

intrusion into those portions of the SVGB. The North Marina Groundwater Model version 2016 ($NMGWM^{2016}$) particle-tracking results presented in EIR/EIS Appendix E2, Figure 5.7 and Figures 8.2.8-1 and 8.2.8-2 presented in Master Response 8, show that onshore drawdown has the opposite effect; it reduces the onshore gradient beyond the capture zone, which retards the inland movement of the saltwater intrusion front. In other words, particle tracking results indicate that, in relation to present-day conditions, gradients would decrease east of the capture zone, eastward moving groundwater would slow, and the rate of seawater intrusion would decrease as a result of proposed project pumping. It is important to note that the capture zones shown in Figure 5.6 of Appendix E-2 include a range of inland gradients based on measured water levels. These capture zones consider the inland gradient, and, therefore, delineate that area along the coast where seawater intrusion would be intercepted and captured by the pumping wells.

MCWD-HGC-8

Characterization of Dune Sand Aquifer

Pertains to HGC comments 16-18, 37, and 38. As discussed in the EIR/EIS Appendix E3, Section 2.1.7, there are important distinctions between the Dune Sand Aquifer and its equivalents (-2-Foot Aquifer encountered in the Monterey Peninsula Landfill area and the "Perched A' in the Salinas Valley), described in the EIR/EIS, Section 4.4.1.2, as opposed to the 35-Foot Aquifer in the Monterey Peninsula Landfill area and the A-Aquifer in the Fort Ord Area (hereafter referred to as the shallow perched/mounded aquifers). The shallow perched/mounded aquifers in the Fort Ord area overlie the Fort Ord-Salinas Valley Aquitard (FO-SVA). Wells from the Dune Sand Aquifer and its equivalents cannot be considered correlative with wells from the shallow perched/mounded aquifers because these are two separate and disconnected aquifers. The shallow perched/mounded aquifer is of limited extent, which results in the water from that aquifer flowing over the edge of the underlying clay layer (similar to a waterfall) into the deeper Dune Sand Aquifer and equivalents, or the 180-Foot Aquifer, depending of the hydrostratigraphy at the particular location. This effect is the same as described in the *Protective Groundwater Flows* section above. However, this occurs about 1.5 miles inland of the coast and, therefore, would not be affected by the proposed MPWSP pumping.

HGC apparently interprets the local hydrogeology at monitoring well MW-5S by inferring that the Dune Sand Aquifer is perched on a regional clay layer and that MW-5S is screened in the Dune Sand Aquifer. But monitoring well MW-5S is screened in a perched aquifer and not the Dune Sands Aquifer; it is screened in a localized water bearing zone underlying the Monterey Peninsula Landfill, referred to as the 35-Foot Aquifer. MW-5S was completed in the uppermost saturated unit but, at that location, the uppermost saturated unit is at a higher elevation and is not correlative with the shallow interval in the other MPWSP monitoring wells. That is why monitoring well MW-5S is identified as MW-5S(P), with the "P" indicating that the well is monitoring an upper perched/mounded aquifer.

HGC states that CalAm's monitoring well MW-5S has a water surface of approximately 35 feet above sea level. However, it is not possible for seawater intrusion to flow uphill at that location. This statement confirms the argument that any fresh water from the shallow perched/mounded aquifer in the Fort Ord A-Aquifer or the 35-Foot Aquifer at the landfill would not be impacted by MPWSP pumping and would continue unimpeded to its final destination.

HGC prepared a groundwater elevation contour map of the Dune Sand Aquifer as Figure 6 in the March 27, 2017 TM. In preparing the groundwater contour map, HGC apparently combined groundwater elevation data from the Dunes Sand Aquifer (MW-1S, MW-3S, MW-4S, MW-7S, MW-8S, and MW-9S), its equivalents (-2-Foot Aquifer encountered in the Monterey Peninsula Landfill area and the "Perched A' in the Salinas Valley), the 35-Foot Aquifer in the Monterey Peninsula Landfill area, and the shallow perched/mounded aquifers. The contour map produced by combining these data points implies that the Dune Sand Aquifer and the perched aquifers form one single aquifer mounded on the FO-SVA and that groundwater flows out toward the Monterey Bay to the west and the Salinas River to the east. Proper contouring using corresponding groundwater elevation data would result in accurate contours that show groundwater in the Dune Sand Aquifer flowing inland from the Monterey Bay. The HGC contour map misrepresents the available groundwater data and appears contrary to the hydrogeologic conceptual model for this area, developed and agreed upon by the community of hydrogeologists, including the experts in the Hydrogeologic Working Group.

MCWD-HGC-9

Purported Existence of Fresh Water in "Marina Subarea"

Pertains to HGC comments 3-5, 9, 10, 15, 16, 18, 19, 22, 29, 34, and 36. HGC asserts that the EIR/EIS inaccurately characterizes the groundwater quality in the area affected by the proposed MPWSP slant wells. HGC contends that there are areas of "fresh" groundwater within what is referred to as the "Marina Subarea" (discussed above), which the proposed MPWSP would impede upon and degrade. HGC relies on groundwater chemistry data CalAm collected from its eight groundwater monitoring wells in February 2015. This section addresses HGC's apparent misconception that lower chloride and TDS concentrations identified in CalAm's wells can be equated with the areas of "freshwater," as shown in Figures 1 and 2 of the HGC Technical Memorandum, dated March 29, 2017. HGC appears to have been selective in using the groundwater quality data points from five groundwater well locations spaced a mile or more apart, and randomly extrapolated regions claiming there are areas of "fresh" groundwater without any consistent correlation to the available groundwater quality data. These regions of purported "fresh" groundwater are located between Highway 1 and the Salinas River on Figures 1 and 2 of the HGC TM and are labelled as "Areas of [Dune Sand Aquifer]/[180-Foot Aquifer], Filled With Freshwater." As explained below, HGC characterization of areas of "freshwater" is inaccurate and misrepresents the available groundwater quality data.

Accurate interpretation of groundwater chemistry data for characterization of seawater intrusion requires an understanding of the changes that occur to chloride, sodium, and calcium concentrations in the groundwater. Seawater contains high concentrations of chloride and elevated or steadily increasing chloride concentrations are a common indicator of the onset of seawater intrusion. However, at low chloride concentrations, trends must be considered as well as absolute concentrations because it is a prolonged process and takes time for chloride concentrations to increase and trends to be recognizable (HydroMetrics, 2016). Seawater contains more sodium than calcium. During the early stages of seawater intrusion, the concentrations of calcium can increase because sodium attaches to the geologic materials in the aquifer and replaces calcium (a process called cation exchange), thereby removing sodium from the groundwater. The exchange of sodium for calcium lowers the sodium/chloride ratio as the seawater front progresses inland. Therefore, low concentrations of chloride may not necessarily indicate groundwater that has not been intruded with seawater, but could indicate incipient seawater intrusion as the front approaches. The latter is the case in the MPWSP project area.

HGC chose to use CalAm monitoring well clusters MW-5, MW-6, MW-7, and MW-8 as indicator wells to establish the areas of "fresh" groundwater. The monitoring well locations are shown in EIR/EIS Figure 4.4-9. HGC also used two Monterey Regional Water Pollution Control Agency (MRWPCA) wells as a data point representing water quality in the 180-Foot Aquifer. HGC reported average concentrations of chloride in the shallow and mid-range monitoring wells in each cluster. The chloride concentrations used by HGC to support "fresh" groundwater range from 67 milligrams per Liter (mg/L) in monitoring well MW-6S to 387 mg/L in the monitoring well MW-7S. Chloride data was not available for the MRWPCA well. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary Maximum Contaminant Level (MCL) for chloride is 250 mg/L (Cal. Code Regs., tit. 22, § 64449). Of the monitoring wells sampled by CalAm in February through June 2015, only five monitoring wells (MW-5M, MW-6S, MW-6M, MW-8D, and MW-9D) had concentrations of chloride below California's Secondary MCL of 250 mg/L. All other monitoring wells, 18 in total, within and proximate to the MPWSP capture zone exceeded the 250 mg/L chloride threshold. The data does not indicate areas of "fresh" groundwater as HGC asserts; rather, it shows, as discussed below, that certain wells are located within groundwater zones of varying stages of seawater intrusion.

As discussed above, seawater intrusion is a prolonged process and the concentrations of sodium, calcium, and chloride can be an indicator of incipient or established seawater intrusion. CalAm monitoring wells MW-1S, MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8D, MW-8M, MW-9S and MW-9M have elevated sodium and chloride concentrations that suggest middle to late stages of seawater intrusion. CalAm monitoring wells MW-6M(L), MW-7S, and MW-7M exhibit calcium and chloride concentrations indicative of the early to mid-stages of

seawater intrusion. As discussed above, monitoring well MW-5S(P) is screened in a shallow perched aquifer, and is not correlative to conditions in the Dune Sands Aquifer. Sample results for monitoring well MW-5M showed relatively low concentrations of calcium and chloride. This is not, as implied by HGC, indicative of fresh water but more likely due to one or all of the following: 1) well screen length and placement; 2) differences in hydraulic heads resulting in ambient groundwater flow from the top of the screen to lower portions of the wells, and; 3) the shape of the seawater intrusion wedge and more saline conditions deeper in the aquifer zone.[11] Lower to moderate chloride concentrations reported in MW-6S and MW-6M are likely due to the location of the monitoring well ahead of the leading edge of the seawater intrusion wedge in the 180-Foot Aquifer. This is supported by the more elevated chloride concentration in the deeper well of the cluster [MW-6M(L)].

HGC also correlated TDS concentrations in the select monitoring wells to support the claim that "fresh" groundwater was present in the area between the MPWSP slant well site and the Salinas River. As was the case with chloride concentrations, the TDS concentrations were averages obtained from CalAm's 2015 sampling of groundwater monitoring wells (MW-5, MW-6, MW-7, and MW-8) and two MRWPCA wells. The TDS concentrations cited by HGC ranged from 350 mg/l TDS in one of the MRWPCA wells to 1,200 mg/L TDS in MW-4S. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary MCL for TDS is 500 mg/L (Cal. Code Regs., tit. 22, § 64449). Only the one groundwater sample from the MRWPCA well is under the 500 mg/L, all other TDS concentrations in the Dune Sand Aquifer and 180-FTE Aquifer in HGC's purported area of fresh groundwater, exceed the State Threshold. As discussed above for chloride, the concentrations of TDS detected in the CalAm monitoring wells do not indicate the presence of areas with "fresh" water, as HGC asserts, but indicate incipient seawater intrusion.

Furthermore, it is important to note that the proposed MPWSP slant wells would affect water quality within the capture zone but not in the larger cone of depression, as discussed in Master Response 8, Project Source Water and Seawater Intrusion. Consequently, even if the purported areas of "fresh" groundwater identified by HGC east of Highway were actually viable sources of potable water, they would not be impacted by slant well pumping because they are inland of the capture zone.

[11] Seawater intrusion typically advances inland in a "wedge" shape where the denser, more saline water is deeper in the aquifer zone and advances forward of the less dense saline water toward the top of the aquifer zone. For this reason, incipient seawater intrusion is commonly first detected in the deeper wells of an aquifer, before the shallower wells are impacted.

MCWD-HGC-10

Test Slant Well Salinity and CEMEX Wash Water

Pertains to HGC comments 15, 19, 33, and 36. HGC asserts that test slant well salinity is artificially increased due to CEMEX wash water recharging in nearby ponds. However, the opposite effect on the test slant well is occurring. Recharge water causes the salinity in the test slant well to decrease because dredge sand is processed with well water, which has a significantly lower salinity than the seawater, although it is still highly brackish. Consequently, the average TDS of the water recharging the groundwater near the test slant well is much lower in TDS than the seawater. In addition to sand washing operations, infiltration of precipitation also causes the salinity in the test slant well to decrease, as discussed in EIR/EIS Appendix E3, Section 2.1.7.4.

MCWD-HGC-11

Groundwater Cumulative Analysis

Pertains to HGC comments 31, 34, 35, and 39. See responses to comments MCWD-106, and LWMC-14 through LWMC-19 in Section 8.6.13 regarding the cumulative analysis of groundwater resource impacts of the MPWSP.

MCWD-HGC-12

HGC Comments on Mitigation Measures Prescribed in EIR/EIS Section 4.4

Pertains to HGC comments 7, 8, 10, 34, 35, 37, 38, and 40. See responses to comments MCWD-103 and MCWD-104, as well as CEMEX-11 and CEMEX-12 in Section 8.6.6.

MCWD-HGC-13

Application of the NMGWM^{2016}

Pertains to HGC comments 1, 4-6, 15, 25, 26, 28, 30-32, 34, 35, 38, 39, 41, and 42. HGC had several comments on the application and use of the NMGWM^{2016} as an analytical tool to evaluate impacts of the MPWSP. The groundwater model is described in EIR/EIS Section 4.4.4.2 and Appendix E2; additional information and clarification on the application of this model is in Master Response 12, The North Marina Groundwater Model (v. 2016).

The NMGWM^{2016} and the Use of Superposition

The calibrated NMGWM^{2016} was not "abandoned and replaced with the inferior superposition model" because of "technical problems," nor was it poorly calibrated. HGC claims that the purported "technical problems" stemmed from a lack of data on the hydrogeology and aquifer recharge mechanisms used by the U.S. Geological Survey in the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM); the U.S. Geological Survey did not develop the SVIGSM. The "superposition model," as referred to by HGC and utilized for the MPWSP analysis, is an application of the NMGWM^{2016}. Superposition is a scientifically

valid, well-documented and routinely employed tool for solving complex problems, and enabled the efficient simulation of slant well pumping drawdown without having to correct the problems associated with pumping and recharge inputs derived from SVIGSM. The method of superposition was implemented to remove model bias due to deficient input data inherited from the SVIGSM, to calculate slant well pumping drawdown directly, and to provide for more transparent model results. The superposition approach is widely used (see Draft EIR/EIS Appendix E2, Section 5.2, Footnote 82, for examples of the use of superposition for solving groundwater problems), and the outputs it provided are the model-calculated water level and flow changes due solely to slant-well pumping. Superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the slant wells. These changes are additive to future changes that would occur as the net result of all other recharge and discharge processes in the basin. In other words, the superposition model results are simply added to the net effects from all other recharge and discharge processes in the basin to calculate the cumulative effect.

HGC incorrectly asserts that the superposition model fails to evaluate potential future cumulative conditions and that it would not be possible to evaluate impacts on wells tied to the MPWSP. Additionally, HGC states that the NMGWM^{2016} cannot determine the impact of the project on future basin management efforts planned to improve the groundwater conditions in the SVGB. As noted above, superposition is employed to isolate the expected changes and these changes are additive to future changes that occur as the net result of all other recharge and discharge processes in the basin. Any model-calculated drawdown due to proposed slant well pumping can be overlain or integrated with future basin management scenarios. Monitoring can provide information about the impact on future basin management efforts. For example, Figure 4.6 in Appendix E2 is an example of where superposition model results are compared to measured water levels collected in real-world monitoring wells. Figures 3.3a, 3.3b, and 3.3c in Appendix E2 show that aquifer parameters in the Fort Ord vicinity fall within the reported range of values from other sources. See Master Response 12, The North Marina Groundwater Model (v. 2016).

Applicability and Reliability of the NMGWM^{2016}

There are several instances where HGC claims that the NMGWM^{2016} is not an adequate groundwater model because it does not predict changes in water quality. The NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The use of equivalent freshwater head to represent seawater, and the constant groundwater density assumption to calculate the drawdown extent is a reasonable and appropriate approach and the error these approximations introduce is small relative to the uncertainty in other more influential factors like the specified pumping rates, return water volumes, projected sea levels, aquifer parameter values, and the relative

contributions of multiple aquifers to total slant well production (see EIR/EIS Appendix E-2, Section 6.0 Uncertainty, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

HGC claims that the NMGWM^{2016} is unreliable, which appears to be based on a misunderstanding of the NMGWM^{2016} and the use of superposition. As described below, HGC incorrectly assumes that modelers attempted to incorporate a "semi-perched layer of fresh water" in the Dune Sand Aquifer but were unsuccessful. Furthermore, HGC is incorrect in its assessment that the comparison between simulated results with observed groundwater level elevations produced model error in the Dune Sand Aquifer (Model Layer 2) on the order of 30 percent. The A-Aquifer (Model Layer 2 above the FO-SVA) was incorporated into the NMGWM^{2016} and improved model performance at MW-5S. Figure 4.2 in Appendix E2 shows the water level at MW-5S calculated by the NMGWM^{2015} (approximately 0 feet above mean sea level), is greatly improved following the update to the NMGWM^{2016} (approximately 29 feet, which is much closer to the measured value of 35 feet). The available data suggest that perched groundwater conditions and the corresponding poor model performance is limited to the southernmost portions of the Fort Ord area, whereas model performance is acceptable in the other portions of the Fort Ord area and where vertical gradients are less steep. Appendix E2 reported a Root Mean Square Error (RMSE) of 30.2 feet in Model Layer 2, and that included two perched wells (MW-BW-01-A and MW-OU2-29-A). As explained in Draft EIR/EIS Appendix E2 (pages 20-21), vertical gradients greater than 1.0 between Model Layer 2 and Model Layer 4 likely indicate an unsaturated zone between two saturated units. When these wells are excluded from the error statistics, the RMSE for Model Layer 2 decreases from 30.2 feet to 10.1 feet (the relative error decreases from almost 63 percent to about 16 percent).

HGC asserts that the EIR/EIS fails to evaluate the project's impacts on the semi-perched groundwater conditions within the Dune Sand Aquifer and the semi-confined conditions in the -2-Foot Dune Sand Aquifer and describes the failure as fatal to the ability of the EIR/EIS to adequately evaluate project impacts on groundwater. The area where perched groundwater conditions occurs appears to be of limited extent, and the model performs well in the remaining areas. The model's inability to simulate these conditions is therefore, not "fatal," and in fact the model performs well in the other areas. Furthermore, the primary purpose for the NMGWM^{2016} was to calculate drawdown in response to pumping, which depends primarily on the pumping rate, the water transmitting and storage properties of the aquifer, and any change in groundwater recharge or discharge that occurs solely as a result of that drawdown. The modeled and reported water transmitting and storage properties of sediments in the model domain compare favorably, and therefore, provide confidence in the drawdown calculated by the model. Indeed, the measured and model-calculated drawdown due to test slant well pumping plotted in Figure 4.6 of Appendix E2 agree well, and provide confidence in model performance. Lastly, the hydraulic conductivity values in the NMGWM^{2016} are

successful, as shown by the relatively low RMSE for the non-perched wells in Model Layer 2. These hydraulic conductivity values were developed from extensive review of the available hydrologic and geologic data.

HGC states that the recalibrated NMGWM^{2016} was not successful at providing shallow groundwater responses and is less representative of real world conditions than the NMGWM^{2015}. The NMGWM^{2016} successfully simulated the measured, real-world shallow groundwater response to test slant well pumping (see EIR/EIS Appendix E2, Figure 4.6). Moreover, in every test that compared model-calculations and "real-world" measurements, the NMGWM^{2016} was shown to be superior to the NMGWM^{2015}. The improvement is attributed to its better representation of "real world" conditions because of the substantial new borehole, water level, and aquifer test data considered and incorporated into the updated, NMGWM^{2016}. For example, Model Layer 2 represents the "Dune Sand Aquifer," "A-Aquifer," "Perched Aquifer," "Perched 'A' Aquifer," "35-Foot Aquifer," and "-2 Foot Aquifer." Similarly, Model Layer 3 incorporated the FO-SVA, and Model Layer 4 represents the "180-FT Aquifer," "180-FTE Aquifer," "Upper and Lower 180-Foot Aquifer," and "Pressure 180-Foot Aquifer." The geographic and hydrogeologic characteristics of these water bearing units are represented in the NMGWM^{2016} by almost 20 different zones assigned unique values for the water transmitting and storage property values derived from an extensive review and analysis of the existing data.

EIR/EIS Appendix E2, Section 4.0, explains model limitations which particularly influenced the discrepancies between measured and model-calculated water levels in the historical 1979-2011 run. The historical 1979-2011 run is another application of the NMGWM^{2016}. The history matching run (1979-2011) utilized all available wells within the model domain having historical water level measurements; south of the Salinas River, there are potential wells with data located in the Fort Ord Area, and monitoring well cluster sites having the longest water level data records were also utilized in the history matching run (cluster sites are where multiple wells monitor conditions in different aquifers). Additional well boring and aquifer test data were also incorporated into the conceptual hydrogeologic understanding of conditions south of the river and represented by the NMGWM^{2016}.

HGC claims that the NMGWM^{2016} was constructed with a landward gradient in the 180-Foot Aquifer and does not simulate the -2-Foot-Aquifer underlying the perched portion of the Dune Sand Aquifer. The NMGWM^{2016} does not contain a specific layer for the -2-Foot-Aquifer. Appendix E2, Table 2.1, shows that Model Layer 2 represents the shallow water-bearing sediments referred to as "Dune Sand Aquifer," "A-Aquifer," "Perched Aquifer," "Perched 'A' Aquifer," "35-Foot Aquifer," and "-2 Foot Aquifer." Model Layer 3 is utilized to represent the confining layer that separates these units from the underlying "180-FT Aquifer" or the equivalent units represented by Model Layer 4. Appendix E2 shows particle-tracking results calculated with the superposition NMGWM^{2016} and three imposed

gradients based on measured water levels (see Appendix E2, Figure 5.6, which delineates the area where particles placed beneath the coast line pass as they move to the slant wells).

HGC asserts that the EIR/EIS and modeling grossly understates the project's impacts using the superposition model and that a well-calibrated model is required to evaluate the impacts. Specifically, HGC asserts that it would be preferable to use a dual density model that uses components of the older Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM) that can represent the "Marina Subarea". As discussed in Appendix E2, Section 4.1, the NMGWM^{2016} is comprised of 8 model layers and represents an approximately 149 square mile area that includes the City of Marina. The NMGWM^{2016} reasonably reproduces historical measured water levels throughout the model area, and utilizes all the recharge and discharge components from the older SVIGSM. The NMGWM^{2016} also included details to better represent hydrogeologic conditions south of the Salinas River and data collected for the test slant well project. None of this detailed information is lost when calculating the changes in water levels and groundwater flow using the NMGWM^{2016} and superposition approach. This is explained in further detail in Master Response 12, The North Marina Groundwater Model (v. 2016).

CEMEX Groundwater Model

HGC states that the modeling completed for the EIR/EIS relies on the CEMEX Model Update completed by Geosciences in 2016, and that its assumptions are unsupported and are based on the lack of available data. However, HGC does not specify the "unsupported assumptions" in the 2016 CEMEX Model Update. The NMGWM^{2016} update modified some parameter zones based on mapped geologic units associated with the dune sand, the older dune sand, and the clay zones associated with the FO-SVA. The parameter values for the modified zones are based on the 2016 CEMEX Model Update. Appendix E-2, Figure 4.6, shows a reasonable comparison between measured and model-calculated drawdown from the slant test well, and provides confidence in the updated zones and parameter values.

HGC states that the CEMEX model is too small to be used to project aquifer parameters across the NMGWM domain. The updated 2016 CEMEX model was not used to simulate regional effects. However, parameter values updated based on slant test well results were considered as part of the NMGWM^{2016} update. This is explained in EIR/EIS Appendix E2.

HGC claims that SVIGSM is inappropriately constructed in the project area and did not include boundary recharge into the Dune Sand Aquifer or the existence of the FO-SVA and cannot be used to feed realistic input into the NMGWM^{2016}. EIR/EIS Appendix E2 identifies the deficiencies of the SVIGSM, and explains how the NMGWM^{2016} was updated and superposition approach was employed to remove

these deficiencies. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional discussion.

HGC incorrectly states that there is limited regional data for model construction south of the Salinas River in the vicinity of the CEMEX site and that the initial field work and aquifer testing conducted for the Test Slant Well project has provided hydrogeological data indicating conditions that were not anticipated during construction of the model such as the semi-confinement of the 180-FTE Aquifer, mounded water in the Dune Sand Aquifer, confinement of the Dune Sand Aquifer along the river, and freshwater present in the 180-FTE Aquifer at MW-5. The updated NMGWM^{2016} utilized a substantial amount of available data south of the Salinas River near the CEMEX site, and the initial field work and aquifer testing conducted for the test slant well data. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional clarification.

Surface Water Features

HGC asserts that the impact assessment of surface water losses from the Salinas River and the Tembladero Slough/Reclamation Ditch are general and compared to annual conditions, and do not consider seasonal or climatic dry periods. HGC also states that EIR/EIS conclusions regarding the potential impacts on the Salinas River and the Tembladero Slough are inconsistent with its treatment of Elkhorn Slough in EIR/EIS Chapter 5, Alternatives. As described in the EIR/EIS Appendix E2, groundwater interaction with the Salinas River and the Tembladero Slough/Reclamation Ditch is simulated using the MODFLOW River Package. The River Package was used to simulate changes in river gains and losses in response to slant well pumping. The results from the superposition calculations are essentially independent of flow conditions – unless those flow conditions are such that the Salinas River and Tembladero Slough are dry. These effects are minor relative to the large stress of slant well pumping and likely have a minimal effect on the drawdown calculations. In contrast, Elkhorn Slough was appropriately simulated using general-head boundaries based on the understanding of the subsurface lithology. The general-head boundary in the NMGWM^{2016} has a modest effect on the model-calculated cone of depression, but that effect is insignificant for making drawdown comparisons between the CEMEX and Potrero Road Sites. See Attachment 2 of Appendix E2, and Master Response 12, The North Marina Groundwater Model (v. 2016), for additional explanation.

Miscellaneous Concerns Regarding Modeling

HGC claims that the NMGWM^{2016} cannot quantify the amount of seawater or fresh groundwater that will be produced and that hydraulic conductivity values assigned in the NMGWM^{2016} are not reliable. The hydraulic conductivity values assigned in the NMGWM^{2016} are based on extensive review and analysis of available data and therefore, considered reliable. The NMGWM^{2016}, therefore, provides a reasonable

representation of "real world" conditions because it is based on substantial borehole, water level, and aquifer test data.

HGC claims that based on work informed by analysis performed by GeoHydros, the proposed MPWSP would draw a substantial portion of groundwater during the first year and would significantly reduce groundwater storage within the "Marina Subarea." HGC states that the EIR/EIS must disclose the amount of groundwater that the MPWSP would deplete from the "Marina Subarea." The water extracted from any well would initially come from aquifer storage. The resulting decline in water levels (drawdown) is determined by the water transmitting and storage properties of the aquifer and changes in groundwater recharge or discharge that occurs solely as a result of that drawdown. In the situation where slant wells are employed near the ocean, that drawdown changes recharge and discharge conditions associated with the ocean, which represents a substantial source of recharge to the well. Hence, as time increases, the proportion of water extracted by the well that comes from aquifer storage diminishes substantially. See Master Response 8, Project Source water and Seawater Intrusion, for additional clarity on the MPWSP capture zone and source water. Furthermore, conclusions based on GeoHydros depletion analysis are based on a flawed application of superposition and an incorrect application of its results. See response to comments MCWD-GeoHydros, for additional information regarding the GeoHydros review of the HydroFocus modeling. Also, refer to Master Response 12, The North Marina Groundwater Model (v. 2016), and Master Response 4, The Agency Act and Return Water, and EIR/EIS Appendix E3 for information on the calculation of OWP in the MPWSP feedwater.

HGC questions the validity of the vertical hydraulic conductivity used in the $NMGWM^{2016}$ at the Potrero Road site and states that it is untested and not substantiated by production test data and is "2 orders of magnitude less than the CEMEX site estimate." HGC also states that while the horizontal hydraulic conductivity value was estimated at 2 times greater than the modeled value at the CEMEX site, the reduced vertical hydraulic conductivity indicates a confined/semi-confined condition. HGC claims that simulated aquifer parameter estimations by the $NMGWM^{2016}$ result in a reduced vertical flow from the ocean and reduced seawater infiltration, and therefore, the higher horizontal hydraulic conductivity, combined with reduced vertical flow, results in more groundwater production. Sediment texture graphs (see Figures 46 and 47 in EIR/EIS Appendix C3) suggest that the vertical hydraulic conductivity of the Dune Sand/Perched "A" Aquifer near Potrero Rd and Moss Landing range from 0.04 to 1.52 ft/d. The vertical hydraulic conductivity (K) value specified for the Model Layer 2 parameter zone that contains the Potrero Rd site (0.1602 ft/d) falls within this range. More detailed data at the Potrero Road site was not available. Additionally, the sensitivity tests reported in Appendix E2 both increased and decreased the anisotropy of this parameter zone by dividing and multiplying the vertical hydraulic conductivity value by 5. Hence, the anisotropy range included vertical hydraulic conductivity

values that ranged from 0.03 to 0.8 ft/d. The "groundwater production" simulated by the model was fixed by the proposed pumping rates defined by the operating scenarios and was not determined by the modeled hydraulic conductivity values. The results of those sensitivity runs are included in Appendix E2, Figure 6.4a and 6.4b, and show that the model-calculated cone-of-depression consistently extends a smaller distance offshore relative to the portion that extends inland, thereby indicating substantially more recharge occurs from seawater infiltration than from inland groundwater. The offshore extension beneath the ocean is consistently greater than the range for results mapped for the sensitivity tests conducted on the CEMEX site.

8.5.2.3 Responses to Comments from MWCD – GeoHydros

MCWD-GH-1

EIR/EIS Appendix E2, Table 3.1 summarizes modifications that were made to the $NMGWM^{2015}$ to improve overall model functionality and its correspondence with the conceptual model described in Appendix E2, Section 2.1; that model is herein referred to as $NMGWM^{2016}$ and was used in the EIR/EIS analysis. As explained in EIR/EIS Appendix E2, Section 3.0, updates to the $NMGWM^{2015}$ included adding the Fort Ord Salinas Valley Aquitard (FO-SVA), modifying aquifer parameter zones based on new boring and test slant well pumping data, and borehole and water level data available from Fort Ord documents. These changes did not "favor" the conceptualized flow, but were based on cross sections and monitoring well data points.

The $NMGWM^{2016}$ was used to calculate changes in groundwater levels (drawdown), and to delineate the area where drawdown (cone of depression) would be 1-foot or greater in response to proposed slant well pumping. Scenarios were developed to calculate drawdown and to assess its sensitivity (uncertainty) to model input and model assumptions. Groundwater "capture zone" boundaries were delineated using $NMGWM^{2016}$ steady-state flow condition results and particle tracking using the MODFLOW computer code post-processer MODPATH.

MCWD-GH-2

The commenter states that the "model boundaries are arbitrary and do not represent natural hydrologic divides therefore the model simulates flow across the external boundaries that cannot be verified from data." However, the $NMGWM^{2016}$ is based on the telescopic mesh refinement approach, where the model boundaries correspond with internal portions of the regional model; the regional model boundaries are defined by the physical limits of the aquifer. Hydraulic continuity is maintained between the two models using fixed heads. Specifically, the water levels simulated by the regional model along the internal boundaries corresponding to the outer edge of the $NMGWM^{2016}$ are extrapolated and assigned to the head-dependent flux boundaries at the outer edge of the $NMGWM^{2016}$. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

The model simulates flow across external boundaries which can be verified from data. The NMGWM[2016] is bounded on the west by the Pacific Ocean, and inland the model is bounded by adjacent portions of the Salinas Valley Groundwater Basin (Appendix E2, Figure 2.3). As described in EIR/EIS Section 4.4.4.2 (see EIR/EIS Figure 4.4-12), the model includes Elkhorn Slough to Prunedale on the north side, Prunedale to south of Salinas on the east side, south of Salinas to just north of the Fort Ord Dunes State Park on the south side, and extending approximately 5 miles into Monterey Bay to coincide with the western boundary of the SVIGSM (see EIR/EIS Appendix E2 Figure 2.2) since the Dune Sands Aquifer, the 180-Foot/FTE Aquifer and the 400-Foot Aquifer daylight a few miles offshore (see EIR/EIS Appendix C2, Figure 7a). The ocean boundary is represented using specified water levels equal to sea level which is easily verifiable. The specified water levels are referred to as "constant head boundaries" because they allow the model to simulate unlimited water flow in or out of these cells to maintain constant water levels throughout the simulation.

The movement of groundwater across the inland NMGWM[2016] boundaries is represented by "head-dependent flow boundaries" (denoted as general-head boundaries in Appendix E2, Figure 2.3). Head-dependent flow boundaries allow for water flow in or out of the model in proportion to the model-calculated water level at the boundary, a specified monthly water level external to the model boundary, and the specified subsurface water-transmitting properties. The specified external water levels at the NMGWM[2016] head-dependent flow boundaries were extrapolated from the distribution of monthly model-calculated water levels from the SVIGSM. These boundaries can also be verified with data.

MCWD-GH-3

The NMGWM[2015] and NMGWM[2016] both utilized equivalent freshwater heads, which are non-zero constant head values specified in the model. See Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-4

EIR/EIS Appendix E2 Section 4.3 explains the NMGWM[2016] was developed using the MODFLOW computer code, which does not consider variable density effects. The NMGWM[2016] employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. Using equivalent freshwater head is a common approach to mimic the water density contrast near ocean boundaries. Equivalent freshwater heads increase the water level in constant density models to account for the greater density of seawater. Comparisons between MODFLOW calculated water level changes and calculations using a variable density flow model (SEAWAT) indicated slight differences in calculated water levels (approximately one foot). These differences exist nearest the coast, where there is a measured difference in groundwater salinity ranging from seawater to freshwater. Near the coast, and where density effects are greatest, slant well pumping will have a much greater influence on water level changes and flow than

the spatial differences in salinity and water density. However, as the salinity concentration decreases with increasing distance from the coast, the differences in model calculated water levels diminish and become insignificant. The effects of variable density flow on NMGWM^{2016} model results were therefore, considered negligible, and a dual density model is not necessary. See also response to comment MCWD-87 and Master Response 12, The North Marina Groundwater Model (v. 2016).

EIR/EIS Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM2016 and MODPATH. Particles were placed along the edge of the inferred 2013 seawater intrusion front in the 180-FT Aquifer (Model Layer 4) and 400-FT Aquifer (Model Layer 6), as reported by MCWRA. Forward particle-tracking was then employed to show the change in front location after 63 years of slant well pumping. Without slant well pumping, the particles representing saltwater would continue to migrate inland. With slant well pumping, the movement of saltwater is in response to the regional background gradient and drawdown created by slant well pumping. We therefore utilized the superposition NMGWM2016 without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping. The change in particle locations initially placed at the seawater interface represent the change in saltwater location relative to its inland location due to continued background recharge, pumping and regional gradients (e.g., the acceleration or retardation of existing saltwater intrusion).

MCWD-GH-5

The NMGWM^{2016} is based on the telescopic mesh refinement approach, where a relatively coarse model grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second model having a relatively fine grid is utilized to represent a sub-region of the aquifer. Continuity between the two models is maintained using either specified heads, or fluxes. The NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area than the NMGWM^{2015} and SVIGSM, since it includes the A-Aquifer and Fort Ord Salinas Valley Aquitard (FO-SVA). As noted in Appendix E2 Section 4.1, the discrepancies in model-calculated water levels in Model Layer 2 are attributed primarily to deficiencies in SVIGSM initial water levels specified at the NMGWM^{2016} boundaries rather than the hydrostratigraphy represented by the model. The discrepancy in initial water levels that was introduced by SVIGSM and other problems inherited from the SVIGSM were removed by the use of superposition, and have no effect on superposition model results and simulation of the drawdown effects of slant well pumping. Errors in the vertical gradients between model-calculated water levels are attributed to limitations in MODFLOW's ability to simulate perched conditions. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-6

EIR/EIS Appendix E2, Section 4.0, documents that the NMGWM^{2016} utilized calibration wells in all four aquifers, and the NMGWM^{2016} reasonably represents the magnitudes, seasonal trends, and longer term trends in the measured water levels (see Appendix E2, Figures 4.1a and 4.1b). The NMGWM^{2016} recharge and pumping input files from the History Matching Assessment (see EIR/EIS Appendix E2, Section 4.1) include the historical river losses and gains due to the hydraulic interactions between groundwater, the Salinas River, and Tembladero Slough. In order to account for the changes in river gains and losses, the NMGWM^{2016} was modified as explained in EIR/EIS Appendix E2 Section 5.3. But the GeoHydros approach failed to account for these changes in groundwater-surface water interactions, and therefore, failed to account for the surface water losses that occur in response to the new pumping stress introduced by the slant wells. Therefore, the drawdown calculated by the GeoHydros approach is greater than reported in Appendix E2 and Figures 6-9 provided by the comment are not correct. Hence, the NMGWM^{2016} yields plausible hydraulic conditions in all four aquifers and the GeoHydros results are flawed and therefore, not credible for assessing the adequacy of the NMGWM^{2016} and the superposition approach. See Master Response 12, The North Marina Groundwater Model (v. 2016) and EIR/EIS Appendix E3.

MCWD-GH-7

Model Layer 2 (Dune Sand Aquifer) is not dry at the start of the simulation; therefore, it is "present." As identified in EIR/EIS Appendix E2, the initial heads inherited from the SVIGSM are too low in Model Layer 2. However, Model Layer 2 water levels increase to appropriate levels by the end of the calibration run, confirming the water storage and transmitting properties are reasonable. The superposition modeling approach utilizes the same water transmitting properties as the calibrated NMGWM^{2016}. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-8

See response to comment MCWD-GH-1. The NMGWM^{2015} did not include the FO-SVA, where in the real world, localized perching in the A-Aquifer (Model Layer 2 in the Fort Ord vicinity) can exist. Therefore, it is not unexpected for the simulated groundwater surfaces in Model Layer 2 to be different between NMGWM^{2015} and NMGWM^{2016}, otherwise there would be no reason to refine the modeled stratigraphy in this portion of the model. By the end of the historical model run, there is a mound beneath the Fort Ord area that slowly flattens into the CEMEX area. Groundwater-level contours generated from the A-Aquifer Fort Ord monitoring wells show similar mounding and gradients. The water levels inherited from the SVIGSM and specified for the southern-most general head boundary conditions are too low, and were removed for the slant well analysis using the method of superposition. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-9

The 400-Foot and 900-Foot/Deep Aquifers are hundreds of feet below the bottom of the ocean, and therefore, eastward (inland) groundwater movement in offshore portions of these aquifers is not derived in part from groundwater in storage and not directly from ocean water recharge. Groundwater also flows into the model from north and south inland areas, and an eastward gradient does not indicate that all inland freshwater has been replaced by saltwater. Appendix E2, Figure 4.1b, shows that the NMGWM^{2016}-calculated water levels generally agree with measured water levels in Model Layer 6 (400-Foot Aquifer) and Model Layer 8 (900-Foot/Deep Aquifer). Since these wells measure real world conditions, and model-calculated water levels generally agree with the real world, the model provides an adequate representation of measured water levels, gradient and direction. Using the model-calculated gradients and an estimated porosity of 0.1 for the 400-Foot and 900-Foot/Deep Aquifers, the calculated representative flow velocities are low and indicate a slow inland advancement of the submarine groundwater. For example, after 32 years the model-calculated submarine groundwater would advance a maximum of only 3,500 feet. Moreover, saltwater intrusion is a dynamic process, and although it has been occurring for decades in the basin, the intrusion process has not likely occurred uniformly in all aquifers. There are several examples from the scientific literature that describe the non-homogeneous nature of sea-water intrusion (e.g., Werner et al., 2013; Nishikawa et al., 2009; and Venhuizen, K.D., 1991).

MCWD-GH-10

The evaluation of model error described in Appendix E2 Section 4.1, utilized six (6) tests, and the tests are widely used and accepted within the groundwater modeling community. The decision to accept or reject a model depends in part on its performance under these multiple tests and also the intended application for which the model was created. A valid error comparison between two models must utilize the same wells and water level data. When the same wells and water level data are utilized, the summary of error statistics shows that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

MCWD-GH-11

The Root Mean Square Error, or RMSE, of 30.2 feet in Model Layer 2 (see Appendix E2, Figure 4.3b) included the results from two Fort Ord wells that appear to be affected by perched conditions. As stated in Appendix E2, Section 4.1, "Errors at this model location are attributed to limitations in MODFLOW and its inability to simulate steep vertical gradients and perched conditions. This limitation appears to be localized, and model performance is acceptable in other portions of the Fort Ord Area where the vertical gradients are less steep." When these wells are excluded, the RMSE for Model Layer 2 becomes 10.1 feet.

A valid error comparison between two models must utilize the same wells and water level data. When properly conducted, RMSE comparisons indicate that the

NMGWM^{2016} is an improvement relative to the NMGWM^{2015}. Model performance improves in part because the NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area than the NMGWM^{2015} and SVIGSM. The NMGWM^{2016} includes the A-Aquifer and the FO-SVA.

Problematic boundary and initial conditions were identified in Appendix E2 and their influence was removed by using the method of superposition. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-12 The errors at a specific location in the Fort Ord area are localized and model performance is acceptable in other parts of the Fort Ord area. Figure 4.1a in Appendix E2 confirms that the NMGWM^{2016} reasonably simulates water level changes in the Layer 2. The hydraulic conductivity values in the Fort Ord area fall within the range of reported values from multiple sources, including reported values from Fort Ord Area studies (see Appendix E2, Figure 3.3). This includes over 25 horizontal hydraulic conductivity estimates for the A-Aquifer (Model Layer 2) and six (6) vertical hydraulic conductivity values for the FO-SVA (Model Layer 3).

MCWD-GH-13 When employing a model to predict future conditions, the parameter sensitivity analysis identifies the hydraulic conductivity and storativity values that have the most influence on the predicted water level changes (parameter prediction sensitivity). Because the proposed project pumping would be an entirely new stress, the most sensitive prediction parameters are not necessarily going to be the same as the most sensitive calibration parameters (most often they are not). Hence, the prediction parameter sensitivity results provide little to no information about the reliability of the model calibration. The range of values employed for the sensitivity analysis provided conservative estimates of the possible range in model-calculated drawdown by slant well pumping, and the results provide little to no information about model calibration reliability. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-14 The historical model-calculated water budget (Appendix E2, Figure 4.5) shows that there is inflow into the model across the south boundary. The superposition approach sets the specified water levels at the boundaries to zero and calculates the change in inflow as a result of slant well pumping. Therefore, the relative differences in inflow from the northern, eastern, and southern boundaries are due entirely to the modeled water transmitting and storage properties of the aquifer materials and the new stress (slant well pumping). Model-calculated inflow in Model Layer 2 along the southern boundary is most influenced by the conductivity values for the A-Aquifer, which was specified based on reported values from other studies in the Fort Ord area (see Appendix E2, Figure 3.3). See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-15 The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The error introduced by the constant groundwater density assumption is relatively small because pumping has a much greater influence on water level changes (drawdown) than spatial differences in water density. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-16 The superposition method increases confidence in the predictions relative to previous modeling efforts. A key advantage of the superposition approach is the simulation of effects of one stress when other stresses are not well quantified. In this case, pumping and recharge are not well quantified for the Salinas Valley Groundwater Basin, and future climate, pumping, and recharge are predicted with even less accuracy. Thus, superposition is a superior approach compared to attempts at calibrating a regional model because the simulation of these unquantified stresses is unnecessary and the superposition approach can provide reliable information about the effects solely due to pumping. See response to comment MCWD-GH-17, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-17

(1) Superposition modeling does not preclude evaluation of changes to the water budget associated with the proposed pumping. As explained in EIR/EIS Appendix E2, Section 4.1, the computer code ZONEBUDGET was used to extract model simulated volumetric fluxes; monthly fluxes are summarized and reported as average annual water budget components for 1979-2011 in Figure 4.5. The water budget components from superposition modeling represent the net change in inflow and outflow of water within the boundaries and at the edges of the NMGWM^{2016}.

(2) Model-calculated drawdown due to slant-well pumping can be compared to measured drawdown to validate model predictions. EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

(3) The calibrated NMGWM^{2016} contains deficiencies in initial water levels, specified recharge and pumping, and boundary conditions that limit it from effectively performing and providing the information necessary for evaluation of this project. See response to comment MCWD-GH-5

(4) Appendix E2 Section 3.0 describes necessary revisions to the Geoscience model (NMGWM^{2015}) to improve agreement with existing information. Those improvements include modified aquifer parameter values, layering, and an update to the conceptual model in the Fort Ord area. Therefore, the

Geosciences model was not the best option for this analysis since it does not represent the most up-to-date conceptual model.

(5) The drawdown from proposed slant well pumping can be isolated by subtracting two model runs, one run with the new stress and a second run without the stress, or directly using superposition. For example, in their report to Marina Coast Water District, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping using the NMGWM^{2016}. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, GeoHydros employed the theory of superposition, but chose to use the approach of subtracting two model runs to isolate the drawdown due solely to the proposed slant well pumping rather than calculate it directly using a superposition model as reported in Appendix E2. If correctly implemented, the results from the two approaches would be identical. But the flawed results are different from the results reported in EIR/EIS Appendix E2; see response to comment MCWD-GH-6.

MCWD-GH-18 The NMGWM^{2016} results are reliable because the superposition method resolves discrepancies with the boundary conditions, and the drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments. However, the GeoHydros analysis referenced in the comment was not conducted correctly; see response to comment MCWD-GH-6.

MCWD-GH-19 These results are generally consistent with the superposition model showing drawdown in Model Layers 2, 4, and 6 but none in Model Layer 8. See EIR/EIS Appendix E2, Figures 5.3 and 5.4.

MCWD-GH-20 Figures 18-21 provided in the comment are results from the method of superposition. However, the mapped changes are calculated by subtracting two model runs rather than calculating them directly as was done in EIR/EIS Appendix E2. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the analysis reflected in Figure 18-21 was not conducted correctly; see response to comment MCWD-GH-6. Therefore, the flawed results are different from the results reported in Appendix E2. EIR/EIS Appendix E2, Figures 5.3 and 5.4, shows that Model Layer 8 (the 900-FT aquifer) has less than one foot of drawdown. See Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-21 The water budget results are from the method of superposition. However, the changes are calculated by subtracting two model runs rather than calculating them directly; if correctly implemented, the results from the two approaches must be

identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the analysis employed by the commenter to develop the water budget numbers was not conducted correctly; see response to comment MCWD-GH-6. Furthermore, the method provides the change in water budget components and those changes must be applied to the real-world groundwater conditions. When appropriately interpreted relative to field measured conditions, the budget changes indicate slant well pumping is expected to reduce outflow from the 180-Foot Aquifer to the 400-Foot Aquifer, likely providing a water quality benefit to the deep aquifers. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-22 When properly conducted using the same well dataset, RMSE comparisons indicate that the NMGWM^{2016} is an improvement relative to the NMGWM^{2015}. Additionally, the use of equivalent freshwater heads had negligible effect on the history matching results and model calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-23 A valid error comparison between two models must utilize the same wells and water level data. When the same wells and water level data are utilized, the summary of error statistics shows that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-24 Hydraulic conductivity values used in the NMGWM^{2016} are within the referenced range of measured values for each stratigraphic unit (see Appendix E2, Figures 3.3a and 3.3b). Additionally, Appendix E2, Figure 4.6, indicates good agreement between measured and model calibrated drawdown in Dune Sand during test slant well pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-25 See response to comment MCWD-GH-9.

MCWD-GH-26 The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping. The NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping, from which changes in the extent of saltwater intrusion are inferred (see EIR/EIS Appendix E2, Section 5.3, Saltwater Intrusion).

MCWD-GH-27 The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. The use of equivalent freshwater heads had negligible effect on the model calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

MCWD-GH-28 See response to comment MCWD-GH-15.

MCWD-GH-29 See response to comment MCWD-GH-5.

MCWD-GH-30 Superposition modeling is appropriate for this evaluation because:

(1) The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. Furthermore, identification of source water contributions to the proposed extractions is not essential for estimating effects on groundwater levels. Appendix E2, Figures 5.6 and 5.12 show the oceanic capture zones from slant well pumping, which identifies the areas of groundwater captured from proposed slant well pumping using the NMGWM^{2016}. See also Master Response 8, Project Source Water and Seawater Intrusion, including Figures 8.2.8-1, 8.2.8-2 and 8.2.8-3.

(2) Model-calculated drawdown due to slant-well pumping can be compared to measured drawdown to validate model predictions. EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

(3) The NMGWM^{2016} results are reliable because superposition method resolves discrepancies with the boundary conditions, and the drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments.

(4) The drawdown from proposed slant well pumping can be isolated by subtracting two model runs, one run with the new stress and a second run without the stress, or directly using superposition. For example, in their report to Marina Coast Water District, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping using the NMGWM^{2016}. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the GeoHydros analysis was not conducted correctly; see response to comment MCWD-GH-6.

MCWD-GH-31 See response to comment MCWD-GH-21.

MCWD-GH-32 These predicted drawdowns provided in the comment are generally similar to those calculated by superposition and shown in Appendix E2, Figures 5.2, 5.3, 5.4, and 5.8. The results are not identical because the analysis conducted by the commenter and described above is flawed; see response to comment MCWD-GH-6.

MCWD-GH-33 See response to comment MCWD-GH-15. Extreme values do not indicate that the values used in the calibrated model are wrong nor does this sensitivity testing provide any support for the importance of achieving better calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-34 The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater, and the pumping stress and aquifer properties have a much larger effect on the model-calculated drawdown than variations in water quality and density. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-35 Scientific support for the simulation of the MPWSP's groundwater impacts has been documented thoroughly in EIR/EIS Appendix E2. Specifically:

- Appendix E2 summarizes and provides extensive technical detail about the $NMGWM^{2016}$ in relation to the hydrogeology, model construction, assessment of model inputs and output, revisions to the $NMGWM^{2015}$ and its application to calculate drawdown using superposition.
- Model inputs are based on thorough scientific review of available data.
- The applicability of the equivalent fresh-water heads is well documented in Appendix E2, Master Response 12, and the scientific literature.
- Comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) indicated slight differences in calculated water levels.
- The model adequately simulates measured water levels and seasonal trends, which demonstrates scientific validity.
- The model adequately simulates measured drawdown in response to test slant well pumping, which demonstrates its scientific validity.
- RMSE comparisons and evaluation of other model performance criteria demonstrate that the $NMGWM^{2016}$ is an improvement relative to the $NMGWM^{2015}$ and model errors and uncertainty minimally influence model output.

- The use of sensitivity analysis to provide a range of water-level drawdown is well documented and based on extensive data for hydraulic conductivity.
- The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping. It also overcomes the influence of deficiencies in quantifying initial conditions, pumping and recharge inherent in the SVGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model.

In contrast, GeoHydros' comments were based on their flawed application of superposition and therefore, a lack of scientific validity. Specifically, GeoHydros employed the theory of superposition, and chose to use the approach of subtracting two model runs to isolate the drawdown due solely to the proposed slant well pumping rather than calculate it directly using a superposition model as reported in Appendix E2. If correctly implemented, the results from the two approaches would be identical. But the GeoHydros analysis was not conducted correctly since it did not account for changes in groundwater-surface water interactions; see response to comment MCWD-GH-6.

8.5.2.4 Responses to Comments from MWCD – EKI

MCWD-EKI-1

EIR/EIS Section 2.6 examines whether, based upon the evidence currently available, the CPUC could conclude that there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible. By letter dated September 26, 2012, the CPUC asked the SWRCB to assist the CPUC, and issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. The SWRCB carefully considered the then-available facts and evidence concerning the MPWSP, prepared a draft report on water rights, circulated that draft for public comments and ultimately issued its July 31, 2013, Final Review of CalAm's MPWSP (Report). The Report is attached to this EIR/EIS as Appendix B2. EIR/EIS Section 2.6 addresses the issue of *harm and injury* and CalAm's water rights, as they apply to the proposed MPWSP. See also Master Response 3, Water Rights.

As discussed in EIR/EIS Section 4.4.4.3, the SWRCB evaluation of the proposed project was considered as guidance for the analysis of groundwater impacts because it elucidates and provides context for the nexus between the thresholds of significance used in this section and recommendations and considerations of the SWRCB relative to water rights. Section 4.4.5.2 explains the feedwater for the proposed MPWSP slant wells would be drawn from a capture zone adjacent to the coast where the groundwater has been documented to far exceed the 3,000 mg/L Total Dissolved Solids (TDS) threshold that the SWRCB identifies in its Resolution No. 88-63, discussed below. The MPWSP slant wells would not draw

groundwater from inland sources into the capture zone, and thus would not encroach on beneficial groundwater sources or on supplies of other users.

MCWD-EKI-2

See response to MCWD-EKI-1 regarding water rights and SWRCB compliance. EIR/EIS Section 4.4.5.2 concluded that the proposed MPWSP would not violate or degrade groundwater quality in the Dune Sand Aquifer or the 180-FTE Aquifer. The conclusion was based on the understanding that the existing groundwater quality near the proposed MPWSP slant well pumping is highly brackish to saline. See also Master Response 8, Project Source Water and Seawater Intrusion. SWRCB Resolution No. 88-63 (Appendix A-9 of the Water Quality Control Plan for the Central Coastal Basin [Basin Plan]) resolves that "[a]ll surface and groundwater of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: *Surface and groundwater where the total dissolved solids exceed 3,000 mg/l and it is not reasonably expected by Regional Boards to supply a public water system*" *(*emphasis added). The groundwater underlying the capture zone of the proposed MPWSP slant wells is: 1) an order of magnitude more brackish (23,400 mg/L to 30,900 mg/L) than the Basin Plan threshold; 2) does not currently support a public water system or individual users, and; 3) other than its potential use for desalination, would not be reasonably expected to supply a public water system. As discussed in EIR/EIS Section 4.4.5.2, while the groundwater in the projected MPWSP capture zone may become more saline because of MPWSP pumping (seawater would eventually replace the ambient highly brackish water), it would not degrade a groundwater source considered by the SWRCB to be a suitable municipal or domestic water supply under the Basin Plan. The proposed MPWSP slant well pumping water quality effects would be confined to a localized capture zone that would not extend inland from the coast or draw less brackish groundwater from inland regions of the Dune Sand and 180-FTE Aquifer, as explained further below and in Master Response 8, Project Source Water and Seawater Intrusion.

MCWD-EKI-3

CalAm constructed eight monitoring well clusters and operated and monitored a test slant well to evaluate and characterize the groundwater response and the water quality changes from the test slant well and the proposed MPWSP slant well pumping. These wells adequately represent the MPWSP area of groundwater influence as they include the capture zone and projected cone of depression. The groundwater investigative work and findings are described in the EIR/EIS, Section 4.4.4 and Appendix E3, Hydrogeologic Investigation Technical Report. The 300 plus Fort Ord wells mentioned in the comment are located inland of the MPWSP area of influence and capture zone, and are completed in a perched/mounded aquifer that is not hydraulically connection to the Dune Sand Aquifer. Therefore, analysis of water quality data from these wells was not necessary for the environmental setting in the EIR/EIS and it does not represent a data gap in the analysis. However, the Fort

Ord area monitoring well data were incorporated into the analysis presented in the EIR/EIS analysis through refinements to the North Marina Groundwater Model, version 2016 ($NMGWM^{2016}$), a key tool used to analyze the environmental impacts of the MPWSP on groundwater resources. The refinements to the $NMGWM^{2016}$ included additional water level calibration points from the CEMEX and Fort Ord areas; see EIR/EIS Appendix E2, Section 3, including Table 3.1. Additionally, aquifer parameter zones were added and refined to include the former Fort Ord area wells. The $NMGWM^{2016}$ was improved by making adjustments to the water transmitting and storage properties in the coastal parameter zones and by modifying the conceptual geologic framework in the Fort Ord Area (see Master Response 12, The North Marina Groundwater Model, (v.2016)). Groundwater contour maps using Dune Sand and 180-FTE Aquifer groundwater elevations from the eight CalAm monitoring well clusters and the Fort Ord area wells were developed and presented to assess the regional groundwater conditions. These contour maps are presented in EIR/EIS Appendix E3.

Baseline groundwater elevations and water quality data have been gathered continuously from the monitoring wells and test slant well since early 2015; see Master Response 11, CalAm Test Slant Well, Section 8.2.11.4. The baseline data collected was adequate to inform the $NMGWM^{2016}$ and the EIR/EIS analysis of potential groundwater resource impacts. Please refer to response to comment MCWD-97 regarding establishing water level and water quality baseline data.

The comment asserts that the $NMGWM^{2016}$ does not accurately characterize baseline water level conditions in the Dune Sand and 180-FTE aquifer zones due to limited information included in the EIR/EIS for this area and extremely poor model calibration results that are reported for the Dune Sand Aquifer. It should be noted that Model Layer 2 of the $NMGWM^{2016}$ represents the shallow water-bearing sediments referred to as "Dune Sand Aquifer," "A-Aquifer," "Perched Aquifer," "Perched 'A' Aquifer," "35-Foot Aquifer," and "-2-foot Aquifer." Similarly, Model Layer 4 represents the "180-foot Aquifer," "180-foot Equivalent Aquifer," "Upper and Lower 180-foot Aquifer," and "Pressure 180-foot Aquifer." The geographic and hydrogeologic characteristics of these water bearing units are not equivalent. It is therefore, erroneous to use model results for an entire model layer to make global conclusions regarding one of these units, such as the Dune Sand Aquifer.

In response to the assertion of poor $NMGWM^{2016}$ calibration, it is important to note that the Root Mean Square Error (RMSE) of 30.2 feet in Model Layer 2 included the results from two Fort Ord wells that appear to be affected by perched conditions; see EIR/EIS Appendix E2, Figure 4.3b. As stated in EIR/EIS Appendix E2, "Errors at this model location are attributed to limitations in MODFLOW and its inability to simulate steep vertical gradients and perched conditions. This limitation appears to be localized, and model performance is acceptable in other portions of the Fort Ord Area where the vertical gradients are less steep." When these wells are excluded, the

RMSE for Model Layer 2 becomes an acceptable 10.1 feet. Furthermore, Dune Sand Aquifer monitoring well data collected during test slant well pumping was available and utilized to adjust aquifer parameter zones and parameter values in Model Layer 2 and Model Layer 4 (see EIR/EIS Appendix E2, Section 3.2, Aquifer Parameter Zones). Appendix E2, Figure 4.6 shows generally good agreement between the model-calculated and measured timing of water level drawdown and recovery in Dune Sand Aquifer monitoring wells, and demonstrates that the model can be employed to reliably project water level drawdown in the CEMEX area in response to proposed slant well pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional information.

MCWD-EKI-3.1

Contrary to the assertion in the comment, the hydrogeologic conditions in the Dune Sand Aquifer and the 180-FTE/180-Foot Aquifer are supported by a comprehensive hydrogeologic conceptual model that is verified by nearly two years of test slant well pumping and baseline groundwater level and quality monitoring. Groundwater conditions presented in the EIR/EIS were based on the eight MPWSP monitoring well clusters and other private production wells located east of CEMEX (i.e., wells owned by the MRWPCA, Monterey Landfill and Bill Bailee, see EIR/EIS Table 4.4-10). However, prior to the completion of the MPWSP monitoring wells, there were only a few existing wells near CEMEX due to seawater intrusion along the coast, and therefore, scant historical groundwater level and hydraulic gradient data were available for this area. The MPWSP monitoring well network supplements the available groundwater data and provides a basis for groundwater flow and gradient mapping. The 300 plus Fort Ord wells mentioned in this comment and comment MCWD-EKI-3, above, are located south and outside of the MPWSP area of influence (shown in EIR/EIS Figures 4.4-14 through 16). While these wells provided data for the refinement of the $NMGWM^{2016}$, they are beyond the area of MPWSP influence and would not be affected by the MPWSP slant well pumping. This is especially the case for the Fort Ord wells completed in the upper perched/mounded aquifer, which is not hydraulically connected to the Dune Sand Aquifer. Groundwater contouring, based on fall and spring 2015 data, for the Fort Ord perched/mounded aquifer, the Dune Sand Aquifer, and the 180 FTE/180-foot Aquifer, and the 400-Foot Aquifer are shown in EIR/EIS Appendix E3 [Technical Memorandum (TM-2)].

Contrary to the comment, the groundwater contouring provided in TM-2 (see EIR/EIS Appendix E3) does not “further complicate or obscure the continuity of groundwater flow;” rather, it correctly distinguishes the aquifer zones that are in hydraulic connection and describes the groundwater flow and hydraulic gradients based on available data. As discussed in the EIR/EIS Appendix E3, the Dune Sand Aquifer is in hydraulic connection with the -2-Foot Aquifer at the Monterey Peninsula Landfill and Perched “A” Aquifer in the Salinas Valley. These are separate and disconnected from the shallow perched/mounded aquifers that exist at the location of CalAm monitoring well MW-5S(P), the 35-Foot Aquifer in the

Monterey Peninsula Landfill area, and the A-Aquifer in the Fort Ord Area, which flows over the Fort Ord-Salinas Valley Aquitard (FO-SVA). Therefore, the contouring map provided as Figure 5 in the EKI comment letter is in error because it included the groundwater elevation in MW-5S(P), which is now understood to represent the water level in the perched/mounded aquifer (35-Foot Aquifer in the landfill area and the A-Aquifer near Fort Ord) and not the Dune Sand Aquifer represented by the shallow completions of the MPWSP monitoring wells. Using well MW-5S(P) results in an erroneous seaward (west) gradient. Furthermore, the groundwater contour maps developed by EKI shows groundwater elevation contours where there is no groundwater data to support them.

Understanding the hydrogeologic characteristics of the Dune Sand Aquifer, there are two important considerations. First, wells from the Dune Sand Aquifer (and equivalents) cannot be contoured with wells from the shallow perched/mounded aquifers to develop contour maps because these are two distinct and hydraulically disconnected aquifers. Second, the primary "connection" between the two, distinct water-bearing zones is that the areal extent of the shallow perched/mounded aquifers, including the A-Aquifer underlying Fort Ord, is limited, which results in perched/mounded water flowing over the edge of the perching clay layer (similar to a waterfall) into the underlying Dune Sand Aquifer (and equivalents) or 180-FTE Aquifer. The edge of the perched clay layer occurs about 1.5 miles inland of the ocean shoreline. Please see response to the comment letter MCWD-HGC and EIR/EIS Appendix E3, Section 2.4.5.2, for additional clarification regarding the hydrogeologic connection of the Dune Sand Aquifer, the 180-FTE Aquifer, and the shallow perched/mounded aquifer.

The comment appears to support the theory that the fresh groundwater that waterfalls (also described as "U-turns") and enters the Dune Sand Aquifer and/or 180-Foot Aquifer protects these water bearing units from seawater intrusion. However, the flows from the shallow perched/mounded aquifers are limited in quantity and it is unlikely that these flows have created the barrier to seawater intrusion because monitoring well data have shown that seawater intrusion has continued to migrate inland for the last several decades regardless of these perched flows. However, whether or not this natural process is an actual barrier to seawater intrusion is no consequence to the proposed MPWSP because the slant well capture zone would be located 1.5 miles to the west at the coast, and would not encroach on this natural process, thereby allowing it to continue into the future unimpeded after onset of MPWSP pumping.

MCWD-EKI-3.2 A detailed discussion of the local groundwater chemistry and purported fresh water zones in the Dune Sand and 180-FTE aquifer is provided in response to comment MCWD-HGC. There is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. EIR/EIS Section 4.4.1.4 references the MCWRA monitoring

data that have been collected through an ongoing program for decades and was considered a reasonable benchmark to assess regional groundwater quality for the impact analysis in the EIR/EIS. See EIR/EIS Figures 4.4-10 and 4.4-11.

The monitoring wells installed by CalAm to support the MPWSP, and the Monterey Peninsula Landfill supply wells sampled as part of CalAm's program, also confirm the presence of seawater intrusion inland of the coast. Monitoring wells at the CEMEX site where the MPWSP slant wells would be drawing source water is considered highly brackish to saline while samples from monitoring wells inland of the capture zone indicate brackish water (considered for the purposes of this analysis to range between 500 mg/L to 33,500 mg/L TDS).

The comment attempts to draw a connection between length of monitoring well screens and depth of lower and higher salinity in the monitoring wells. The comment states that TDS concentrations detected in wells with long screen intervals, such as those constructed by CalAm for the MPWSP, likely reflect a mix of lower salinity (fresh) water from the upper portions of the 180-FTE Aquifer and more saline water from the deeper portion of the aquifer. The comment concludes that data from these wells is difficult to interpret and inadequate for characterizing salinity within the upper portions of the 180-FTE Aquifer.

It is first worth noting that the CalAm monitoring wells were constructed as clustered wells where each of the three wells in the cluster represents and monitors a distinct groundwater zone: the Dune Sand Aquifer (S), the 180-FTE Aquifer (M), and the 400-Foot Aquifer (D). Because of this, these wells were not constructed with particularly long screens; well screens in most of the CalAm monitoring wells range from 30 to 90 feet. The exception is MW-5M with a well screen of 210 feet (this is the only CalAm well cited by EKI in the comment).

As discussed in response to comment MCWD-HGC, the relatively low to moderate salinity measured at MW-5M is likely due to: 1) the relatively long screen interval that extends up to shallower elevations; 2) ambient groundwater inflow (with lower TDS) through the shallower screened section to lower portions of the monitoring well screen; and 3) typical seawater intrusion wedge, which results in denser seawater concentrations in the lower portion of the aquifer zone. Alternatively, the lower salinity observed at MW-5M could reflect the combined effects of inland groundwater pumping and aquifer heterogeneity.

Contrary to the comment's interpretation of TDS concentrations in the MPWSP monitoring wells, the salinity differences in the water column are more likely due to the various stages of seawater intrusion throughout the area. As evaluated and discussed in response to comment MCWD-HGC, elevated calcium and chloride levels in three of the MPWSP monitoring wells indicate early to middle stage seawater intrusion (MW-6M(L), MW-7S, and MW-7M). In other MPWSP monitoring wells screened in the Dune Sand and 180-FTE Aquifer (MW-1S,

MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8S, MW-8M, MW-9S, and MW-9M), elevated sodium and chloride indicate later stage seawater intrusion. The relatively low to moderate salinity reported at well MW-6M is likely due to its proximity to the leading edge of seawater intrusion in the 180-FTE Aquifer, and the shape of the seawater intrusion wedge relative to the screened interval of MW-6M. The much higher chloride concentration (814 mg/L) in MW-6M(L), compared to the chloride concentration in MW-6M (167 mg/L), demonstrates the presence of the seawater intrusion wedge at this location. See EIR/EIS Appendix E3 for additional details.

The comments assert that not considering groundwater data from the monitoring wells in the Fort Ord Area leads to an incomplete understanding of the hydrogeologic conditions and the importance of the Dune Sand Aquifer. The wells in the Fort Ord Area monitor groundwater in the shallow perched/mounded aquifer (also referred to as the Fort Ord A-Aquifer) and not the Dune Sand Aquifer, and the connection of these two zones is described in the response to comment MCWD-EKI-3.1. To reiterate from the discussion above, the connection between the Fort Ord shallow perched/mounded aquifer zone and the Dune Sand/180-FTE Aquifers is considered to be located 1.5 miles inland from the MPWSP capture zone and thus, the MPWSP would not impact the purported barrier to seawater.

Furthermore, contrary to the assertion in the comment, the EIR/EIS does not dismiss the beneficial use and condition of the local groundwater system but does conclude that the ambient groundwater and eventual mix of seawater created in the MPWSP slant well capture zone would not harm other users, would not impact production wells, or would not degrade water quality because this groundwater currently far exceeds the 3,000 mg/L threshold set forth for suitable municipal or domestic supply by the RWQCB Basin Plan and SWRCB Resolution 88-63. See discussion in response to comment MCWD-EKI-2.

MCWD-EKI-4

The comment claims that construction and operation of the proposed project would limit recharge of fresh water from the Dune Sand Aquifer into the upper 180-FTE Aquifer, influence this natural hydraulic barrier and decrease the existing freshwater zone within a portion of MCWD's service area. These assertions are inaccurate. The comment is somewhat unclear as to where the "recharge" of fresh water from the Dune Sand Aquifer to the 180-FTE Aquifer is thought to occur but based on the previous comments, it is assumed that the comment is referring to the inland groundwater zone where groundwater from the shallow perched/mounded aquifer "waterfalls" into the Dune Sand Aquifer and/or 180-FTE Aquifer about 1.5 miles inland from the projected MPWSP capture zone; see response to comment MCWD-EKI-3.1. Since recharge from the shallow perched/mounded aquifer is occurring 1.5 miles inland from the capture zone of the MPWSP slant wells, the proposed MPWSP wells would not impact this process.

The comment asserts that the proposed MPWSP project pumping would cause brackish groundwater in the capture zone to become more saline and states that no current water quality data exists in the southern portion of these capture zones, an area close to MCWD's Service Area where non-saline water may currently exist. The projected capture zones of the proposed MPWSP slant wells are shown in Master Response 8, Project Source Water and Seawater Intrusion, Figures 8.2.8-1 and 8.2.8-2, EIR/EIS Appendix E2 Figure 5.6, and the EIR/EIS, Figure 4.4-13b.

EIR/EIS Appendix E2 presents three capture zones that were projected by the NMGWM^{2016} using estimated inland gradients of 0.0004, 0.0007, and 0.0011. Measurements of local gradients reveal that the highest gradient used in this analysis (0.0011) is more representative of the average local gradient and the 0.0007 gradient is more representative of the minimum local gradient. Therefore, the smallest capture zone shown on EIR/EIS Appendix E2 Figure 5.6 would be more typical of the capture zone created by the proposed MPWSP slant well pumping and the capture zone shown on Figures 8.2.8-1 and 8.2.8-2 can be considered worst case (or largest of the projected capture zones) because they are based on a gradient of 0.0007.

These capture zones would occupy an area that monitoring wells have identified as containing brackish water in the early to later stages of seawater intrusion, to highly brackish/saline groundwater, most with TDS concentrations exceeding 3,000 mg/L. While there may not be monitoring well data to confirm water quality in the northern and southern extremities of the projected slant well capture zones, it is reasonable to assume that similar groundwater quality exists throughout the capture zone due to its proximity to the coast. This is verified by data gathered during the Airborne Electromagnetics (AEM) survey conducted in May 2017 by Stanford University and MCWD that show a significant band of highly brackish groundwater extending inland from the coast up to 2,000 feet to include the area where the projected slant well capture zone would form. Evaluation of the data and findings from the AEM survey is provided in Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), and EIR/EIS Appendix E3, Section 3.1.8. Considering that the capture zone under a regional gradient between 0.0007 and 0.0011 would only extend a few thousand feet into the Monterey Subbasin, additional characterization of groundwater quality to confirm the presence of seawater-intruded groundwater this close to the coast would likely not be warranted.

One central concept that appears to be misinterpreted in the comment is the relationship between the projected area of influence from the proposed MPWSP slant well pumping (also referred to as the cone of depression) and the projected slant well capture zone. The cone of depression that forms from groundwater pumping and the capture zone that provides feedwater to the slant wells are not the same. As discussed in EIR/EIS Section 4.4.4, Master Response 8, Project Source Water and Seawater Intrusion (Section 8.2.8.1) and EIR/EIS Appendix E3

(Section 3.26), the fundamental difference between the capture zone, which is supplying the water to the slant wells, and the cone of depression, which forms in response to pumping, is that the groundwater entering the slant wells would originate only from within the capture zone, while the regional gradient controls the groundwater flow beyond the capture zone. Because of this, while the area of influence (shown by the 1-foot drawdown line in EIR/EIS Figures 4.4-14 through 16) may extend inland up to 4-miles, the groundwater drawn into the slant well would only be occurring in the capture zone, which is a confined area adjacent to the coast around the slant wells, as shown in Master Response 8, Figures 8.2.8-1 and 8.2.8-2. Therefore, the assertion in the comment that the proposed project would hinder MCWD's ability to implement groundwater recharge augmentation at Armstrong Ranch is unfounded because the proposed MPWSP slant wells would not draw water from the inland sources, especially as far inland as the groundwater recharge augmentation site proposed by MCWD at Armstrong Ranch.

MCWD-EKI-5

EIR/EIS Appendix E2, North Marina Groundwater Model Review, Revision, and Implementation for Future Slant Well Pumping Scenarios, provides documentation of the groundwater modeling inputs and outputs. Appendix E2, Figure 4.1 shows measured and model-calculated water levels by model layer with corresponding well locations – gradients are readily calculated with this data. The drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments. There is ample documentation in Appendix E2, Section 3 of hydraulic conductivity values, storativity (Figure 3.3 provides values and sources of parameter values), and boundary conditions. Appendix E2 Section 5.0 shows by way of particle tracking, the projected groundwater flow paths after project implementation. See also Master Response 12, The North Marina Groundwater Model (v. 2016), for further clarification on $NMGWM^{2016}$ construction, calibration and output.

Superposition modeling provides estimates of changes in flow direction and groundwater levels due to slant well pumping. The superposition method is routinely employed for solving complex problems and is useful in saving time and effort and eliminating uncertainty. Its usefulness is well documented in the peer-reviewed literature (see Master Response 12, Section 8.2.12.4 "Superposition"). Because superposition isolates the drawdown directly, it does not "obscure model deficiencies." In fact, rather than provide results obscured by other factors that cannot be predicted, such as future climatic conditions and water use practices, superposition provides the results directly.

The changes calculated with superposition are additive to future changes that occur as the net result of all other factors like climate, background pumping, background recharge, and land use changes that cannot be predicted with certainty. Accordingly, validating the future drawdown calculated by the superposition modeling approach, which corresponds to validating the change in future water

levels due solely to proposed project pumping, is in practical terms less difficult than validating model projections that include the additional complexity of assumed climate, water use, and land use changes which are not known with certainty. See Appendix E2, Section 4.2, Test Slant Well Pumping, for an example where real-world monitoring data is utilized to compare measured drawdown with the drawdown calculated with the superposition model.

The $NMGWM^{2016}$ was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The error introduced by the constant groundwater density assumption is relatively small because pumping has a much greater influence on water level changes (drawdown) than spatial differences in water density. See Master Response 12 for more details.

MCWD-EKI-6

Contrary to the statement in the comment, the EIR/EIS does not conclude that the proposed MPWSP slant wells would draw water from the Dune Sand Aquifer and 180-FTE Aquifer 1.5 to 4.5 miles inland. The maximum (worst case) projected influence from slant well pumping would result in a 1-foot drawdown in the 180-FTE Aquifer up to 4 miles inland under the 0 percent return water scenario and current sea level rise. As stated in the response to comment MCWD-EKI-4, groundwater and seawater would only be drawn into the MPWSP slant wells from within the capture zone adjacent to the coast, which would eventually be recharged by seawater. The slant wells would not have an influence on inland groundwater sources beyond the eastern extent of the capture zone.

The EIR/EIS does not dismiss the beneficial uses of the groundwater in the Dune Sand and 180-FTE Aquifer but it does conclude that the groundwater that would be drawn from the capture zone of the slant wells would be a highly brackish to saline mix of groundwater and seawater that far exceeds the SWRCB threshold (3000 mg/L TDS) for groundwater that is considered suitable or potentially suitable for municipal or domestic water supply.

The EIR/EIS concluded that there would be no significant environmental impacts on groundwater resources from the proposed MPWSP slant well pumping, and therefore, no mitigation was necessary. Contrary to the comment, there is no evidence that the MPWSP would harm MCWD's water rights (see EIR/EIS Section 2.6, and Master Response 3, Water Rights, Section 8.2.3.7) or preclude MCWD from utilizing the Dune Sand Aquifer for storage and augmentation at Armstrong Ranch. However, as an Applicant-Proposed Measure (see EIR/EIS, Section 4.4.4.5, Applicant-Proposed Measure 4.4-3), CalAm would work with MCWRA to expand the existing regional groundwater monitoring program to include new and existing private wells through a voluntary monitoring program in the area where groundwater elevations are anticipated to decrease by 1 foot or

more. CalAm has proposed returning water to the basin not as a mitigation measure needed to reduce groundwater impacts; rather, the return water would ensure that the proposed project remains in compliance with the Agency Act. This is discussed in detail in Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2.

MCWD-EKI-7

Contrary to the comment, the EIR/EIS demonstrates that the proposed MPWSP would not harm or cause injury to other basin users. However, as discussed in EIR/EIS Applicant Proposed Measure 4.4-3, CalAm would work with MCWRA to fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. As noted in response to comment MCWD-EKI-4, data gathered during the AEM survey conducted in May 2017 verifies that the baseline water quality conditions in the Dune Sand and 180-FTE aquifers include a significant band of highly brackish groundwater extending inland from the coast up to 2,000 feet to include the area of the projected slant well capture zone. Installation of new monitoring wells at appropriate locations near the boundary of the MPWSP area of influence would complement the existing monitoring well network, which would monitor drawdown due to the MPWSP pumping throughout the life of the project.

See response to comment MCWD-EKI-7; groundwater and seawater would only be drawn into the MPWSP slant wells from within the capture zone adjacent to the coast, which would eventually be recharged by seawater. The slant wells would not have an influence on inland groundwater sources beyond the eastern extent of the capture zone. The groundwater modeling does not, therefore, need to be expanded to demonstrate the proposed project would not degrade groundwater quality in the MCWD Service Area. See Master Response 3, Water Rights, Sections 8.2.3.8 and 8.2.3.9.

Applicant-Proposed Measure 4.4-3 requires that CalAm, working with MCWRA, shall fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. Once expanded, the program will monitor groundwater levels and water quality within the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer and within at least 1 mile outside of the predicted radius of influence. The Applicant-Proposed Measure describes additional elements proposed under this measure.

8.5.2.5 Responses to Comments from MWCD – IntakeWorks

MCWD-IW-1

References cited in the EIR/EIS continue to be publicly available at https://tinyurl.com/MPWSPRefs. The EIR/EIS did not conclude that slant wells were the only potentially feasible subsurface intake system for the MPWSP. As

explained in EIR/EIS Section 5.3.6.1, "Ranney wells (Intake Option 13) were shown to result in similar environmental effects compared to the proposed slant wells, resulting in neither increased or decreased impacts. Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary."

MCWD-IW-2 EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis; see response to comment MCWD-168 and MCWD-170. CEQA Guidelines Section 15126.6(a) acknowledges an EIR "need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."

EIR/EIS Section 5.3 describes the process employed to develop, screen and evaluate potential alternative components, and develop whole alternatives for analysis. Section 5.3.1 describes the regulatory considerations applicable to the successful implementation of a desalination project and Section 5.3.2 describes the screening and evaluation process for components of whole alternatives. Components that are not carried forward are described, with the reason for their dismissal, in Appendix I1, which is the stated focus of this comment letter.

The components that are carried forward from the first screening (EIR/EIS Section 5.3.2) are evaluated against each other in Section 5.3.6. Components that are considered to be the least environmentally damaging are then combined into "whole" alternatives in Section 5.4, which are evaluated in Section 5.5.

MCWD-IW-3 The comment is correct; open water intakes should be cleaned more often than every 3-5 years. As noted in EIR/EIS Section 5.4.5.3, the screened open water intake associated with Alternative 3 would be cleaned annually by divers and pipelines would be pigged. Appendix I1 has been revised accordingly; the revision does not change any conclusion in the EIR/EIS.

MCWD-IW-4 This comment addresses statements in the EIR/EIS that were cited from WateReuse, 2011, and is not a comment on the EIR/EIS. The potential for impingement of marine organisms or organic material on the seafloor as a result of the proposed project subsurface intakes is evaluated in EIR/EIS Section 4.5.5.2.

MCWD-IW-5 This comment acknowledges there are significant advantages of using subsurface intakes for obtaining desalination source water, which are discussed in EIR/EIS Appendix I1. See responses to the following specific comments regarding subsurface intakes.

MCWD-IW-6 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation; see response to comment MCWD-172.

The analysis in EIR/EIS Appendix I1 concluded that other alternative subsurface intake technologies would have a smaller construction footprint and permanent footprint because other subsurface intakes would require fewer wells to generate the same volume of source water. The number of vertical wells that would be needed to provide a reliable source water flow to the desalination plant is considered infeasible, both from a construction and operational perspective and in terms of economic, legal (permitting) and environmental factors. Therefore, vertical wells are not considered further.

MCWD-IW-7 EIR/EIS Section 5.2.3 discusses the implementation of Assembly Bill 1182 (Keeley) and the development of the CPUC Plan B. As noted in Footnote 1 in that section, the Plan B report determined that a desalination plant at Sand City would be less appropriate for the desired scale of production than a desalination plant at Moss Landing. A desalination plant at Moss Landing was proposed by CalAm; the Coastal Water Project is described in EIR/EIS Section 5.2.4. See response to comment MCWD-IW-2 and MCWD-172. See also response to comment Surfrider-6; the EIR/EIS has not identified a significant unavoidable impact for any resource that would require an alternative to avoid or lessen a potentially significant impact.

MCWD-IW-8 The Huntington Beach ISTAP Phase 1 Feasibility Report (HB ISTAP, 2014) concluded that an infiltration gallery was a feasible subsurface option at Huntington Beach, but the Phase II Feasibility Report (HB ISTAP, 2015) concluded that the beach infiltration gallery is infeasible at the Huntington Beach location. Furthermore, on October 4, 2017, the CA State Lands Commission issued a Notice of Availability and Intent to Consider Certification of the Final Supplemental EIR for the Seawater Desalination Project at Huntington Beach; the Final EIR considers a lease modification that would allow Poseidon to install wedgewire screens on an existing open water intake that would provide almost 107 mgd of desalination feedwater. EIR/EIS Appendix I1 explains that an infiltration gallery within MBNMS would have a greater impact on marine biological resources than slant wells. Based on the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and marine habitat in MBNMS, this technology is considered infeasible at this location. See response to comment MCWD-173.

MCWD-IW-9 The Lead Agencies appreciate the background provided by the comment on horizontal wells using Neodren or other horizontal well technology for subsurface intake systems. EIR/EIS Appendix I1 has been revised to provide the following additional information about the Neodren™ intake technology:

The Neodren™ HDD intake technology is patented by the Spanish company Catalana de Perforacions. This technology has been used for over ten years in several small and medium-size seawater desalination plants in Spain, but does not have any applications in the United States. One of the largest seawater desalination plants using HDD wells in operation is the New Cartagena Canal (San Pedro de Pinatar) plant. It is located in Almeria, Spain and has a capacity of 17 mgd. The individual intake wells are between 1,650 and 1,980 feet long and are 14-inches in diameter. Each well produces between 2.3 and 3.1 mgd and the desalination plant operates at 45 percent recovery. The water is collected in a large wet well (located under a parking lot to reduce visual impacts) located underground and pumped to the plant using submersible pumps.

Experience with the use of HDD wells at this plant, indicates that the plant intake has encountered significant "technical issues and limitations" causing the plant's owner to switch to an open water intake system for the plant's Phase-2 expansion (Shea, 2007). Four of the wells lost over 40 percent of their production capacity within the first nine months of plant operation; furthermore, the capacity of the other wells has continued to diminish over time. Such productivity reduction triggered the need to install additional intake wells and ultimately to build open intake for the second phase of the plant expansion.

When HDD wells were introduced on the market in late 1998, they initially received acceptance in Spain and have been considered a viable intake alternative for a number of other countries. However, after five years of operational experience, many of the plant intakes have faced production reliability challenges (loss of productivity due to blockage of the perforated piping). As a result, HDD wells have not been used for full-scale desalination projects worldwide since 2010. An HDD intake system that would be capable of collecting source water needed for the MPWSP desalination plant would consist the same number of wells proposed by the MPWSP, and would collect water into a common wet well located inland from the beach.

Based on experience with other forms of infiltration galleries, HDD intake maintenance maybe challenging due to their historical tendency to clog. Furthermore, experience shows that once the intake collectors become plugged and the productivity of the individual collectors' decreases, it is impossible to recover the original full capacity (Rachman, 2014).

The construction of HDD intake systems would involve the use a drill rig launched from an onshore location to drill a pilot bore. The drill rig would be positioned over the bore hole centerline a sufficient distance behind the entry point to allow the drill bit to enter the ground at the correct location and angle. Depending on the rig size and entry angle, this distance may be 3 feet to 20 feet behind the entry point. The entry angle usually is between eight degrees and 16 degrees, although entry angles of up to 20 degrees have been used on some large diameter projects. A small pit is usually excavated over the entry point, using a backhoe or shovel. When

performing HDD in an unconsolidated media like sand, it will be necessary to pressurize the bore hole and stabilize the walls by coating them with drilling mud (e.g., bentonite) or another similar drilling fluid. Because of the pressure involved to coat the hole walls with mud, frac-out of the drilling mud has occurred in other HDD operations. Such a prospect would result in the potential release of drilling fluid into the ocean environment.

The pilot bore would be enlarged by one or more back reamers to the size required for the intake pipe; the pipes would be assembled on barges, lowered to the seafloor and pulled back through the borehole (float-and-sink method) during the final reaming process. Daylighting the drill offshore could result in the release of drilling fluid to the ocean. Neodren™ claims that they have a new technique that avoids daylighting the drill offshore ("push" method) and this was the technique assumed for the MPWSP. However, as of late 2015, the push method of construction has yet to be demonstrated successfully for an intake well. The area required for construction and the associated impacts will likely be similar to slant wells, but for the off-shore support services, e.g. barges, that would be associated with assembling and pulling the HDD pipe through the borehole.

MCWD-IW-10

EIR/EIS Appendix I explains that horizontal wells installed with HDD technology were not evaluated further for the reasons correctly cited by the comment, and nothing in this comment letter or the associated responses has caused the Lead Agencies to revise that conclusion. However, based on information provided by this comment, EIR/EIS Appendix I1 has been revised as follows:

> Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the seafloor (upwards of 2,500 feet) would be challenging in terms of ~~construction time,~~ physical limitations ~~and the disposal of drilling sludge (and consequently much more expensive than other options)~~; and (2) ~~installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3)~~ HDD would not avoid or minimize any of the impacts associated with the proposed action.

The Lead Agencies acknowledge that HDD construction techniques are feasible for installing pipe over distances greater than 2,500 feet (float-and-sink), but it would be challenging to "push" that length of pipe as concluded in Appendix I1 for installing HDD intake system. As noted in EIR/EIS Section 5.4.5.1, seawater would be conveyed through approximately 3,600 feet of 42-inch diameter pipeline from the DeepWater Desal intake structure to an onshore pump station, and the discharge pipeline would extend approximately 3,400 feet offshore into Monterey Bay. Both the intake and discharge pipelines proposed by Deepwater Desal, and evaluated in EIR/EIS Section 5.5, would be installed using HDD techniques, and would use the float and sink method to pull pipes through the seafloor; see EIR/EIS Section 5.4.5.2.

The off-shore support services associated with the float and sink method would result in greater impacts to the marine environment in MBNMS than the proposed slant wells, and this technique was not considered for the MPWSP in EIR/EIS Appendix I1. As noted in response to comment MCWD-IW-9, while pipes can be pulled through the borehole from offshore, the push method of construction, the assumed HDD technique for installing HDD wells, has yet to be demonstrated successfully for an intake well. Some of the projects listed by the comment in Table 2 exceed 2,500 feet, but they were each installed using the float and sink method. No HDD intake wells (or, drain) shown in the examples provided by/attached to the Intake Works comment letter however, exceed 600 meters (1,968 feet) in length, which supports the conclusion in the EIR/EIS that the amount of pipeline required to be pushed for HDD wells for the MPWSP would be challenging.

The San Diego County Water Authority (SDCWA) is indeed proceeding with a pilot project that would compare the pre-treatment requirements (and associated costs) for an open water intake and for a subsurface intake. The SDCWA has selected a Neodren system to test the subsurface intake requirements. The 20 gallon per minute pilot project, including an 800 to 1,000-foot long, 8-inch diameter HDPE subsurface intake pipe, is still in the permitting phase, with construction expected to begin in early 2019; the installation will utilize the float-and-sink technique (Jeremy Crutchfield, SDCWA personal communication, November 27, 2017).

As noted earlier in this response, the disposal of drilling sludge and the cost of HDD have been removed from the EIR/EIS Appendix I1 text, but does not change the conclusion. HDD wells would not eliminate the need for the Castroville Pipeline; see also response to comment MCWD-IW-11 regarding the Salinas Valley Return Water.

Also as noted above in this response, the text regarding artificial filter packs has been removed from EIR/EIS Appendix I1, but does not change the conclusion.

No revisions were made to the conclusion in EIR/EIS Appendix I1 regarding HDD wells. See also response to comment MCWD-IW-2 and MCWD-IW-11.

MCWD-IW-11

The slant well heads as proposed, would be located approximately 900 feet (275 meters) inland of the Mean High Water (MHW) line; see EIR/EIS Figure 3-3b. If an HDD system “could be located well further inland” as the comment suggests, “outside any endangered species habitat and avoiding endangered species along the coast,” that would locate the HDD wells somewhere inland of the CEMEX property. The CEMEX entrance/parking lot is located approximately 2,200 feet (670 meters) inland of MHW. As noted in response to comment MCWD-IW-10, no one single HDD intake well (or, drain) shown in the examples provided by/attached to the comment, exceed 600 meters, and the subsea geology of the largest project, San Pedro del Pinatar, was permeable fractured rock material, not sand and gravel like at

CEMEX. Therefore, HDD wells at CEMEX would be drilled into the Dune Sands Aquifer -- or the 180-FTE depending on the depth, see EIR/EIS Figure 4.2-3 -- for their entire length, and would not reach any further under the ocean than the proposed slant wells. HDD wells at CEMEX, like the slant wells, would draw source water that originated in the SVGB, and a Salinas Valley return water obligation would still be required, as would the return water (Castroville) pipeline.

As shown on EIR/EIS Appendix C3, Figure 8, HDD wells at the Potrero Road site would also penetrate the Dune Sands Aquifer. Therefore, HDD wells at Potrero Road, like the proposed slant wells, would also draw source water that originated in the SVGB, and the return water obligation (and Castroville Pipeline) would still be required.

HDD wells could potentially be located closer to the CalAm Service Area, but the source water would still need to be piped to the desalination plant, making the alternative impractical and excessively expensive.

MCWD-IW-12

EIR/EIS Section 5.3.3 explains that open water intakes and subsurface intakes have different site requirements, design features, and construction techniques, and the two intake technologies are described in Appendix I1. Thirteen intake options were identified and screened for fatal flaws (see response to comment MCWD-IW-2) and are shown on EIR/EIS Figures 5.3-1 and 5.3-2, and in Table 5.3-1. Three of the 13 intake options evaluated include Ranney Wells: at Moss Landing (Intake Option-5), at Seaside/Sand City (Intake Option-11) and at CEMEX (Intake Option-13); see EIR/EIS Sections 5.3.3.5, 5.3.3.11, and 5.3.3.13. As described in EIR/EIS Section 5.3.3.13, each caisson (referred to as a shaft in the comment) at CEMEX would be 12 feet in diameter, and would be buried approximately 50 feet into the sand, not 90 to 260 feet deep as stated by the comment.

Six of the 13 intake options were not carried forward for further analysis, and they are described in EIR/EIS Appendix I2, along with an explanation for their elimination (Intake Option-5 and -11 were eliminated). Options that were retained are evaluated against the proposed project's slant wells at CEMEX in EIR/EIS Section 5.3.6. Table 5.3-1 presents the intake options, and summarizes the results of the screening process.

Intake Option-13, Ranney Wells at CEMEX, was carried forward; see EIR/EIS Table 5.3-4, and response to comment MCWD-IW-1.

MCWD-IW-13

The Monterey Peninsula Water Management District 95-10 Project Constraints Analysis (referred to herein as the 2008 Constraints Analysis) (ICF et al., 2008) identified 25 individual well locations for using HDD (e.g., slant wells), radial

wells (e.g., Ranney collector wells), or conventional wells; see response to comment MCWD-178.

The 2008 Constraints Analysis did not look at any alternatives south of Seaside/ Sand City. The EIR/EIS also did not consider alternative intake locations south of Seaside/Sand City (Intake Option-11, Ranney Wells at Seaside/Sand City. The Carmel River State Beach is located about 10 miles south of Sand City and would require a 20-mile source water pipeline, making this alternative impractical, if not excessively expensive; see response to comment MCWD-IW-2. CalAm would utilize a diverse portfolio of water supplies (see EIR/EIS Section 2.4) to manage supply uncertainties.

MCWD-IW-14 See response to comment MCWD-174 regarding slant well technology, and response to comment MCWD-82 regarding slant well replacement.

MCWD-IW-15 Chemical parameters reported from the test slant well are presented in EIR/EIS Table 4.4-4, and a more extensive summary of test slant well laboratory water quality results are presented monthly by CalAm; results continue to be made publicly available at https://www.watersupplyproject.org/test-well. EIR/EIS Section 4.4 referenced Geoscience, 2016b, which is Monthly Monitoring Report No.7; see Table 3 therein for the full suite of water quality constituents.

MCWD-IW-16 EIR/EIS Section 3.2.2.2 describes the configuration of the proposed MPWSP desalination plant RO system, Section 5.4.5.1 describes the similar RO system for Alternative 3 (DeepWater Desal) and Section 5.4.6.1 describes the similar RO system for Alternative 4 (People's Project).

MCWD-IW-17 EIR/EIS Section 3.4.1 describes that during maintenance of the slant wells, workers would access the well from the wellhead, and would lower mechanical brushes into the wells to clean the screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. The periodic well maintenance procedures are also described in the 2013 Hydrogeologic Investigation Work Plan (see Appendix B to EIR/EIS Appendix E3), and include simultaneously swabbing and airlifting the screened interval to dislodge and remove materials collected on the well screen, and aggressively pumping and surging the well until fluids removed are effectively free of sand, sediment, and other material. Contrary to the comment, the casing would not be withdrawn.

MCWD-IW-18 EIR/EIS Section 4.18.4.2 explains that the proposed RO system would incorporate an energy recovery system that utilizes pressure exchange technologies to recover

energy from the high-pressure waste stream and reduce overall pumping power requirements (and energy consumption) for the RO modules.

MCWD-IW-19 See responses to comments MCWD-IW-2 through MCWD-IW-14.

8.5.2.6 Responses to Comments from MCWD – Hopkins Groundwater Consultants2

These responses address September 29, 2017 comments submitted by Hopkins Groundwater Consultants, Inc. (HGC) to the Marina Coast Water District (MCWD) regarding estimates of return water volumes associated with Monterey Peninsula Water Supply Project (MPWSP).[12] HGC considers the September 29, 2017 memorandum an update of its January 22, 2016 report to the MCWD regarding the MPWSP return water proposal that was submitted to the California Public Utilities Commission (CPUC) with the direct testimony of Curtis Hopkins dated January 22, 2017. In the September 29, 2017 memorandum, HGC supplements the analysis presented in its January 22, 2016 report and provides its professional opinion on the MPWSP Return Water Settlement Agreement. HGC asserts that providing return water to the Castroville area, as proposed, would not address or mitigate the adverse groundwater impacts caused by the proposed MPWSP in the North Marina Area of the 180-400 Foot Aquifer Subbasin within the Salinas Valley Groundwater Basin (SVGB). Additionally, the HGC September 29, 2017 memorandum claims to address new evidence, including the recent Airborne Electromagnetics (AEM) survey data collected by Dr. Rosemary Knight and her team from Stanford University, that supports HGC's original hypothesis that extensive groundwater resources in the shallow aquifers along the coastline around CEMEX would be adversely impacted by the MPWSP.

Many of the comments in HGC's September 29, 2017 memorandum repeat or are similar to those received from HGC in its March 27, 2017 letter to MCWD regarding the MPWSP Draft EIR/EIS, which have been responded to in response to comment MCWD-HGC in Section 8.5.2.2. While some of the comments in HGC's September 29, 2017 memorandum address the Draft EIR/EIS, many address the MPWSP Return Water Settlement Agreement and HGC's assessment of the regional hydrogeology. This response generally focuses on the HGC comments that address the adequacy of the Draft EIR/EIS and is subdivided based on general topics. The September 29, 2017 HGC memorandum presents no new data, information, or findings that change the conclusions of the impact analyses presented in the Draft EIR/EIS.

MCWD-HGC2-1

Return Water

The assertions in the September 29, 2017 HGC memorandum suggest a general misunderstanding of the purpose and need of the return water proposed under the MPWSP. The return water is not intended to mitigate adverse impacts on groundwater resources in the SVGB that would be caused by the MPWSP. As

[12] Section 8.5.2.2 provides responses to technical comments dated March 27, 2017, that HGC provided on the MPWSP Draft EIR/EIS, on behalf of MCWD.

analyzed and discussed in EIR/EIS Chapter 4.4, impacts on groundwater resources in the SVGB were determined to be less than significant and, therefore, mitigation to restore aquifer groundwater levels or groundwater supplies for other users is not required. The EIR/EIS concludes that the proposed MPWSP pumping from the intake wells on the CEMEX property would not cause harm or cause injury to groundwater users in the SVGB. The return water is the amount of desalinated groundwater that CalAm has agreed, as part of the MPWSP Return Water Settlement Agreement (see response to comment MCWD-84), to return to the SVGB to comply with the Monterey County Water Resources Agency (MCWRA) Act (see Master Response 4, The Agency Act and Return Water), which prohibits groundwater from being exported out of the SVGB. The volume of groundwater that CalAm must return under the agreement would be determined annually by an agreed upon calculation of the Ocean Water Percentage (OWP) in the MPWSP feedwater. The return water would then be conveyed to the Castroville Community Services District (CCSD) and the Castroville Seawater Intrusion Project (CSIP) to be used in lieu of pumping an equal amount of groundwater. HGC opines that by delivering the required return water to the CCSD and CSIP, it would not be benefiting the groundwater aquifers affected by the MPWSP slant well pumping located south of the Salinas River in an area it refers to as the "Northern Marina Subarea" (discussed below). Not only is delivery of water south of the Salinas River not necessary as mitigation due the projected less-than-significant effects on the SVGB by MPWSP proposed pumping, but the Agency Act concerns itself with the SVGB as a whole and does not regulate use of SVGB water based upon any geographic locale or administrative jurisdiction within the overall SVGB. For more information about the Agency Act and the proposed return water, see Master Response 4, The Agency Act and Return Water.

HGC asserts that the Draft EIR/EIS did not provide discussion to explain or support the range of return water, which was estimated for the purposes of the EIR/EIS as between 0 percent and 12 percent. When the Draft EIR/EIS was prepared, the estimate of the OWP in the source water was not finalized but based on monitoring work at the test slant well at CEMEX, it appeared that the actual Ocean Water Percentage (OWP) necessary to gauge return water amounts would range between 0 and 12 percent. This range was supported by the observation that the test slant well at the time (November 2015) was extracting water reported to be in the range of 29,800 mg/L (see Table 3 in Geoscience, 2016a), or 12 percent of ocean water salinity (33,500 mg/L), suggesting 12 percent was a reasonable upper limit.

Projecting return water volumes based on OWP projection has since been refined by the HWG by employing a dual methodology consisting of an analytical equation (analytical mixing model), a numerical modeling using the existing CEMEX Model (variable solute transport model), and actual field data. Results of the analytical/ numerical methods indicate that the OWP would range from 88 to 92 percent the first year, increase to 93-97 percent after two years, and exceed 94 percent over the long term. This is consistent with two years of field data from the test slant well

that indicated OWP ranging from 92 to 95 percent in the first year and 90 to 92 percent in year 2.[13] These methodologies and results are discussed in Master Response 4, Agency Act and Return Water, and are described in detail in EIR/EIS Appendix E3, the Hydrogeologic Working Group (HWG) Hydrogeologic Investigation Technical Report. The combined analytical and numerical methodology plus the actual field data adequately support the estimated OWP range of 0 to 12 percent used in the Draft EIR/EIS. Given the data acquired to date, it is unlikely that a greater volume of return water would be required in the years following the start-up of MPWSP pumping.

In the September 29, 2017 letter, HGC focuses on the stated value of 7 percent return water that Mr. Ian Crooks of CalAm provided during his direct testimony on September 15, 2017. In reviewing the direct testimony, it appears that Mr. Crooks used 7 percent return water value merely as an estimate in a system supply/demand comparison. Nonetheless, 7 percent return water is not an unreasonable estimate based on the OWP estimates developed through analytical/numerical modeling and field data.

MCWD-HGC2-2

Current Seawater Intrusion

EIR/EIS Section 4.4.1.4 references the MCWRA seawater intrusion monitoring data (see EIR/EIS Figures 4.4-10 and 4.4-11) that have been collected for decades through an ongoing program that was considered a reasonable benchmark to assess regional groundwater quality for the impact analysis in the EIR/EIS. It is important to reiterate that Draft EIR/EIS Section 4.4 states that based on estimates from the MCWRA, seawater has intruded within the 180-Foot and 400-Foot Aquifers by approximately 8 miles and 3.5 miles inland, respectively, based on chloride concentrations greater than 500 mg/L. There is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. The Draft EIR/EIS or the modeling completed to analyze the impacts of the MPWSP, did not assume that "groundwater comparable to that of seawater occurs up to 8 miles inland." It is also important to note that 2 percent ocean water (98 percent groundwater) equates to groundwater quality with 250 to 500 mg/L chloride and between 1,000 and 1,500 mg/L TDS, which as described below, are California's secondary drinking water Maximum Contaminant Levels for chloride and TDS. Figure 13, presented by HGC on page 18 of the September 29, 2017 memorandum, therefore, is not an effective way to interpret or demonstrate the extent of seawater intrusion. A detailed discussion of the local groundwater chemistry and purported fresh water zones in the Dune Sand and 180-FTE aquifer is provided in response to comment MCWD-HGC-9.

[13] The decrease in salinity in Year 2 can be explained by the infiltration of fresh rainwater during an above normal rainfall year and percolation of fresh water during sand washing operations at CEMEX.

MCWD-HGC2-3

NMGWM^{2016} Modeling

HGC reasserts that the modeling performed for the Draft EIR/EIS is inadequate to evaluate the direct and cumulative impacts from the MPWSP on groundwater resources in the SVGB. These comments reflect those same comments that HGC provided in its March 27, 2017 letter to MCWD on the Draft EIR/EIS. Responses to comments on the development and calibration of the NMGWM^{2016} model, its applied use to project groundwater response in the SVGB from the MPWSP, and its effectiveness to evaluate environmental impacts of that groundwater response have been addressed in detail and are presented in response to comment MCWD-HGC-13, and Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-HGC2-4

Northern Marina Subarea and Protective Groundwater Levels

HGC contends that the return water component of the MPWSP be sufficient to maintain "protective groundwater levels" in the Northern Marina Subarea to prevent seawater intrusion. The "Northern Marina Subarea"[14] and purported "protective groundwater levels" are summarized here and discussed in further detail in response to comments MCWD-HGC-3, -5, and -9. The term "Northern Marina Subarea" as defined by HGC is not based on or consistent with the accepted definitions of basins in the SVGB and the term appears to have been created by HGC to describe an area which it appears to believe possesses unique hydrogeology. The area considered by HGC as the Northern Marina Subarea is simply part of a continuous, hydraulically connected portion of the 180/400-Foot Aquifer subbasin of the SVGB.

"Protective groundwater levels," discussed in the September 29, 2017 HGC letter and in other comments provided previously by HGC, apparently refer to purported areas of "freshwater" in the perched/mounded Fort Ord Salinas Valley Aquifer. HGC theorizes that groundwater in these perched/mounded aquifers flow westward and "waterfalls" into the Dune Sands and 180-Foot Aquifer creating a barrier to seawater intrusion. If these flows are present, they are hydraulically disconnected and located 1.5 miles inland of CEMEX, beyond the influence of the capture zone that would be created by MPWSP pumping. Furthermore, the ability of these flows to reduce seawater intrusion appears to be unsupported considering seawater intrusion has been documented along and inland of the coast for decades. For this reason, assertions such as (Page 29) "unique groundwater recharge condition creating shallow mounding in the Northern Marina Area will be removed by the project . . ." are a mischaracterization of the conceptual model of the SVGB that

14 The March 29, 2017 HGC technical memorandum, which provided its technical comments to the MCWD on the MPWSP Draft EIR/EIS, referred to the "Northern Marina Subarea" as the "Marina Subarea". It is assumed that the two names refer to the same areas.

has been put forth by the HWG and by this EIR/EIS and misrepresents the dynamics of groundwater gradients and flow in this area.

MCWD-HGC2-5

Reliance on Recent AEM Survey Data

HGC references the preliminary findings from the May 2017 Airborne Electromagnetic (AEM) Survey conducted by Dr. Rosemary Knight and her team from Stanford University to support its theory that there is a substantial freshwater resource in the "Northern Marina Subarea." Dr. Knight and her team released a preliminary report of the May 2017 AEM survey on June 16, 2017, the final report is under way and is expected in spring 2018. The 2017 AEM survey and its value in interpreting the groundwater conditions in the coastal area of the SVGB is discussed in detail in EIR/EIS Section 4.4, Groundwater Resources, in Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) and in Final EIR/EIS Appendix E-3.

It appears that HGC interprets the preliminary AEM data presented in the June 2017 report to assert that groundwater with 3,000 milligrams per Liter (mg/L) TDS is fresh water. However, groundwater quality data from the MPWSP monitoring wells indicate that the groundwater with 3,000 mg/L TDS contains over 1,000 mg/L of chloride. As stated in the Final EIR/EIS Section 4.4, the State of California secondary maximum contaminate level in drinking water for TDS is 500 mg/L (recommended with 1,000 mg/L maximum) and 250 mg/L for chloride as per the California Code of regulations.[15] Therefore, HGC's assertion that groundwater with 3,000 mg/L TDS is freshwater is not an accurate way to translate this state threshold to represent the presence of a fresh groundwater resource.

HGC further misinterprets the AEM resistivity data because it presents the data as groundwater quality (fresh water to brackish water) when, in actuality, the preliminary AEM resistivity profiles represent the combined (bulk) resistivity of the water bearing sediments and the pore water in those sediments, rather than just the groundwater alone. This interpretation can lead to confusion because until the data are presented in such a way that distinguishes between the bulk resistivity and the resistivity/conductivity in the groundwater itself, the use of the preliminary AEM findings and the cross sections developed from the data to describe the current groundwater conditions is a misrepresentation of the data. Furthermore, the preliminary data is just that, and should not be used to draw conclusions or support previous assertions on whether or not significant freshwater pockets exists inland from the coast. For these reasons, many of HGC's assertions in the September 29, 2017 memorandum regarding groundwater flow, occurrence, and quality, which are based on the preliminary AEM data, are inaccurate and not discussed further.

15 California Code of Regulation Title 22. Division 4. Environmental Health Chapter 15. Domestic Water Quality and Monitoring Regulations Article 16. Secondary Water Standards, May, 2006.

MCWD-HGC2-6

Purported Presence of Fresh Groundwater in Dune Sand and 180-FTE Aquifers

HGC asserts in the September 29, 2017 letter, as it did in its March 27, 2017 memorandum, that there are areas in the Dune Sand Aquifer and 180-FTE Aquifer that contain significant quantities of fresh groundwater. HGC asserts that this contradicts the findings in the Draft EIR/EIS that indicate this area has been historically intruded by seawater. This issue is discussed in detail in response to comment MCWD-HGC-9. On Page 11 of the September 29, 2017 letter, HGC states that, "[g]iven the potential magnitude of the increased groundwater production in the Dune Sand Aquifer and the 180-foot aquifer, the impacts to the SVGB, in particular the North Marina Subarea are grossly understated by the MPWSP modeling to date." There is not now nor has there historically been water supply pumping from the Dune Sand Aquifer, due to low quantity and quality. The Dune Sand Aquifer and the 180-FTE Aquifer in the vicinity of CEMEX, in the area projected to be impacted by the project, is documented as containing highly brackish to saline water due to historic seawater intrusion. If there are localized areas of less brackish groundwater in the Dune Sand Aquifer, they are likely discontinuous and would become more brackish or saline once proposed project pumping began. Figures 9 and 10 presented in the September 29, 2017 letter are the same figures presented in its March 29 letter. These figures misrepresent the extent of the so-called fresh water because HGC fails to adequately consider the mechanics of seawater intrusion, bases the extent of the fresh water on only a select number of data points, and relies on an unrealistic threshold of freshwater (1,000 to 3,000 mg/L). Please refer to response to comment MCWD-HGC-9 for a complete discussion.

MCWD-HGC2-7

Salinity Effects of CEMEX Operations

HGC claims that CEMEX operations influence the salinity of the feedwater, and that CalAm's return water estimates fail to address how CEMEX operations impact the test slant well discharge and whether similar effects would occur for the proposed MPWSP production wells. HGC also states that there are local sources of saline water (namely, the dredge pond and percolation ponds) at CEMEX that are not located elsewhere, particularly where the MPWSP production wells are proposed, and implies that without these sources, the actual OWP in the MPWSP feedwater would be lower.

The dredge pond and percolation ponds do not create a unique source of saline water that influences salinity in the shallow groundwater. The dredge pond is excavated to a depth that exposes the groundwater surface so the water in the dredge pond is representative of the quality of groundwater beneath the CEMEX site. CEMEX uses dredge pond water and well water in its sand rinsing and sorting operations and conveys it through a flume to a percolation pond for disposal. The

percolation pond is adjacent to the dredge pond. When the dredge is operating (approximately 8 to 10 hours per day), the water in the flume is a mixture of brackish well water [approximate conductivity of 19,000 microseimens per centimeter (µs/cm)] and dredge pond water (conductivity of about 48,000 µs/cm). During the remainder of the time, only lower salinity well water is conveyed to the percolation pond. In essence, all that CEMEX is doing in its operation is transferring saline water from the dredge pond, mixing it with lower salinity well water during sand rinsing, and conveying that brackish-saline mixture back to the percolation pond where it infiltrates back into the shallow aquifer.

Conductivity in the test slant well and monitoring wells decreased in the winter-spring of 2017 due to the percolation of rainwater into the Dune Sands Aquifer. The winter of 2016-2017 was a record year for rainfall in Monterey County. Conductivity also decreased due to the disposal of rinse water to the percolation pond, as described above. Consequently, the average TDS of the water recharging the groundwater near the test slant well was much lower in TDS than the seawater. Precipitation and introduction of wash water can reduce conductivity in the test slant well but this condition is unique to the area overlying the dredge pond and CEMEX sand washing operations. The proposed MPWSP wells would be located south of the CEMEX operations and beyond the influence of the percolation pond infiltration. Rainfall infiltration would still contribute to the MPWSP feedwater and that is considered in the OWP calculation as it accounts for annual average precipitation occurring over the projected capture zone of the MPWSP production wells. Refer to Appendix E-3, Sections 3.1.7.3 and 3.2.3 for a detailed analysis of freshwater contributions to the test slant well discharge and OWP calculations.

MCWD-HGC2-8

Responses to Figures in the September 29, 2017 HGC Letter

Page 8, **Figure 5** (Water Level Elevation and Shoreline Proximity), is a confusing and somewhat misleading representation of groundwater data and is not considered by experts in hydrogeology as a standard method of representing groundwater flow. Groundwater flow in this region is shown accurately on groundwater contour maps presented in Appendix E-3 (*Appendix E, MPWSP Well Completion Report and CEMEX Update, TM2*).

Page 9, **Figure 6** (Resistivity Profile B-B' groundwater Flow direction) shows an inferred groundwater flow direction but there is no correlation with known lithology or basis for the flow paths. Also, because the colors represent bulk resistivity, the actual groundwater TDS concentrations are not represented. Therefore, this figure does not support HGC's assertions of freshwater inland from the coast.

8.5.2.7 Responses to Comments from MWCD – EKI2

These responses address comments that EKI provided to Marina Coast Water District (MCWD) in a memo report dated June 22, 2017. In that memo report, EKI outlines the groundwater remedial actions and establishment of remedial goals in the Dune Sand Aquifer (identified as the A-Aquifer) and the 180-Foot Aquifer at Fort Ord. EKI acknowledges in its memo report that MCWD and its counsel intend to meet with the Central Coast Regional Water Quality Control Board (CCRWQCB) to discuss the potential environmental impacts of the proposed Monterey Peninsula Water Supply Project (MPWSP).

EKI states that the MPWSP has the potential to degrade groundwater water quality and impact the beneficial uses of groundwater within the Dune Sand Aquifer and the 180-Foot Aquifer underlying MCWD's service area. EKI asserts the MPWSP Draft EIR/EIS characterized the Dune Sand Aquifer and the 180-Foot Aquifer as having "poor water quality" and that these aquifers are impacted by salt water intrusion. EKI also states the Draft EIR/EIS did not acknowledge that further degradation of the groundwater quality in these aquifers would violate the Water Quality Control Plan for the Central Coast Basin (Basin Plan), which designates all groundwater within the Salinas Valley Groundwater Basin (SVGB) as a potential drinking water source. Furthermore, EKI states that the Draft EIR/EIS findings contradict the restoration efforts that have been completed and continue to be completed to clean-up groundwater to drinking water standards in the aquifers underlying the former Fort Ord and that CalAm should be held to the same groundwater restoration standards as those required at Fort Ord.

The responses to EKI's comments are provided below and focus on the comments that address the adequacy of the Draft EIR/EIS. The responses are organized based on general topic areas. Many of the comments are similar to, or reflect those previously provided by HGC and EKI (see Sections 8.5.2.2 and 8.5.2.4, respectively).

The June 22, 2017 EKI memo report presents no new data, information, or findings that would cause a change in the conclusions of the impact analyses presented in the Draft EIR/EIS.

MCWD-EKI2-1

Characterization of Seawater Intrusion in the MPWSP EIR/EIS

The MPWSP Draft EIR/EIS, Section 4.4 did not use the term "poor water quality" to describe the groundwater in the Dune Sand Aquifer and 180-Foot Aquifer but it does acknowledge that these aquifers have been subject to years of seawater intrusion. The EIR/EIS references the Monterey County Water Resources Agency (MCWRA) seawater intrusion monitoring data (see EIR/EIS Figures 4.4-10 and 4.4-11) that have been collected from the 180-Foot Aquifer and the 400-Foot Aquifer for decades through its ongoing seawater intrusion monitoring program, and thus, was considered a reasonable benchmark to assess existing regional groundwater quality for the analysis in the EIR/EIS. EIR/EIS Section 4.4 states that, based on estimates from the MCWRA, seawater has intruded within the 180-Foot Aquifer and 400-Foot Aquifer by approximately 8 miles and 3.5 miles inland, respectively, based on chloride concentrations greater than 500 mg/L. There

is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. There is not now, nor has there historically been water supply pumping from the Dune Sand Aquifer, due to low quantity and quality. It is documented through groundwater monitoring that the Dune Sand Aquifer at CEMEX contains highly brackish to saline water due to historic seawater intrusion. If there are localized areas of less brackish groundwater in the Dune Sand Aquifer, they are likely discontinuous and would become brackish or saline once proposed project pumping began.

MCWD-EKI2-2

Impacts on Groundwater Quality from the MPWSP

The proposed MPWSP slant well pumping would be confined to a localized capture zone at the coast that would not extend inland from the coast or draw less brackish groundwater from inland regions of the Dune Sand and 180-FTE Aquifer. EIR/EIS Section 4.4 concluded that the proposed MPWSP would not violate or degrade groundwater quality in the Dune Sand Aquifer or the 180-FTE Aquifer. The conclusion was largely based on the understanding that the groundwater quality near the proposed MPWSP intake wells was highly brackish to saline. SWRCB Resolution No. 88-63 [Appendix A-9 of the Water Quality Control Plan for the Central Coastal Basin (Basin Plan)] resolves that "[a]ll surface and groundwater of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: *Surface and groundwater where the total dissolved solids exceed 3,000 mg/l and it is not reasonably expected by Regional Boards to supply a public water system" (*emphasis added). The groundwater underlying the capture zone of the proposed MPWSP slant wells is: 1) an order of magnitude more brackish (23,400 mg/L to 30,900 mg/L) than the Basin Plan threshold; 2) does not currently support a public water system or individual users, and; 3) other than its potential use for desalination, would not be reasonably expected to supply a public water system. As discussed in EIR/EIS Section 4.4, while the groundwater in the projected capture zone may become more saline because of MPWSP pumping (seawater would eventually replace the ambient highly brackish water), it would not degrade a groundwater source considered by the SWRCB as a suitable municipal or domestic water supply under the Basin Plan.

MCWD-EKI2-3

Relationship between the A-Aquifer at Fort Ord and the Dune Sand Aquifer at CEMEX

The Dune Sand Aquifer includes the -2 Foot Aquifer at the Monterey Peninsula Landfill and Perched "A" Aquifer in the Salinas Valley. These are separate from the shallow perched/mounded aquifers that include the 35-Foot Aquifer in the Monterey Peninsula Landfill area, and the A-Aquifer in the Fort Ord Area, which flows over the Fort Ord-Salinas Valley Aquitard (FO-SVA).

With this understanding, there are several important distinctions. First, the Dune Sand Aquifer (and equivalents) and the shallow perched/mounded aquifers are two distinct and hydraulically disconnected aquifers. Second, the primary "connection" between the two distinct water-bearing zones , is that the areal extent of the shallow perched/mounded aquifers, including the A-Aquifer underlying Fort Ord, is limited, which results in perched/mounded water flowing over the edge of the perching clay layer (similar to a waterfall) into the underlying Dune Sand Aquifer (and equivalents) or 180-FTE Aquifer. The edge of the perching clay layer occurs about 1.5 miles inland of the CEMEX site and the proposed MPWSP pumping. HGC and EKI have described the condition where freshwater "U-turns" from the perched/mounded A-Aquifer at Fort Ord and enters the Dune Sand Aquifer and/or 180-Foot aquifer and claim that these freshwater flows somehow develop a natural protection against seawater intrusion. However, the flows from the shallow perched/mounded aquifers are limited in quantity and it is unlikely that these flows have created the barrier to seawater intrusion because MCWRA monitoring data have shown that seawater intrusion has continued to migrate inland for the last several decades. However, whether or not this natural process is an actual barrier to seawater intrusion is of no consequence to the proposed MPWSP because the slant well capture zone would be located at the coast, 1.5 miles west, and would not encroach on this natural process, thereby allowing it to continue on into the future unimpeded after onset of MPWSP pumping. EKI states that the purported natural barrier to seawater intrusion ". . . appears to have been undermined north of Fort Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX sand mining site and would likely be further disturbed by the Cal Am project." It is unclear what EKI is intending to convey by its claim that groundwater pumping north of Fort Ord and salt water discharges at CEMEX have undermined this natural barrier to seawater intrusion. While the groundwater beneath CEMEX is highly brackish to saline, CEMEX does not discharge saltwater. CEMEX discharges a mixture of brackish well water and dredge pond water to percolation ponds as part of its sand rinsing operation. Therefore, the water released to the percolation ponds has salinity less than that of seawater. In response to EKI's assertion that the proposed MPWSP would further disturb the "natural barrier" it is reiterated that if the flows from the perched/mounded A-aquifer near Fort Ord indeed create a freshwater barrier to seawater intrusion, it is occurring at least a mile and a half inland beyond the projected influence of the MPWSP capture zone.

MCWD-EKI2-4

MPWSP EIR/EIS Consideration of Ongoing Fort Ord Remediation

EIR/EIS Section 4.7.1.1 describes the three groundwater plumes at the Fort Ord Army Base that contain the contaminate carbon tetrachloride, which are identified as OUCTP A-Aquifer Plume, OUCTP Upper 180-Foot Aquifer Plume, and the OUCTP Lower 180-Foot Aquifer Plume (Figure 4.7-1). EIR/EIS Section 4.4

(Impact 4.4-4) considers whether the cone of depression, as projected by groundwater modeling ($NMGWM^{2016}$), would interfere with these plumes.

As discussed in EIR/EIS Impact 4.4-4, the OUCTP A-Aquifer Plume is located about 2 miles southeast of the proposed slant wells that is currently being treated using enhanced in situ bioremediation in the A-Aquifer, pump and treat in the Upper 180-Foot Aquifer, and natural attenuation in the Lower 180-Foot Aquifer. The EIR/EIS considers the consequence of the expanding MPWSP cone of depression reaching the western portion of the OUCTP A-Aquifer Plume and concludes that if it did, the projected decline in groundwater elevations could possibly spread contamination to areas currently not impacted by the plume. At 2 miles, the accuracy of the $NMGWM^{2016}$ decreases and thus, the projected 1 to 2-foot groundwater elevation is less certain to extend that far. The EIR/EIS considers the potential for the cone of depression of the MPWSP pumping to intersect the OUCTP A-Aquifer Plume a significant impact. Mitigation was proposed (Mitigation Measure 4.4-4) that would monitor changes in the groundwater surface elevation caused by MPWSP pumping near the OUCTP plumes. If it is determined that MPWSP pumping could interfere with the Fort Ord plumes, the mitigation measure requires CalAm to take necessary actions so the plumes do not expand and contaminate other areas, such as reimbursing the US Army for work necessary to change the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by MPWSP pumping. The EIR/EIS considers the impacts from the MPWSP on the OUCTP Upper and Lower 180-Foot Aquifer plumes less than significant. However, the mitigation measure referenced above would monitor the three plumes, as noted.

MCWD-EKI2-5

Remedial Actions and CCRWQCB Oversight

EKI suggests that CalAm should be held to the same groundwater remediation standard as those at Fort Ord because they claim the MPWSP would impact beneficial uses of groundwater in the Monterey Subbasin. Further, EKI opines that the modeling conducted to analyze the impacts of the proposed MPWSP does not adequately assess salinity impacts on the groundwater near the MPWSP.

There was no evidence, developed either through groundwater modeling or from available groundwater data, to conclude that the proposed MPWSP would impact the beneficial uses of groundwater in the SVGB. This is detailed in EIR/EIS Section 4.4. Salinity underlying the CEMEX property, where the proposed MPWSP slant wells would extract a mixture of brackish groundwater and seawater, is well documented through over two years of groundwater monitoring and operation of the test slant well. This work has verified the availability of brackish to saline groundwater for the MPWSP and confirmed it is feasible to extract it; see EIR/EIS Appendix E3. The feedwater for the proposed MPWSP would be extracted from a capture zone located adjacent to the coast, which contains

groundwater that exceeds, by an order of magnitude, the State of California's upper threshold for beneficial use of groundwater (3,000 mg/L TDS). The MPWSP groundwater wells would draw highly brackish groundwater from the capture zone, which over time would draw in a greater quantity of seawater. The inland flow to the proposed MPWSP slant wells would occur only within the localized capture zone and the slant wells would not initiate inland groundwater flow beyond the influence of the capture zone. Groundwater level response in the Dune Sand and 180-Foot Aquifers from the slant well pumping has been conservatively modeled; the modeling determined that the pumping would not impact other groundwater users in the SVGB.

The groundwater monitoring network developed for the test slant well adequately monitored groundwater levels and quality at and near the test slant well extraction. Additional monitoring wells in the Dune Sand Aquifer, 180-Foot Aquifer, the 400-Foot Aquifer and the Deeper Aquifer (see Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage) would supplement the existing monitoring well network, which would monitor water levels prior to and at the onset of full-scale pumping. Additional monitoring wells would be placed based on the area of influence as it migrates away from the capture zone. Additional discussion of the conclusions derived from monitoring and test slant well operations and recommendations for continued monitoring is provided in EIR/EIS, Appendix E3.

There has been considerable effort to respond to comments on the adequacy of the groundwater modeling conducted for the EIR/EIS analysis, so it is not repeated here. Refer to EIR/EIS Section 4.4, response to comments MCWD – HGC, response to comments MCWD – EKI, and Master Response 12, North Marina Groundwater Model (v. 2016), for a detailed description of the development, calibration, assumptions, and results of the NMGWM^{2016}.

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8.5.3 Responses to Comments from Monterey Bay Air Resources District

MBARD-1 To further reduce exhaust emissions that would be associated with project construction, Mitigation Measure 4.10-1a identified in EIR/EIS Section 4.10 has been revised as follows to include requirements for construction equipment powered by electricity or natural gas. For the context of the other revisions to the mitigation measure, refer to responses to comments MBARD-3 and MBARD-4, below.

> **Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.**
>
> For diesel-fueled off-road construction equipment of more than 50 horsepower, CalAm and/or its construction contractor shall make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards or is alternatively powered (e.g., with electricity, natural gas, propane, methanol and ethanol blends, or gasoline) construction equipment. For all pieces of equipment that would ~~not~~ neither meet ~~at least~~ Tier ~~3~~ 4 emission standards nor be alternatively powered, CalAm or its construction contractor shall provide to the CPUC documentation from two local heavy construction equipment rental companies that indicate~~s~~ that the companies do not have access to higher-tiered equipment or alternatively powered equipment for the given class of equipment. Such documentation shall be provided to the CPUC at least two weeks prior to the anticipated use of those pieces of equipment.

MBARD-2 The following paragraph has been added to the end of EIR/EIS Section 4.10.2.2, Regional Agencies and Regulations, to acknowledge that if asbestos-containing pipes or materials are encountered during open trenching for pipeline installations, the requirements of air district Rule 424 and National Emissions Standards for Hazardous Air Pollutants could be triggered.

> ***Asbestos Program***
>
> The purpose of the Asbestos Program is to protect the public from uncontrolled emissions of asbestos through enforcement of the federal Asbestos Standard and Air District Rule 424. The program covers most renovations and demolition projects and may be triggered if asbestos-containing pipes or materials are encountered during open trenching for pipeline installations. Elements of the program include survey and notification requirements prior to beginning a project, as well as work practice standards and disposal requirements. The program operates on a "cradle to grave" basis through the regulation of all aspects related to the handling of asbestos materials from discovery and removal, through transportation and disposal (MBUAPCD, 2017).

MBARD-3 To further reduce exhaust emissions of NO_x that would be associated with project construction, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards. For the revised mitigation measure, see response to comment MBARD-1.

MBARD-4 Mitigation Measure 4.10-1a has been revised to include the use of non-diesel powered equipment where feasible. For this revision, see response to comment MBARD-1.

MBARD-5 State Water Resources Control Board (SWRCB) Order 2016-0016 requires CalAm to terminate its water diversions from the Carmel River in excess of its legal entitlement by December 2021. To ensure a continuous water supply, the project must be completely constructed, tested, and operational by December 2021. The proposed project facilities are expected to be completely constructed by June 2020 (see Final EIR/EIS Section 3.3.9, Construction Schedule). Using measures to limit simultaneous construction activities would affect project schedule. Extending the construction schedule by too many months to avoid multiple simultaneous construction activities during the May-October ozone season may cause CalAm to violate the terms of SWRCB Order 2016-0016 (indeed, there is no feasible construction phasing schedule that could reduce construction NO_x impacts to a less-than-significant level). However, some construction scheduling to reduce overlapping high-emitting construction activities may be feasible. For example, Mitigation Measure 4.6-1d (Protective Measures for Western Snowy Plover), Subpart 2, restricts construction work at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant to between October 1 through February 28 unless otherwise approved by the USFWS. Thus, construction activities accounting for approximately 13 percent of the estimated maximum daily construction emissions in Table 4.10-5 would likely occur mostly outside of the May-October ozone season. Similarly, Mitigation Measure 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl), Subpart 5, may restrict some construction of the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main to between October 15 and April 1; together, the Source Water Pipeline and new Transmission Main account for approximately 17 percent of the estimated maximum daily construction emissions in Table 4.10-5. Therefore, to the extent feasible and anticipated to be required by wildlife permitting agencies, construction scheduling limitations would coincide with the May-October ozone season to reduce overlap among project components.

As noted above, further adjusting the construction schedule to reduce construction NO_x emissions would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria. Construction scheduling flexibility would be reduced as would CalAm's ability to manage unforeseen changes in field conditions. Because unexpected delays in contractor and materials availability would be more likely to occur when using a prolonged and phased construction

schedule, the total construction period could be extended beyond 42 months, in which case CalAm would be unable to meet its obligations under SWRCB Order 2016-0016. Therefore, mitigation to impose phased construction schedule requirements in order to reduce NOx emissions to a greater extent than described above is considered infeasible for this project.

MBARD-6 The representative of the Lead Agencies contacted the MBARD to determine the feasibility of funding an off-site mitigation program to mitigate the impact of construction-related NO_x off-site mitigation to offset construction-related impacts associated with emissions of NO_x.

The MBARD confirmed that it has worked with other project applicants to fund off-site mitigation programs for significant impacts under CEQA. In these cases, the emissions to be offset were typically long-term operational emissions, as opposed to short-term construction emissions. One exception is a housing development project that is being constructed over a number of years. For that project, the MBARD developed a mitigation fee per housing unit based on an annual fee per ton-year paid by the developer to be spent on various emissions offset ventures, including converting diesel-powered farm engines to run on electricity or an alternative fuel, development of electric vehicle infrastructure, and/or diesel school bus retrofits (MBARD, 2017a).

The MBARD indicated that one challenge for off-site mitigation programs to offset short-term construction emissions is that their implementation can be delayed due to uncertainties, such as securing third-party agreements. In addition, there is considerable front-end research required by MBARD staff that has posed some staffing challenges to administer the programs. For these reasons, the MBARD prefers mitigation to be on-site, but if impacts are not reduced to less than significant with incorporation of on-site mitigation, the MBARD indicated its planners would work with CalAm on an off-site mitigation program for the proposed project (MBARD, 2017a).

In order for a similar off-site mitigation program to effectively reduce construction-related impacts associated with the proposed MPWSP, the off-site mitigation program offsets would have to occur contemporaneously with project construction. This may or may not be feasible depending on the timing of the initiation of the offsets. In addition, the CEQA and NEPA Lead Agencies would have no ability to ensure that any third-party agreements that may be needed to initiate an off-site mitigation program would be successfully negotiated. Nonetheless, because air quality impacts associated with construction activities would not be reduced to a less-than-significant level with implementation of on-site mitigation, such as Mitigation Measure 4.10-1a, Mitigation Measure 4.10-1e, Off-site Mitigation Program, and related discussion has been added to the Final EIR/EIS (see below). It should be noted that since we cannot substantiate at this time that off-site

mitigation in the form of emissions offsets are feasible, the impact continues to be significant and unavoidable.

The following sentences have been revised in the EIR/EIS Gaseous Criteria Pollutant Emissions discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> Implementation of **Mitigation Measures 4.10-1a (Equipment with High-Tiered Engine Standards),** ~~and~~ **4.10-1b (Idling Restrictions)**, and **4.10-1e (Off-site Mitigation Program)** would reduce NO_x emissions by requiring CalAm and/or its construction contractor(s) to make a good faith effort to use construction equipment that meets the highest USEPA-certified tiered emission standards~~, as well as~~ to ensure on-road and off-road equipment idling is minimized, and to fund an off-site mitigation program.

The following sentence has been added to the EIR/EIS Gaseous Criteria Pollutant Emissions discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> In addition, it cannot be substantiated at this time that off-site mitigation in the form of emissions offsets is feasible given the schedule of proposed construction activities and schedule uncertainties associated with implementing such a program; therefore, off-site emission reductions that would be associated with this Mitigation Measure 4.10-1e cannot be quantified.

The following mitigation measure has been added to the EIR/EIS discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> *Mitigation Measure 4.10-1e applies to all of the proposed project components.*
>
> **Mitigation Measure 4.10-1e: Off-site Mitigation Program.**
>
> CalAm shall work with the Monterey Bay Air Resources District (MBARD) and put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NO_x. CalAm shall provide to the Lead Agencies documentation showing that it has reached an agreement with MBARD to fund an off-site emissions mitigation program that shall include offsets to be executed during construction of the project. If such a program is determined by CalAm and MBARD to be infeasible given the construction schedule of the project, CalAm shall provide documentation to the Lead Agencies that substantiates such a determination. All documentation shall be provided to the Lead Agencies at least two weeks prior to the commencement of construction.

MBARD-7 Operational NOx emissions would not exceed the applicable significance threshold (see Table 4.10-7); therefore, as described in Impact 4.10-4, no mitigation for NOx during operation is required. There would be no vehicle fleet associated with project operations.

MBARD-8 The first bullet item of Mitigation Measure 4.10-1c, Construction Fugitive Dust Control Plan, has been revised to include more frequent (three times daily) watering (see Air Quality Section 4.10.5.1, Construction Impacts).

As described below, modulating dust producing activities along populated corridors would not provide a meaningful reduction in the overall construction PM_{10} emissions.

The majority of the construction activities that would occur along populated corridors would be associated with installation of the proposed pipelines, which would occur at rates of 150 to 250 feet per day. The fugitive dust emission estimates assume that all six pipelines that would be constructed at various locations throughout Monterey County would be constructed concurrently. Concurrent construction of all pipelines combined with implementation of Mitigation Measure 4.10-1c, Construction Fugitive Dust Control Plan, is estimated to result in a maximum of 2 pounds per day of fugitive dust in the form of PM_{10} (see Final EIR/EIS Appendix G1.7). This equates to an average of about 0.3 pound per day per pipeline, and thus the emissions near specific sensitive receptors would be less than the total estimated daily emissions. There would also be earth moving associated with the ASR wells and Carmel Valley Pump Station in the vicinity of sensitive receptors; however, these activities would be limited to areas of 0.25 acre and 0.08 acre respectively, which would result in mitigated emissions of 1.8 pounds and 0.6 pound per day respectively. Therefore, even if fugitive dust emissions could be reduced by an additional 50 percent by modulating dust-producing activities in the vicinity of sensitive receptors, the resulting reductions would equate to less than 1 pound per day at any given location, which would not equate to a meaningful reduction, and would not be necessary to achieve a less-than-significant impact.

8.5.4 Responses to Comments from Monterey County Resource Management Agency

MCRMA-1 EIR/EIS Section 4.14 evaluated impacts of the proposed project on aesthetic (visual) resources. The visual setting at the desalination plant site is described in EIR/EIS Section 4.14.2.3; conformance with applicable Monterey County General Plan policies is described in Table 4.14-2. Construction impacts at the desalination plant site are addressed in Section 4.14.6.1. Operational and facility siting impacts at the desalination plant location, including consideration of effects on public views and visual compatibility with surrounding land uses, are addressed in Section 4.14.6.2 (see also Figure 4.14-4).

MCRMA-2 The text in EIR/EIS Section 4.8.2.3 has been revised to read: "~~*2010*~~*1982 Monterey County General Plan*." Additionally, a footnote has been added to clarify that for purposes of implementation of the LCP, the relevant 1982 General Plan policies currently remain applicable, although a comprehensive update was adopted in 2010.

MCRMA-3 The text in EIR/EIS Table 4.8-2 has been revised as follows:

> Lands with a General Plan land use designation of Permanent Grazing may need to be redesignated to accommodate the proposed MPWSP Desalination Plant unless the County issues a Use Permit, which~~. As necessary, such conversion~~ would occur through the requisite local planning and permit review processes. The proposed MPWSP Desalination Plant would be compatible with the adjacent Monterey County Landfill and the MRWPCA Regional Wastewater Treatment Facility.

MCRMA-4 The text in Draft EIR/EIS Table 4.8-2 has been revised as follows:

> Potentially Inconsistent: Impacts related to cultural, agricultural, and biological resources and water quality, are discussed in EIR/EIS Sections 4.15, 4.16, 4.6, and 4.3, respectively. Specifically, please refer to Tables 4.15-6, 4.16-2, 4.6-2, and 4.3-5 for additional discussion of the project's conformity with applicable North County Land Use Plan policies related to cultural, agricultural, terrestrial biological resources, and water quality ~~these resource areas~~, respectively. In all but one instance related to compatibility with established land use policies regarding biological resources (i.e., Impact 4.6-4), potential land use policy and regulation conflicts are resolvable with the implementation of recommended mitigation. Because this policy pertains to topics other than land use and recreation and is addressed elsewhere in the EIR/EIS, it is not discussed further in Section 4.8.

MCRMA-5 As noted in Draft EIR/EIS Section 4.16.2.1, the Farmland Protection Policy Act (FPPA) seeks to protect Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance from conversion to non-agricultural

uses (7 USC §4201(c)(1)). As described in Section 4.16.5, Direct and Indirect Effects of the Proposed Project, the proposed project would not irreversibly convert any of these farmland designations to non-agricultural use. The conversion of land designated or zoned as grazing land, such as would occur due to construction of the MPWSP Desalination Plant on the 25-acre parcel designated Grazing Land and zoned for Permanent Grazing, would not conflict with the FPPA. The text in the last paragraph of Section 4.16.2.1 has been clarified as follows:

> The proposed project would not be subject to FPPA requirements because the project would not irreversibly convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance ~~farmland~~ to non-agricultural use.

As described in Section 4.16.3, there are two impact significance criteria related to the conversion of farmland (or other agricultural land) to non-agricultural use: 1) involves changes in the existing environment that, due to their location or nature, could result in the conversion of farmland to non-agricultural use; or 2) converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP, to non-agricultural use. The land on which the MPWSP Desalination Plant would be located is not designated as Prime, Unique, or Farmland of Statewide Importance by the FMMP, and thus would not result in a significant impact under the second criterion.

With respect to the first criterion, Impact 4.16-1 concludes that construction of the MPWSP Desalination Plant would have a less-than-significant impact with respect to conversion of agricultural land to non-agricultural uses because no agricultural uses currently are present in this location. CEQA Guidelines Section 15126.2(a) states that "In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published…" The physical conditions on the proposed MPWSP Desalination Plant site are described in Section 4.16.1; the land has not been used for grazing for at least several decades. Because the land does not and has not sustained agricultural use for many years, constructing the MPWSP Desalination Plant would not be responsible for converting this land to non-agricultural use; thus, it would not result in a significant impact. According to CEQA Guidelines Section 15126.4(a)(3), mitigation measures are not required for effects which are not found to be significant. See also response to comment Marina-125 in Section 8.5.1 for further explanation regarding the conclusion that the proposed MPWSP would have a less-than-significant impact on the conversion of farmland to non-agricultural use.

Notwithstanding this limitation on the CPUC's ability under CEQA to impose mitigation on CalAm for the use of land zoned for grazing, CEQA does not affect

any agency's authority to condition permit approval in any way consistent with that agency's statutory and constitutional powers. If Monterey County would like to consider requiring additional mitigation for this use of the 25-acre site in the context of its issuance of a conditional use permit for the proposed project, CEQA would not prohibit it from doing so. It would be the responsibility of CalAm to consult with the appropriate entities (which could include the Ag Land Trust) regarding such issues at that time.

MCRMA-6 Mitigation Measure 4.16-1, Minimize Disturbance to Farmland (on Draft EIR/EIS page 4.16-14) lists several measures that CalAm and its construction contractors shall incorporate into construction plans and specifications for all construction activities located in farmland areas to minimize adverse impacts on farmland. Such measures apply to the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road. Included in Mitigation Measure 4.16-1 is the requirement that CalAm shall notify affected property owners at least 90 days prior to initiating construction activities that have the potential to interfere with agricultural operations. The mitigation also includes several other measures to minimize disturbance to farmland.

In response to this comment, the second bullet point under Mitigation Measure 4.16-1 has been revised to require CalAm and its construction contractors to consult with affected property owners to determine the best construction schedule for their operations:

- Construction contractor(s) shall minimize the extent of the construction disturbance, including construction access, in agricultural areas to the maximum extent feasible. <u>Minimization efforts shall include, but not be limited to, consulting with affected property owners to schedule construction activities to minimize impacts during planting, growing, and/or harvest seasons.</u>

See response to comment MCRMA-5 regarding the County's authority to further condition permit approval, including by requiring that the project be reviewed by the County Agricultural Commissioner's Ag Advisory Committee.

8.5.5 Responses to Comments from Monterey County Water Resources Agency

MCWRA-1 MCWRA's review of the EIR/EIS, and general comments on Chapter 2 (Water Demand, Supplies and Water Rights), Section 4.3 (Surface Water Hydrology and Water Quality), Section 4.4 (Groundwater Resources) and Appendix E2 (updated Groundwater Modeling) are acknowledged. See responses to the more specific comments MCWRA-2 through MCWRA-8.

MCWRA-2 The text corrections have been made in EIR/EIS Section 4.2.1.3.

MCWRA-3 The Department of Water Resources' (DWR) 2016 Bulletin 118 Interim Update responds to the Sustainable Groundwater Management Act (SGMA), which is discussed in Master Response 6, The Sustainable Groundwater Management Act. Section 8.2.6.2 of Master Response 6 provides a discussion of basin name designations including the current basin and subbasin boundaries, and notes that the designation of basin names and boundaries may change. Regardless of where the boundaries will eventually be established and named, the EIR/EIS hydrogeologic and groundwater investigations used the names described in this EIR/EIS, although the groundwater models further subdivided the areas into cells that used input parameters specific to that individual cell, as explained in Section 4.4.4.2, Groundwater Modeling. Therefore, to maintain consistency throughout the EIR/EIS, and the hydrogeologic and groundwater modeling (Appendices B2, C3, E1, and E2), the names of the basins have not been changed in Final EIR/EIS Figure 4.4-1.

MCWRA-4 In response to this comment, the discussion of the Seaside Groundwater Basin and Aquifers in Section 4.4.1.2 (Draft EIR/EIS page 4.4-12) has been clarified as follows:

> The Seaside Groundwater Basin (SGB)<u>, as defined by the California Department of Water Resources, the Seaside Watermaster, and the Monterey Peninsula Water Management District,</u> encompasses approximately 24 square miles at the southwest corner of the Salinas Valley adjacent to the Pacific Ocean (Yates et al., 2005). The <u>Seaside Watermaster</u> ~~SGB is~~ further subdivided <u>the SGB</u> into the Northern and Southern Subbasins by the Laguna Seca Anticline and a segment of the Ord Terrace Fault, which restrict groundwater flow between the subbasins (HydroMetrics, 2009a). The two subbasins are further subdivided into coastal and inland subareas with the division boundary just west of General Jim Moore Boulevard.

All references in the EIR/EIS to the Seaside Groundwater Basin (SGB) refer to the basin defined in the above-cited paragraph and not to the "Seaside Area Subbasin" referenced in the comment.

MCWRA-5 In the process of further evaluating basin names and boundaries in response to the SGMA, the California DWR has recently renamed the area in between the southern boundary of the Pressure Area and the adjudicated Seaside Groundwater Basin shown on Figure 4.4-1. In response to this comment, the following new language has been inserted into EIR/EIS Section 4.4.1.2, at the end of the subsection titled Salinas Valley Groundwater Basin (Draft EIR/EIS page 4.4-5):

> The boundaries and names of the basins have been updated to reflect the currently available information, as shown on **Figure 4.4-1**. This figure illustrates the updated basin boundaries in the western part of the SVGB, which were used in the modeling for the proposed project (HydroFocus, 2016). Subsequent to the publication of the Draft EIR/EIS, the California Department of Water Resources made further changes by designating the area in between the Pressure Area (now called Salinas Valley Basin, Subbasin 180/400 Foot Aquifer) and the adjudicated Seaside Groundwater Basin as the Monterey Subbasin of the SVGB. In this EIR/EIS, the primary area of study within the SVGB is within the Pressure Area.

MCWRA-6 Draft EIR/EIS page 4.4-19 incorrectly states that the 2015 Brown and Caldwell report was prepared for the MCWRA, when it was actually prepared for the Monterey County Resource Management Agency (MCRMA). The text in has been revised accordingly in the Final EIR/EIS.

MCWRA-7 The referenced text in the section on Groundwater Enhancement Programs in the SVGB in Section 4.4.1.3, Groundwater Flow and Occurrence has been revised to clarify that the CSIP is operated in tandem with the SVRP.

MCWRA-8 The text on Draft EIR/EIS page 4.4-28 discusses the extent of seawater intrusion as measured by the concentration of Total Dissolved Solids (TDS), which can also be measured using chloride concentrations. Both measurement methods would result in delineating the same extent of seawater intrusion, shown on Figures 4.4-10 and 4.4-11. However, in the section on Seawater Intrusion in Section 4.4.1.4, Groundwater Quality, the text has been revised to clarify that the MCWRA uses chloride measurements.

8.5.6 Responses to Comments from Monterey Peninsula Regional Water Authority

MPRWA-1 The Lead Agencies acknowledge the Monterey Peninsula Regional Water Authority's commendation of the Draft EIR/EIS.

MPRWA-2 As described in detail in EIR/EIS Section 4.3.5.2, the assessment of impacts and regulatory compliance related to the discharge of brine via the existing MRWPCA outfall diffuser is based on model analyses that incorporate conservative (i.e., worst-case) assumptions regarding effluent and receiving water density, dilution and mixing dynamics, and concentrations of water quality constituents. Consistent with such an approach, the model analyses utilized a combination of water quality characteristics for the desalination brine and receiving water, such as temperature and salinity, that resulted in the maximum density, and thus the most conservative (lowest) dilution results specific to each assessed discharge scenario.

As discussed in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1, the groundwater entering the slant wells would originate only from within the capture zone and after the ambient groundwater is extracted from the capture zone, the capture zone would continue to be recharged by ocean water. As explained in Master Response 4, The Agency Act and Return Water, Section 8.2.4.3, the steady-state water inflows to the capture volume would be seawater inflow from Monterey Bay and recharge from precipitation on the land surface overlying the capture zone.

Increasing the temperature of the brine, as suggested, based on monitoring data from the test well and/or from the desalination process (which would not add heat)[1] would result in slightly decreased assumed brine density and a subsequent slight increase in the assessed dilution; increased dilution would further reduce potential water quality impacts associated with operational discharges reported and discussed in the EIR/EIS. Therefore, using ocean water temperature without heat gain from the treatment process remains a reasonable and conservative assumption.

MPRWA-3 Whereas the April 2015 Draft EIR did not directly address hypoxia or the Coanda effect (sometimes referred to as the Coanda attachment, see also Appendix Section 4.3), this EIR/EIS addresses both in EIR/EIS Section 4.3.5.2. The dilution modeling conducted for this EIR/EIS considered the near-field to be limited to the edge of the Zone of Initial Dilution (ZID), which is the point at which the plume would no longer driven by the dynamics of the discharge port, and dilution would become influenced by the ocean waves and currents; this distance would range between 10 and 39 feet from the diffuser ports (see Table 4.3-13). The far-field is

[1] See EIR/EIS Section 4.3.3: "There would be no heating mechanism or any process that would increase the temperature of the source water as it passes through the treatment units."

considered to be the area between the edge of the ZID and the edge of the regulatory BMZ at 100 meters (328 feet). EIR/EIS Table 4.3-13 shows that for the most-dense operational scenario modeled (brine-only, Scenario 2), salinity at the edge of the BMZ would be 1.34 ppt above ambient. Since the salinity increment above ambient would be low, and the Coanda attachment would not occur, hypoxia would not occur, consistent with the conclusion found by Geosyntec using the mass balance analysis. In response to the comment, the second paragraph on p. 4.3-84 of the Draft EIR/EIS has been revised as follows:

> Comments specifically expressed concern that, due to sediment oxygen demand and potential limited mixing due to dense discharges forming Coanda attachments, limited dilution and mixing could restrict oxygen supply. As described above, Coanda attachments would not occur, and modeled salinity levels are less than 2 ppt above ambient salinity at the edge of the ZID. Further, to evaluate the potential for hypoxia, Geosyntec (2015) performed a mass-balance analysis (a mass-balance analysis accounts for a given material entering and leaving a system) based on dilution and dispersion analyses for operational discharges completed by ESA (ESA, 2015). The analysis applied a mass-balance approach to a conservative areal extent of a brine-only plume (i.e., the most-dense of the proposed operational discharges) to derive estimates of oxygen demand in local sediments (70 to 180 kilograms/day) and estimates of oxygen supplied (less than 5,600 kilograms/day) by the operational discharges (including entrained seawater). Based on the results of the mass-balance analysis, the amount of oxygen supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution is more than 30 times greater than that consumed by the sediments. As such the concentration of dissolved oxygen in receiving ocean waters would not become depressed by more than 10 percent from that which occurs naturally, hypoxia is unlikely to occur as a result of proposed operational discharges and impacts would be less than significant.

MPRWA-4 The total annual net project energy demand used to estimate project greenhouse gas (GHG) emissions includes consideration of a net reduction of 8,100 acre-feet per year (afy) of product water pumping in the existing Monterey Main System, which includes facilities in Carmel, Seaside, Ryan Ranch, Bishop, and Hidden Hills. However, for a conservative analysis, it was assumed that no CO_2 degassing currently occurs due to groundwater pumping for the Monterey Main System due to the relatively shallow depths of the existing Carmel Valley wells.

In addition, the project GHG emissions estimates identified in the EIR/EIS do not include consideration of the 800 afy of reduced groundwater pumping by the Castroville Community Services District (CCSD) from the Salinas Valley Groundwater Basin. However, assuming the same energy use factor that was used for estimating the existing Monterey Main System (i.e., 913 kWh per acre-foot of

water produced), and the same groundwater degassing rate as estimated for the project (i.e., 735 metric tons CO_2 per 23,219 acre-feet water pumped), the reduced groundwater pumping by the CCSD would result in a net reduction of project-related GHG emissions of about 120 metric tons CO_2e per year. Compared to the amortized emissions of the project presented in the Final EIR/EIS (i.e., 8,365 metric tons CO_2e per year), the reduction would represent approximately 1.5 percent of the GHG emissions estimated for the project and this potential reduction in GHG emissions is considered negligible.

MPRWA-5 Subsequent to the release of the Draft EIR/EIS, Mitigation Measure 4.11-1 has been revised to include a net zero indirect operational GHG emissions requirement for the project (see Impact 4.11-1 discussion in Final EIS/EIR Section 4.5.11). One of the items identified in the revised measure's emission reduction loading order is to procure renewable energy from off-site sources within California via purchases from one or more of a variety of specified sources, including Monterey Bay Community Power.

MPRWA-6 Text has been revised to clarify that the offshore portion of the outfall consists of 60-inch and 48-inch diameter pipe (E2 Consulting Engineers, 2014).

MPRWA-7 Figure 10 in Appendix D1 is a reproduction of a figure presented in the study referenced in the figure title and is accurately labeled.

MPRWA-8 In response to the comment, the last bullet on page 4.3-73 of the Draft EIR/EIS has been revised as follows:

> Estimate regions within the BMZ where salinity would exceed 2 ppt <u>above background salinity</u>.

References

E2 Consulting Engineers, 2014. Basis of Design Report for Proposed Brine Mixing Facility – Section 4. January. Prepared for MRWPCA.

8.5.7 Responses to Comments from Monterey Peninsula Water Management District

MPWMD-1 EIR/EIS Table 3-8, Anticipated Permits and Approvals, includes the Monterey Peninsula Water Management District (MPWMD) Water System Expansion permit under Ordinance 96 of the MPWMD Board of Directors. Ordinance 96 includes Rule 20-A, which describes permits to create/establish a water distribution system.

MPWMD-2 The referenced sections, including EIR/EIS Section 3.2.3.5, have been revised; Terminal Reservoir has been removed from the description of the proposed project, from Figure 3.3-9b and from all sections of the EIR/EIS that evaluated the component. The treated water storage tanks were properly described in Draft EIR/EIS Section 3.2.3.1.

MPWMD-3 In response to this comment, the first paragraph of EIR/EIS Section 2.2.1 has been revised to include the Monterey Peninsula Airport District. This does not change the analysis or conclusions presented in the EIR/EIS, which recognized that the airport district is within the area served by the project.

MPWMD-4 In response to this comment, the 2016 Cease and Desist Order (CDO) has been added to the referenced sentence in EIR/EIS Section 2.1.

MPWMD-5 In response to this comment, the referenced text in EIR/EIS Section 2.2.1.1 has been revised as shown:

> The majority of the Monterey District water supply comes from 21 extraction wells screened in the upper alluvial deposits of the Carmel River in Carmel Valley known as the Carmel Valley Alluvial Aquifer. CalAm's supply also includes ~~Carmel River supplies are supplemented, especially during the summer high-demand season, by~~ groundwater production wells in the Seaside Groundwater Basin.

Furthermore, as a result of the September 2016 Phase 2 decision that authorized the construction of the Monterey Pipeline, text at the end of EIR/EIS Section 2.2.1.1 that references the hydraulic trough has been deleted.

MPWMD-6 The existing interconnections are emergency interconnections according to the Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan (MPWMD and Denise Duffy & Associates, 2014). In response to this comment, the EIR/EIS text has been revised, but these revisions do not change the analysis or conclusions presented in the Draft EIR/EIS. The revisions include the addition of a footnote in Section 2.2.1:

> Because the Toro and Ambler areas would not be served by the proposed project, these areas are not included in the proposed project's demand and supply assumptions.[4]
>
> [4] There is an existing emergency interconnection between the Toro and Hidden Hills systems; the project would not change the use of this emergency interconnection.

In addition, the second and third paragraphs of EIR/EIS Section 2.2.2.2 have been revised for clarity.

MPWMD-7 In response to this comment, the footnote on Draft EIR/EIS page 2-4 (now footnote 7 in the Final EIR/EIS due to other revisions) has been revised to include the sentence,

> "In January 2017, the MPWMD approved a contract for preparation of an alternatives study for Los Padres Dam and sediment management in the reservoir (MPWMD, 2017)."

MPWMD-8 The description of the Monterey Peninsula Water Resources System presented on page 2-5 of the Draft EIR/EIS is based on information in the MPWMD comment letter that was submitted on the 2015 MPWSP Draft EIR, which stated in relevant part, regarding the corresponding section of Chapter 2 in the 2015 Draft EIR, "The District's jurisdiction extends throughout its entire boundary; however, *MPWMD has defined the sources of supply to the CalAm system as the MPWRS.* Amendments to the MPWRS are made through ordinances such as Ordinance No. 135, which changed the definition of the MPWRS to include all of the Seaside Groundwater Basin, including the Laguna Seca Subarea…." (MPWMD 2015, page 2, emphasis added.)

Neither MPWMD's 2015 comment on the Draft EIR cited above, nor the current Draft EIR/EIS text cited in the current comment, state or imply that CalAm's sources of supply are for CalAm's exclusive use. To clarify the text in response to this comment, the paragraph under Section 2.2.2.3, Allocation Program has been revised as follows:

> The MPWMD augments, manages, and regulates surface and groundwater resources in the Carmel Valley and the greater Monterey Peninsula. MPWMD's jurisdiction includes the area served by CalAm's Monterey District (shown in **Figure 3-1** in Chapter 3, Description of the Proposed Project) and CalAm's sources of supply (the Seaside Groundwater Basin and Carmel Valley Alluvial Aquifer), which MPWMD defines as the Monterey Peninsula Water Resource System (MPWMD, 2015b). The Monterey Peninsula Water Resource System includes supplies for non-CalAm pumpers in the Seaside Groundwater Basin and Carmel Valley Alluvial Aquifer, as well. The MPWMD was established…

MPWMD-9 In response to this comment, the text in the first paragraph of EIR/EIS Section 2.2.2.4 has been revised to include Order 2016-0016.

MPWMD-10 In response to this comment and consistent with Section 3(b)(viii) of Cease and Desist Order 2016-0016, the text in the last paragraph on page 2-7 of the Draft EIR/EIS is revised as follows:

> …. If CalAm fails to meet a milestone, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy. The revised CDO also provides that "[i]f the State Water Board determines that the cause [for failing to achieve a milestone] is beyond Applicants' control, it may suspend any corresponding reductions under [the specified CDO condition] until such time as the Applicants can reasonably control progress towards the Milestone."[13] Section 5.4.2, No Project / No Federal Action, provides further discussion on the CDO and the milestones.
>
> [13] Order WR 2016-0016 Schedule and Condition 3(b)(viii).

MPWMD-11 EIR/EIS Table 2-3, Other Demand Assumptions, accurately presents the demand assumptions identified by CalAm in its Application A.12-04-019 to the CPUC for approval of the MPWSP, and does not explicitly identify a timeline associated with Pebble Beach water entitlements or legal lots of record. In response to this and other comments, as well as the SWRCB's recognition of the Pebble Beach water entitlements in the CDOs, the discussion of Pebble Beach Water Entitlements throughout the EIR/EIS has been revised to show that the Pebble Beach entitlements are considered existing service area demand that CalAm is obligated to serve, with or without the proposed project. See EIR/EIS Section 1.6.2. Therefore, given that "Service Area Demand" now includes the demands of existing service area customers as well as the existing Pebble Beach entitlements, EIR/EIS Table 2-3 and the corresponding Table 6.3-1 in EIR/EIS Section 6.3 have been revised to qualify the term as follows:

> "Existing Annual Service Area Demand."

Please also see responses to comments MPWMD-21, MPWMD-57, and MPWMD-59.

MPWMD-12 Draft EIR/EIS Section 2.3.3.3 (Final EIR/EIS Section 2.3.2.2) discusses the two preliminary MPWMD estimates and describes MPWMD's opinion that CalAm's estimate of supply needed to serve lots of record is not a valid number. The comment augments information presented in Draft EIR/EIS Section 2.3.3.3 on the lots of record estimates, noting that additional development has occurred in the service area since the preliminary estimates MPWMD prepared in the early 2000s, and implying that there are likely now fewer vacant legal lots of record than when MPWMD's estimates were prepared. As described in Draft EIR/EIS Section 2.3.3.3, the more recent of MPWMD's two estimates (1,211 afy), from 2002, was greater

than CalAm's estimate even though the 2002 estimate did not include vacant lots on improved parcels in unincorporated Monterey County. MPWMD testified in 2013 (Stoldt, 2013) that CalAm's estimate may therefore, underestimate demand associated with lots of record. This comment observes that some vacant lots on unimproved parcels may never be split from those parcels and developed.

The EIR/EIS discloses the uncertainty of the estimates of water demand associated with lots of record, noting that MPWMD adopted neither of the estimates it had commissioned due to their shortcomings. The analysis of potential growth inducing impacts in EIR/EIS Section 6.3 compares the water supply that would be provided by the proposed project to serve additional development (such as lots of record) with the updated estimate of demand associated with general plan buildout that MPWMD prepared in 2006 in consultation with service area jurisdictions (see Draft EIR/EIS Section 2.5.3.4, pages 6-35 through 6-37).

To explicitly recognize that development has occurred in the service area since the estimates were prepared and update the EIR/EIS discussion pursuant to this comment, the third and fourth paragraphs in Final EIR/EIS Section 2.3.2.2 (which had been Draft EIR/EIS Section 2.3.3.3) has been revised as follows:

> The summary identifies two reports on the topic of lots-of-record water demand that were prepared for the MPWMD in 2000 and 2002, and notes that the 2001 estimate cited in CalAm's 2006 Management Plan was from an interim period between these two reports. The 2000 report, which had identified demand of 1,166.3 afy for vacant lots and remodels, was not adopted by the MPWMD Board because it did not include estimates for the city of Monterey or the unincorporated county; the revised 2002 report, which identified demand of 1,211 afy, included estimates for the city of Monterey but not for the unincorporated county (MPWMD, 2013c). The MPWMD's direct testimony to the CPUC in February 2013 reiterated these observations, stating that the MPWMD does not consider the 1,181 afy estimate a valid value and that the higher 2002 estimate did not account for vacant lots on improved parcels in the unincorporated areas (Stoldt, 2013). While MPWMD testified that ~~Thus,~~ CalAm's estimate may therefore underestimate the actual demand for lots of record (Stoldt, 2013)~~.~~, MPWMD observed in 2017 that development of lots of record has occurred since the estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). Whether development of lots of record since the early 2000s has offset, or more than offset, the number of uncounted lots that should have been included in the 2002 study, and by how much, cannot be determined from available data.

~~On the other hand,~~ Another factor affecting the estimate of demand associated with lots of record is water use rates. ~~c~~Comment on the 2015 MPWSP Draft EIR suggested that water demand per lot has likely decreased in years since those reports were prepared. It may be the case that per-lot water demand is somewhat lower than 15 years ago, considering the general trend in lower per capita demand in the service area and throughout the state; however, the extent of such reductions may not be quantifiable based on available data ~~and, more important, water demand for lots in the unincorporated part of the service area had not been estimated at all in the 2000 study and were only partly taken into account in the 2002 study, as stated in the MPWMD testimony~~. (Refer to Section 6.3, Growth Inducement, for additional discussion of this demand component.)

The first paragraph under "Vacant Lots of Record" in Section 6.3.5.1, Proposed MPWSP Water Service Capacity, has been revised as follows:

…The District never adopted this estimate because it did not include demand associated with vacant lots on improved parcels in the unincorporated County areas (Stoldt, 2013). While MPWMD testified in ~~In~~ 2013~~, the MPWMD testified~~ that CalAm's estimate of 1,181 afy may therefore underestimate demand associated with lots of record (Stoldt, 2013), in 2017 MPWMD observed that development has occurred since those estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). MPWMD's most recent estimate of future service area demand, prepared…

The new reference added in Section 6.3.5.1 (MPWMD, 2017) is shown in response to comment MPWMD-7. Nothing in this comment or response would result in a revision to the EIR/EIS analysis or conclusions.

MPWMD-13 Draft EIR/EIS Section 2.3.4.2 (changed to Section 2.3.3.2 in the Final EIR/EIS), to which this comment refers, accurately summarizes information presented in CalAm's 2010 Urban Water Management Plan (UWMP), including its non-revenue demand estimates and projections, and no changes to that section are warranted in response to this comment.

Draft EIR/EIS Section 2.5.3.3, Non-revenue Water Reduction, provides more current information on CalAm's non-revenue water than is included in the 2010 UWMP. EIR/EIS Section 2.5.3.3, which includes information from quarterly reports CalAm submits to the SWRCB in compliance with the 2009 CDO, shows that since 2009 CalAm has substantially reduced non-revenue water (referred to as unaccounted-for water in the reports), consistent with this comment. The quarterly reports show 12-month running averages of unaccounted-for water (e.g., for the periods January 2015-December 2015, February 2015-January 2016, etc.).

Quarterly reports in 2016 show that non-revenue water for the period January-December 2015 (i.e., the calendar year) was 247 af, consistent with the information cited in this comment. (The quarterly reports do not provide total production data with which the percentage of non-revenue water might be calculated.) The 12-month running averages show that the amount of system losses fluctuates from period to period, and occasionally show anomalous results, which is why the Draft EIR/EIS showed the average trends over several years. In general, non-revenue water has continued to decrease, as indicated in the EIR/EIS and this comment. For example, in most of the 12-month running averages reported since January-December 2015, non-revenue water has totaled less than 200 af, although for the period April 2016 to March 2017 non-revenue water was slightly higher than for January-December 2015 (271 af compared to 247 af) (CalAm 2016; 2017). In response to this comment, the text in EIR/EIS Section 2.5.3.3 has been revised to update the information on non-revenue water, as follows:

> CalAm submits quarterly compliance reports to the State Water Board under the CDO (CalAm, 2011, 2012b, 2013, 2014, 2015~~.~~). ~~In t~~Those reports show~~, CalAm states~~ that between the 2011 and 2015 water years, CalAm ~~the company has~~ reduced system losses by an average of 506 afy~~,~~ compared to the base year system losses in water year 2009, and that by the end of this period the reductions in water losses exceeded the reduction target of 549 afy that had been established in the 2009 CDO:~~. Further, for the last three years,~~ the reduction in system losses ranged from 752 af in water year 2013 to 919 af in water year 2015~~, which exceeds the 549 afy target established in the CDO~~. System losses (i.e., the amount of non-revenue or unaccounted-for water), as opposed to the *reduction* in losses, for the period October 2014 through September 2015 (water year 2015) totaled 357 af and system losses for the period January through December 2015 (calendar year 2015) totaled 247 af (CalAm, 2016d). Since then, through March 2017, system losses were less than 200 afy in all 12-month periods except one (April 2016-March 2017), when non-revenue water totaled 271 af. CalAm notes that the actual components of unaccounted-for water are difficult to identify because unaccounted-for water represents a combination of system leaks and unmetered water use. Savings from system repairs and line replacements and the like through 2015 ~~would be~~are reflected in CalAm's system demands data ~~for those years, as part of the 10 years of demand data~~ discussed in Section 2.3.1.

The following references have been added in Section 2.5:

> California American Water (CalAm), 2016d. Letter report to Leslie Grober, Deputy Director, Division of Water Rights, SWRCB, Re: SWRCB Order WR 2009-0060, 4th Quarterly Report for the 2015-2016 Water Year Addressing Operations for the Period of July 1, 2016 to September 30, 2016. November 3, 2016. Available:

https://amwater.com/caaw/customer-service-billing/billing-payment-info/water-rates/monterey-district.

California American Water (CalAm), 2017. Letter report to Barbara Evoy, Division Chief, Division of Water Rights, SWRCB, Re: SWRCB Order WR 2009-0060, 2nd Quarterly Report for the 2016-2017 Water Year Addressing Operations for the Period of January 1, 2017 to March 31, 2017. Dated May 1, 2017. Available: https://amwater.com/caaw/customer-service-billing/billing-payment-info/water-rates/monterey-district.

MPWMD-14 The Monterey Pipeline referenced in this comment was evaluated and approved as part of the CPUC's September 2016 Phase 2 GWR decision. Attachment 1 referenced in this comment is a table entitled "Effects of the Monterey Pipeline on ASR Yields by Water Year Type" and shows Carmel Valley well field capacity and permitted diversions for both ASR Phase 1 and ASR Phase 2 projects (Permits 20808A and 20808C, respectively). MPWMD's estimate of the long term annual yield for ASR Phases 1 and 2 and additional CalAm improvements noted in this comment is similar to the estimate of 1,920 afy for ASR Phases 1 and 2 that was presented in an Addendum prepared for the ASR project (Denise Duffy & Associates, 2012), as cited on page 2-19 of the Draft EIR/EIS. However, based on the information presented in Attachment 1, the yield of the two phases appears to be about 1,600 afy with the Monterey Pipeline in place in normal rainfall years. In addition, since the time that Attachment 1 was provided with this comment, MPWMD has added three new columns to the table (Stoldt, 2017) that show the weighted average yields based on the relative frequency of different water year types. As shown in the table below, the weighted average increased yield from adding the Monterey Pipeline is 714 afy and the weighted average total yield of the Phase 1 and 2 ASR projects is 1,641 afy or about 1,600 afy.

	Operational Days		Project Yield (AF)			Percent of Time	Weighted Increased Yield	Weighted Total Yield
	20808A	20808 C	Without Pipeline	With Pipeline	Increased Yield			
Critically Dry	4	3	53	86	33	12.5%	4.1	10.8
Dry	18	14	239	393	154	12.5%	19.3	49.2
Below Normal	41	33	545	908	363	12.5%	45.4	113.5
Normal	69	62	918	1,600	682	25.0%	170.5	399.9
Above Normal	94	102	1,357	2.372	1,016	12.5%	127.0	296.5
Wet	115	114	1,530	2,784	1,254	12.5%	156.8	347.9
Extremely Wet	139	140	1,862	3,389	1,527	12.5%	190.8	423.6
						Weighted Average:	713.8	1,641.46

SOURCE: Stoldt, 2017

As discussed in EIR/EIS Section 2.4.3, because of the variability of precipitation and instream flow levels and because diversions allowed under the ASR permits are contingent on maintaining instream flows, CalAm assumes a more conservative yield – 1,300 afy – from the ASR Phase I and II projects and the proposed MPWSP ASR-5 and ASR-6 wells. Given the low yields during dry years and critically dry years (53 to 239 af per year without the Monterey Pipeline and 86 to 393 afy with the pipeline, respectively), the recent severe five-year drought, and that more frequent and severe droughts will occur in the state in coming years due to climate change,[1] CalAm's lower estimate of long term reliable yield from the ASR is not unreasonable. Estimates in this EIR/EIS of supply provided by the MPWSP in conjunction with other sources assume operation of the proposed desalination plant at or close to 100 percent capacity. Should the MPWMD's current estimate prove more accurate than CalAm's, and the ASR system thereby provides more supply than CalAm currently expects, CalAm could operate the desalination plant at a less intensive level, as discussed in Master Response 13, Demand (Project Need) and Growth. The difference between MPWMD's and CalAm's ASR's yield estimates, 700 afy, is equivalent to about 0.6 mgd. Assuming ASR provides 700 afy more than was assumed for the MPWSP, a 9.6 mgd desalination plant could operate at 93 to 94 percent capacity, rather than 100 percent, to produce about 9 mgd of product water.

The discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.3, considers other possible supply and demand scenarios. If supply from the Carmel River ASR system provided either 1,300 or 1,600 afy, in combination with the other assumed supplies, the desalination plant could be reduced by one or two 1.6-mgd reverse osmosis units, depending on the particular demand scenario. See Master Response 13 for more information.

MPWMD-15 The typographical errors in the numbers of the two water rights permits in the paragraph at the bottom of page 2-20 and top of page 2-21 of the Draft EIR/EIS have been corrected.

MPWMD-16 The text in EIR/EIS Section 2.4.6.2, Malpaso Water Company LLC, is primarily based on information presented in the Findings in MPWMD Ordinance 165, as indicated in the cited references, which uses the term "Malpaso Water Company Water Use Permit subscribers" several times (e.g., in Findings No. 3, No. 6, and No. 8). Text in Section 2.4.6.2 has been revised to adhere to the term used in the Findings of Ordinance 165 and to clarify the use of "subscribers."

MPWMD-17 In response to this comment, the discussion under "Los Padres Reservoir" in EIR/EIS Section 2.5.2.1 has been updated as follows:

[1] For example, at the same time the California governor directed the State Water Resources Control Board to lift specific provisions of the drought emergency in April 2017, he also proposed legislation to establish long-term water conservation measures and "improved planning for more frequent and severe droughts" (SWRCB, 2017).

> …Based on the 2008 study, MPWMD estimated~~s~~ that the long-term sedimentation rate of the reservoir was~~is~~ 21 afy and that more than 510 af of replacement supply would likely be needed to offset the lost capacity (MPWMD, 2015b). A 2016 resurvey conducted for MPWMD determined that although the reservoir can hold up to 1,810 af at the spillway level, the safe usable storage was less than 1,400 af due to concerns about releasing anoxic water or water with hydrogen sulfide in the lowest portion of the reservoir (MPWMD, 2017). MPWMD currently estimates that sedimentations rates could range from 11 to 19 afy. Based on the 2016 resurvey and changes in reservoir operation, MPWMD currently believes that the previous estimate of needed replacement supply may be low. However, because the need for this replacement supply is long-term, MPWMD believes that water supply available from the Seaside Groundwater Basin at the end of CalAm's in-lieu replenishment period (discussed in Section 2.2.4) may be adequate to offset losses in supply from the Los Padres Dam and Reservoir (MPWMD, 2017).[30] As noted in Section 2.2.2, MPWMD and CalAm are currently studying the long term options for the Los Padres Dam and Reservoir.
>
> [30] The estimate of safe useable reservoir capacity based on the 2016 resurvey is 779 af less than the capacity identified in Order 95-10 (2,179 af), and an additional 700 afy will be available to CalAm at the end of the Seaside Groundwater Basin in-lieu replenishment period.

The new reference added in Section 2.5.2.1 (MPWMD, 2017) is shown in response to comment MPWMD-7.

MPWMD-18 The completion date shown in the Draft EIR/EIS is based on the cited reference, MPWMD Ordinance 168 (specifically, Item 5 on page 2 of the ordinance). In response to this comment, however, the second paragraph in EIR/EIS Section 2.5.3.1 has been revised and this comment letter is cited as a reference. See response to comment MPWMD-7 for the new reference.

MPWMD-19 Please see the response to comment MPWMD-13, which addresses the discussion of non-revenue water presented in Section 2.5.3.3.

MPWMD-20 EIR/EIS Table 2-5 presents the estimates of future water supply need (demand) prepared by MPWMD in consultation with service area jurisdictions in 2006 and revisions to some of those estimates based on more recent information. The revisions included an updated estimate for Monterey County based on the 2030 water demand estimate presented in Monterey County General Plan Final EIR Table 4.3-9e, Carmel River/Seaside Aquifer Existing and 2030 Estimated Water Demand. Table note "h" at the updated county estimate in EIR/EIS Table 2-5 explains that the updated estimate is "for the unincorporated county areas served by the Carmel River and Seaside Basin aquifer;" therefore this demand estimate would not include demand for the city of Marina. In addition, a review of the

Monterey County General Plan land use plans for the Greater Monterey Peninsula and Carmel Valley Master Plan planning areas shows that the areas south and east of CalAm's service area largely consist of lands designated as "rural grazing" and "resource conservation," which are unlikely to generate much water demand. The same Table 2-5 without further revisions is included in EIR/EIS Chapter 2.

The only reference to the "Greater Monterey Peninsula" on the page cited in this comment is Footnote 31, which is part of a discussion of several updates to the projection of future water supply needs associated with general plan buildout that had been prepared by MPWMD in 2006. Footnote 31 explains that because the Monterey County General Plan Final EIR used a higher per capita demand rate than currently assumed, and because the population estimate assumed in the General Plan EIR was higher than what AMBAG more recently projects, the EIR/EIS used the General Plan Final EIR estimate of 2030 demand (1,005 afy) rather than the estimate of buildout demand (4,439 afy).

The commenter's opinion of the County General Plan estimates of future demand and population are acknowledged The revised estimate of future supply needs in EIR/EIS Table 2-5 represents the most current data available on demand anticipated by the adopted general plan for the area that most closely conforms to the area served by CalAm, and table note "h" discloses the breakdown of demand for subareas within that portion of the unincorporated county that are included in the estimate. The future demand estimates presented in this table were not the basis for sizing the MPWSP but are presented to provide a general comparison of demand associated with anticipated development under adopted general plans with the proposed project water supply that would be available to serve additional development. Please note that the revised county estimate in EIR/EIS Table 2-5 *reduces* MPWMD's own estimate, which was prepared in consultation with the county for the area served by CalAm.

Finally, in comment MPWMD-62, the commenter endorses the revised estimate of 3,526 afy shown in EIR/EIS Table 2-5 (and Table 6.3-8), of which the county estimate is part, suggesting at least general agreement with the revised estimate. See also EIR/EIS Appendix L, which considers several other possible supply and demand scenarios. The results of these scenarios are summarized in Master Response 13, Section 8.2.13.5.

MPWMD-21 This comment confirming that the MPWMD has not determined how water provided by the MPWSP may be allocated and suggesting how it may be allocated or reserved is noted. Absent definitive information about the allocation, it was necessary to make assumptions for purposes of the growth inducement analysis presented in EIR/EIS Section 6.3. The discussion in EIR/EIS Section 2.5.4 discloses the EIR/EIS *assumptions*, as opposed to presenting more definitive information, as indicated in the section heading, "Assumptions about the Allocation of MPWSP Water," and section text. The assumption that water

provided by the project that is not needed for existing demands or Salinas Valley return water would be used to meet demand associated with future development is an appropriately conservative assumption for the impact analysis, in the absence of verifiable commitments that project water would not be so used. The assumption that water not needed for existing demand or return water obligations would be distributed in general proportion to projected planned growth in the CalAm service area is also appropriate, in the absence of definitive information on any MPWMD plans to the contrary.

Regarding the statement that MPWMD "may" maintain a reserve to offset Pebble Beach water entitlements, note that based on comments by the Pebble Beach Company, other comments by MPWMD, and the SWRCB's recognition of the Pebble Beach water entitlements, the EIR/EIS has been revised to characterize the Pebble Beach entitlements as an "existing" demand. Thus the EIR/EIS assumes that water supply provided by the MPWSP or other sources water would be retained – by whatever means the MPWMD determines – to offset the Pebble Beach entitlements (see, e.g., responses to comments MPWMD-11 and MPWMD-57).

In response to this comment, the text of the second paragraph of Draft EIR/EIS Section 2.5.4 on page 2-30 has been revised to expand the discussion of MPWSP water allocation, as follows:

> One of the MPWMD's key functions is to allocate water supply within its boundaries. The water supply that the proposed project would provide, along with other existing and planned supplies, would continue to be subject to MPWMD's allocation program. Although MPWMD has not yet begun to address allocation of the proposed MPWSP supply, this analysis assumes that the same considerations that informed the past and current allocations will be relevant to the allocation of the MPWSP supply. This EIR/EIS assumes for purposes of the impact analyses presented in Chapters 4 through 6 that water provided by the proposed project will be used to ~~allocated to~~ meet existing demand and that any water left over would be allocated in general proportion to projected planned growth in the CalAm service area jurisdictions. MPWMD recently confirmed that the future allocation process has not been defined and that MPWMD will update its 1990 Allocation Program EIR only when it is clear that CalAm will complete construction of a project to provide replacement supplies [for the reductions that resulted from SWRCB Order 95-10 and related CDOs and the Seaside Basin adjudication] (MPWMD, 2017). MPWMD indicates that it may not allocate all the water, choosing instead to retain some for future allocation to jurisdictions, "as general plans change over time," or to "retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations" (MPWMD, 2017). In the absence of

> definitive commitments as to how water provided by the project would be allocated (or not), the assumption that water provided by the project and not needed for existing demands or Salinas Valley return water would be used to meet demand associated with additional development, distributed in general proportion to projected planned growth in the CalAm service area, is a reasonable and appropriately conservative assumption for the EIR/EIS impact analysis.

The new reference added in Section 2.5.4 (MPWMD, 2017) is shown in response to comment MPWMD-7.

MPWMD-22 The referenced footnote in EIR/EIS Chapter 2, Water Demand, Supplies, and Water Rights) has been revised as requested in this comment.

MPWMD-23 EIR/EIS Figure 3-1 has been revised to include the Toro portion of CalAm's Service Area.

MPWMD-24 See response to comment USARMY-7 in Section 8.3.2.

MPWMD-25 EIR/EIS Table 4.1-2 has been revised to reflect the addition of two new extraction wells by CalAm at the Sand City Desalination Plant.

MPWMD-26 Project No. 17 has been removed from the cumulative analysis.

MPWMD-27 In response to this comment as well as comment MPWMD-40, the first paragraph on page 4.3-63 of the Draft EIR/EIS has been revised to remove the reference to the prior use of the depression during the development of ASR-3 and ASR-4 wells.

MPWMD-28 This comment is addressed in Master Response 6, Sustainable Management Act, which includes a discussion of basin boundaries.

MPWMD-29 The referenced text has been corrected in Section 4.3, Surface Water Hydrology and Water Quality, to state that the capacity of Los Padres Reservoir has been reduced by about 60 percent capacity, as opposed to 2 percent capacity.

MPWMD-30 This comment is addressed in Master Response 6, Sustainable Management Act, which includes a discussion of basin boundaries.

MPWMD-31 As noted on Draft EIR/EIS page 4.4-25, Pueblo Water Resources 2016 was the reference, and the cited text has been revised to reflect Water Year 2015, as follows:

> For the 2015~~2013~~ water year, groundwater in Well PCA-E was estimated to contain about~~22 to~~ 30 percent injected potable water.

MPWMD-32 The reference to the Seaside Ozone Treatment Plant in Section 4.4.1.4 has been revised to "Santa Margarita Chemical Building."

MPWMD-33 The referenced text in Section 4.8.2.4, Special Districts, has been clarified to reference "an amendment to [CalAm's] Water Distribution System Permit" rather than "a Water System Expansion Permit."

MPWMD-34 A footnote has been added to Section 4.4.2.2 to clarify that "The RWQCB regulates ASR operations throughout California under SWRCB Order 2012-0010 General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Water into Groundwater. However, the MPWMD operates the Seaside Basin ASR wells under Permit 20808C, which predates the statewide order."

MPWMD-35 The discussion of Division of Water Rights Permit 20808C – Amended Permit for Diversion and Use of Water in Section 4.4.2.2 has been updated as follows:

> ***Division of Water Rights Permit 20808~~C~~ – Amended Permit for Diversion and Use of Water***
>
> In 1995, the State Water Resources Control Board (SWRCB) issued Permit 20808 to the Monterey Peninsula Water Management District (MPWMD) for the proposed Los Padres Reservoir project. The permit was later split and modified several times, and now addresses additional requirements for the diversion of surface and under stream flow from the Carmel River, protection of the Carmel Lagoon and fish habitat, and the injection and storage of Carmel River water in the Seaside Basin using the ASR injection/extraction wells. The MPWMD and CalAm now jointly own Permits 20808A and 20808C, which total 5,326 acre feet per year. The ASR project that diverts excess water off of the Carmel River operates under Permits 20808A and 20808C.
>
> The requirement to limit recovered water to 1,500 acre feet in any given year is associated with a side agreement between MPWMD, CalAm, and the California Department of Fish and Wildlife (CDFW) concerning recovery of water injected into the Seaside Basin under Permit 20808A. The Quarterly Water Budget Group which was set up to determine how the CalAm system should be operated can decide to extract less. This agreement does not include water recovered under Permit 20808C. However, Condition 7 in the Cease and Desist Order (CDO) (see Section 2.2.3 State Water Board Order 95-10 and Cease and Desist Order 2009-0060 for discussion) requires that all water injected under either Permit 20808A or 20808C be recovered in the same year, unless the CDFW and the National Marine Fisheries Service (NMFS) agree to an alternate recovery plan. Under the CDO, the first 600 acre feet per year of water diverted to ASR in

any water year must go toward offsetting Carmel River diversions in the water year it is diverted.

These requirements and others placed by the SWRCB on ASR recovery will be lifted once the CDO is met; thus, these limits will not be an operational or budgetary limit after replacement supplies are operational and CalAm has reduced its Carmel River diversions to authorized amounts.

MPWMD owns Permit 20808B for 18,674 acre feet per year, which is referred to as the "remainder" permit and is associated with a project to build a new main stem reservoir on the Carmel River downstream of the existing Los Padres Dam. That permit has a different set of instream flow requirements that were fixed to the permit by the SWRCB in 1995 prior to NMFS listing steelhead as a threatened species. No water has been diverted under Permit 20808B to date.

~~Permit 20808C set requirements for the ASR system and established a maximum annual Carmel River diversion of 2,900 afy for injection and storage in the Seaside Basin, timing and monitoring requirements for diversion, fish protection measures, and rules for the recovery of the stored water. The current annual volume of stored water that can be recovered is 1,500 afy, plus unrecovered carryover water from previous years, if available. In addition, the volume of recovered water may not exceed 1,500 af for a given year if the volume of water injected that year, plus carryover from previous years, does not equal 1,500 af. In that case, only the volume of water injected that year, plus whatever carryover water is available may be recovered.~~ Implementation of the proposed project would allow CalAm to more effectively utilize its Carmel River water rights by increasing its capacity to inject water for storage when river flows are sufficiently high to allow for diversion. CalAm is presently operating within the terms of the permit and nothing about the proposed project would change its ability to operate consistent with the permit.

MPWMD-36 See Master Response 4, Agency Act and Return Water, Sections 8.2.4.1 through 8.2.4.3 for additional information on the return water calculations and input from the Hydrogeologic Working Group (HWG).

MPWMD-37 The Proposed Return Water Settlement mentions there may be limitations in the capacity of the CSIP to accommodate **all of the return water** under some conditions [emphasis added]. EIR/EIS Section 3.2.3.7 articulates that "the first 800 afy would go to CCSD and the remaining water would go to the CSIP." There are no indications or reasons to believe that the CSIP could not feasibly accept the balance of the return water.

MPWMD-38 The referenced text has been revised to clarify the relationship between the SEAWAT model and the Seaside Groundwater Basin Modeling.

MPWMD-39 See EIR/EIS Section 3.4.2, Operation of the ASR System, which explains that the Seaside Groundwater Basin annual monitoring reports prepared by the Seaside Groundwater Basin Watermaster would be reviewed yearly to identify the current location of the groundwater depression in the Santa Margarita Formation, the aquifer unit where the ASR system water would be banked.

MPWMD-40 See response to comment MPWMD-27.

MPWMD-41 The requested clarification has been made.

MPWMD-42 The requested clarification regarding the ASR source aquifer (i.e., the Santa Margarita Sandstone) has been made in EIR/EIS Section 4.4.5.2.

MPWMD-43 EIR/EIS Section 3.2.4 explains that CalAm proposes to expand the existing Seaside Groundwater Basin ASR system to provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies, and to increase system reliability. EIR/EIS Table 3-8 has been revised to reflect the need for CalAm to file a Petition for Change with the SWRCB in order to use ASR-5 and ASR-6 wells for the injection and extraction of Carmel River water.

MPWMD-44 The EIR/EIS Section 4.4.5.2 text referred to in this comment has been revised to make the clear distinction between in lieu recharge and delivered water. See also response to comment Thomas-10 in Section 8.7.24.

MPWMD-45 The reference to Figure 4.7-2 in the subsection "Interference with Existing Groundwater Remediation Systems" has been revised to include reference to Figure 4.7-1 as well. Together, these two figures show the entire project area; therefore, while the ASR wells are visible on Figure 4.7-2 only, there are several nearby sites that are shown on Figure 4.7-1 that are located north of the ASR well area.

MPWMD-46 Carbon dioxide (CO_2) would have the opportunity to be released once the seawater concentrate reaches the brine equalization basin where it would first be exposed to the atmosphere; however, this does not change the amount of CO_2 estimated to be released.

The following revisions to the Brine Degassing Emissions discussion in EIR/EIS Section 4.11.4.2 have been incorporated as shown below:

> The remaining 57 percent would be discharged to the brine storage basin where it would temporarily be stored ~~prior to being discharged back into the ocean where it would~~ and have the opportunity to come to equilibrium with the atmosphere ~~and~~ thereby releasing CO_2 ~~would be released~~.

MPWMD-47 Although EIR/EIS Table 4.19-1 accurately reflects the DOF's estimates of the increase in housing units for the individual service area cities and unincorporated county, the total number of housing units shown for the Monterey District Service Area in 2015 contains a transcription error. The correct total is 43,053 units (not 43,858), an increase of 195 units since 2010. Table 4.19-1 has been revised accordingly. The Department of Finance is an established, standard source of demographic estimates and projections in California. (Another potential source of 2015 estimates, the U.S. Census Bureau's American Community Survey, shows a greater increase in the number of units in most service area cities compared to the DOF estimates.)

MPWMD-48 The referenced text in Section 5.2.5 has been changed to read as follows,

> "… and the Monterey County Agency Act prohibition on out- of-basin transfers <u>of groundwater</u>…"

MPWMD-49 The EIR/EIS has been revised to include Pebble Beach entitlements as a component of existing demand, as stated in the response to comment MPWMD-11 and related responses. Accordingly, the first and last paragraphs under "Supply Shortages" and first paragraph under "Monterey Peninsula Water Conservation and Rationing Plan Actions" in EIR/EIS Section 5.4.2.3 have been revised to show that baseline demand under the No Project Alternative is 12,595 afy, rather than 12,270 afy, and that available supplies under the No Project Alternative represent 51 percent, rather than 52 percent, of baseline demand.

While some economic rebound at existing properties theoretically could occur under the No Project Alternative, it is not reasonably foreseeable. Considering the adverse socio-economic impacts of the No Project Alternative identified in EIR/EIS Section 5.5.20, Socioeconomics and Environmental Justice, and the shortfall that would exist for serving existing demands, an assumption that economic rebound would not occur and could not be served under this alternative is reasonable. MPWMD itself stated in comments to the State Water Board on the 2016 extension of the CDO, regarding reduced diversions from the Carmel River then under consideration, that the reduced diversion amount "will likely undermine the local economy" (MPWMD, 2016); the reduced Carmel River diversion amount then being considered was greater than combined total supplies that would be available under the No Project Alternative. MPWMD also anticipates adverse socioeconomic impacts under this alternative according to comment MPWMD-52.

A footnote has been added to the first paragraph under "Supply Shortages" in EIR/EIS Section 5.4.2.3 to clarify the reason demand associated with economic recovery at existing businesses is not assumed as part of baseline demand under the No Project Alternative:

> …Because the MPWSP or an alternative new water supply would not be implemented, this scenario assumes that potential demands associated with hospitality industry rebound[2] and legal lots of record….
>
> [2] Increased demand that resulted from economic recovery at existing businesses would not require new water connections or permits to be served. However, given the constrained supply that would result under the No Project Alternative, economic rebound resulting in increased demand at existing water customers is not considered reasonably foreseeable under this alternative. Therefore, additional demand at existing businesses resulting from economic recovery is not considered part of the baseline service area demand for this analysis. (See also Section 5.5.20 regarding anticipated socioeconomic impacts of the No Project Alternative, and the discussion of this demand component in Section 6.3, which assumes that a degree of economic rebound identified by CalAm in its application as future demand has already occurred and is therefore reflected in existing annual demand.)

In addition, the footnote in the first paragraph under "Monterey Peninsula Water Conservation and Rationing Plan Actions" has been revised to clarify that the comparisons of supply and demand under the No Project Alternative do not include demand associated with vacant legal lots of record or economic recovery.

MPWMD-50 The assumption in EIR/EIS Section 5.4.2.3 that reductions in Carmel River diversions would occur under the No Project Alternative due to failure to meet milestones required in the CDO does not presume that CalAm is "at fault" or "chooses" not to execute the project. However, neither does it presume to know how the SWRCB would interpret its CDO and the failure to meet CDO milestones.

According to the language in the CDO, suspension of reductions is not automatic but at the Water Board's discretion, it "may" suspend any corresponding reduction. The key result of the No Project Alternative is that the service area would experience a serious reduction in water supply. Whether the supply reduction would begin somewhat gradually in 2018 due to a missed milestone, as assumed in the description of the No Project Alternative, or occur at once at the end of the CDO extension in 2022 (illustrated as a supply gap "cliff" in some MPWMD presentations) may be debatable, but it is not unreasonable to assume that reductions would occur if milestones established in the CDO to ensure progress were missed.

The CDO also includes schedule and condition number 15, which states that "[t]he conditions of this Order, State Water Board Order WR 2009-0060 and State Water Board Order 95-10 shall remain in effect until (a) CalAm certifies, with supporting documentation, that it has obtained a permanent supply of water that has been substituted for the water illegally diverted from the Carmel River and (b) the Deputy Director for Water Rights concurs, in writing, with the certification." By the reasoning in this comment, this could be interpreted to mean that if CalAm fails to obtain a new permanent supply, but CalAm is not responsible for that failure, that the SWRCB would allow the level of illegal river diversions established for 2016 in the CDO to continue indefinitely. The 2009 and 2016 CDOs are intended to ensure progress toward obtaining a replacement supply and stop illegal diversions as required in Order 95-10, and it does not seem

reasonable that the SWRCB would allow (such as under a No Project Alternative scenario) illegal diversions to continue indefinitely.

MPWMD-51 As noted above in responses to comments MPWMD-11, MPWMD-49, and others, the EIR/EIS has been revised to recognize that CalAm is obligated to serve Pebble Beach entitlements with or without the project and that these entitlements are appropriately considered a category of existing demand. Text in EIR/EIS Section 5.5.21.2 and Table 5.5-18 have been revised accordingly, showing that demand associated with existing annual service area demand, existing water entitlements, and existing land uses under an improved economy totals 12,845 afy, rather than 12,520, and that demand associated with new development totals 1,430 afy, rather than 1,755 afy. EIR/EIS Section 5.5.21.2 text and Table 5.5-19 have been revised to show that the quantity of supply available after meeting the aforementioned existing demands and a 6 percent or 12 percent SVGB return water obligation would total 1,845 afy or 209 afy, respectively.

Provision of water to develop vacant lots of record meets the definition of a growth inducing effect described in CEQA Guidelines Section 15126.2(d), which is presented in Section 6.3.3, Regulatory Framework, of the EIR/EIS growth inducement analysis. Vacant lots of record cannot currently be served water; with the project, water supply would be available that would allow their development. Therefore, the project would remove water supply constraints as an obstacle to growth, consistent with the CEQA Guidelines definition of a growth inducing effect. The analysis in Section 6.3 concludes that the growth that would be supported by the MPWSP would be consistent with growth planned by cities and the county in the CalAm service area. The analysis also recognizes, in Section 6.3.6, Secondary Effects of Growth, that even planned growth would have environmental impacts, and discloses the impacts of growth that would be supported, in part,[2] by the project. The identified impacts are based primarily on the EIRs prepared for the General Plans and General Plan elements of jurisdictions in CalAm's service area. Some of those impacts are significant and mitigable and some are significant and unavoidable. Growth supported by the project – e.g., development of currently vacant lots – is therefore expected to result in at least some of the impacts expected from development under adopted land use plans of service area jurisdictions.

The degree to which a vacant legal lot of record that would be served by the project has undergone environmental review is uncertain. Arguably, some lots are likely to have been created before environmental review was required for a division of land. More to the point, however, is that CEQA specifically requires consideration of a project's potential to remove an obstacle to growth in its growth inducement analysis, as noted above. In the CalAm service area, water supply constraints have been such an obstacle. The effect a vacant parcel has on the

[2] While water service is only one of many factors affecting the growth potential of a community, it is one of the chief public services needed to support urban development.

environment is different from the effect of a developed parcel. Consistent with the CEQA Guidelines, the analysis did not assume that growth in the CalAm service area was necessarily beneficial, detrimental, or of little significance to the environment; as noted above, the analysis identified growth-related impacts based on the environmental documents prepared for city and county General Plans.

MPWMD-52 Consistent with CEQA and NEPA requirements presented in Section 6.3.3, the growth inducement analysis in Section 5.5.20 focuses on the ways and extent to which the proposed project or alternatives (including the No Project Alternative) would foster economic or population development, including by removing an obstacle to such development. The "negative growth" factor associated with the No Project Alternative, which is noted in the comment, is addressed in the socioeconomic and environmental justice effects in Section 5.5.20.3. The analysis concludes that the socioeconomic and environmental justice impact of the No Project Alternative would be significant and unavoidable.

MPWMD-53 The commenter's opinion about the significance of the impact of the proposed project and the No Project Alternative is acknowledged. See responses to comments MPWMD-51 and MPWMD-52.

MPWMD-54 The bullet referenced in this comment is part of EIR/EIS Section 6.1, Significant and Unavoidable Environmental Effects. The analysis conclusion summarized in this bullet is consistent with NEPA and CEQA requirements for the analysis of growth inducing impacts and the analysis of the project's growth inducing impact presented in Section 6.3. See also response to comment MPWMD-51.

MPWMD-55 In response to this comment, the seventh sentence in the first paragraph of EIR/EIS Section 6.3.1 has been revised to include the Monterey Peninsula Airport District.

MPWMD-56 The referenced description of MPWMD was based on information at its former (now replaced) website. In response to this comment the text and bullets in EIR/EIS Section 6.3.2.3 have been revised as requested.

MPWMD-57 As noted in response to comment MPWMD-11, the discussion of the Pebble Beach entitlements has been revised to show that they represent existing service area demand that CalAm is obligated to serve with or without the project. The text under "Pebble Beach Entitlements" in EIR/EIS Section 6.3.5.1 has been revised as follows:

> … Because the recently issued permits may not immediately translate to water connections or water use that is reflected in existing demand data, 325 afy is a reasonable estimate of ~~future~~ demand associated with these entitlements.

> The remaining entitlements represent an existing commitment by MPWMD to issue water permits to entitlement-holders and, as stated by the SWRCB in the CDO (SWRCB, 2016), the total entitlements represent less water than historically had been diverted from the Carmel River to serve areas now served by the wastewater project. Given that the Pebble Beach entitlements represent an existing commitment by MPWMD and duty to serve by CalAm whether or not the MPWSP is implemented, water supply limitations are not considered an obstacle to the development of the Del Monte Forest properties associated with these entitlements. Therefore, the Pebble Beach water entitlements are considered part of CalAm's existing demand and project water supply used to serve these entitlements would not be growth-inducing under CEQA or NEPA. ~~but the entitlements do not represent existing demand or development. Supply provided by the MPWSP would enable remaining entitlement holders to convert the entitlements to actual water permits – and water – to serve the development of properties in the Del Monte Forest. MPWSP supply used to serve the Pebble Beach entitlement-holders would remove water supply limitations as a constraint on that development, and would therefore, induce growth.~~

Regarding economic rebound, the comment that increased demand associated with economic rebound would occur at existing properties and would not be growth inducing is acknowledged and consistent with the EIR/EIS analysis. The EIR/EIS growth inducement analysis considers project water supply used to serve increased demand at existing businesses under improved economic conditions to be a component of existing demand, and not growth-inducing. The Draft EIR/EIS states (page 6-17): "This rebound in demand is assumed to occur due to increased occupancy rates without any expansion in physical capacity. Because no development or expansion of physical capacity would cause those demand increases, water supply provided to meet such increases would not be considered growth-inducing under CEQA or NEPA." The analysis does, however, conclude that CalAm's estimate of the amount of supply needed to serve economic recovery within the existing hospitality sector may be overstated. The proposed MPWSP would be capable of producing a given quantity of product water, and as stated in Draft EIR/EIS Section 2.5 (page 2-29), future demands cannot be predicted with absolute certainty. If less water supply than CalAm estimated was needed to meet demand at existing land uses due to economic rebound, more water (i.e., the difference between the estimated 500 afy and the amount actually needed, if it turns out to be less) would be available for other purposes. Absent a known, enforceable allocation or other mechanism to limit the proposed water supply to the uses specified in CalAm's application, it is appropriate for the EIR/EIS growth inducement analysis to consider that if some of the water supply identified for economic rebound is not used for that purpose it could be used to support development in the service area.

The EIR/EIS evaluates the project proposed by CalAm. To assess the potential increased water demand that could result from economic rebound of the hospitality industry (a major industry in the service area), the EIR/EIS reviews changes in commercial sector water consumption before and since the recession started; this approach is also consistent with MPWMD's approach as described in the document "MPWMD Analysis of Hospitality Bounce-Back" (cited as MPWMD, 2013b in EIR/EIS Chapter 2). In response to this comment, water consumption data for the industrial and public authority sectors were also reviewed to consider how the recession may have affected water consumption in those sectors. This additional review is described under "Economic Recovery" in Section 8.2.13.1 of Master Response 13, Demand (Project Need) and Growth.

The first three paragraphs under "Hospitality Industry Rebound" in EIR/EIS Section 6.3.5.1 have been revised to clarify the comparisons of commercial sector water use before and after the recession started and the basis for the EIR/EIS conclusion that demand associated with hospitality industry economic rebound may be less than CalAm's estimate, as shown below. The purpose of evaluating CalAm's estimate is to ensure that water supply provided by the project that may not be needed to serve these existing customers was appropriately considered in the growth inducement analysis.

> …MPWMD performed several comparisons of recent commercial sector water demand with earlier levels of demand, considering the years 1998 through 2011, and determined that recent demand ~~ranged from~~was 194, 236, ~~to~~or 440 afy lower than in previous years, depending on the years compared and the methodology used….
>
> … For example, consumption in 2003 was 980 af higher than in 2015.~~,~~ ~~whereas the~~ Average annual consumption for the four years before the recession (water years 2004 through 2007) was 233 af higher than average annual consumption for the four years after the recession started (2008 through 2011) and average annual consumption for the five years before the recession (water years 2003 through 2007) was 289 af higher than for the average of the five years after it started (2008 through 2012). Considering all 13 years shown, average annual consumption for the five ~~first seven~~ years prior to the recession ~~(water years 2003 through 2009)~~ was 434~~467~~ af higher than average annual consumption for the eight ~~in the last six~~ years since (water years 200819 through 2015), which included four drought years. Consumption in the last year before the recession (water year 2007) was higher than the year before and any year since. Since the region was experiencing a serious drought during the last four years of the~~is~~ 13-year record shown in Table 6.3-2, at least some of the reductions in demand shown in these years may reflect short term behavioral water conservation practices that may not be sustained during normal rainfall years.

… ~~In addition,~~ MPWMD's analysis of occupancy levels and commercial sector water consumption indicated that, based on four hospitality-industry businesses in Monterey and one in downtown Carmel, occupancy levels in 2011 were about 7 percent lower than the average occupancy levels for the years 1998 to 2001. Based on this difference, and on commercial sector water consumption data, MPWMD calculated that a 7 percent increase in the average annual commercial water demand for years 2009 to 2011 would increase annual demand by about 194 af. The greatest difference MPWMD found in its analysis, which compared average commercial water use for water years 2009 through 2011 with water use in the year 2000, was 440 afy; commercial water use was 3,207 af in the year 2000, which is higher than most years shown in Table 6.3-2. Of the comparisons presented above, the greatest differences are in the comparisons that include more distant pre-recession years or include post-recession years influenced by the recent drought.

Given the permanent reductions in water consumption achieved by ongoing conservation programs and the fact that the recent severe drought was not a factor constraining water use in the year CalAm used to represent existing annual water demand, the less extreme pre-and post-recession differences found in the above comparisons seem more likely indicators of the increased commercial sector water use that could occur in a fully recovered post-drought economy than do the more extreme differences. Therefore, based on the~~is~~ above considerations ~~comparison~~, increases in demand at area restaurants, lodging, and other commercial businesses from a rebounding economy ~~and hospitality industry~~ may more likely be on the order of 200 or 300 afy, rather than CalAm's estimate of 500 afy.

The commenter's opinion that economic rebound could occur with or without the project is acknowledged. Without the project or another water supply project to replace Carmel River and Seaside Basin supplies that are being reduced, it is reasonable to assume the resulting water supply shortage would constrain the local economy compared to existing conditions and make additional economic rebound less likely; refer to response to comment MPWMD-49. Regarding the evaluation of water supply for legal lots of record in the growth inducement analysis, see the last two paragraphs of response to comment MPWMD-51.

MPWMD-58 See response to comment MPWMD-57.

MPWMD-59 Draft EIR/EIS Section 2.3.3.2 (Final EIR/EIS Section 2.3.2.1) describes the analysis MPWMD prepared of commercial sector water consumption before and since the onset of the recession in 2008, in reference to CalAm's estimate of the additional water that would be needed (above existing service area demand) to serve the existing hospitality industry in a recovered economy. The MPWMD memo cited in Draft EIR/EIS Section 2.3.3.2 summarizes three comparisons of

demand before and since the recession started. The comparisons found that recent demand was 194, 236, or 440 afy lower than in years prior to the recession, depending on the years compared and the methodology used; Draft EIR/EIS Section 2.3.3.2 provides additional details about these comparisons.

Selectively focusing on any of these three results could be misleading by suggesting that one particular result was definitive. The MPWMD memo does not indicate that any one comparison was definitive or more compelling than the others. EIR/EIS Section 6.3.5.1 describes additional analysis of commercial sector consumption data prepared as part of the EIR/EIS evaluation; see response to comment MPWMD-57, above, for revisions clarifying that Draft EIR/EIS analysis. In addition, see Master Response 13, Section 8.2.13.1 regarding a review of water consumption data before and since the recession that also includes the industrial and public authority sectors. (Note also that while this comment refers to 440 afy for "CII demand" – indicating that the 440 afy referred to a change in commercial, industrial, and institutional sector demand – the MPWMD memo cited in Chapter 2 focuses on the rebound of the hospitality industry and refers to commercial sector demand.)

As stated in the first paragraph of Chapter 2, the chapter is descriptive: it describes water demand and supply information and assumptions included in CalAm's application and provides supplemental information about water supply and demand and factors affecting them in the CalAm service area. The growth inducement impact analysis presented in Section 6.3 takes a closer look at CalAm's assumptions to ensure the potential growth inducement potential of the project is adequately disclosed and analyzed.

MPWMD-60 The discussion of the Pebble Beach entitlements has been revised to show that they are considered existing service area demand that CalAm is obligated to serve with or without the project, and EIR/EIS text and tables have been revised accordingly.

The EIR/EIS does not assume that water in excess of the amount needed to meet demand associated with economic rebound, if less than the proposed 500 afy, would "automatically" go to the jurisdiction or that it would not be subject to the MPWMD allocation program. However, the EIR/EIS does assume that MPWMD *could* allocate such water supply to the jurisdictions. The information provided in this comment and comment MPWMD-21 on how MPWMD may retain or allocate project water, and some of the considerations MPWMD will weigh, is of interest; however, as these two comments indicate, MPWMD has not yet determined how project water available to its allocation program would be allocated. In addition, regarding the statement that "to assume the 500 afy is in excess is an unprovable assumption," the EIR/EIS does not assume that none of the 500 afy CalAm proposed to provide to meet economic recovery would be needed for that purpose. There is a degree of uncertainty associated with this estimate, and arguably the contrary is also "unprovable." See the discussion of economic rebound and

associated text revisions in response to comment MPWMD-57 for additional discussion of the EIR/EIS assessment of the estimate of water supply needed for this demand component.

In response to this comment, the first paragraph under "Assumptions Regarding Allocation and Use of MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1 has been revised to state the assumption that supply provided by the proposed project would be "used" rather than "allocated" to meet existing demand within the CalAm service area, and the remainder of this section has been revised as follows:

> ~~This analysis also recognizes that the MPWMD could choose not to allocate to the County the approximately 325 afy proposed to serve Pebble Beach water entitlement-holders, to ensure that adequate water supply would be available when development associated with those entitlements was proposed. If, on the other hand, the MPWMD did allocate this water to the County, the County could then elect to allocate at least a portion of the 325 afy to other development – if, for example, other development was proposed first or the County determined that the entitlement-holders were unlikely to use the full amount. In either case, this portion of the proposed MPWSP supply would be used to serve new development.~~
>
> Similarly, because <u>at present</u> there is no guarantee that the 500 afy proposed to meet demand associated with hospitality industry rebound <u>would be reserved for</u> ~~will actually go to~~ that use, this analysis assumes that either the MPWMD or the local jurisdictions could elect not to set aside 500 afy exclusively for use by existing businesses. Therefore, some portion of this 500 afy could actually serve new development within the service area.
>
> <u>As discussed in Section 2.5.4, MPWMD recently confirmed that the future allocation process has not yet been defined; refer to Section 2.5.4 regarding options MPWMD would consider regarding the allocation or reservation of MPWSP water, once the MPWSP was approved and it is clear that the project would be constructed. These considerations do not change the allocation assumptions described above for this analysis.</u>

Tables 6.3.3 and 6.3.4 have been revised to show that demand associated with existing land uses and water entitlements totals 12,845 afy (rather than 12,520 afy) and that demand associated with anticipated development totals 1,430 afy (rather than 1,755 afy) along with associated changes to the "Surplus (or Deficit)" shown in Table 6.3-4. Similarly, the discussion in EIR/EIS Section 6.3.5.1 under "Conclusion: MPWSP Water Service Capacity" has been revised to clarify that demand associated with the Pebble Beach water entitlements is considered a component of existing demand.

MPWMD-61 The commenter's opinion on the AMBAG projections is noted. AMBAG prepared the projections with substantial feedback from jurisdictions in the AMBAG region, and the projections were adopted in 2014. The projections supplement information from the jurisdictions' general plans and CalAm's anticipation of development of lots record and indicate that a degree of growth is anticipated in the region, including the CalAm service area. Obviously most of the growth in CalAm's service area would be limited to the period after the moratorium on new connections was lifted. As the commenter points out in comment MPWMD-12, some development associated with water rights not affected by the 2009 CDO has occurred since the CDO was issued.

MPWMD-62 The commenter's opinion that Water Code requirements that would reduce estimated future demands by an additional 20 percent would not apply to the CalAm service area is noted. The future demand estimates presented in EIR/EIS Table 6.3-8 were not the basis for sizing the MPWSP (which is described in EIR/EIS Sections 2.3.1 through 2.3.3), but are presented to provide a general comparison of demand associated with anticipated development under adopted general plans with the future demand that CalAm proposes for the project to meet.

The Draft EIR/EIS does not assume that the Water Code Section 10608 requirements necessarily would apply; indeed, the text and Table 6.3-8 note "b" point out that CalAm's 2010 UWMP showed that CalAm's Monterey District was already in compliance with the 20 percent reduction requirements. Ultimately, however, that determination is not for the Lead Agencies to make. In addition, as the comments in this letter and responses indicate, there is some uncertainty associated with projections of various components of future supplies and demands. For example, comment MPWMD-20 suggests that estimated demand for unincorporated Monterey County, which is part of the service area estimate of 3,526 afy that this comment endorses, is high. Including the revised estimate (3,526 afy) further reduced by 20 percent shows that the water supply the MPWSP proposes to provide for additional development (e.g., to serve legal lots of record) would be consistent with (that is, would not exceed) even this constrained estimate of future supply needs associated with development under adopted general plans. Showing the estimate of 2,080 afy in Table 6.3-8 does not imply, nor is it intended to imply, that it necessarily supersedes the revised 3,526 afy estimate, which is also shown. Regarding the uncertainty associated with the supply and demand projections, see also the discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.3, which considers several other possible supply and demand scenarios.

MPWMD-63 The first sentence of the fourth paragraph under "Local Programs" in EIR/EIS Appendix K has been revised to say,

> "… properties that have not already been retrofitted be retrofitted upon change of ownership, remodel, or change of use."

Table K-1 and related text in Appendix K have been revised to include MPWMD's mandatory water retrofit requirements and to show the revised total of quantifiable estimated savings.

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Stoldt, David J., 2013. Direct Testimony of David J. Stoldt, Before the Public Utilities Commission of the State of California, Application No. 12-04-019, February 22, 2013.

Stoldt, David J., 2017. E-mail to Eric Zigas, Subject: See last column, June 19, 2017.

8.5.8 Responses to Comments from Monterey Regional Waste Management District

MRWMD-1 The Lead Agencies acknowledge MRWMD's support for the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline.

MRWMD-2 The 0.8-mile-long segment of the optional alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline along Charles Benson Road would be installed within the paved Charles Benson Road right-of-way.

Impact 4.9-2 in EIR/EIS Section 4.9.5.1 addresses impacts related to temporary lane closures. The analysis conservatively assumes that all pipelines could require construction within or adjacent to vehicle travel lanes and could require temporary lane closures and/or detours. Due to the width of Charles Benson Road (approximately 28 feet), temporary lane closures with one-way traffic control could be required during installation of these pipelines if the optional alignment is implemented. At a rate of 150 to 250 feet of pipeline installation per day, the lane closure along the portion of Charles Benson Road under construction could last approximately 16 to 27 days. With implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan), which includes measures to minimize the adverse effects of roadway construction and detours, these impacts would be reduced to a level that is considered less than significant.

However, the Lead Agencies acknowledge MRWMD's concern that one-way traffic controls for a period of up to one month would not be compatible with the volume and type of traffic on Charles Benson Road, and could disrupt daily operations. As a result of this comment, EIR/EIS Section 3.2.1.2 (Source Water Pipeline – optional alignment), Section 3.2.3.3 (New Desalinated Water Pipeline – optional alignment) and Section 3.2.3.6 (Castroville Pipeline – optional alignment 2) have been revised to acknowledge that construction of these optional alignments would be limited to after hours/nighttime construction-only, since the Waste Management District shuts down operations and closes the gate on Charles Benson Road daily at 4 p.m.

8.5.9 Responses to Comments from Monterey Regional Water Pollution Control Agency (MRWPCA, now named Monterey 1 Water)

MRWPCA-1 The EIR/EIS, beginning in Chapter 1 on page 1-2, describes the two options put forth by CalAm in its application to the CPUC to meet estimated service area demand of 15,296 afy: the proposed 9.6 mgd desalination plant, or a reduced-size (6.4 mgd) desalination plant in combination with a water purchase agreement for 3.2 mgd (3,500 afy) from the Groundwater Replenishment (GWR) Project. (The commenter refers to the "Pure Water Monterey (PWM) Project," which is the same and merely an updated name for the GWR project analyzed in the EIR/EIS.) EIR/EIS Table 4.1-1 presents an overview of alternatives evaluated in detail, and shows that, because the GWR project has been approved, a Water Purchase Agreement for GWR project water would be a component of the No Action Alternative, as well as Alternative 5a and 5b. EIR/EIS Section 1.1. explains that presenting and evaluating both desalination capacity options allows the fullest consideration of the scope of the potential project and alternatives that may be feasible to meet project objectives under various scenarios, and furthers public transparency of the analysis of the options proposed in CalAm's applications to the CPUC and MBNMS. Footnote 2 on Table 4.1-1 explains, "The GWR project is not considered for cumulative impacts in conjunction with the proposed project or Alternatives 1, 2, or 4 because if a desalination option is selected that is of a size sufficient to fully satisfy the project objectives in terms of water supply, such choice would presumably mean that the GWR project was not successful in securing funding, completing construction and undertaking operations. The GWR project is conservatively considered for cumulative impacts with Alternative 3 because under that option, CalAm could meet its full project water supply objectives via the DeepWater Desal project, or could obtain water from a combination of the DeepWater Desal project and the GWR Project." The approach to evaluating cumulative scenarios is explained in Section 4.1.7 and the approach to evaluating alternatives is described in Section 5.5.1.

With respect to the need for MRWPCA to rely on an analysis that includes impacts of the combined MPWSP and GWR Projects, the analysis of Alternatives 5a and 5b throughout Sections 5.5 and 5.6 does include impacts of both the reduced-size MPWSP desalination plant and the GWR Project, in part by referencing the stand-alone certified EIR for the GWR Project. See also responses to comments MRWPCA-7 and MRWPCA-9.

MRWPCA-2 EIR/EIS Section 4.13.5.2 identified the potential for the proposed project to increase corrosion of the MRWPCA outfall and diffuser as a result of brine discharge. Based on studies provided by the MRWPCA (E2 Consulting Engineers, 2015), Impact 4.13-5 determined the proposed project could accelerate corrosion of a nearshore portion of the offshore segment, as well as the

land segment, of the outfall. The Draft EIR/EIS concluded the impact could be significant and included Mitigation Measures 4.13-5a and 4.13-5b, which would apply to the offshore segment and the land segment, respectively.

The Lead Agencies acknowledge receipt of the Enclosure 3 (Brown and Caldwell Technical Memorandum: Land Outfall Pipeline Evaluation and Protection Measures, January 9, 2017) with its March 2017 comment letter on the Draft EIR/EIS that describes revised options to protect the land segment of the outfall from corrosion. Impact 4.13-5 and Mitigation Measure 4.13-5b has been revised in Final EIR/EIS Section 4.13.5.2 to incorporate this refinement. The changes do not implicate any new or more severe significant environmental impacts than were identified in the Draft EIR/EIS.

MRWPCA-3 A description of the proposed Brine Mixing Box and appurtenances has been included in Final EIR/EIS Section 3.2.2.5. The description is similar to the Brine Mixing Facility that is described and evaluated in the January 2016 GWR Consolidated Final EIR. The environmental impacts of the proposed Brine Mixing Box and appurtenances have been discussed and are analyzed throughout the resource sections of Final EIR/EIS Chapter 4. The inclusion of the Brine Mixing Box does not alter the environmental impact analysis, and none of the significance conclusions of the Draft EIR/EIS have been altered as a result of this new component.

MRWPCA-4 The MRWPCA is required to replace the exposed Beach Junction Structure and outfall components under an order from the California Coastal Commission, independent from and as a project separate from the MPWSP. Therefore, the replacement of the Beach Junction Structure is a cumulative project considered in the cumulative scenarios relevant to the MPWSP; see Table 4.1-2. The Final EIR/EIS analysis has assumed that this separate project would be completed prior to the start of operation of the MPWSP Desalination Plant. See also responses to comments MRWPCA-5 and MRWPCA-10, below.

MRWPCA-5 As explained on page 2 of Enclosure 3 that was provided with this comment, the MRWPCA engaged a diving contractor in 1990/1991 to install over 20 seals and stainless steel clamps at joints inside the outfall that had started to leak following the 1989 Loma Prieta earthquake. Brown and Caldwell (January 9, 2017) determined that since the clamps are over 20 years old and are susceptible to chloride corrosion, they should be replaced prior to using the outfall to discharge brine from the proposed project. Impact 4.13-5 and Mitigation Measure 4.13-5a have been revised in Final EIR/EIS Section 4.13, Public Services and Utilities, to include a description of the WEKO band seal replacement process and to consider potential secondary impacts. This revised analysis does not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS.

MRWPCA-6 Impact 4.3-5 in EIR/EIS Section 4.3.5 has been revised to reflect the concern that the existing outfall diffuser end gate may need to be modified in order for operational discharges from the proposed project to comply with Ocean Plan and NPDES permitting requirements. The model analyses assessing dilution, regulatory compliance, and water quality at the discharge diffuser were revised and expanded to include a description of the end gate modification design, an assessment of outfall hydraulics with a modified end gate, and calculation of the discharge dilutions associated with implementation of a modified end gate to assess, in part, whether overall dilution from the outfall diffuser ports would be reduced following modification of the end gate. The supporting model-based analyses are presented in Appendix D1 (see Roberts, 2017, Supplemental Report). The findings of the revised analyses have been incorporated into the assessment of impacts for the proposed project and alternatives presented in Sections 4.3 and 5.5.3 of the EIR/EIS respectively; the impacts remain less than significant with the implementation of Mitigation Measures 4.3-4 and 4.3-5. Further, an analysis of potential secondary impacts associated with constructing and operating a modified end gate has been added to EIR/EIS Section 4.3.5.4. This additional analysis does not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS. See Section 4.3 for further discussion regarding updated modeling, updated Ocean Plan constituent compliance analysis, and updated impacts considerations.

The end gate, described in detail under Impact 4.3-4 and in Appendix D1, is an opening about two inches high at the end of the diffuser pipe from which approximately 5 percent of total operational discharge flows exit for flushing purposes. Mitigation Measure 4.3-5 has been revised to include a specific design, developed in collaboration with MRWPCA staff, for modifying the end gate, if needed, to increase dilution and ensure compliance with Ocean Plan requirements and NPDES provisions relating to operational discharges and water quality. The feasibility for such a modification to meet Ocean Plan salinity requirements was assessed in detail in a supplemental dilution model analysis (see Appendix D1).

In summary, the minimum dilution of discharges exiting the end gate would be substantially increased by modifying the existing 2-inch opening with a Tideflex check valve installed at an upward angle to maximize dilution of dense discharges. As modeled by Roberts (Appendix D1), modifying the end gate with an inclined check valve would slightly reduce flow volume and increase exit velocity, resulting in substantially increased dilution at the end gate, as compared to existing conditions. As described in detail in Appendix D1 Section 3.1, any upward angle greater than 20 degrees would result in dilutions that meet the Brine Mixing Zone (BMZ) salinity requirements, with 60 degrees calculated as being an optimum angle to maximize dilution (see Figures 2 and 3, in Appendix D1).

As described in EIR/EIS Section 4.3.5.4, modification of the end gate would have minimal effect on the flow distribution between the 129 horizontally-oriented diffuser ports and minimal effect on head loss, and would not reduce dilution from the outfall diffuser ports for the assessed discharge scenarios (for details see Section 3.2 of Appendix D1). The end gate check valve would decrease the flow from the end gate and increase the flow from the 2-inch ports, altering overall dilution by less than 1 percent (i.e., no effect on dilution when rounded to a whole number).

MRWPCA-7 Implementation of the proposed project (as discussed in EIR/EIS Section 4.3.5.2), as well as Alternatives 1 and 2, and Alternative 5 (reduced size desalination facility implemented in combination with the Pure Water Monterey GWR Project, discussed in Section 5.5.3) could result in exceedances of Ocean Plan water quality objectives, resulting in potentially significant impacts related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. As described in detail in EIR/EIS Sections 4.3.5.2 and 5.5.3, potentially significant impacts related to water quality would be reduced to a less-than-significant level by implementing Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives).

Mitigation Measure 4.3-5 requires that, prior to implementing operational discharges via the existing outfall, CalAm must perform an extensive water quality assessment using protocols defined in Appendix II "Minimum Levels" of the 2015 California Ocean Plan to demonstrate compliance with Ocean Plan water quality objectives and minimum initial dilution requirements. If the water quality assessment shows that releases via the existing outfall would exceed Ocean Plan water quality objectives, then additional design features, engineering solutions, and/or operational measures, would be implemented to reduce the concentration of water quality constituents in the operational discharges such that they conform with regulatory standards and objectives. Possible additional engineering measures and operational protocols needed to achieve compliance with regulatory standards, should any or all of them be required, are described in detail as part of Mitigation Measure 4.3-5. The feasibility for each of the engineering and/or operational protocols to achieve Ocean Plan and NPDES requirements is fully assessed and discussed in detail in Section 4.3.5.2 under the section titled "Determination of Efficacy of Mitigation Measures." Furthermore, the potential for secondary environmental impacts to result from implementation of the engineering and operational protocols detailed under Mitigation Measure 4.3-5 is comprehensively assessed in Section 4.3.5.4 of the EIR/EIS under the section titled "Secondary Impacts of Mitigation Measure 4.3-5."

Subsequent to the publication of the Draft EIR/EIS, in response to concerns raised by the MRWPCA with regards to the NPDES permitting of the Pure Water Monterey GWR Project, the EIR/EIS analyses assessing dilution, regulatory compliance, water quality at the discharge diffuser, feasibility of mitigation to

achieve regulatory requirements, and secondary impacts resulting from implementation of Mitigation Measure 4.3-5 were revised and expanded in Impacts 4.3-4 and 4.3-5; for additional details, see responses to comments MRWPCA-9 and MRWPCA-20, as well EIR/EIS Appendix D1. The revised and expanded analyses support the impact assessments and impact conclusions presented in the Draft EIR/EIS and were conducted in collaboration with MRWPCA staff specifically to ensure that the EIR/EIS contains adequate detail to enable MRWPCA and other responsible agencies to rely on the document for subsequent permit approvals. Although the revised analyses resulted in a revised Ocean Plan compliance analysis, the modeling indicated that potential constituent exceedances could be fully mitigated by implementing a diffuser retrofit with inclined jets, or other mechanisms as explained in Mitigation Measure 4.3-5. The additional analyses do not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS and the conclusions of the Draft EIR/EIS are unchanged.

Regarding the concerns related to other specific mitigation approaches that are described in Mitigation Measure 4.3-5, the addition of up to 5 mgd of freshwater has been demonstrated by Dr. Phil Roberts in EIR/EIS Appendix D1, Section 7.1 to be a technically feasible method for increasing dilution of dense and moderately dense brine discharges. Such an operational protocol is presented as one of a number of potential mitigation strategies that may be employed independently or in combination with other engineering or operational strategies to reduce potential impacts. It is not required to be implemented, but is included as an optional measure to ensure flexibility for implementing mitigation strategies over the lifetime of the project. While having up to 5 mgd of freshwater for dilution may not be feasible currently due to the lack of reliable availability of wastewater or another fresh water source, it is possible that additional flows may become available in the future. For this reason, the option for flow augmentation remains a part of Mitigation Measure 4.3-5. However, should flow augmentation remain impossible to implement due to a lack of availability of fresher water for blending, a variety of other mitigation solutions remain available to successfully increase dilution and/or reduce pollutant concentrations.

The option involving installation of a 20-inch pipe through the side of the MRWPCA outfall to convey brine to a dedicated brine diffuser is described in EIR/EIS Section 5.3.4.1. As explained in Section 5.3.6.1, all of the optional outfalls evaluated would have greater impacts than the proposed use of the MRWPCA outfall (Draft EIR/EIS page 5.3-55) and this alternative outfall configuration was not carried forward as part of the proposed project or any of the alternatives that are described and evaluated in Sections 5.4 and 5.5. Accordingly, no changes were made to the EIR/EIS in response to this comment.

MRWPCA-8 Text has been added to EIR/EIS Section 3.3.2.1, Subsurface Slant Wells, to indicate CalAm would need to obtain permission from the MRWPCA to accept well development water into the outfall.

MRWPCA-9 As described in EIR/EIS Sections 4.3 and 5.5.3, under certain operating scenarios, operational discharges associated with the proposed project, Alternatives 1, 2, and 5, could result in exceedances of Ocean Plan water quality objectives when various effluents are co-mingled (i.e., with MRWPCA secondary treated wastewater, brine, and/or GWR effluent), resulting in a potentially significant impact related to water quality that can be reduced to less-than-significant impact with the implementation of Mitigation Measures 4.3-4 (and 4.3-5, if necessary).

In response to concerns that were raised in this comment and comment MRWPCA-17, the dilution analyses presented in Appendix D1 of the EIR/EIS assessing minimum dilution at the outfall were revised and expanded. Discharge scenarios involving higher volumes of desalination brine and higher GWR effluent flows (only associated with Alternative 5) were modeled for the proposed project and alternatives to determine minimum dilution values and to assess impacts on water quality and regulatory compliance. Furthermore, discharge scenarios involving a wider variety of MRWPCA secondary effluent flows were modeled to support the assessment of potential water quality impacts at a higher degree of resolution. For example, water quality impacts were assessed for operational discharges involving MRWPCA secondary effluent flows, increased at 1 mgd increments.

As described in EIR/EIS Section 3.4.1, following a shutdown of the desalination facility for repair or routine maintenance, CalAm may temporarily (up to 11 days) operate the desalination facility with one additional reverse osmosis module in service to catch up on production; however, the total annual production would not be increased. Such an increase in production would result in temporary brine discharges of 16.31 mgd (as compared to 13.98 mgd under typical operations) for the proposed project (and Alternatives 1 and 2). For Alternatives 5a and 5b (reduced scale desalination facility), 11.24 mgd of brine would temporarily be produced following a shutdown (as compared to 8.99 mgd under typical operations). To reflect this operational scenario, the dilution modeling was revised to include higher brine flows following a shutdown of the desalination facility for the proposed project and relevant Alternatives (see Appendix D1). The analysis was also revised to include 0.1 mgd of trucked brine (see response to comment MRWPCA-14 for details).

Impact discussions for Impact 4.3-4 in EIR/EIS Sections 4.3.5.2 and 5.5.3 were revised to incorporate the results of the additional dilution analyses into the assessment of water quality impacts related to salinity concentrations and other water quality constituents; the revised analyses support and reinforce the

conclusions in the Draft EIR/EIS and impacts would continue to be less than significant with mitigation.

Summarizing key findings, when considering the increased brine flows following a shutdown, salinity levels associated with the proposed project and Alternatives 1, 2, and 5 are projected to continue to meet Ocean Plan salinity and dissolved oxygen standards. As was concluded for Impact 4.3-4 in the EIR/EIS, although impacts related to water quality from increased salinity have been determined to be less than significant, Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) continues to be required to ensure compliance with the Ocean Plan monitoring requirements and consistency with MBNMS guidelines.

The analysis to determine Ocean Plan Compliance for the proposed project and Alternatives for higher brine discharges following a shutdown, including for cumulative scenarios involving GWR effluent flows, has also been revised and expanded (see revised Appendix D3 of the EIR/EIS). The revised analysis was incorporated into the assessment of potential impacts in EIR/EIS Sections 4.3.5.2 and 5.5.3 related to water quality standards, waste discharge requirements, and numeric water quality objectives defined in the Ocean Plan. The analyses were also revised and expanded to assess potential water quality impacts related to a greater number of operational scenarios for typical operations to provide higher resolution water quality analysis, similar to that described for salinity, above.

None of the revisions made in response to this comment identified any new significant impact, or any substantially more severe significant impact, than previously evaluated and described in the Draft EIR/EIS.

MRWPCA-10 Table 4.1-1 in EIR/EIS Section 4.1 has been revised to include the Brine Mixing Structure and the Ocean Outfall End Gate Modification. However, the land outfall corrosion protection, and the WEKO Seal Band replacement have not been included in the table as components of the proposed project because they are mitigation measures in response to potential impacts resulting from the operation of the proposed project; although these mitigation measures are not part of the proposed project as submitted by Cal Am, these mitigation measures will be included in the Mitigation Monitoring and Reporting Plan (MMRP) and will therefore, become conditions of project approvals. The Outfall Protection Project (re-location of the Beach Junction Box), as explained in response to comment MRWPCA-4, is a cumulative project that has been added to EIR/EIS Table 4.1-2, and has been considered in the cumulative analyses. Response to comment MRWPCA-1 explains why the Pure Water Monterey GWR Project Water Purchase Agreement would not be in effect and why GWR would not be operating under all scenarios; SWRCB Order 2016-0016 will expire in 2021; no such change has been made to Table 4.1-2.

MRWPCA-11 The Ocean Outfall Manhole Protection project, also known as the Beach Junction Structure, has been added to Table 4.1-2 since it is a project separate from the proposed project that will be undertaken with approval of separate environmental review, while the other listed projects do not qualify as cumulative projects because they are either project components or mitigation measures designed in response to potential impacts resulting from operation of the proposed project. See responses to comments MRWPCA-1 (regarding the GWR Project), MRWPCA-2 (regarding the land segment outfall protection project), MRWPCA-3 (regarding the brine mixing structure), MRWPCA-4 (regarding the Ocean Outfall Manhole Protection project), MRWPCA-5 (regarding the WEKO band seal protection), and MRWPCA-6 (regarding the ocean outfall end gate correction/modification).

MRWPCA-12 In response to this comment, changes have been made to EIR/EIS Table 4.1-2.

MRWPCA-13 Table 4.3-9 in EIR/EIS Section 4.3.5.2 summarizes the average monthly MRWPCA wastewater flows for the years 1998-2012. As shown in Table 4.3-9, and discussed as part of the water quality impact assessments, the treated MRWPCA wastewater flow varies throughout the year. The highest flows are observed during the non-irrigation season (November through March) and the lowest flows are observed during the irrigation season (April through October), when the treated wastewater is processed through the Salinas Valley Reclamation Plant for tertiary treatment and distributed to irrigators through the Castroville Seawater Intrusion Project (CSIP).

To ensure the most recent data are accurately disclosed, Table 4.3-9 has been revised to include the recent data related to baseline wastewater flows provided by MRWPCA in its comment letter on the Draft EIR/EIS. Regarding the range of discharge scenarios modeled as part of dilution analyses to support impact assessments under CEQA and NEPA and additional model work conducted subsequent to the publication of the Draft EIR/EIS to support NPDES permitting of the Pure Water Monterey GWR Project, see response to comment MRWPCA-9. Regarding Table 4.3-10, see response to comment MRWPCA-14.

MRWPCA-14 See response to comment MRWPCA-1 regarding the GWR Project. The Pure Water Monterey GWR Project is assumed to be operational and is assessed in combination with desalination operations (Alternatives 5a and 5b) in detail for water quality impacts and regulatory compliance in EIR/EIS Section 5.5.3.8 and for marine biological resources in Section 5.5.5.8. Section 5.5.3.8 has been revised to consider a wide range of operational scenarios that include varying volumes (high/low) of GWR concentrate and varying volumes of MRWPCA wastewater being discharged via the existing ocean outfall along with desalination brine. In response to the comment, the dilution model analysis supporting water quality and regulatory compliance impact assessments for the proposed project and relevant Alternatives has been revised to include trucked brine. Detailed discussion and updated results are available in Appendix D1 and

the impact analyses presented in Sections 4.3 and 5.5.3 of the EIR/EIS have been revised accordingly.

EIR/EIS Section 5.5.5.8 uses the water quality impact assessment presented in Section 5.5.3.8 to assess impacts on marine biological resources from operational discharges from implementation of Alternative 5, which includes detailed assessment of water quality in the vicinity of the outfall diffuser from discharges that include effluent from the GWR project.

See also responses to comments MRWPCA-9 (regarding operation of GWR and revisions to the model analyses) and MRWPCA-13 (baseline MRWPCA wastewater flows to the existing ocean outfall diffuser).

MRWPCA-15 See response to comment MRWPCA-6 for concerns related to the outfall diffuser end gate.

MRWPCA-16 See responses to comments MRWPCA-1, MRWPCA-6, and MRWPCA-9.

MRWPCA-17 See response to comment MRWPCA-9. EIR/EIS Tables 4.3-15 and -16 have been revised to reflect the results of the additional and revised modeling of operational discharge scenarios associated with varying the volumes of co-mingled flows.

MRWPCA-18 The EIR/EIS includes comprehensive quantitative model analyses, presented in Appendix D3, that assess operational discharges associated with the proposed project and Alternatives for compliance with Ocean Plan water quality standards and numeric water quality objectives (WQO). The results of the model analyses presented in Appendix D3 are incorporated into the assessment of water quality impacts for operational discharges associated with the proposed project, Alternatives 1 and 2, and Alternative 5 (reduced size desalination facility implemented in combination with PWM/GWR Project) in EIR/EIS Section 4.3.5.2 and Section 5.5.3. See response to comment MRWPCA-7 for a detailed discussion of these impacts and associated mitigation measures.

Regarding additional assessment of the mitigation component involving retrofitting the outfall diffuser with inclined jets to increase dilution, see response to comment MRWPCA-20, which also provides details related to the assessment of potential secondary impacts on MRWPCA compliance with NPDES and Ocean Plan requirements from inclined jets when brine is absent (such as when the desalination facility is offline during repairs or routine maintenance).

MRWPCA-19 Advanced oxidation, additional filtration, and Granular Activated Carbon treatment methodologies have been demonstrated to be technically feasible methods for reducing the concentrations of certain constituents when used as part of a water quality treatment process. While none of these treatment methods would independently reduce the concentrations of all constituents regulated

under the California Ocean Plan, such treatment options are included as part of Mitigation Measure 4.3-5, Implement Protocols to Avoid Exceeding Water Quality Objectives, as components of a suite of potential mitigation strategies, both operational and engineering related measures, that may be employed independently or in combination with other mitigation component strategies to reduce identified constituent concentrations in operational discharges to ensure conformance with regulatory requirements. The various methodologies are included to ensure flexibility for implementing successful mitigation strategies over the lifetime of the project. In response to the comment, the inclusion of Biologically Active Filtration has been removed from Mitigation Measure 4.3-5.

MRWPCA-20 EIR/EIS Appendix D1 and Appendix D3 have been revised/supplemented to include a comprehensive analysis of inclined jets, such as included in Mitigation Measure 4.3-5, for operational discharges associated with the proposed project, Alternative 5, and the Alternative 5 cumulative scenario (i.e., with GWR effluent included). The analyses assessed changes to dilution, salinity, and Ocean Plan compliance associated with inclined jets for all ocean conditions and for a range of inclined angles to identify the optimum angle for meeting Ocean Plan water quality standards. Additionally, the assessment of Ocean Plan compliance (EIR/EIS Appendix D3) was revised to assess the potential for inclined jets to cause secondary impacts by preventing MRWPCA from meeting NPDES discharge requirements (for a buoyant discharge) when the desalination facility is offline. The results of the additional analyses have been incorporated into EIR/EIS Sections 4.3 and 5.5.3. As demonstrated by the revised analyses presented in Appendix D3 and incorporated into the assessment of impacts in EIR/EIS Sections 4.3 and 5.5.3, inclining the outfall diffuser jets increases dilution sufficiently to ensure that operational discharges would meet Ocean Plan standards and other regulatory requirements without causing secondary impacts to MRWPCA or cumulative scenarios (i.e., with GWR assumed to be operational). The revised and expanded analyses support the impact assessments and impact conclusions presented in the Draft EIR/EIS and were conducted in collaboration with MRWPCA staff specifically to ensure that the EIR/EIS contains adequate detail to enable MRWPCA and other responsible agencies to rely on the document for subsequent permit approvals. The additional analyses do not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS and the conclusions of the Draft EIR/EIS are unchanged.

MRWPCA suggests alternate mitigation, such as reducing the number of open ports on the outfall diffuser, reducing the diffuser size, and/or the removal or modification of the Tideflex duckbill diffuser nozzles to increase dilution. Altering the number of open ports was assessed by Roberts (2016) in EIR/EIS Appendix D1 and the approach was found to have only a negligible effect on dilution. Additionally, reducing the size of the ports could result in reduced head pressure, which would require discharges to be pumped under pressure rather

than flow by gravity as it currently operates, which would require the construction of a new pump station, potentially resulting in additional environmental impacts, and increased operating costs. For these reasons, the suggested mitigation strategies have not been added to Mitigation Measure 4.3-5.

MRWPCA-21 See response to comment MRWPCA-7.

MRWPCA-22 As discussed in EIR/EIS Section 4.4.1.2, Local and Regional Hydrogeology, the aquifers in the area near the subsurface intake system consist of the Dune Sand, 180-FTE, 400-Foot, and Deeper Aquifers. These aquifer names are based on the general depth at which the aquifers are encountered (see Master Response 7 regarding the clarification that what the Draft EIR/EIS referred to as the "900-Foot Aquifer" is more properly termed the "Deeper Aquifers" of the SVGB). However, the actual depth of each aquifer can vary depending on the location. The MRWPCA has three wells located at the Regional Wastewater Treatment Plant, but the well screen depth intervals do not precisely fit into the 180-FTE, 400-Foot, and Deeper Aquifer depth intervals as listed below.

Well	Screen Depth Interval below Ground Surface (feet)
14S/02E-20B01	260 to 340
14S/02E-20B02	260 to 290 and 300 to 340
14S/02E-20B03	670 to 730 and 785 to 805

Well 14S/02E-20B03 has depth intervals that are in between the 400- and 900-foot depth intervals. This well was assigned to the 900-Foot Aquifer (now Deeper Aquifers) since the well screen is in the Paso Robles Formation, which is the geologic unit below the Aromas Sand to which Deeper Aquifer wells are typically assigned.

Further examination of the geologic cross section on Draft EIR/EIS Figure 4.4-3 indicates that Wells 14S/02E-20B01 and 14S/02E-20B02 should be assigned to the 180-FTE Aquifer. These two wells have been deleted from Figure 4.4-16 (the proposed action response in the 400-Foot Aquifer) and added to Figure 4.4-15 (the proposed action response in the 180-Foot Aquifer). In addition, Table 4.4-10 has been revised.

MRWPCA-23 See responses to comments MRWPCA-1 and MRWPCA-14.

MRWPCA-24 See responses to comments MRWPCA-4, MRWPCA-5, and MRWPCA-6, which address revisions to the Draft EIR/EIS regarding descriptions and analyses of the construction and operation of the proposed protective measures for the Ocean Outfall, including the Beach Structure Evaluation and Protective Measures, the WEKO seal replacement and protection measures, and the End Gate protection measures.

In addition, see responses to comments MRWPCA-2, which addresses the land outfall protection mitigation, and MRWPCA-3, which addresses construction and operation of the Brine Mixing Facility.

MRWPCA-25 See response to comment MRWPCA-7.

MRWPCA-26 Text revisions have been made throughout the EIR/EIS regarding the correct phrasing of the Groundwater Replenishment Project and spelling of Trussell. With regards to use of the term "CSIP Pond" versus "Salinas Valley Reclamation Project" (SVRP), the following text revision has been made in EIR/EIS Section 1.4.4:

> 5. The preferred method of returning water to the Salinas Valley now includes a new 5-mile-long pipeline to the city of Castroville, with connections to the Castroville Community Services District (CCSD) and Salinas Valley Reclamation Project Storage Pond (hereafter referred to as Castroville Seawater Intrusion Project [CSIP] pond) distribution systems.

8.6 Organizations Comments and Responses

8.6.1 Ag Land Trust (ALT)
Ag Land Trust – Letter 1
Ag Land Trust – Letter 2
Ag Land Trust – Letter 3

8.6.2 California Unions for Reliable Energy (CURE)
CURE – Main Letter
CURE – Fox Letter
CURE – Owens Letter
CURE - Sobczynski Letter

8.6.3 California-American Water Company (Cal-Am)

8.6.4 Carmel River Steelhead Association (CRSA)

8.6.5 Carmel River Watershed Conservancy (CRWC)

8.6.6 CEMEX

8.6.7 Citizens for Just Water (CJW)

8.6.8 Coalition of Peninsula Businesses (CPB)

8.6.9 Deep Water Desal, LLC (DWD)

8.6.10 Ecological Rights Foundation (ERF), the Center for Biological Diversity (CDB), and Our Children's Earth Foundation (OCEF)

8.6.11 Fort Ord Rec Users (FORU)

8.6.12 Just Water (JW)

8.6.13 Land Watch Monterey County (LWMC)

8.6.14 Pebble Beach Company (PBC)

8.6.15 Point Blue Conservation Science

8.6.16 Public Trust Alliance (PTA)

8.6.17 Public Water Now (PWN)
Public Water Now – Letter 1
Public Water Now – Letter 2
Public Water Now – Letter 3

8.6.18 Salinas Valley Water Company (SVWC) and Monterey County Farm Bureau (MCFB)

8.6.19 Surfrider Foundation

8.6.20 Water Ratepayers Association of the Monterey Peninsula (WRAMP)
WRAMP – Letter 1
WRAMP – Letter 2
WRAMP – Letter 3
WRAMP – Letter 4

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8.6.1 Ag Land Trust
Letter 1 (ALT1)

Mary Jo Borak,
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Karen Grimmer,
NEPA Lead Monterey Bay National Marine Sanctuary
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First Letter of Objection to Monterey Peninsula Water Supply Project (MPWSP) CalAm's defective and incomplete draft EIR/EIS

Dear Ms. Borak and Ms. Grimmer:

This correspondence and letter of objection (and our subsequent additional letters of objection) to the massively incomplete and defective draft EIR/EIS prepared for the California American (CalAm) De-Salination Project/slant wells are hereby submitted by and on behalf of **the Ag Land Trust of Monterey County (Monterey County Agricultural and Historic Lands Conservancy)** and its' Board of Directors (Ag Land Trust).

Organized in 1984, the Ag Land Trust is a 501(c)(3) non-profit corporation which holds/owns over 32,000 acres both of fee title and permanent conservation easements to prime and productive coastal agricultural lands that are protected California coastal resources pursuant to adopted and enforceable certified California Local Coastal Plans, state statutes, and federal regulations and legally recorded easements. These real property ownership interests fully include our percolated potable groundwater rights and resources that we have jealously protected, preserved, and conserved for potable use and agricultural irrigation purposes for over 30 years.

For over three decades, the **Ag Land Trust** is and has acted as a multiple grant recipient, agent, and de-facto trustee for both the United States Government (U.S. Department of Agriculture, the U.S. Department of Homeland Security, and the U.S. Department of Defense/National Guard Bureau) and for the State of California (California Coastal Conservancy and California Department of Conservation). The Ag Land Trust acts in this capacity to implement and enforce both legally adopted federal and state mandatory policies and regulations for permanent agricultural land and natural resources preservation, including preservation of potable irrigation groundwater resources for continuing agricultural production of those farmlands that have been federally designated for preservation due to their remarkable productivity. These responsibilities are ongoing contractual obligations between the Ag land Trust and the identified federal and state agencies, and may not be impaired by other private or federal or state agencies. Further, the reversionary property rights (water rights) held by the U.S. Government in the potable groundwater resources of our Armstrong Ranch farm, which CalAm and the CPUC are intentionally polluting with its' slant well, may not be "taken" by either CalAm or the State of California using any kind of "made-up", contrived theory of "salvage water rights" that result from the intentional pollution of the aquifers that is resulting from CalAm and the CPUC's combined actions. The EIR/EIS has failed to even mention, let alone mitigate, that the massive environmental degradation and adverse impacts to our potable aquifers which is being caused by CalAm's CPUC authorized pumping. Again, this demonstrates the bias of the CPUC against the property owners whose property rights are being taken by the combined CalAm/CPUC actions.

ALT1-1

The CalAm slant well and CalAm's excessive and wasteful pumping thereof is directly, knowingly, and intentionally contaminating and permanently polluting both our potable groundwater supplies/aquifers and our two agricultural irrigation wells (and the potable water supplies thereof) that underlie our Armstrong Ranch property. Our Armstrong Ranch, to which we own fee title and in which the U.S. federal

government holds a reversionary ownership interest (including its' potable groundwater supplies and rights) is immediately adjacent to the CEMEX site upon which CalAm has built its' slant well which is wrongfully exploiting our overlying potable groundwater resources.

CalAm has no groundwater rights in the Salinas Valley aquifers. None. It is undisputed law in California that in an overdrafted groundwater basin, a junior appropriator cannot acquire groundwater rights. Yet CalAm, by its' pumping of its' slant well is causing massive environmental damage, without any mitigation, tour potable groundwater aquifers. The EIR/EIS has systematically ignored the massive and adverse environmental impacts of CalAm's proposed project so as to avoid identifying the necessary and massively expensive mitigations that would be required of CalAm to actually mitigate CalAm's proposed wrongful exploitation of the protected Salinas Valley (coastal) groundwater aquifers and resources. Loss of prime coastal farmland and its attendant productivity of food crops (due to the unlawful and irreplaceable stealing of potable groundwater supplies and the resultant pollution of the potable aquifers by the excess pumping of the slant wells), along with the permanent and irreplaceable loss of farmworker jobs have not been addressed or mitigated in the draft EIR/EIS. The costs to purchase those prime and productive coastal farmlands and ranches that will have their potable groundwater supplies wrongfully taken by the ultra vires approval of the CPUC, without compensation to the innocent land owners, are not addressed in the EIR/EIS. Nor is the loss of employment and massive displacement of low-income, Latino farmworkers (and their families) who are employed on those farms and ranches even acknowledged, let alone mitigated in the draft EIR/EIS. Although the Ag Land Trust offered to discuss these issues with Mr. Zigas (as well as offered our water quality baseline test results going back to 2007 and our recorded title documents demonstrating the U.S. Governments reversionary interests in our farmland and groundwater rights) during his one visit to our Armstrong Ranch farm, **he never called us back**. This may be because, much to his and CalAm's consternation, we proved that our potable and operational irrigation wells actually existed (he had publicly denied their existence in the press) and that we use them to irrigate our farmland and our dune habitat restoration sites which are mandated by the terms of our federal grants. (SEE **http://www.montereybaypartisan.com/tag/marc-del-piero/** - **Monterey Bay Partisan (4 articles AND VIDEO included in** PUC experts finally track down the elusive Ag Land Trust wells by ROYAL CALKINS *on* DECEMBER 16, 2015). The impermissible continuing bias of the EIR/EIS consultants in favor of CalAm and its plans to wrongfully take groundwater to which it has no legal rights, to the massive economic and environmental detriment of landowners that actually own real potable groundwater resources and rights, continues to be demonstrated in the draft EIR/EIS by their ignoring of valid objections and their refusal to full investigate,characterize, and fully mitigate the massive and adverse environmental impacts that have been identified by the real parties in interest whose property rights are being taken, without compensation by the CPUC.

The first letter of objection the **Ag Land Trust** sent to the CPUC in opposition to CalAm's plans to wrongfully exploit our potable groundwater supplies was in 2006. A copy of the original letter along with significant documentation of the illegality and adverse environmental impacts of CalAm's proposed "taking" (children call it "theft") of our groundwater (which documentation has previously been provided to the CPUC and the California Coastal Commission) is herewith attached. In spite of our objections, with the exception of the single field trip (wherein Eric Zigas finally was forced to acknowledge the existence of our large irrigation wells, although he declined to inspect our federally mandated and protected coastal sand dunes habitat restoration project), the CPUC and its' consultants have never responded in writing to any of our correspondence. .

Moreover, in violation of CEQA notice mandates, the CPUC has never sent the required mailed notices of the CalAm project (and its' massive cone of depression and resulting induced seawater intrusion into the potable aquifers) to the potentially affected real property owners whose potable overlying groundwater supplies and rights will clearly be polluted and compromised by the excessive and uncontrolled pumping by CalAm.

Please accept this e-mail, and all the documents, statements, objections, references, and attachments thereto, as the first of three e-mails from the Ag Land Trust that are intended to demonstrate the massive illegalities of the CalAm project and the defects and failures of the draft

ALT1-1 cont.

ALT1-2

ALT1-3

ALT1-4

ALT1-5

ALT1-6

EIR/EIS, and the huge legal deficiencies of that draft (that have been "ignored" or "whitewashed") that will subject that document to successful challenge in court unless the EIR/EIS is re-drafted to cure the deficiencies and re-circulated.

Further, by this correspondence, the Ag Land Trust hereby incorporates by reference, (and adopts as our own comments and our own criticisms and our own objections), the criticisms, comments, statements, asserted facts, correspondence, and objections, and all documents and attachments thereto, of the following parties which have submitted comments on the defects, omissions, and inadequacy of the draft EIR/EIS:

1. **The Water Ratepayers Association of the Monterey Peninsula (WRAMP) – Comment letter dated March 17-18, 2017, and all other comment letters submitted by WRAMP commenting on the EIR/EIS.**

2. **Comment Letter by Mr. Larry Parrish dated February 23, 2017 and all of the unanswered questions therein regarding unmitigated environmental impacts that have not been addressed in the draft EIR/EIS.**

3. **All comment letters and objections from Mr. David Beech (including Beech-1, Beech-2, Beech-3, Beech-4, Beech-5, and Beech-(5a)), dated Feb. 20, 2017 et seq..**

4. **Comment letter by Mr. Michael Baer dated February 24, 2017, and all additional comments and objections filed by Mr. Michael Baer regarding the draft EIR/EIS.**

5. **All correspondence and objections submitted by Nancy Selfridge, including but not limited to her e-mailed correspondence and objections dated February 22-23, 2017 sent by Mr. Steven Collins.**

6. **All correspondence from Kathy Biala, resident of Marina, Citizens for Just Water ("Just Water") - including but not limited to her correspondence, objections, and attachments dated 02.23.17.**

7. **All correspondence and comment letters from "Water Plus", including all correspondence and objections signed by George Riley, and including his correspondence dated 20 February 2017.**

8. **All comments and objection letters from and filed by Ms. Myrleen Fisher.**

ALT1-6 cont.

The draft EIR/EIS is fatally flawed because of the bias of the consultants, the deficiencies in its' content, and their refusal to acknowledge, investigate, and document the identified significant adverse environmental impacts of the proposed project. The failure to acknowledge and fully characterize,and mitigate, these significant adverse environmental impacts will cause these documents to be over turned in court, unless they are fully and factually revised and recirculated in compliance with CEQA and NEPA.
I will forward additional comments under a separate cover.

Most Respectfully, For the Ag Land Trust of Monterey County,

Marc Del Piero, Director

(SEE BELOW - Background environmental documents)

-----Original Message-----
From: MJDelPiero <MJDelPiero@aol.com>

To: sarahcoastalcom <sarahcoastalcom@yahoo.com>; zimmerccc <zimmerccc@gmail.com>; mmcclureccc <mmcclureccc@co.del-norte.ca.us>; cgroom <cgroom@smcgov.org>; Gregcoastal <Gregcoastal@sdcounty.ca.gov>; tom.luster <tom.luster@coastal.ca.gov>; tluster <tluster@coastal.ca.gov>; virginia.jameson <virginia.jameson@gmail.com>
Sent: Mon, Nov 10, 2014 7:09 am
Subject: Objection to Cal-Am appeal/application for test slant well

TO: The California Coastal Commission (Please Distribute/Forward This to All Members and Staff)

FROM: Monterey County Agricultural and Historic Lands Conservancy (THE AG LAND TRUST)

RE: Opposition to Proposed California American Water Company Appeal/Application to Acquire a Well Site to Violate Mandatory Policies of the Certified Local Coastal Plan and to Prescriptively "Take" Groundwater from the Overdrafted Salinas Valley Groundwater Basin and our Farm
Herewith enclosed, please accept this notice/letter of opposition to the appeal/application by the California American Water Company, along with the herewith attached EXHIBITS A, B, AND C.

Notice of Objection to proposed Cal-Am "test" slant well (11 pages)

Exhibit A - Board of Directors bios.

Exhibit B - Maps (showing induced seawater intrusion area and undisclosed A.L.T. wells)

Exhibit C - Prior objections correspondence (2006 - present)

The flawed Cal-Am appeal/application proposes to directly violate multiple mandatory Local Coastal Plan policies and state groundwater rights laws, and proposes an illegal "taking" of private property/groundwater rights, to economically benefit the privately held California American Water Company at the expense of the Ag Land Trust.

The application even fails to identify one of our agricultural groundwater wells on our farm property (the "Big Well"), which is the closest to the so-called Cal-Am "test well" and which will be the first to be permanently and irreparably contaminated by Cal-Am's illegal conduct. The proposed environmental review is incomplete and flawed.

No Coastal Commission staff review of these reasonably anticipated, immitigable adverse impacts on our protected coastal agricultural groundwater resources and farmland has been conducted or presented to the Commission in anticipation of this appeal hearing. The failure to even identify these unmitigated adverse impacts in the staff report, we assume, is because the Commission staff has relied exclusively on the flawed (by omission) Cal-Am appeal/application that has tried to "downplay" its intended "taking" of our groundwater supplies and its adverse environmental effects on our prime farmland. Coastal Commission staff has not contacted our Ag Land Trust in spite of our prior correspondence (see Exhibit C).

We anticipate presenting testimony pursuant to our attached Letter of Opposition and Exhibits at your Wednesday meeting in Half Moon Bay.

Please distribute our full comments and all attachments to each and all commissioners prior to the day of the meeting so that they may fully understand and consider the potential consequences of their actions.

Most Respectfully, Marc Del Piero, Director

Second Letter of Objection to Monterey Peninsula Water Supply Project (MPWSP) CalAm's defective and incomplete draft EIR/EIS

As was previously indicated in the prior e-mail sent on behalf of the Ag Land Trust of Monterey County, although the Ag Land Trust offered to provide additional information to the CPUC EIR consultant (Eric Zigas) for the draft EIR/EIS, no request was ever received. No phone call, no letter, no request for the environmental information that we offer was received in the past 20 months from the CPUC or Mr. Zigas. ALT2-1

Our information includes baseline laboratory water quality test data from 2009 forward, and recorded title documents showing the real property interests of the U.S. federal government in our farmland and its' groundwater supplies and aquifers. The recorded documents preclude any party (private, state, or federal) from taking the real property interests, including water supplies and rights, of the federal government for private, for-profit uses, as is CalAm's and the CPUC's intent with their "salvaged water theory". ALT2-2

Moreover, we object to the defective "groundwater model" used by the Hydrologic Working Group, which is controlled by interests which are contractually obligated to support CalAm's project and which hold no groundwater rights in the basin, because the model established no baseline hydrologic condition before CalAm began its' excessive and irresponsible slant well pumping, and because it intentionally excluded all adverse impacts to our groundwater resources and potable irrigation wells. This is a major and intentional defect by omission in the draft EIR/EIS expressly for the benefit of CalAm and its proposal. ALT2-3

Consequently, the draft EIR/EIS is defective by the intentional refusal and omission of available data by the CPUC EIR consultants and the CalAm consultants and engineers who have refused from the beginning of the CEQA process to acknowledge the significant and adverse environmental impacts that they are causing to the potable aquifers of the Salinas Valley and the injury to the landowners and farmworkers whose livelihoods and food production are dependent upon the protection and preservation of those freshwater potable aquifers that are beneath the prime coastal farmland that is subject to both federal and state statutory and regulatory protections. ALT2-4

Mr. Zigas, who was under contract to prepare a fair and impartial EIR, has never called or requested the offered environmental data, and his associates from CalAm and the CPUC hand-picked review panel, euphemistically referred to as the Hydrologic Working Group, has never contacted the Trust for that data either. Given their collective refusal to even acknowledge the existence of our wells for months, because they were inconvenient impediments to their pre-conceived plan to "take water from the Salinas Valley aquifers" that they are now polluting by inducing seawater intrusion from their slant well pumping, the Ag Land Trust has concluded that the draft EIR/EIS is massively defective.

In the earlier e-mail, the Ag Land Trust provided a "link" to the website of the Monterey Bay Partisan and the articles that it carried about our irrigation wells. It also has a link to a video where proof of the fully operational nature of our potable irrigation wells is proven. The bias of Mr. ALT2-5

Zigas and his associates that was also referred to in the earlier e-mail is demonstrated in the newspaper articles attached hereto, wherein Mr. Zigas and his friends continued to assert that our potable irrigation wells were either: 1. non-existent, 2. impossible to find (they are fully visible from CA Highway 1, or 3. were "capped" wells that were non-operational. Mr. Zigas, and the County of Monterey, and CalAm's engineers of the Hydrologic Working Group, and the Carmel Pine Cone newspaper were proven wrong when they visited our farm and personally witnessed our potable irrigation wells in operation pumping over 2000 gpm. It was also at that time that Mr. Zigas declined to look at our federally mandated coastal dune habitat restoration plot that we irrigate with potable water from our irrigation wells. This issue, and the threat and impacts of Cal-Am's wrongful actions to our federally required dune restoration efforts, are not addressed in the draft EIR/EIS.

Please see the attachments and view the video link at the Monterey Bay Partisan website, and the four (4) articles therein that proved the truthfulness of our assertions and the impermissible bias of the CPUC consultant who has omitted important information regarding the unmitigated significant and adverse environmental impacts of CalAm's proposed project. These acts of omission and impermissible bias of the drafters cause the draft EIR/EIS to require re-drafting and re-circulation.

Respectfully, the Board of Directors of the Ag Land Trust of Monterey County

ALT2-5
cont.

Ag Land Trust
Letter 3 (ALT3)

From: mjdelpiero@aol.com
Subject: Supplimental documents re: federal rights and water quality
Date: March 29, 2017 at 4:51:11 PM PDT
To: Maryjo.Borak@cpuc.ca.gov, Karen.Grimmer@noaa.gov, MJDelPiero@aol.com, sdarington@redshift.com

Third Letter of Objection to Monterey Peninsula Water Supply Project (MPWSP) CalAm's defective and incomplete draft EIR/EIS

On behalf of the Ag Land Trust of Monterey County, and in order to offer proof of our previous assertions, herewith attached are excerpts from the recorded federal real property (including water rights) contract/deed documents that the federal government has with our Trust, and one sample of our original (2009) baseline water quality test data (that meets WHO drinking water standards) that the CPUC consultants, and CalAm's Hydrology working Group did not request, in spite of our offer to supply additional information to them for the draft EIR/EIS. ALT3-1

These documents demonstrate only a few of the intentional defects (by intentional omission of significant adverse impacts and lack of identified mitigations) in the draft EIR/EIS that necessitate re-drafting and re-circulation of the document. ALT3-2

Respectfully, The Ag Land Trust of Monterey County

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March 28, 2017

VIA EMAIL AND OVERNIGHT MAIL

Mary Jo Borak, CEQA Lead
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108
Email: mpwsp-eir@esassoc.com

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue
Building 455a
Monterey, CA 93940
Electronic Submission at: www.regulations.gov/#!docketDetail;D= NOAA-NOS-2016-0156

Re: Comments on the Draft Environmental Impact Report/ Draft Environmental Impact Statement for the Proposed Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

We are writing on behalf of California Unions for Reliable Energy ("CURE") to provide comments on the Draft Environmental Impact Report and Draft Environmental Impact Statement ("DEIR/EIS") prepared by the California Public Utilities Commission ("CPUC") and by the Monterey Bay National Marine Sanctuary ("MBNMS"), pursuant to the California Environmental Quality Act, and its regulations ("CEQA"),[1] and the National Environmental Policy Act, and its regulations ("NEPA"),[2] respectively, for the Monterey Peninsula Water Supply

[1] California Public Resources Code, §§ 21000 et seq.
[2] National Environmental Policy Act, 42 U.S.C. 4321 et seq.

Project ("Project"). The Project is being proposed by the California American Water Company ("CalAm" or "Applicant") and will include the construction and operation of a seawater desalination plant and conveyance system with an initial capacity of 9.6 million gallons per day ("mgd") to provide a supplemental source of water to the Monterey Bay area.

The Project area extends approximately 18 miles, from the Project site located in the town of Castroville in the north to the City of Carmel in the south.[3] The Project would include:

- a seawater intake system (comprising of ten subsurface slant wells) extending offshore into submerged lands of MBNMS, and a Source Water Pipeline;[4]
- a 9.6 mgd desalination plant and related facilities (including pretreatment, reverse osmosis, and post-treatment systems), backwash supply and filtered water equalization tanks, chemical feed and storage facilities, brine storage and conveyance facilities, and other associated non-process facilities;[5]
- desalinated water conveyance facilities including pipelines and stand-alone pump station, and a Terminal Reservoir;[6]
- an expanded ASR system, including two additional injection/extraction wells, the ASR-5 and ASR-6 Wells, and three parallel pipelines, the ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR injection/extraction wells and backwash effluent from the wells to an existing settling basin.[7]

The seawater intake system comprises of ten subsurface slant wells (eight active and two on standby), which would be constructed at the CEMEX sand mining site in the northern coastal area of the City of Marina.[8] An estimated 24.1 mgd of raw seawater — extracted through the seafloor in MBNMS — is needed to reliably generate 9.6 million gallons per day (mgd) of product water at the desalination

[3] DEIR/EIS, at p. ES-5.
[4] *Id.*
[5] *Id.*
[6] *Id.*
[7] *Id.*
[8] *Id.*

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plant, which would be constructed in unincorporated Monterey County.[9] The plant would produce approximately 10,750 acre-feet per year ("afy").[10] The plant's related facilities include pretreatment, reverse osmosis ("RO"), and post-treatment systems; backwash supply and filtered water equalization tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities.[11]

The source water is conveyed through the slant well to the desalination plant and related facilities. There, it must first pass through a pretreatment system, which would remove suspended and dissolved contaminants and fine particulates. Backwash supply pumps would be used to clean the pretreatment system's filters. Next, the source water would pass through the RO system, which would remove salts and other minerals from the pretreated source water. Finally, the source water would pass through the post-treatment system, if necessary, to meet State Water Resources Control Board standards.[12]

Brine produced during the RO process and pretreatment backwash effluent (a total of approximately 13.98 mgd) would be stored at the desalination plant before being conveyed to the existing ocean outfall pipeline.[13] The brine may be blended with treated wastewater effluent to Monterey Bay.[14] During wet periods the brine would be blended with treated wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant before discharge.[15] During dry months, the brine stream could be discharged without dilution.[16] The amount of treated wastewater effluent would vary throughout the year.[17] The salinity of the discharged brine would be roughly 71 to 74 percent higher than seawater.[18]

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[9] *Id.*
[10] *Id.*
[11] *Id.*
[12] *Id.*, at pp. 3-8-12 (Table 3-1).
[13] *Id.*, at p. 3-56.
[14] *Id.*, at pp. 3-8-12 (Table 3-1).
[15] *Id.*, at p. 3-56.
[16] *Id.*
[17] *Id.*
[18] *Id.*

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The desalinated water would be held in holding tanks from which water would be pumped to either the CalAm water system, the existing Castroville Seawater Intrusion Project ("CSIP") or the Castroville Pipeline.[19] The Project includes other desalinated water conveyance and storage facilities, including treated water storage tanks, desalinated water pumps, a new desalinated water pipeline, a new transmission main, a terminal reservoir tank to store desalinated water and ASR product water, the Carmel Valley Pump Station to provide additional pressure needed to pump water, improvements to interconnection pipelines, the Castroville Pipeline, which would convey desalinated water to the CSIP and the Castroville Community Services District ("CCSD") Well #3, and a pipeline to the CSIP pond for subsequent delivery to agricultural users in the Salinas Valley.[20] The ASR system, includes two new ASR injection/extraction wells (named ASR-5 and ASR-6), which would inject desalinated water into the Seaside Groundwater Basin for storage.[21] Three parallel pipelines would also be constructed to convey water.[22]

The Project would return approximately 700 afy to the Seaside Groundwater Basin over 25 years.[23] It would also include improvements to the Seaside Groundwater Basin aquifer storage and recovery ("ASR") system facilities to enable CalAm to inject desalinated product water into the groundwater basin for subsequent extraction and distribution to customers.[24] The improved ASR system would include two additional injection/extraction wells, the ASR-5 and ASR-6 Wells, and three parallel pipelines, the ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline, and would improve the reliability of the existing ASR system.[25]

The Project also includes over 21 miles of water pipelines that convey source water between the subsurface intakes and the desalination plant, and desalinated water from the plant to the Terminal Reservoir.[26]

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[19] *Id.*, at p. 3-10.
[20] *Id.*, at p. 3-7.
[21] *Id.*
[22] *Id.*
[23] *Id.*, at p. ES-3.
[24] *Id.*, at p. ES-5.
[25] *Id.*
[26] *Id.*

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CalAm's application for the Project also includes an option that would combine a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 afy of product water from another source, the Pure Water Monterey Groundwater Replenishment ("GWR") Project.[27] The Monterey Regional Water Pollution Control Agency ("MRWPCA") certified the Final EIR and approved the GWR project in October 2015.[28]

Finally, CalAm constructed and operated a test slant well at the CEMEX sand mining site. A separate environmental review document covered the test slant well construction and operation.[29] This DEIR/EIS does not evaluate the test slant well.[30] If the project with subsurface slant wells at CEMEX is not approved and implemented, the test slant well will be decommissioned.[31]

The Project requires a number of permits and approvals including incidental take permits, a Biological Opinion, and waste discharge permits, among others.[32]

Based upon our review of the DEIR/EIS and pertinent agency records, we conclude that the DEIR/EIS fails to comply with CEQA and NEPA and must be withdrawn. The DEIR/EIS fails to include a complete project description, provide an adequate description of the environmental setting, adequately analyze and mitigate the project's potentially significant impacts, provides deferred, unenforceable, or otherwise inadequate mitigation measures, evaluate certain alternatives, and consider growth-inducing impacts. The CPUC and MBNMS must revise the DEIR/EIS and recirculate the revised DEIR/EIS for public review.

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[27] *Id.*
[28] *Id.*, at pp. ES-6, 1-2.
[29] DEIR/EIS, p. ES-6, fn. 2 ("In October 2014, MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, the City of Marina and the California Coastal Commission completed their CEQA review."); California American Water Slant Test Well Project Draft Initial Study/Mitigated Negative Declaration (State Clearinghouse No. 2014051060) (City of Marina, 2014), **Attachment A**.
[30] DEIR/EIS, p. ES-6.
[31] *Id.*
[32] *Id*, pp. 3-62-67, Table 3-8.

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We prepared these comments with the assistance of Phyllis Fox, Ph.D., Renée Owens, M.Sc., and Radoslaw Sobczynski, Ph.D. Their technical comments are attached hereto and submitted to the CPUC and MBNMS, in addition to the comments in this letter. [33] Accordingly, the CPUC and MBNMS must address and respond to the comments of Dr. Fox, Ms. Owens, and Dr. Sobczynski, separately.

I. STATEMENT OF INTEREST

CURE is a coalition of labor organizations whose members construct, operate, and maintain industrial facilities throughout California. CURE has an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for its members. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for industry to expand along the Monterey Bay, and by making it less desirable for businesses to locate and people to live in the area, including the Project vicinity. Continued degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduce future employment opportunities.

CURE members live, work, recreate and raise their families in the Project vicinity along the Monterey Bay. Accordingly, CURE's members would be directly affected by the Project's adverse environmental impacts. The members of CURE's member organizations may also work on the Project itself. They will, therefore, be first in line to be exposed to any hazardous materials, air contaminants and other health and safety hazards that exist on the Project sites.

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[33] *See* Letter from Phyllis Fox, to Linda Sobczynski, re: Comments on Draft Environmental Impact Report/Environmental Impact Statement for the CalAm Monterey Peninsula Water Supply Project, February 27, 2017 (hereinafter, "Fox Comments"), **Attachment B** (letter provided in hard copy and references are enclosed on a CD). *See* Letter from Renee Owens, to Linda Sobczynski re: Comments on the CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, February 24, 2017 (hereinafter, "Owens Comments"), **Attachment C** (letter provided in hard copy and references are enclosed on a CD). *See* Letter from Radoslaw Sobczynski, to Linda Sobczynski re: Comments on Draft Environmental Impact Report/Environmental Impact Statement for the CalAm Monterey Peninsula Water Supply Project, February 24, 2017 (hereinafter, "R. Sobczynski Comments"), **Attachment D** (letter provided in hard copy and references are enclosed on a CD).

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II. LEGAL BACKGROUND

A. National Environmental Policy Act ("NEPA")

NEPA is "our basic national charter for protection of the environment."[34] Its purpose is "to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment."[35] NEPA therefore requires federal agencies to take a "hard look at [the] environmental consequences" of their proposed actions.[36] In so doing, NEPA makes certain "that environmental concerns will be integrated into the very process of agency decision-making."[37]

NEPA requires all agencies of the federal government to prepare a "detailed statement" that discusses the environmental effects of, and reasonable alternatives to, all "major Federal actions significantly affecting the quality of the human environment."[38] This statement is commonly known as an environmental impact statement ("EIS"). An EIS must describe: (1) the "environmental impact of the proposed action"; (2) any "adverse environmental effects which cannot be avoided should the proposal be implemented"; and (3) any "alternatives to the proposed action."[39] It further requires that "the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth" therein.[40] The environmental "effects" that must be considered in an EIS include both "direct effects which are caused by the action" and "indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[41]

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[34] 40 C.F.R. 1500.1(a).
[35] *Id*. § 1500.1(c).
[36] *Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 350.
[37] *Andrus v. Sierra Club*, 442 U.S. 347, 350 (1979).
[38] 42 U.S.C. § 4332(2)(C).
[39] *Id*.
[40] *Id*.
[41] 40 C.F.R. § 1508.8(a), (b).

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B. California Environmental Quality Act

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR") (except in certain limited circumstances).[42] The EIR is the very heart of CEQA.[43] "The foremost principle in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[44]

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[45] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'"[46] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[47]

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures.[48] The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[49] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and

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[42] *See, e.g.,* Public Resources Code § 21100.
[43] *Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.
[44] *Communities. for a Better Env. v. Cal. Res. Agency* (2002) 103 Cal. App.4th 98, 109 ("*CBE v. CRA*").
[45] 14 Cal. Code Regs. § 15002(a)(1).
[46] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564.
[47] *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal. App. 4th 1344, 1354 ("*Berkeley Jets*"); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[48] 14 CCR § 15002(a)(2) and (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at p. 564.
[49] 14 Cal. Code Regs. §15002(a)(2).

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that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[50]

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. *A clearly inadequate or unsupported study is entitled to no judicial deference.*"[51] As the courts have explained, "a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decision making and informed public participation, thereby thwarting the statutory goals of the EIR process."[52]

III. THE DEIR/EIS FAILS TO INCLUDE A COMPLETE PROJECT DESCRIPTION

The DEIR/EIS does not meet NEPA's or CEQA's requirements because it fails to include a complete project description, rendering the entire analysis inadequate. Without a complete project description, the environmental analysis under CEQA and NEPA will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.[53]

Under NEPA, a complete project description is necessary for the public and decision makers to understand the effects of the proposed action and its alternatives.[54] It follows that information in an EIS that is incomplete will skew the environmental consequences analysis and prevent informed public input. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decision maker and the public could not make an informed comparison of the alternatives, revision of an EIS may be necessary to provide a

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[50] PRC § 21081; 14 CCR § 15092(b)(2)(A) & (B).
[51] *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added), *quoting, Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391 409, fn. 12.
[52] *Berkeley Jets*, 91 Cal.App.4th at 1355; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722; *Galante Vineyards v. Monterey Peninsula Water Management Dist*. (1997) 60 Cal.App.4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.
[53] *See, e.g., Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.* (1988) 47 Cal.3d 376.
[54] *See* 40 C.F.R. § 1502.15; *see also Laguna Greenbelt v. U.S. Dept. of Transportation* (1994) 42 F.3d 517, 528-29 [reviewing plaintiff's claim that inconsistent definition resulted in misleading analysis of project's positive and negative effects].

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reasonable, good faith, and objective presentation of the subjects required by NEPA."[55]

CEQA places the burden of environmental investigation on the government rather than the public. Accordingly, a lead agency may not hide behind its failure to obtain a complete and accurate project description.[56] CEQA requires that the project description contained in a CEQA document that is circulated for public review contain sufficiently detailed information to permit a meaningful evaluation and review of the potential environmental impacts of a proposed project.[57] California courts have repeatedly held that "an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient [CEQA document]."[58] In contrast, an inaccurate or incomplete project description renders the analysis of environmental impacts inherently unreliable. Without a complete project description, the environmental analysis under CEQA will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.[59]

A. The DEIR/EIS Fails to Describe the Decommissioning Phase of the Project

NEPA and CEQA require a full description of the Project, including its decommissioning phase. Under NEPA, federal agencies must analyze and disclose the impacts of major Federal actions. They may not segment the project into separate components. The Council on Environmental Quality regulations state in relevant part that an EIS must consider the following types of actions:

> (1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

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[55] *Natural Resources Defense Council v. U.S. Forest Service* (2005) 421 F.3d 797, 811 (citing *Animal Defense Council v. Hodel* (1988) 840 F.2d 1432, 1439).
[56] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[57] 14 Cal. Code Regs. § 15124 (hereafter "CEQA Guidelines").
[58] County of Inyo v. City of Los Angeles (3d Dist. 1977) 71 Cal.App.3d 185, 193.
[59] *See, e.g., Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.

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> (i) Automatically trigger other actions which may require environmental impact statements.
>
> (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
>
> (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.
>
> (2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.
>
> (3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.[60]

In requiring agencies to analyze these types of actions in the same environmental review document, the agency is prevented from segmenting the project into multiple individual actions, each of which would have an insignificant impact, but collectively would have a significant one.[61]

CEQA is similar. It requires that a complete project description include the "later phases of the project, and any secondary, support, or off-site features necessary for its implementation."[62] The requirements of CEQA cannot be avoided

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[60] 40 C.F.R. § 1508.25; *see also Kentucky Coal Ass'n, Inc. v. Tennessee Valley Authority* (W.D. Ky. 2014) 68 F.Supp.3d 685, 696–97.
[61] *Kentucky Coal Ass'n, Inc. v. Tennessee Valley Authority* (W.D. Ky. 2014) 68 F.Supp.3d 685, 697 (citing *Delaware Riverkeeper Network,* 753 F.3d at 1314 (citing *NRDC v. Hodel,* 865 F.2d 288, 297 (D.C.Cir.1988))
[62] *Bozung v. Local Agency Formation Com.* (1975), 13 Cal.3d 263, 283-84.

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by chopping a large project into many small parts or by excluding reasonably foreseeable future activities that may become part of the project.[63]

The DEIR/EIS must supply enough information so that the decision makers and the public can fully understand the scope of the Project.[64] The CPUC and MBNMS, as the lead agencies, must fully analyze the whole Project in a single environmental review document and may not piecemeal or split the Project into pieces for purposes of analysis.

Here, the DEIR/EIS fails to describe the full scope of the Project, and thus fails to disclose the full range and severity of the Project's environmental impacts. Throughout the document, the DEIR/EIS states that the Project will have an approximately "40-year operations phase."[65] The DEIR/EIS analyzes some of the impacts in this 40-year context. For example,

> The timeframe during which the MPWSP could contribute to cumulative surface water hydrology and water quality effects includes the 24-month construction period, as well as the estimated 40-year operations phase.[66]

Note, in the above example that the DEIR/EIS acknowledges that impacts will occur during the construction period and the 40-year operations phase, but not decommissioning. The DEIR/EIS must take into consideration impacts that occur during the decommissioning phase.

Where the DEIR/EIS does discuss decommissioning, the analysis is limited to coastal retreat — triggering decommissioning and abandoning the slant wells[67] —, and anticipated energy demand and energy efficiency of the proposed project as a whole, including decommissioning. This limited description and analysis of decommissioning is not enough to comply with CEQA's requirement to describe and analyze impacts from the whole project.

CURE-1

[63] Pub. Resources Code § 21159.27 (prohibiting piecemealing); *see also Rio Vista Farm Bureau Center v. County of Solano* (1992) 5 Cal.App.4th 351, 370.
[64] *Dry Creek Citizens Coalition v. County of Tulare* (1999) 70 Cal.App.4th 20, 26.
[65] DEIR/EIS, at p. 4.18-14.
[66] *Id.*, at p. 4.3-120.
[67] *Id.,* at p. 4.2-71

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1. Slant Wells' Decommissioning Is Not Adequately Described

For the slant wells, the DEIR/EIS admits that the presence of any slant well on the beach would result in a significant impact.[68] However, it states that "Mitigation Measure 4.2-9 (Slant Well Abandonment Plan) would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissions before the beach migrates inland to the location of the subsurface slant wells."[69]

When it is anticipated that the slant well will become exposed in five years, "CalAm will implement the planning and permitting necessary to *abandon* the slant wells."[70] Then, the affected slant wells would be removed from service. Their casing would be pressure grouted such that the screened section would be sealed and the section well casing and pipelines at risk of exposure would be cut and removed to a depth of five feet below the 2060, 100 year lower profile envelope as determined by the 2014 Coastal Erosion Study or any permit condition.[71] Because "the rate of coastal retreat may vary due to unforeseen changes in climate change," this mitigation measure applies to all slant wells, even though the new slant wells would be located inland of the modeled anticipated inland extent of coastal retreat, unlike the test slant well, which might become exposed during the operational life of the project.[72]

CURE-2

This mitigation measure only appears to be triggered when there is a risk of exposure. The DEIR/EIS does not discuss what will be done with the slant wells at the decommissioning phase of the Project.[73] This is a significant, and unexplained, deviation from the test slant well's project description, discussing mitigation. In the 2014 Environmental Assessment for the test slant well, the lead agency, MBNMS, stated the well should be removed to an ultimate depth of no less than 40 feet below

[68] *Id.*
[69] *Id.,* at pp. 4.2-71-72.
[70] *Id.,* at p. 4.2-72 (italics added).
[71] *Id.*
[72] *Id.,* at pp. 4.2-71-72.
[73] *Id.,* at p. 4.2-72.

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existing ground surface at project decommissioning.[74] That document provided the following Mitigation Measure:

> At project decommissioning, the slant test well and all related infrastructure shall be removed to an ultimate depth of no less than 40 feet below existing ground surface to eliminate the possibility for future re-surfacing and exposure of submerged well casing or related project components as a result of coastal erosion and shoreline retreat. Removal of the well would take place upon completion of the test pumping and/or in segments over time as mutually agreed upon by MBNMS, MRWPCA, Cal Am, the California State Lands Commission, and other identified regulatory agencies. If removal to the total required depth of 40 feet below ground surface is not completed within 5 years following completion of the test pumping due to potential risk to the MRWPCA outfall, the applicant shall post a bond with the City to ensure future removal measures would be appropriately supported and timed to prevent any future resurfacing of the well casing or other project components and shall provide evidence of the bond to MBNMS.[75]

CURE-2 cont.

Unlike the description above for the test slant well, the DEIR/EIS does not provide an adequate project description by failing to provide an explanation of the decommissioning phase for this Project's test slant well (which will be converted to a permanent well) and the proposed wells. This is significant because, as a result of the inadequate project description, the DEIR/EIS fails to analyze significant impacts from decommissioning the wells and fails to require this or another mitigation measure for the test slant well and the proposed wells.

During Project decommissioning, well materials may have to be removed or destroyed in accordance with state well destruction standards. For example, California Well Standards Bulletin 74-81 and 74-90 requires removal or destruction

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[74] Final Environmental Assessment for the California American Water Slant Test Well Project, September 2014, *available at* http://montereybay.noaa.gov/resourcepro/resmanissues/desal_projects/pdf/140912calam-slantwell_ea-final.pdf ("NOAA EA, 2014"), at Appendix A. Avoidance, Minimization, and Mitigation Measures, at p. 121, Measure 28, **Attachment E.**

[75] *Id.*

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of wells that are no longer useful or are abandoned.[76] The California Well Standards describe an intensive process for destroying wells, including cleaning, excavation, removing materials, filling, sealing and other activities.[77]

The DEIR/EIS fails to mention the common sense impact on the environment from decommissioning and abandoning slant wells in the event of coastal erosion. Given the real possibility decommissioning and abandonment may occur at least for the test slant well, this omission renders the project description inadequate. The DEIR/EIS must also evaluate if the decommissioned slant wells would need to be replaced with new slant wells in the event decommissioning and abandonment occurs during the 40-year operational lifetime of the Project.

CURE-2 cont.

Even though Mitigation Measure 4.2-9 (Slant Well Abandonment Plan) would bring the Project into conformance with a number of policies,[78] the DEIR/EIS cannot avoid providing a complete description of the Project and the Project's impacts from its construction, operation, and decommissioning and abandonment phases.[79] By recognizing that slant wells may need to be decommissioned and abandoned, but failing to describe the impact of these wells after their operating lifetime, the DEIR/EIS fails to adequately describe the project.

2. Other Desalination Facilities' Decommissioning Is Not Adequately Described

CURE-3

Although the DEIR/EIS discusses decommissioning of the slant wells and decommissioning in the context of energy demand and energy efficiency,[80] the DEIR/EIS must consider *all* potentially significant impacts from decommissioning

[76] California Well Standards, http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/wws/wws_combined_sec20-22.html#22, **Attachment F-1**.
[77] California Well Standards, http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/wws/wws_combined_sec23.html, **Attachment F-2**.
[78] DEIR/EIS, at p. 4.2-71.
[79] *Id.*, at p. 4.2-72.
[80] The DEIR/EIS states that the "amounts of direct energy consumption that would occur at the end of the useful life of the project (in approximately 40 years) related to decommissioning is unknown; however, it is anticipated that the amounts would be similar to those required for construction, discussed above." *Id.*, at p. 4.18-14.

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the *entire* Project. Decommissioning the desalination plant and related facilities (including, in part, abandoning the subsurface slant wells) would result in environmental impacts, including impacts to air quality, biological resources, water, and solid waste capacity.

In short, the DEIR/EIS's description and analysis of Project decommissioning do not come close to satisfying NEPA's and CEQA's requirements. Where the DEIR/EIS acknowledges that some Project components could be decommissioned, it completely fails to analyze the associated impacts. Further, the DEIR/EIS fails to even mention, let alone analyze, impacts from decommissioning the rest of the Project. As a result, the DEIR/EIS fails to identify the Project's potentially significant impacts from Project decommissioning and fails to incorporate mitigation measures to reduce those impacts to a less than significant level.

CURE-3 cont.

An accurate and complete project description is necessary to perform an adequate evaluation of the potential environmental effects of a proposed project. The CPUC and MBNMS must prepare a revised DEIR/EIS that fully describes decommissioning for all Project components, including the plant, the slant wells, pipelines, injection wells and other associated materials. Only by doing so will the agencies be able to properly analyze and mitigate impacts from decommissioning the whole Project.

B. The DEIR/EIS Fails to Describe the Operating Life of the Slant Wells

The DEIR/EIS fails to include a complete project description with respect to the operating life of the slant wells. The Project is designed to draw 24.1 mgd through ten slant wells (eight would be active, two would be on standby).[81] Each slant well is capable of drawing approximately 3 mgd.[82] The existing test slant well would be converted to a permanent one, and nine additional slant wells would be constructed.[83] Slant well construction would take approximately 15 months to complete, and could take place anytime throughout the overall 24-month

CURE-4

[81] DEIR/EIS, at p. 3-56.
[82] *Id.*
[83] *Id.*, at p. ES-10.

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construction duration for the proposed project.[84] Yet, the DEIR/EIS states that the proposed slant wells would have a productive span of only 20-25 years, far short of the Project's 40 year expected operating phase.

> [T]he proposed slant wells would now be located behind the predicted 2060, 100-year lower profile envelope. . . . The proposed slant wells would not be exposed during the operational life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment.[85]

Without providing further information, it is unclear how the Project will maintain consistent seawater intake over the 40-year operations phase if each well has a productive span of only 20-25 years. In order to maintain the Project's objective to draw 24.1 mgd over the span of 40 years, the Project would have to build another set of slant wells midway through the Project's operating phase.[86] The associated impacts with abandoning the no-longer-productive original slant wells, and building a new set of slant wells has not been evaluated, rendering the entire project analysis incomplete. What's more, the CPUC and MBNMS studied the location of the test slant well and proposed slant wells, but those studies never considered this possibility that more slant wells would need to be built to support the Project's objective to intake 24.1 mgd of water over the course of 40 years.[87]

CURE-4 cont.

The DEIR/EIS fails to describe and analyze the 20- to 25-year operational life of the slant production wells and the Project's need to build more than 10 slant wells over the 40-year operational life of the Project.

C. The DEIR/EIS Fails to Adequately Explain the Design of the Slant Wells

CURE-5

The DEIR/EIS fails to provide an adequate description of the slant wells to enable a meaningful evaluation and review of their associated environmental

[84] *Id.*, at p. 3-47.
[85] *Id.*, at p. 4.2-70.
[86] *Id.*, at pp. 3-56; ES-3
[87] *See* DEIR/EIS, at Appendices E1 (Lawrence Berkeley National Laboratories Peer Review) and E2 (Draft North Marina Groundwater Model Review, Revision, and Implementation for Future Slant Well Pumping Scenarios).

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impacts.[88] The test slant well's purpose was to inform the design of the proposed slant wells. The test slant well was analyzed in an Environmental Assessment by The National Oceanic and Atmospheric Administration and the MBNMS in 2014 ("NOAA EA").[89]

> Cal Am proposes to construct a slant test well in the coastal foredunes and conduct a 24- month pumping and testing program to obtain information regarding the geologic, hydrogeologic and water quality characteristics of the underlying aquifers in the project area. The data obtained over the 24-month test period would be used to facilitate the planning and final design of a proposed subsurface intake system and desalination plant to serve as the primary future water supply source for the Monterey Peninsula.[90]

CURE-5 cont.

The test slant well was drilled at a 19º angle and was 724 feet long.[91] The test slant well facilities include a "a submersible well pump, a wellhead vault, electrical facilities and controls, temporary flow measurement and sampling equipment, monitoring wells, and a temporary pipeline connection to the adjacent MRWPCA ocean outfall pipeline for discharges of the test water."[92]

In contrast, according to the DEIR/EIS, the proposed slant wells will be at a 14º angle and will extend 900 to 1,000 feet.[93] They would not extend beyond a depth of 190 to 210 feet below the seafloor.[94] The proposed slant wells would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin.[95] The decision to adjust the angle of the proposed slant wells by 5º is not explained in the DEIR/EIS.[96]

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[88] CEQA Guidelines, § 15124.
[89] NOAA EA, 2014, *supra*.
[90] *Id.*, at Summary.
[91] DEIR/EIS, at p. 3-15.
[92] *Id.*
[93] *Id.*, at pp. 3-8, 3-15.
[94] *Id.*, at p. 3-8.
[95] *Id.*
[96] *Id.*, at pp. 3-15-16, 3-47, 4.2-69, 4.4-42, 4.15-3 (discussing 14-degree and 19-degree slant well angles, but failing to explain rational for 5-degree difference).

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The DEIR/EIS also lacks any reference to the location of the submersible well pump within the slant wells.[97] At most, the DEIR/EIS states that "[a] submersible pump would be lowered several hundred feet into each well."[98] As Dr. Sobczynski points out in his comment letter, the location of the submersible pump is important for calculating the vertical infiltration rate,[99] which is necessary for evaluating impacts. However, the DEIR/EIS fails to disclose the location of the pump, rendering this DEIR/EIS inadequate as an information disclosure document.

The NOAA EA stated that, for the test slant well, the "water flow rate during the operational period would vary from 1,000 gallons per minute (gpm) to 2,500 gpm."[100] According to the DEIR/EIS each proposed slant well would be equipped with a 2,500 gpm, 300 hp submersible well pump for a total feedwater supply of 24.1 mgd from 8 active slant wells;[101] each active well would pump approximately 2,100 gpm.[102] This raises the question as to when, if ever, the slant wells would run at their maximum capacity of 2,500 gpm, rather than their average operating rate of 2,100 gpm. CURE-6

One possible time that the wells may run at maximum capacity may be after a shutdown, when the plant would need to "catch up on production" and produce 11.2 mgd of desalinated water, rather than its usual 9.6 mgd.[103] If, as the DEIR/EIS states, approximately 24.1 mgd of raw seawater is needed to produce 9.6 mgd of desalinated product water, then to produce 11.2 mgd of desalinated water after shutdown, approximately 28.11 mgd would be needed.[104] (Note, that the DEIR/EIS fails to provide a correct overall recovery rate. It states the recovery rate is 42 percent; however, 9.6 mgd out of 24.1 mgd is 39.8 percent.)[105] Under normal conditions, the eight active slant wells would draw approximately 3 mgd,[106] but in

[97] *Id.*, at pp. 3-15-16; 3-48.
[98] *Id.*, at p. 3-48.
[99] R. Sobczynski Comments, pp. 7-8 (discussing the possible location of the submersible pump).
[100] NOAA EA, 2014, *supra*, at p. 39.
[101] DEIR/EIS, at p. 3-18.
[102] *Id.*, at pp. 3-15; 3-18; 4.12-52.
[103] *Id.*, at p. 3-57.
[104] *Id.*, at p. 3-56 (based on the proportion of 9.6 mgd out of 24.1 mgd).
[105] *Id.*
[106] *Id.*

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this post-shutdown scenario, the eight wells would need to draw closer to 3.5 mgd. At a rate of 2,500 gpm, the eight slant wells could draw up to 3.6 mgd. Alternatively, all ten slant wells could be activated to draw approximately 2.8 mgd. Yet, none of this information regarding the water flow rate is adequately explained. In describing a shutdown situation, the DEIR/EIS only concerns itself with the RO modules stating:

> After a shutdown, CalAm might operate the plant with all RO modules in service (at the plant's maximum production capacity of 11.2 mgd) to catch up on production; however, the total annual production would not exceed 9.6 mgd.[107]

CURE-6 cont.

Dr. Sobczynski explains in his comment letter that the submersible pump will impact the vertical infiltration rate, which may result in an adverse impact to the environment.[108] In failing to disclose how the Project would "catch up on production,"[109] the DEIR/EIS leaves the public guessing as to how this would be achieved. As will be described in further detail below, the DEIR/EIS must consider these types of events in its impact analysis for the slant wells.

The NOAA EA also explained that the test well would feature a "packer device,"[110] which was used "to isolate one aquifer [either the Dune Sand or the 180-FTE] for testing and pumping."[111] As Dr. Sobczynski explains, this device alters the flow of water to the slant well intake, which can alter the vertical infiltration rate and thereby lead to environmental impacts.[112] Yet, the DEIR/EIS is silent as to whether this device would be utilized. The DEIR/EIS should inform the public and decision makers about whether this device would be installed, and if so, when it would be used.

CURE-7

[107] *Id.*, at p. 3-57.
[108] R. Sobczynski Comments, at pp. 7-8.
[109] DEIR/EIS, at p. 3-57.
[110] NOAA EA, *supra*, at p. 39; *see also* Williams, D.E., 2011, Slant Well Desalination Feedwater Supply System and Method for Constructing Same, U.S. Patent 8,056,629 B2 *available at* https://www.google.com/patents/US8056629 (hereafter "Slant Well Patent") **Attachment G**; R. Sobczynski Comments, at pp. 14-16.
[111] NOAA EA, *supra*, at p. 39.
[112] R. Sobczynski Comments, at pp. 14-16.

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An adequate description of the design of the slant wells is important because, without it, the DEIR/EIS contains no discussion about slant wells' biofouling or corroding over time. Despite analysis pertaining to:

- corrosion at the MRWPCA outfall or diffusor[113];
- corrosion in other Project components[114]; and
- fouling at the RO membranes due to "[t]he accumulation of salts or scaling (from to [*sic*] microbial contamination, turbidity, and other contaminants such as iron and manganese),"[115]

the DEIR/EIS leaves out long term degradation concerns regarding the slant wells. Even Dr. Williams (the slant well patent holder)[116] points out in his article about slant well technology, that the slant wells will experience biofouling and corrosion.[117] Dr. Williams writes:

CURE-8

> The Monterey test slant well has an 18 in. pump house casing which can accommodate placement of large development pumps with capacities over 3,000 gpm. Properly developed wells constructed using corrosion resistant materials such as 2507 Super Duplex Stainless Steel minimize well deterioration due to corrosion and biofouling. As such, these design improvements result in less frequent well rehabilitation with intervals estimated at between 3–5 yrs.[118]

Though the DEIR/EIS does not provide the technical specifications of the slant well, the Request for Proposals call for the use of 2507 Super Duplex Stainless

[113] DEIR/EIS, at p. 4.13-13.
[114] *Id.*, at p. 4.2-23 (Table 4.2-4).
[115] *Id.*, at p. 3-25.
[116] *See* Slant Well Patent, 2011, *supra.*
[117] Dennis Edgar Williams, President, Geoscience Support Services, Inc., USA, Yield And Sustainability of Large Scale Slant Well Feedwater Supplies For Ocean Water Desalination Plants, The International Desalination Association World Congress On Desalination And Water Reuse 2015/San Diego, CA, USA Ref: Idawc15_Williams_51564 Http://201.199.127.109/Textos/Desalinizacion/Tomas%20de%20agua/Slant%20wells%202015.Pdf, at p.4, (hereafter "Williams, Yield, 2015"), **Attachment H** .
[118] *Id.* at p. 4.

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Steel,[119] assuming, for the same reason described above, that it minimizes deterioration due to corrosion and biofouling.[120] By not discussing the slant wells' degradation (even while admitting that certain materials would need to be used to minimize biofouling and corrosion), the DEIR/EIS fails as an information disclosure document because it leaves out information that is necessary for evaluating and reviewing an adverse environmental impact from the Project.

The courts may not look for "perfection" but would expect "adequacy, completeness, and a good faith effort at full disclosure,"[121] which has not occurred here. Incomplete information in an environmental review document will skew the environmental consequences analysis and prevent informed public input. The information described above about Project decommissioning, operating life, and design must be included in the DEIR/EIS because each component is necessary to inform the public and decision makers about the Project's potentially significant environmental impacts. By failing to provide an adequate and complete project description, the DEIR/EIS violates NEPA and CEQA.

CURE-8 cont.

IV. THE DEIR/EIS FAILS TO PROVIDE AN ADEQUATE DESCRIPTION OF THE ENVIRONMENTAL SETTING

The DEIR/EIS employs an incomplete baseline, thereby skewing the impact analysis. An accurate description of the environmental setting is important because it establishes the baseline physical conditions against which a lead agency can determine whether an impact is significant. The failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.

CURE-9

According to NEPA, an environmental review document must "succinctly describe the environment of the area(s) to be affected or created by the alternatives

[119] Monterey Peninsula Water Supply Project: Subsurface Source Water Slant Wells Design Documents, 2015, pdf. p. 7, *available at* https://www.dropbox.com/s/xs6tdmtg6qvk0fc/draft%20Source%20Water%20Slant%20Well%20supplemental%20conditions%20and%20tech%20specs%20and%20drawings.pdf?dl=0 (hereafter "MPWSP, Well Design, 2015"), **Attachment I-1**.

[120] Williams, Yield, 2015, *supra*, at p.4.

[121] CEQA Guidelines, § 15151.

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under consideration."[122] Without a description of the areas to be affected by a proposal, the potentially significant effects resulting from a proposal cannot be determined.[123] Indeed, "without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment and, consequently, no way to comply with NEPA."[124] Moreover, adequate and accurate compilation of relevant data and information is critical in establishing whether the project would have a significant impact, while also allowing for public scrutiny and public participating in the decision-making process.[125]

CEQA requires the lead agency to include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time environmental review commences.[126] The EIR must also describe the existing environmental setting in sufficient detail to enable a proper analysis of project impacts. "The adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project."[127] "A legally adequate EIR . . . must contain sufficient detail to help ensure the integrity of the process of decision-making by precluding stubborn problems or serious criticism from being swept under the rug."[128] Furthermore, special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project.[129]

The description of the environmental setting in the DEIR/EIS is inadequate because it omits highly relevant information regarding existing water quality and biological and marine resources that may be significantly impacted by the Project.

CURE-9 cont.

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[122] 40 C.F.R. § 1502.15.
[123] *Half Moon Bay Fishermans' Marketing Ass'n v. Carlucci* (9th Cir.1988), 857 F.2d 505, 510.
[124] *Id.*; *see also Am. Rivers v. Fed. Energy Regulatory Comm'n* (9th Cir.1999) 201 F.3d 1186, 1195, n. 15.
[125] *Northern Plains Resource Council, Inc. v. Surface Transp. Bd.* (9th Cir. 2011) 668 F.3d 1067, 1083-1085 (discussing lack of data in evaluating and understanding impact on species before construction).
[126] CEQA Guidelines, § 15125, subd. (a); *see also Communities For A Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 321.
[127] CEQA Guidelines, § 15024 subd. (a).
[128] *Kings County Farm Bureau v. City of Handford* (1990) 221 Cal.App.3d 692, 733.
[129] CEQA Guidelines, § 15125.

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The CPUC and MBNMS are required to gather the relevant data and provide an adequate description of the existing environmental setting in a revised DEIR/EIS. CURE-9 cont.

A. The DEIR/EIS Fails to Set Forth an Adequate Environmental Setting for Ocean Water Quality

In order to adequately determine the impacts of discharging brine, the DEIR/EIS must provide the ionic composition of the ocean water. Ocean water salts include much more than sodium and chloride ions, ex. Ba, Ca, K, Sr, Mg.[130]

This Project must disclose the ionic composition of the ocean water due to the common ion effect.[131] The common ion effect occurs when, by increasing the concentration of one ion, *i.e.*, chloride, another ion becomes more soluble or more insoluble.[132] The interactions among the ions in ocean water are complex and failing to disclose the ionic composition deprives the public from knowing if certain compounds will precipitate out. For this reason, only taking aqueous samples without taking seafloor samples to determine compliance with the Ocean Plan may not suffice as some ions may precipitate out.[133] The Ocean Plan is not site-specific and the ionic composition in Monterey Bay must be disclosed to determine if there may be an impact due to the high increase of chloride ions being discharged.[134] CURE-10

B. The DEIR/EIS Fails to Set Forth an Adequate Environmental Setting for Marine Resources

The CPUC and MBNMS failed to conduct the requisite due diligence to investigate and disclose in the DEIR/EIS the physico-chemical character of ocean CURE-11

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[130] State Water Resources Control Board, Appendix I Responses to the External Peer Review of the Proposed Desalination Amendment, *available at* http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/amendment/150320_appendix_i.pdf, at pp. "I"-29-30 (responding to a comment by Dr. Lisa A. Levin, one of the external peer reviewers) (hereafter "SWRCB, Appx. I"), **Attachment J-2**.

[131] Chemistry: The Central Science, 12th Ed., pp. 703-704, 726-731, **Attachment K-1**; General Chemistry: Principles & Modern Applications, 9th Ed., p. 751 (showing that with the addition of iodide ion to an aqueous solution containing lead and iodide, the equilibrium shifts to form more lead iodide (solid)), **Attachment K-2.**

[132] *Id.*

[133] DEIR/EIS, at p. 4,3-98; *see also id.* at Appendix D-3; *id.* at p. 4.3-104.

[134] SWRCB, Appx. I, *supra*, at p. I-20.

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water and sediment in the Sanctuary. As Dr. Sobczynski explains in his comment letter, the DEIR/EIS does not provide critical information about the marine setting, which is important for an adequate impact analysis.[135] Without an adequate environmental setting, the lead agencies' finding that there would be less than significant impacts for marine resources is inaccurate.

1. DEIR/EIS Fails to Provide an Adequate Environmental Setting Due to Inconsistency Regarding Clay, and Lack of Data on Organic Matter

The DEIR/EIS provides inconsistent information about the existence of clay in the subsurface in the specific area of the slant wells.[136] On the one hand, the DEIR/EIS states that there is little to no silt, clay, and organic materials in the subsurface that would impede infiltration.[137] But, on the other hand, the DEIR/EIS states that, during slant well construction, clay and silt would be produced from the subsurface.[138] In examining the lithological bore logs from the test slant well, Dr. Sobczynski highlights that there are clay layers, which the slant well transects.[139] In failing to fully acknowledge the existence of clay in the subsurface, the DEIR/EIS failed to provide critical information about the existing subsurface environment.

CURE-11 cont.

As Dr. Sobczynski explains in his comments, even small amounts of clay will result in colloid buildup when microorganisms pass through the material.[140] The DEIR/EIS fails as an information disclosure document by providing inconsistent and unclear statements about the presence of clay in the subsurface, in the area where the slant wells are located, leading to potential colloidal buildup.[141] This potentially significant impact is discussed in further detail below.

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[135] R. Sobczynski Comments, at p. 2, *passim*.
[136] DEIR/EIS, at p. 4.2-67; *see also id.*, at pp. 27-29.
[137] DEIR/EIS, at p. 4.2-67.
[138] *Id.*
[139] R. Sobczynski Comments, at p. 29; Monterey Peninsula Water Supply Project: Subsurface Source Water Slant Wells Design Documents, 2015, *supra,* at Appendix A *available at* http://media.wix.com/ugd/28b094_d40d9b99079e40a687789b86742c997b.pdf (Boring Logs), **Attachment I-1**.
[140] R. Sobczynski Comments, at pp. 27-28.
[141] *Id.*, at pp. 27-29; *see also* DEIR/EIS, at p. 4.2-67 ("Clayey soils are potentially corrosive.").

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With respect to organic materials, the DEIR/EIS groups the existence of organic materials, or rather the lack thereof, with the existence of clay and silt.[142] Yet, as described above, Dr. Williams (the slant well patent holder) and Geosciences (Dr. Williams' company) anticipate biofouling to occur, which is why they call for the special construction materials (Super Duplex 2507) to minimize corrosion and biofouling for the slant well.[143]

The DEIR/EIS's unexplained silence on this issue of slant well biofouling is also evident in its minimal discussion about harmful algal blooms. The DEIR/EIS states that "Hazardous Algal Blooms would not be a reason for the [slant] wells to stop operating. Subsurface intakes are not affected by algal blooms."[144] Algae is organic matter and the location, quantity, intensity, and potential toxicity of algal blooms (including the extent of the dead algae's ultimate settling on the sea floor) should be adequately disclosed, particularly because the DEIR/EIS claims subsurface intakes would not be affected by algal blooms.[145] The DEIR/EIS must explain how this can be so. As is, the DEIR/EIS does not provide any evidence to reconcile the statement that organic matter would not impact slant well operations but that biofouling may occur at the slant well and its effects should be minimized through the use of Super Duplex 2507 stainless steel.[146]

CURE-11 cont.

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[142] DEIR/EIS, at p. 4.2-67.
[143] Williams, Yield, 2015, *supra*, at p. 4.
[144] DEIR/EIS, p. 4.5-6; *id.,* at p. 3-57, fn. 14.
[145] *See* Harmful Algal Blooms, NOAA, *available at* https://coastalscience.noaa.gov/research/habs/default, **Attachment L-1**; What is a Harmful Algal Bloom, NOAA, *available at* http://www.noaa.gov/what-is-harmful-algal-bloom, **Attachment L-2**; Ocean Acidification Promotes Disruptive and Harmful Algal Blooms on Our Coasts, NOAA, *available at* https://coastalscience.noaa.gov/news/climate/ocean-acidification-promotes-disruptive-and-harmful-algal-blooms-on-our-coasts/ (discussing that nutrient loading and acidification promote growth and increased toxicity of the red tide algal species *Alexandrium fundyense*), **Attachment L-3**; Impacts of Climate Change on the Occurrence of Harmful Algal Bolooms, U.S. EPA: Office of Water, *available at* https://www.epa.gov/sites/production/files/documents/climatehabs.pdf ("[acidification] can change the competitive relationships between HABs and other algae, and can also change the ability of zooplankton to control HABs through their grazing activity"), **Attachment L-4**; Hutchins, D., Toxic Algal Blooms in a Changing Coastal Ocean, Univ. of Southern California, *available at* https://dornsife.usc.edu/assets/sites/142/docs/Toxic_Algal_Blooms_in_a_Changing_Environment_-_Hutchins.pdf ("Domoic acid production increases dramatically at lower pH (higher CO2), especially during nutrient-limited growth"), **Attachment L-5.**
[146] *See* Williams, Yield, 2015, *supra*, at p. 4.

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By failing to disclose the existing amount of dissolved organic matter, sedimentary organic matter, and microorganisms in the subsurface,[147] the DEIR/EIS fails to establish an adequate baseline. The DEIR/EIS's description that there is "little to no" organic material in the subsurface is not sufficiently detailed to enable an analysis of buildup, biofouling and algal blooms.[148] The DEIR/EIS's vague statements regarding existing subsurface material and organic matter conflict with the requirements of CEQA and NEPA because, without an adequate description of the existing setting, there is simply no way to determine what effect a project will have on the environment. This inhibits the decision makers and public from being able to determine if the Project will have significant impacts.

CURE-11 cont.

The DEIR/EIS must be revised and recirculated to adequately inform the public about the presence and extent of clay, and of organic matter, including the quantity and intensity of algal blooms.

C. The DEIR/EIS Fails to Set Forth an Adequate Environmental Setting for Biological Resources

CEQA requires agencies to place special emphasis on environmental resources that are rare or unique to a region.[149] According to independent expert biologist Renee Owens, the DEIR/EIS fails to acknowledge the high degree of importance of the Project area to conserving marine and terrestrial flora and fauna biodiversity.[150] As Ms. Owens explains, Monterey County has some of the most diverse flora in California.[151] It is a "hot spot" due in part to its high endemism of species, and it has been described as one of the most essential coastal regions in the world in terms of plant and wildlife biodiversity conservation.[152]

CURE-12

Both federal and state metrics indicate the biodiversity value of the Project area. The U.S. Fish and Wildlife Service reports that there are 35 listed threatened or endangered species within, or that may be affected by projects in, the Project

[147] DEIR/EIS, at p. 4.2-67.
[148] *Id.*
[149] CEQA Guidelines, § 15125
[150] Owens Comments, at pp. 3-4.
[151] *Id.*
[152] *Id.*

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area.[153] The California Natural Diversity Database ("CNDDB") denotes within the Project area quads 17 Federal Endangered Species Act ("ESA") listed species, 10 California Endangered Species Act ("CESA") listed species, and 24 Species of Special Concern.[154] Due to the overall biological importance of the terrestrial habitats and species included in the Project footprint and buffer zone, the DEIR/EIS must emphasize the importance and resultant fragility of the ecosystems, habits, and sensitive species populations in describing the environmental setting.[155] The DEIR/EIS must analyze the Project's biological impacts, mitigation measures, and cumulative impacts with respect to an accurate environmental setting, which should emphasize the Project area's high degree of biological importance.

CURE-12 cont.

1. Sensitive species highlighted in the City of Marina's Local Coastal Land Use Plan are not analyzed in the DEIR/EIS

Not only does the DEIR/EIS fail to provide an adequate environmental setting by minimally discussing the biological importance of the area, but the DEIR/EIS also fails to provide an adequate and accurate list of species in the area. Specifically, the DEIR/EIS fails to consider sensitive species highlighted in the City of Marina's Local Coastal Land Use Plan ("LCLUP"), such as the globose dune beetle (*Coelus globosus*), Salinas Kangaroo Rat (*Dipodomys heermanni goldmani*), seaside painted cup (*Castilleja latifolia ssp. Latifolia*), and Eastwood's Ericameria (*Ericameria fasciculate*).[156] These species are present in the region and the DEIR/EIS fails to explain why it did not include an analysis of impacts to these species.[157] As Ms. Owens explains, the DEIR/EIS must include these species in the environmental setting and evaluate the potential impacts to these species and their habitat,[158] as required by NEPA and CEQA.[159]

CURE-13

[153] *Id.*, at p. 4.
[154] *Id.*
[155] *Id.*
[156] *Id.*, at pp. 4-9.
[157] *Id.*
[158] *Id.*, at pp. 8-9.
[159] *See Northern Plains Resource Council, Inc. v. Surface Transp. Bd.* (9th Cir. 2011) 668 F.3d 1067, 1085-1086 (finding that the agency's inability to conduct on-the-ground surveys as part of the EIS process, and instead relying on outdated aerial surveys, violated NEPA's requirement that the agency takes a "hard look" at the potential environmental consequences.)

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2. The DEIR/EIS Fails to Adequately Survey Terrestrial Sensitive Species

For this Project's 2015 DEIR, Ms. Owens provided comments that protocol surveys should have been included.[160] Although the DEIR/EIS appears to acknowledge this need to provide project-level, protocol or focused surveys, the CPUC and MBNMS failed to obtain these adequate surveys.[161]

Instead, the DEIR/EIS relies largely on databases and outdated reports, rather than formal scientific observations made on the ground by permitted biologists who specialize in identifying species for which protocol surveys are required.[162] Furthermore, the DEIR/EIS's habitat assessment provides anecdotal observations or inferences from habitat onsite to make protected species status determinations.[163] As Ms. Owens explains, the CPUC and MBNMS must obtain results from protocol surveys to ensure specificity and accuracy in the DEIR/EIS for this Project, because many species may not actually be reported on the CNDDB or on the California Native Plant Society's Inventory of Rare and Endangered Species.[164] The CPUC and MBNMS must obtain site-specific, protocol level surveys in order to accurately describe species in the existing setting in order to analyze the Project's impacts on those species in a revised and recirculated DEIR/EIS.[165] CURE-14

Ms. Owens also explains that the DEIR/EIS still fails to provide a thorough, up-to-date, written biological report that describes in detail the results of project-wide, or facility-wide focused or protocol level surveys of special status plant or animal species.[166] Instead, the DEIR/EIS provides an impact analysis that is based on special-status species observations available to Environmental Science Associates ("ESA") as of June 20, 2016, and other documents from 2010 to 2014.[167] However, the 2016 ESA document only includes GIS shape files and does not

[160] *See* Owens Comments, at pp. 9-16; *see also* Owens, R. Comments on Draft Environmental Impact Report for MPWSP (2015), at p. 5, **Attachment M.**
[161] Owens Comments, at pp. 10-11.
[162] *Id*, at pp. 11-13.
[163] *Id.*, at p. 11.
[164] *Id.*
[165] *Id.,* at pp. 11-13.
[166] *Id.,* at p. 12.
[167] *Id.*, at pp. 12-13.

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include a written analysis about the biological setting.[168] This haphazard compilation of GIS files deprives the public of the opportunity to participate in the decision-making process.[169]

"Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."[170] The same is true for CEQA, which states that the purpose of the "EIR is to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action."[171] Here, as a result of the failure to provide data from surveys and an evaluation in a biological report, the information the DEIR/EIS provides is unverifiable and impossible to review for accuracy.[172] Ms. Owens summarizes this lack of data:

> Upon review of the entire discussion of terrestrial biological resources in the DEIR/S, it is apparent that every mention of focused, protocol, and most reconnaissance surveys for sensitive flora (not just habitat types) and fauna conducted for this Report hinge mostly upon data either not cited at all, vaguely alluded to by mentioning reports that covered only small sections of this Project footprint - some such report being 10 – 11 years old – and the citation of AECOM shape files, "AECOM 2016". In fact, "AECOM 2016" is cited at least 50 times throughout the document. Yet no report of data on individual species accounts are provided. For such a large, well-funded, and public Project that has had ample opportunity to contract biological specialists to conduct protocol level surveys for threatened, endangered, and Special Concern species, this is an overt oversight.[173]

To comply with NEPA and CEQA, the DEIR/EIS must adequately survey, and subsequently analyze the potential impact of the Project on, sensitive terrestrial species. As proposed, the DEIR/EIS fails to do so.

CURE-14 cont.

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[168] *Id.*
[169] *Id.*; *see Northern Plains Resource Council, Inc.*, *supra*, 668 F.3d 1067, 1085.
[170] 40 C.F.R. § 1500.1.
[171] CEQA Guidelines, § 15003.
[172] Owens Comments, at p. 12.
[173] *Id.*, at p. 13

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3. The DEIR/EIS Biological Resources Maps are Inadequate for Determining Existing Conditions Regarding Special Status Species

The DEIR/EIS provides unclear maps to indicate the occurrences of animals and plants species. As Ms. Owens explains, the DEIR/EIS should provide maps that clearly indicate which, and how many species, occur in a given location in order to enable review of existing site conditions.[174] The DEIR/EIS's failure to include clear maps is indicative of a larger problem — the DEIR/EIS lacks focused and protocol level surveys of species in the Project area that are necessary to adequately inform the public and decision makers about the existing environment.[175] CURE-15

4. The DEIR/EIS Fails to Consider the Western Snowy Plover Background and Relative Status for the Project Region

Ms. Owens provides extensive background about the western snowy plover, its status relative to the Project region, and threats and types of impacts to the species.[176] Given the severity of impacts that this Project may pose to the western snowy plover,[177] the DEIR/EIS must provide detailed information about the species' status in the Project area.[178] Currently, the DEIR/EIS does not provide enough information to accurately assess the impact of the Project's activities on the area's snowy plover population, and thereby to the regional population as a whole.[179] CURE-16

D. The DEIR/EIS Fails to Set Forth an Adequate Environmental Setting for the Socioeconomics and Environmental Justice Impacts in the Area CURE-17

The DEIR/EIS should incorporate the Office of Environmental Health Hazard Assessment's CalEnviroScreen 3.0 tool to inform decision makers and the public of

[174] *Id.*, at p. 16.
[175] *Id.*
[176] *Id.*, at pp. 16-20
[177] *Id.*
[178] CEQA Guidelines, § 15024 subd. (a) ("The adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project.")
[179] Owens Comments, at p. 19.

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the environmental burdens that the communities near the Project will face.[180] Since this information is available, and NEPA requires a socioeconomic and environmental justice analysis, the tool should be utilized to better describe the Project's setting.[181] By incorporating CalEnviroScreen 3.0, the DEIR/EIS can disclose relevant information needed to identify pollution burdens and vulnerabilities affecting communities near the Project. For example, the tool provides information such as potential burdens to communities posed by contaminants in drinking water, and potential social stressors relating to unemployment.[182] For a complete environmental setting, the DEIR/EIS should incorporate the CalEnviroScreen 3.0 information.

CURE-17 cont.

V. THE DEIR/EIS FAILS TO ADEQUATELY ANALYZE AND MITIGATE THE PROJECT'S POTENTIALLY SIGNIFICANT IMPACTS

NEPA requires a full and fair discussion of every significant impact, as well as disclosure to the decision makers and the public of reasonable alternatives, which would avoid or minimize adverse impacts.[183] The impacts analysis must include a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.[184] The discussion of impacts must include both "direct and indirect effects (secondary impacts) of a proposed project."[185] The agency need not speculate about all conceivable impacts, but it must evaluate the reasonably foreseeable significant effects of the proposed action.[186] In this context, reasonable foreseeability means that "the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision."[187]

CURE-18

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[180] CalEnviroScreen 3.0 Report, CalEPA, *available at* https://oehha.ca.gov/media/downloads/calenviroscreen/report/ces3report.pdf, **Attachment N-1**; *see also id., available at* https://oehha.maps.arcgis.com/apps/webappviewer/index.html?id=4560cfbce7c745c299b2d0cbb07044f5 (Map), **Attachment N-2**.
[181] DEIR/EIS, at pp. 4.20-6, 4.20-22. (using U.S. Census Bureau data).
[182] *See generally,* CalEnviroScreen 3.0 Report, *supra*.
[183] 40 C.F.R. § 1502.
[184] *Id.,* at § 1502.16.
[185] *Id.*; *see also Sierra Club v. Marsh* (1st Cir. 1992) 976 F.2d 763, 767.
[186] *Sierra Club v. Marsh*, *supra*, 976 F.2d at p. 767.
[187] *Ibid*; *see also Dubois v. Dept. of Agriculture* (1st Cir. 1996) 102 F.3d 1273, 1286.

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NEPA also requires a discussion regarding possible conflicts between the proposed action and the objectives of Federal, regional, State, and local land use plans, policies and controls for the area concerned.[188]

NEPA requires that agencies take a "hard look" at the environmental consequences of a proposed action.[189] A hard look is defined as a "reasoned analysis containing quantitative or detailed qualitative information."[190] The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives.[191] An EIS must provide a "full and fair discussion of significant environmental impacts and shall inform the decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment."[192] "General statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided."[193] "[L]ack of knowledge does not excuse the preparation of an EIS; rather it requires [the agency] to do the necessary work to obtain it."[194]

CURE-18 cont.

As described above in the legal background, CEQA has two basic purposes, neither of which the DEIR/EIS satisfies. First, CEQA is designed to inform decision-makers and the public about the potential, significant environmental effects of a project.[195] CEQA requires that an agency analyze potentially significant environmental impacts in an EIR.[196] The EIR should not rely on scientifically outdated information to assess the significance of impacts, and should result from

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[188] 40 C.F.R. § 1502.16.
[189] *Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 350; *Dubois, supra*, 102 F.3d at p. 1284; *see also South Fork Band Council Of Western Shoshone of Nevada v. U.S. Dept. of Interior* (9th Cir. 2009) 588 F.3d 718, 727 ["NEPA requires that a hard look be taken, if possible, *before* the environmentally harmful actions are put into effect"].
[190] Bureau of Land Management, NEPA Handbook, at p. 55 (Jan. 2008), *available at* http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.24487.File.dat/h1790-1-2008-1.pdf (hereinafter "NEPA Handbook").
[191] *Id.,* at p. 55; *see also* 40 C.F.R. § 1502.1
[192] 40 CFR § 1502.1.
[193] *Neighbors of Cuddy Mountain v. U.S. Forest Service* (9th Cir. 1998) 137 F.3d 1372, 1380.
[194] *National Parks & Conservation Association v. Babbitt* (9th Cir. 2001) 241 F.3d 722, 733.
[195] CEQA Guidelines, § 15002, subd. (a)(1).
[196] *See* Pub. Resources Code § 21000; CEQA Guidelines, § 15002.

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"extensive research and information gathering," including consultation with state and federal agencies, local officials, and the interested public.[197] To be adequate, the EIR should evidence the lead agency's good faith effort at full disclosure.[198] Its purpose is to inform the public and responsible officials of the environmental consequences of their decisions *before* they are made. For this reason, the EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[199] Thus, the EIR "protects not only the environment but also informed self-government."[200]

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.[201] The EIR serves to provide public agencies, and the public in general, with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced."[202] If a project has a significant effect on the environment, the agency may approve the project only upon a finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible," and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081.[203]

CURE-18 cont.

The DEIR/EIS fails to satisfy the basic purposes of CEQA. Specifically, the DEIR/EIS fails to reflect a good faith effort at public disclosure by failing to adequately analyze and mitigate the Project's potentially significant impacts to ocean water quality, marine resources, biological resources, air quality, public health, and vibration issues, and others. The DEIR/EIS also fails to propose measures that could reduce these Project impacts to a less than significant level. In sum, the DEIR/EIS fails to inform decision-makers and the public of the Project's

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[197] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm.* (2001) 91 Cal. App.4th 1344, 1367; *Schaeffer Land Trust v. San Jose City Council* (1989) 215 Cal.App.3d 612, 620.
[198] CEQA Guidelines, § 15151; *see also Laurel Heights I* (1998) 47 Cal.3d 376, 406.
[199] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[200] *Laurel Heights I* (1998), *supra*, at p. 392.
[201] CEQA Guidelines, § 15002(a)(2)-(3); *Berkeley Keep Jets Over the Bay Comm., supra*, 91 Cal.App.4th at p. 1354.
[202] CEQA Guidelines, § 15002, subd. (a)(2).
[203] *Id.*, at § 15092, subd. (b)(2)(A)-(B).

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potentially significant environmental effects and to reduce damage to the environment *before* they occur. CURE-18 cont.

A. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Impacts to Ocean Water Quality

The Ocean Plan's Desalination Amendment provides regulations for desalination operations.[204] Scientists reviewed and commented on the Desalination Amendment.[205] The State Water Resourced Control Board provided responses to the external, scientific peer review.[206] The DEIR/EIS states that it will comply with the California Ocean Plan: Desalination Amendment.[207] With respect to discharges the DEIR/EIS states:

> Typically, constituent concentrations are permitted to exceed water quality objectives within the [Zone of Initial Dilution ("ZID")], which is limited in size. Thus, in the case of MPWSP, the Ocean Plan water quality objectives would apply to the edge of the ZID (Flow Science, Inc., 2014 in Appendix D2). Dilution occurring within the ZID from an operational discharge is conservatively calculated as the minimum probable initial dilution (Dm). The water quality objectives established in the Ocean Plan are considered in the context of the calculated Dm to derive the NPDES effluent limits for a wastewater discharge in-pipe (i.e., prior to ocean dilution).[208]

CURE-19

Although the Ocean Plan may permit constituents (defined as bacterial, physical, chemical, biological and chemical constituents) to exceed water quality objectives at the point of discharge, the Ocean Plan provides general regulations and does not provide site-specific impacts analyses for this Project.[209] For example, Dr. Lisa A. Levin, in the external peer review for the Desalination Amendment,

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[204] State Water Resources Control Board (2015) Water Quality Control Plan: Ocean Waters of California, *available at* http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf.
[205] SWRCB, Appx. I, *supra.*
[206] *Id.*
[207] DEIR/EIS, at pp. 4.3-27-28.
[208] *Id.*
[209] SWRCB, Appx. I, *supra.*

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stated that "subsurface intake options need to be evaluated in light of cumulative impacts and habitat status." In response, the Water Board stated that:

> Cumulative impacts will be evaluated on a project-specific basis taking into consideration site-specific considerations during the CEQA process for each desalination facility.[210]

Thus, the DEIR/EIS must comply with the CEQA and NEPA and cannot rely on compliance with the Ocean Plan as a substitute for a site-specific impact analysis.[211]

Despite providing various modeling, the DEIR/EIS lacks evidence to support the statement that excessive constituents *within* the ZID would not result in a potentially significant impact. In fact, the DEIR/EIS seems to suggest the opposite that there would be a significant impact at the point of discharge, but because the Ocean Plan allows for water quality objectives to be exceeded at the point of discharge, the Project's impact would be less than significant.[212] Thus, all the DEIR/EIS commits to is that, in the case of the MPWSP, the Ocean Plan water quality objectives would apply to the edge of the ZID.[213] The DEIR/EIS completely omits any impact analysis and any identification of potential mitigation for the potential significant impact at the point of discharge.

CURE-19 cont.

The DEIR/EIS cannot "completely ignore[]" a potential impact.[214] For the purposes of NEPA and CEQA, the DEIR/EIS fails to adequately analyze and mitigate potentially significant impacts to ocean water quality *within* the ZID. The CPUC and MBNMS cannot rely on compliance with the Ocean Plan to avoid analyzing and mitigating significant impacts within the ZID.

As the DEIR/EIS points out, "[o]perational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds.

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[210] *Id.*, at p. I-20.
[211] *See also* Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary, NOAA (May 2010), *available at* http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf, **Attachment O**.
[212] *See* DEIR/EIS, at pp. 4.3-27-28.
[213] *Id.*, at p. 4.3-28.
[214] *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421, 430.

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Exceedances of these thresholds would be potentially inconsistent with Coastal Act policies."[215] However, the operational discharge scenarios all provide estimated concentrations at the *edge* of the ZID for Ocean Plan constituents.[216] The common-ion effect, described above, informs us that ions might become more or less soluble based on the influx of chloride ion at the point of discharge.[217] It does not appear from the DEIR/EIS that the various discharge scenarios considered an accumulation of constituents at the sea floor that had precipitated out at the point of discharge.[218] Certainly, accumulated constituents on the seafloor that are hazardous to marine (and human life) would pose a potentially significant effect. By failing to consider impacts at the point of discharge, and the complex chemical interactions due to the high level of chloride ions that would be discharged through the outfall, the DEIR/EIS fails to adequately analyze and mitigate potentially significant effects to ocean water quality.

CURE-19 cont.

Exacerbating matters regarding existing constituents, the DEIR/EIS proposes to add inert biodegradable additives for construction and cleaning, if needed.[219] CURE requested the Material Safety Data Sheets ("MSDS") for these chemicals and was informed that such documents were unavailable because "We [Environmental Science Associations] are not in possession of any MSDS(s). The exact products CalAm would use are unknown."[220] Even if those chemicals may be inert, that does not mean they may not have significant impacts. The DEIR/EIS lacks evidence to support its conclusions and must disclose this information in a revised and recirculated DEIR/EIS.

[215] DEIR/EIS, at p. 4.3-24.
[216] *Id.*, at pp. 4.3-96-101 (Table 4.3-16).
[217] SWRCB, Appx. I, *supra.*
[218] DEIR/EIS, at p. 4.3-93 ("After compiling water quality data for the desalination brine and MRWPCA wastewater (described above), Trussell Tech (2016; Appendix D3) combined the data for the evaluated discharge scenarios.")
[219] 4.3-111.
[220] Letter from Eric Zigas to Linda Sobczynski (Feb. 13, 2017), **Attachment P**.

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B. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Impacts Related to Marine Resources

The DEIR/EIS fails to adequately analyze and mitigate potential significant impacts related to marine resources, particularly as those impacts are caused by the subsurface slant well technology.

1. Factors Influencing Vertical Infiltration Rates Are Not Adequately Analyzed

The DEIR/EIS does not include critical information, which will impact the vertical infiltration rate,[221] such as:

- the location of the submersible pump;[222]
- the sediment profile for the 19° test slant well and for 14° proposed slant wells;[223]
- the inflatable packers for the test slant well, and the possible packers in the proposed slant wells;[224] and
- the clogging in the seabed.[225]

CURE-20

According to independent expert physical chemist, Dr. Radoslaw Sobczynski, these factors will result in a higher vertical infiltration rate, which has not been adequately disclosed and may lead to a significant, undisclosed impact.[226] As Dr. Sobczynski provides in further detail in his letter, the vertical infiltration calculations were based on a calculation that Dr. Williams (the slant well patent holder) conducted based on site-specific information from the Doheny Desalination Plant's slant wells, and a calculation, which divided the amount of water (24.1 mgd) by the subsurface area above the slant wells (1,000,000 ft^2).[227] Because the CPUC and MBNMS considered these numbers to be sufficiently similar, it determined that

[221] R. Sobczynski Comments, at p. 7.
[222] *Id.*, at pp. 7-10.
[223] *Id.*, at pp. 10 -14.
[224] *Id.*, at pp. 14-16
[225] *Id.*, at pp. 16-17.
[226] *Id.*, at p. 17.
[227] *Id.*, at pp. 5-7.

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this vertical infiltration range was adequate for purposes of impact analysis.[228] Dr. Sobczynski identifies a number of factors, which could change this vertical infiltration rate, and which have not been adequately disclosed in the DEIR/EIS.[229] The implication of failing to provide an accurate infiltration rate is that there may be a significant, undisclosed impact.[230]

CURE-20 cont.

a) Submersible Pump

Critically, the DEIR/EIS fails to provide information about the location of the submersible pump.[231] As Dr. Sobczynski explains in his comments, the submersible pump's location is critical in evaluating the intake's environmental impact.[232] Based on information gleaned from the DEIR/EIS, the slant well patent, and Dr. Williams' article about the Monterey test slant well, Dr. Sobczynski assumed that the submersible pump is located at a depth of approximately 60-70 feet.[233] The test slant well uses a telescoping design, meaning that the part of the well closest to the surface is progressively wider than it is at its lowest point.[234]

CURE-21

As Dr. Sobczynski describes in further details in his letter, the submersible pump will create a pressure gradient, which will draw most of the water in the area of the pump.[235] By drawing most of the water in a limited area directly above the pump, the vertical infiltration rate will be higher, an important fact that the DEIR/EIS failed to consider.[236]

b) Sediment Profile

Next, the slant well is constructed through the Older Dune Sand and Terrace Deposits.[237] The Older Dune Sand is described as having high permeability.[238] The

CURE-22

[228] *Id.*, at p. 7; *see also* DEIR/EIS, at p. 4.5-52.
[229] *Id.*, at pp. 17-23.
[230] *Id.*, at pp. 23-30.
[231] *Id.*, at pp. 7-10.
[232] *Id.*
[233] *Id.*, at p. 8.
[234] DEIR/EIS, at p. 3-48.
[235] R. Sobczynski Comments, at pp. 7-10 (Figures 2 and 3).
[236] DEIR/EIS, at p. 10.
[237] R. Sobczynski Comments, at pp. 10-14.
[238] DEIR/EIS, at p. 4.2-67.

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DEIR/EIS views this as a positive characteristic stating, "[t]he high permeability of the dune sand would be suitable for the infiltration of water."[239] Notably, the DEIR/EIS does not make any statement about the permeability of the Terrace Deposits, yet this will impact the vertical infiltration rate. If water will flow more easily through the Older Dune Sand, then that portion of the well (approximately the upper third) will be more productive.[240] This will once again result in a higher infiltration rate because most of the water will flow through the Older Dune Sand into the upper third of the slant well.[241]

CURE-22 cont.

c) Inflatable Packers

Third, the test slant well had an inflatable packer feature.[242] This packer feature is also disclosed in Dr. Williams' slant well patent.[243] However, the DEIR/EIS is silent on whether the proposed slant wells would have this feature.

The packers may be on either, or both sides of the submersible pump.[244] The slant well operator may inflate either or both of these packers.[245] By inflating the lower packer, for example, any suction power from the pump would be lost and the lower portion of the slant well (below the submersible pump) would become inactive.[246] Without providing further information, it is unclear from the DEIR/EIS if the proposed slant wells would include this feature. If they do include the packers, then the DEIR/EIS should disclose when either or both packers would be inflated (*i.e.*, to deal with a clog, or for regular maintenance).

By concentrating the water's flow to the area directly above the submersible pump, the vertical infiltration rate might be higher.[247] However, because the DEIR/EIS is silent about the presence of the inflatable packers, even though they could increase the vertical infiltration rate, Dr. Sobczynski did not include the

CURE-23

[239] *Id.*
[240] R. Sobczynski Comments, at p. 14.
[241] *Id.*
[242] *Id.*, at pp. 15-16.
[243] *Id.*, at p. 14.
[244] *Id.*
[245] *Id.*
[246] *Id.*, at p. 15.
[247] *Id.*, at p. 14.

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packers' presence in his calculations to determine the vertical infiltration rate.[248] The CPUC and MBNMS must revise the DEIR/EIS to clarify whether and how the inflatable packers would be used and their effect on infiltration. CURE-23 cont.

d) Clogging of the Seabed

Fourth, according to Dr. Sobczynski, there is a high likelihood that the slant wells' intake screens and seabed will clog over time.[249] In fact, the intake screens are specially designed to minimize biofouling and corrosion and thereby to reduce the need for more frequent cleaning.[250] Though the intake screens can be cleaned by lowering mechanical brushes and possibly adding inert chemicals, the seabed through which the water will be filtered cannot be cleaned in this way.[251]

Clogging was an issue at the Doheny wells at Dana Point where the test slant wells lost their efficiency from an original value of 95% in 2006 to 52% in 2012.[252] Dr. Williams stated that the reason why the Doheny wells failed is because of technical limitations.[253] CURE-24

> "Due to the pump house casing limitation experienced at Dana Point and the inability to fully develop the well, the MPWSP test slant well included a larger diameter pump house casing. The Monterey test slant well has an 18 in. pump house casing which can accommodate placement of large development pumps with capacities over 3,000 gpm."[254]

The Monterey test slant well has allegedly not lost efficiency since beginning operations in 2015.[255] However, that is not to say clogging will not occur in the future for the test slant well and the proposed slant wells. The slant wells are

[248] *Id.*, at p. 15.
[249] *Id.*, at pp. 16-17.
[250] Williams, Yield, 2015, *supra,* at p. 4.
[251] DEIR/EIS, at p. 3-57.
[252] R. Sobczynski Comments, at p. 16.
[253] Williams, Yield, 2015, *supra,* at p.4.
[254] *Id.*
[255] DEIR/EIS, at Appendix G2, p.5 ("By the end of September 2016, the test slant well had been operating continuously for 5 months and intermittently since April 2015.")

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designed to draw brackish groundwater initially, but within 18 months[256] to 4 years[257] the slant wells should draw predominantly from ocean water that filters through the subsurface sediment (93% of source water).[258]

Assuming this is true, the buildup of sediment and organic matter traversing through the seabed will be at its highest when most of the source water will be coming from above the seafloor.[259] Additionally, an operational report for the Doheny wells stated that future wells must be carefully constructed so that the wells do not become immediately clogged.[260]

CURE-24 cont.

Yet, the DEIR/EIS does not disclose that there is a high likelihood that sediment and organic matter will build up in the subsurface, especially when after some time most of the source water will come from above the seafloor.[261] As Dr. Sobczynski points out, unless the mechanical cleaning process includes displacing the seabed above the intake, then the slant wells will likely become clogged over time.[262]

2. <u>The Recalculated Vertical Infiltration Rate is Higher than the Rate Provided</u>

CURE-25

Dr. Sobczynski recalculated the vertical infiltration rate.[263] He found that the infiltration rate was approximately ten times higher than what Dr. Williams calculated with respect to the Doheny wells and what the DEIR/EIS reported in its

[256] Final Summary Report for the Doheny Ocean Desalination Project Phase 3 Investigation: Extended Pumping and Pilot Plat Test Regional Watershed and Groundwater Modeling Full Scale Project Conceptual Assessment, January 2014. Municipal Water District of Orange County ("MWDOC"), at p.19, *available at* https://www.scwd.org/civica/filebank/blobdload.asp?BlobID=5592 ("MWDOC – Final Summary, 2014"), **Attachment Q.**
[257] DEIR/EIS, at Appendix G2, p. 5 ("Figure 3 shows that it could take up to four years for the slant well to be drawing 96% seawater . . .").
[258] DEIR/EIS, at Appendix G2, p. 3 ("The slant wells for the MPWSP are projected to pull 93 percent seawater from the Monterey Bay and 7 percent groundwater from the surrounding area when the MPWSP is operating (GeoScience 2014b)."); *see also* R. Sobczynski Comments, at p. 4.
[259] *See* R. Sobczynski Comments, at p. 26.
[260] *Id.*, at p. 17; *see also* MWDOC – Final Summary, 2014, *supra,* at p. 57.
[261] R. Sobczynski Comments, at p. 26.
[262] *Id.*, at p. 16.
[263] *Id.*, at pp. 17-23.

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calculation dividing the area above the slant wells (one-million square feet) by the bulk flow of water (24.1 mgd).[264] Dr. Sobczynski found a vertical infiltration rate of 0.16 mm/sec.[265] Based on this new vertical infiltration rate, Dr. Sobczynski recalculated the ventilation parameter, which is important for determining whether microorganisms could be pulled into the seabed.[266] Dr. Sobczynski found that the infiltration rate will increase wave induced bottom stress by 10%, rather than the previously calculated 1%.[267] This increase was not adequately analyzed in the DEIR/EIS, because it was underestimated.[268] As a result, the DEIR/EIS failed to disclosed and evaluate significant impacts from the Project's higher infiltration rate. CURE-25 cont.

3. Accumulation of Biomatter Above the Slant Well is Not Adequately Analyzed and Mitigated

The DEIR/EIS fails to adequately analyze and mitigate potentially significant impacts related to marine resources as a result of the slant well.[269] Dr. Sobczynski describes the potential for the accumulation of biomatter above the slant wells.[270] The DEIR/EIS should account for how it will handle the sediment layer at the bottom of the seafloor. CURE-26

4. Impacts from Maintaining and Abandoning the Slant Well Have Not Been Adequately Analyzed and Mitigated

The DEIR/EIS fails to adequately analyze and mitigate potentially significant impacts related to maintaining[271] and abandoning the slant well materials in the ocean subsurface,[272] and to the wells' degradation over time. Whereas active slant wells would require maintenance every 5 years,[273] the DEIR/EIS does not mention CURE-27

[264] *Id.*, at p. 19.
[265] *Id.*, at p. 20.
[266] *Id.*, at pp. 21-22.
[267] *Id.*, at p. 22.
[268] *Id.*
[269] *Id.*, at pp. 23-30.
[270] *Id.*, at p. 23.
[271] DEIR/EIS, at p. 3-57.
[272] *Id.*, at p. 4.2-72.
[273] *Id.*, at p. 3-57.

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maintenance activities associated with the decommissioned, abandoned slant wells, which would likely foul and corrode for as long as they remain in the subsurface.[274] According to the abandonment plan, which does not consider removing abandoned slant wells, the wells would remain in the seabed in perpetuity, degrading over time.[275] By not analyzing this degradation over the time, particularly in the context of slant well abandonment, the DEIR/EIS fails to adequately analyze and mitigate potentially significant impacts from the whole Project.

CURE-27 cont.

Given Dr. Sobczynski's findings about accumulation of biomatter above the slant well,[276] the DEIR/EIS must also consider the impact of abandoning the slant wells and the resultant degradation arising from the wells' corrosion and biofouling, and the decomposing biomatter above the slant well.[277] The biomatter accumulation and subsequent decay can lead to a potentially significant impact (*i.e.*, toxic gases) that has not been adequately disclosed and mitigated.[278]

C. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Cumulative Impacts Related to Marine Resources

CURE-28

In evaluating significance, NEPA requires consideration of whether the action is related to other actions with individually insignificant but cumulatively significant impacts.[279] The lead agency must make a finding of significance if it is "reasonable to anticipate a cumulatively significant impact on the environment."[280] The CEQ regulations further require that significance "cannot be avoided by terming an action temporary or by breaking it down into small component parts."[281]

An EIR is required to discuss the cumulative impacts of a project "when the project's incremental effect is cumulatively considerable."[282] An EIR is required to

[274] Williams, Yield, 2015, *supra,* at p. 4.
[275] DEIR/EIS, at p. 4.2-72.
[276] R. Sobczynski Comments, at pp. 23-30.
[277] *Id.*
[278] *Id.*
[279] 40 C.F.R. § 1508.27.
[280] *Id.*
[281] *Id.*
[282] 14 C.C.R. § 15130(a).

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discuss significant impacts that the proposed project will cause in the area that is affected by the project.[283] "This area cannot be so narrowly defined that it necessarily eliminates a portion of the affected environmental setting."[284]

The CEQA Guidelines specifically direct the lead agency to "define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used."[285] The courts have held that it is vitally important that an EIR avoid minimizing the cumulative impacts. Rather, it must reflect a conscientious effort to provide public agencies and the general public with adequate and relevant detailed information about them.[286] An EIR's cumulative impacts discussion "should be guided by the standards of practicality and reasonableness," but several elements are deemed "necessary to an adequate discussion of significant cumulative impacts" including "[a] list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency."[287]

CURE-28 cont.

Both the State Water Resources Control Board[288] and the MBNMS Desalination Guidelines establish subsurface intakes as the preferred technology for seawater intakes.[289] There are a number of desalination proposals for Monterey Bay and along the California Coast, which have considered or are evaluating the feasibility of subsurface intake systems.[290] Consequently, there may be a significant

[283] *Bakersfield Citizens*, 124 Cal.App.4th at p. 1216 (emphasis added); *see* 14 C.C.R § 15126.2(a).
[284] *Bakersfield Citizens*, 124 Cal.App.4th at p. 1216.
[285] *Id.*; 14 C.C.R § 15130(b)(3).
[286] Pub. Resources Code, § 21061; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 79; *see also Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 723.
[287] 14 C.C.R. § 15130(b); *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal.App.4th 899, 928-29.
[288] Ocean Plan with Desalination Amendment, State Water Resources Control Board, p. 39, *available at* http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf ("the regional water board in consultation with State Water Board staff shall require subsurface intakes unless it determines that subsurface intakes are not feasible . . ."). **Attachment J-1.**
[289] Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary, NOAA, *supra,* at p. 6 ("Desalination project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods.")**.**
[290] Resource Issues: Desalination, NOAA: MBNMS, *available at* http://montereybay.noaa.gov/resourcepro/resmanissues/desalination.html ("While only a few small-scale desalination facilities currently operate within the boundaries of the sanctuary, there has

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cumulative impact from the subsurface slant wells due to bioaccumulation, as Dr. Sobczynski described.[291] Moreover, the Desalination Amendment uses the same Williams and Jenkins calculations, relied upon in this DEIR/EIS,[292] to demonstrate that there will be no impingement of organic matter on the seafloor.[293] Dr. Sobczynski demonstrates that these calculations may not be correct and that the vertical infiltration may be much higher.[294] Organic matter may become impinged and pulled through the sea floor.[295] During maintenance, or upon abandonment, the subsurface slant wells are deprived of dissolved oxygen that normally flows through the subsurface.[296] Multiple desalination plants with subsurface intakes — all of which draw organic matter through the subsurface — may lead to significant cumulative impacts, such as the ones Dr. Sobczynski described.

CURE-28 cont.

D. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Impacts to Biological Resources

As described above, the DEIR/EIS fails to provide updated biological information in a meaningful way. Rather than provide an accurate analysis of the biological setting, the DEIR/EIS provides GIS shape files.[297] GIS shape files do not provide the level of detail necessary for thoroughly assessing what sensitive species are present throughout the project site, as a biological technical report (with focused and protocol surveys) would.[298] The DEIR/EIS's lack of focused and protocol surveys leads to an inability to accurately analyze the Project's impacts on biological

CURE-29

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recently been an increase in interest for both private and public desalination plants, with several new facilities being pursued in the Monterey Bay and in Cambria"), **Attachment R-1**; *see also* Desalination Map*, id.* (map), *available at* http://montereybay.noaa.gov/materials/mappages/desalinizationmap.html, **Attachment R-2**; Williams, Yield, 2015, *supra*, at p. 2.

[291] R. Sobczynski Comments, at pp. 23-30.

[292] DEIR/EIS, at p. 5.5-52-53.

[293] SWRCB, Appx. I, *supra,* at pp. I-19-20.

[294] R. Sobczynski Comments, at pp. 19-22.

[295] *Id.,* at p. 23, 27-30.

[296] *Id.,* at pp. 27-30.

[297] Owens Comments, at pp. 12-13.

[298] *Id.,* at p. 12.

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resources.[299] Consequently, the DEIR/EIS fails to mitigate potentially significant impacts to biological resources.[300]

As Ms. Owens explains, an updated Biological Technical Report would provide real data from protocol surveys required for listed species, and details on how the surveys were conducted, so that others may determine if the methodology was done correctly.[301] Focused and protocol survey data are essential for conservation and mitigation analysis.[302] Not only are they important for an adequate CEQA review but also for section 7 and section 10 consultation under the federal ESA.[303] Since this Project may significantly impact ESA listed species, take is likely to occur.[304] The DEIR/EIS must require that qualified biologists conduct surveys not just at a habitat level, but also on an individual species level.[305] As is, the DEIR/EIS violates NEPA and CEQA by failing to adequately analyze and mitigate potentially significant impacts to biological resources.

CURE-29 cont.

1. Snowy Plover Impacts are Not Adequately Analyzed and Mitigated

Ms. Owens explains that the DEIR/EIS fails to adequately analyze and mitigation impacts to snowy plover critical habitat.[306] The snowy plover's critical habitat must be minimally disturbed.[307] Yet, the Project will border approximately 9 miles of coastal snowy plover critical habitat.[308] Additionally, to properly protect the snowy plover, the Project must avoid impacts to non-breeding season snowy plover habitat.[309] In failing to adequately analyze the impacts to plovers during both breeding and non-breeding season, the DEIR/EIS has not proposed sufficient mitigation measures to adequately protect the species.[310]

CURE-30

[299] *Id,* at p. 14.
[300] *Id.,* at p. 15.
[301] *Id.,* at p. 12; *see also id.,* at p. 31.
[302] *Id.,* at p. 15
[303] *Id.*
[304] *Id.*
[305] *Id.*
[306] *Id.*, at p. 21-22.
[307] *Id.,* at p. 22.
[308] *Id.,* at pp. 22-24.
[309] *Id.,* at p. 24.
[310] *Id.,* at p. 24-29.

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Additionally, the DEIR/EIS should provide a more accurate cumulative impact analysis with respect to snowy plovers.[311] There are a number of project in the coastal zone in the vicinity of the Project that have not been adequately analyzed to determine their contribution to the cumulative impact of the species.[312] Additionally, compensatory mitigation details are necessary for complete snowy plover impact analysis. Ms. Owens suggests that the compensatory mitigation measure should incorporate collaboration with local snowy plover conservationists.[313]

CURE-30 cont.

2. Wildlife Corridors Impacts are Not Adequately Analyzed and Mitigated

The DEIR/EIS states that there would be no significant impacts to species due to the lack of wildlife corridors.[314] This, however, is inaccurate as Ms. Owens explains.[315] According to Ms. Owens, species use wildlife corridors and nurseries in agricultural and industrial areas.[316] The DEIR/EIS's conclusion, therefore, is not supported.[317] Ms. Owens concludes that this impact must be analyzed with greater detail and supporting documentation.[318]

CURE-31

3. Coastal Dunes Impacts are Not Adequately Analyzed and Mitigated

The DEIR/EIS does not adequately analyze coastal dune habitat. This critical habitat must be managed pursuant to Environmentally Sensitive Habitat Area requirements.[319]

CURE-32

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[311] *Id.*, at p. 32-34.
[312] *Id.*, at p. 33.
[313] Owens Comments, at p. 34-35.
[314] DEIR/EIS, at p. 4.6-119.
[315] Owens Comments, at pp. 45-47.
[316] *Id.,* at p. 45.
[317] *Id.,* at p. 47.
[318] *Id.*
[319] *Id.,* at p. 47; *see also* DEIR/EIS, at p. 4.6-207 ("Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values . . .").

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E. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Impacts to Air Quality

The DEIR/EIS fails to adequately analyze and mitigate potentially significant impacts to air quality, with respect to significant pollutants, criteria pollutants, and indirect emissions.

1. Construction Criteria Pollutant Emissions are Significant and Unmitigated

The DEIR/EIS estimated maximum daily emissions of ROG, NO_x, CO, PM10, and PM2.5 from Project construction and concluded that emissions of NO_x and PM10 are significant and require mitigation.[320] Dr. Fox explains that the impact analysis is unsupported and the mitigation is inadequate to reduce impacts to less than significant.[321] CURE-33

First, the construction emissions from off-road and on-road construction equipment are not supported by substantial evidence.[322] As Dr. Fox states, the DEIR/EIR fails to provide adequate documentation for some of its off-road emissions estimates.[323] In addition, the DEIR/EIS does not include input and output sheets or provide adequate explanation for its on-road construction emissions estimates.[324] The DEIR/EIS's assumptions used in emissions modeling should be subject to public review.[325] As such, the DEIR/EIS fails to disclose information pertaining to construction emission calculations and should be recirculated to include identification of all Project-specific assumptions and input parameters, a copy of the model run inputs and outputs, and any documentation used to make the final construction emission calculations.[326]

[320] Fox Comments, at p. 3.
[321] *Id.*
[322] *Id.*, at pp. 3-4.
[323] *Id.* at p. 3.
[324] *Id.*, at pp. 4-5.
[325] *Id.*
[326] *Id.*

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Second, Dr. Fox explains that construction mitigation is not adequate to reduce impacts to less than significant.[327] The DEIR/EIS concludes that the air quality impact with respect to ozone and NO2 standards would be significant and unavoidable even with implantation of Mitigation Measures 4.10-1a and 4.10-1b.[328] However, the CPUC and MBNMS cannot simply conclude that an impact is significant and unavoidable without requiring all feasible mitigation. Additional feasible mitigation is possible to mitigate for ozone and NO2.[329]

Mitigation Measure 4.10-1a proposes the use of equipment that meets asserted high-tiered engine standards.[330] Dr. Fox explains that Tier 3 engines are not the highest tier (lowest emission) off-road engines available; rather, this measure should require Tier 4 engines.[331] If Tier 4 engines cannot be obtained, then the mitigation measure should be expanded to require the consideration of leasing or renting from private vendors within 1,000 miles of the Project site.[332] The request to deviate from the use of Tier 4 engines should only be considered after all feasible actions have been taken to comply.[333]

Mitigation Measure 4.10-1b establishes limits on idling time for on-road and off-road engines.[334] Idling should be limited to no longer than five minutes, which is consistent with California Code of Regulations, title 13, § 2449, subd. (d)(3).[335] Therefore, this is not a valid mitigation measure because this is already what the law requires.[336] Dr. Fox states that this mitigation measure should be modified to limit idling to two minutes, which has been required for other similar projects.[337] This policy should be distributed to employees and enforced by the on-site construction manager.[338]

CURE-34

[327] *Id.,* at p. 6.
[328] *Id.*
[329] *Id.*
[330] *Id.,* at p. 7.
[331] *Id.*
[332] *Id.*
[333] *Id.*
[334] *Id.,* at p. 8.
[335] *Id.*
[336] *Id.*
[337] *Id.*
[338] *Id.*

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Third, additional feasible mitigation for construction ozone and NO_2 emissions exists.[339] The Project's Draft Initial Study and Mitigated Negative Declaration provided feasible measures, which are not included in this DEIR/EIS.[340] Feasible mitigation measures for NO_x and ROG can also be found in the Monterey Bay Unified Air Pollution Control District's CEQA Guidelines, other projects (i.e., Chevron Modernization Program), and U.S. EPA programs.[341] In her letter, Dr. Fox includes these feasible mitigation measures for NO_x and ROG, which are not included in the DEIR/EIS.[342] The DEIR/EIS fails to include all feasible mitigation for an impact that is significant and unavoidable.

CURE-34 cont.

2. The DEIR/EIS Omits Indirect Operational Emissions

The DEIR/EIS estimates operational emissions from on-road vehicle exhaust, emergency generator testing, and slant well maintenance.[343] However, according to Dr. Fox, the major source of Project emissions is indirect emissions from the generation of electricity.[344] The DEIR/EIS does not include those emissions. The CPUC and MBNMS argue that "[i]t is generally not possible to determine the exact generator source(s) of electricity on the power grid that would supply the proposed project, or whether or not the electricity would even be generated within the Air Basin."[345] The lead agencies are wrong.

CURE-35

CEQA does not allow the CPUC and MBNMS to exclude this major source of emissions from the DEIR/EIS.[346] As noted by Dr. Fox, EIRs routinely include indirect emissions from electricity generation.[347] In fact, the GHG section of this DEIR includes indirect GHG emissions from power generation.[348] Furthermore, the Monterey Bay Unified Air Pollution Control District's ("MBUAPCD"). CEQA Guidelines state: "The following thresholds apply to all indirect and direct

[339] *Id.,* at pp. 8-9.
[340] California American Water Slant Test Well Project Draft Initial Study/Mitigated Negative Declaration, *supra*; DEIR/EIS, at p. 4.15-21.
[341] Fox Comments, at p. 9.
[342] *Id.*, at 9-11.
[343] *Id.*, at p. 12 (citing DEIR/EIS, Table 4.10-7).
[344] *Id.,* at p. 12.
[345] *Id.*
[346] *Id.*
[347] *Id.*
[348] *Id.*

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emissions, whether or not they are subject to District permit authority, unless noted otherwise."[349] The MBUAPCD's guidelines indicate that the NO_x and ROG significance thresholds should be compared to "direct + indirect" emissions.[350] Thus, Dr. Fox concludes that "the DEIR/EIS must include the increase in emissions from the net increase in power production to support the Project."[351]

Furthermore, Dr. Fox explains that indirect emissions need not be limited to the Project's Air Basin.[352] Dr. Fox states that "[e]lectricity from any generator in California could be used at the Project site. As the significance criteria are based on the maximum day, finding the 'maximum' is all that is required."[353]

The DEIR/EIS indicates that PG&E would supply the power for the Project. According to Dr. Fox, the sources of PG&E's power are known and "emissions should be estimated for the plausible worst case daily maximum emissions. . . ."[354] However, the DEIR/EIS does not include any of the information required to estimate these emissions.[355] Thus, the DEIR/EIS fails as an informational document under CEQA, leaving the public to generate independent emissions estimates in order to evaluate the Project's impacts.[356]

CURE-35 cont.

Dr. Fox provides her own estimates.[357] Dr. Fox finds that "the Project would increase NO_x emissions by up to 363 lb/day, which exceeds the MBUAPCD's NO_x significance threshold of 137 lb/day."[358] The NO_x emissions from producing a net increase of 51,698 MWh per year of electricity "is large enough taken alone to exceed the MBUAPCD's NO_x significance threshold."[359] This is a significant impact not disclosed or mitigated in the DEIR/EIS.

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[349] *Id.* (citing Monterey Bay Unified Air Pollution Control District ("MBUAPCD") 2008), p. 5-4.
[350] *Id.* (citing MBUAPCD 2008, Table 5-3.)
[351] *Id.*
[352] *Id.*, at pp. 12-14.
[353] *Id.*, at p. 12.
[354] *Id.*, at p. 13.
[355] *Id.*
[356] *Id.*
[357] *Id.,* at pp. 13-14.
[358] *Id.*, at p. 13.
[359] *Id.*

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In addition, Dr. Fox identified all PG&E owned power plants in California, determining the maximum daily emissions from each, using EPA's CAMD daily data for 2014.[360] She then concludes — assuming 1,152 lb of NO_x is emitted on the maximum day from the Gateway Generating Station — that operational NO_x emissions would increase to 1,179 lb/day,[361] which exceeds the MBUAPCD's NO_x threshold (137 lb/day) by a significant amount.[362] Thus, Dr. Fox concludes that operational NO_x emissions from power production are a significant impact not disclosed in the DEIR/EIS that must be mitigated.[363] This significant impact is not disclosed or mitigated in the DEIR/EIS.

CURE-35 cont.

Dr. Fox offers suggestions for mitigating this impact, including "purchasing local and contemporaneous emission reduction credits or by collaborating with a nearby NO_x source to reduce their NO_x emissions. Alternatively, the increase in electricity demand could be met by using 100% renewable sources of electricity."[364]

CEQA requires the lead agencies' to disclose, analyze, and require mitigation for the Project's indirect electricity generation emissions for all criteria pollutants and to require mitigation for the resulting significant NO_x impacts.

3. The DEIR/EIS Fails to Evaluate All Air Quality Impacts

Under CEQA, a lead agency has discretion to determine how to classify the significance of impacts.[365] However, an agency's judgment must be supported by scientific information and other factual data, and the agency does not have discretion to simply not evaluate the significance of impacts.[366] In her letter, Dr. Fox states that the DEIR/EIS fails to evaluate the significance of pollutants for which the Monterey Bay Unified Air Pollution Control District ("MBUAPCD") has not set official CEQA significance thresholds.[367] Specifically, the DEIR/EIS fails to evaluate the significance of impacts from two pollutants: NO_x emissions for impacts

CURE-36

[360] *Id.,* at p. 14.
[361] *Id.*
[362] *Id.*
[363] *Id.*
[364] *Id.*
[365] CEQA Guidelines, § 15064(b).
[366] *Id.*
[367] Fox Comments, p. 14.

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other than its contribution to ozone, and ROG for its impacts other than its contribution to ozone.[368]

a) NO_x

The MBUAPCD's significance criteria for NO_x (137 lb/day) is based only on ozone.[369] Thus, the DEIR/EIS only evaluates NO_x as an ozone precursor.[370] However, as Dr. Fox points out, NO_x "can also causes adverse health effects, acid rain, form particulate matter, and contribute to global warming, water quality deterioration, and visibility impairment."[371] NO_x can damage lung tissue and reduce lung function.[372] The DEIR acknowledges that there are primary and secondary state and federal ambient air quality standards for nitrogen oxides established using NO_2 as a surrogate for all nitrogen oxides.[373] The primary standards (1-hour) are set to protect public health, including the health of sensitive populations.[374] The secondary standards (annual) are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.[375] The DEIR/EIS fails to evaluate these primary and secondary impacts of NO_x.[376]

CURE-36 cont.

The absence of a MBUAPCD "CEQA significance threshold" for non-ozone precursor NO_x impacts does not obviate the need to evaluate this impact as the ambient air quality standards themselves can be used as CEQA significance thresholds.[377] According to Dr. Fox, when a CEQA significance threshold is missing, a lead agency can model emissions to determine if they cause or contribute to an exceedance of the ambient standards or look to other sources, such as other air districts, for significance criteria expressed as emission rates.[378]

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[368] *Id.*, pp. 15-19.
[369] *Id.*, pp. 15-17.
[370] *Id.*
[371] *Id.*
[372] *Id.*
[373] *Id.* at p. 15 (citing DEIR/EIS, Table 4.10-2).
[374] *Id.*
[375] *Id.*
[376] *Id.*
[377] *Id.,* at p. 16.
[378] *Id.*, at pp. 16-17.

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In *Bakersfield Citizens For Local Control v. City of Bakersfield*, the Fifth District appellate court held that an EIR was inadequate because it failed to correlate adverse air quality impacts to resulting adverse health impacts.[379] In that case, a local citizens group filed a CEQA petition challenging the EIRs for two retail shopping centers planned for the southwestern portion of Bakersfield, California.[380] Both EIRs concluded that the shopping center projects would have significant and unavoidable adverse impacts on air quality, yet the court found:

> neither EIR acknowledges the health consequences that necessarily result from the identified adverse air quality impacts. Buried in the description of some of the various substances that make up the soup known as 'air pollution' are brief references to respiratory illnesses. However, there is no acknowledgement or analysis of the well-known connection between reduction in air quality and increases in specific respiratory conditions and illnesses. After reading the EIR's, the public would have no idea of the health consequences that result when more pollutants are added to a nonattainment basin.[381]

CURE-36 cont.

The court concluded that the disclosures were inadequate and stated that the health impacts resulting from the adverse air quality impacts must be identified and analyzed in new EIRs.[382]

Here, although the DEIR/EIS acknowledges the impacts of NO_x as an ozone precursor, it fails to identify the respiratory impacts and other impacts resulting from NO_x emissions.[383] The CPUC and MBNMS must prepare a revised DEIR/EIS that adequately discloses, analyzes and mitigates all potentially significant impacts from the Project's NO_x emissions. Furthermore, and discussed in further detail below, the NO_x and Reactive Organic Gases emissions reported exceed the non-ozone significance thresholds established by four air districts pursuant to CEQA.[384]

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[379] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219–1220.
[380] *Id.*, at p. 1193.
[381] *Id.*, at p. 1220.
[382] *Id.*
[383] Fox Comments, at pp. 15-16.
[384] *Id.*, at p. 17.

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b) Reactive Organic Gases (ROG)

Reactive Organic Gases ("ROG"), in addition to forming ozone, can cause "severe eye, nose, and throat [irritation] and increases susceptibility to respiratory infections."[385] As with NO_x, the DEIR/EIS only evaluates ROG as an ozone precursor.[386] The Volatile Organic Compounds ("VOCs") present in ROG before it is converted into ozone include compounds that are hazardous to human health.[387] The DEIR/EIS's health risk assessment ("HRA") only evaluated diesel particulate matter; it did not evaluate the health impacts from toxic air pollutants ("TAC") subsumed in ROG that are not converted to ozone when they reach sensitive receptors.[388] According to Dr. Fox, these TACs include "acutely and chronically toxic chemicals such as toluene, xylene, ethylbenzene, and 1,3 butadiene and carcinogens such as benzene, formaldehyde, acrolein, and acetaldehyde."[389] CURE-37

Like the NO_x discussion above, Dr. Fox states that other air districts have established CEQA significance thresholds for ROG.[390] The DEIR/EIS does not take this approach and the DEIR/EIS must include TAC impacts in a revised HRA.[391] The DEIR/EIS fails to meet CEQA standards because it does not evaluate the Project's non-ozone impacts from ROG emissions.[392]

F. The DEIR/EIS Fails to Adequately Evaluate Health Risks

The DEIR/EIS evaluated health risks of Project construction from Diesel Particulate Matter ("DPM") at two sites, the Carmel Valley Pump Station and ASR Injection/Extraction Wells.[393] As Dr. Fox notes, this analysis concluded that cancer and chronic health risks are less than significant.[394] However, the analysis is flawed and when corrected, Dr. Fox finds that there would be a significant health impact. CURE-38

[385] *Id.*, p. 18.
[386] *Id.*, at pp. 17-18.
[387] *Id.* at p. 18.
[388] *Id.*
[389] *Id.*
[390] *Id.*, at p. 17.
[391] *Id.,* at p. 18.
[392] *Id.*
[393] *Id.*, at p. 20.
[394] *Id.*

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Further, she finds that the HRA analysis is unsupported, incomplete, and fails to include acute impacts.[395]

First, all sensitive receptors were not evaluated.[396] As Dr. Fox points out, there are other facilities that are near sensitive receptors that were excluded from the HRA, including Wells ASR-5 and ASR-6, which would be constructed within 50 feet of existing residences.[397] The ASR Conveyance Pipeline, ASR Recirculation Pipeline, and the ASR Pump-to-Waste Pipeline would be within 250 feet of Seaside Middle School, and within 50 to 100 feet of residences in the Fitch Park military housing area along Hatten Road and Ardennes Circle.[398]

Second, the DEIR/DEIS did not follow OEHHA Guidelines, which resulted in the DEIR/EIS substantially underestimating the Project's health risk.[399] The OEHHA guidelines, adopted in March 2015, provide recommendations for preparing health risk assessments.[400] Dr. Fox points out that the DEIR/EIS analysis only evaluated risk for exposures of 0.25 years, or 3 months after birth.[401] However, if exposure is increased to 6 months after birth, per OEHHA guidance, then the cancer risk increases from 5.2 in one million to 10 in one million, which is per se significant.[402] The 10 in one million number is the significance threshold for a lifetime exposure, which dilutes the short term risk.[403] Instead, the DEIR/EIS should have a lower significance threshold than the 10 in one million used for a 70 year exposure.[404] Dr. Fox provides differing scenarios in evaluating the cancer risk.[405] In either scenario, however, the cancer risk from diesel exhaust alone would be highly significant and unmitigated. This significant impact is not disclosed in the

CURE-38 cont.

[395] *Id.*
[396] *Id.*
[397] *Id.*
[398] *Id.*
[399] *Id.,* at pp. 20-21.
[400] *Id.*
[401] *Id.,* at p. 21.
[402] *Id.*
[403] *Id.*
[404] *Id.*
[405] *Id.,* at pp. 21-22.

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DEIR/EIS.[406] At a minimum, all diesel fuel equipment should have diesel particulate traps to mitigate this significant impact.[407]

Third, all hazardous pollutants were not included in the HRA.[408] As already mentioned, the HRA only evaluated diesel exhaust, which is emitted from construction equipment and on-road vehicles.[409] But there are also VOCs, present in ROG before it is converted into ozone, which are hazardous to human health.[410] The HRA should have evaluated toxic air pollutants subsumed in ROG that are not converted to ozone when they reach sensitive receptors.[411] By failing to include unconverted VOCs, the HRA underestimates health impacts and further fails to evaluate acute health impacts.[412]

CURE-38 cont.

G. The DEIR/EIS Fails to Identify Significant Health Impacts Due to Valley Fever

Dr. Fox provided evidence in her 2015 comments that the DEIR/EIS fails to identify significant health impacts due to Valley Fever.[413] Yet the DEIR/EIS continues to dismiss the risk of Valley Fever to Project workers and nearby sensitive receptors.[414] In the attached comments, Dr. Fox provides evidence about the health risks associated with Valley Fever for this Project, which is located in an endemic zone.[415] Valley Fever is contracted by inhaling *Coccidioides ssp. (*"Cocci spores"*)*, a component of PM10, or PM2.5.[416]

CURE-39

First the DEIR/EIS misrepresents the status quo by stating that Valley Fever is declining.[417] However, the decline recorded in 2014 (to which the DEIR/EIS relies

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[406] *Id.*
[407] *Id.,* at p. 22.
[408] *Id.*
[409] *Id.*
[410] *Id.*
[411] *Id.*
[412] *Id.*
[413] *Id.,* at p. 25; *see* Dr. Fox Comments (2015) at p. 38, **Attachment S**.
[414] *Id.*
[415] *Id.*, at p. 23.
[416] *Id.*, at p. 27.
[417] *Id.*, at p. 25.

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on for its support) was an anomaly.[418] In fact, there were 50% more cases in 2016 than in 2015.[419]

Second, the DEIR/EIS makes assertions that are inconsistent with CEQA and are unsupported and incorrect.[420] The DEIR/EIS concludes that much of the population of Monterey County has already been exposed to Cocci spores.[421] Valley Fever is contracted by inhaling Cocci spores, which become airborne during earth moving construction, which increases PM10 and PM2.5.[422] Project construction would disturb over 173 acres of endemic land, likely to contain spores.[423] Additional disturbance would occur during maintenance.[424] Therefore, the DEIR/EIS concludes that Valley Fever-related impacts would not be considered significant because residents are continually exposed to spores and construction would not represent an increased risk to public health.[425] Even if everyone in Monterey County has been exposed to Cocci spores, Dr. Fox states, this does not mean that an increase in the number of Cocci spores due to Project construction would not result in new cases, or that construction workers from non-endemic areas would not contract Valley Fever.[426]

CURE-39 cont.

Dr. Fox writes, "[w]hile some residents of Monterey County may have been exposed to Cocci spores as they live adjacent to agricultural fields or a construction site, this does not mean that an increase in the number spores due to Project construction would not result in an increase in Valley Fever cases."[427] Additionally, the record contains no evidence that all residents downwind of Project construction and all construction workers who would build the Project have in fact been exposed to Cocci spores in sufficient amounts to assure immunity.[428] Dr. Fox challenges this

[418] *Id.*
[419] *Id.*
[420] *Id.,* at p. 26.
[421] *Id.*
[422] *Id.*
[423] *Id.*, at p. 28.
[424] *Id.,* at pp. 28-29.
[425] *Id.,* at p. 29.
[426] *Id.,* at p. 29.
[427] *Id.,* at p. 26.
[428] *Id.*

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immunity argument, stating that being exposed to Cocci spores does not imply nor can it guarantee immunity to Valley Fever from increased exposure.[429]

Moreover, the Requests for Proposal for the slant wells and conveyance facilities state that the Contractor must make a good faith effort to employ individuals, who have lived for at least one year out of the three years prior to the opening of proposals, from Monterey, San Benito, or Santa Cruz Counties.[430] Therefore, Dr. Fox states that it is a highly unlikely scenario that all potentially exposed parties have already been exposed in Monterey County.[431]

The DEIR/EIS must evaluate the significance of Cocci spore exposure relative to the baseline, just as it had evaluated the significance of PM10 and PM2.5 emissions relative to the baseline.[432] By stating that residents have already been exposed to Cocci spores (present in PM10, or PM2.5) is a statement of the baseline.[433] It does not adequately inform the public about the Project's Valley Fever health risk.

CURE-39 cont.

Construction workers who would be exposed to land disturbance activities would be at considerable risk of catching Valley Fever.[434] Construction workers, alongside agricultural workers, are the most at-risk populations.[435] This is because these labor groups are in intimate contact with soil in a Valley Fever endemic area and many may be from non-endemic zones or may have never worked in an endemic area.[436] The DEIR/EIS fails to adequately evaluate this significant construction impact, not only on construction workers, but also on the nearby sensitive receptors and the larger population (spores can travel as much as 500 miles).[437] Since the DEIR/EIS evaluated the increase of PM10 and PM2.5, of which Cocci spores are a component, the DEIR/EIS should also disclose that Cocci spores will increase.[438]

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[429] *Id.,* at p. 27.
[430] *Id.,* at pp. 26-27.
[431] *Id.,* at p. 27.
[432] *Id.*
[433] *Id.*
[434] *Id.,* at p. 30.
[435] *Id.*
[436] *Id.*
[437] *Id.,* at pp. 29-30.
[438] *Id.*, at p. 31.

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Third, the DEIR/EIS fails to mitigate the significant Valley Fever health risks.[439] Although the DEIR/EIS provides Mitigation Measure 4.10-1c (a conventional construction fugitive dust mitigation measure that would allegedly mitigate the risk to a less than significant level), this measure is ineffective at controlling Valley Fever.[440] Conventional dust control measures are effective at controlling visible dust or larger dust particles (PM10), but not the very fine particulate matter (PM2.5), where Valley Fever spores are found.[441] Dr. Fox states that the spores, which may be difficult to see and have low settling rates, are not controlled by conventional dust control measures.[442] Additionally, the Project's construction period coincides with a period when there might be a higher risk of catching Valley Fever.[443]

Dr. Fox provides a number of recommended mitigation measures to reduce the risk of Valley Fever.[444] These recommended measures go beyond the conventional dust control measures for controlling PM10 emissions.[445] These recommendations include continuously wetting the soil before and while digging, thoroughly cleaning equipment, vehicles and other items before they are moved off-site to other work locations, developing a protocol with medical professionals to medically evaluate employees who have symptoms of Valley Fever, and others.[446] Dr. Fox also identifies flaws in Mitigation Measure 4.10-1a, such as required daily sweeping, which generates fugitive dust that may contain spores.[447]

Not only do the PM10 mitigation measures not adequately control Valley Fever, but they also fail to mitigate PM10 impacts.[448] Projects that have implemented conventional PM10 dust control measures, like the ones for this Project, have experienced several incidences of severe dust storms and reported

CURE-39 cont.

[439] *Id.*
[440] *Id.*
[441] *Id.*
[442] *Id.,* at pp. 31-32.
[443] *Id.,* at pp. 32-33.
[444] *Id.,* at pp. 33-36.
[445] *Id.*
[446] *Id.*
[447] *Id.,* at pp. 37-39.
[448] *Id.,* at p. 38.

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cases of Valley Fever.[449] The DEIR/EIS must adopt an enhanced dust control plan, as suggested by Dr. Fox, to reduce the risk to construction workers, on-site employees and the public of contracting Valley Fever.[450] These measures are feasible as many of them have been adopted by the County of Monterey in other EIRs.[451] Still, even if all of the above feasible measures are adopted, a recirculated DEIR/EIS is required to analyze whether these measures are adequate to reduce the Valley Fever significant impact to a level below significance.[452]

CURE-39 cont.

H. The DEIR/EIS Fails to Adequately Explain Why the Project's GHG Impacts Are Significant and Unavoidable and Improperly Defers Mitigation

In *Keep Berkeley Jets Over the Bay Com. v. Board of Port Comrs.*, the First Appellate court concluded that "simply labeling the effect 'significant' without accompanying analysis" violates "the environmental assessment requirements of CEQA."[453] Before the lead agencies can make a "significant and unavoidable" finding, it must specifically identify the GHG mitigation measures and estimate the reduction in GHG achieved by each.[454]

CURE-40

An agency may defer mitigation only when three narrow, specific prerequisites are met: (1) an EIR contains criteria or performance standards to govern future actions implementing the mitigation; (2) practical considerations preclude development of the measures at the time of initial project approval; and (3) the agency has assurances that the future mitigation will be *both* "feasible and efficacious."[455] An agency may not satisfy its mitigation requirements by merely

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[449] *Id.*
[450] *Id.*
[451] *Id.*
[452] *Id.,* at pp. 38-39.
[453] *Berkeley Keep Jets Over the Bay Committee v. Board of Port Comrs.* (2001) 91 Cal.App.4th 1344, 1371 [111 Cal.Rptr.2d 598, 618], *as modified on denial of reh'g (Sept. 26, 2001)*; San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus (1996) 42 Cal.App.4th 608.
[454] *See Berkeley Keep Jets Over the Bay Com.*, *supra*, at p. 1373.
[455] *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 94-95; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 669-71; CEQA Guidelines § 15126.4(a)(1)(B).

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ordering a project proponent to "obtain a . . . report and then comply with any recommendations that may be made in the report."[456]

In *Communities for a Better Environment v. City of Richmond*,[457] an EIR for a Chevron refinery project was deemed legally inadequate in part because the mitigation measures for GHG emissions were impermissibly deferred. The EIR in that case was "legally required to describe, evaluate and ultimately adopt feasible mitigation measures which would 'mitigate or avoid' [GHG] impacts."[458]

The mitigation measure at issue in the Chevron project EIR stated that "[n]o later than one (1) year after approval of this Conditional Use Permit, Chevron shall submit to the City, for approval by the City Council, a plan for achieving complete reduction of GHG emissions. . ."[459] As the court explained, the mitigation measure "required Chevron, within one year of Project approval, to hire and fully fund 'a qualified independent expert' to complete an inventory of greenhouse gas emissions and to identify potential emissions reduction opportunities."[460] Furthermore, the measure stated that Chevron "shall consider implementation of measures that achieve GHG reductions including, but not limited to, the following measures . . ."[461] The measure then listed several potential mitigation measures. The respondents in the case argued that the EIR failed to adequately formulate a plan to mitigate GHG emissions, but instead offered "a menu of potential mitigation measures, with the specific measures to be selected by Chevron and approved by the City Council a year after Project approval."[462]

CURE-40 cont.

The court found that the measure was deferred mitigation, which is impermissible under CEQA. The court stated, in part, that the measure amounted to "a generalized goal of no net increase in greenhouse gas emissions and . . . a handful of cursorily described mitigation measures for future."[463] Furthermore, the court found that "[n]o effort [was] made to calculate what, if any, reductions in the

[456] *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275.
[457] *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 95.
[458] *Id.*, at p. 91.
[459] *Id.*
[460] *Id.*, at p. 92.
[461] *Id.*
[462] *Id.*
[463] *Id.*, at 93.

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Project's anticipated greenhouse gas emissions would result from each of these vaguely described future mitigation measures" and that the list of potential mitigation measures was "nonexclusive, undefined, untested and of unknown efficacy."[464]

As Dr. Fox explains, the DEIR/EIS fails to substantiate that its GHG emissions cannot be reduced to an insignificant level and fails to include all feasible mitigation measures.[465] It also improperly defers mitigation by stating it will implement a GHG Emissions Reduction Plan and Construction Equipment Efficiency Plan prior to the start of construction, but after Project approval.[466]

The DEIR/EIS concludes that GHG emissions from construction and operation of the Project are significant and unavoidable.[467] The DEIR/EIS then proposes Mitigation Measure 4.11-1 to reduce the Project's GHG emissions from construction and operation and Mitigation Measure 4.18-1 for construction GHG emissions.[468] The DEIR/EIS concludes that even after complying with these measures, "it is not possible to substantiate numerically that the GHG emissions would be reduced to a less-than-significant level."[469] Consequently, the GHG emissions remain significant and unavoidable.[470]

CURE-40 cont.

The DEIR/EIS must provide further explanation for its conclusion that the Project's GHG emissions impacts are significant and unavoidable.[471] Furthermore, it must explain the Project's consistency with the State's energy and climate objectives.[472]

The CPUC's inability to numerically substantiate the Project's mitigated emissions is a result of its improper deferral of the identification of mitigation

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[464] *Id.*
[465] Fox Comments, at pp. 39-40.
[466] *Id.,* at pp. 40-47.
[467] *Id.,* at p. 40.
[468] *Id.*
[469] *Id.,* at p. 39 (citing DEIR/EIS, at p. 4.11-19).
[470] *See id.*
[471] *Id.*
[472] *Id.,* at p. 40.

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measures.[473] Indeed, as Dr. Fox points out, other applicants and lead agencies have successfully quantified GHG emission reductions.[474]

Mitigation Measure 4.11-1 requires that CalAm prepare a GHG Emissions Reduction Plan and submit it to the CPUC for approval prior to the start of construction.[475] CalAm shall also make a good faith effort to ensure that at least 20 percent of the approved project's operation energy use requirements are achieved with "clean" renewable energy.[476] Mitigation Measure 4.11-1 improperly defers mitigation and is inadequate for six reasons, which Dr. Fox explains in further detail in her letter.[477]

First, a "good faith effort" to use renewable energy for 20% of the Project's operational needs is not adequate CEQA mitigation because for a significant and unavoidable impact, all feasible mitigation under CEQA must be implemented.[478] One-hundred percent of the Project's operational electricity demand can be met through renewable energy.[479] The County of Monterey has also included a similar policy with respect to desalination plants.[480]

CURE-40 cont.

> The EIRs prepared for the desalination plants are expected to require that construction equipment use alternative fuels or other means to reduce their emissions of ozone precursors. Although, depending upon the intensity of construction, there is the potential for a significant impact on air quality from ozone precursors. . . Taking a conservative view, the indirect impacts of the water supply projects to be built would potentially make considerable contributions to air quality, biological, and electrical energy use.[481]

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[473] *Id.* at p. 39.
[474] *Id.*
[475] *Id.,* at p. 40.
[476] *Id.*
[477] *Id.,* at pp. 40-45.
[478] *Id.,* at pp. 40-41.
[479] *Id.*
[480] Monterey County General Plan EIR: Section 6.4.3.3, at p. 6-14, *available at* http://www.co.monterey.ca.us/planning/gpu/2007_GPU_DEIR_Sept_2008/Text/Sec_06_Other_CEQA.pdf. **Attachment T.**
[481] Fox Comments, at pp. 40-41.

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Second, preparing the Emissions Reduction Plan is improperly deferred until after Project approval.[482] This plan must be part of the DEIR/EIS and circulated for public review, as explained by the Court in *CBE v. Richmond*.[483]

Third, "good faith effort" measures are not adequate because they are not enforceable, as required under CEQA.[484] Under CEQA, an EIR must not only discuss measures to avoid or minimize adverse impacts, it also must ensure that mitigation measures are fully enforceable through permit conditions, agreements, or other legally binding instruments.[485] Mitigation measures cannot be vague or have uncertain effectiveness or feasibility.[486]

Fourth, the DEIR/EIS should require that a registered professional (mechanical) engineer in California confirm that the Plan includes all feasible measures.[487]

CURE-40 cont.

Fifth, the Plan should have ongoing monitoring by a registered professional engineer to ensure successful mitigation under CEQA.[488]

Sixth, and last, the Plan should include construction GHG emissions, and opportunities throughout the CalAm system, not just Project operational facilities.[489]

Mitigation Measure 4.18-1 requires that CalAm contract a "qualified professional" to prepare a "Construction Equipment Efficiency Plan" that will increase the efficient use of construction equipment to the maximum extent feasible.[490] This mitigation measure has some of the same deficiencies as Mitigation 4.11-1.[491]

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[482] *Id.,* at p. 41.
[483] *Id.*
[484] *Id.,* at pp. 41-42.
[485] *Id.* (citing CEQA Guidelines § 15126.4, subd. (a)(2).)
[486] *Id.* (citing *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28; *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 79.)
[487] *Id.,* at p. 42.
[488] *Id.*
[489] *Id.*, at pp. 42-45.
[490] *Id.,* at p. 45.
[491] *Id.,* at pp. 45-47.

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First, the Efficiency Plan is deferred until after the Project is approved, pre-empting public review.[492] This Plan must be part of the DEIR/EIS and circulated for public review, as required by the Court in *CBE v. Richmond*.[493]

Second, the measure should be modified to require that a registered professional (civil) engineer confirm that the Plan includes all feasible construction equipment efficiency measures.[494]

Third, the Plan must include all feasible mitigation measures, such as NO_x and ROG mitigation measures identified above.[495] Dr. Fox provides a list of additional measures that were recently required as GHG construction mitigation in the Chevron Modernization Final EIR,[496] including maintenance of construction equipment, further idling restrictions and other measures.[497]

Fourth, the measure fails to identify any method to verify compliance.[498] Dr. Fox proposes "a comprehensive inventory of all off-road equipment that will be used to construct the Project . . . The inventory should include the horsepower rating, engine production year, hours of use, and amount and type of fuel used."[499] Furthermore, "[a]t least 48 hours prior to the use of heavy-duty off-road equipment at a new construction site, the project representative shall provide the inspector and MBUAPCD with the construction timeline, including start date and name and phone number of project manager and on-site foreman."[500]

CURE-40 cont.

[492] *Id.,* at p. 45.
[493] *Id.*
[494] *Id.,* at pp. 45-46.
[495] *Id.,* at p. 46.
[496] *Id.*
[497] *Id.* (citing Chevron Refinery Modernization Project EIR, March 2014, Chapter 4.8, Greenhouse Gases, *available at* http://chevronmodernization.com/wp-content/uploads/2014/03/4.8_Greenhouse-Gases.pdf and Chapter 5, Mitigation Measure Monitoring and Reporting Program, *available at* https://s3.amazonaws.com/chevron/Final+EIR/5_MMRP.pdf).
[498] *Id.,* at pp. 46-47.
[499] *Id.*
[500] *Id.*, at pp. 46-47.

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Finally, the Efficiency Plan fails to provide adequate monitoring, according to Dr. Fox, who suggests a similar monitoring program as stated above.[501] Dr. Fox concludes that the Efficiency Plan "fails to adequately mitigate the air quality impacts resulting from Project construction."[502]

The CPUC must ensure that all feasible mitigation is incorporated in the DEIR to address the significant and unavoidable GHG impacts. As stated in *CBE v. Richmond*, "the time . . . to formulate mitigation measures to minimize or avoid those impacts [is] during the EIR process, before the Project was brought to the [approving body] for final approval."[503] The DEIR/EIS must be revised in accordance with these comments and recirculated before the Project can be lawfully approved under CEQA.

CURE-40 cont.

I. Vibration Impacts Are Significant and Unmitigated

The DEIR/EIS fails as an information document with respect to construction activities that can produce significant ground born vibration that can damage nearby buildings and annoy sensitive receptors.[504] The Project fails to provide supporting calculations, citations to specific pages from the methodology it used, or disclose input values used in calculations, which would have allowed Dr. Fox to reproduce and verify the vibration analysis.[505] The DEIR/EIS concluded that vibration from pipeline installation using both compactors and pile drivers would result in significant building damage and annoyance from constructing the Castroville Pipeline and Source Water Pipeline, the new Desalinated Water Pipeline, and the new Transmission Main where trenchless construction methods are required.[506] The DEIR/EIS imposes Mitigation Measures 4.15-1a and Measure 4.12-3, which it asserts would allegedly make the vibration impact no longer significant.[507] These, however, are fundamentally flawed and are not adequate to reduce vibration impacts to a less than significant level.[508]

CURE-41

[501] *Id.*, at p. 47.
[502] *Id.*
[503] *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 95.
[504] Fox Comments, at pp. 47-48.
[505] *Id.*
[506] *Id.*
[507] *Id.,* at pp. 48-50.
[508] *Id.,* at p. 48.

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Mitigation Measure 4.15-1a is not described.[509] Although there is an Impact 4.15-1, there is no mitigation measure associated with that impact and therefore no way to determine what Mitigation Measure 4.15-1a entails.[510]

Mitigation Measure 4.12-3 proposes vibration reduction measures, which are not practically enforceable.[511] Additionally, there are more aggressive mitigation measures that this city should comply with in order to mitigate the potentially significant vibration impact.[512] However, without supporting analysis to demonstrate that the vibration impacts would be less than significant with the proposed mitigation, the DEIR/EIS fails as an information disclosure document.[513] The City of Monterey includes a "Vibration Control Plan for Monterey Pipeline Project," which includes more aggressive mitigation measures for vibration impacts than what is identified in the DEIR/EIS.[514] The City's Vibration Control Plan should replace the weak measures in the DEIR/EIS and should be included for public review in an appendix to the DEIR/EIS.[515]

CURE-41 cont.

However, without providing reproducible analysis to demonstrate that the vibration impacts would be less than significant with the proposed mitigation, the DEIR/EIS fails as an information disclosure document.[516]

J. The DEIR Fails to Adequately Analyze and Mitigate Potentially Significant Impacts to Historic Resources

CURE-42

The DEIR/EIS states that construction will not cause an adverse impact to historical resources.[517] However, as Dr. Fox explains, this impact was narrowly evaluated.[518] The DEIR/EIS only looked at historical resources listed in or eligible

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[509] *Id.*
[510] *Id.*
[511] *Id.,* at p. 49.
[512] *Id.,* at pp. 49-50.
[513] *Id.,* at p. 48.
[514] *Id.,* at pp. 49-50.
[515] *See id.*
[516] *Id.*, at p. 47.
[517] *Id.,* at p. 50-51.
[518] *Id.*

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for listing in the California Register or historic properties listed in or eligible for listing in the National Register that are within the Area of Potential Impact of all project components.[519] In so doing, the DEIR/EIS neglects evaluating the impact of construction equipment induced vibration on properties listed in the City of Monterey's Vibration Control Plan.[520] This list includes 24 historic structures that are close enough to be damaged — constituting a significant adverse impact to historical resources.[521] This new impact was not disclosed or mitigated in the DEIR/EIS.[522]

CURE-42 cont.

K. The DEIR/EIS Fails to Adequately Analyze and Mitigate Potentially Significant Impacts from Decommissioning Activities

At the end of the Project's 40-year life, the Project would be decommissioned. As explained above, the decommissioning phase of the Project is part of the whole Project.[523] CEQA requires the CPUC to analyze all phases of the Project. Similarly, NEPA requires that an environmental document analyze all stages of a project to the extent they are interdependent.[524] Despite this requirement, the DEIR/EIS provides no analysis of the Project's decommissioning activities and, therefore, violates CEQA and NEPA.

CURE-43

As explained above, the DEIR/EIS only briefly mentions decommissioning in the context of coastal erosion for the slant wells.[525] The CPUC and MBNMS must provide a complete description of the decommissioning activities necessary to assess all of the Project's impacts, including those that our independent experts identified (e.g., terrestrial sensitive species impacts, biomatter accumulation, Valley Fever.)[526]

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[519] *Id.*
[520] *Id.*
[521] *Id.,* at p. 51.
[522] *Id.*
[523] 40 C.F.R. § 1508.25; *see also Kentucky Coal Ass'n, Inc. v. Tennessee Valley Authority* (W.D. Ky. 2014) 68 F.Supp.3d 685, 696–97; *Bozung v. Local Agency Formation Com.* (1975), 13 Cal.3d 263, 283-84; Pub. Resources Code § 21159.27 (prohibiting piecemealing); *see also, Rio Vista Farm Bureau Center v. County of Solano* (1992) 5 Cal.App.4th 351, 370.
[524] *Thomas v. Peterson* 753 F.2d 754, 760 (9th Cir. 1985).
[525] DEIR/EIS, at pp. 4.2-64, 4.2-71-72.
[526] *See also* California American Water Slant Test Well Project Draft Initial Study/Mitigated Negative Declaration, *supra,* at p. 41 ("Earthwork (i.e., trenching and excavation) would generate

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The public and decision makers cannot engage in a meaningful assessment of these potential impacts without a proper description and analysis of decommissioning-related impacts.

Furthermore, the CPUC and MBNMS have enough information, such as the type of equipment to be utilized and range of activities to be performed, as well as baseline knowledge of impacts resulting from the Project's construction and operation, to make a reasonable assessment of impacts from decommissioning.[527] For example, the DEIR/EIS fails to adequately investigate and mitigate air and water quality impacts related to decommissioning, which may be similar in nature to construction emissions and discharges.[528] For example, the construction phase already produces emissions beyond an acceptable threshold, and Dr. Fox identified problems with the Construction Equipment Efficiency Plan, which considers both construction and decommissioning activities.[529] The flawed equipment efficiency plan is inadequate as a mitigation measure.[530]

CURE-43 cont.

To properly disclose the Project's impacts from decommissioning, the CPUC and MBNMS must revise the DEIR/EIS to include the type (*i.e.*, direct, indirect, or cumulative), the duration (*i.e.*, temporary or permanent), the nature (*i.e.*, source) and extent (*i.e.*, scale) of the associated potential impacts.[531] The CPUC and MBNMS must then develop mitigation measures that are certain, enforceable and linked to measurable performance standards.[532] Absent additional information, the CPUC and MBNMS cannot conclude that the Project's impacts have been fully assessed and properly mitigated.

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fugitive dust during construction and decommissioning activities."); *see also* https://www.miga.org/documents/Befesa_Desalination_EIA_Report.pdf (international desalination plant that considered decommissioning), **Attachment U**.

[527] *See, e.g.,* DEIR/EIS, at p. 4.10-25 (describing construction equipment).

[528] *Id.*, at p. 4.18-14.

[529] *Id.,* at p. 4.18-14-15; *see also* Fox Comments, at pp. 45-47.

[530] Fox Comments, at pp. 45-47.

[531] *See* DEIR/EIS, at p. 4.1-2.

[532] *See* CEQA Guidelines, § 15126.4(a)(2).

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VI. MITIGATION MEASURES PROPOSED IN THE DEIR/EIS ARE DEFERRED, UNENFORCEABLE OR OTHERWISE INADEQUATE

An EIS must include a discussion of "appropriate mitigation measures not already included in the proposed action or alternatives."[533] An EIS is not complete unless it contains "a reasonably complete discussion of possible mitigation measures."[534] Mitigation includes "avoiding the impact altogether by not taking a certain action or parts of an action."[535] It also includes "minimizing impacts by limiting the degree or magnitude of the action and its implementation."[536] The mandate to thoroughly evaluate all feasible mitigation measures is critical to NEPA's purposes.[537] Hence, a "perfunctory description" or a "mere listing" of possible mitigation measures is not adequate to satisfy NEPA's requirements.[538] That individual harms are somewhat uncertain due to limited understanding of the Project characteristics and baseline conditions does not relieve an agency of the responsibility under NEPA to discuss mitigation of reasonably likely impacts at the outset.[539]

CURE-44

Courts have interpreted these provisions further. In *Northern Plains Resource Council, Inc. v. Surface Transp. Bd.*, the agency provided a mitigation measure, which stated that the agency would gather baseline data at a later point.[540] The court found the agency's mitigation measures to be inconsistent with NEPA's requirements.[541] Consequently, the court found that the agency acted arbitrarily and capriciously.[542] Without baseline data, the agency could not have

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[533] 40 C.F.R. § 1502.14(f).
[534] *Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 352.
[535] 40 C.F.R. § 1508.20(a).
[536] *Id.,* § 1508.20(b).
[537] *Id.*, § 1500.1(c).
[538] *Neighbors of Cuddy Mountain v. U.S. Forest Service* (9th Cir. 1998) 137 F.3d 1372, 1380; *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1998).
[539] *See South Fork Band Council Of Western Shoshone of Nevada v. U.S. Dept. of Interior* (9th Cir. 2009) 588 F.3d 718, 727, citing *National Parks & Conservation Association v. Babbitt* (9th Cir. 2001) 241 F.3d 722, 733.
[540] *Northern Plains Resource Council, Inc. v. Surface Transp. Bd.* (9th Cir. 2011) 668 F.3d 1067, 1084–85.
[541] *Id.*
[542] *Id.*

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carefully considered information about significant impacts.[543] Even if the mitigation measures guaranteed that data would be collected at some point in the future, the data was not available during the EIS process and was not available to the public for comment.[544] The EIS process, therefore, did not serve its larger informational role.[545] In essence, data must exist "*before approval* so that [an agency] can understand the adverse environmental affects *ab initio*."[546] Where baseline data exists through some scientific study or methodology that the agency's experts deem reliable, the court will not "act as a panel of scientists" instructing the agency how to make its scientific determinations.[547] However, where mitigation measures are deferred for gathering baseline data, or where the agency deprives the public of reviewing data, the EIS will not be sufficient for NEPA purposes.[548]

CURE-44 cont.

In enacting CEQA, the Legislature declared that it is "the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects."[549] An EIR is inadequate unless it includes "a detailed statement setting forth . . . mitigation measures proposed to minimize [the project's] significant effects on the environment."[550] CEQA requires lead agencies to incorporate all feasible mitigation measures into a project to reduce the project's potentially significant impacts to a level of insignificance.[551] Finally, CEQA requires the lead agency to find, based on substantial evidence, "that the mitigation measures are required in or incorporated into the project; or that the measures are the responsibility of another agency and have been, or can and should be, adopted by the other agency."[552]

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[543] *Id.*
[544] *Id.*
[545] *Id.*
[546] *Id.,* at p. 1085.
[547] *Id.,* at p. 1075.
[548] *Id.*
[549] Pub. Resources Code, § 21002.
[550] *Id.,* § 21100(b)(3); CEQA Guidelines, § 15126(e).
[551] *See* Pub. Resources Code, § 21081(a)(1)-(3); CEQA Guidelines, §§ 15002(a)(3), 15021(a)(2), 15091(a)(1).
[552] *Federation of Hillside & Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1260 (internal quotations omitted).

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Courts have imposed several parameters for the adequacy of mitigation measures. We address some of the relevant criteria here. First, the lead agency may not defer the formulation of mitigation measures until a future time, unless the EIR also specifies the specific performance standards capable of mitigating the project's impacts to a less than significant level.[553] Deferral is impermissible where an agency "simply requires a project applicant to obtain a . . . report and then comply with any recommendations that may be made in the report."[554] Second, a public agency may not rely on mitigation measures of uncertain efficacy or feasibility.[555] Third, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments."[556] Fourth, mitigation measures that are vague or so undefined that it is impossible to evaluate their effectiveness are legally inadequate.[557]

As explained in the following paragraphs, there are several mitigation measures in various sections of the DEIR/EIS that are deferred, unenforceable or otherwise inadequate. The DEIR/EIS must be revised to include effective and enforceable mitigation for all significant impacts.

CURE-44 cont.

A. Mitigation Measures Proposed for Terrestrial Biological Resources Are Inadequate to Reduce Impacts to Less-Than-Significant Levels

The DEIR/EIS provides a number of mitigation measures to address significant impacts to terrestrial species.[558] Ms. Owens addresses some of these measures and explains that the mitigation measures, which in some cases are improperly deferred, do not reduce the impacts to terrestrial species to a less-than-significant level.

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[553] CEQA Guidelines, § 15126.4(a)(1)(B); *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-94; *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275.
[554] *Defend the Bay*, *supra*, at p. 1275.
[555] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727 (finding groundwater purchase agreement inadequate mitigation measure because no record evidence existed that replacement water was available).
[556] CEQA Guidelines, § 15126.4(a)(2).
[557] *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61,79.
[558] *See* DEIR/EIS, at pp. 4.6-131-132.

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Mitigation Measure 4.6-1a, states a lead biologist should be retained to oversee implementation of protective measures.[559] Ms. Owens states that this measure should have some standard or assurance within the mitigation measure to ensure that the lead biologist, onsite, has the irrevocable authority to stop work when needed.[560] Ms. Owens also explains that this mitigation measure is vague as it does not explain what "at risk" means with respect to relocating special status species that are at risk.[561]

Mitigation Measure 4.6-1d, aimed at addressing impacts to the Western Snowy Plover is improperly deferred.[562] Additionally, visual barriers will not serve to significantly reduce the direct and indirect impacts of noise on breeding birds.[563] Ms. Owens also challenges the DEIR/EIS's assertion that displacement can be easily mitigated, which she states is contrary to the Snowy Plover Recovery Plan.[564] Mitigation Measure 4.6-1n is inadequate because the measure should require collaboration with local snowy plover conservationists.[565]

Mitigation Measure 4.6-1e, which states that CalAm or its contractor shall conduct focused botanical surveys for special-species plants.[566] Ms. Owens states that these types of surveys are insufficient for sensitive species and their habitat protection.[567] The measures must include appropriate site-specific considerations, such as timing (*i.e.*, dormant season).[568] The DEIR/EIS fails to provide appropriate mitigation measures, which are specific to species, and to each site, including parcels set aside for habitat loss compensation.[569] Without sufficient information,

CURE-44 cont.

[559] Owens Comments, at p. 35.
[560] *Id.*
[561] *Id.*, at p. 36.
[562] *Id.*, at pp. 24 (consultation with USFWS is improperly deferred, onsite biologist survey for nests is improperly deferred, Habitat Mitigation and Monitoring Plan is improperly deferred).
[563] *Id.,* at pp. 31-32.
[564] *Id.*, at p. 32.
[565] *Id.,* at p. 34.
[566] *Id.*, at p. 15.
[567] *Id.,* at pp. 15-16.
[568] *Id.*
[569] *Id.,* at p. 16.

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the mitigation measure may not effectively reduce potential impacts for rare plants to below significant.[570]

Mitigation Measure 4.6-1f for the Smith's Blue Butterfly is premised on a lack of data, which skews the impact analysis and this mitigation measure.[571] Ms. Owens provides information about the species specific flight period, which is important for the species' success.[572] Yet, there is no information about this specific flight period and therefore the mitigation measure does not provide a way to avoid impacts.[573]

Mitigation Measure 4.6-1g for the Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard is inadequate for some of the same reasons mentioned above.[574] There is a lack of data on the reptiles, which deprives the public from being able to determine if the mitigation measures will be adequate.[575]

CURE-44 cont.

Mitigation Measure 4.6-1i for nesting birds should apply throughout the duration of construction to ensure that nesting birds are not impacted.[576] According to Ms. Owens continuous surveying will ensure the birds are not harassed by Project activities.[577]

Finally, Mitigation Measure 4.6-1n describes the Habitat Mitigation and Monitoring Plan, which Ms. Owens explains does not reduce impacts to below significant.[578] The compensatory mitigation lacks data, description, detail, and standard criteria to analyze its efficacy and success.[579]

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[570] *Id.*
[571] *Id.*, at p. 38.
[572] *Id.*, at pp. 39-40.
[573] *Id.*
[574] *Id.,* at pp. 40-41.
[575] *Id.*
[576] *Id.,* at p. 42.
[577] *Id.,* at pp. 42-43.
[578] *Id.,* at pp. 43.
[579] *Id.*

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B. Substantial Evidence Shows the Project Would Result in Potentially Significant Impacts, Despite Compliance with Laws

The DEIR/EIS concludes in several sections that the Project's compliance with laws and regulations are sufficient to mitigate potentially significant impacts to a level of insignificance. In many cases, the DEIR/EIS simply concludes that impacts are less than significant by assuming compliance with laws. However, compliance with a regulation or law is not an indication of the sufficiency of mitigation measures where there is substantial evidence that the project may result in significant impacts.[580] CEQA requires a lead agency to fully assess the significance of a Project's impacts in light of substantial evidence "notwithstanding compliance with the adopted regulations or requirements."[581] Furthermore, the DEIR/EIS may not simply assert "a bare conclusion . . . not supported by facts or analysis."[582]

CURE-45

In *Communities for a Better Env't v. California Res. Agency*, the court struck down a CEQA Guideline because it "impermissibly allow[ed] an agency to find a cumulative effect insignificant based on a project's compliance with some generalized plan rather than on the project's actual environmental impacts."[583] The court concluded that "[i]f there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding that the project complies with the specified plan or mitigation program addressing the cumulative problem, an EIR must be prepared for the project."[584] Thus, the ruling supports the notion that compliance with an applicable standard outside of the CEQA process does not automatically obviate a lead agency's obligation to consider substantial evidence and analyze and mitigate potentially significant impacts.

In *Keep our Mountains Quiet v. County of Santa Clara*, neighbors of a wedding venue sued over the County's failure to prepare an EIR due to significant noise impacts. The court concluded that "a fair argument [exists] that the Project

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[580] *Keep our Mountains Quiet v. County of Santa Clara* (2015) 236 Cal.App.4th 714, 733; *Communities for a Better Env't v. California Res. Agency* (2002) 126 Cal.Rptr.2d 441.
[581] CEQA Guidelines § 15064.4.
[582] *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390-1391.
[583] *Communities for a Better Env't v. California Res. Agency* (2002) 126 Cal.Rptr.2d 441, 453.
[584] *Id.*

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may have a significant environmental noise impact" and reasoned that although the noise levels would likely comply with local noise standards, "compliance with the ordinance does not foreclose the possibility of significant noise impacts."[585] The court ordered the County to prepare an EIR.

CURE-45 cont.

C. The DEIR Fails to Require Compliance with Laws as Enforceable Mitigation

1. Project Fails to Require Compliance with NPDES and the Ocean Plan

The DEIR/EIS states that the Project will be consistent with the Ocean Plan and the NPDES permit process:

> The MPWSP would be consistent with the Monitoring and Reporting Plan requirements of the Ocean Plan because such requirements form a part of the NPDES permit process and, further, CalAm would submit and, once approved by the RWQCB and MBNMS, execute a facility specific Monitoring and Reporting Plan.[586]

CURE-46

The Ocean Plan requires more than a monitoring and reporting plan. CalAm must also meet certain reporting requirements, such as providing a Marine Life Mortality Report. Based on the results of this Marine Life Mortality Report, CalAm must either complete a mitigation project or implement a fee-based mitigation program to mitigate for the mortality of all forms of marine life.[587]

2. Project Fails to Require Compliance with City of Marina Local Coastal Land Use Plan (LCLUP)

CURE-47

The Project fails to comply with habitat management and conservation plans, policies, or regulations in local regional land use plans.[588] The following regions

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[585] *Keep our Mountains Quiet*, *supra*, 236 Cal.App.4th, at p. 733.
[586] DEIR/EIS, at p. 4.3-34.
[587] SWRCB, California Ocean Plan, *supra,* at pp. 43-44.
[588] Owens Comments, at pp. 4-8.

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have habitat management and conservation plans: the City of Marina General Plan, the City of Marina Local Coastal Land Use Plan, the Marina Municipal Code, the Fort Ord Dunes State Park General Plan and EIR, the Monterey City Code, the Seaside General Plan, the Seaside Municipal Code, Carmel Valley Master Plan, Greater Monterey Peninsula Area Plan, Monterey County Code, Monterey County General Plan, North County Land Use Plan, Fort Ord Reuse Plan.[589]

The DEIR/EIS concludes that where this Project may be inconsistent with the applicable plan, policy, or regulation, the impact will be separately identified.[590] Where the impact would be considered significant, then feasible mitigation would be identified to resolve or minimize that conflict.[591] Yet, the DEIR/EIS does not adequately address all of the potential conflicts with these plans and, as a result, fails to require mitigation measures to ensure consistency with those plans.

CURE-47 cont.

As Ms. Owens explains, the City of Marina Local Coastal Land Use Plan has very specific policies and mitigation measures regarding potential impacts to sensitive species and habitats.[592] These policies include establishing a list of biologists qualified to prepare habitat evaluation reports, determining the extent and landward boundary of a wetland, and identifying plant and animal species which are locally or generally rare, endangered, threatened, or are necessary for the survival of an endangered species.[593]

The City of Marina Local Coastal Land Use Plan has specific minimum habitat mitigation and restoration plan requirements to protect the biodiversity in the area.[594] All direct and potential impacts to primary and secondary habitats shall be fully mitigated.[595] Habitat restoration plans should be prepared by a qualified biologist, and where appropriate with a qualified hydrologist. Plans should be developed in consultation with the Department of Fish and Wildlife and the U.S. Fish and Wildlife Service in cases where these agencies have jurisdiction.[596] To

[589] *Id.,* at p. 4.
[590] *Id.,* at p. 5; *see also* DEIR/EIS, at p. 4.6-99.
[591] Owens Comments, at p. 5.
[592] *Id.*, at pp. 5-8.
[593] *Id.*
[594] *Id.,* at p. 6.
[595] *Id.*
[596] *Id.*

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enforce these plans, they should be authorized by a coastal development permit and must be approved prior to issuance of any grading or building permits.[597] The plan shall include at a minimum: (1) a detailed site plan; (2) a baseline ecological assessment; (3) goals, objectives, performance standards and success criteria for the site; (4) management methods to ensure the site achieves the goals, objectives, and performance standards; (5) provisions for the full restoration of any impacts that are identifies as temporarily necessary to install the restoration or enhancement elements; (6) submitting documentation at the completion of initial restoration work; (7) provision for a detailed monitoring program to include a provision for assessing the initial biological and ecological status of the site; and (8) provision for the prompt remediation of a site if the monitoring results indicate the site does not meet the goals, objectives and performance standards identified in the approved mitigation program.[598]

CURE-47 cont.

The DEIR/EIS admits that it is potentially inconsistent with the City of Marina LCLUP with respect to installing the subsurface slant wells, source water pipeline, new desalinated water pipeline, and new transmission main, and maintenance of the subsurface slant wells.[599] These installations and maintenance will occur within special status species habitats, including wetlands and primary and secondary habitat in the City of Marina.[600] Ms. Owens notes that although the DEIR/EIS proposes mitigation measures to reduce or avoid impacts on special-status species, the measures are insufficient because they may not include all direct, indirect, and cumulative impacts.[601] Further, and as provided above, the DEIR/EIS must comply with the City of Marina's minimum habitat mitigation/restoration plan requirements, which are more aggressive at ensuring protection of biological resources than the mitigation measures provided in the DEIR/EIS.[602]

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[597] *Id.*
[598] *Id.,* at pp. 6-8.
[599] DEIR/EIS, at p. 4.6-101 (Table 4.6-4).
[600] Owens Comments, at p. 8.
[601] *Id.,* at pp. 8-9.
[602] *Id.*

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3. Project Fails to Require Compliance with Other Laws

The DEIR/EIS abdicates its duty under CEQA in several resource areas. For example, under Impact 4.2-1 (increased soil erosion or loss of topsoil during construction), the DEIR/EIS finds that the Project could result in substantial soil erosion or loss of topsoil during construction."[603] However, the DEIR/EIS simply concludes that "the proposed project would be required to comply with the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit), the Monterey County Grading Ordinance, and Monterey County Erosion Control Ordinance, all of which are described in Section 4.2.2, Regulatory Framework"; therefore, "impacts associated with substantial increases in soil erosion during construction would be less than significant for all project components."[604] The DEIR/EIS fails to provide further substantive analysis and mitigation for soil erosion impacts aside from requirements under the applicable laws. In addition, compliance with these laws is not encapsulated as enforceable mitigation. Simply assuming the Applicant will comply with laws outside of CEQA does not satisfy CEQA's requirement for a full analysis and mitigation of potentially significant impacts. CURE-48

Additional impacts that are assumed to be less than significant based on compliance with other laws include:

> damage to structural elements from earthquake (Impact 4.2-3);[605] exposure of people or structures to substantial adverse effects related to liquefaction and lateral spreading (Impact 4.2-4);[606] water quality impact associated with construction activities (Impact 4.3-1);[607] discharges of treated water and disinfectant from existing and newly

[603] DEIR/EIS, at p. 4.2-54.
[604] *Id.*
[605] DEIR/EIS, p. 4.2-59 (compliance with California Building Code).
[606] *Id.*, at p. 4.2-61 (compliance with Monterey County requirements for geotechnical study, standard engineering practices, implementation of design recommendations, and standard construction methods).
[607] *Id.,* at p. 4.3-58 (compliance with NPDES).

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> installed pipelines during construction (Impact 4.3-3);[608] degradation of water quality due to discharges associated with maintenance of the subsurface intake wells and ASR injection/extraction wells (Impact 4.3-6);[609] alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff (Impact 4.3-7);[610] and construction-related impact to water quality in jurisdictional waters related to increased soil erosion and/or inadvertent releases of toxic construction chemicals (Impact 4.6-3).[611]

In the analyses for all of these impacts, the DEIR/EIS acknowledges the impacts could be significant, but then concludes no significant impact based on compliance with laws without actually analyzing the impact and incorporating any enforceable mitigation. For example, under Impact 4.3-3, the DEIR/EIS states:

> The treated water generated from the draining of existing pipelines and the effluent generated from disinfection of newly installed pipelines would be discharged to the local storm drainage system. Without proper controls, these discharges could adversely affect water quality in downstream receiving water bodies by increasing turbidity (if discharged directly without appropriate treatment) or due to high chlorine (the primary disinfectant used for drinking water) concentrations.[612]

CURE-48 cont.

The DEIR/EIS further states that "General [Waste Discharge Requirements (Order No. R3-2011-0223, NPDES Permit No. CAG993001)] WDRs require that CalAm neutralize the residual chlorine remaining in disinfection effluent such that detectable chlorine levels are less than 0.02 mg/L, and require that the total dissolved solids be within surface water and groundwater quality objectives."[613] The DEIR then concludes that "[c]ompliance with the General WDRs and the conditions therein would protect water quality in receiving water bodies [and] the impact would be less than significant,"[614] without requiring any mitigation. Under

[608] *Id.,* at p. 4.3-65 (compliance with NPDES).
[609] *Id.,* at p. 4.3-110 (compliance with NPDES).
[610] *Id.,* at p. 4.3-112 (compliance with Construction General Permit requirements).
[611] *Id.,* at p. 4.6-209 (compliance with NPDES).
[612] *Id*., at p. 4.3-65.
[613] *Id*.
[614] *Id*.

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CEQA, the DEIR/EIS must actually analyze the potential for the increased turbidity and high chlorine levels, and incorporate compliance with the WDR standards as enforceable mitigation.

The CPUC and MBNMS may not rely solely on compliance with regulations or laws as reducing impacts to less than significant levels without a full analysis of impacts or enforceable mitigation. As the DEIR/EIS is currently presented, the CPUC and MBNMS cannot conclude that the Project's impacts have been fully assessed and properly mitigated to less than significant.

CURE-48 cont.

VII. THE DEIR/EIS FAILS TO EVALUATE CERTAIN ALTERNATIVES

NEPA regulations identify the need to consider reasonable alternatives.[615] NEPA requires consideration of all aspects that may be relevant and important to decision-makers, including factors that are not related to environmental quality. NEPA requires substantial treatment of each alternative, including the proposed action, so that reviewers may evaluate their comparative merits.[616]

Under CEQA, the lead agency is required to consider project alternatives that might eliminate or reduce the Project's significant adverse environmental effects. CEQA requires that an EIR "[d]escribe a range of reasonable alternatives . . . which could feasibly attain the basic objectives of the project and evaluate the comparative merits of the alternatives."[617] An EIR must "produce information sufficient to permit a reasonable choice of alternatives so far as environmental aspects are concerned."[618] The key issue is whether the alternatives analysis fosters informed decision-making and informed public participation.[619]

CURE-49

The discussion must focus on alternatives capable of either eliminating any significant adverse environmental effects or reducing them to a level of

[615] 40 C.F.R. § 1502.14(c).
[616] *Id.*, at § 1502.14.
[617] CEQA Guidelines, § 15126(d); *Village Laguna of Laguna Beach v. Board of Supervisors* (1982)134 Cal.App.3d 1022, 1028; *Citizens of Goleta Valley v. Board of Supervisors (Goleta I)* (1988) 197 Cal.App.3d 1167, 1180-81.
[618] *San Bernardino Valley Audubon Soc'y v. County of San Bernardino* (1984) 155 Cal.App.3d 738, 750-51.
[619] CEQA Guidelines, § 15126.6.

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insignificance, even if such alternatives would be more costly or to some degree would impede the project's objectives. One of the most substantive aspects of CEQA is that section 21002 of the statute forbids agencies from approving projects with significant adverse impacts when feasible alternatives (or feasible mitigation measures) can substantially lessen such impacts.[620]

Aside from the proposed Project and the No Project alternative, the DEIR/EIS provides six different alternatives:

- Alternative 1 – Slant wells at Potrero Road[621]
- Alternative 2 – Open-Water Intake at Moss Landing[622]
- Alternative 3 – Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project)[623]
- Alternative 4 – People's Moss Landing Water Desalination Project (People's Project)[624]
- Alternative 5a – Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at CEMEX[625]
- Alternative 5b – Reduced Project 6.4-mgd Desalination Plant (Intake Slant Wells at Potrero Road)[626]

CURE-49 cont.

All of these project alternatives rely on the same basic technology: reverse osmosis. Yet, there is no discussion of other desalination technologies that would allow for CalAm to meet its water production objective, such as:

- Electrodialysis
- Multi-stage flash distillation
- Multiple effect distillation
- Vapor compression desalination[627]

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[620] *Sierra Club v. Gilroy City Council* (1990) 222 Cal.App.3d 30, 41; *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433, 440-41; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 711, 730-31; Pub. Resources Code, § 21081.
[621] DEIR/EIS, at § 5.4.3.
[622] *Id.*, at § 5.4.4.
[623] *Id.*, at § 5.4.5.
[624] *Id.*, at § 5.4.6.
[625] *Id.*, at § 5.4.7.
[626] *Id.*, at § 5.4.8.

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Among these processes are also those that embrace renewable energy, such as:

- Solar humidification
- Membrane distillation[628]

The DEIR/EIS proposes a reduced project alternative, which is the environmentally superior option.[629] But it fails to consider aggregated, small scale desalination projects.[630] This is particularly relevant given that other desalination proposals are being considered in Monterey Bay, which may provide sufficient water quantities to the County.[631]

CURE-49 cont.

VIII. OTHER CONSIDERATIONS

A. Growth Related Impacts Must Be Adequately Considered

CEQA requires a separate and distinct analysis of growth-inducing impacts. The requirement to assess "growth-inducing impacts" must include the following:

> [T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is

CURE-50

[627] I. El Saliby et al., Desalination plants in Australia, Review and Facts, *Desalination 247 (2009) 1–14,* at p. 2, **Attachment V.**
[628] *Id.,* at p. 2.
[629] DEIR/EIS, at p. 1-2 (discussing Alternative 5a).
[630] I. El Saliby et al., *supra*, at p. 2.
[631] *See* Desalination Map*,* NOAA: MBNMS, *supra*, *available at* http://montereybay.noaa.gov/materials/mappages/desalinizationmap.html.

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> necessarily beneficial, detrimental, or of little significance to the environment.[632]

In *City of Davis v. Coleman*, the court set aside a Negative Declaration and required preparation of an EIR where evidence supported the finding that the construction of a highway interchange would cause urban growth.[633] However, the court reached its holding in reliance on the common sense conclusion that a project that is intended to support future growth ***will*** also cause potentially significant urban growth impacts which must be analyzed in an EIR.[634] As articulated by the court:

> The growth-inducing effects of the Kidwell Interchange project are its raison d'etre, and with growth will come growth's problems: increased population, increased traffic, increased pollution, and increased demand for services such as utilities, education, police and fire protection, and recreational facilities.[635]

CURE-50 cont.

In Monterey, water scarcity has constrained development.[636] Removing this constraint would allow for development projects to move forward.[637] The impacts associated increased development, such as impacts on air quality and water quality, in particular, as compared to the current "constrained" environmental setting may be significant.[638] New building will lead to water quality impacts from urban runoff, which the DEIR/EIS has not considered.[639] With respect to ocean water quality, the levels of contaminants are already at the brink of exceeding Ocean Plan thresholds.[640] Allowing additional development to go forward, with the associated air and water impacts, will likely cause these thresholds to be exceeded.

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[632] CEQA Guidelines, § 15126.2(4) (emphasis added).
[633] C*ity of Davis v. Coleman* (1975) 521 F.2d 661, 674-76.
[634] *Id*., at p. 675.
[635] *Id*.
[636] DEIR/EIS, at p. 6-5-6.
[637] *Id.*
[638] *See id.*
[639] *See* DEIR/EIS, Table 4.3-8
[640] *See id.*, Table 4.3-16.

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Although the DEIR/EIS claims that additional growth would be consistent with adopted land use plans, consistency with adopted goals, polices and guidelines is not a valid basis for finding that impacts of a Project are not cumulatively considerable.[641]

While an EIR's cumulative impact analysis generally may rely on a summary of projections contained in an adopted general plan or related planning document instead of on a list of past, present, and probable future projects[642], it may not do so if the projections in the general plan or related planning document are inaccurate or outdated and thus do not adequately evaluate the potentially significant cumulative impacts of the project.[643] The fact that a particular project's incremental impact may not have been found significant under old, out-of-date growth projections, does not mean that the same project will not contribute to a cumulatively considerable impact when development projections change. Accordingly, consistency with existing zoning, community plan or general plan policies does not relieve a lead agency from the requirement to conduct environmental review of potentially significant cumulative impacts that were not analyzed, discussed or identified in the EIR prepared for the planning document.[644] An EIR's reliance on out-of-date growth projections that do not take into account identified probable future projects thus violates CEQA.

CURE-50 cont.

In *Bakersfield Citizens for Local Control v. City of Bakersfield*, the court found that an agency's reliance on projections contained in a general plan was improper where the general plan's projections did not take into account new projects that were not identified at the time the general plan was prepared, but were reasonably foreseeable at the time of the current EIR.[645] In reaching this decision, the court held that "use of a planning document does not preclude challenge to the accuracy or sufficiency of the cumulative impacts analysis."[646] The Court further held that the "summary-of-projections approach may present problems if the projections in the general plan or related planning document are inaccurate or

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[641] DEIR/EIS, at p. 6-5.
[642] CEQA Guidelines § 15130, subd. (b).
[643] *Bakersfield Citizens for Local Control, supra,* 124 Cal.App.4th, at p. 1217
[644] CEQA Guidelines, § 15183, subd. (b).
[645] *Bakersfield Citizens for Local Control, supra*, 124 Cal.App.4th at p. 1217.
[646] *Id.*

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outdated."[647] The Port's position is also inconsistent with the Court's decision in *Citizens to Preserve the Ojai v. County of Ventura*.[648] In that case, the Court held that an EIR's cumulative analysis of air quality impacts was inadequate where it relied upon a prior Air Quality Management Plan that did not take into account new evidence of the cumulative contribution to air pollution from offshore emissions.[649]

Consistency with adopted goals, polices and guidelines is not a valid basis for finding that impacts of a Project are not cumulatively considerable.[650] Impacts do not become automatically less than significant merely because the actions are consistent with adopted goals, polices and guidelines.

The same is true here. Lifting the water constraint will open the Monterey Peninsula to foreseeable growth that must be adequately accounted for, as required by NEPA and CEQA.

CURE-50 cont.

IX. CONCLUSION

The DEIR/EIS does not satisfy CEQA's procedural and evidentiary standards for preparing an EIR, or NEPA's standards for preparing an EIS. The DEIR/EIS fails to include an adequate description of the Project and fails to adequately describe the environmental setting. The DEIR/EIS also fails to address the Project's potentially significant impacts to biological resources, marine resources, air quality, public health, vibration issues, and others. Furthermore, the DEIR/EIS proposes mitigation measures that are deferred, unenforceable, or otherwise inadequate to mitigate impacts to below a level of significance. In the case of significant and unavoidable impacts, the DEIR/EIS fails to propose all feasible mitigation. It also fails to propose legally sufficient alternatives. For these reasons, the CPUC and MBNMS must withdraw the DEIR/EIS and prepare and recirculate

CURE-51

[647] *Id*. (emphasis added).
[648] *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421, 427.
[649] *Id.*
[650] *Bakersfield Citizens for Local Control v. City of Bakersfield*, *supra*, 124 Cal.App.4th at 1217.

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a revised DEIR/EIS that adequately analyzes and proposes all necessary and feasible mitigation to reduce the Project's potentially significant environmental and public health impacts.

CURE-51 cont.

Sincerely,

Linda T. Sobczynski

LTS:acp
Attachments

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Comments

on

Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/DEIS)

for the

CalAm Monterey Peninsula Water Supply Project

Prepared

for

Adams Broadwell Joseph & Cardozo

Prepared by

Phyllis Fox, Ph.D., PE
Consulting Engineer
745 White Pine Ave.
Rockledge, FL 32955

February 27, 2017

The California American Water Company (CalAm) is proposing to construct and operate the Monterey Peninsula Water Supply Project (MPWSP or Project) in the Monterey Bay Area. The California Public Utilities Commission (CPUC) as lead agency for the State and the National Oceanic and Atmospheric Administration for the United States (NOAA) have prepared a Draft Environmental Impact Report and Environmental Impact Statement (DEIR/EIS) for the Project.[1]

The purpose of the Project is to replace existing water supplies that were limited by the adjudication of the Carmel River and Seaside Groundwater Basin. The Project would replace the lost water with desalinated sea water and increase the CalAm storage capacity in the Seaside Groundwater Basin. CalAm proposes to build either a desalination plant with the capacity to produce up to 9.6 million gallons per day (mgd) of desalinated product water, or to build a smaller project that would include the purchase of product water from the proposed Pure Water Monterey Groundwater Replenishment (GWR) project and construction of a 6.4 mgd desalination plant.

The Project includes construction of up to ten subsurface slant wells, a 9.6-mgd desalination plant to produce about 10,267 ac-ft/yr of desalinated water, improvements to the existing Seaside Groundwater Basin Aquifer Storage and Recovery (ASR) system facilities, 30 miles of pipeline, two pump stations, a Terminal Reservoir, and water storage tanks.[2]

CURE-Fox-1

I reviewed the air quality, greenhouse gas, historic resources, and vibration sections of the DEIR/EIS for the Project as well as the 2015 DEIR.[3] My comments on the 2015 DEIR are incorporated here by reference.[4] My review of the DEIR/EIS indicates:

- The DEIR/EIS fails to evaluate all air quality impacts.
- Construction emissions are not supported by substantial evidence.

CURE-Fox-2

[1] ESA, CALAM Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, January 2017; Available at: http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir-eis/1_CalAm_MPWSP_DEIR-EIS.pdf.

[2] DEIR/EIS, Table ES-2 & Chapter 2.

[3] ESA, Monterey Peninsula Water Supply Project Draft Environmental Impact Report, Prepared for California Public Utilities Commission, April 2015; Available at: http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_toc.html.

[4] Phyllis Fox, Comments on Draft Environmental Impact Report for the CalAm Monterey Peninsula Water Supply Project, July 1, 2015, Attachment A to comments submitted by Adams Broadwell Joseph and Cardozo ("Fox 2015 DEIR Comments"); Available at: http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_comments/G_CURE4_p1.pdf.

- The DEIR/EIS fails to require all feasible mitigation for significant and unavoidable construction ROG and NOx impacts.
- The DEIR/EIS fails to include indirect operational impacts from electricity generation, which are significant for NOx.
- The DEIR/EIS fails to identify and mitigate significant cancer health risks from diesel particulate matter emissions during Project construction.
- The DEIR/EIS fails to identify a significant risk of Valley Fever for construction and well maintenance workers as well as local residents.
- The DEIR/EIS relies on conventional dust control measure to mitigate Valley Fever impacts, which are well known to be ineffective due to the small size of the Cocci spores.
- The DEIR/EIS fails to adequately explain why the Project's GHG impacts are significant and unavoidable.
- The DEIR/EIS fails to require all feasible mitigation for significant GHG emissions.
- The DEIR/EIS fails to identify and mitigate significant vibration impacts.
- The DEIR/EIS fails to identify and mitigate significant adverse impacts to historical resources.

CURE-Fox-2 cont.

My resume is included in Exhibit 1 to these Comments. I have over 40 years of experience in the field of environmental engineering, including air emissions and air pollution control; greenhouse gas (GHG) emission inventory and control; water quality and water supply investigations; hazardous waste investigations; hazard investigations; risk of upset modeling; environmental permitting; nuisance investigations (odor, noise); environmental impact reports (EIRs), including CEQA/NEPA documentation; health risk assessments; and litigation support. I have M.S. and Ph.D. degrees in environmental engineering from the University of California at Berkeley with minors in Hydrology and Mathematics. I am a licensed professional chemical engineer in California.

CURE-Fox-3

I have prepared comments, responses to comments and sections of environmental impact reports (EIRs) for both proponents and opponents of projects on air quality, water supply, water quality, hazardous waste, public health, risk assessment, worker health and safety, odor, risk of upset, noise, land use and other areas for well over 500 CEQA documents. This work includes EIRs, Negative Declarations (NDs), and Mitigated Negative Declarations (MNDs). My work has been cited in two published CEQA opinions: (1) *Berkeley Keep Jets Over the Bay Committee, City of San Leandro, and City of Alameda et al. v. Board of Port Commissioners* (2001) 111 Cal.Rptr.2d 598 and *Communities for a Better*

Environment v. South Coast Air Quality Management Dist. (2010) 48 Cal.4th 310 and has supported the record in many other CEQA cases. CURE-Fox-3 cont.

I. AIR QUALITY IMPACTS

The Project would emit pollutants limited by state and federal ambient air quality standards during construction and operation. These include: carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter equal to or smaller than 10 microns (PM10), and particulate matter equal to or smaller than 2.5 microns (PM2.5). CURE-Fox-4

A. Construction Criteria Pollutant Emissions Are Significant And Unmitigated

The DEIR/EIS estimated maximum daily emissions of ROG, NOx, CO, PM10, and PM2.5 from Project construction, concluded emissions of NOx and PM10 are significant,[5] and proposed mitigation[6]. The proposed mitigation is inadequate. CURE-Fox-5

1. Construction Emissions Are Not Supported by Substantial Evidence

The construction emissions are summarized in Table 4.10-5. The DEIR/EIS summarizes the methods used to estimate construction emissions[7] and refers the reader to Appendix G1 for detailed assumptions and calculations.[8] However, Appendix G1 is not the starting point for all of the construction emission calculations.

For off-road construction equipment, Appendix G1 includes model inputs and outputs for most emission sources. However, Appendix G1 notes that some emissions were estimated outside of models, but fails to explain where or how.[9] This includes: CURE-Fox-6

- Operational emissions, DEIR/EIS, Appx. G1, pdf 35,78
- Worker and haul trips, DEIR/EIS, Appx. G1, pdf 36,79
- Grading, DEIR/EIS, Appx. G1, pdf 36, 79

[5] DEIR/EIS, Table 4.10-5, pp. 4.10-22 /24.

[6] DEIR/EIS, pp. 4.10-25/27.

[7] DEIR/EIS, p. 4.10-18, Section 4.10.4.2, Construction Emissions.

[8] DEIR/EIS, p. 4.10-22.

[9] DEIR/EIS, Appendix G1, pdf 36, 78,79 (worker and haul trips estimated outside of CalEEMod); 35, 78 (operational emissions are estimated outside of CalEEMod); 36, 78 (fugitive dust emissions estimated outside CalEEMod)

This lack of documentation deprives the public of the opportunity for independent review of the CPUC's conclusions regarding the significance of the Project's construction emissions. CURE-Fox-6 cont.

On-road operational and construction emissions were estimated using CARB's EMFAC2014 Burden Model.[10] This model generates emissions in (1) grams per mile for running exhaust, (2) grams per hour for running loss and diurnal/resting loss, (3) grams per idle-hour for idling exhaust, and (4) grams per trip for hot soak and start. These four sources of emissions cannot be simply summed to come up with a total emissions factor for on-road emissions as they are reported in different units. The starting point for the Appendix G on-road emissions is an emission factor in grams per mile.[11] However, the DEIR/EIS does not include the EMFAC input and output sheets or explain how it combined the EMFAC output, expressed in four different units, into grams per mile. CURE-Fox-7

While the use of models that have been approved by a regulatory agency is a reasonable starting point, the mere claim that such a model was used does not by itself establish substantial evidence to support the emission estimates and conclusions presented in DEIR/EIS Appendix G. Models are merely tools which can be used correctly or incorrectly depending on the assumptions made to develop project-specific input parameters and the accuracy of parameter inputs into the model. As such, the assumptions used to run EMFAC should be subject to public review. Here, they are not. CURE-Fox-8

The DEIR/EIS does not provide any support to demonstrate how ESA calculated the starting point for on-road construction emissions in Appendix G1 and other emissions calculated outside of models (grading, workers and haul trips, operational emissions). The DEIR/EIS should be recirculated with enough relevant information to verify the DEIR/EIS's estimates of construction emissions including: (1) identification of all Project-specific assumptions and input parameters; (2) a copy of the model run inputs and outputs; and (3) any other documentation prepared by ESA or other CPUC consultants, such as original Excel spreadsheet model inputs and outputs plus Appendix G1 spreadsheets used to make the final construction emission calculations, i.e., the record should include unlocked Excel spreadsheets that correspond to those in Appendix G1. These documents are routinely provided to support EIRs[12] and other CEQA-equivalent documents,[13] as required under CURE-Fox-9

[10] DEIR/EIS, Appendix G1, pdf 19, 23, 24-28, 31, 36.

[11] DEIR/EIS, Appendix G1, pdf 19.

[12] *See*, for example, City of Los Alamitos, General Plan Update, Draft Environmental Impact Report, August 2014, SCH No. 2013121055, Appendix C, Air Quality and GHG Modeling; Available at: http://cityoflosalamitos.org/?wpfb_dl=2323; County of Los Angeles, Los Angeles County General Plan Update, Draft Environmental Impact Report, SCH No. 2011081042, June 2014, Appendix G;

CEQA and California public records laws. They must be provided here to support the DEIR/EIS's conclusions regarding the significance of construction emissions. CURE-Fox-9 cont.

Thus, the DEIR/EIS's conclusions regarding construction impacts on air quality are not supported by substantial evidence. As it stands, the reviewer has no choice but to simply accept the DEIR/EIS's analysis without any opportunity to verify the CPUC's conclusions regarding the significance of construction CO, SO2, ROG, NOx, PM10, and PM2.5 emissions. This frustrates the public review requirements under CEQA. CURE-Fox-10

Available at: http://planning.lacounty.gov/generalplan/ceqa; The Town of Los Gatos, Los Gatos Sustainability Plan, October 15, 2012, Available at: Appendix B; http://www.losgatosca.gov/1860/Sustainability-Plan.

[13] **Victorville 2 Solar Gas-Hybrid Power Project**: Construction and operational criteria pollutant and TAC emission estimates were provided on CD as password-protected Excel spreadsheets in response to California Unions for Reliable Energy ("CURE") data requests. *See* http://www.energy.ca.gov/sitingcases/victorville2/documents/applicant/2007-07-02_APPLICANTS_OBJECTIONS_TO_CURE_DATA_REQUEST_SET_01.PDF and http://www.energy.ca.gov/sitingcases/victorville2/documents/applicant/2007-07-12_RESPONSES_TO_CURE_DATA_REQUEST_SET_01.PDF;

Blythe Solar Power Project: Operational emissions were provided as unprotected Excel spreadsheets in response to CEC staff data requests. http://www.energy.ca.gov/sitingcases/solar_millennium_blythe/documents/applicant/data_responses_set_1/Air%20Quality/Air%20Quality%20Supporting%20Documentation/Blythe%20DR%20Operating%20Emissions.xlsx and http://www.energy.ca.gov/sitingcases/solar_millennium_blythe/documents/applicant/data_responses_set_1/Air%20Quality/Air%20Quality%20Supporting%20Documentation/Blythe%20Data%20Rresponse%20Emissions.xlsx;

Palen Solar Power Project: Construction and operational emission estimates were provided as unprotected Excel spreadsheets in response to CEC staff data requests. *See* http://www.energy.ca.gov/sitingcases/solar_millennium_palen/documents/applicant/data_responses_set_1/Air%20Quality/Air%20Quality%20Supporting%20Documentation/Palen%20DR%20Construction%20Emissions.xlsx and http://www.energy.ca.gov/sitingcases/solar_millennium_palen/documents/applicant/data_responses_set_1/Air%20Quality/Air%20Quality%20Supporting%20Documentation/Palen%20DR%20Operating%20Emissions.xlsx;

Bullard Energy Center: Operational emission estimates were provided as unprotected Excel spreadsheets in response to CEC staff data requests. *See* http://www.energy.ca.gov/sitingcases/bullard/documents/applicant/DA-response-1/appendix-A/Attachment-7-1.xls and http://www.energy.ca.gov/sitingcases/bullard/documents/applicant/DA-response-1/appendix-A/Attachment-19-1.xls; and

Riverside Energy Resource Center: Estimates for startup, shutdown, maintenance emissions from turbines and emissions estimates for on-road vehicle travel were provide as unprotected Excel spreadsheets in response to CURE data requests. *See* http://www.energy.ca.gov/sitingcases/riverside/documents/applicants_files/2004-08-10_CURE_DATA_REQ4.PDF and http://www.energy.ca.gov/sitingcases/riverside/documents/applicants_files/cure_set4.

2. Construction Mitigation Is Not Adequate

The DEIR/EIS concluded that "[s]hort-term emissions associated with construction of the proposed project could contribute to an exceedance of a state and/or federal standard for ozone, NO2, and PM10 based on the estimated maximum daily mass emissions levels presented in Table 4.10-5, which would exceed the MBUAPCD significance threshold for PM10."[14] Elsewhere, the DEIR/EIS concluded that construction activities could conflict with implementation of the MBUAPCD's Air Quality Management Plan (Impact 4.10-2).[15]

The DEIR/EIS then concludes that the significant air quality impact with respect to ozone and NO2 standards "would be significant and unavoidable even with implementation of Mitigation Measures 4.10-1a and 4.10-1b."[16] An EIR may conclude that an impact is significant and unavoidable only if all available and feasible mitigation measures have been proposed, but are inadequate to reduce the impact to a less than significant level.[17] If supported by substantial evidence, the lead agency may make findings of overriding considerations and approve the project in spite of the significant and unavoidable impact(s). However, the lead agency cannot simply conclude that an impact is significant and unavoidable without requiring all feasible mitigation, as here. As discussed below, the proposed mitigation for ozone and NO2 impacts from construction is not all feasible mitigation.

CURE-Fox-11

[14] DEIR/EIS, p. 4.10-24, pdf 1048.

[15] DEIR/EIS, p. 4.10-26, Impact 4.10-2.

[16] Ibid.

[17] See Cal. Code Regs. Titl.14 ("CEQA Guidelines"), § 15126.2.

a. Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards

Mitigation Measure 4.10-1a proposes the use of equipment that meets asserted high-tiered engine standards.[18] This mitigation measure stipulates:

> **Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.**
>
> For diesel-fueled off-road construction equipment of more than 50 horsepower, CalAm and/or its construction contractor shall make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards. For all pieces of equipment that would not meet at least Tier 3 emission standards, CalAm or its construction contractor shall provide to the CPUC documentation from two local heavy construction equipment rental companies that indicates that the companies do not have access to higher-tiered equipment for the given class of equipment. Such documentation shall be provided to the CPUC at least two weeks prior to the anticipated use of those pieces of equipment.

CURE-Fox-12

This measure is inadequate as mitigation. First, Tier 3 is not the highest tier (lowest emission) off-road engines available. Tier 4 engines are the lowest polluting engines and are widely available in new construction fleets, such as that offered by Garney Pacific,[19] one of the contractors for the pipeline.[20]

Second, a "good faith" effort is not adequate to satisfy CEQA. The Request for Proposal (RFP) for this Project should specify the use of Tier 4 engines or control(s) that yield the Tier 4 emission standards. If no contractor can comply (which is highly unlikely), this mitigation measure should be expanded to require consideration of lease or rental from private vendors within 1,000 miles of the Project site if Tier 4 is not available in any contractor's fleet. If a Tier 4 engine is not available from a contractor or via lease/rental, the lowest emitting engine should be retrofit with pollution controls to meet Tier 4 standards, e.g., SCR, particulate trap. The request to deviate from the use of Tier 4 engines should only be considered after all feasible actions have been taken to comply, accompanied by a report certified by a licensed California professional engineer, listing all steps taken to acquire Tier 4 engines supported by correspondence from all contacted suppliers.

CURE-Fox-13

[18] DEIR/EIS, p. 4.10-25, pdf 1051.

[19] Garney Construction, Construction Equipment Efficiency Plan, Monterey Pipeline Project, October 24, 2016, pdf 3 ("The Garney Construction project maintenance program starts with reduction of potential mechanical issues by utilizing new equipment (4 years or newer) for all heavy equipment utilized in our fleet. This ensures all equipment used is in compliance with emission (Tier 4) and noise regulations…").

[20] Garney Construction, Garney Pacific Lands Monterey Peninsula Water Supply Project, January 2016; Available at: http://www.garney.com/garney-pacific-lands-monterey-peninsula-water-supply-project-2/.

Third, the IS/MND for this Project and other similar EIRs have required Tier 4 engines, as noted in Comment I.A.2.a. CURE-Fox-14

b. Mitigation Measure 4.10-1b: Idling Restrictions

Mitigation Measure 4.10-1b establishes limits on idling time for on-road and off-road engines[21]:

> **Mitigation Measure 4.10-1b: Idling Restrictions.**
>
> On road vehicle idling time shall be minimized and shall not exceed a five minute maximum. Additionally, off-road engines shall not idle for longer than five minutes per Section 2449(d)(3) of Title 13, Article 4.10, Chapter 9 of the California Code of Regulations. Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.

CURE-Fox-15

Limiting idle time to 5 minutes is required by 13 CCR 2449[d][3], 2485 for off-road vehicles.[22] Thus, this is not valid CEQA "mitigation". This mitigation measure should be modified to lower the maximum idling time to 2 minutes, which has been required for other similar projects[23] . Some states, Connecticut, Delaware, the District of Columbia, and New Jersey, and some cities, Santa Barbara, Minneapolis, Burlington and Chicago, for example, limit idling to 3 minutes for all on- and/or off-road vehicles.[24] In addition to lowering the idling time, the construction contractor should be required to maintain a written idling policy and distribute it to all employees and subcontractors. The on-site construction manager shall enforce this limit.[25]

c. Additional Feasible Mitigation for Construction Ozone and NO_2 Emissions

CURE-Fox-16

The Draft Initial Study and Mitigated Negative Declaration for the slant test well (IS/MND)[26] concluded air quality impacts would be "less than significant with

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[21] DEIR/EIS, p. 4.10-25.

[22] https://govt.westlaw.com/calregs/Document/ID1C693E02DDD11E197D9B83B68A61150?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

[23] See, e.g., Chevron Refinery Modernization Project EIR, March 2014, Chapter 5, Mitigation Measure Monitoring and Reporting Program, p. 5-27; Available at: https://s3.amazonaws.com/chevron/Final+EIR/5_MMRP.pdf

[24] Idling Database; Available at: https://cleancities.energy.gov/files/docs/idlebox_idlebase_database.xlsx.

[25] CARB, Written Idling Policy Guidelines, June 2009; Available at: https://www.arb.ca.gov/msprog/ordiesel/guidance/writtenidlingguide.pdf.

[26] SWCA Environmental Consultants, Draft Initial Study and Mitigated Negative Declaration for the California American Water Slant Test Well Project, Prepared for City of Marina, May 20 (IS/MND).

mitigation incorporation"[27] and imposed mitigation measures for NOx and ROG impacts.[28] However, most of these measures were not included in the DEIR/EIS. The omitted measures are all feasible, are listed below, and identified by "(IS/MND)". Additional mitigation is identified in the MBUAPCD's CEQA Guidelines.[29] The recently approved FEIR for the Chevron Modernization Program (Chevron) also includes mitigation measures for NOx and ROG emissions from construction equipment.[30] Finally, EPA has identified feasible mitigation for NOx and ROG emissions from construction emissions. Feasible mitigation measures from these and other sources for NOx and ROG not included in the DEIR/EIS are: CURE-Fox-16 cont.

- Maintain all construction equipment in proper tune according to manufacturer's specifications. The equipment must be check by an ASE-certified mechanic and determined to be running in proper condition before it is operated. (IS/MND; Chevron). CURE-Fox-17
- Diesel powered equipment shall be replaced by electric equipment whenever feasible to reduce NOx emissions (IS/MND, Chevron) CURE-Fox-18
- Diesel-powered equipment shall be replaced by gasoline-powered equipment whenever feasible (IS/MND, Chevron) CURE-Fox-19
- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time (IS/MND) CURE-Fox-20
- The engine size of construction equipment shall be the minimum practical size (IS/MND) CURE-Fox-21
- Catalytic converters shall be installed on gasoline-powered equipment (IS/MND) CURE-Fox-22
- Signs shall be posted in designated queuing areas and job sites to remind drivers and operators of the idling limit (IS/MND, Chevron) CURE-Fox-23
- Diesel equipment idling shall not be permitted within 1,000 feet of sensitive receptors (IS/MND) CURE-Fox-24
- Engine size of construction equipment shall be the minimum practical size (IS/MND) CURE-Fox-25

[27] IS/MND, p. 38.

[28] IS/MND, p. 44, AQ/mm-2.

[29] MBUAPCD 2008, Table 8-2 to 8-4, and 8-7.

[30] Chevron Refinery Modernization Project EIR, March 2014, Chapter 4.8, Greenhouse Gases; Available at: http://chevronmodernization.com/wp-content/uploads/2014/03/4.8_Greenhouse-Gases.pdf and Chapter 5, Mitigation Measure Monitoring and Reporting Program; Available at: https://s3.amazonaws.com/chevron/Final+EIR/5_MMRP.pdf.

- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time (IS/MND) CURE-Fox-26
- Construction worker trips shall be minimized by providing options for carpooling and by providing for lunch onsite (ISMND, Chevron) CURE-Fox-27
- Use electric fleet or alternative fueled vehicles where feasible including methanol, propane, and compressed natural gas (Chevron) CURE-Fox-28
- Use alternative diesel fuels, such as Aquazole fuel, Clean Fuels Technology (water emulsified diesel fuel), or O2 diesel ethanol-diesel fuel (O2 Diesel) in existing engines (SCAQMD, Monterey County General Plan EIR) [31,32] CURE-Fox-29
- Modify engines with ARB verified retrofits CURE-Fox-30
- Repower engines with Tier 4 Interim diesel technology CURE-Fox-31
- Convert part of the construction truck fleet to natural gas[33] CURE-Fox-32
- Use new or rebuilt equipment CURE-Fox-33
- Use diesel-electric and hybrid construction equipment[34] CURE-Fox-34
- Use low rolling resistance tires on long haul class 8 tractor-trailers[35] CURE-Fox-35

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[31] SCAQMD, Mitigation Measure Resources, Construction Emissions Mitigation Measures, https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=scaqmd%20ceqa%20construction%20mitigation.

[32] Monterey County General Plan EIR, Section 6.4.3.3, p. 6-14 (""The EIRs prepared for the desalination plants are expected to require that construction equipment use alternative fuels or other means to reduce their emissions of ozone precursors. Although, depending upon the intensity of construction, there is the potential for a significant impact on air quality from ozone precursors."); Available at: http://www.co.monterey.ca.us/planning/gpu/2007_GPU_DEIR_Sept_2008/Text/Sec_06_Other_CEQA.pdf.

[33] This is a mitigation measure used by PG&E to offset NOx emissions from its Otay Mesa Generating Project. See: GreenBiz, Natural Gas Trucks to Offset Power Plant Emissions, September 12, 2000; Available at: http://www.greenbiz.com/news/2000/09/12/natural-gas-trucks-offset-power-plant-emissions.

[34] Tom Jackson, How 3 Diesel-Electric and Hybrid Construction Machines are Waging War on Wasted Energy, Equipment World, June 1, 2014; Available at: http://www.equipmentworld.com/diesel-electric-and-other-hybrid-construction-equipment-are-waging-war-on-wasted-energy/; Kenneth J. Korane, Hybrid Drives for Construction Equipment, Machine Design, July 7, 2009; Available at: http://machinedesign.com/sustainable-engineering/hybrid-drives-construction-equipment; Caterpillar's D7E Electric Drive Redefines Dozer Productivity; Available at: http://www.constructionequipment.com/caterpillars-d7e-electric-drive-redefines-dozer-productivity.

[35] EPA, Verified Technologies for SmartWay and Clean Diesel, Learn About Low Rolling Resistance (LRR) New and Retread Tire Technologies; Available at: https://www.epa.gov/verified-diesel-tech/learn-about-low-rolling-resistance-lrr-new-and-retread-tire-technologies; EPA, Verified Technologies for SmartWay and Clean Diesel, SmartWay Verified List for Low Rolling Resistance (LRR) New and Retread Tire Technologies; Available at: https://www.epa.gov/verified-diesel-

- Use idle reduction technology, defined as a device that is installed on the vehicle that automatically reduces main engine idling and/or is designed to provide services, e.g., heat, air conditioning, and/or electricity to the vehicle or equipment that would otherwise require the operation of the main drive engine while the vehicle or equipment is temporarily parked or is stationary[36] CURE-Fox-36
- Convert part of the construction truck fleet to natural gas[37] CURE-Fox-37
- Implement EPA's National Clean Diesel Program.[38,39,40] CURE-Fox-38

To assure the construction mitigation program is carried out, all off-road diesel-powered equipment should be tested to assure tailpipe emissions do not exceed 20% opacity for more than 3 minutes in any hour. Any equipment found to exceed 20% opacity must be repaired immediately. A visual inspection of all in-operation equipment must be made at least daily by the contractor and witnessed monthly or more frequently by the MBUAPCD, and a periodic summary of the visual survey results must be submitted by the contractor throughout the duration of the project to the MBUAPCD. The summary should include the quantity and type of vehicles inspected and dates. CURE-Fox-39

All feasible mitigation must be required when an impact is significant and unavoidable. Thus, the DEIR/EIS must be revised to include these additional mitigation measures and recirculated for public review. CURE-Fox-40

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tech/smartway-verified-list-low-rolling-resistance-lrr-new-and-retread-tire.

[36] EPA Names Idle Reduction Systems Eligible for Federal Tax Exemptions, March 2009, Available at: http://www.greenfleetmagazine.com/channel/green-operations/article/story/2009/03/epa-names-idle-reduction-systems-eligible-for-federal-excise-tax-exemptions-grn.aspx. See also: Idle Reduction, Wikipedia; Available at: https://en.wikipedia.org/wiki/Idle_reduction and Diesel Emissions Reduction Program (DERA): Technologies, Fleets and Project Information, Working Draft Version 1.0; Available at: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100CVIS.TXT.

[37] This is a mitigation measure used by PG&E to offset NOx emissions from its Otay Mesa Generating Project. See: GreenBiz, Natural Gas Trucks to Offset Power Plant Emissions, September 12, 2000; Available at: http://www.greenbiz.com/news/2000/09/12/natural-gas-trucks-offset-power-plant-emissions.

[38] Northeast Diesel Collaborative, Best Practices for Clean Diesel Construction.Successful Implementation of Equipment Specifications to Minimize Diesel Pollution; https://www.northeastdiesel.org/pdf/BestPractices4CleanDieselConstructionAug2012.pdf.

[39] U.S. EPA, Cleaner Diesels: Low Cost Ways to Reduce Emissions from Construction Equipment, March 2007; https://www.epa.gov/sites/production/files/2015-09/documents/cleaner-diesels-low-cost-ways-to-reduce-emissions-from-construction-equipment.pdf.

[40] NEDC Model Contract Specification, April 2008; http://www2.epa.gov/sites/production/files/2015-09/documents/nedc-model-contract-sepcification.pdf.

B. The DEIR/EIS Omits Indirect Operational Emissions

The DEIR/EIS estimated emissions from operation of the Project from three sources: on-road vehicle exhaust, emergency generator testing, and slant well maintenance.[41] However, the major source of Project emissions is indirect emissions from the generation of electricity. The DEIR/EIS did not include those emissions, arguing that "[i]t is generally not possible to determine the exact generator source(s) of electricity on the power grid that would supply the proposed project, or whether or not the electricity would even be generated within the Air Basin."[42] Further, the Monterey County General Plan EIR explicitly recognized that that ""Taking a conservative view, the indirect impacts of the water supply projects to be built would potentially make considerable contributions to air quality, biological, and electrical energy use."[43]

CURE-Fox-41

CURE-Fox-42

These are not valid reasons under CEQA to exclude the major source of emissions from this Project. EIRs routinely include indirect emissions from electricity generation.[44] In fact, the GHG section of this DEIR/EIS includes indirect GHG emissions from power generation.[45] Further, the MBUAPCD's CEQA guidelines state: "The following thresholds apply to all indirect and direct emissions, whether or not they are subject to District permit authority, unless noted otherwise."[46] The "following thresholds" are in Table 5-3, which indicates that the NOx and ROG significance thresholds of 137 lb/day are to be compared to "direct + indirect" emissions.[47] Thus, the DEIR/EIS must include the increase in emissions of criteria pollutants from the net increase in power production to support the Project.

CURE-Fox-43

Further, CEQA does not require that indirect emissions be limited to the Project's "Air Basin." Electricity from any generator in California could be used at the Project site. As the significance criteria are based on the maximum day, finding the "maximum" is all that is required.

CURE-Fox-44

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[41] DEIR/EIS, Table 4.10-7.

[42] DEIR/EIS, p. 4.10-29.

[43] Monterey County General Plan EIR, p. 6-14; Available at: http://www.co.monterey.ca.us/planning/gpu/2007_GPU_DEIR_Sept_2008/Text/Sec_06_Other_CEQA.pdf.

[44] See, e.g., The Carlsbad Desalination Project EIR, pp. 4.2-18/20 & Table 4.2-9; Available at: http://carlsbaddesal.com/eir.

[45] DEIR/EIS, p. 4.11-12/13, 4.11-16/18, Table 4.11-4.

[46] MBUAPCD 2008, p. 5-4.

[47] MBUAPCD 2008, Table 5-3. Table 5-3.

The DEIR/EIS indicates that PG&E would supply the power. The sources of PG&E's power are known. As any source within PG&Es system and elsewhere on the grid could be used via purchases by PG&E, unless the EIR includes a condition limiting power sources, emissions should be estimated for the plausible worst case daily maximum emissions, which is the basis of MBUAPCD's significance thresholds for NOx and ROG. As the DEIR/EIS does not provide substantial evidence that these emissions are de minimus, they must be estimated. Further, the DEIR/EIS does not include any of the information required to estimate these emissions. Thus, it fails as an informational document under CEQA and forces the public to generate its own estimates in order to properly evaluate the Project's impacts. CURE-Fox-45

As the DEIR/EIS contains none of the information required to estimate these emissions, I bounded the maximum plausible NOx emissions using two methods. CURE-Fox-46

First, I used AP-42 emission factors for natural gas fired turbines,[48] the most likely electricity source for the Project. The maximum daily emissions would occur at an uncontrolled gas turbine plant, i.e., during a startup/shutdown or uncontrolled operation. CURE-Fox-47

The NOx emission factor for an uncontrolled natural gas turbine plant is 2.56 lb/MWh.[49] The net increase in annual electrical power demand due to the Project is 51,698 MWh per year, relative to the baseline.[50] Thus, assuming a maximum day NOx emission factor of 2.56 lb/MWh, the Project would increase NOx emissions by up to 363 lb/day,[51] which exceeds the MBUAPCD's NOx significance threshold of 137 lb/day. Therefore, the NOx emissions from producing a net increase of 51,698 MWh per year of electricity to support the Project is large enough taken alone to exceed the MBUAPCD's NOx significance threshold. CURE-Fox-48

Therefore, the NOx emissions from producing a net increase of 51,698 MWh per year of electricity to support the Project is large enough taken alone to exceed the MBUAPCD's NOx significance threshold. This is a significant impact that was not disclosed in the DEIR/EIS and that must be mitigated. CURE-Fox-49

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[48] U.S. EP, Compilation of Air Pollutant Emission Factors, (AP-42), Chapter 3.1: Stationary Gas Turbines, April 2000, Table 3.1-1; Available at: http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s01.pdf.

[49] NOx emission factor from Table 3.1-1: (0.32 lb/10^6 Btu)(8000 Btu/KWh)(1000 KW/MW) **= 2.56 lb/MWh**.

[50] DEIR/EIS, p. 4.11-13.

[51] (2.56 lb/MWh)(51,698 MWh/yr)/365 day/yr = **363 lb/day NOx**.

Second, I identified all PG&E owned power plants in California.[52] I then determined the maximum daily emissions from each, using EPA's CAMD daily data for 2014. This analysis identified two fossil fuel fired PG&E owned power plants in California with the follow maximum daily emissions in 2014:

- Colusa Generating Station: 432 lb/day
- Gateway Generating Station: 1,152 lb/day

Thus, assuming 1,152 lb of NOx is emitted on the maximum day, operational NOx emissions would increase from 26.66 lb/day to 1,179 lb/day,[53] which exceeds the MBUAPCD's NOx significance threshold of 137 lb/day by a significant amount. Therefore, the NOx emissions from producing a net increase of 51,698 MWh per year of electricity is large enough taken alone to exceed the MBUAPCD's NOx significance threshold. This is a significant impact not disclosed in the DEIR/EIS that must be mitigated. CURE-Fox-50

This impact could be mitigated by purchasing local and contemporaneous emission reduction credits or by collaborating with a nearby NOx source to reduce their NOx emissions. Alternatively, the increase in electricity demand could be met by using 100% renewable sources of electricity. Comment IV.B. CURE-Fox-51

The DEIR/EIS should be revised to include indirect electricity generation emissions for all criteria pollutants and to mitigate the resulting significant NOx impacts. CURE-Fox-52

C. The DEIR/EIS Fails to Evaluate All Air Quality Impacts

The DEIR/EIS did not evaluate the significance of pollutants for which the Monterey Bay Unified Air Pollution Control District (MBUAPCD) had not set official CEQA significance thresholds. A lead agency has discretion to determine how to classify the significance of impacts. However, it does not have discretion to simply not evaluate the significance of impacts. Further, its judgment must be supported by scientific information and other factual data.[54] Here, the CPUC has simply failed to evaluate the significance of impacts from two pollutants: (1) NO_2 for impacts other than its contribution to ozone and (2) ROG for its impacts other than its contribution to ozone. CURE-Fox-53

[52] Power_Plants.xlsx; Available at: http://energyalmanac.ca.gov/powerplants/.

[53] Revised operational NOx emissions (DEIR/EIS, Table 4.10-7), to include electricity generation: 26.66 + 1,152 = **1,178.7 lb/day**.

[54] CEQA Guidelines §15064(b).

1. Nitrogen Oxides (NOx) Significance Criteria

Nitrogen oxides (NOx) is a family of seven highly reactive gases. The EPA only regulates nitrogen dioxide (NO_2) as a surrogate for this family, because it is the most prevalent in the atmosphere. NO_2 forms quickly from emissions from cars, trucks and buses; power plants; and off-road equipment. In addition to contributing to the formation of ground-level ozone, and fine particulate pollution, NO_2 is linked with a number of adverse effects on the respiratory system.[55] CURE-Fox-54

The DEIR/EIS only evaluated NOx as an ozone precursor, as the MBUAPCD's significance criteria for NOx (137 lb/day) is based only on this endpoint. However, NOx not only contributes to ground-level ozone, it can also causes adverse health effects, acid rain, form particulate matter, and contribute to global warming, water quality deterioration, and visibility impairment.

Thus, there are primary and secondary state and federal ambient air quality standards for nitrogen oxides established using NO_2 as a surrogate for all nitrogen oxides.[56] The primary standards (1-hour) are set to protect public health, including the health of sensitive populations. The secondary standards (annual) are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.[57] The DEIR/EIS did not evaluate these primary and secondary impacts of NOx. CURE-Fox-55

First, NOx is harmful to public health. Children, people with lung diseases such as asthma, people who work or exercise outside, children, and the elderly are susceptible to adverse effects such as damage to lung tissue and reduction in lung function.[58] Thus, the Project's NOx emissions also should have been evaluated to determine if the existing primary NO_2 ambient air quality standards, set to protect public health, would be violated. As these standards are based on a 1-hour average, it is plausible that they would be exceeded during construction. CURE-Fox-56

Second, some of the emitted NOx (as well as SO_2) can be converted in the atmosphere to sulfate and nitrates, which contribute to acid rain and fine particulate matter (PM10, PM2.5). These fine particulates can be breathed in and lodged deep in the lungs, leading to a variety of health problems and even premature death. The NOx and SOx contribution to PM10 and PM2.5 should have CURE-Fox-57

[55] EPA, Nitrogen Dioxide, Available at: http://www.epa.gov/airquality/nitrogenoxides/.

[56] DEIR/EIS, Table 4.10-2.

[57] National Ambient Air Quality Standards (NAAQS), Available at: https://www.epa.gov/criteria-air-pollutants#self.

[58] U.S. EPA, Integrated Science Assessment for Oxides of Nitrogen – Health Criteria, EPA/600/R-08/071, July 2008, Available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=194645#Download.

been estimated and added to total PM10 and PM2.5 emissions, but was not. The DEIR/EIS failed to evaluate these impacts of NOx and (and SO2) thus fails as a public disclosure document. CURE-Fox-57 cont.

Third, NOx emissions contribute to visibility reduction and damages animals, crops, vegetation, and buildings.[59] As the Project is near prime farmland, the DEIR/EIS should have evaluated the potential impacts of construction emissions on these endpoints to determine if the secondary NO_2 ambient air quality standards, set to protect public welfare, were violated. The DEIR/EIS failed to evaluate these secondary NOx impacts and thus is deficient as a public disclosure document. CURE-Fox-58

Appendix G of the CEQA Guidelines indicates a project would have a significant impact if it also violates any air quality standard or exposes sensitive receptors to substantial pollutant concentrations. This determination can be made for NOx using dispersion modeling, which was not included in the DEIR/EIS, or CEQA significance thresholds from other air districts that are in attainment with ozone standards. CURE-Fox-59

There are both federal and state 1-hour and annual average ambient NO_2 air quality standards, set to protect public health and welfare.[60] NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. Elevated concentrations increase the risk of acute and chronic respiratory disease. The annual average state NOx standard is 0.030 ppm.[61] The DEIR/EIS indicates that the maximum hourly average NOx concentration for the period 2011 to 2015 has been 0.04 ppm, but fails to report any annual average NOx concentration data.[62] As construction will last for more than one year and emissions from construction equipment are released at ground level, in the breathing zone of nearby sensitive receptors, the DEIR/EIS should have evaluated whether construction emissions violate the ambient NOx standards or expose sensitive receptors to substantial pollutant concentrations in the vicinity of construction activities. CURE-Fox-60

The absence of a MBUAPCD "CEQA significance threshold" for non-ozone precursor NOx impacts is not an impediment to evaluating this impact as the ambient air quality standards themselves are the CEQA significance thresholds. A CURE-Fox-61

[59] EPA, Review of the National Ambient Air Quality Standards for Nitrogen Dioxide: Assessment of Scientific and Technical Information, OAQPS Staff Paper, EPA-452/R-95-005, September 1995; Available at: http://www.epa.gov/ttn/naaqs/standards/nox/data/noxsp1995.pdf.

[60] DEIR/EIS, Table 4.10-2.

[61] DEIR/EIS, Table 4.10-2.

[62] DEIR/EIS, Table 4.10-1.

significance threshold is just a surrogate or short cut for avoiding the more time intensive modeling required to evaluate compliance with the ambient standard. When a CEQA significance threshold is missing, a lead agency must model emissions to determine if they cause or contribute to an exceedance of the ambient standards or look to other sources for significance criteria expressed as emission rates, e.g., other air districts.

CURE-Fox-61 cont.

CEQA significance thresholds established by other air districts that are in attainment with ozone standards could be used to evaluate NOx health and other impacts. Four air districts that are in attainment with ozone standards have established CEQA significance thresholds for NOx and ROG based on other considerations:

- Mendocino County AQMD construction: 110 lb/day[63] for NOx and ROG[64]
- Mendocino County AQMD operation: 180 lb/day for ROG and 42 lb/day for NOx[65]
- Colusa County APCD construction: 25 lb/day for NOx and ROG[66]
- Modoc County APCD construction & operation: 250 lb/day for NOx and ROG[67]
- Shasta County AQMD construction & operation: 25 – 137 lb/day for NOx and ROG[68]

CURE-Fox-62

As reported ROG emissions (34 lb/day) exceed the non-ozone significance thresholds of 25 lb/day for Colusa County APCD and Shasta County AQMD, non-ozone public health impacts for both ROG and NOx are significant. This is a new impact that was not disclosed in the DEIR/EIS.

2. Reactive Organic Gases (ROG) Significance Criteria

Reactive Organic Gases or ROG is a collection of volatile organic compounds (VOCs) that form ozone in the atmosphere in the presence of sunlight. The ROG

CURE-Fox-63

[63] BAAQMD, California Air District CEQA Significance Thresholds, Appendix A, Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Thresholds_Report_Revised_Appendices_082309.ashx?la=en.

[64] MCAQMD, Advisory, District Interim CEQA Criteria and GHG Pollutant Thresholds, Available at: http://www.co.mendocino.ca.us/aqmd/pdf_files/ceqa-criteria-and-ghg.pdf.

[65] BAAQMD, Appendix A.

[66] BAAQMD, Appendix A.

[67] BAAQMD, Appendix A.

[68] BAAQMD, Appendix A.

emissions from construction of the Project originate largely from diesel exhaust, which is a known Toxic Air Contaminant.[69] Ozone is an oxidant that attacks synthetic rubber, textiles, and other materials and causes extensive damage to plants by leaf discoloration and cell damage. It is also a severe eye, nose, and throat irritant and increases susceptibility to respiratory infections. Ozone is not emitted directly, but rather forms from photochemical reactions in the atmosphere involving VOCs and NOx.

However, the reactions can be slow and not all of the VOCs are converted into ozone under all conditions. The original VOCs emitted from the source can remain in the atmosphere for significant periods, where they result in health impacts of a different nature than ozone, depending upon the specific Toxic Air Pollutants (TAPs) present. The DEIR/EIS only evaluated ROG as an ozone precursor.

CURE-Fox-63 cont.

The VOCs present in ROG, before it is converted into ozone, include volatile organic compounds that are additionally hazardous to human health.[70] The DEIR/EIS's health risk assessment (HRA) only evaluated diesel particulate matter (DPM). It did not evaluate health impacts from toxic air pollutants subsumed in ROG that are not converted to ozone when they reach sensitive receptors, such those only 25 to 100 feet away from active construction sites. These include acutely and chronically toxic chemicals such as toluene, xylene, ethylbenzene, and 1,3 butadiene and carcinogens such as benzene, formaldehyde, acrolein, and acetaldehyde.

The conversion of ROG to ozone is a slow process, so nearby receptors would initially be exposed to unconverted VOCs. The significance thresholds discussed above for ROG by air districts that are in attainment with ozone standards can be used as a first step to evaluate non-ozone construction and operational ROG impacts of the Project. However, a health risk assessment should be conducted due

[69] California Air Resources Board (CARB), Initial Statement of Reasons for Rulemaking, Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Staff Report, June 1998. See summary: Findings of the Scientific Review Panel on The Report on Diesel Exhaust as Adopted at the Panel's April 22, 1998, Meeting; Available at: http://www.arb.ca.gov/toxics/dieseltac/de-fnds.pdf.

[70] CARB 1998; H. Ogawa and T. Li, Volatile Organic Compounds in Exhaust Gas from Diesel Engines under Various Operating Conditions, International Journal of Engine Research, 2011, v. 12, 30-40; K. Tanaka et al., Simultaneous Measurements of the Components of VOCs and PAHs in Diesel Exhaust Gas using a Laser Ionization Method, SAE Technical Paper 2009-1, 2009; Y. Yamamoto et al., Measurement of Volatile Organic Compounds in Vehicle Exhaust Using Single-Photon Ionization Time-of-Flight Mass Spectrometry, Anal. Sci., v. 28, no. 4, 2012, 385-90; G.J. Sheng et al., GS-MS Determination of Volatile Organic Compounds in Gasoline and Diesel Emissions, Spring 2006; Available at: http://dujs.dartmouth.edu/wp-content/uploads/2008/05/sheng.pdf; K.E. Ho et al, Vehicular Emissions of Volatile Organic Compounds (VOCs) from a Tunnel Study in Hong Kong, Atmos. Chem. Phys., v. 9, 7491-7504, 2009, Available at: http://www.atmos-chem-phys.net/9/7491/2009/acp-9-7491-2009.pdf.

to the proximity of sensitive receptors. The health risk assessment in Appendix G1.4 only evaluated diesel particulate matter.

CURE-Fox-63 cont.

In sum, the DEIR/EIS did not evaluate the significance of emissions if a pollutant, such as NOx as respiratory irritant, does not have a MCUAPCD significance threshold because it failed to perform air dispersion modeling. In summary, NOx emissions have three separate impacts, of which only the first was considered in the DEIR/EIS.

CURE-Fox-64

First, NOx forms ozone in the atmosphere and thus contribute to violations of ozone ambient air quality standards. The MBUAPCD NOx significance threshold was developed specifically to address this impact.[71]

CURE-Fox-65

Second, NOx is a respiratory irritant. Separate, air quality standards to protect public health and welfare apply to NO_2 as itself, rather than just as an ozone precursor. The MBUAPCD's CEQA significance threshold for NOx is based on its impacts as an ozone precursor.[72] The MBUAPCD CEQA Guidelines do not include a significance threshold for this second set of impacts. These impacts are addressed by the primary NO_2 ambient air quality standards.

CURE-Fox-66

Third, NO_2 is a PM10/PM2.5 precursor, reduces visibility, and damages animals, crops, vegetation, and buildings. These impacts are addressed by the secondary NO_2 ambient air quality standards.

CURE-Fox-67

The DEIR/EIS is totally silent on these additional NOx impacts. Thus, it fails as a public disclosure document.

CURE-Fox-68

Other air districts that are in attainment with the state and federal ozone ambient air quality standards have established significance thresholds for NOx of 25 lb/day to 180 lb/day. The operational NOx emissions estimated in the DEIR/EIS of 26.66 lb/day[73] which excludes indirect emissions, exceed the 25 lb/day operational NOx significance threshold set by Shasta County AQMD. Thus they are *per se* significant without considering any other indiscretions. The DEIR/EIS failed to identify this significant impact, which must be mitigated.

CURE-Fox-69

When indirect NOx emissions from power production are added (1152 lb/day), as discussed above, total NOx emissions increase from 26.66 lb/day to 1,179 lb/day, which exceeds the non-ozone attainment NOx significance thresholds of attainment air districts (25 lb/day to 250 lb/day) by a huge amount for all air districts that have

CURE-Fox-70

[71] MBUAPCD 2006, p. 5-3.

[72] MBUAPCD 2006, p. 5-5 ("Projects which would emit 137 pounds per day or more of direct and indirect VOC emissions would have a significant impact on regional air quality by emitting substantial amounts of ozone precursors." NOx is indirect ozone.)

[73] DEIR/EIS, Table 4.10-7.

established NOx significance thresholds for operational emissions and are attainment for ozone. Thus, NOx emissions from power production, when evaluated for impacts other than ozone formation are significant under the NOx significance thresholds established by other air districts. The DEIR/EIS must disclose and analyze this significant impact.

CURE-Fox-70 cont.

II. HEALTH RISKS

The DEIR/EIS evaluated health risks of Project construction for diesel particulate matter (DPM) at two sites, the Carmel Valley Pump Station and ASR Injection/Extraction Wells.[74] This analysis concluded that cancer and chronic health risks are less than significant.[75] However, there are many problems with the DEIR/EIS's analysis, which when corrected, would result in a significant health impact. Further, the HRA analysis is unsupported, incomplete, and failed to include acute impacts.

CURE-Fox-71

A. All Sensitive Receptors Were Not Evaluated

The DEIR/EIS only evaluated the Carmel Valley Pump Station and the ASR Injection/Extraction well site. However, there are other facilities that are near sensitive receptors that were excluded from the HRA, including:

CURE-Fox-72

- Wells ASR-5 and ASR-6 would be constructed within 50 feet of existing residences.[76]

- "The ASR Conveyance Pipeline, ASR Recirculation Pipeline, and the ASR Pump-to-Waste Pipeline would be within 250 feet of Seaside Middle School, and within 50 to 100 feet of residences in the Fitch Park military housing area along Hatten Road and Ardennes Circle."[77]

CURE-Fox-73

B. The DEIR/EIS Did Not Follow OEHHA Guidelines, Substantially Underestimating Health Risk

The OEHHA's guidelines for preparation of health risk assessments, adopted in March 2015, explain that for short-term projects, such as construction of various components of the Project:

CURE-Fox-74

[74] DEIR/EIS, p. 4.10-27/29; Appendix G1.4.1.

[75] DEIR/EIS, Table 4.10-6; Appendix G1.4.1.

[76] DEIR/EIS, pp. 4.10-7 and 4.8-11.

[77] DEIR/EIS, p. 4.10-7.

"We recommend that exposure from projects longer than 2 months but less than 6 months be assumed to last 6 months (e.g., a 2-month project would be evaluated as if it lasted 6 months). Exposure from projects lasting more than 6 months should be evaluated for the duration of the project
….

Finally, the risk manager may want to consider a lower cancer risk threshold for risk management for very short-term projects…There is a valid scientific concern that the rate of exposure may influence the risk – in other words, a higher exposure to a carcinogen over a short period of time may be a greater risk than the same total exposure spread over a much longer time period. In addition, it is inappropriate from a public health perspective to allow a lifetime acceptable risk to accrue in a short period of time (e.g., a very high exposure to a carcinogen over a short period of time resulting in a 1 x 10^{-5} cancer risk). Thus, consideration should be given for very short term projects to using a lower cancer risk trigger for permitting decisions."[78]

CURE-Fox-74 cont.

The DEIR/EIS's analysis only evaluated risk for exposures of 0.25 years or 3 months after birth.[79] If the 3 months post-birth is increased to 6 months[80] per OEHHA guidance, the cancer risk increases from 5.2 in a million to 10 in a million, which is per se significant.

CURE-Fox-75

Further, the DEIR/EIS used the significance threshold for a lifetime exposure, which dilutes the risk when it is received over a very short period of time, as here. Babies exposed during the construction period would receive a lifetime dose of diesel exhaust in a 3 month period. This requires a lower significance threshold than the 10 in one million used in the DEIR/EIS for a 70 year exposure.

CURE-Fox-76

Historically, the significance threshold for cancer risk has been one in a million and still is for criteria set elsewhere, including Clean Water Act 304(a), Safe Drinking Water Act, and the National Toxics Rule.[81] The short-term cancer risks

CURE-Fox-77

[78] OEHHA, Air Toxics Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments, February 2015, Section 8.2.10: Cancer Risk Evaluation of Short Term Projects, pp. 8-17/18; Available at: http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

[79] DEIR/EIS, Appendix G1.4.1, pdf 119/120.

[80] Excel Spreadsheet G1.4.1 Health Risk Assessment Calculations, tab "HRA Calcs", change cell E21 from 0.25 to 0.5. This increases the cancer risk from 5.2 per million to 10 per million.

[81] Cheryl Niemi, "Acceptable" Risk Levels for Carcinogens: Their History, Current Use, and How They Affect Surface Water Quality Criteria, Policy Forum #3, Human Health Criteria and Implementation Tools Rule-Makings, February 8, 2013; Available at: http://www.tmw-law.com/news-pdf/SWQSPolicyForumRiskLevel%2002-08-213.pdf.

estimated in the HRA are 5.2 to 6.4 in one million.[82] If the one in a million threshold were used to evaluate Project health impacts, these risk levels would be highly significant. Alternatively, if one assumes the risk is evenly spread out over a 70 year lifetime, the significant cancer risk threshold for a one-year-old would be 0.1 in one million. Under either scenario, cancer risk from diesel exhaust alone would be highly significant and unmitigated. This is a significant impact not disclosed in the DEIR/EIS. This impact could be and should be mitigated by requiring diesel particulate traps on all diesel fueled equipment.

CURE-Fox-77 cont.

C. All Hazardous Pollutants Were Not Included in the HRA

The HRA only evaluated diesel exhaust, which is emitted from construction equipment and on-road vehicles. As noted in Comment I.C, the VOCs present in ROG, before it is converted into ozone, include volatile organic compounds that are additionally hazardous to human health. The HRA only evaluated DPM and failed to evaluate the health impacts from toxic air pollutants subsumed in ROG that are not converted to ozone when they reach sensitive receptors. These include acutely and chronically toxic chemicals such as toluene, xylene, ethylbenzene, and 1,3 butadiene and carcinogens such as benzene, formaldehyde, acrolein, and acetaldehyde.

CURE-Fox-78

The conversion of ROG to ozone is a slow process, so nearby receptors would initially be exposed to unconverted VOCs. These should be included in the HRA, which as it standard, underestimates health impacts and further fails to evaluate acute health impacts.

III. VALLEY FEVER

Valley Fever, or *Coccidioidomycosis* (Cocci), is an infectious disease caused by inhaling the spores of *Coccidioides ssp. (*"Cocci spores"*)*[83], a soil-dwelling fungus. The fungus lives in the top 2 to 12 inches of soil. When soil containing this fungus is disturbed by activities such as digging, vehicles, construction activities, agricultural operations, dust storms, or during earthquakes, the fungal spores become air borne, exposing sensitive receptors. The Valley Fever fungal spores are too small to be seen by the naked eye, and there is no reliable way to test the soil for spores before working in a particular area.[84] The disease is endemic (native and

CURE-Fox-79

[82] DEIR/EIS, Table 4.10-6.

[83] Two species of *Coccidioides* are known to cause Valley Fever: *C. immitis*, which is typically found in California, and *C. posadasii*, which is typically found outside California. *See* Center for Disease Control, Coccidioidomycosis (Valley Fever), Information for Health Professionals; Available at: https://www.cdc.gov/fungal/diseases/coccidioidomycosis/health-professionals.html.

[84] California Department of Public Health, Preventing Work-Related Coccidioidomycosis (Valley Fever), June 2013; Available at: http://www.cdph.ca.gov/programs/hesis/Documents/CocciFact.pdf.

common, regularly found in a particular area) in the semiarid regions of the southwestern United States.[85] As there is no reliable test, presence is assessed based on the known occurrence of the disease in a particular area. Valley Fever is endemic to Monterey County where the Project will be constructed.[86]

Monterey County, including the Project site, is located within the established endemic range of Valley Fever, as shown in Figure 1 below, with one of the highest infection rates in California. The disease has become an increasing concern for Monterey County Health Department.[87] In 2013, there were 70 new cases of Valley Fever reported among Monterey County residents. The rate of new cases in 2013 was 15.7 cases per 100,000 individuals, well above the California statewide rate of 10.8 in 2012. Between 2009 and 2011, there were 145 hospital admissions in Monterey County, costing over $32 million. Forty one percent of these cases occurred in the north county area, which includes most of the project facilities. [88] There were 7 fatal cases in Monterey County between 2011 and 2013.[89] In recent years, reported Valley Fever cases in the southwestern United States have increased dramatically.[90]

CURE-Fox-79 cont.

[85] San Luis Obispo County Public Health Department, What Is Valley Fever? July 20, 2011; Available at: http://www.slocounty.ca.gov/Assets/PH/Epidemiology/ValleyFever_Info.pdf.

[86] CDPH June 2013.

[87] Valley Fever Cases Prompt Health Warning, Available At: http://www.valley-fever.org/.

[88] Monterey County Health Department (MCHD), Coccidioidomycosis in Monterey County. Quick Facts, May 2014, Available at: https://www.mtyhd.org/wp-content/uploads/2014/09/Cocci-Fact-Sheet-2013.pdf.

[89] DEIR/EIS, Appendix G1, Figure G1.1.2.

[90] *See* Center for Disease Control; Fungal Pneumonia: A Silent Epidemic, Coccidioidomycosis (Valley Fever); Available at: http://www.cdc.gov/fungal/pdf/cocci-fact-sheet-sw-us-508c.pdf.

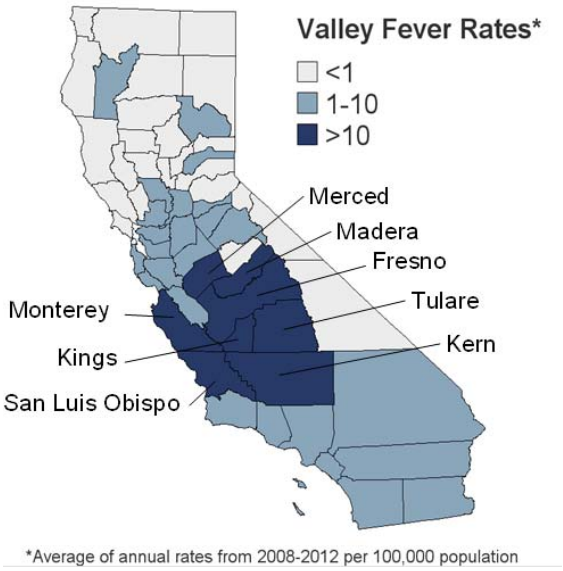


Figure 1. Endemic Areas for Valley Fever in California.[91]

Typical symptoms of Valley Fever include fatigue, fever, cough, headache, shortness of breath, rash, muscle aches, and joint pain. Symptoms of advanced Valley Fever include chronic pneumonia, meningitis, skin lesions, and bone or joint infections. The most common clinical presentation of Valley Fever is a self-limited acute or subacute community-acquired pneumonia that becomes evident 13 weeks after infection.[92] No vaccine or known cure exists for the disease.[93] Between 1990 and 2008, more than 3,000 people have died in the United States from Valley Fever with about half in California.[94]

CURE-Fox-80

[91] California Department of Public Health , What you Need to Know About Valley Fever in California, May 2014, Available at: http://www.cdph.ca.gov/HealthInfo/discond/Documents/EnglishValleyFeverBrochure.pdf.

[92] *See, e.g.*, Lisa Valdivia, David Nix, Mark Wright, Elizabeth Lindberg, Timothy Fagan, Donald Lieberman, Prien Stoffer, Neil M. Ampel, and John N. Galgiani, Coccidioidomycosis as a Common Cause of Community-acquired Pneumonia, Emerging Infectious Diseases, v. 12, no. 6, June 2006; Available at: http://europepmc.org/articles/PMC3373055.

[93] Rebecca Plevin, National Public Radio, Cases Of Mysterious Valley Fever Rise In American Southwest, May 13, 2013; Available at: http://www.npr.org/blogs/health/2013/05/13/181880987/cases-of-mysterious-valley-fever-rise-in-american-southwest.

[94] Jennifer Y. Huang, Benjamin Bristow, Shira Shafir, and Frank Sorvillo, Coccidioidomycosis-associated Deaths, United States, 1990–2008; Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3559166/.

The disease debilitates the population and thus prevents them from working.[95] The longest period of disability from occupational exposure in California is to construction workers, with 62% of the reported cases resulting in over 60 days of lost work.[96] Another study estimated the average hospital stay for each (non-construction work) case of Coccidioidomycosis at 35 days.[97]

CURE-Fox-80 cont.

In spite of this evidence, which I presented in my 2015 comments, incorporated here by reference, the DEIR/EIS dismisses the risk of Valley Fever to Project workers and nearby sensitive receptors by making two irrelevant arguments, discussed below.

A. The DEIR/EIS Fails To Identify Significant Health Impacts Due to Valley Fever

1. The DEIR/EIS Misrepresents Status Quo

First, the DEIR/EIS argues that cases of Valley Fever dropped substantially in 2014 (19 cases) compared to 2011-2013 (68-73 cases),[98] implying that Valley Fever is declining and thus not a concern. However, the Monterey County Health Department reported 73 confirmed cases in 2016, up more than 50% from 2015[99] and consistent with the 2011 to 2013 cases reported in the DEIR/EIS.[100] The decline in 2014 was an anomaly.[101] It is duplicitous for the CPUC to assert Valley Fever is declining based on an anomaly.

CURE-Fox-81

[95] Frank E. Swatek, Ecology of *Coccidioides Immitis*, Mycopathologia et Mycologia Applicata, v. 40, Nos. 1-2, pp. 3-12, 1970.

[96] Schmelzer and Tabershaw, 1968, Table 4.

[97] Demosthenes Pappagianis and Hans Einstein, Tempest from Tehachapi Takes Toll or Coccidioides Conveyed Aloft and Afar, West J. Med., v. 129, Dec. 1978, pp. 527-530; Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1238466/pdf/westjmed00256-0079.pdf.

[98] DEIR/EIS, p. 4.10-4.

[99] KION 5/46 News Channel, Valley Fever Cases up in Monterey County, Update, December 8, 2016; Available at: http://www.kion546.com/news/valley-fever-cases-up-in-monterey-county/201939326.

See also Pam Marino, Valley Fever on the Rise in the Salinas Valley and South County, December 10, 2016; Available at: http://www.kion546.com/news/valley-fever-cases-up-in-monterey-county/201939326.

[100] DEIR/EIS, p. 4.10-4.

[101] County of Monterey Health Department, Coccidioidomycosis – Local Data; Available at: http://www.co.monterey.ca.us/government/departments-a-h/health/diseases/coccidioidomycosis-valley-fever/coccidioidomycosis-local-data.

2. Valley Fever Impacts Are Significant

The DEIR/EIS argues that "much of the population of Monterey County has already been exposed to Valley Fever and would continue to be exposed because of the various earthmoving activities that have historically occurred and continue to occur as a result of agricultural and construction activities throughout the region. As a result of the endemic nature of the disease and the number of earthmoving activities in the County (e.g., grading and excavation for agriculture, as well as new residential, commercial, and industrial development and surface mining operations), there are new cases of Valley Fever documented in the County each year, however, many people who are exposed do not develop symptoms."[102] The DEIR/EIS then concludes, without conducting any analysis whatsoever, that[103]:

> Valley Fever-related impacts associated with the project would not be considered significant because ongoing ground-disturbing activities in the County currently represent a continual source of spores that contribute to the low number of Valley Fever cases reported each year. Construction activities associated with the project would result in similar localized ground disturbing activities to those that occur continually within the County and the project would not result in a substantial increase in spore release. Therefore, construction of the project would not represent an increased risk to public health. In addition, implementation of Mitigation Measure 4.10-1c (see above), which requires implementation of fugitive dust control measures, would ensure that fugitive dust that could contain coccidioides immitis spores would be controlled to the maximum extent feasible. Valley Fever-related impacts would be less than significant.

CURE-Fox-82

These assertions are inconsistent with CEQA, unsupported, and incorrect.

CEQA requires that impacts be evaluated relative to the baseline present at the time environmental review commenced. While some residents of Monterey County may have been exposed to Cocci spores as they live adjacent to agricultural fields or a construction site, this does not mean that an increase in the number spores due to Project construction would not result in an increase in Valley Fever cases. Even assuming, *arguendo*, that this line of argument is valid, the record contains no evidence that all residents downwind of Project construction and all construction workers who would build the Project have in fact been exposed to Cocci spores in sufficient amounts to assure immunity.

It is common, for example, to import construction workers when local skills are not available or cheaper wages can be gained by using out-of-state employees. The request for proposal for the slant wells, for example, requires that the Contractor "must make a good faith effort to employ qualified individuals who are, and have been for at least one year out of the three years prior to the opening of

[102] DEIR/EIS, p. 4.10-28.

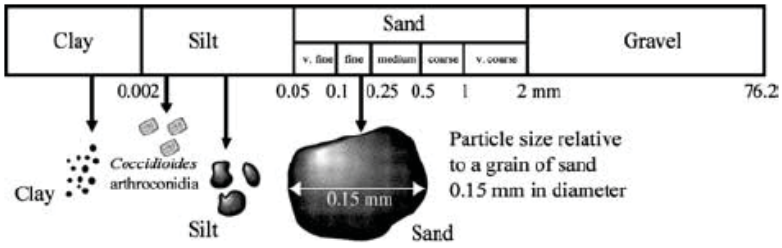
[103] DEIR/EIS, p. 4.10-28.

proposals, residents of Monterey County, San Benito County, or Santa Cruz County in sufficient numbers to achieve a goal of at least fifty percent of the Contractor's total construction work force, including any subcontractor work force."[104] The same condition is found in the RFP for the conveyance facilities.[105] Thus, it is duplicitous to suggest that all potentially exposed parties have already been exposed in Monterey County, which is a highly unlikely scenario.

Residents of the area also have been exposed to existing levels of PM10 and PM2.5, but the DEIR/EIS still evaluated the significance of an increase in PM10 and PM2.5 emissions relative to the baseline. The argument that County residents have been exposed to Cocci spores (a component of PM10, or PM2.5) (Figure 2) is simply a statement of the baseline or the status quo.

CURE-Fox-82 cont.

Figure 2. Size of cocci spores compared to soil particles (in mm)[106]



Valley Fever is contracted only by inhalation of Cocci spores, which are only inhaled when they become air borne, as during earth moving during construction of the Project, which increases PM10, PM2.5 and associated Cocci spores. If Cocci spores are present in the disturbed soil, which is highly likely given the Project location in an endemic area, they would increase in proportion to PM10 and PM2.5 emissions due to earth moving activities. Further, the fact that resident have been and are currently "exposed" to Cocci spores does not imply, nor can it guarantee, immunity to Valley Fever from increased exposure.

CURE-Fox-83

Digging, grading, trenching, and other earth disturbing activities will occur during construction of all Project's components over the 24 month construction period,[107] which will increase PM10, PM2.5 and associated Cocci spores, relative to

CURE-Fox-84

[104] CalAm, Monterey Peninsula Water Supply Project, Request for Proposals for the Construction of Source Water Slant Wells, September 24, 2015, Section 2.10, p. 2-7; Available at: http://www.watersupplyproject.org/about1.

[105] CalAm, Monterey Peninsula Water Supply Project, Request for Proposals for the Construction of Conveyance Facilities, August 17, 2015, Section 2.10, p. 2-10; Available at: http://media.wix.com/ugd/28b094_0f3fe76982564516a50c204aa1332cb1.pdf.

[106] Fisher et al., 2007, Fig. 3.

[107] DEIR/EIS, Appendix G1, Figure G1.1.2, pdf 3.

the CEQA baseline. These activities will disturb a significant amount of soil, including:

- slant wells (9 acres)[108];
- desalination plant (25 acres);[109]
- source water pipeline construction (16.4 acres);[110]
- desalinated water supply pipeline (35.4 acres);[111]
- Castroville pipeline (15 – 16 acres);[112]
- brine discharge pipeline/pipeline to CSIP Pond alignments (6.6 acres);[113]
- ASR pipelines (8.8 acres);[114]
- ASR 5/6 water retention depression (7.0 acres);[115]
- ASR wells (0.9 acres);[116]
- new transmission main (27.1 acres);[117]
- Ryan Ranch-Bishop Interconnection improvements (7.3 acres);[118]
- Terminal Reservoir (6-6.7 acres);[119] and
- Pump stations (>7 acres).[120]

In total, Project construction would disturb over 173 acres of endemic land, likely to contain Cocci spores. Additional intimate contact with soil would occur during spoils management and disposal and during periodic maintenance of the

CURE-Fox-84 cont.

[108] DEIR/EIS, pp. 3-47, 4.6-24, 4.6-70.

[109] DEIR/EIS, p. 3-49.

[110] DEIR/EIS, p. 4.6-76.

[111] DEIR/EIS, p. 4.6-78.

[112] DEIR/EIS, p. 4.6-79/80.

[113] DEIR/EIS, p. 4.6-81.

[114] DEIR/EIS, p. 4.6-82.

[115] DEIR/EIS, p. 4.6-82.

[116] DEIR/EIS, p. 4.6-215.

[117] DEIR/EIS, p. 4.6-83.

[118] DEIR/EIS, p. 4.6-86.

[119] DEIR/EIS, p. 3-54, 4.6-84.

[120] 2015 DEIR/EIS, p. 3-48.

slant wells, which would disturb roughly 6 acres every five years.[121] Thus, construction workers as well as maintenance workers during Project operation are at considerable risk of catching Valley Fever. This is a significant construction impact that was not identified in the DEIR/EIS. Further, many of the construction sites are very close to sensitive receptors, within 50 to 300 feet of residential areas, military housing, and schools, placing residents at risk.[122]

CURE-Fox-84 cont.

CURE-Fox-85

Further, the potentially exposed population is much larger than construction workers because the very small spores – 0.002-0.005 millimeters ("mm") – do not settle out as rapidly as other components of particulate matter and thus would be carried further, potentially into non-endemic areas, where they would expose large populations that may not have been previously exposed.[123,124] Valley Fever spores have been documented to travel as much as 500 miles[125] and, thus, dust raised during construction could potentially expose a large number of people hundreds of miles away, outside of endemic areas.

CURE-Fox-86

Further, there is no evidence that prior exposure to Cocci spores confers immunity, which is what the DEIR/EIS is arguing. *First*, this argument is fundamentally flawed because there is no "immunity" to Valley Fever. As explained by the Valley Fever Patient Advocacy Organization, "Once a person is infected with Valley Fever an immune resistance takes effect in the body, but this does not mean "immunity" in the sense that a person could never suffer from the disease again. Not only have reactivations occurred in many cases, but it has been proven that even "immune" hosts can suffer a severe case of Cocci if they inhale enough additional spores."[126] Thus, even if everyone in Monterey County has been exposed to Cocci spores, this does not mean that an increase in the number of Cocci spores due to Project construction would not result in new cases of Valley Fever, or that construction workers from a non-endemic area brought into the area to construct the Project would not catch Valley Fever.

CURE-Fox-87

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[121] DEIR/EIS, pp. 3-57, 4.3-110.

[122] DEIR/EIS, Tables 4.7-2, 4.12-10; Figure 4.7-2; p. 4.10-7.

[123] Schmelzer and Tabershaw, 1968, p. 110; Pappagianis and Einstein, 1978.

[124] Pappagianis and Einstein, 1978, p. 527 ("The northern areas were not directly affected by the ground level windstorm that had struck Kern County but the dust was lifted to several thousand feet elevation and, borne on high currents, the soil and arthrospores along with some moisture were gently deposited on sidewalks and automobiles as "a mud storm" that vexed the residents of much of California." The storm originating in Kern County, for example, had major impacts in the San Francisco Bay Area and Sacramento).

[125] David Filip and Sharon Filip, Valley Fever Epidemic, Golden Phoenix Books, 2008, p. 24.

[126] Valley Fever Survivor, Frequently Asked Question; Available at: http://www.valleyfeversurvivor.com/faq.html.

In fact, dust exposure, which occurs during construction, is one of the primary risk factors for contacting Valley Fever.[127] Specific occupations and outdoor activities associated with dust generation such as construction, farming, road work, military training, gardening, hiking, camping, bicycling, or fossil collecting increase the risk of exposure and infection compared to baseline exposure to individuals who do not engage in these activities.[128]

CURE-Fox-88

It is well known that the most at-risk populations are construction and agricultural workers,[129] the former being the very population that would be directly exposed by the Project. The Monterey County Health Department notes: "Workers who disturb the soil by digging, operating earth-moving equipment, driving vehicles, or working in dusty, wind-blown areas are more likely to breathe in the fungal spores and become infected."[130]

Similarly, a refereed journal article on occupational exposures notes that "[l]abor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations."[131] One study reported that at study sites, "generally 50% of the individuals who were exposed to the dust or were excavating dirt at the sites were infected."[132] The California Department of Public Health cites this as a typical example:

CURE-Fox-89

> "In October 2007, a construction crew excavated a trench for a new water pipe. Within three weeks, 10 of 12 crew members developed coccidioidomycosis (Valley Fever), an illness with pneumonia and flu-

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[127] Rafael Laniado-Laborin, Expanding Understanding of Epidemiology of Coccidioidomycosis in the Western Hemisphere, Ann. N.Y. Acad. Sci., v. 111, 2007, pp. 20-22; Frederick S. Fisher, Mark W. Bultman, Suzanne M. Johnson, Demosthenes Pappagianis, and Erik Zaborsky, Coccidioides Niches and Habitat Parameters in the Southwestern United States, a Matter of Scale, Ann. N.Y. Acad. Sci., No. 1111, 2007, pp. 47-72 ("All of the examined soil locations are noteworthy as generally 50% of the individuals who were exposed to the dust or were excavating dirt at the sites were infected."); Available at: http://www.researchgate.net/publication/6461426_Coccidioides_niches_and_habitat_parameters_in_the_southwestern_United_States_a_matter_of_scale/file/72e7e51c9b9f058a45.pdf?origin=publication_detail.

[128] CDPH June 2013; Center for Disease Control, Coccidioidomycosis (Valley Fever); Available at: https://www.cdc.gov/fungal/diseases/coccidioidomycosis/health-professionals.html and Kern County Public Health Services Department, Valley Fever (Coccidioidomycosis) in Kern County; Available at: http://kerncountyvalleyfever.com/what-is-valley-fever/risk-factors/.

[129] Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, Am. J. Public Health Nations Health, v. 58, no. 1, 1968, pp. 107-113, Table 3; Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1.

[130] MCHD 2014, p. 2.

[131] *Ibid*, p. 110.

[132] Fisher et al., 2007.

like symptoms. Seven of the 10 had rashes, and one had an infection that had spread beyond his lungs and affected his skin. Over the next few months, the 10 ill crew members missed at least 1660 hours of work and two workers were on disability for at least five months."[133]

Thus, the "potential" existing "background" exposure of the general population to Cocci spores is not a guarantee that Project construction workers, who are in intimate contact with soil in a Valley Fever endemic area, and many of whom may be from elsewhere or may have never worked in an endemic area, would not experience an increase in Valley Fever cases, relative to the baseline. The DEIR/EIS's assertions as to background exposures in Monterey Count is merely the statement of the baseline conditions. In fact, construction workers are in direct contact with soil and will inhale greater than baseline amounts of Cocci spores if construction occurs in an endemic area. Cocci spores are a component of PM10/PM2.5. Thus, it is indisputable that construction of the Project will increase not only PM10/PM2.5 but also Cocci spores.

CURE-Fox-89 cont.

[133] CDPH June 2013, p. 1.

B. The DEIR/EIS Fails to Mitigate Significant Valley Fever Health Risks

The DEIR/EIS asserts that Mitigation Measure 4.10-1c, a conventional construction fugitive dust mitigation measure[134], would contain *Coccidioides immitis* spores to the maximum extent feasible, resulting in a less than significant impact.[135] It is well known that conventional dust control measures that are included in the mitigation measures for the Project are not effective at controlling Valley Fever[136] as they largely focus on visible dust or larger dust particles, the PM10 fraction, not the fine particles where the Valley Fever spores are found. The DEIR/EIS does not contain any mitigation whatsoever for the very fine fraction of particulate matter, PM2.5, as the air quality analysis concluded this impact was not significant, without considering the fact that it harbors Cocci spores. CURE-Fox-90

While dust exposure is one of the primary risk factors for contacting Cocci spores and dust-control measures are an important defense against infection, it is important to note that PM10 and visible dust are only indicators that Cocci spores may be airborne in a given area. Freshly generated dust clouds usually contain a larger proportion of the more visible coarse particles. However, these larger particles settle more rapidly and the remaining fine respirable particles may be difficult to see and are not controlled by conventional dust control measures. CURE-Fox-91

Spores of *Coccidioides ssp.* have slow settling rates in air due to their small size (2 to 5 micrometers), low terminal velocity, and possibly also due to their buoyancy, barrel shape and commonly attached empty hyphae cell fragments.[137] Thus spores, whose size is well below the limits of human vision, may be present in air that appears relatively clear and dust free. Such ambient, airborne spores with their low settling rates can remain aloft for long periods and be carried hundreds of kilometers from their point of origin. Thus, implementation of conventional dust control measures will not provide sufficient protection for both on-site workers and the general public. CURE-Fox-92

Further, infections by *Coccidioides ssp.* frequently have a seasonal pattern with infection rates that generally spike in the first few weeks of hot dry weather that follow extended milder rainy periods. In California, infection rates are CURE-Fox-93

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[134] DEIR/EIS, p. 4.10-25/26.

[135] DEIR/EIS, p. 4.10-28.

[136] *See, e.g.*, Cummings and others, 2010, p. 509; Schneider et al., 1997, p. 908 ("Primary prevention strategies (*e.g.*, dust-control measures) for coccidioidomycosis in endemic areas have limited effectiveness.").

[137] Frederick S. Fisher, Mark W. Bultman, and Demosthenes Pappagianis, Operational Guidelines (version 1.0) for Geological Fieldwork in Areas Endemic for Coccidioidomycosis (Valley Fever), U.S. Geological Survey Open-File Report 00-348, 2000; Available at: https://pubs.usgs.gov/of/2000/0348/pdf/of00-348.pdf.

generally higher during the hot summer months especially if weather patterns bring the usual winter rains between November and April.[138] The majority of cases of Valley Fever accordingly occur during the months of June through December, when 16 of the 24 months of construction would occur. Typically, the risk of catching Valley Fever begins to increase in June and continues an upward trend until it peaks during the months of August, September and October.[139] The majority of the construction will occur during these dry summer months.[140]

CURE-Fox-93 cont.

Drought periods can have an especially potent impact on Valley Fever if they follow periods of rain.[141] It is thought that during drought years the number of organisms competing with *Coccidioides ssp.* decreases and the fungus remains alive but dormant. When rain finally occurs, the arthroconidia germinate and multiply more than usual because of a decreased number of other competing organisms. When the soil dries out in the summer and fall, the spores can become airborne and potentially infectious.[142] The anticipated end of the current drought conditions in California coincides with the start of construction and may well have created ideal conditions for a uptick in Valley Fever cases.

CURE-Fox-94

C. Recommended Mitigation Measures to Reduce Risk of Valley Fever

In response to an outbreak of Valley Fever in construction workers in 2007 at a construction site for a solar facility within San Luis Obispo County, its Public Health Department in conjunction with the California Department of Public Health developed recommendations to limit exposure to Valley Fever based on scientific information from the published literature.[143] The recommended measures go far beyond the conventional dust control measures recommended in the DEIR/EIS to control PM10 emissions. They include the following measures that are not required in the DEIR/EIS to mitigate PM10 emissions from the Project:

CURE-Fox-95

[138] *Ibid.*

[139] Kern County Public Health Services Department, What Is Valley Fever, Prevention, Valley Fever Risk Factors; Available at: http://kerncountyvalleyfever.com/what-is-valley-fever/risk-factors/.

[140] DEIR/EIS, Appendix G1. Figure G1.1.2. MPWSP Estimated Construction Phasing.

[141] Gosia Wozniacka, Associated Press, Fever Hits Thousands in Parched West Farm Region, May 5, 2013, citing Prof. John Galgiani, Director of the Valley Fever Center for Excellence at the University of Arizona; Available at: http://www.huffingtonpost.com/huff-wires/20130505/us-valley-fever/.

[142] Theodore N. Kirkland and Joshua Fierer, Coccidioidomycosis: A Reemerging Infectious Disease, Emerging Infectious Diseases, Vol. 3, No. 2, July-September 1996; Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2626789/pdf/8903229.pdf.

[143] San Luis Obispo County Health Agency, Recommendations for Workers to Prevent Infection by Valley Fever in SLO County; Available at: http://www.slocounty.ca.gov/Assets/PH/Epidemiology/Cocci+Recomendations.pdf.

1. *Implement comprehensive Injury and Illness Prevention Program (required by Title 8, Section 3203) ensuring safeguards to prevent Valley Fever are included.*
2. *Work with a medical professional with expertise in cocci to develop a training program for all employees discussing the following issues: potential presence of C. immites in soils; the risks involved with inhaling spores; how to recognize common symptoms (which resemble common viral infections, and may include fatigue, cough, chest pain, fever, rash, headache, and body and joint ache); requesting prompt reporting of suspected symptoms to a supervisor and health care provider; discussing worker entitlement to receive prompt medical care if they suspect symptoms of work-related Valley Fever; and requesting the use of personal protection measures as outlined below.*
3. *Control exposure to dust:*
   - Consult with local Air Pollution Control District Compliance Assistance programs and with California Occupational Safety and Health Administration ("Cal/OSHA") compliance program regarding meeting the requirements of dust control plans and for specific methods of dust control.
   - Continuously wet the soil before and while digging or moving the earth. Landing zones for helicopters and areas where bulldozers, graders, or skid steers operate are examples where wetting the soil is necessary.
   - Wetting methods should use processes that do not raise dust or adversely affect the construction process.
   - Provide high-efficiency particulate ("HEP")-filtered, air-conditioned enclosed cabs on heavy equipment. Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment and keeping windows closed.
   - Provide communication methods, such as 2-way radios, for use in enclosed cabs.
   - When exposure to dust is unavoidable, use National Institute for Occupational Safety and Health ("NIOSH")-approved respirators rated as N95, N99, N100, P100, or HEPA. Respirators must be used within a Cal/OSHA compliant respiratory protection program that covers all respirator wearers and includes medical clearance to wear a respirator, fit testing, training, and procedures for cleaning and maintaining respirators.
   - Employees should be medically evaluated, fit-tested, and properly trained on the use of the respirators, and a full

CURE-Fox-95 cont.

respiratory protection program in accordance with the applicable Cal/OSHA Respiratory Protection Standard (8 CCR 5144) should be in place.[144]

- Prohibit eating and smoking at the worksite, and provide separate, clean eating areas with hand-washing facilities.
- Promptly secure graded areas using seeding, soil binders or paving and by laying building pads as soon after grading as possible.
- When digging a trench or fire line or performing other soil-disturbing tasks, position workers upwind when possible.
- Place overnight camps, especially sleeping quarters and dining halls, away from sources of dust such as roadways.
- Stop outdoor construction operations during unusually windy conditions or in dust storms.
- Minimize the amount of digging by hand. Instead, use heavy equipment with operator in an enclosed, air-conditioned, HEP-filtered cab.
- Consider limiting outdoor construction during the fall to essential jobs only, as the risk of cocci infection is higher during this season.

CURE-Fox-95 cont.

4. *Prevent transport of cocci outside endemic areas:*
   - Thoroughly clean equipment, vehicles, and other items before they are moved off-site to other work locations.
   - Provide workers with coveralls daily, lockers (or other system for keeping work and street clothing and shoes separate), daily changing and showering facilities.
   - Keep street clothes and work clothes separate by providing separate lockers or other storage areas.
   - Clothing should be changed after work every day, preferably at the work site.
   - Encourage workers to shower and wash their hair at the workplace or as soon as they get home if no on-site facilities are available.

[144] Short-term skin tests that produce results within 48 hours are now available. See Nick VinZant, New Skin Test for Valley Fever Produces Results within 48 Hours, April 15, 2015, Available at: http://www.abc15.com/news/region-west-valley/sun-city/new-skin-test-for-valley-fever-produces-results-within-48-hours.

- Train workers to recognize that cocci may be transported offsite on contaminated equipment, clothing, and shoes; alternatively, consider installing boot-washing.
- Train workers to recognize symptoms and ways to minimize exposure.
- Post warnings onsite and consider limiting access to visitors, especially those without adequate training and respiratory protection.

5. *Improve medical surveillance for employees*
   - Employees should have prompt access to medical care, including suspected work-related illnesses and injuries.
   - Work with a medical professional to develop a protocol to medically evaluate employees who have symptoms of Valley Fever.
   - Consider preferentially contracting with 1-2 clinics in the area and communicate with the health care providers in those clinics to ensure that providers are aware that Valley Fever has been reported in the area. This will increase the likelihood that ill workers will receive prompt, proper and consistent medical care.
   - Respirator clearance should include medical evaluation for all new employees, annual re-evaluation for changes in medical status, and annual training, and fit-testing.
   - Skin testing is not recommended for evaluation of Valley Fever.
   - If an employee is diagnosed with Valley Fever, a physician must determine if the employee should be taken off work, when they may return to work, and what type of work activities they may perform.

CURE-Fox-95 cont.

Two other studies have developed complementary recommendations to minimize the incidence of Valley Fever. The U.S. Geological Survey ("USGS") has developed recommendations to protect geological field workers in endemic areas.[145] An occupational study of Valley Fever in California workers also developed recommendations to protect those working and living in endemic areas.[146] These two sources identified the following measures, in addition to those identified by the San Luis Obispo County Public Health Department, to minimize the exposure to Valley Fever:

[145] Fisher et al. 2000.

[146] Schmelzer and Tabershaw, 1968, pp. 111 - 113.

- Evaluate soils to determine if each work location is within an endemic area.
- Implement a vigorous program of medical surveillance.
- Implement aggressive enforcement of respiratory use where exposures from manual digging are involved.
- Test all potential employees for previous infection to identify the immune population and assign immune workers to operations involving known heavy exposures.
- Hire resident labor whenever available, particularly for heavy dust exposure work.
- All workers in endemic areas should use dust masks to protect against inhalation of particles as small as 0.4 microns. Mustaches or beards may prevent a mask from making an airtight seal against the fact and thus should be discouraged.
- Establish a medical program, including skin tests on all new employees, retesting of susceptibles, prompt treatment of respiratory illness in susceptibles; periodic medical examination or interview to discover a history of low grade or subclinical infection, including repeated skin testing of susceptible.

CURE-Fox-95 cont.

In addition to these generic measures that apply to all construction projects that disturb soil, others are feasible that specifically address Project components. For example, construction will generate 25,110 cubic yards of excess spoils and construction debris. The majority of this earthmoving is from pipeline construction, contributing 96% of total excess debris[147] and thus is a potential major source of exposure to Cocci spores. Further, sensitive receptors are 100 to 250 feet away from many pipeline construction sites.[148] Most of the pipeline s will be installed using conventional open-trench technology, except where these methods are not feasible. Where not feasible, trenchless methods would be used.[149]

CURE-Fox-96

However, trenchless methods are feasible for most all pipelines. These methods are preferable as they do not generate as much fugitive dust. These include jack-and-bore, drill-and-burst, horizontal directional drilling, and/or microtunnelling.[150] These alternate methods should be used to minimize fugitive dust and the release of Cocci spores. The applicant should evaluate each Project component to determine whether modifications in construction methods can be

[147] DEIR/EIS, Table 3-5.

[148] DEIR/EIS, p. 4.10-7.

[149] DEIR/EIS, Section 3.3.4.2.

[150] DEIR/EIS, p. 3-52.

implemented to minimize the amount of soil that will be disturbed and released into the atmosphere. CURE-Fox-96 cont.

The DEIR/EIS's PM10 control measures do not include the above listed measures specifically developed by regulatory agencies to control Valley Fever. Some similar measures are required in the DEIR/EIS to mitigate PM10 impacts, but they do not go far enough to control Valley Fever. Some examples follow. CURE-Fox-97

Mitigation Measures 4.10-1c (#1, #7) require that all active construction areas and stockpiles be watered at least twice daily. Mitigation Measure 4.10-1c (#3) requires the application of water three times daily on unpaved access roads, parking area, and staging areas.[151] The CDPH, on the other hand, recommends for Valley Fever control, that "[w]hen soil will be disturbed by heavy equipment or vehicles, wet the soil before disturbing it and continuously wet it while digging to keep dust levels down."[152] The watering trucks themselves used in twice daily watering generate fugitive dust, which is not addressed by the DEIR/EIS's measure, but is addressed by CDPH by requiring the use of wetting methods that do not raise dust. CURE-Fox-98

Mitigation Measure 4.10-1a (#4, #5) requires daily sweeping, which generates fugitive dust that may contain spores.[153] CURE-Fox-99

Mitigation Measure 4.10-1a (#6) only requires hydroseeding or use of soil stabilizers in inactive construction areas (defined as previously graded areas that are inactive for 10 days or more) while CDPH's Valley Fever controls require "prompt" securing of graded areas.[154] CURE-Fox-100

Mitigation Measure 4.10-1a (#11) only requires wheel washers on trucks[155] while CDPH Valley Fever control requires "[t]horoughly clean equipment, vehicles, and other items before they are moved off-site to other work locations."[156] CURE-Fox-101

In addition, major onsite and offsite soil-disturbing construction activities should be timed to occur outside of any prolonged dry period, when Cocci spores are most abundant. After soil-disturbing activities conclude, all disturbed soils should be sufficiently stabilized to prevent air-borne dispersal of Cocci spores. CURE-Fox-102

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[151] DEIR/EIS, p. 4.10-25.

[152] CDPH June 2013, p. 4.

[153] DEIR/EIS, p. 4.10-25.

[154] DEIR/EIS, p. 4.10-25.

[155] DEIR/EIS, p. 4.10-25.

[156] DEIR/EIS, p. 4.10-25.

In sum, the PM10 mitigation measures in the DEIR/EIS are not adequate to control Valley Fever or even PM10, as explained above. Projects that have implemented conventional PM10 dust control measures, such as those proposed here, have experienced several incidences of severe dust storms and reported cases of Valley Fever.

For example, construction of First Solar's Antelope Valley Solar Ranch One ("AVSR1") was officially halted in April 2013 due to the company's failure to bring the facility into compliance with ambient air quality standards, despite dust control measures similar to those proposed here. A dust storm in Antelope Valley on April 8, 2013 was so severe that it resulted in multiple car pileups in the sparsely populated region, as well as closure of the Antelope Valley Freeway. The company was issued four violations by the Antelope Valley Air Quality Management District. Dust from the project led to complaints of respiratory distress by local residents and a concern of Valley Fever. [157]

CURE-Fox-103

At two photovoltaic solar energy projects in San Luis Obispo County, Topaz Solar Farm and California Valley Solar Ranch, 28 construction workers contracted Valley Fever. One man was digging into the ground and inhaled dust and subsequently became ill. A blood test confirmed Valley Fever.[158]

CURE-Fox-104

All of the above health-protective measures recommended by the San Luis Obispo County Public Health Department and the California Department of Public Health are feasible for the Project and must be required in an enhanced dust control plan to reduce the risk to construction workers, on-site employees and the public of contacting Valley Fever. Many of these measures have been required by the County of Monterey in other EIRs.[159] Even if all of the above measures are adopted, a recirculated DEIR/EIS is required to analyze whether these measures are adequate to reduce this significant impact to a level below significance.

CURE-Fox-105

[157] Herman K. Trabish, Green Tech Media, Construction Halted at First Solar's 230 MW Antelope Valley Site, April 22, 2013, Available at: http://www.greentechmedia.com/articles/read/Construction-Halted-At-First-Solars-230-MW-Antelope-Valley-Site.

[158] Julie Cart, Los Angeles Times, 28 Solar Workers Sickened by Valley Fever in San Luis Obispo County May 01, 2013; available at http://articles.latimes.com/2013/may/01/local/la-me-ln-valley-fever-solar-sites-20130501.

[159] County of Monterey, California Flats Solar Project Final Environmental Impact Report, December 2014; Available at: http://www.co.monterey.ca.us/Planning/major/California%20Flats%20Solar/FEIR/FEIR_PLN120294_122314.pdf.

IV. GREENHOUSE GAS (GHG) EMISSIONS

The DEIR/EIS concluded that greenhouse gas (GHG) emissions from construction and operation of the Project are significant.[160] Thus, it imposed Mitigation Measure 4.11-1 for Project GHG emissions and Mitigation Measure 4.18-1 for construction GHG emissions.[161] The DEIR/EIS concludes that GHG emissions remain significant and unmitigated after compliance with these measures as "it is not possible to substantiate numerically that the mitigated GHG emissions would be reduced to a less-than- significant level."[162] CURE-Fox-106

The DEIR/EIS failed to substantiate that its GHG emissions cannot be reduced to an insignificant level and failed to include all feasible mitigation measures.

A. The DEIR/EIS Failed to Adequately Explain Why the Project's GHG Impacts Are Significant and Unavoidable

The DEIR/EIS jumps to the conclusion that GHG impacts are significant and unavoidable because "it is not possible to substantiate numerically that the mitigated GHG emissions would be reduced to a less-than- significant level."[163] The only reason the CPUC cannot substantiate mitigated emissions numerically is because it has improperly deferred identification of mitigation measures to a future plan, as discussed below.[164] Other applicants and lead agencies have succeeded in quantifying GHG emission reductions.[165] CURE-Fox-107

The DEIR/EIS must explain "why" the impact is significant and unavoidable. See *Keep Berkeley Jets Over the Bay Com. v. Board of Port Comrs.* (2001) which concluded: "simply labeling the impact "significant" without accompanying analysis" violates "the environmental assessment requirement of CEQA." Before the DEIR/EIS can make the "significant and unavoidable" finding, it must specifically identify the GHG mitigation measures and estimate the reduction in GHG achieved CURE-Fox-108

[160] DEIR/EIS, p. 4.11-18 and Table 4.11-5.

[161] DEIR/EIS, p. 4.11-18.

[162] DEIR/EIS, p. 4.11-19.

[163] DEIR/EIS, p. 4.11-19.

[164] DEIR/EIS, p. 4.11-19, Mitigation Measure 4.11-1

[165] See, for example, Chevron Refinery Modernization Project EIR, March 2014, Section 4.8, Available at: http://chevronmodernization.com/wp-content/uploads/2014/03/4.8_Greenhouse-Gases.pdf and resulting mitigation program, Final Environmental Impact Report, Chapter 5. Mitigation Measure Monitoring and Reporting Program, Available at: https://s3.amazonaws.com/chevron/Final+EIR/5_MMRP.pdf.

by each. Further, it must explain how the Project is or is not consistent with the State's energy and climate objectives.

CURE-Fox-108 cont.

B. The Proposed GHG Mitigation Measures Are Inadequate

The DEIR/EIS concluded that greenhouse gas (GHG) emissions from construction and operation of the Project (8,370 MT/yr)[166] are significant. Thus, it imposed Mitigation Measure 4.11-1 for Project GHG emissions and Mitigation Measure 4.18-1 for construction GHG emissions.[167] These mitigation measures are fundamentally flawed as they are unenforceable, ambiguous, and do not include all feasible mitigation that would allow impacts to reduced to a less than significant level.

CURE-Fox-109

1. Mitigation Measure 4.11-1: GHG Emission Reductions

This measure requires CalAm to do two things. First, it must prepare a "GHG Emissions Reduction Plan" and submit it to the CPUC for approval prior to start of construction. The Plan "shall include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies…" Second, CalAm "shall make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy…"[168] This is not adequate mitigation under CEQA.

First, a "good faith effort" to use renewable energy to meet only 20% of the Project's operational energy demand is not adequate CEQA mitigation. The DEIR/EIS concluded the increase in GHG emissions was a significant and unavoidable impact, which requires all feasible mitigation under CEQA. The use of 100% renewable energy to meet the Project's demand of 51,698 MWh/yr[169] is feasible. The CPUC has procedures that would allow CalAm to pay to allow PG&E or other providers to build renewable generation to meet 100%of the Project's operational electricity demand as well as the increase in GHG emissions due to construction. The new renewable facilities would be dedicated to the Project, and any excess electricity could be sold, offsetting costs.

CURE-Fox-110

The GHG-free electricity generation required to offset the GHG emissions associated with the Project's electricity use and construction emissions would not have to be occur simultaneously with the emissions it would displace, since GHG emissions are a multi-year problem. Rather, the Applicant could procure

CURE-Fox-111

[166] DEIR/EIS, Table 4.11-5.

[167] DEIR/EIS, pp. 4.11-19/20.

[168] DEIR/EIS, p. 4.11-20.

[169] DEIR/EIS, p. 4.11-16.

incremental renewable generation sufficient to offset the annual GHG emissions that will result from its construction and operation, without regard to the intra-year timing of when that incremental generation would operate. The important point is that, in order to count as mitigation for the Project, the mitigation generation would have to be incremental generation that did not already exist and would not have been built but for its procurement by the Project.

The CPUC has previously addressed how to ensure that renewable generation that is dedicated to particular customers is indeed incremental. See D.15-01-051 creating a Green Tariff Shared Renewables (GTSR) program[170], a program which might be one way for the Project to procure the 100% renewables proposed here as mitigation (D.15-01-051 authorized up to 207 MW of unreserved new renewable capacity for PG&E customers (D.15-01-051, Table 1); 51,698 MWh/year corresponds to the output of approximately 25 MW of solar PV capacity).

CURE-Fox-111 cont.

Second, preparation of the Emissions Reduction Plan is deferred until after Project approval, pre-empting public review. The Plan must be prepared as part of the DEIR/EIS and circulated for public review. Otherwise, the public does not have an opportunity to evaluate the effectiveness of the GHG reduction measures.

CURE-Fox-112

Third, under CEQA, an EIR must not only discuss measures to avoid or minimize adverse impacts, it also must ensure that mitigation measures are fully enforceable through permit conditions, agreements, or other legally binding instruments.[171] Mitigation measures that are vague (e.g., "good faith effort") or so undefined [a future "plan"] that it is impossible to evaluate their effectiveness are inadequate.[172] A CEQA lead agency cannot make the required CEQA findings unless the record shows that all uncertainties regarding mitigation of impacts have been resolved. Further, an agency may not rely on mitigation measures of uncertain effectiveness or feasibility.[173] Thus, for example, "good faith efforts" to obtain "clean" renewable energy for project operation is not adequate. An enforceable condition requires that the CPUC obtain a commitment to use renewable energy, which is a feasible measure. The required findings cannot be made based on a Plan that will be prepared in the future, after the EIR has been certified, and "good faith efforts" to use "clean" renewable energy.

CURE-Fox-113

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[170] CPUC, Green Tariff/Shared Renewables Program (GTSR); Available at: http://www.cpuc.ca.gov/General.aspx?id=12181.

[171] CEQA Guidelines §15126.4, subd. (a)(2).

[172] See *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 79.

[173] *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28 ("a groundwater purchase agreement was inadequate mitigation because there was no record evidence that replacement water was available).

Fourth, there is no assurance that all feasible measures will be identified unless the Plan is developed by a "qualified professional" as required in Mitigation Measure 4.18-1. The analyses and judgements required to draft this Plan fall under California's engineering licensing laws[174], specifically for Mechanical Engineers. This measure should be modified to require that a registered professional engineer (mechanical) in California confirm by stamp and signature that the Plan includes all feasible measures. CURE-Fox-114

Fifth, the Plan does not require any post-Project construction confirmation and on-going verification that the approved Plan has in fact has been implemented and is being complied with. Monitoring is a key component of successful mitigation under CEQA. This measure should therefore be modified to require that a registered professional engineer (mechanical) in California confirm by stamp and signature that the Plan has been implemented. Further, annual tracking/reporting on implementation of all measures should be required via a compliance checklist or similar documentation. CURE-Fox-115

Sixth, the Plan focuses only on Project operational facilities, i.e., "operational components" including the desalination plant, pipelines, and pumping system. It is silent as to construction GHG emissions. Further, there are other opportunities for CalAm to reduce GHG emissions. CURE-Fox-116

CalAm provides water and wastewater services to over 600,000 people at multiple locations in California. It operates other water facilities in the Monterey area, including facilities to secure water from the Carmel River and Seaside Groundwater Basin.[175] CalAm also operates water and wastewater facilities elsewhere including in Sacramento, San Diego, Larkfield, Los Angeles, and Ventura[176] and is actively acquiring additional water production and service facilities elsewhere in California[177]. Thus, CalAm has opportunities throughout its system to reduce GHG emissions, not only at the Project facilities. These opportunities include: CURE-Fox-117

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[174] Business & Professions Code §§ 6700 – 6799. See especially, §6731.6 (Mechanical Engineering Defined) and 6735.4 (Signing and Sealing of Mechanical Engineering Documents).

[175] DEIR/EIS, Sections 2.4.1 and 2.4.2.

[176] CalAm News, See: http://www.amwater.com/caaw/About-Us/news.html.

[177] See, e.g., California American Water Enters into Contract to Purchase Adams Ranch Mutual Water Company, June 16, 2015; Available at: http://files.shareholder.com/downloads/AMERPR/337273308x0x835654/79470B9D-7EE8-488D-9392-66C25DA01B25/Adams_Ranch_Acquisition_PR_FINAL_061615.pdf and California Public Utilities Commission Approves California American Water Acquisition of Ox Bow Marina Mutual Water Company, June 15, 2015; Available at: http://files.shareholder.com/downloads/AMERPR/337273308x0x835474/94F6DA33-7B68-4E41-87E6-49F5499C9777/AL_1066_-_Ox_Bow_PR_FINAL_061115_CS.pdf.

- **Energy Audits and Retrofits at Existing CalAm Buildings:** Mitigation could include offsetting the Project's GHG emissions through a comprehensive audit of existing buildings owned by CalAm throughout California and processes to identify and implement energy saving measures, including improving the efficiency of existing equipment so that it uses less electricity or burns less fuel. As an example, in September 2007, the California Attorney General's office came to an agreement with ConocoPhillips, in which ConocoPhillips agreed to mitigate greenhouse gas emissions for a planned hydrogen facility by, among other measures, undertaking an energy efficiency audit and carbon emissions audit for all of its California facilities.[178] CURE-Fox-118

- **Community Energy Efficiency Building Retrofits:** Mitigation could include funding programs that provide for energy efficiency retrofits of existing buildings and housings in the local Project area, with a particular focus on rental and low-income housing. As one example, the Chula Vista Energy Upgrade Project included $210,000 worth of mitigation funds "for energy efficiency and related improvements to local homes and business, … intended to directly benefit the residents potentially most affected by the proposed project."[179] These upgrades could include installation of a heat-reflecting "cool roof" and heat-reducing window awnings, high-efficiency air conditioning systems with programmable thermostats, and energy-saving fluorescent lighting fixtures that feature daylight and occupancy sensors. CURE-Fox-119

- **Funding of Carbon Offset Programs:** Mitigation could include providing funds to the MBUAPCD, Audubon Society, California Wildlife ReLeaf, or other organizations to fund off-site carbon reduction or sequestration projects. AB 32 allows CARB to give credit for voluntary GHG reductions that are undertaken before the regulations require specific GHG reductions are adopted.[180] For example, the 2007 ConocoPhillips settlement included an agreement to mitigate and offset greenhouse gas emissions by providing: (1) $7 million to the BAAQMD to create a fund for carbon offsets, (2) $200,000 to the Audubon Society for restoration of wetlands in the San CURE-Fox-120

[178] ConocoPhillips and California Attorney General Settlement Agreement, September 10, 2007); Available at: http://ag.ca.gov/globalwarming/pdf/ConocoPhillips_Agreement.pdf.

[179] California Energy Commission, Docket No. 07-AFC-4, Chula Vista Energy Upgrade Project, Final Staff Assessment, Addendum, p. 3, September 30, 2008; Available at: http://www.energy.ca.gov/sitingcases/chulavista/documents/2008-09-29_FINAL_STAFF_ASSESSMENT_ADENDUM_TN-48266.PDF.

[180] Health & Safety Code, §38562, subd. (b)(2).

Pablo Bay for purposes of carbon sequestration, and (3) $2.8 million to California Wildlife ReLeaf for reforestation projects, estimated to sequester 1.5 million metric tons of CO_2 over the lifetime of the forest. As another example, Chevron agreed to a $30 million GHG reduction plan to offset the increase in GHG from its modernization project which included working with others to develop transportation and transit programs and a roof-top solar and energy retrofit program.[181] These programs also could include electric vehicle (EV) rebate; installation of EV charging stations; reserved parking for EV vehicles; clunker scraping programs with incentives for purchasing or leaving new or used EVs; and financing options for EVs for people with limited credit, among many other.

CURE-Fox-120 cont.

- **Water Conservation**: CalAm's Monterey system is among the best in California at conserving water. Its daily per-capita water use in the SWRCB's most recent statewide survey for October 2014 to April 2015 is 55.8 gallons per person, while its facilities in San Diego reported 65 gallons per person; in Sacramento 80.2 gallons per person; and in Los Angeles, 126.2 gallons per person.[182] The Monterey Division has implemented an aggressive water conservation program under a settlement agreement.[183] This program includes residential audits, leak detection, a house call pilot program, residential and commercial plumbing retrofits, large landscape audits and water budgets, a landscape grant program, and rain sensor and soil moisture sensor installation programs. CalAm should expand these measures to its other systems which use substantially more water. This would significantly reduce GHG emissions by reducing water demand, which requires significant amounts of electricity to supply. Reducing electrical demand throughout CalAm's system could significantly offset GHG emissions from the Project. CalAm should also agree to make these measures in its Monterey District permanent.

CURE-Fox-121

[181] Chevron Richmond Refinery Modernization, Environmental and Community Investment Agreement, October 7, 2014; Available at: http://www.ci.richmond.ca.us/DocumentCenter/View/29755 and Chevron Refinery Modernization Project Environmental and Community Investment Agreement between City of Richmond, CA and Chevron Products Company, pp. 12-15, Available at: http://www.ci.richmond.ca.us/DocumentCenter/View/30667.

[182] Excel Spreadsheet: October 2014 – April 2015 Urban Water Supplier Report, Available at: http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.

[183] 2014 Monterey Peninsula Water Conservation Program Annual Report, Available at: http://www.montereywaterinfo.org/documents/2014%20Conservation%20Report_FINAL%20SUBMITTED.pdf.

- **On-Site Solar:** A UC Berkeley study found that in order to meet the State of California's existing goal of 80% GHG reduction by 2050,[184] California must: (1) completely phase out fossil-fueled *electricity* and (2) electrify *transportation*. Thus, to comply with Executive Order S-3-05, the Project could install and operate a solar plant and battery storage facility on City property to supply 100% of its electricity needs.

CURE-Fox-122

2. Mitigation Measure 4.18-1: Construction Equipment Efficiency Plan

This measure requires CalAm to contract a "qualified professional" to prepare a "Construction Equipment Efficiency Plan" to identify specific measures that CalAm will implement as part of Project construction "to increase the efficient use of construction equipment to the maximum extent feasible."[185] This measure has the same deficiencies as Mitigation Measure 4.11-1, discussed above.

CURE-Fox-123

First, preparation of the Efficiency Plan is deferred until after the Project is approved, pre-empting public review. The Plan must be prepared as part of the DEIR/EIS and circulated for public review.

Second, the measure does not clarify what constitutes a "qualified professional". This measure should be modified to require that the qualified professional be a registered professional engineer (civil[186]) in California and the Efficiency Plan should be confirmed by stamp and signature that the Plan includes all feasible construction equipment efficiency measures.

CURE-Fox-124

Third, the Efficiency Plan[187] does not include all feasible mitigation measures. Many other such measures should have been identified in the DEIR/EIS as all feasible mitigation is required when the impact is not fully mitigated. These include the NOx and ROG mitigation measures identified above, plus measures recently required as GHG construction mitigation in the Chevron Modernization FEIR[188] (annotated here by "Chevron"):

CURE-Fox-125

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[184] James H. Williams et al., The Technology Path to Deep Greenhouse Gas Emissions Cuts, Science, v. 335, pp. 53-59, January 6, 2012; Abstract available at http://www.sciencemag.org/content/335/6064/53.

[185] DEIR/EIS, p. 4.18-15.

[186] Business & Professions Code §§ 6700 – 6799. See especially, §6731 (Civil Engineering Defined) and 6735 (Preparation, Signing, and Sealing of Civil Engineering Documents).

[187] DEIR/EIS, p. 4.18-15.

[188] Chevron Refinery Modernization Project EIR, March 2014, Chapter 4.8, Greenhouse Gases; Available at: http://chevronmodernization.com/wp-content/uploads/2014/03/4.8_Greenhouse-Gases.pdf and Chapter 5, Mitigation Measure Monitoring and Reporting Program; Available at: https://s3.amazonaws.com/chevron/Final+EIR/5_MMRP.pdf.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator (Chevron). CURE-Fox-126
- The idling time of diesel-powered construction equipment shall be limited to 2 minutes rather than the 5 minutes in Mitigation Measure 4.10-1c, as required in the Chevron FEIR. Clear signage shall be provided for construction workers at all access points as required in the Chevron FEIR (Chevron). CURE-Fox-127
- All contractors shall be required to use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines (Chevron). CURE-Fox-128
- Reuse and recycle construction and demolition waste, including, but not limited to soil, vegetation, concrete, lumber, metal, and cardboard (Chevron). CURE-Fox-129
- Using alternative fueled, e.g., biodiesel, construction vehicles/equipment on at least 15% of the fleet (Chevron). CURE-Fox-130
- Consolidate truck deliveries. CURE-Fox-131
- Require a certified on-site inspector (licensed general contractor or similar) to confirm that the construction mitigation program is properly implemented. CURE-Fox-132
- Reduction in worker trips using carpooling or vans to transport construction workers from regional hubs. CURE-Fox-133

Fourth, no method to verify compliance is identified. To facilitate confirmation of compliance with the construction mitigation measures, and to verify the DEIR/EIS's estimated construction emissions, the FEIR should include a comprehensive inventory of all off-road equipment that will be used to construct the Project. The inventory should include the horsepower rating, engine production year, hours of use, and amount and type of fuel used. At least 48 hours prior to the use of heavy-duty off-road equipment at a new construction site, the project representative shall provide the inspector and MBUAPCD with the construction timeline, including start date and name and phone number of project manager and on-site foreman. CURE-Fox-134

Fifth, the Efficiency Plan does not require any monitoring during construction to assure that the measures are implemented. The Efficiency Plan should require an on-site construction mitigation manager to oversee and enforce implementation of all mitigation measures and to proactively ensure that construction activities do not result in noise, odor, dust, or other complaints. The monitor should be a licensed and qualified professional (QEP, CIH, PE) who is CURE-Fox-135

continuously present at the construction site(s) to confirm that the Efficiency Plan is implemented. Further, annual tracking/reporting on implementation of all measures should be required via a compliance checklist or similar documentation.

CURE-Fox-135 cont.

Therefore, the Efficiency Plan fails to adequately mitigate the air quality impacts resulting from Project construction. The DEIR/EIS must be revised in accordance with these comments and recirculated before the Project can be lawfully approved under CEQA.

CURE-Fox-136

V. VIBRATION IMPACTS ARE SIGNIFICANT AND UNMITIGATED

Construction activities that use impact tools (e.g., pile drivers, drill rigs, bulldozers, jackhammers, vibratory rollers) can produce significant groundborne vibration that can damage nearby buildings and annoy sensitive receptors.[189] The Project will employ impact equipment within close proximity to residential, commercial, and historic receptors that can be annoyed and/or damaged by vibration. The DEIR/EIS evaluated vibration impacts using a methodology from FTA 2006[190] and summarized the results in DEIR/EIS Table 4.12-10 as a fait accompli.[191] However, the DEIR/EIS fails to present supporting calculations or cite to any specific pages from FTA 2006 or disclose input values used in the calculations. I was unable to reproduce the DEIR/EIS's vibration analysis. Thus, the DEIR/EIS fails as an informational document under CEQA as to vibration.

CURE-Fox-137

This unsupported analysis concluded that vibration from pipeline installation using both compactors and pile drivers would result in significant building damage and annoyance from construction of the Castroville Pipeline and Source Water Pipeline, the new Desalinated Water Pipeline, and the new Transmission Main where trenchless construction methods are required.[192] The DEIR/EIS then imposes Mitigation Measures 4.15-1a and 4.12-3[193] to address construction-related vibration during pipeline installation and concludes that with mitigation, vibration impacts no longer would be significant.[194] These measures would restrict pile

CURE-Fox-138

[189] DEIR/EIS, p. 4.12-42, pdf 1129.

[190] U.S. Department of Transportation, Transit Noise and Vibration Impact Assessment, Report FTA-VA-90-1003-06, May 2006; Available at: https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/fta-noise-and-vibration-impact-assessment.

[191] DEIR/EIS, Table 4.12-10, p. 4.12-43, pdf 1131.

[192] DEIR/EIS, Table 4.12-10, p. 4.12-43, pdf 1131 and p. 4.12-47, pdf 1136.

[193] DEIR/EIS, p. 4.12-48.

[194] DEIR/EIS, p. 4.12-62, pdf 1150.

driving to daytime hours, require vibration monitoring for the first 700 feet of pipeline construction and restrict the location of sheet piles, if necessary.[195]

However, the DEIR/EIS does not include any analysis to demonstrate that vibration impacts would be less than significant with the proposed mitigation. Further, the proposed mitigation is not adequate to reduce significant vibration impacts to a less than significant level, as asserted in the DEIR/EIS.[196] The DEIR/EIS proposes two mitigation measures to reduce significant vibration impacts to less than significant. These are both fundamentally flawed and not adequate to reduce vibration impacts to a less than significant level.

CURE-Fox-138 cont.

A. Avoidance Mitigation Measures

The DEIR/EIS proposes Mitigation Measure 4.15-1a: "Avoidance and Vibration Monitoring for Pipeline Installation in the Lapis Sand Mining Plant Historic District."[197] It then refers the reader to Impact 4.15-1 in the Cultural and Paleontological Resources section for a description of this mitigation measure. However, this section does not propose any mitigation for Impact 4.15-1 (cause a substantial adverse change in significance of a historical resource) and thus proposes no mitigation.[198] Therefore, the DEIR/EIS contains no description of Mitigation Measure 4.15-1a and thus no explanation of what is encompassed in "avoidance and vibration monitoring for pipeline installation in the Lapis Sand Mining Plant Historic District". In fact, this measure asserts, wrongly, that there are no historic resources within the direct or indirect APE of all project components. See Comment VI.

CURE-Fox-139

B. Vibration Reduction Mitigation Measures

The DEIR/EIS next proposes a series of vibration reduction measures in Mitigation Measure 4.12-3.[199] These have many of the problems previously discussed elsewhere for other impacts (Comment I.A.2) because they are not practically enforceable. Further, the City of Monterey's files include a "Vibration Control Plan for Monterey Pipeline Project,"[200] which identifies much more

CURE-Fox-140

[195] DEIR/EIS, p. 4.12-45,

[196] DEIR/EIS, 4.12-48.

[197] DEIR/EIS, p. 4.12-48.

[198] DEIR/EIS, p. 4.15-45.

[199] DEIR/EIS, pp. 4.12-48/49.

[200] Response Dynamics, Vibration Control Plan for Monterey Pipeline Project, As Per Technical Specifications, Division 1: General Requirements, 01062: Environmental Requirements, November 14, 2016 (Vibration Control Plan) (Exhibit 1).

aggressive mitigation for vibration impacts than identified in the DEIR/EIS. These include: CURE-Fox-140 cont.

- Use construction practices that do not generate vibration levels at the closest sensitive land use above 0.1 in/se PPV (continuous of frequent intermittent level CURE-Fox-141
- Avoid use of impact sheet piles unless needed in situations in which the soil cannot be stabilized by standard methods, such as by use of manual shoring jacks; CURE-Fox-142
- Sheet pile installation will be minimized and if needed, shall be conducted during daytime hours and access pits shall be located greater than 45 ft from standard structures and 80 feet from any listed historic resource CURE-Fox-143
- Wet-saw cutting shall be used before excavations, to minimize the need for jackhammer use CURE-Fox-144
- Whenever possible, the compaction requirement will be met by using a non-vibratory excavator-mounted compaction wheel, and a small smooth drum roller will be used for final compaction of asphalt base and asphalt concrete. If needed to meet compaction requirements, smaller vibratory rollers will be used to minimize vibration levels during repaving activities where needed to meet vibration standards CURE-Fox-145
- Contractor will provide no less than 30 days notification prior to beginning improvements at all listed historic resources. CURE-Fox-146

In addition, the City's vibration monitoring plan includes the following requirements omitted from the DEIR/EIS:

- Monitor vibration at adjacent historic resources during compaction efforts in close vicinity of any listed historic resource. If measured vibration exceeds the threshold for historic structures, construction will be stopped and alternate methods of compaction used. CURE-Fox-147
- If impact sheet pile installation is needed within 80 feet of any historical resource or within 80 feet of a historical district, vibration levels will be monitored to insure that the 0.12 in/sec PPV damage threshold is not exceeded. If vibration levels exceed the applicable threshold, alternate construction methods, such as vibratory pile drivers, will be used. CURE-Fox-148
- The vibration monitoring will be conducted using calibrated, industry standard, Instantel Series portable seismograph units with redundant CURE-Fox-149

internal batteries and the measures will be achieved for the project duration.

CURE-Fox-149 cont.

The City's Vibration Control Plan should replace the weak mitigation measures in the DEIR/EIS and the Plan itself should be included in full in an appendix to the DEIR/EIS.

CURE-Fox-150

VI. HISTORIC RESOURCES

The DEIR/EIS asserts in Impact 4.15-1 that construction will not cause an adverse impact to historical resources. This potential impact was narrowly evaluated only for historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register that are within the direct or indirect Area of Potential Impact of all project components.[201] However, CEQA Section 15064.5 defines "historical resources" much more broadly to include:

> (1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4850 et seq.).
>
> (2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
>
> (3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code, § 5024.1, Title 14 CCR, Section 4852) including the following:

CURE-Fox-151

[201] DEIR/EIS, p. 4.15-45.

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

CURE-Fox-151 cont.

The City of Monterey's Vibration Control Plan includes a list of historic architectural resources within the direct and indirect Area of Potential Impact (APE) of the Project. The list includes 24 historic structures that are close enough to be damaged from construction equipment induced vibration, based on the DEIR/EIS's analysis.[202] Thus, the Project would result in a significant adverse impact to historical resources. This is a new impact that was not disclosed or mitigated in the DEIR/EIS.

[202] DEIR/EIS, Table 4.15-3, p. 4.15-43 and Figure 4.15-2.

February 24, 2017

Linda Sobczynski
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080

Subject: Comments on the CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement

Dear Ms. Sobczynski,

This letter contains my comments on the Draft Environmental Impact Report / Environmental Impact Statement (DEIR/S) for the Monterey Peninsula Water Supply Project (Project or proposed Project).

Professional Background

I am a conservation biologist and environmental consultant with 25 years of professional experience in wildlife ecology and natural resource management, and since 1994 have maintained U.S. Fish and Wildlife (USFWS) Recovery permits for listed species under the federal Endangered Species Act (ESA). In addition to these I hold several California state and federal certifications for surveys and monitoring of protected and special status species. I have extensive experience monitoring and studying many species across several taxa, including reptiles and amphibians, passerines and raptors, and marine and terrestrial mammals. I have served as a biological resources expert on over a hundred projects involving water projects, urban and rural residential developments, and industrial scale energy projects; on private, public, and military lands; in California, the southwest, and Latin America.

The scope of work I have conducted as an independent environmental contractor, supervisor, and full time employee has included assisting clients to evaluate and achieve environmental compliance, restoration, mitigation, and research as related to biological resources; as well as submitting written reports and comments for such work. This work often included analyzing and reviewing actions pursuant to the California Environmental Quality Act CEQA and the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Clean Water Act, the Migratory Bird Treaty Act (MBTA), and other regulations, along with surveying for, and preparing Biological Technical Reports and Assessments. I have been

contracted as an environmental consultant and biologist by the USFWS, the USDA Forest Service, Ultrasystems, ICF, Helix Environmental, URS, AECOM, AMEC, GeomorphIS, DUDEK, ESA, Brian Smith and Associates, Tetra Tech, Bridgenet Bioacoustics, among others. I am also a core member of the National Sierra Club's Wildlife and Endangered Species Advisory Committee and Marine Advisory Committee.

My conservation and natural history research on endangered vertebrate species in Latin America has received various awards, including the National Geographic Research and Exploration Award and the National Commission for Scientific and Technological Research Award. My research has been featured on National Geographic Television and Discovery Channel documentaries, and I have served as an on- and off-camera technical consultant for wildlife documentaries filmed by National Geographic Television, Discovery Channel, BBC, and Animal Planet.

I have a Master's degree in Ecology and my professional experience includes college instruction at the college level since 1991. I was an adjunct instructor in Biology and Zoology at Palomar Community College and San Diego State University between 1991 and 1995, where I authored a laboratory text for Biology majors. In 1999-2000 I taught semester-long field courses in Tropical Ecology in Ecuador and the Galapagos for Boston University. In 2008 I was a Visiting Full Time Professor in Environmental Science and Botany at Imperial Valley College (IVC), and since 2012 have been teaching Environmental Science at IVC as an Adjunct Professor. At present I am completing a MS degree program in Environmental Studies from Green Mountain College, focusing on developing a Program in Environmental Science field study.

I have gained particular knowledge of the biological resource issues associated with the Project through my work on numerous other projects in California, including several years of surveys on coastal projects for pre-, ongoing, and post-construction activities. My comments are based upon first-hand observations, review of the environmental documents prepared for the Project, review of scientific literature pertaining to biological resources known to occur in and near the Project area, consultation with other biological resource experts, and the knowledge and experience I have acquired throughout my 25 years of working in the field of natural resources research and management.

Finally, pursuant the species discussions below, it is important to note that I have extensive experience conducting focused and protocol-level surveys for sensitive wildlife in various marine and terrestrial California ecosystems, including species of cetaceans, pinnipeds, eagles and other raptors (i.e. burrowing owls, Swainson's hawks), lizards, butterflies, frogs, plovers and terns, many nesting bird species protected under the Migratory Bird Treaty Act., and rare plants.

I. PROJECT SCOPE

According to the DEIR/S the California-American Water Company's (CalAm or Applicant) proposed Project area extends about 18 miles from the from the town of Castroville in the north to the City of Carmel in the south (DEIR Figure ES-1)[1], from the northern site of the proposed desalination plant to the western end of the associated proposed pipeline, and east approximately eight miles to the community of Hidden Hills. In addition to the construction of the desalination plant located on the Salinas River in unincorporated Monterey County northeast of the City of Marina, with related facilities that include pretreatment, reverse osmosis, and post-treatment systems; backwash supply and filtered water equalization tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities[2]. The Project's vast scope also includes development of ten subsurface slant wells in the northern coastal area of the City of Marina and extending offshore into the submerged lands of the Monterey Bay National Marine Sanctuary (MBNMS), approximately 21 miles of pipelines with associated pump stations and water storage tanks. The project also includes improvements to the existing Seaside Groundwater Basin (SGB) aquifer storage and recovery system facilities (ASR); including two new additional injection/extraction wells and various related pipelines.

II. THE DEIR/S PROJECT FAILS TO ACKNOWLEDGE THE HIGH DEGREE OF IMPORTANCE OF THE PROJECT AREA TO REGIONAL CONSERVATION OF BIODIVERSITY

The area proposed for the Project is incredibly rich in biological terms, both in marine and terrestrial flora and fauna. The DEIR/S does mention how the MBNMS' biological marine communities host one of the highest levels of marine biodiversity in the world, including 27 federally listed threatened and endangered species. The report does not, emphasize the overall biological importance of the terrestrial habitats and species included in the Project footprint and buffer zone. Not only does Monterey County have some of the most diverse flora in California, the area has been identified as an important conservation "hot spot" due in part to its high endemism of species, and it has been described as one of the most essential coastal regions in the world in terms of conservation of biodiversity of plants and wildlife.[3,4,5] Biologists

CURE-Owens-1

[1] DEIR/S ES-5

[2] DEIR/S ES-5

[3] Davis, E. B., Koo, M. S., Conroy, C., Patton, J. L., & Moritz, C. 2008. The California hotspots project: Identifying regions of rapid diversification of mammals. *Molecular Ecology, 17*(1), 120-138. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1111/j.1365-294X.2007.03469.x

[4] Keledjian, A. J., & Mesnick, S. 2013. The impacts of El Niño conditions on California sea lion (*Zalophus californianus*) fisheries interactions: Predicting spatial and temporal hotspots along the California coast. *Aquatic Mammals, 39*(3), 221-232. Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/1439262501?accountid=14068

[5] Maxwell, S. M. 2010. *Effectiveness of marine protected areas for top predators along the central west African and US west coasts* (Order No. 3421299). Available From ProQuest Dissertations & Theses Full

recognize the importance of thorough and enlightened management conservation strategies in the region, especially where coastal development pressures are increasing, stating that for this area's rare habitats

> "Habitat conversion will clearly outpace expansion of formal protected-area networks, and conservationists must augment this traditional strategy with new approaches to sustain the Mediterranean biota."[6]

This statement emphasizes the importance of protections prescribed and implemented in areas exactly such as those proposed for development by this Project. Historical and recent data reflect the biological sensitivity of this area for both aquatic and terrestrial habitats and species. The U.S. Fish and Wildlife Service (2013)[7] reports no fewer than 35 listed threatened or endangered species that "occur within or may be affected by projects in the area". In terms of terrestrial species only, the California Natural Diversity Database (CNDDB) denotes within the Project area the occurrence of 17 Endangered Species Act (ESA) listed species, 10 California Endangered Species Act (CESA) listed species, and twenty-four Species of Special Concern. As such the DEIR/S should emphasize the importance, *and resultant fragility*, of the ecosystems, habitats, and sensitive species populations that are impacted by this project and incorporate this reality in impact analyses and mitigation measures discussions, especially in consideration of cumulative impacts.

CURE-Owens-1 cont.

III. THE PROJECT PROPOSAL FAILS TO COMPLY WITH LOCAL REGIONAL LAND USE PLAN(S)

This high degree of importance of the local biota to conservation is reflected in how many habitat management and conservation plans already exist in the region; including habitat and species protections within the City of Marina General Plan, the City of Marina Local Coastal Land Use Plan, the Marine Municipal Code, the Ford Od Dunes State Park General Plan and EIR, the Monterey City Code, the Seaside General Plan, the Seaside Municipal Code, Carmel Valley Maser Plan, Greater Monterey Peninsula Area Plan, Monterey County Code, Monterey County General Plan, North County Land Use Plan, For Ord Reuse Plan.[8]

CURE-Owens-2

In the DEIR/S' review (4.6.2.3) of these applicable regional and local land use plans, the authors identify where they believe the Project may be inconsistent with any given plan. They then state that, "Where the analysis concludes the proposed project would be potentially

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Text; ProQuest Dissertations & Theses Global. (751629118). Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/751629118?accountid=14068

[6] Cox, R. L., & Underwood, E. C. 2011. The importance of conserving biodiversity outside of protected areas in Mediterranean ecosystems. *PLoS One, 6*(1) doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1371/journal.pone.0014508

[7] USFWS. 2013. Endangered Species Division, Letter to Michelle Giolli. (Document Number 130408113454). 8 April. TS.

[8] DEIR/S table 4.6-4

inconsistent with the applicable plan, policy, or regulation, the reader is referred to Section 4.6.5, Direct and Indirect Effects of the Proposed Project. In that subsection, the significance of the potential conflict is evaluated. Where the effect of the potential conflict would be significant, feasible mitigation is identified to resolve or minimize that conflict."[9]

Despite this claim, the DEIR/S does not adequately address each and every potential conflict ("inconsistency") with these plans in future discussions by way of its proposed mitigation measures, thus leaving insufficient information regarding how impacts will be minimized. Additionally, some Plans intend for most impacts not simply to be minimized but avoided altogether, with very specific standards set regarding mitigation, success criteria, if and when it must occur prior to issuance of a development permit.

For example: The City of Marina Local Coastal Land Use Plan (CMLCLUP) has very specific policies regarding potential impacts to sensitive species and habitats, and any mitigation coinciding with such. Specifically, it states,

> *"Much of the Marina Coastal Zone either is environmentally sensitive because of the presence of rare and endangered species or has the potential for supporting a rare and endangered species. In Marina, environmentally sensitive habitats include, but are not limited to area of undisturbed native dune vegetation [and other wetland habitats]…. The precise limits of such habitats shall be confirmed by professional on-site evaluation at the time development is proposed and before a Coastal Development permit is issued. In addition to indicating the location of primary habitat areas for rare and endangered plant and animal species (which are to be protected), the evaluation shall address protective measures, such as setbacks, restoration of habitat areas where natural dune landform remains, and limitations to uses in secondary and/or support areas which are necessary to the health of the identified primary habitat area.* ***Because of the variety of plants and animals involved, the secondary or support area will have to be individually identified and specifically protected on a site-by-site or case-by-case basis.*** *For this reason, it is important that the City establish a list of biologists qualified to prepare habitat evaluation reports within the City's Coastal Zone. Developers may then choose specialists from these lists.* ***In the case of wetlands, the biologists will have to determine the extent and landward boundary of the wetland. The biologist will then establish a 100 foot setback line from the boundary of the wetland.*** *This entire area, pond, wetland and setback, will be subject to Coastal Development Permit requirements as well as being in the Coastal Permit Appeal Zone.* ***In the case of dune habitat areas, the Environmental Analysis Report prepared for this plan identified a number of plant and animal species which are locally or generally rare, endangered, threatened, or are necessary for the survival of an endangered species. The habitats of these species, collectively referred to throughout this plan as "rare and endangered", warrant protection as environmentally sensitive…the list***

CURE-Owens-2 cont.

[9] *Ibid*, 4.6-99

presently includes:

1. Smith's Blue Butterfly (Shijimiaeoides enoptes smithi)
2. Globose Dune Beetle (Coelus globosus)
3. Black Legless Lizard (Anniella pulchra nigra)
4. Salinas Kangaroo Rat (Dipodomys heermanni goldmani)
5. Seaside Painted Cup (Castilleja latifolia ssp. Latifolia)
6. Monterey Spine Flower (Chorizanthe pungens var. pungens)
7. Eastwood's Ericameria (Ericameria fasciculate)
8. Coast (sand-loving) Wallflower (Erysimum ammophilum)
9. Menzies' Wallflower (Erysimum menziesii)
10. Coastal Dunes Milk Vetch (Astragalus tener var. titi)
11. Dune (Sand) Gilia (Gilia tenuiflora var. arenaria)
*12. Wild Buckwheat (Eriogonum latifolium)**
*13. Wild Buckwheat (Eriogonum parvifolium)**
14. Bush Lupine (Lupinus ssp.) +
** only within the range of Smith's Blue Butterfly.*
+ only within the range of the Black Legless Lizard.

CURE-Owens-2 cont.

Minimum Habitat Mitigation/Restoration Plan Requirements

All direct and potential impacts to primary and secondary habitats shall be fully mitigated**. Appropriate acreage replacement/restoration ratios for any unavoidable direct impacts to habitat areas and buffer areas shall be applied to fully protect identified habitat**. Habitat restoration plans shall be prepared and approved prior to issuance of any grading or building permits.

Habitat Restoration Plan Requirement

All habitat restoration, enhancement and/or buffering plans shall be prepared by a qualified biologist and where appropriate, with the assistance of a qualified hydrologist. Plans shall be developed in consultation with the Department of Fish and Game and the U.S. Fish and Wildlife Service in cases where these agencies have jurisdiction. The plans and the work encompassed in the plans shall be authorized by a coastal development permit. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the City. No changes to the approved final plans shall occur without a City-approved amendment. ***The elements of such plan shall at a minimum include**:*

a. A detailed site plan of the entire habitat and buffer area, with a topographic base map;

b. A baseline ecological assessment of the habitat and buffer area, including but not limited to, assessment of biological, physical and chemical criteria for the area;

c. ***The goals, objectives, performance standards and success criteria for the site, including specific coverage and health standards for any areas to be planted. At a minimum, explicit performance standards for vegetation, hydrology, sedimentation, water quality and wildlife and a clear schedule and procedure for determining whether they are met shall be provided. Any such performance standards shall include identification of minimum goals for each herbaceous species, by percentage of total planting and by percentage of total cover when defined success criteria are met; and specification of the number of years active maintenance and monitoring will continue once success criteria area met. All performance standards shall state in quantifiable terms the level and extent of the attributes necessary to reach the goals and objectives. Sustainability of the attributes shall be a part of every standard. Each performance standard shall identify:***

1. ***The attribute to be achieved;***
2. ***The condition or level that defines success; and***
3. ***The period over which success must be sustained.***

The performance standards must be specific to provide for the assessment of habitat performance over time through the measurement of habitat attributes and functions including, but not limited to, wetland vegetation, hydrology and wildlife abundance.

CURE-Owens-2 cont.

d. The final design, installation and management methods that will used to ensure the mitigation site achieves the defined goals, objectives and performance;

e. Provision for the full restoration of any impacts that are identified as temporary necessary to install the restoration or enhancement elements;

f. Provisions for submittal: Within 30 days of completion of initial (and subsequent phases, if any of) restoration work, of "as built" plans demonstrating that the restoration and enhancement has been established in accordance with the approved design and installation methods;

g. ***Provision for a detailed monitoring program to include, at a minimum, provision for assessing the initial biological and ecological status of the site. The assessment shall include an analysis of the attributes that will be monitored pursuant to the program, with a description of the methods for making that evaluation****;*

h. Provision to ensure that the site will be promptly remediated if the monitoring results indicate that the site does not meet the goals, objectives and performance standards identified in the approved mitigation program and provisions for such remediation. If the

final report indicated that the mitigation project has been unsuccessful, in part or in whole, based on the approved performance standards, the applicant shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. Provisions for submission of annual reports of monitoring results to the City for the first five years after all restoration and maintenance activities have concluded (including but not limited to watering and weeding, unless weeding is part of an ongoing long-term maintenance plan) and periodic monitoring after that time, beginning that first year after submission of the "as-built" assessment. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring program are used to evaluate the status of the project in relation to the performance standards. [Resolution No. 2001-118 (October 16, 2001); approved by CCC November 14, 2001]"[10] (bold emphasis only added)**.**

The DEIR/S notes that the Project is "potentially inconsistent" with the CMLCLUP by way of these project components: the installation of the subsurface slant wells, source water pipeline, new desalinated water pipeline, and new transmission main, and maintenance of the subsurface slant wells, since these developments would occur within special status species habitats, including wetlands and including those defined as primary and secondary habitat in the City of Marina LCLUP. The DEIR/S goes on to say these inconsistencies are addressed by way of mitigation measures that are "provided to reduce or avoid impacts on special-status species habitats. However, as described in Impact 4.6-4, construction of these facilities, and maintenance of the subsurface slant wells, would be inconsistent with the City of Marina LCLUP, a significant and unavoidable impact."[11]

CURE-Owens-2 cont.

The DEIR/S's mitigation measures provided may indeed reduce some of the impacts on special-status species and habitats, however they are not inclusive or detailed enough to demonstrate that all direct, indirect, and cumulative impacts can and will be reduced to below significant in a manner consistent with the City Plan. Additionally, the DEIR/S proposed mitigation measures fail to adequately comply with, or fulfill, the City of Marina's minimum habitat mitigation/restoration plan requirements as described above, requirements approved and certified by the City Council and the California Coastal Commission[12]. The detailed standards iterated above (items a – h) require mitigation protocols be prepared according to standards with vastly greater detail than the DEIR/S provides in its mitigation measures. The "minimal requirements" drafted by the City of Marina must be described in detail according to the City's (and possibly other) land use plans prior to any development permitting, not deferred

[10] City of Marina Local Coastal Program Volume II Implementation Plan, 2013. pp 5-7. Retrieved from: http://www.ci.marina.ca.us/DocumentCenter/View/4491

[11] DEIR/S p. 4.6-104

[12] City of Marine Local Coastal Program Volume II Implementation Plan, 2013. pp 5-7. Retrieved from: http://www.ci.marina.ca.us/DocumentCenter/View/4491

until a later date after permit approval as the DEIR/S seeks to do. The Applicant does not provide data necessary to develop such detailed mitigation protocols, including a lack of wetland delineation report[13], lack of reporting of protocol or focused surveys.

CURE-Owens-2 cont.

a. Sensitive Species Highlighted in the City of Marina's LCLUP Are Not Analyzed in the DEIR/S

The DEIR/S fails to analyze potential impacts to some species highlighted as of importance and required for minimum in the Coastal Land Use Plan's requirements for mitigation with their district, namely, the globose dune beetle (*Coelus globosus*), Salinas kangaroo rat (*Dipodomys heermanni goldmani*), seaside painted cup (*Castilleja latifolia ssp. Latifolia*), and Eastwood's Ericameria (*Ericameria fasciculate*). The Applicant's review should include analysis of the potential for impacts to these species. These species are present in the region covered by the City's Plan, therefore the burden is on the Applicant to explain why they are not necessary for consideration, including current ground-truthed evidence that potentially impacted habitat for these species does not exist within any of the Project's footprint. If such habitat does exist, the Applicant must present data and reports of recent focused surveys (not merely reconnaissance surveys or habitat assessments) that demonstrate that these species are not present, along with a record in the database that shows them to be consistently absent in focused surveys for many years.

CURE-Owens-3

Therefore the DEIR/S fails to provide essential data necessary to analyze the degree of significant biological impacts imposed by the Project, and thus how to adequately mitigate them. The Project's lack of compliance with the City of Marina's land conservation plan is not only of issue for state and federal statutory fulfillment, it represents a potential and serious precedent that could serve to diminish community efforts for conservation of biodiversity overall. Regardless of how much effort it may take for the Project Applicant to script specific plans that satisfy compliance, community plans like that of the City of Marina are agreements crafted, deliberated upon, and certified by many authorities and scientific experts throughout a long period of time, and thus have a weighty investment of deliberation whose purpose is to drive the actions and decisions for permitting of projects just like that of the one proposed in this DEIR/S. For this reason alone this project should be required to provide the necessary detail in its mitigation measures to meet the standards set by the City of Marina's land use plan detailed above, and all other land use and conservation plants respective to the Project sites.

The DEIR/S correctly states that the City of Marina has jurisdiction via their Local Coastal Program and must permit development proposed in the Coastal Zone, where the CCC retains jurisdiction over appeals[14]. Therefore permission from the City to move forward for coastal

[13] DEIR/S p. 4.6-35.
[14] DEIR/S 3-65

development is required, further reason for the Applicant to commit to fulfilling consistency with the City's Land Use Plan.

CURE-Owens-3 cont.

IV. THE DEIR/S FAILS TO ADEQUATELY SURVEY AND ANALYZE THE POTENTIAL IMPACT OF THE PROJECT ON TERRESTRIAL SENSITIVE SPECIES

a. Protocol and Focused Surveys Are Necessary To Establish Existing Conditions and Sufficient Mitigation Measures and Standards

Studies in the Monterey Bay area show not only abundance but presence of coastal species of various taxa can be highly variable from year to year based upon factors such as drought, El Niño conditions, and related prey-predator cycles.[15] And yet, instead of conducting project level, protocol or focused surveys for the majority of the many sensitive wildlife species potentially present onsite as should have occurred, the DEIR/S relies largely on databases and outdated reports (some over 10 years old) not only to predict presence/absence of species, but for the degree to which such a predicted species' status may be mitigated if and when Project impacts to the species are deemed significant based upon this prediction. Such predictions are not supported by actual, ground-truthed observations made by biologists who specialize in detecting the species for which protocol surveys have been required due to their protected status and resultant sensitivity to harassment.

CURE-Owens-4

For federally endangered and threatened species, protocol surveys are conducted by permitted biologists as they have the proven experience (as verified by USFWS, the permitting agency) to be able to detect the species and other essential characteristics important to individual and subpopulations assessments, including density, behavioral factors, breeding status, etc. Permitted biologists not only have the responsibility of formally reporting all such observations to USFWS, but also to insure harassment of species during surveys is minimized by default of their knowledge and training for the species in question.

The DEIR/S, however, does not recognize this important and widely accepted aspect of protected species surveys, and made little attempt to use focused surveys to determine the most current site-specific status threatened or endangered wildlife species on or near the site. It instead referred to habitat assessments to indicate, via anecdotal observations or assumptions from habitat onsite, to make protected species status determinations – and resultant creations of mitigation measures. This is a clear oversight in the DEIR/S, as species presence/ absence, and indications of 'likelihood to occur" are guidelines intended to assist consultants in determining where site-specific, protocol level surveys are warranted in order to determine essential details required for adequate mitigation analyses, such as current species

[15] Benson, S. R. 2002. *Ecosystem studies of marine mammals and seabirds in Monterey bay, California, 1996--1999* (Order No. 1408777). Available From ProQuest Dissertations & Theses Full Text; ProQuest Dissertations & Theses Global.

density, nesting or breeding status, species richness, and all of the other components that are part of a protocol survey and cannot be completely derived from any given database.

CURE-Owens-4 cont.

b. Databases and Reconnaissance Level Surveys (habitat assessments) Do Not Provide a Complete Assessment to Determine Baseline, Existing Conditions for the Project

Using databases is a standard part of gathering site-specific data, but it cannot replace focused or protocol surveys in its specificity or accuracy. For example, the CNDDB is relied upon heavily by the DEIR/S to make species impact determinations. However, the CNDDB is limited in its ability to predict species currently present at any given locale; instead it presents at best a conservative description of what may or may not be present on site. Many species sightings are not actually reported on the public CNDDB. For instance, according to the California Department of Fish and Wildlife CNDDB coordinator, for most birds the CNDDB keeps track of and maps only those occurrences that can be associated with "evidence of nesting". Observations of flyovers or foraging are generally not mapped into CNDDB as an 'Element Occurrence', the standard mapping unit, based on NatureServe natural heritage program methodology.[16] The CNDDB biologists state that the database represents summaries of species occurrences; not individual detections. "Given limited resources to map submissions, the CNDDB tries a best to map occurrences that relate to an important aspect of life history." (*pers. comm,* P. McIntyre, CDFW, June 6, 2015).

CURE-Owens-5

As importantly, CNDDB records are voluntarily reported and only exist for locations that have been surveyed to varying degrees. As a result, the lack of CNDDB records, or records from any other database, does not mean a species is absent. To reinforce this fact the California Department of Fish and Wildlife posts a disclaimer on its CNDDB website:

> *"We work very hard to keep the CNDDB and the Spotted Owl Database as current and up-to-date as possible given our capabilities and resources. However, we cannot and do not portray the CNDDB as an exhaustive and comprehensive inventory of all rare species and natural communities statewide. Field verification for the presence or absence of sensitive species will always be an important obligation of our customers."*[17]

Similarly, the California Native Plant Society's Inventory of Rare and Endangered Species states the following: "A reminder*:* Species not recorded for a given area may nonetheless be present, especially where favorable conditions occur."[18] The DEIR/S repeatedly mentions that they conducted "botanical" surveys. However, when focused surveys for sensitive species are conducted, they are termed rare plants species, yet this term is not used in the Report, and numbers (even estimates) of abundance, density, individual numbers of rare plants are not

[16] http://www.natureserve.org/conservation-tools/standards-methods. (Retrieved June 18, 2015)
[17] http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp (Retrieved June 18, 2015)
[18] https://archive.is/northcoastcnps.org (Retrieved June 20, 2015)

provided or mapped in any documents with the DEIR/S. Once again the Report is lacking in specificity of on-the-ground data for protected species.

The DEIR/S does, however, recognize the difference between habitat assessments and focused, or protocol-level surveys where it states,

> *"Reconnaissance-level field surveys are conducted for the purpose of generally describing the vegetation communities present within a project area and assessing the potential for special-status species to occur within the project area plus a 50-foot buffer (i.e., the survey area). Focused surveys are conducted to determine the presence or absence of a certain species or habitat type. Protocol level surveys are a type of focused survey using specific survey protocol as defined by a regulatory agency".*[19]

The DEIR/S also acknowledges that reviewer comments to the previous DEIR for this Project (released in 2015) indicated that protocol surveys should have been included in the Draft EIR, and claims that such surveys have been completed and the "results are reflected in discussions of special status species and critical habitat in sections 4.6.1.4 and 4.6.1.10"[20]. Also, section 4.6.1.2 states that "The impact analysis described in this section [on terrestrial biological resources] is based on special-status species observations available to Environmental Science Associates (ESA) as of June 20, 2016." However, observations or data from ESA surveys are not made available anywhere in the DEIR/S or its Appendices. There is one citation for ESA 2016 that lists GIS shapefiles. All other ESA citations are dated between 2010 and 2014 but only cite reconnaissance level survey shapefiles, a memorandum about the test well sites surveys, and an email about a rare plant survey in 2010. Nowhere is there a thorough, written biological technical report made available that describes in detail the results of project-wide, or facility-wide focused or protocol level surveys of special status plant or animal species.

CURE-Owens-5 cont.

The DEIR/S refers to sections 4.6.1.4 and 4.6.1.10 for details on the purported additional surveys. 4.6.1.4 discusses vegetation communities and habitat mapping surveys as follows: "This mapping was conducted by AECOM between 2013 and 2015 in support of federal and state regulatory permit applications (AECOM, 2016). ESA verified this survey data in the field in 2016." Maps are provided that show habitat types throughout the Project, citing AECOM 2016, which it cited as "*GIS shapefiles from biological surveys conducted by URS within the Monterey Peninsula Water Supply Project ar*ea"[21]. It is unclear what exactly is meant by the statement that ESA "verified" the survey data in the field in 2016; in fact it is impossible to analyze since no biological technical report (BTR) was presented for this entire DEIR/S, there is no citation for this 2016 reference cited, and the citation of shapefiles from "AECOM 2016" was also not provided for review in any Appendix. This omission will be discussed further below.

[19] DEIR/S 4.6-5
[20] *Ibid* 4.6-1
[21] DEIR/S 4.6-262

Section 4.6.1.10 discusses sensitive terrestrial biological resources in the study area, and states that the potential for terrestrial biological resources to occur at each facility in the study area are based upon databases, "site-specific **reconnaissance level (habitat assessments) of the project area, and focused and protocol-level surveys of special-status species at select facility locations**"[22]. However, a search for "focused" level surveys reveals only vague inferences, again relying on the same cited shapefiles for botanical surveys (not even "rare plant surveys" specifically) for sections, not all, of the Project; i.e. "focused botanical surveys of the project area [were conducted] along General Jim Moore Boulevard (ESA, 2016; AECOM, 2016)";[23] and "coast horned lizard has been observed during focused surveys of the Terminal Reservoir site (AECOM, 2016)"[24].

Mention of protocol level surveys in the DEIR/S are in the same preliminary section where it states that such surveys were conducted by AECOM, cites the same shapefile citations noted above, but provides no further evidence or detailed discussion regarding the results of any Project-wide rare plant surveys or habitat-wide special status animal surveys, and despite stating that "new" habitats were assessed and measured including wetlands, the DEIR/S claims that no wetland delineation report is available.

CURE-Owens-5 cont.

Not having, or providing for review, a formal wetland delineation report is an oversight that prevents the reviewer to adequately assess analyses, or subsequent mitigation, of any and all wetlands for this Project. Its absence may also preclude issuance of a 404 permit since this Project will impact waters of the U.S. for which a permit it required, as the DEIR/S states "The proposed project has potential to result in fill of wetlands or other waters regulated under Section 404 of the CWA or activities in, over, or under navigable waters regulated under Section 10 of the Rivers and Harbors Act, which would be inconsistent with each of these regulations."[25]

Upon review of the entire discussion of terrestrial biological resources in the DEIR/S, it is apparent that every mention of focused, protocol, and most reconnaissance surveys for sensitive flora (not just habitat types) and fauna conducted for this Report hinge mostly upon data either not cited at all, vaguely alluded to by mentioning reports that covered only small sections of this Project footprint - some such report being 10 – 11 years old – and the citation of AECOM shapefiles, "AECOM 2016". In fact, "AECOM 2016" is cited at least 50 times throughout the document. Yet no report of data on individual species accounts are provided. For such a large, well-funded, and public Project that has had ample opportunity to contract biological specialists to conduct protocol level surveys for threatened, endangered, and Special Concern species, this is an overt oversight.

[22] *Ibid*. 4.6-70
[23] *Ibid* 4.6-82
[24] *Ibid* 4.6-85
[25] DEIR/S 4.6-3

c. The DEIR/S Lacks the Necessary Data to Assess Existing Conditions of the Project

The lack of focused and protocol surveys discussed above prevents the public reviewer of the DEIR/S from thoroughly assessing exactly what sensitive species are present throughout the Project site, and in what density or abundance. As noted, reconnaissance surveys, databases, and historic records are an important part of determining whether or not the habitat for special status species exists on site. However, they do not, and cannot, determine how many individuals of a species may be present, when, where, in what density, status of breeding and nesting, life stage (i.e. larvae or adult), and other important details that are necessary for developing an accurate impact assessment and, where necessary, developing appropriate standards and details for impact mitigation, including the type, size, and location of mitigation parcels designated to offset habitat and impacts that could result in 'take' for species listed under the federal and state Endangered Species Act.

A citation of a shapefile (a geospatial vector data format for GIS software, such as "AECOM 2016") does not provide this type of necessary information the same as a standard Biological Technical Report (BTR) can. A standard BTR provides thorough data on protocol surveys required for listed species, and includes details on how the surveys were conducted so that others can determine if they were done adequately to detect species as prescribed by the lead wildlife permitting agencies. Dates, times, weather conditions, duration, and other important information regarding behavior, breeding status, exact location, territory use, etc. are all types of information that are required for preparation of site-specific mitigation measures, protocols, plans, including selection of specific parcels for mitigation banking or habitat offset.

CURE-Owens-6

The necessity of this type of data is underscored by the DEIR/S own claim that "the definition of a substantial [impact analyses] as used in the significance criteria above has three principal factors: magnitude or intensity and duration of the impact; rarity and context of the affected resource; and susceptibility of the affected resource to disturbance"[26] and, "The evaluation of significance must also consider the interrelationship of these three factors. **For example, a relatively small-magnitude impact on a state- or federally listed species could be considered significant if the species is rare and highly susceptible to disturbance".**[27] This is true not only for determining significance of impact, but degree of significance in respect to what mitigation measures would be adequate. One cannot completely determine factors such as context and susceptibility of an entire population regarding impacts of the development of the Project if one does not know whether there may be one, ten, one hundred, or one thousand individuals of a special status species present. It is also impossible to determine, without such data, if any given mitigation measure can specifically reduce the Project impacts to below significant when the measure is based upon the assumption that the protected

[26] DEIR/S 4.6-121
[27] DEIR/S 4.6-121

species is present, as opposed to how many may be present, and under what conditions they are present as iterated above.

Focused and protocol surveys are key for conservation and mitigation analyses and subject to agency oversight; the California and federal Fish and Wildlife Agencies require them for development permits where the habitat of protected species is at risk by a given project. Therefore, focused and protocol survey data are essential not only for adequate CEQA review of the analysis of potential impacts, such surveys are required for section 7 and section 10 consultation under the ESA, and will be necessary for this Project as it has the potential to impact ESA listed species a and definitely their habitat. Focused and protocol surveys are conducted by biologists who have extensive and otherwise appropriate experience enabling them to observe and record all detectable individuals of the species in question, and are regulated by the agencies with certifications and permits. Reconnaissance surveys make observations at the habitat level, and any individual species observed are done so incidentally, not with a thorough procedure for which training and oversight (via project and annual reports) are required as is the case with biologists who hold ESA recovery permits (and certifications) for specific rare, threatened, and endangered species.

CURE-Owens-6 cont.

d. Incomplete Assessments of Special Status Species and Deferred Mitigation Contingent on Such Assessments and Surveys. This Results in an Incomplete Impact Analyses.

The DEIR/S states that for Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants that prior to construction "CalAm or its contractor shall conduct focused botanical survey(s) for special-status plants in all potentially suitable habitat during the appropriate blooming period for each species. Special-status plant species are widespread throughout the project area, and could occur at the following facility locations subsurface slant well site, MPWSP Desalination Plant site, ASR-5 and ASR-6 Wells sites, Terminal Reservoir site, and along the Source Water Pipeline, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional Alignment, the Castroville Pipeline and Castroville Pipeline Optional Alignments, new Transmission Main and new Transmission Main Optional Alignment, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements, and at proposed staging areas. The results of these final surveys shall be combined with previous survey results to produce habitat maps showing habitat where the special status plants have been observed during either of the focused botanical surveys conducted for each facility site." Although future surveys as described are indeed helpful, what is missing are detailed accounts of the focused surveys already conducted.

CURE-Owens-7

Simply stating that surveys revealing potential presence of a sensitive species in a particular habitat provides only a partial picture of what is necessary to develop baseline mitigation plans. For instance, the DEIR/S mitigation measures briefly describe rare plant relocation and/or avoidance as the foundation of impact reduction. However, a mitigation protocol that is effective for one to a dozen individual plants on a given site may be very

different, and thus ineffective, for a site that hosts a special status species that has several hundred or more individuals on the same size site. Whereas on a site with very low occurrence and density of rare plants avoidance of these plants may be feasible, a site with high rare plant density and occurrence may well require additional mitigation measures, including specific restoration or other kinds of compensatory mitigation, not detailed by this DEIR/S' impact reduction analyses, including things like requiring significant alteration or movement of soils, roads, access to roads, impacts to ephemeral ponds and puddles, etc. Appropriate timing of such measures is specific to accurate impact analyses as well, since, for example, some species are blooming while others are still dormant or not yet merged, contained mostly in soils and undetectable at certain times by even the most attentive onsite botanist conducting last minute pre-construction surveys as is typical in many such projects. In summary, simply assuming presence of a special status species is clearly inadequate for mitigation planning that is species and site appropriate. Not having such accuracy in mitigation measures precludes the Applicant from correctly claiming that such measures will indeed reduce potential impacts to below significant.

CURE-Owens-7 cont.

Such information is necessary to draft appropriate mitigation measures **specific to species**, **and to each site, including parcels set aside for habitat loss compensation**. Such has not been provided in this DEIR/S, therefore it cannot be determined if proposed mitigation measures will effectively reduce potential impacts for rare plants to below significant, or if proposed measures are truly feasible, efficacious, and within the capabilities or expertise of the staff on hand to carry them out.

e. DEIR/S Biological Resource Maps are Inadequate for Determining Existing Conditions Regarding Special Status Species Calling Attention to Need for Focused and Protocol Surveys

The DEIR/S provides maps (figures 4.6-2a, 2b, 2c) that are of very limited utility regarding the existing status of sensitive species for the Project. The maps show circles and polygons to indicate presence of CNDDB listed plants and animals, however the "occurrences" do not indicate which animals or plant species correspond to which circle or polygon, therefore one can only determine from these maps that some unspecified species from the long list on the map legend was recorded for a given area on the Project. To enable thorough review of the existing site conditions, the Applicant should present maps of known locations within each Project site of each of these sensitive species, labeled appropriately (especially for those for which mitigation is deemed required), including representations of how many individuals occur in any given location. At this point it should be obvious that focused and protocol level surveys of species are necessary to create such maps that are current for this Project footprint.

CURE-Owens-8

V. THE DEIR/S FAILS TO ADEQUATELY ANALYZE AND MITIGATE IMPACTS ON SNOWY PLOVER

a. Western Snowy Plover Background and Relative Status for the Project Region

Historically, thousands of snowy plovers nested along the California coast, however by the late 1970s the snowy plover had disappeared from significant parts of its coastal California breeding range, and biologists estimate the breeding population along the coast has now dwindled to fewer than 1,500 birds. [28, 29, 30] The Pacific Coast population of the western snowy plover (*Charadrius nivosus nivosus*) was federally listed as Threatened in 1993,[31] and is a Bird Species of Special Concern in California. A Recovery Plan for the species was finally published in 2007, and a Final Rule for the revised designation of critical habitat was published in June 2012. [32]

CURE-Owens-9

b. Threats and Types of Impacts to the Snowy Plover

The primary threats to Pacific coast population of the western snowy plover are decreased habitat availability and anthropogenic disturbances to habitat.[33] Specific causes and effects vary geographically, but include fragmentation, degradation, and loss of habitat due to encroachment, habitat erosion, expansion of urban development and increased recreational beach use.[34] Increasingly, the impacts of climate change and resultant sea level rise are contributing to the cumulative impacts on populations. These adverse effects often are exacerbated by various anthropogenic influences that benefit or attract predators of the snowy plover.[35]

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[28] WesternSnowyPlover.org. n.d. Western Snowy Plover Natural History and Population Trends. *Adapted from U.S. Fish and Wildlife Western Snowy Plover Pacific Coast Population Draft Recovery Plan*, May 2001. Available at: <http://www.westernsnowyplover.org/pdfs/plover_natural_history.pdf> Retrieved June 20 2015. *See also* Thomas SM, JE Lyons, BA Andres, EE T-Smith, E Palacios, JF Cavitt, JA Royle, SD Fellows, K Maty, WH Howe, E Mellink, S Melvin, T Zimmerman. 2012. Population Size of Snowy Plovers Breeding in North America. *Waterbirds* 35(1):1-14.

[29] *Ibid*.

[30] Morrison RIG, BJ McCaffery, RE Gill, SK Skagen, SL Jones, GW Page, CL Gratto-Trevor, BA Andres. 2006. Population estimates of North American shorebirds. Wader Study Group Bulletin 111:66-84.

[31] http://www.fws.gov/arcata/es/birds/WSP/documents/1993Mar5%20Determination%20of%20Threatened%20Status%20for%20WSP%2058%20FR%2012864.pdf (Retrieved June 20, 2015).

[32] http://www.fws.gov/arcata/es/birds/WSP/documents/WSPCH_June2012/6-19-2012_FR_rule.pdf (Retrieved June 21, 2015)

[33] MacDonald B, Longcore, T Dark, S. 2010. Habitat suitability modeling for Western Snowy Plover in Central California. The Urban Wildlands Group, Los Angeles, California, 129 pp. *See also* United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751.

[34] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751.

[35] *Ibid*.

The Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (Recovery Plan) specifically identifies habitat degradation caused by **human disturbance, urban development, introduced species** such as beachgrass, and expanding predator populations as resulting in significant decline in active nesting areas and in the size of the breeding and wintering populations, **while contributing to poorly analyzed, cumulative type of habitat loss for western snowy plovers**.[36] **In addition to causing direct loss of habitat, urban development causes a suite of other direct and indirect impacts that adversely affect plovers**. For example, increased development increases human use of the beach, thereby increasing disturbance to plovers.[37] In addition, the value of breeding and wintering habitat is diminished by increased levels of illumination at night (e.g., for parking, construction activities); increased sound and vibration levels; increased attraction of predators due to increased sources of garbage and other anthropogenic food attractants, and pollution drift.[38] Finally, activities such as beach raking and debris (e.g., driftwood) collection remove habitat features for both plovers and their prey, and precludes nests from being established.[39]

CURE-Owens-9 cont.

The Pacific coast population of the western snowy plover (SNPL) has continued to decline despite its listed status protections and development of the Recovery Plan. Point Blue Conservation Science (Point Blue), in collaboration with the USFWS and California Department of Parks and Recreation, has been monitoring the status of nesting snowy plovers along the coast of Monterey Bay and for the past 30 years, and in northern Santa Cruz County since 1988.[40] At the end of 2012 they issued a report of the snowy plover's nesting status in these areas, including an assessment of the species' response to management agencies efforts to enhance breeding success and population size.[41] According to the report the plovers experienced a 10% decrease from the previous year, with no plovers detected in Santa Cruz beaches for the third year, thus reinforcing the elevated importance of the nearby population in Monterey Bay area where the Project site is located. Specifically, the report stated, "The plovers experienced subpar breeding success in 2012. Their clutch-hatching rate was 51.0 % on Monterey Bay beaches. These rates were well below their respective averages from 1999-2011. The hatching rate on the beaches was 21% below the 64% average of the previous 13 years." They also reported that only 28-30% of the chicks that hatched on the beaches fledged; a rate about 32% below the average of 42.4% from 1999-2011. Fledging rates were below 10% at one survey site (Martin Property) that is in close proximity to the Project's proposed slant well site.

[36] *Ibid*.
[37] *Ibid*.
[38] *Ibid*.
[39] *Ibid*.
[40] Point Blue Conservation Science. 2014. Nesting of the Snowy Plover in the Monterey Bay Area, California in 2013. Point Blue Conservation Science, Petaluma (CA). 32 pp.
[41] Page G. W, Neuman K. K., Warriner J. C., Warriner J. S., Eyster C., Erbes, Dixon D., and Palkovic A., (December 2012). Nesting of the Snowy Plover in the Monterey, California in 2012. PRBO Conservation Science Publication # 1898.

The sensitivity of this species, and its slow progress in recovering even under ESA protections, demonstrate the need for detailed information regarding just how close nesting birds are to the Project prior to issuance of a permit that approves scripted mitigation measures. However due to the DEIR's:

(a) Complete lack of focused, protocol surveys for snowy plovers, or

(b) Lack of provisioning of data for public review regarding nest monitoring by other research agencies, including specific nesting grounds locations and numbers of breeding pairs over the past 5 plus years by other researchers, and

(c) Poor map detail and quality regarding adequate location details of Project components and proximity of current breeding pairs,

it is impossible to make such a determination, thus making it impossible for the public to thoroughly and accurately assess the impact of the Project's activities in this area to this segment of the plover population, and thus the regional population as a whole. This same argument can be made project-wide, since within the DEIR/S no such recent, detailed data regarding the specific subpopulation status of breeding pairs were provided for review, nor were protocol surveys conducted, or directly reported and mapped in detail for any segment of the Project, including Project development sites in close proximity to snowy plover critical habitat.

CURE-Owens-9 cont.

The Point Blue researchers concluded that the consequence of the low number of fledglings in 2012 will likely be a smaller breeding population in the Monterey Bay area in 2013, and their prediction was correct. The authors released a monitoring update for the 2013 breeding season, where once again breeding success was reported as declining compared to previous years: "Plovers experienced another year of subpar breeding success in the Monterey Bay area in 2013. Clutch hatching rate was 54% and chick fledging rate 31% below the prior 14-year average. As a result, the total of 116 fledges was 51% lower than the average of the prior 14 years. The consequence of the low number of fledglings produced in 2013 will likely be a smaller breeding population in the Monterey Bay area in 2014. One fledged young per male is necessary to sustain a population experiencing average mortality levels but only 0.6 chicks per male fledged in 2013."[42] Poor reproductive success has contributed to the decline and low population size of the western snowy plover, especially where it breeds on coastal beaches used by humans for recreation.[43] Due to increasingly low reproductive success, the Pacific coast population of the western snowy plover has become a management-dependent species.

[42] *Ibid*.

[43] Colwell MA, CB Millett, JJ Meyer, JN Hall, SJ Hurley, SE McAllister, AN Transou, RR LeValley. 2005. Snowy Plover reproductive success in beach and river habitats. Journal of Field Ornithology 76(4):373-382.

To sustain the breeding population requires provision of undisturbed nesting areas and wintering habitat, as well as protection from predators.[44]

The DEIR/S states that, "Western snowy plover are known to nest in the beach and sand dunes between Reservation Road and the Salinas River National Wildlife Refuge (Page et al., 2015). In 2015 there were 469 individual snowy plovers in the Monterey Bay breeding population. During surveys conducted for the MPWSP in 2012 (ESA, 2012) and 2013 (ESA, 2013), western snowy plovers were observed at the beach located north and south of the CEMEX sand mining facility, respectively. Multiple western snowy plover nests have been observed on the beach and foredunes within and at the proposed northernmost subsurface slant well cluster in the CEMEX active mining area (PRBO, 2012 in Zander Associates, 2013). Several western snowy plovers were observed among the sparse central dune scrub and iceplant mats of the CEMEX active mining facility during reconnaissance surveys in May 2016 (ESA, 2016). Western snowy plover has a high potential to nest along the beach and foredunes in the vicinity of the northernmost subsurface slant well cluster at the western terminus of the proposed Source Water Pipeline alignment. Additionally, western snowy plover may use the beach and dunes within all subsurface slant well and Source Water Pipeline work areas for wintering, roosting, and foraging. Western snowy plover has potential to nest in the backdunes in the proposed subsurface slant well area."[45]

CURE-Owens-10

This reviewer is unable to confirm any details about the current existing conditions (numbers and status of breeding and non-breeding, abundance, etc.) of SNPL on the project footprint and its buffer zones, since the surveys cited here are not focused or protocol level but instead are habitat assessments conducted near, but not on the site. The most detailed record of such available is from Point Blue's annual report from 2015[46], however it is important to note: (a) Point Blue's surveys did not cover all of the potential SNPL winter and breeding habitat potentially impacted by the Project, (b) Point Blue's report says that only *preliminary results* are printed in their report, and that the results are not to be cited in other reports or the scientific literature without the authors' permission. Also, the DEIR/S excuses the existence of a 2016 data on focused surveys of nesting or wintering SNPL by saying that, "ESA requested western snowy plover occurrence data from Point Blue Conservation Science, but Point Blue Conservation Science was unable to provide this data prior to publication of this EIR/EIS."[47] It is not, however, the responsibility of Point Blue to render services for this Project's timeline, and it appears nothing precluded the Applicant from hiring another biologist to conduct protocol

[44] Colwell M, NS Burrell, MA. Hardy, K Kayano, JJ Muir, WJ Pearson, SA Peterson, KA Sesser. 2010. Arrival times, laying dates, and reproductive success of Snowy Plovers in two habitats in coastal northern California. Journal of Field Ornithology 81(4):349-360. *See also* Point Blue Conservation Science. 2014. Nesting of the Snowy Plover in the Monterey Bay Area, California in 2013. Point Blue Conservation Science, Petaluma (CA). 32 pp.

[45] DEIR/S 4.6-50

[46] Retrieved from: https://www.fws.gov/arcata/es/birds/wsp/documents/siteReports/California/2015_SNPL_Report_MBarea_Final_Jan.pdf. Report citation not permitted by the author without permission.

[47] *Ibid*. 4.6-2

surveys during breeding season to determine the number, and exact locations, of SNPL within and surrounding the Project footprint. Since Point Blue consistently publishes their annual reports in January for the previous year surveys, and since the Applicant has referenced these previous reports and is aware of this timeline, they could have predicted that a 2016 report from Point Blue would not be available for the DIER/S timeline and thus hired an independent permitted biologist to conduct the necessary surveys.

In regards to the slant well construction and its impacts to SNPL, the DEIR/S compares results of mitigation for a single test well with this proposed development of ten wells by saying "…the analysis and findings from the test slant well support the conclusion that impacts to plovers can be reduced through implementation of avoidance and minimization measures." Again the authors blur the lines of adequate mitigation and impact reduction by comparing site conditions and development impacts that are not equivalent, and fail to demonstrate that impacts can be reduced to below significant when the report does not describe what that the conditions are in respect to exact numbers of terns impacted, breeding, overwintering, etc. within and near the Project footprint.

CURE-Owens-10 cont.

c. The DEIR Fails to Adequately Mitigate Impacts to Snowy Plover Critical Habitat

The Project site not only supports snowy plovers, but as mentioned above is also located adjacent to federally designated critical habitat for the species. Critical habitat is defined as "a specific geographic area that is essential for the conservation of a threatened or endangered species and that may require special management and protection."[48] Within designated critical habitat, the USFWS protects areas that provide **primary constituent elements** (PCEs), which are the physical and biological features of a landscape that a species needs to survive and reproduce.[49] PCEs of critical habitat for the western snowy plover include:

1. Areas that are below heavily vegetated areas or developed areas and above the daily high tides;
2. Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low-water flow and annual high tide or high-water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;
3. Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in PCE 2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and
4. **Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted**

CURE-Owens-11

[48] USFWS. 2002. Critical Habitat: What is it? Publication 703/358 2105. http://endangered.fws.gov. (Retrieved Jun 14, 2015).
[49] *Ibid*.

predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.[50] (Emphasis added).

Snowy plover critical habitat is within close proximity to the Project site, which currently provides these PCEs. It is essential to note that construction sites consistently create impacts that extend beyond the footprint boundaries in the form of temporary roads, parking areas, poorly contained construction vehicles, noise, erosion, dust and other pollutants that can markedly diminish the minimally disturbed quality of critical habitat as described above. It is therefore possible that the Project site could significantly reduce the quality of snowy plover critical habitat as defined by these PCEs.[51]

The Project proposes construction bordering critical habitat:

(a) At the proposed slant well site,

(b) At the west end of the proposed seawater intake system, and

(c) Along approximately **9 miles of coastal snowy plover critical habitat** from the northern slant well proposed site to Monterey State Beach, at times within less than 400 feet of the development footprint, with virtually no major visual, structural, or auditory barriers (from existing development or geographic topography) between the proposed construction footprint and critical habitat. The majority of this critical habitat has historically been occupied by nesting plovers, and was recorded as having active nesting during breeding season 2012 and 2013 by Point Blue researchers. Also, the site of the proposed seawater intake system pipeline where it runs west from the shoreline is historic nesting habitat for the snowy plover, according to Point Blue studies (*pers. comm.* Kriss Neuman June 23, 2015).[52,53]

CURE-Owens-11 cont.

d. The Importance of Avoiding Impacts to Non-breeding Season Snowy Plover Habitat is Underestimated

It is important to note that critical habitat provision #4 above does not distinguish between breeding and non-breeding season; in other words minimization of disturbance to critical habitat is important regardless of the time of year. Western snowy plovers are non-migratory residents along the Monterey coast, studies of banded birds demonstrate that many individuals occupy the same general habitat with little to no migration to other locales;

CURE-Owens-12

[50] Federal Register. 2012 Jun 19. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover; Final Rule. Federal Register 77(118):36728-36869.

[51] USFWS. 2014 Apr 7. Letter to the California Coastal Commission. Attachment to Staff Report Addendum for April 8, 2014 for April 9, 2014 Hearing.

[52] Point Blue Conservation Science. 2014. Nesting of the Snowy Plover in the Monterey Bay Area, California in 2013. Point Blue Conservation Science, Petaluma (CA). 32 pp.

[53] Page G. W, Neuman K. K., Warriner J. C., Warriner J. S., Eyster C., Erbes, Dixon D., and Palkovic A., (December 2012). Nesting of the Snowy Plover in the Monterey, California in 2012. PRBO Conservation Science Publication # 1898.

researchers have discovered that banded plovers exhibited high site faithfulness, occupying small linear stretches of beach (752 +/- +/- 626 m).[54]

Successful management of highly sensitive, reduced populations such as those found along the Monterey coast require equal attention paid to avoiding significant impacts to occupied nesting habitat year-round, since the specific habitat, foraging, and predation factors continue to play a key role in population size and viability despite the time of year or breeding status of the individuals. In their Final Recovery Plan, the USFWS state that species' social factors play a role in attracting plovers to nest in any given area, and that the management of wintering flocks can be important relative to plover nesting sites.[55] In response to comments of their Final Recovery Plan, USFWS states that "Our designation of critical habitat recognizes the importance of both wintering and breeding areas."[56]

Western snowy plover research emphasizes the importance of careful management of habitat and nest sites during both breeding and non-breeding season, and how mitigation for impacts is not nearly as straightforward as avoiding major impacts during breeding season only, or relying on implementing avoidance measures for impact mitigation during breeding season only, such as fencing, nest exclosures, or 'educating' on-site workers about the presence of plovers.

CURE-Owens-12 cont.

Some snowy plover management scenarios have demonstrated that lethal predator removal and reducing human disturbance facilitate population recovery and may partially alleviate the reliance upon immigration of birds from other areas, a necessary function to maintain a viable subpopulation. However, in some cases the use of nest exclosures reduced population growth because they were found to compromise *adult* survival, thus highlighting the importance of maintaining viable source populations and re-evaluating the recovery objectives for plovers during both breeding and non-breeding seasons.[57]

It has been demonstrated that conservation of snowy plover populations in California, characterized by those located near and within the Project site, "requires managing habitat throughout the year, especially during winter when northern populations may be limited by

[54] Brindock, K. M., & Colwell, M. A. 2011. Habitat selection by western snowy plovers during the nonbreeding season. Journal of Wildlife Management, 75(4), 786-793. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1002/jwmg.106

[55] USFWS. 2007. Western snowy plover (*Charadrius alexandrinus nivosas*). Pacific coast population Recovery Plan, Portland, Oregon, USA.

[56] *Ibid.*

[57] Eberhart-Phillips, L., & Colwell, M. A. 2014. Conservation challenges of a sink: The viability of an isolated population of the snowy plover. *Bird Conservation International,* 24(3), 327-341. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1017/S0959270913000506

food and predation".[58] **Specific, often seemingly minor attributes of wintering sites can make a significant difference in survival and fecundity of individuals.** Northern coastal sites occupied by plovers had more brown algae (e.g., *Macrocystis, Nereocystis, Postelsia,* and *Fucus*) and associated invertebrates (e.g., amphipods and flies), were wider, and had less vegetation than unoccupied sites, suggesting that wintering plovers select habitats with more food and where they could more easily detect predators.[59] Maintaining habitat year-round with attributes that support abundant food and reduce predation risk (i.e., wide beaches, limited obstructive cover) is important to individual survival and maintaining the Pacific Coast population of snowy plovers. Specifically, researchers concluded that,

> *"Protecting occupied sites from human disturbance, which adversely alters nonbreeding habitat and directly causes mortality, may be essential for conserving the Pacific coast population of the snowy plover, and it may benefit other shorebirds."*[60]

For these highly sensitive nesting populations that occur near and on the Project site, within critical habitat, mitigation of the significant temporary, indirect, direct, and cumulative impacts of the Proposed Project requires more than is prescribed by the DEIR to reduce impacts below significant.

CURE-Owens-12 cont.

e. Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover is Inadequate to Reduce Impacts Below Significant

The DEIR/S defers the mitigation impact analysis of the SNPL by stating that "for work that cannot be completed during the non-nesting season" SNPL surveys will be conducted as part of attempts to obtain approval by USFWS to develop SNPL habitat during breeding season. This infers that some construction must occur during breeding season. It goes on to say that "If nests are observed within 300 feet of construction activities, the qualified biologist shall notify and consult with USFWS to determine whether construction may proceed, based on detailed information on location of nest(s), proximity to construction, site lines and topography, and noise environment. Any additional avoidance or minimization measures shall be implemented prior to initiating construction activities."[61]

What if the Applicant does not receive permission to continue with construction activities due to presence of too close, or too many nesting SNPL immediately prior to development commencement, or during development? Or if such is the case and the developer is not given permission to continue, will the developer then pressure USFWS to allow such, claiming to delay construction for months is an undue hardship (for the company, or for the

CURE-Owens-13

[58] Brindock, K. M., & Colwell, M. A. 2011. Habitat selection by western snowy plovers during the nonbreeding season. Journal of Wildlife Management, 75(4), 786-793. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1002/jwmg.106

[59] *Ibid.*

[60] *Ibid.*

[61] DEIR/S 4.6-169

community's water needs), especially if it is for the duration of nesting and fledging as the mitigation measure explains could be the case? Such a tactic by developers is one I have commonly witnessed as a consulting biologist, increasingly so over the years, wherein the developer's mitigation measures are insufficient for various reasons including poor ground-truthing and poor knowledge of existing conditions for any given sensitive species. Despite this, permits are approved based upon vaguely described, deferred mitigation. And yet this deferred mitigation has less than rigorous oversight for many reasons, is lacking in details and insight, and sometimes the result is that construction must be temporarily halted to avoid take of a species. This incurs pushback from the developer claiming hardship, and such delays are often not upheld by USFWS due to this pressure.

In my years as an environmental consultant I have witnessed that it is far more common for the agency to give a "variance" of a permit and defer to the complaints of the developer when construction is at risk of being seriously delayed. These variances for the prescribed mitigation can and do lead to mitigation measures that are altered and diminished in effectiveness from their written prescriptions on paper, resulting in unmitigated, significant impacts, unanticipated (and sometimes unreported) take of species. This is an all-too common practice among developers and environmental consultants that I have personally witnessed as an independent biologist for construction sites with sensitive species of nesting birds and other rare animals present. Certain actions by the developer, including violations of regulations and mitigation measures, go unreported in part due to environmental consultants' ubiquitous use of extreme and rigid non-disclosure agreements (NDA), where biologists are required to sign strict NDAs to be employed and subsequently are at risk of losing their jobs, or worse, if they report any unpermitted harassment or take of protected species.

CURE-Owens-13 cont.

In short, these mitigation measures that seek to develop SNPL habitat during breeding season are unacceptable for reasons outlined above. To ensure adequate mitigation of indirect, direct, and cumulative impacts, the Applicant should commit to withholding all construction activities within SNPL habitat during SNPL breeding season, without exception.

The DEIR/S concludes impacts to SNPL would be significant throughout at least 9 acres of the Project footprint, yet they do not describe in detail the degree of such an impact since they do not provide any data on exactly how many of the birds have nested within and near the SNPL habitats within the Project footprint. The Report states, "Construction of the slant wells in the CEMEX active mining area could occur year-round"[62] where impacts could result in flight of breeding birds, nest abandonment, or nest failure, and "construction activities would be implemented in or around areas where plovers may occur during the winter. Construction during the snowy plover wintering season (October 1 through February 28) could directly or indirectly impact individual birds if present within or adjacent to the construction area. Human presence and construction noise and activities can cause roosting plovers to fly and disturb resting or foraging activities. This would be a significant impact."[63]

[62] *Ibid*. 4.6-129
[63] DEIR/S 4.6-130

The DEIR/S acknowledged impacts to wintering plovers would be significant, and states its primary mitigation measure to reduce ongoing construction during non-breeding season impacts as follows: "For work conducted during the non-nesting season, a qualified biologist will evaluate the nature and extent of wintering plover activity in the project area several days prior to construction and inform CalAm so they can make construction decisions that avoid or minimize disturbance to plovers. The biologist shall conduct periodic monitoring during construction to ensure that minimization measures are implemented to avoid or minimize disturbance to plovers."

This measure is not specific enough to ensure confidence in avoidance measures for temporary impacts that include harassment and possibly species take. Details must be provided as to exactly how the developers will avoid harassment, and to what degree of impact. For instance, to avoid one or two plovers may be easier than if many are found to be using the area to forage regularly on and near the site. If the latter is the case, what measures can be taken to avoid a moving target of foraging plovers, especially given the natural history details provided above regarding plover sensitivity to human disturbance, and importance of lack of disturbance of wintering habitat for breeding success?

The DEIR/S infers that direct, indirect, and cumulative impacts to SNPL by development of their habitat may be partly minimized by the simple fact that they have abundant habitat to the north and south of the site in which to relocate, forage, and breed; and that they would only be temporarily displaced by construction. They claim that harassed ("displaced") birds can simply move elsewhere due to there being abundant habitat nearby. This argument is biologically flawed and should be summarily dismissed. If impacts to species could be avoided simply by default of the existence of the presence of similar habitat nearby, much of the impacts of any given development on a given species could be ignored by default.

There is abundant evidence demonstrating how erroneous the DEIR's assumption here regarding how an animal (not just the SNPL) can simply just "go elsewhere" thanks to nearby habitat that it can use being present. It is an assumption that affects mitigation analyses and thus should not be ignored as minor. Nearby habitat of the same category may or may not be as adequate for an individual's needs as habitat already occupied. There is no way for the Applicant to determine to what degree 'nearby' habitat destinations for displaced birds may be occupied by conspecifics that may defend resources, or to what density predators may occur, or if, for instance, whether nearby habitat may or may not have adequate microsites or other resources for optimal foraging, thus potentially impacting foraging success and fecundity.[64] For instance, years of personal observations have revealed that Diegan coastal sage scrub, the habitat used by breeding California gnatcatchers (CAGN) (a federally threatened ESA species), can be quite different from one location to the next. Whether or not the CAGN chooses to use a

CURE-Owens-13 cont.

[64] Nol, E., MacCulloch, K., Pollock, L., & McKinnon, L. 2014. Foraging ecology and time budgets of non-breeding shorebirds in coastal Cuba. *Journal of Tropical Ecology, 30*(4), 347-357. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1017/S0266467414000182

particular causal sage scrub habitat for nesting depends invariably on characteristics including dominant shrub species, grade, slope, percentage of bare ground, and sometimes heterogeneity of the shrub habitat. Such choosiness for appropriate breeding, and nesting microhabitats is common for many species within all taxa. This factor is an important one when it comes to mitigation prescriptions for impacted habitats, including selection and analysis of efficacy of parcels for compensatory mitigation that are species-specific.

Additionally, research demonstrates that when birds and other vertebrates emigrate to a new location, risk of mortality increases due to factors such as increased visibility, decreased familiarity with a new area relative to competitors, predators, and resources.[65] Mortality for passerine juveniles during their first year, including during non-breeding season, is typically very high and based on many factors that can be compromised by anthropogenic influences. [66, 67, 68, 69] The Applicant provides no way of determining the degree to which direct and indirect impacts from harassment will reduce survival of first year juveniles, especially given the DEIR/S makes little attempt to discuss actual site population details such as number of breeding pairs, local breeding success in terms of chicks fledged in a given area each year, etc. Such oversights in isolation may appear minor, however when considered as part of a cumulative impact over time, especially in light of the difficulty of recovering threatened and endangered species that reside in areas increasingly urbanized and developed as California is, they become significant. As the USFWS Recovery Plan indicates, snowy plover population recovery requires undisturbed wintering as well as breeding habitat; this fact must be taken into consideration for impact analysis. (See below for additional supporting evidence regarding wintering habitat, cumulative impacts, and resultant inadequacy of snowy plover impact analysis.)

CURE-Owens-13 cont.

[65] Guy Morrison, R.I., R, K. R., & Niles, L. J. 2004. Declines In Wintering Populations Of Red Knots In Southern South America. *The Condor, 106*(1), 60-70. Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/211249469?accountid=14068

[66] Vitz, A. C., & Rodewald, A. D. 2011. Influence of condition and habitat use on survival of post-fledging songbirds. *The Condor, 113*(2), 400-411. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1525/cond.2011.100023

[67] Cano, L. S., Franco, C., Doval, G., Torés, A., Carbonell, I., & Tellerãa, J. L. 2013. Conservation of iberian black storks (*Ciconia nigra*) outside breeding areas: Distribution, movements and mortality. *Bird Conservation International*, 23(4), 463-468. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1017/S0959270912000482

[68] Tökölyi, J., Mcnamara, J. M., Houston, A. I., & Barta, Z. 2012. Timing of avian reproduction in unpredictable environments. *Evolutionary Ecology, 26*(1), 25-42. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1007/s10682-011-9496-4

[69] Sandercock, B. K., Székely, T., & Kosztolányi, A. 2005. The Effects Of Age And Sex On The Apparent Survival Of Kentish Plovers Breeding In Southern Turkey. *The Condor, 107*(3), 583-596. Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/211305157?accountid=14068

f. Plover Mortality Will Increase Due to Increase in Human Disturbance Despite Proposed Mitigation Measures

Disturbance by humans is a key factor in reducing or eliminating snowy plover nesting habitat.[70] Humans negatively impact plovers by causing: (1) destruction of nests and chicks; (2) increased disturbance leading to reduced incubation or brooding constancy; and (3) decreased foraging opportunities by adults and chicks.[71]

Direct mortality can occur when humans inadvertently step on chicks or them with mechanized vehicles.[72] Neither is mortality to birds due to nearby construction activities limited to chicks. As a professional environmental consultant specializing (in part) in wildlife monitoring for over 20 years, I have personally witnessed, as have other biologist construction monitors I have communicated with over time, that for various types of development - including pipeline installation – that despite a myriad of mitigation protocols and best management approved and imposed under standard multi-agency permitting processes, mortalities of ground nesting and foraging birds, along with reptiles and rodents, are an inevitable result of construction traffic on any given construction site that occurs in a species habitat (*pers. comm*, Patrick Hord, Jan 2014; Jane Higginson June 2015; Dr. Kelly Smith May 2015). These mortalities occur despite imposed speed reductions, fencing, signage, right-of-way-restrictions, imposed nest 'buffers', educational trainings for workers, pre-construction nest surveys, and other typical mitigation measures that purport to reduce impacts during both breeding and non-breeding season development. For instance, on one construction site for a large industrial complex, within the span of one month along one dirt road designated for construction traffic, over 30 flat-tailed horned lizards (a special status species) were inadvertently run over and killed due to their cryptic nature and attraction to the moisture provided by erosion control water trucks. The degree to which this phenomenon occurred was partly due to the construction site occurring near, but not within, occupied critical habitat for the species, and had little to do with breeding season or status of the individuals.

CURE-Owens-14

Although it can be argued whether or not such inevitable mortalities are significant based on the numbers of individuals injured or killed, it cannot be denied that when the mortalities occur among individuals of endangered or threatened species such as the Western snowy plover, it must be concluded that each breeding individual loss results to some degree in reduced viability of the population.

[70] MacDonald B, T Longcore, S Dark. 2010. Habitat suitability modeling for Western Snowy Plover in Central California. The Urban Wildlands Group, Los Angeles, California, 129 pp.

[71] Colwell MA, CB Millett, JJ Meyer, JN Hall, SJ Hurley, SE McAllister, AN Transou, RR LeValley. 2005. Snowy Plover reproductive success in beach and river habitats. *Journal of Field Ornithology* 76(4):373-382. *See also* United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751.

[72] *Ibid.*

As significantly, indirect mortality occurs because high levels of human activity hinder normal brooding, foraging, and sheltering activities. As mentioned above, snowy plover chicks are precocial. After hatching, the male bird cares for the chicks for approximately 28 days.[73] However, the chicks quickly must learn how to feed themselves, balance thermoregulatory needs, and avoid predators without assistance. Human activities can be especially detrimental to survivorship during this critical period in the species' life cycle. When a brooding adult is disturbed, it often leaves chicks exposed, and hence vulnerable to predation, inclement weather, and reduced foraging time.[74] Human activity may also cause brood movement, resulting in the separation of one or more chicks from the rest of the brood.[75] In addition, movement into adjacent territories can result in attacks on the young by other adult plovers, resulting in chick death and abandonment.[76]

Predation, by both native and nonnative species, has also been identified as a cause of mortality to plovers even in the presence of applied certain mitigation measures to reduce impacts of development projects, and is a major factor limiting western snowy plover reproductive success at many Pacific coast sites.[77]

CURE-Owens-14 cont.

While predominantly a natural phenomenon, predation is enhanced through the introduction of nonnative predators and unintentional human encouragement of larger populations of native predators (e.g., by providing supplemental food, water, and nest sites). Elevated predation pressures result from both temporary and permanent landscape-level alterations in coastal dune habitats that, in turn, now support increased predator populations within the immediate vicinity of nesting habitat for western snowy plovers.[78]

Because anthropogenic disturbance is the primary threat to the western snowy plover, numerous biologists have concluded that protecting occupied sites from human disturbance during both breeding and non-breeding season is essential to the conservation and recovery of the species.[79]

g. Case Studies Substantiating the Effects of Snowy Plover Disturbance

CURE-Owens-15

Numerous studies have demonstrated that human activities are affecting the

[73] Colwell MA, SJ Hurley, JN Hall, SJ Dinsmore. 2007. Age-Related Survival and Behavior of Snowy Plover Chicks. *Condor* 109(3):638-647.
[74] *Ibid.*
[75] Ruhlen TD, S Abbott, LE Stenzel, GW Page. 2003. Evidence that human disturbance reduces snowy plover chick survival. *Journal of Field Ornithology* 74(3):300-304.
[76] *Ibid.*
[77] *Ibid.*
[78] *Ibid.*
[79] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751. *See also* Brindock KM, MA Colwell. 2011. Habitat Selection by Western Snowy Plovers During the Nonbreeding Season. *Journal of Wildlife Management* 75(4):786-793.

survivorship, numbers, and activity patterns of western snowy plovers. Escofet and Espejel concluded that human encroachment has caused nesting snowy plovers to completely disappear from many coastal breeding locations in California. Habitat that is opened to human disturbance, such as the Project construction proposed over a minimum of a six month period in occupied plover nesting habitat, even while temporary and possibly during non-breeding season may have permanent impacts on snowy plovers. Lafferty reported that snowy plovers immediately stopped breeding at the Reserve when it was opened to recreation, and ultimately permanently abandoned the site for wintering.[80] Page et al. observed western snowy plovers' response to human disturbance at two coastal beaches where normal beach use ranged from light to heavy.[81] When humans approached western snowy plovers, adults left their nests 78% of the time when people were within 50 meters and 34% of the time when people were over 100 meters away. Ruhlen et. al. examined the effects of human disturbance on snowy plover chick survival at Point Reyes National Seashore, California.[82] Chick loss on weekends and holidays was 72% greater than expected in 1999 and 69% greater than expected in 2000. This suggested that increased human recreation on Point Reyes beaches over weekends and holidays negatively affected snowy plover chick survival, even though humans were not observed to cause direct impacts to chicks. Rather, results suggest that the increased associated potential for anthropogenic disturbance (noise, predator attraction) was primarily responsible for chick mortality.

CURE-Owens-15 cont.

h. Summary about Impacts to Snowy Plover

First, Mitigation Measure 4.6-1d defers aspects of mitigation to consultation with USFWS. This prohibits the reviewer to analyze the efficacy of details of mitigation protocols (or success criteria for such), as they cannot be provided when they are as of yet to be determined. Deferment of mitigation measures and relevant details to some point in the future does not allow for adequate impact analysis as required under CEQA, and provides no guarantee such measures will even be undertaken.

CURE-Owens-16

Second, for construction during the breeding season, visual barriers are proposed to reduce impacts. In light of the complex causes and results of anthropogenic disturbances to breeding pairs and chicks, such barriers will not serve to significantly reduce the direct and indirect impacts of noise on breeding birds. Based upon the abundant evidence regarding the negative impact of human proximity to nesting birds, all construction during breeding season

[80] Lafferty KD. 2001. Human disturbance to wintering western snowy plovers at a southern California beach. *Biological Conservation* 10:1-14. *See also* University of California, Santa Barbara Natural Reserve System. 2001. Snowy Plover Management Plan (SPMP) – 2001. Available at: <http://coaloilpoint.ucnrs.org/SnowyPloverProgram.html>. (Retrieved Jun 19, 2015).

[81] Page GW, JS Warriner, JC Warriner, RM Halbeisen. 1977. Status of the snowy plover on the northern California coast. Part I: Reproductive timing and success. California Department of Fish and Game Nongame Wildlife Investigations, Sacramento, CA. 6 pp.

[82] Ruhlen TD, S Abbott, LE Stenzel, GW Page. 2003. Evidence that human disturbance reduces snowy plover chick survival. *Journal of Field Ornithology* 74(3):300-304.

should simply be avoided, as impacts will be inevitable and unavoidable despite construction of a barrier, or the presence of a biologist on-site to detect breeding birds. The Applicant should be reminded that detection, imperfect avoidance mechanisms, and reporting cannot and will not serve to restore the impacts that will inevitably occur to birds in the form of harassment, injury, and possibly mortality if construction occurs within their nesting area during breeding season.

The DEIR/S states that impacts will be minimized, under Measure 4.6-1d, by having an onsite biologist survey for nests and then consult with experts to determine any additional avoidance or minimization measures should be implemented prior to initiating construction activities. Once again mitigation is deferred to a future consult / plan, thus making it impossible for the public to review the efficacy proposed mitigation. This is important because although agency consultation for protected species take is required under the ESA, the agencies do not conduct oversight of all mitigation measure for such species, therefore confirming due diligence of mitigation detail is necessary prior to issuance of a development permit while oversight is still a reality.

CURE-Owens-16 cont.

Adequate details for analysis are not only preferable, but essential. For example, the snowy plover management plans for the proposed Monterey Bay Shores Resort – to be constructed in snowy plover occupied habitat in proximity to the Project's western Source Water pipeline - prescribed establishing exclosures around the nesting area "during fledging" (the interval between hatching and flight) as a method to reduce breeding season construction impacts.[83] However, this has little value as a take avoidance measure because snowy plovers have precocial chicks that leave the nest within hours after hatching.[84] Snowy plover chicks coming from nests on the project site or adjacent areas would be susceptible to direct (e.g., crushing) and indirect (heightened vigilance that precludes normal foraging activities) impacts from Project construction activities.[85]

Additionally, Muir and Colwell (2010) studied the response of incubating plovers to an observer approaching the nests. Incubating plovers ceased incubation and left nests when an observer approached to within a mean distance of 80 ± 33 meters,[86] thus further demonstrating the ease at which harassment to plovers can occur with the presence of humans in the general area. This is just one example of where a thorough analysis of mitigation protocols is essential for determining adequacy of mitigation measures; without such an accurate assessment of impact reduction is impossible. **Ultimately, the only reliable way to prevent such impacts is to prohibit construction activities during the entire snowy plover breeding season.**

[83] http://www.landwatch.org/pages/issuesactions/gm-ecoresort.html Retrieved June 22, 2015.
[84] Precocial chicks are well developed, feed themselves, run about, and regulate their body temperature.
[85] Muir JT, MA Cowell. 2010. Snowy Plovers Select Open Habitats for Courtship Scrapes and Nests. *Condor* 112(3):507-510.
[86] *Ibid.*

Third, the Applicant proposes to develop a Habitat Mitigation and Monitoring Plan (HMMP) to complete its obligation to reduce impacts to below significant for sensitive species including the snowy plover. Once again the description of adequate impact reduction is deferred, and as a result the reviewer is unable to determine the adequacy of the measures given that no site-specific or species-specific details or methodology have been provided for a plan that has yet to be created. This prohibits adequate review by the public to determine if impacts will satisfactorily be reduced to below significant as required. Not only does it prohibit thorough analysis, it provides no guarantee that the HMMP will actually be developed and function as promised to reduce impacts as proposed, nor are any standard success criteria for such presented. The DEIR/S states the HMMP will be given to the appropriate agencies for approval, but it does not discuss what, if any, actions will be taken if any of the "appropriate" agencies (such as USFWS, or CDFW, or a local jurisdiction) do not all approve the final HMMP, nor how such an impasse would affect impact mitigation as the DEIR/S asserts will occur be default of the mention of a Plan that has yet to be created.

Fourth, in respect to movement of SNPL and assuming that displacement can be easily mitigated partly because it is a temporary impact: it is important to note that the USFWS Recovery Plan specifically states,

CURE-Owens-16 cont.

> *"A portion of the Pacific coast population of western snowy plovers do not migrate up or down the coast and are year round residents. Additionally, the majority of western snowy plovers that do migrate are site-faithful, returning to the same breeding areas in subsequent breeding seasons (Warriner et al. 1986, Stenzel et al. 1994). Western snowy plovers occasionally nest in exactly the same location as the previous year (Warriner et al. 1986)."*[87]

The USFWS Snowy Plover Recovery Plan concludes that to bring the snowy plover population back to numbers above threatened status, it is essential to

> *"prevent disturbance of breeding* ***and wintering*** *western snowy plovers by people and domestic animals.* ***Disturbance by humans and domestic animals causes significant adverse impacts to breeding and wintering western snowy plovers****. Because human disturbance is a primary factor affecting western snowy plover reproductive success, land managers should give the highest priority to implementation of management techniques to prevent disturbance of breeding birds. Management plans (Actions 3.3.1, 3.3.2, and 3.4) should include appropriate human/domestic animal access restrictions to prevent disturbance of western snowy plovers* [emphasis added]".

i. Cumulative Impacts to Snowy Plovers are Not Adequately Analyzed

CURE-Owens-17

[87] USFWS. 1986. Snowy Plover Recovery Plan. p. 138

Several other projects have been proposed for the coastal zone in the vicinity of the Project site, and proximal to snowy plover critical habitat, including:[88]

1. The Collection at Monterey Bay Project (development of a 342-room coastal resort on a 26.46-acre site located west of State Route 1 in Sand City).
2. A new campground at Fort Ord Dunes State Park (development of 100 campsites, parking areas, an internal trail network with beach access, and various other infrastructures).
3. The Monterey Bay Shores Resort Project (development of a 40 acre parcel in Sand City, including approximately 680,000 cubic yards of grading)

The Fort Ord coastal HCP includes the creation of a new campground at Fort Ord beach and will greatly increase human use in plover habitat, causing significant impacts to wintering and breeding birds and habitat within the general region of this Proposed Project's pipeline development.

The Monterey Bay Shores Resort, an exceedingly large coastal hotel to be constructed at the southern boundary of Fort Ord, will preclude nesting and wintering of plovers within and adjacent to the Project footprint, thus causing permanent direct and long term impacts to nesting to the regional population. The California Coastal Commission, amazingly, did not require any sort of concurrence with USFWS when it issued its conditional development permit, and as a result impacts to snowy plovers (and other resident sensitive species) remain inadequately mitigated, thus contributing further to local impacts to plovers in close proximity to the Project proposal. The Collections is another hotel proposed slightly south of the Monterey Bay shores Resort, and is also in Sand City, with similar significant impacts to snowy plovers.

CURE-Owens-17 cont.

The DEIR/S acknowledges the potential for cumulative impacts as follows, "Specifically, the Monterey Shores Resort (No. 19), 90-Inch Bay Avenue Outfall Phase 1 (No. 43), Slant Test Well Project (No. 47), Moss Landing Community Plan (No. 37), and The Collection at Monterey Bay Resort (No. 56) would affect beach or dune areas that may support western snowy plover. Implementation of the Monterey Bay Shores Resort and Moss Landing Community Plan projects could occur at the same time as the proposed MPWSP construction and therefore could adversely affect western snowy plover and its habitat through heavy equipment use, dust generation, elevated noise levels, and increased human activity" but claims that the mitigation measures provide will reduce impacts to below significant. However, what is not addressed is that a comprehensive strategy for the conservation of western snowy plover breeding and wintering locations has not been incorporated into the Sand City General Plan, Local Coastal Program, or their implementing ordinances. The USFWS has expressed concern about the

[88] DEIR p. 5-4

aforementioned projects being addressed in a piecemeal fashion, **which does not allow an adequate assessment of their cumulative effects**.[89] **As a result, the USFWS and others have recommended the preparation of a habitat conservation plan (HCP) to adequately address cumulative effects**.[90] The City of Sand City, City of Marina, and the Monterey Bay Shores Resort developers each committed to preparing an HCP for the western snowy plover. None of these entities have fulfilled their commitment. To date, there exists no definitive habitat plan by any of these entities that addresses cumulative impacts to the plover, or proposes a strategy for conserving snowy plovers in the specific region. In light of these oversights the DERI/S has not provided a complete discussion of all projects and development plans that contribute to cumulative impacts of the species.

CURE-Owens-17 cont.

j. Compensatory Mitigation Details are Necessary for Complete Snowy Plover Impact Analysis.

Under Mitigation Measure 4.6-1n (discussed above) the DEIR/S does state that the HMMP would include a description of any compensation in the form of land purchase or restoration. Not only should a land purchase or restoration be considered with appropriate compensation ratios of habitat gained to habitat lost of a least 2:1, but ideally would collaborate with local SNPL conservationists. According to Point Blue snowy plover biologist Kriss Neuman (*pes. comm.* June 23, 2015),

> *"There is currently no dedicated funding to support the monitoring and conservation activities that are conducted to support this regional plover population and in particular at this site. The landowner [of the Cemex site] gladly allows Point Blue, California State Parks, and USFWS refuge staff to access habitat, and we jointly install protective fencing, manage habitat and predators, and monitor nesting. A dedicated conservation fund supporting these activities on the site and possibly in the region as well would help to ensure population stability in the region."*

CURE-Owens-18

Given that the Point Blue, in coordination with California State Parks, and the local USFWS Wildlife Refuge have been working to monitor and conserve snowy plovers for the past 30 years, it would appear that two of the most effective measures that could be taken to truly reduce the cumulative impacts to this sensitive species would be for the applicant to

(1) Contribute to a conservation fund, to be overseen by the appropriate oversight agency, that will be used for monitoring, habitat restoration, and other conservation actions that are key to the populations' viability over time, and

(2) Contribute to a region-wide Snowy plover Habitat Management Plan that incorporates

[89] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751.
[90] *Ibid*.

all of the relevant municipalities and agencies that are stakeholders for this regional plover population's habitat and conservation. Any such Plan should coordinate and consult with the Point Blue, California State Parks, and USFWS biologists who have been researching this region's snowy plovers for decades.

CURE-Owens-18 cont.

The hydrology of sand systems such as those found in dune habitats in complicated.[91] In a coastal setting such as this, the dune plants are typically neither xerophytic nor halophytic.[92] They typically germinate during a rain event and rapidly send down a fine root through wet sand until it reaches the water table. Fresh water "floats" on the salt. The ground water is drawn toward the surface, and if the dune gets built higher, complicated physics results in the water being drawn up so that the freshwater lens used by the plants stays a relatively stable distance from the surface of the dune, whether the dune is being built higher, or eroded lower.[93] In short, the effect and resultant impacts of imposing the construction of ten extraction wells through this intricate and sensitive hydrological system, and providing a strong pull toward the ocean, is not addressed but should be for adequate impact analysis.

CURE-Owens-19

VI. ADDITIONAL MITIGATION MEASURES PROPOSED FOR TERRESTRIAL BIOLOGICAL RESOURCES IMPACTS ARE INADEQUATE

In addition to those discussed above, there are other incidences where impacts proposed as significant are considered mitigated to below significance with the following measures, despite the fact that the specifics of these measures and their standard criteria for success are not adequately identified, and at times deferred to the future, preventing complete analysis of their efficacy.

CURE-Owens-20

a. Mitigation Measure 4.6-1a. Retain a Lead Biologist to Oversee Implementation of Protective Measures[94]

First, in the case of a potential sensitive species take or harassment, the lead biologist is said to have direct stop work authority, as is a typical prescription for construction sites, and most onsite mitigation protocols and potential actions rest on this unadulterated authority of the lead biologist. However in reality the lead biologist is often not actually onsite, and his/her responsibilities are handed to a subordinate who theoretically has power to stop work, but in reality does not due to the realities of who is asserting authority over construction, aggressive

[91] Zarnetske, P. L. 2011. *The influence of biophysical feedbacks and species interactions on grass invasions and coastal dune morphology in the pacific northwest, USA* (Order No. 3492886). Available From ProQuest Dissertations & Theses Full Text; ProQuest Dissertations & Theses Global. (918818070). Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/918818070?accountid=14068

[92] Martinez, M. L. and Psuty, N.P. (eds.) 2004. Coastal Dunes: Ecology and Conservation. Ecological Studies Vol. 171, Springer-Verlag Berlin.

[93] *Ibid.*

[94] DEIR/S 4.6-164

pressure from the developer to never stop work more than momentarily, and other pressures including the NDAs mentioned above that tie the hands of biologists who observe violations of permits but are at risk of losing jobs if they report them. This reality is the norm, not the exception (*pers. comm.* Patrick Hord, Sage Wildlife Biology; Kim Davis, Helix Environmental; Frank Dittmer, AECOM, 2016).

I have witnessed this scenario many times in my experience as an environmental consultant, where the onsite lead biologist is not in reality given full authority to cease any actions that threaten or are in the process of causing impact to sensitive species or their habitats, or any other related environmental violations of air or water. This remains a growing and serious problem on these construction sites, due largely to the delays inherent within the process, and the conflicts inherent when relying on construction or operational site supervisors to stop work on projects for which their primary responsibility, reinforced by their employer, is ensuring work proceeds with no interruption or delays. This scenario is ripe for conflict, and more often than not results in the impacts to species and habitats going unreported, under-reported, or the situation being settled in a manner that does not comply with the spirit or intent of the mitigation measure or protocol(s). The Applicant may claim that they have little control of conflicting parties onsite, but by default they do have authority of oversight to fix these problems given that as part of CEQA compliance they are tasked with creating mitigation measure that are actually effective, with criteria for measuring success that are relevant and enforceable.

CURE-Owens-20 cont.

Therefore the Applicant should provide some standard or assurance within the mitigation measures that insures that the lead biologist, onsite, has the un-revocable authority to stop work when needed, and is **working as an independent third party** (independent of the primary environmental consultant, and of the developer) assigned to such a duty with the responsibility of reporting violations or takes of species to the agencies. As importantly, any reports of mitigation monitoring, violations, daily or monthly activities, etc. related to biological resource protection shall be given to the agencies first, developer second. The developer should not be allowed to alter or suggest alterations to any reports prior to delivery to the regulatory agency(ies). As a consultant for a quarter of a century observing the on-the-ground interactions on construction sites, I can say with confidence that without such measures in place, the role of the lead biologist is often reduced to that of a paper tiger, one hired to appease the developer as employer, and not one hired to adequately comply with all mitigation measures and standards.

Second, according to this mitigation measure it appears that the lead biologist is expected to relocate any special status species that are 'at risk'. The DEIR/S does not specify what 'at risk' entails, yet such a definition for plants and animals of different taxa is extremely broad, nor any protocol for relocation methodology, nor even which species or taxa are being referred to in the first place. Confusingly, Mitigation Measure 4.6-1c(10) says that if special

status species are found on site during construction, construction activities shall cease (under whose authority it does not say) while everyone waits for the animal to move "on its own outside of the project area (if possible)". What makes this impossible, what are the parameters? If a sensitive species of reptile is sleeping under the parked truck of a construction worker - a common occurrence on some site - does s/he have to wait until the lizard moves before he can drive his vehicle? If a burrowing owl takes up residence overnight next to a pipeline trench, what then? If it is a plant species to be relocated, which is an almost inevitable reality, the DEIR/S does not identify to where the plant species shall be relocated, or with what methodology, despite the fact that areas of the Project site have been determined to be occupied by threatened and endangered plants species for which the risk of impacts on site could arise frequently, and despite the fact that different species can require vastly different relocation protocols. Consideration of where to relocate the animal to has been deferred and delegated to the field biologist, and thus goes undescribed. There is no consideration that it might not be possible to easily locate certain species, nor any discussion of what measures would be undertaken to reduce impacts if such is the case. This results in a failure to meet the assumption of these measures reducing impacts below significant.

CURE-Owens-20 cont.

b. Mitigation measure 4.6-1e Avoidance and Minimization Measures for Special-status Plants.[95]

First, the DEIR/S states that focused surveys will be conducted in the future prior to development. However, it also says that based upon the results of these surveys, sensitive plants will be flagged and avoided where possible, *or* salvaged, *or* a take permit may be solicited, and impacts may be mitigated as a result of a consult with USFWS and/or CDFW, the details for which are not provided to any degree[96]. At present, focused, protocol level, and rare plant surveys have not been conducted in the recent past, and therefore no data is available for review, beyond some predictions of presence and likelihood to occur. As iterated previously, the lack of data on existing conditions at the species-specific level makes it impossible for the reviewer to predict the efficacy of these mitigation measures that are mostly deferred to the future. It is inevitable that mitigation measures' efficacy can be quite different based upon how many individuals of a sensitive species are present.

CURE-Owens-21

Second, the DEIR/S also states that "compensation for temporary or permanent loss of special status plant occurrences, in the form of land purchase or restoration [on or off site], shall be provided to a level acceptable to the resource agencies with jurisdiction over those species." This is also deferment of mitigation prescriptions, it also provides no information for the reviewer to determine if and how impacts will be adequately reduced below significant, nor does it make any mention of what success criteria will be used to determine impacts have been adequately reduced, or for which species specifically. It additionally puts the entire burden of

[95] DEIR/S 4.6-171
[96] *Ibid*.

determining this Project's mitigation efficacy on one or a few individuals assigned to this project within a given lead agency. This negates the role of CEQA here, which exists in part to allow the public to provide input to impact mitigation including its applicability and efficacy, presuming the public has been provided with sufficient data to make such a review.

Experts on measuring effectiveness of mitigation measures, especially ones regarding compensatory tradeoffs as alluded to here, correctly state that, "Public choice theory suggests officials and traders have more incentive to facilitate barter than to ensure biodiversity protection. Thus, given the option of saying to developers "yes, with conditions" rather than "no," officials will prefer "yes, with conditions"— particularly when compliance with conditions cannot be credibly measured and officials can avoid accountability for outcomes. Legitimized bartering can thus create a policy situation "obscure enough to please all parties . . . and so ill-defined that failures will be difficult to detect."[97] This statement speaks profoundly to why so many compensatory conservation deals have failed to meet the goals of mitigation for projects over the years. If the CPUC and the Monterey Bay National Marine Sanctuary are truly concerned with their role in insuring adequate mitigation of all of the significant impacts described herein to plants and animal species, they will require detailed description and discussion of the adequacy of compensatory mitigation plans (such as funds for sensitive specie s research, HMPs, HCPs) and parcels prior to issuance of a development permit, and not leave all such prescriptions solely up to individuals of a lead agency.

CURE-Owens-21 cont.

c. Mitigation measure 4.6-1f Avoidance and Minimization Measures for Smith's Blue Butterfly.[98]

As with most if not all other special status species discussed in this document, the DEIR/s fails to conduct focused or protocol-level surveys for the Smith's Blue butterfly throughout any of the Project site. For reason already discussed above, such lack of data prevents the reviewer from adequately assessing existing status and resultant measures and standards necessary to mitigate potential impacts to this ESA listed species. The DEIR/S indicates that Slant Wells, Pipelines, Transition main, the CEMEX active mining area, CEMEX access road and the surrounding sand dunes, and staging areas all have Smith's Blue butterfly habitat (its host planta, coast and seacliff buckwheat, specifically). It states that construction within these areas has the potential to "temporarily impact" Smith's blue butterfly habitat, "which would be a significant impact. The impact is considered temporary because coast

CURE-Owens-22

[97] Walker, S.; Brower, A.; Stephens, R,T.; and Lee, W. 2009. Why Bartering Biodiversity Fails. *Conservation Letters* 2:149–157. Retrieved from: http://www.azoresbioportal.angra.uac.pt/files/publicacoes_Walker%20et%20al%202009.pdf

[98] DEIR/S 4.6-172

buckwheat is relatively easy to cultivate and reestablish in dune scrub habitat, and would be returned to pre-construction conditions".[99]

As its primary mitigation measure the Applicant states it will conduct a section 7 consultation implement all measures required by USFWS. This amounts to mitigation measures being deferred, unspecified, and thus impossible to assess for efficacy, regardless of a statement that purports compliance with the ESA contingent on future discussions.

Measure 4.6-1f states that 'floristic botanical surveys of all suitable habitat for coast buckwheat and seacliff buckwheat, both of which are host plants to Smith's blue butterfly, shall be conducted by a qualified biologist during project design and prior to project implementation. Maps depicting the results of these surveys shall be prepared to document the location of the host plants within or adjacent to the project area. Construction of project elements shall be planned to avoid mapped host plants for Smith's blue butterfly whenever feasible."[100] This is also deferral of mitigation planning and descriptions, and prevents thorough analysis of mitigation efficacy. Minimum required impact reduction actions can vary widely from standard avoidance procedures if just a few host species are present, to major changes necessary in development footprint and design and/or timing of construction if there are many host plants and even butterflies on site. The Applicant needs to provide not only complete habitat maps of the host plants, but also focused butterfly surveys, especially considering the sensitivity of this species and its slow road to recovery since its listing in 1976.

CURE-Owens-22 cont.

The unique natural history of the Smith's blue butterfly is important to be aware of, since it represents some of the difficulties in relying on mitigation measures whose details are generic or deferred to the future in order to address reduction in impacts to the species and its host plants. For example, individual adult males and females live approximately one week, therefore detecting them at the adult stage can be very difficult and depend on long term surveys efforts. Therefore presence of butterflies can be easily missed.[101] Young larvae feed on the pollen and developing flower parts, while older larvae feed on the seeds. Older larvae are tended by ants, which may provide some protection from parasites and predators. Upon maturing in about one month, the larvae pupate in the flowerheads or in the leaf litter and sand at the base of the buckwheat plant. Pupae that form in the flowerheads later drop to the ground. Some adults are quite sedentary, with home ranges no more than a few acres, however others may disperse farther and use home ranges between 20-30 acres.[102] This species prefers

[99] DEIR/S 4.6-129
[100] *Ibid*. 4.6-172
[101] Arnold, R.A. 1983b. Ecological studies of six endangered butterflies: Island biogeography, patch dynamics, and the design of habitat preserves. Univ. of Calif. Publications in Entomology 99: 1-161. Retrieved from: https://searchworks.stanford.edu/view/1049101
[102] USFWS. 2006. Smith's Blue Butterfly Five Year Review: Summary and Evaluation. Retrieved from: https://www.fws.gov/cno/es/Smith's%20blue%20butterfly%205-year%20review.FINAL.pdf

to feed on mature, robust individuals of the perennial buckwheats because they produce more flowers. Thus buckwheat stands that consist of younger or older, senescent individuals, which produce fewer flowers, may not be visited by the butterfly, and are of lesser value for this species' conservation.

These characteristics demonstrate that (a) detection of the species requires very specific training and a knowledge of the species natural history, and (b) host plants and habitats are not all alike in terms of viability and resultant importance for the species conservation. Thus treating any and all buckwheat habitats equally, especially in terms of both construction mitigation and parcel selection for compensatory mitigation, can result in failure to reduce potential impacts. Additionally, USFWS recommends that grading involving motor vehicles, heavy equipment, or ground disturbance will be scheduled outside the potential flight period of the Smiths blue butterfly (June-September)[103], and yet there is no mention of construction avoidance during this specific flight period in the mitigation measures. Also, since there are no surveys that provide estimates of the numbers of Smith's blue butterflies that might exist within or bordering the Project site, it is not possible to quantify the exact number of individual butterflies or host plants that could be taken, and thus impacted, by the removal of buckwheat in the area. Thus overall impacts and resultant detailed mitigation analyses for the Smith's blue butterfly by the Project cannot be thoroughly assessed.

CURE-Owens-22 cont.

d. Mitigation measure 4.6-1g Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.[104]

Due to their cryptic nature and difficulty to detect without conducting focused surveys for such, reptiles are historically underestimated in all aspects of conservation, including surveys, monitoring, and impact analysis. I was co-researcher on the world's most extensive study in the wild of the world's largest snake species, the green anaconda (*Eunectes murinus*). This species had not been studied to any extent previously due primarily to the false belief that they were not in high abundance anywhere and thus difficult to observe for research. Even expert herpetologists recommended against commencing the study, convinced we would find very few of the snakes in the wild. However, once we began focused surveys in their known habitat, as just two researchers we caught and released over 800 green anacondas within a small region (a few square kilometers). We found the snakes primarily by tactile searching (walking the shallow wetlands until we stepped on them), due to the fact that visual searching of this cryptic predator would result in missing up to 90% of the individuals we encountered.[105] I mention this research to underscore the reality that even one of the largest reptile species in

CURE-Owens-23

[103] USFWS. 1984. Smith's Blue Butterfly Recovery Plan.

[104] DEIR/S 4.6-173

[105] Rivas, J. A. (1999). *The life history of the green anaconda (Eunectes murinus), with emphasis on its reproductive biology* (Order No. 9973496). Retrieved from: http://www.anacondas.org/diss/disser.pdf

the world can be very difficult to detect if one is not conducting focused surveys with a protocol designed for species-specific detection. Even during my research on the Orinoco crocodile – a species that can get upwards of 800 pounds – our biggest research challenge was visually locating them in known occupied habitats.[106]

This Project's underestimation of the impacts to reptiles – by way of zero attempts to survey them anywhere, or create species-specific mitigation protocols - falls within this sort of erroneous assumption that if individuals are not detected anecdotally, they are likely not abundant or not present, and/or can easily be detected in a very short period of time when construction monitoring requires such. Reptiles have a wide range of preferences for heat tolerance, some being purely nocturnal, while many will retreat into shallow burrows or rapidly shuffle from side to side to burrow into the sand in order to avoid extreme heat and cold, including sensitive lizard species including the black legless lizard, silvery legless lizard, and coast horned lizard. Environmental impacts assessments are notorious for underestimating, undervaluing, and under-mitigating reptile species, and this Project's Report is no different.

CURE-Owens-23 cont.

These lizard species forage and move within a broad range of habitats, beyond those identified in the DEIR/S as preferred habitats or optimal foraging habitats, and as a result the impact analyses estimating the "potential to occur" of these species based only such assertions of "preferred habitat" in the literature, and not focused field ground-truthing, fall short of accurate site assessments regarding species presence, density, and abundance.[107,108,109,110] For instance, I have observed flat-tailed horned lizards and fringe-toed lizards – both sensitive species that prefer small dunes and loose sandy soils– frequent very rocky and disturbed habitats. The fact that the Applicant also failed to conduct any focused migratory bird or raptor surveys only reinforces the importance of reptiles surveys, as these provide an important prey item for many species of birds.

Additionally, unexpected consequences of other practices on construction sites can negatively impact local species. On one such site I repeatedly observed workers spreading insecticide to kill all species of ants, in areas proximal to critical habitat occupied by protected flat-tailed horned lizards whose primary prey are various ant species. Avoidance of such actions

[106] Rivas, J.A. and Owens, Renee Y. 2002. Orinoco crocodile (*Crocodylus intermedius*): Age at First Reproduction. *Herpetological Review*. 33 (3): 203.

[107] Gerson, M. M. 2004. *Aspects of the ecology of a desert lizard, Callisaurus draconoides (blainville 1835), in Joshua Tree National Park with an emphasis on home range and diet* (Order No. 3146172).

[108] Heaton, J. S. 2002. *The LizLand model: Geomorphic landform and surface composition analysis of lizard habitat in the California Mojave desert* (Order No. 3029564).

[109] Williams, A. K. 2004. *The influence of probability of detection when modeling species occurrence using GIS and survey data* (Order No. 3123715).

[110] Rosen, P. C. 2000. *A monitoring study of vertebrate community ecology in the northern Sonoran desert, Arizona* (Order No. 9965915).

are one of the specific details that are important, but consistently omitted, by mitigation protocols for reptiles.

The lead biologist for this Project is presumed to prepare a relocation plan, and use relocation as a primary mitigation measure. The DEIR/S states that "only relocation sites that are not over-populated and have suitable habitat conditions (e.g., soils, moisture content, vegetation, aspect) shall be used", however provides inadequate details on how these conditions may be determined, which is important considering preferred habitats and prey items are different for each species of lizard. There is no information provided about the existence of such sites nearby, nor is there data, criteria, or standards established on likelihood of survival via relocation. The DEIR/S says the biologist shall survey for lizards by raking under bushes and walking "appropriately spaced transects" prior to construction. These mitigation descriptions and methods are inadequate, partly for the same reasons described above, since no ground-truthing has been conducted to assess or estimate whether or not these species are present and to what degree, result in the reviewer being unable to reasonably determine the efficacy of mitigation based upon generic protocols. Each species has different natural histories, and different characteristics in respect to detectability during any given time, temperature, and type of habitat. To assume the same protocol will work in detecting, not to mention relocating, these species will be adequate is unsupported. In my experience the taxa most susceptible to incidental mortality on construction sites are snakes and lizards, due to difficulty of detection by biologists and ease of hidden movements on the part of the animal. I have caught, documented, and released over 1,000 reptiles in the course of my natural history and consulting research, and to say these animals are highly susceptible to anthropogenic impacts would be an understatement. Such realities must be taken into consideration when reviewing mitigation measures, something the reviewing public cannot do in this case because no necessary details are provided.

CURE-Owens-23 cont.

e. Mitigation Measure 4.6-1i: Avoidance and Minimization Measures for Nesting Birds

This measure states that, "For all construction activities scheduled to occur during the nesting season (February 1 to September 15), the qualified biologist shall conduct a preconstruction avian nesting survey within 14 days of site clearing and/or ground disturbance. Copies of the survey results shall be submitted to the CPUC. If construction activities at any given facility site begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required. However, if there is a break of 14 days or more in construction activities during the breeding season, a new nesting bird survey shall be conducted before reinitiating construction."[111]

CURE-Owens-24

[111] DEIR/S 4.6-176

1. Pre-construction nesting survey reports must also be provided to the USFWS, since they have primary jurisdiction over enforcement and implementation of the Migratory Bird Treaty Act, and would be the agency providing a take permit if the developer seeks approval for any activities that risk violation of the MBTA.

2. There is no reason why ongoing construction activities that proceed into breeding season should not require nesting bird surveys; such surveys are required to insure nesting birds are not harassed by Project actions. As someone who has conducted hundreds of MBTA breeding bird surveys on and near construction sites, I can say with complete confidence that birds can, and often do, commence nesting within construction footprints, sites, and along construction access roads due to many species having high natal site fidelity, philopatry, and established territoriality, even despite human interference.[112,113,114]

CURE-Owens-24 cont.

Therefore any and all development activities can significantly impact a breeding bird regardless of when the actual construction began onsite, and nesting / breeding bird surveys should be conducted not only prior to any activities during breeding season, but throughout construction activities during breeding season. Sweeps for nesting birds should be made on a daily basis, and more thorough surveys conducted weekly. This includes surveys for ground-nesting birds as well as others.

f. Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan

This Measure states that part of its criteria for reduction of significant impacts to special status species includes the **"**Description of any other compensatory mitigation in the form of land purchase, establishment of conservation easements or deed restrictions, contribution of funds in lieu of active restoration, or purchase of mitigation bank credits, or other means by which the mitigation site will be preserved in perpetuity."[115]

CURE-Owens-25

This Measure is inadequate for CEQA purposes of review and analysis since it is based upon deferral of mitigation, thus lacking in data, description, detail, and standard criteria to even begin to analyze its efficacy and success. Compensatory mitigation is highly variable in its targets (species and habitats) goals, efficacies, and prescriptions, and the reviewer is unable to make any determinations regarding the success when no further detail is provided on a habitat and species-specific basis. As such, this measure's contribution to impact reduction fails, and considering what a key part of most mitigation reductions compensatory tradeoffs must be, this

[112] Sedgwick, J. (2004). Site Fidelity, Territory Fidelity, and Natal Philopatry in Willow Flycatchers (*Empidonax traillii*). *The Auk, 121*(4), 1103-1121. doi:10.2307/4090479

[113] Reed, J., & Oring, L. (1993). Philopatry, Site Fidelity, Dispersal, and Survival of Spotted Sandpipers. *The Auk, 110*(3), 541-551. doi:10.2307/4088418

[114] Robert A. James, Jr. (1995). Natal Philopatry, Site Tenacity, and Age of First Breeding of the Black-Necked Stilt. *Journal of Field Ornithology, 66*(1), 107-111.

[115] 4.6-181

means the Applicant has failed to demonstrate impacts have been reduced below significant for every species and habitat for which this measure is used.

CURE-Owens-25 cont.

g. Field Case Study Supporting the Problem of Deferral of Mitigation Prescriptions to the Future

The following example demonstrates how:

(a) Mitigation measure deferred to the future can fail to reduce impacts including sensitive species mortality,
(b) Failure to recognize the importance of nearby critical habitat to a Project footprint can cause unanticipated sensitive species mortalities, and
(c) Failure to consider the natural history of lizard species or creating species-specific mitigation measures can result in species mortalities.

I and my biologist colleagues have witnessed an important phenomenon on project construction sites in arid regions, and during warmer spring and summer seasons in semi-arid temperate regions similar to that of this Project, where lizard species are present, and pre-construction surveys require minimal pre-construction surveys for reptiles along roads and within construction zones (similar to the mitigation measure for lizards discussed above for this DEIR/S regarding pre-construction survey to be conducted immediately before and during construction). Specifically, I have observed that lizards are directly and immediately attracted to roads on and around construction sites where trucks spraying water and other erosion control liquids are used to reduce airborne dust. We have observed that this practice serves to attract lizards of a variety of species, including coast horned lizards, to the higher moisture levels on the roads, resulting in marked increased lizard mortality and injury due to being hit by construction site traffic that use the roads subsequent to the water trucks passing. For instance, within the course of one month this phenomenon resulted in the mortality of over 20 flat-tailed horned lizards (*Phrynosoma mcallii*) (FTHL) (a state Species of Special Concern and previously petitioned for listing under the CESA and FESA) on one construction site in Southern California during the summer of 2014, and where an additional 110 FTHLs were relocated to avoid injury or mortality from vehicle impacts during several weeks of the construction phase.[116] During the construction of the Sunrise Powerlink gen-tie line just April to November, 103 flat-tailed horned lizards were relocated and 25 mortalities were recorded.[117]

CURE-Owens-26

[116] Wilton, Ben. Tenaska (*Pers. comm*., March 19, 2015)

[117] [FTHLICC] Flat-tailed Horned Lizard Interagency Coordinating Committee. (2011). Annual Progress Report: Implementation of the Flat-tailed Horned Lizard Rangewide Management Strategy, January 1, 2010 to December 31, 2010. Report prepared by the Flat-tailed Horned Lizard Interagency Coordinating Committee. Retrieved from: https://webcache.googleusercontent.com/search?q=cache:swX3uX5D8OsJ:https://www.fws.gov/sout

What is key here is that this industrial project failed to anticipate significant impacts to lizards due primarily to the phenomenon described above, despite the site bordering habitat known to be occupied and critical to the species, despite recommendations by conservationists that mitigation measures as written in the EIR/S were inadequate, and as a result the developer had to completely stop work for at least two weeks. One independent contractor reported losing an alleged $146,000 a week due to the unexpected delay.[118] It is also important to note that because the FTHL mortalities were vastly beyond any predicted by the EIR/S and its mitigation measures for the project, the lead biologist was unable to compensate for the additional time requirements needed to relocate lizards, thus four more biologists had to be hired simply to monitor and relocate lizards. However, even despite this, the mortalities of lizards resulted in failed mitigation. Additionally relocations were haphazard and not assessed for success, and now the already at-risk population of this species has been reduced by this oversight that began with a lack of focused surveys, ignoring the importance of FTHL critical habitat proximal to the site, and providing vague mitigation measures mostly deferred to the future for development.

CURE-Owens-26 cont.

In order to adequately mitigate for such potential risks to the sensitive lizards species with high potential to occur on site, this phenomenon must be taken into consideration, and mitigation measures to reduce resultant impacts may include additional biologists, enhanced traffic restrictions, and a reptile relocation Plan and Monitoring Strategy during the construction phase.

VII. WILDLIFE CORRIDORS IMPACTS INAPPROPRIATELY DISMISSED AS NOT SIGNIFICANT

The DEIR/S asserts that there would be no significant impacts to species due to the lack of established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites because "the proposed project does not include the placement of structures within creeks, rivers, or other waterways and there are no established native resident or migratory wildlife corridors or wildlife nurseries within the project area[119]…The terrestrial wildlife habitat in the project area is fragmented by agricultural fields, residential developments, commercial / industrial developments, and roads and does not serve as wildlife movement corridors."[120]

CURE-Owens-27

There is abundant evidence in the literature regarding species that use wildlife corridors and nurseries in agricultural and industrial areas. The highest incidence of **burrowing owls** in

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hwest/es/arizona/Documents/SpeciesDocs/FTHL/FTHL_Annual_report_2010_Final.pdf+&cd=1&hl=en&ct=clnk&gl=us

[118] Clarke, C. March 2015. Work on Solar Project Halted to Protect Lizard. KCET. Retrieved from: http://www.kcet.org/news/redefine/rewire/solar/work-on-solar-project-halted-to-protect-lizard.html

[119] DEIR/S 4.6-119

[120] *Ibid*.

the state of California – almost 70% - occur and move throughout agricultural regions in Imperial county, and utilize the soft soils from agricultural disturbance in which to establish burrows and raise young.[121,122,123] As a biologist I have spent many months studying burrowing owls and other species, including American kestrels, cattle egrets, gray foxes, and various other passerines, that use corridors primarily within agricultural areas, bordering urbanized areas, to travel and get from one destination to the next for foraging and other territory requirements. For instance, research on peregrine falcons - a sensitive species known to have occurred recently within or near the Project area according to the CNDDB - have been observed to utilize non-forested and agricultural habitat as important post-fledgling corridors.[124] Red-tailed hawks and owls that live in highly urbanized areas travel between their urban nest sites and less urbanized areas to forage[125]. Snakes have been found to use agricultural habitats as important corridors, particularly in urbanized landscapes.[126] Movement corridors for various taxa often occur along (not just within) watercourses, coastal borders, or follow the cover of shrubs or trees; especially hedgerows or grassy areas between developed habitat, often found along roadsides to block residences from a view of the road. Such vegetation corridors bordering roads are characteristic of the footprint to be impacted by the pipeline development of the Project.

CURE-Owens-27 cont.

Corridors and nursery areas vary widely in characteristics and type of wildlife species that use them, and include movement to and from nesting areas to foraging areas, feeding areas to hilltopping areas, one part of range to another part of range, allowing genetic

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[121] Poulin, R. G. (2003). *Relationships between burrowing owls (Athene cunicularia), small mammals, and agriculture* (Order No. NQ87138). Available from ProQuest Dissertations & Theses Global. (305315258). Retrieved from http://jerome.stjohns.edu:81/login?url=http://search.proquest.com.jerome.stjohns.edu:81/docview/305315258?accountid=14068

[122] Estabrook, T. S. (1999). Burrow selection by burrowing owls in an urban environment (Order No. 1394137). Available from ProQuest Dissertations & Theses Global. (304494873). Retrieved from http://jerome.stjohns.edu:81/login?url=http://search.proquest.com.jerome.stjohns.edu:81/docview/304494873?accountid=14068

[123] Moulton, C., Brady, R., & Belthoff, J. (2006). Association between Wildlife and Agriculture: Underlying Mechanisms and Implications in Burrowing Owls. *The Journal of Wildlife Management, 70*(3), 708-716.

[124] Dzialak, M. R. (2003). *Peregrine falcon, Falco peregrinus, reintroduction in cliff habitat in Kentucky* (Order No. 3117498). Available From ProQuest Dissertations & Theses Full Text; ProQuest Dissertations & Theses Global. (305319211).

[125] William F. Minor, Maureen Minor, & Michael F. Ingraldi. (1993). Nesting of Red-Tailed Hawks and Great Horned Owls in a Central New York Urban/Suburban Area (Anidamiento de Buteo jamaicensis y de Bubo virginianus en un area urbana/suburbana de la parte central de New York). *Journal of Field Ornithology, 64*(4), 433-439. Retrieved from http://proxy.greenmtn.edu:2074/stable/4513852

[126] Andrus, W. (2011). *Ecology and conservation of prairie rattlesnakes (Crotalus viridis viridis) in relation to movement in a fragmented urban environment* (Order No. MR80171). Available From ProQuest Dissertations & Theses Full Text; ProQuest Dissertations & Theses Global. (895976697). Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/895976697?accountid=14068

exchange and viability.[127, 128] Considering that the Project includes at least 18 miles of more or less linear development along and near the coast, there is actually a high potential for construction, with its requisite erosion control fencing, other physical barriers, noise, and lighting to cause displacement and avoidance of wildlife along their habitual corridors, resulting in a significant impact including death due in part to the phenomenon that animals displaced in areas with many roads significantly increase their likelihood of being hit by traffic[129]. Therefore this development certainly could impact corridors by impeding movement of wildlife moving within in established territories.

Therefore the conclusion that the project does not significantly impact corridors is not supported. Existing corridors within and next to the project, including those incorporating agricultural, partly developed, and disturbed habitat, must be assessed with greater detail and supporting documentation, and mitigated with appropriate actions to allow movement and dispersal of native wildlife along this 18 + miles of Project development. Mitigation should include an analysis of the potential for increased mortality and harassment of native species due to various factors including time duration of development, acreage impacted, sensitive species potentially present, and ways to reduce the negative impact of movement barriers within corridors that cross and parallel the project footprint and buffer zones.

CURE-Owens-27 cont.

VIII. IMPACTS TO COASTAL DUNES NOT ADEQUATELY ANALYZED

Coastal dune habitat has been virtually extirpated from most parts of southern California. As such, in California it is one of our most impacted, most rare, and most fragile habitats. Yet because it is critical as a barrier to the sea, it is also one of our most important habitats.[130] Part of the project site is considered mostly primary habitat according to the City of Marina's Local Coastal Plan, with some secondary habitat (habitat adjacent to primary), and constitutes an environmentally sensitive habitat area" pursuant to the Coastal Act.[131] The habitat should thus by definition be protected against habitat losses; where only uses dependent on coastal resources shall be permitted in such areas.[132] The DEIR/S's proposed

CURE-Owens-28

[127] Nabe-Nielsen, J., Sibly, R. M., Forchhammer, M. C., Forbes, V. E., & Topping, C. J. (2010). The effects of landscape modifications on the long-term persistence of animal populations. *PLoS One, 5*(1) doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1371/journal.pone.0008932

[128] Sales, J. (2007). *Determining the suitability of functional landscapes and wildlife corridors utilizing conservation GIS methods in Denton County, Texas* (Order No. 1449625). Available From ProQuest Dissertations & Theses Full Text; ProQuest Dissertations & Theses Global. (304827551). Retrieved from http://search.proquest.com.jerome.stjohns.edu:81/docview/304827551?accountid=14068

[129] Garrah, E., Danby, R. K., Eberhardt, E., Cunnington, G. M., & Mitchell, S. (2015). Hot spots and hot times: Wildlife road mortality in a regional conservation corridor. *Environmental Management, 56*(4), 874-889. doi:http://dx.doi.org.jerome.stjohns.edu:81/10.1007/s00267-015-0566-1

[130] Martinez, M. L. and Psuty, N.P. (eds.) 2004. Coastal Dunes: Ecology and Conservation. Ecological Studies Vol. 171, Springer-Verlag Berlin.

[131] DEIR/S 4.6-70

[132] *Ibid.*

actions appear to conflict with this description of this Environmentally Sensitive Habitat Area required management.

CURE-Owens-28 cont.

IX. CONCLUSION

Based on the issues described in this letter, it is my professional opinion that the Applicant has not met the obligations of CEQA, and that the Project would result in significant and unmitigated impacts to several sensitive biological resources.

Sincerely,

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Orange, Connecticut

Comments
on
Draft Environmental Impact Report/
Environmental Impact Statement
for the
CalAm Monterey Peninsula
Water Supply Project

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February 24, 2017

I. Introduction

California American Water Company (CalAm) has proposed a desalination plant for Marina City, California: the CalAm Monterey Peninsula Water Supply Project (Project or MPWSP). This Project will utilize subsurface slant wells as the water intake points. In 2014, the National Oceanic and Atmospheric Administration (NOAA) and the Monterey Bay National Marine Sanctuary (MBNMS) evaluated the impact of installing one test slant well in an Environmental Assessment (EA).[1] The test slant well was built in Monterey Bay at the CEMEX sand mining site to inform the geologic conditions for the full-scale project. If this Project is approved the test slant well will be converted to a permanent well and nine other wells will be built. The draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) evaluates the impact of the full-scale Project, *i.e.,* the Proposed Project, as well as alternatives to the Proposed Project.[2] This letter evaluates the slant well intake technology.

The subsurface slant wells will draw from subsea aquifers. Due to the risk to marine life as a result of open-water intakes, several agencies have shown a preference for subsurface intake systems:

> *Several state and federal regulatory and permitting agencies (SWRCB, California Coastal Commission (CCC)) will not consider permitting an open-water intake unless a subsurface intake has been deemed infeasible or would result in greater environmental impacts. NOAA's MBNMS and National Marine Fisheries Service also established guidelines for discretionary approvals for new intake structures stating that subsurface intakes should be used where feasible and beneficial.*[3]

However, as I will set out below, I demonstrate that the DEIR/EIS fails to consider a number of conditions which may lead to an adverse environmental impact in the Monterey Bay National Marine Sanctuary.

I am qualified to evaluate the technical merits of the subsurface slant well, the potential physical and chemical impacts resulting from the slant well intake, and identify where the DEIR/EIS should disclose additional information. I have over thirty-five years of experience in the field of physical and natural sciences. I earned a doctorate degree in plasma chemistry diagnostics and laser spectroscopy, and a master's degree in spectroscopy and physical chemistry. I hold two US patents and one International and two more are pending. I have subject matter expertise in evaluating prior art patents and public domain proposals in spectroscopy and physical chemistry, and in utilizing high

[1] Draft Environmental Impact Report/ Environmental Impact Statement for the Monterey Peninsula Water Supply Project, January, 2017. California Public Utilities Commission and National Oceanic and Atmospheric Administration: Monterey Bay National Marine Sanctuary, *available at* http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir-eis_toc.html ("DEIR/EIS") at ES-6.
[2] DEIR/EIS, ES-9-10.
[3] DEIR/EIS, ES-16.

performance computational methods for imaging and analytical chemistry applications.

My curriculum vitae is attached to this letter.

II. Background: Slant Well Technology

Dennis Edgar Williams, Ph.D., holds the patent for subsurface slant wells.[4] The patent was published on November 15, 2011, but has a priority date of January 7, 2010.[5] In 2015, Dr. Williams presented a paper entitled "Yield and Sustainability of Large Scale Slant Well Feedwater Supplies for Ocean Water Desalination Plants" for the International Desalination Association World Congress on Desalination and Water Reuse in San Diego.[6] In that paper Dr. Williams discussed the slant well technology. He begins:

> *Originating out of the necessity to explore subsea aquifers near Dana Point, CA, the first test slant well was constructed in 2006. . . . As of this writing, a 724 ft test slant well completed in March of 2015 near Monterey, California as part of the Monterey Peninsula Water Supply Project (MPWSP) is currently undergoing long-term test pumping.*[7]

Unlike open-ocean intakes, which draw water from above the sea floor, subsurface slant wells draw water from aquifers.

> *Slant wells receive recharge from vertical leakage through the sea floor (i.e., benthic zone) and horizontal flow from subsea and near shore aquifer system*s.[8]

The aquifer water is drawn through the seabed, through an artificial filter, and then finally through a mesh screen. The intake is made possible by a high power 300 hp submersible pump contained within the slant. Each slant well is capable of drawing in 3-4 million gallons of water per day of untreated ocean water, which equates to four-and-a-half Olympic swimming pools or a cube that is 74 feet long, 74 feet wide, and 74 feet high. The Project calls for a total of ten slant wells with eight operating at any given time.

Overtime, the slant well technology should draw primarily from "young" ocean water.

> *Geochemical tracers used to quantify water sources to the Doheny test*

[4] Williams, D.E., 2011. Slant Well Desalination Feedwater Supply System and Method for Constructing Same, US Patent 8,056,629 B2 ("Slant Well Patent, 2011").
[5] Slant Well Patent, 2011.
[6] Williams, D.E, 2015. Yield and Sustainability of Large Scale Slant Well Feedwater Supplies for Ocean Water Desalination Plants, *available at* http://201.199.127.109/textos/Desalinizacion/Tomas%20de%20agua/slant%20wells%202015.pdf, ("Williams 2015").
[7] Williams, 2015, at pg. 2.
[8] Williams, 2015, at pg. 2.

slant well during an almost two year pumping test (2010-2012) were used to estimate slant well connectivity to the ocean and relevant amounts of water sources.

Test results support the increased capture of shallow, young marine ground water. Natural isotope data showed after one year of pumping, recharge to the slant well consisted of a mixture of brackish ground water (which showed a decreasing trend), ocean water (which showed an increasing trend), and old marine ground water which initially increased and then slightly decreased as it was being removed from the aquifer. This reflected the fresh/salt interface being induced to migrate toward the well. The geochemical data combined with a three-dimensional variable density flow and solute transport model predicted that the old marine ground water would be fully removed from the subsea aquifer within approximately one year at the full scale production rate of 30 mgd. Furthermore, upon reaching steady state conditions, (approximately one year), and after removal of the old marine ground water, the source of water to the feed water supply wells was predicted to consist of 95% "younger" ocean water (with very low levels of dissolved iron/manganese, ~ 2 µg/L), and 5% brackish ground water (~2 mg/L of dissolved iron/manganese), resulting in a blended concentration of approximately 0.10 mg/L.[9]

The anticipated hydrogeologic transition is illustrated in the Figure 1 below, which is from the Final Summary Report for the Doheny Ocean Desalination Project Phase 3 Investigation, prepared by the Municipal Water District of Orange County (MWDOC) in 2014.[10] This report for the Doheny wells indicated that the wells would draw 95% young ocean water once the project reached steady state operations. For the MPWSP, the slant wells "are projected to pull 93 percent seawater from the Monterey Bay and 7 percent groundwater from the surrounding area when the MPWSP is operating (GeoScience 2014b)."[11]

[9] Williams, 2015, pg. 5, 15 ("Slant wells completed in subsea aquifers typically produce over 95% of their supply from ocean water sources (vertical leakage through the sea floor) and lateral flow from subsea aquifers.")
[10] Final Summary Report for the Doheny Ocean Desalination Project Phase 3 Investigation: Extended Pumping and Pilot Plat Test Regional Watershed and Groundwater Modeling Full Scale Project Conceptual Assessment, January 2014. Municipal Water District of Orange County (MWDOC), *available at* https://www.scwd.org/civica/filebank/blobdload.asp?BlobID=5592 ("MWDOC – Final Summary, 2014"); *see also* Williams, 2015, at pg. 3 (evaluating the Doheny wells at Dana Point and the Monterey test slant well).
[11] DEIR/EIS, at Appx. G2, pg. 3.

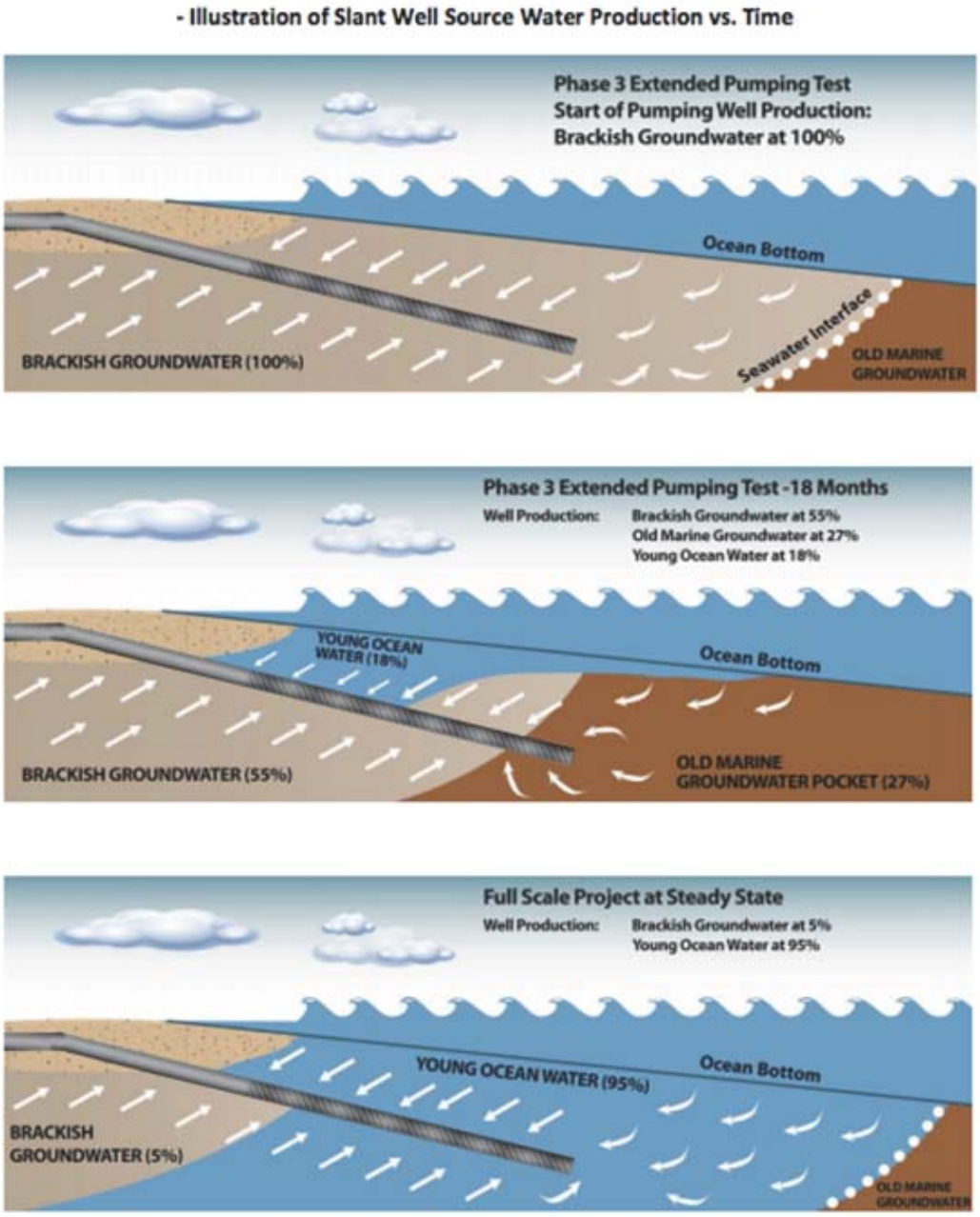


Figure 1. Final Summary Report Doheny Wells[12]

CURE-Sobczynski-1

III. Analysis

First, the DEIR/EIS underestimates the actual infiltration rate of water through the seafloor to the slant well. This estimation is based on the average bulk flow rate of the

[12] MWDOC – Final Summary, 2014, at pg. 19.

water over a 1,000,000 square foot area[13] and calculations done by Williams with respect to the Doheny slant wells.[14]

In reality, the flow rate will vary along the length of the slant well. The following factors will vary the flow rate: the utilization of the submersible pump in the slant well, filter medium and composition, the use of inflatable packers to limit flow to certain sections of the well, and the accumulation of suspended organic material (SOM), detritus and other biomass which would lower hydraulic conductivity of the medium around the slant well. Additionally, the DEIR/EIS does not consider the flow rate as it changes due to erosion, compaction, strong wave action, or violent storm events over the 40 year lifetime of the project.

When each factor is considered, the infiltration rate based on preliminary flow modeling of a 19-degree[15] axis angle slant well, will be 0.00052 ft/sec ($1.6x10^{-4}$ m/s) at its peak above the submersible pump and 0.000033 ft/sec ($1.0x10^{-5}$ m/s) at the well bore end. The infiltration rate for 14-degree axis angle yielded 0.0016 ft/sec ($5x10^{-4}$ m/s), see Figure 11. The DEIR/EIS is therefore deficient as it does not properly analyze the specific factors along each slant well which will create drastically higher infiltration rates at the slant well intake sites.

As a consequence of failing to accurately calculate the vertical infiltration rate, the DEIR/EIS also does not account for accumulation of biomatter in the seabed.[16] The DEIR/EIS states that biomatter will not accumulate because strong wave actions will prevent accumulation.[17] This statement is unsupported, as I will examine in further detail below.

CURE-Sobczynski-1 cont.

[13] DEIR/EIS, at pg. 4.5-52.

[14] Williams, D.E., 2010. South Orange Coastal Ocean Desalination Project – Vertical Infiltration Rate of Ocean Water Migrating Through the Seafloor in the Vicinity of the Slant Well Intake System*, available at* http://www.mwdoc.com/cms2/ckfinder/files/files/Evaluation%20of%20Potential%20Impacts%20%20to%20Marine%20Life%20by%20Slant%20Wells%20-%20MLPA%20DEIR%20Comment%202010-10-13.pdf, at pgs. 2-3 ("Williams, 2010"). The Williams, 2010 paper, and the Jenkins, 2010 paper (cited later) are included as support in the State Water Resources Control Board (SWRCB), 2015. California Ocean Plan, *available at* http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf and in this DEIR/EIS at pg. 4.2-52. Collectively, the Williams, 2010, and Jenkins, 2010 papers, and a cover letter written by Dr. Noel Davis, are referred to as "MWDOC, 2010." The full citation for this document is Davis, N., 2010, Memorandum to Richard Bell, P.E., Municipal Engineer, Municipal Water District of Orange County (MWDOC), Subject: Evaluation of Potential Impacts to Marine Life Due to Operation of Slant Beach Wells, *available at* http://www.mwdoc.com/cms2/ckfinder/files/files/Evaluation%20of%20Potential%20Impacts%20%20to%20Marine%20Life%20by%20Slant%20Wells%20-%20MLPA%20DEIR%20Comment%202010-10-13.pdf.

[15] The test slant well was installed at a 19-degree angle, the proposed slant wells will be installed at 14-degree angle. The DEIR/EIS does not account for how this angle change may impact the vertical infiltration rate. The DEIR/EIS does not inform the public if the1,000,000 square foot area was derived based on the 19 degree test slant well, the 14 degree proposed wells, or a combination.

[16] DEIR/EIS, at pgs. 4.5-53.

[17] DEIR/EIS, at pgs. 4.5-52-53; *see also* State Water Resources Control Board, 2014. Appendix I Responses to the External Peer Review of the Proposed Desalination Amendment Associated with the Draft Staff Report Including the Draft Substitute Environmental Documentation For the Proposed Desalination Amendment, *available at* http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/amendment/150320_appendix_i.pdf, at pg. I-19-20 (citing Williams, 2010.)

A. The DEIR/EIS underestimates the infiltration rate through the sea floor. In actuality, the infiltration rate at some sections of the well will be much higher.

The DEIR/EIS calculates the vertical infiltration rate by taking the entire 24.1 mgd amount of seawater and dividing approximately 1,000,000 square feet by that amount.[18] Using this method, the DEIR/EIS arrives at a vertical infiltration rate of 0.0000373 ft/sec or 0.011 mm/sec.[19] The DEIR/EIS compares this number to the infiltration rate, which Williams calculated in 2010[20] with site specific information for the Doheny wells. Williams used an entirely different methodology to calculate the infiltration rate, examining the hydraulic conductivity of seafloor sediments, effective porosity of seafloor sediments, hydraulic head difference between the ocean surface, and groundwater levels in the vicinity of feed water supply wellfield, and the average vertical distance from the seafloor to the middle of the intake well screen sections.[21] Williams arrived at an infiltration rate of 0.000051 ft/sec or 0.016 mm/sec, and 0.00000078 ft/sec at the outer limits of the ocean water source area.[22] The DEIR/EIS then proclaims because its number is "very similar" to the Williams' calculation, it will use a potential infiltration rate band of 0.011 to 0.016 mm/sec.[23]

CURE-Sobczynski-1 cont.

This methodology fails to take into consideration fundamental physical and chemical properties. As such, the DEIR/EIS is deficient at properly disclosing impacts.

1. Factors that Influence Infiltration Rate: Submersible Pump

The DEIR/EIS does not fully disclose the fluid mechanics along the screened segment of the slant well. We know from the patent that inventions incorporated into the well construction are important in terms of controlling the flow (*i.e.*, utilizing a submersible pump, inflatable/deflatable packers).[24] As is, the DEIR/EIS fails to recognize that the greatest draw of water will be above the submersible pump.

Based on the 2015 Williams White Paper[25], descriptions of the slant well in the patent[26], geometries from a 2006 test slant well drawing ("Well As Built, Test Slant Well

[18] DEIR/EIS, at pg. 4.5-52.
[19] *Id.*
[20] Williams, 2010, at pgs. 1-4; see also Jenkins, S. A., 2010. Potential Impact on Wave and Current Transport Process Due to Infiltration Rates Induced by the South Orange Coastal Ocean Desalination Project, available at http://www.mwdoc.com/cms2/ckfinder/files/files/Evaluation%20of%20Potential%20Impacts%20%20to%20Marine%20Life%20by%20Slant%20Wells%20-%20MLPA%20DEIR%20Comment%202010-10-13.pdf ("Jenkins, 2010").
[21] *Id.*
[22] *Id.*
[23] DEIR/EIS, at pg. 4.5-52
[24] Slant Well Patent, 2011.
[25] Williams, 2015, at pg. 4 ("The Monterey test slant well has an 18 in. pump house casing which can accommodate placement of large development pumps with capacities over 3,000 gpm.")
[26] Slant Well Patent, 2011 ("In one embodiment of the invention, the slant wells include a unique telescoping set of casings and screens. This design allows for a larger pump house casing near the land surface, with successively smaller casing and screen diameters as the well extends downward. The telescoping casings and screens facilitate extending the well to lineal lengths of 1,000 feet or greater beneath the floor of the saline water body, with angles below horizontal ranging from zero to ninety degrees.")

SL-1")[27], and the Request for Proposals (RFP) for the Project's slant wells[28], we have assumed that the submersible pump location is at the vertical depth of approximately 60-70 feet in the dune sand zone. This Project's RFP do not clearly identify the location of the submersible pump, but based on information from the documents above, the pump might possibly be as shallow as 48 feet for one of the proposed slant wells.[29] But, most submersible pump locations in the RFP appear to be at a depth of 65-76 feet, which is consistent with my assumption.[30] Similarly, it seems most pumps would be located 140-280 lineal feet.[31] Based on the RFP and the documents above, I assume that the pump is located at a depth of about 62 feet (19 meters) and a length of about 230 feet (70 meters). The DEIR/EIS should accurately disclose the location of the submersible pump because the submersible pump creates a pressure zone, which pulls seawater from above the seafloor via induced infiltration. This pressure zone should be adequately disclosed to the public in order to accurately evaluate the Project's impacts.

CURE-Sobczynski-1 cont.

[27] Municipal Water District of Orange County, Well as Built Test Slant Well SL-1, http://www.mwdoc.com/cms2/ckfinder/files/files/Test%20Slant%20Well%20-%20As%20Built%20Drawing.pdf (the geometry of the well to estimate the location of the submersible pump and other relevant parameters were taken from this drawing).

[28] Monterey Peninsula Water Supply Project: Subsurface Source Water Slant Wells Design Documents, 2015, *available at* https://www.dropbox.com/s/xs6tdmtg6qvk0fc/draft%20Source%20Water%20Slant%20Well%20supplemental%20conditions%20and%20tech%20specs%20and%20drawings.pdf?dl=0, at pgs. 108-116 (showing the location of the "18 in. id well casing 2507 super duplex ss, 0.25 in. wall thickness, 18.500 in.od," which is a possible location of the submersible pump at 140-355 lineal feet (34-55 meters) and at a depth ranging from 48feet to 76 feet, with most locations [8 out of 9] at a depth of 65-76 feet (20-23 meters).

[29] *Id.* at pg. 102

[30] *Id.* at pgs. 108-116

[31] *Id.*

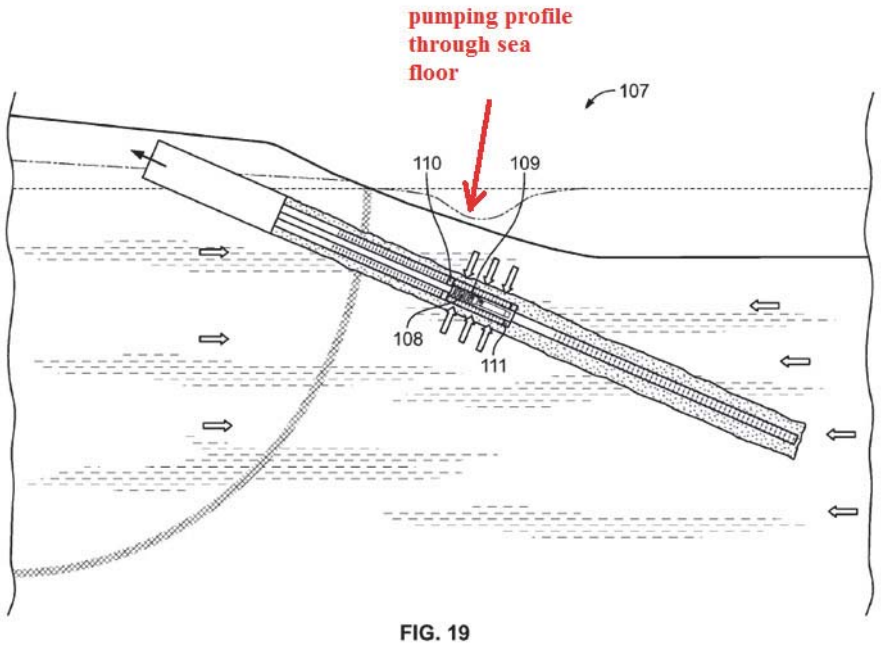


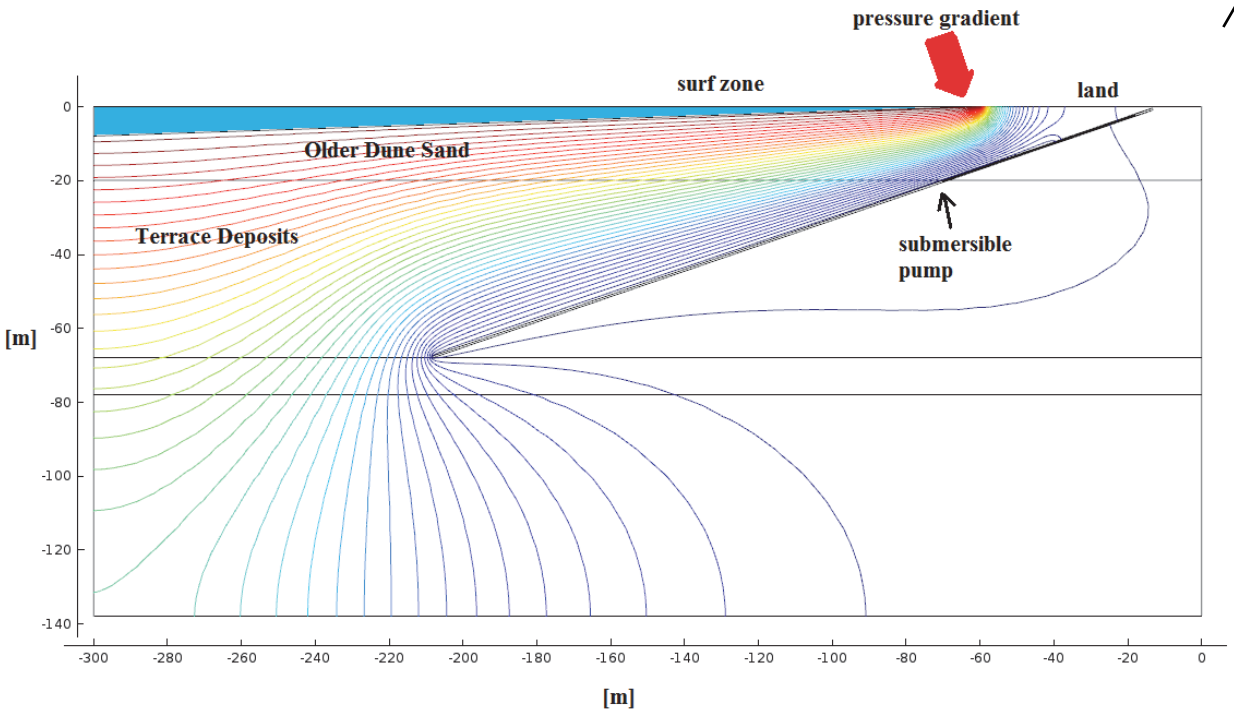
FIG. 19

U.S. Patent Nov. 15, 2011 Sheet 19 of 23 US 8,056,629 B2

CURE-Sobczynski-1 cont.

Figure 2. Slant Well Patent, 2011,[32] showing the inflow directly above the submersible pump. The presented upside down bell curve (red arrow), is the anticipated pumping profile through the sea floor. More elaboration about induced infiltration can be found in Williams 2015. [33]

[32] Slant Well Patent, 2011.
[33] Williams, 2015.



CURE-Sobczynski-1 cont.

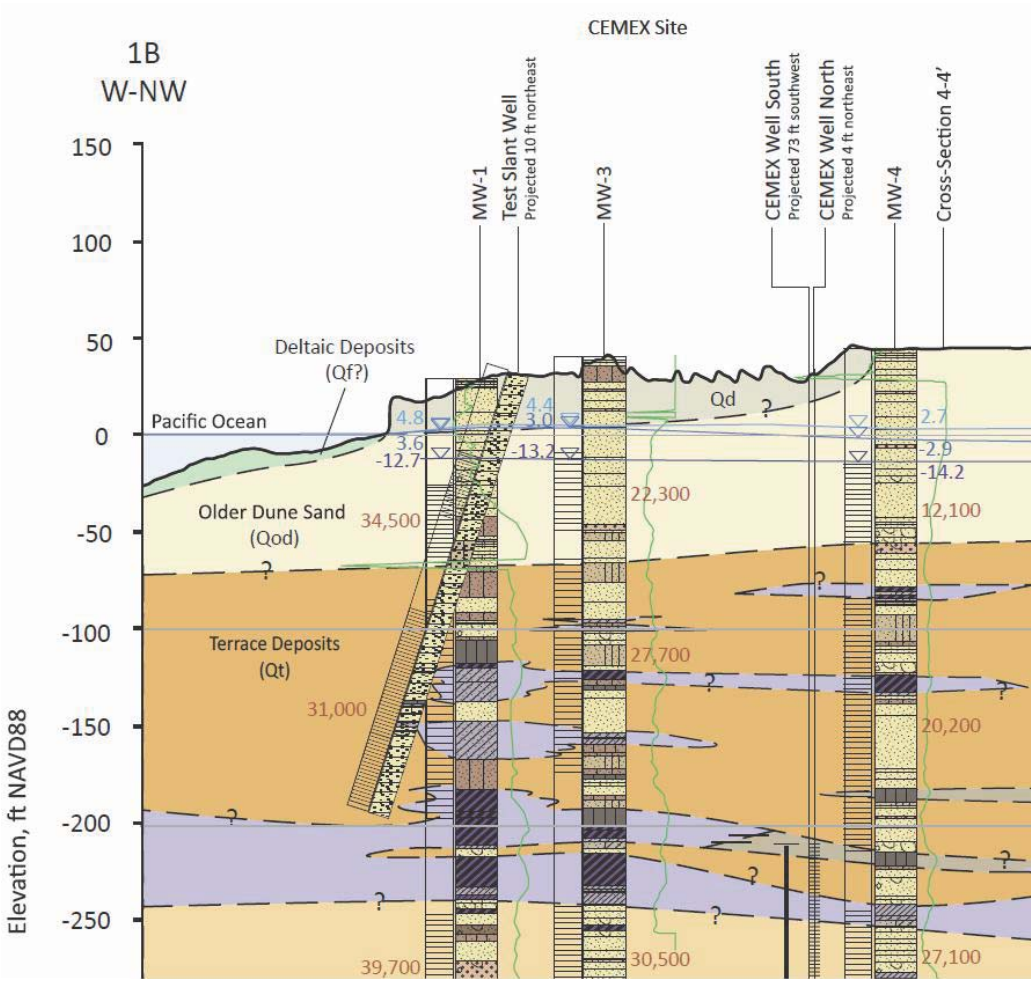
Figure 3. Qualitative illustration of pressure gradient present at pumping speed of 0.132m^3/s by the submersible pump. Position of submersible pump is at x=-70m, and y=-19m

2. Factors that Influence Infiltration Rate: Location of Slant Wells With Respect to the Sediment Profile

The DEIR/EIS analysis of the infiltration rate is flawed because it does not account for the sediment composition of the Monterey Bay which will direct the flow of water to specific parts of the slant well as opposed to evenly distributing the infiltration rate force along the entirety of the well. Therefore, the DEIR/EIS's assumption that water will flow evenly through 1,000,000 square feet, is inaccurate.[34]

Section 4.2.1.1 of the DEIR/EIS presents a diagram for where the test slant well exists in the Monterey Bay geology.[35]

[34] DEIR/EIS, at pg. 4.5-52
[35] DEIR/EIS, at pg. 4.2-5.

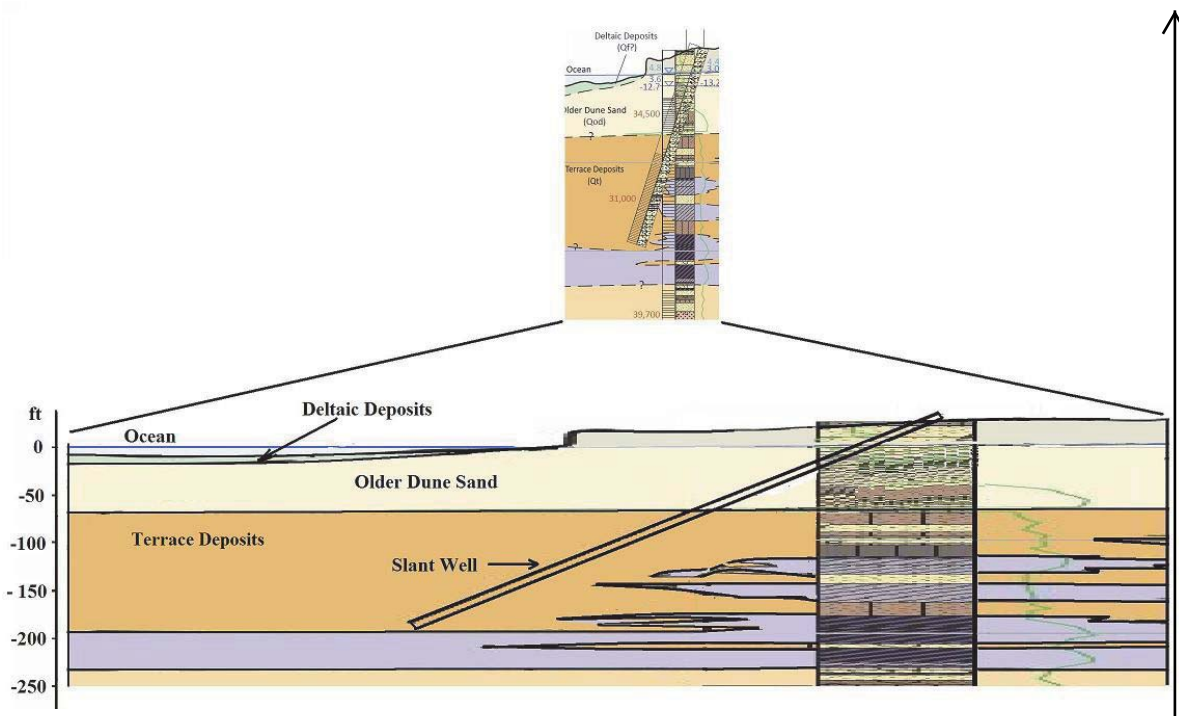


CURE-Sobczynski-1 cont.

Figure 4. Geological cross section through the project site. The drawings aspect ratio has not been preserved.[36]

Note, however, that this picture does not preserve the actual angle the test slant well was designed to operate at. When accounting for the approximate 19 degree angle, the picture of the slant well becomes clearer.

[36] DEIR/EIS, at pg. 4.4-9.

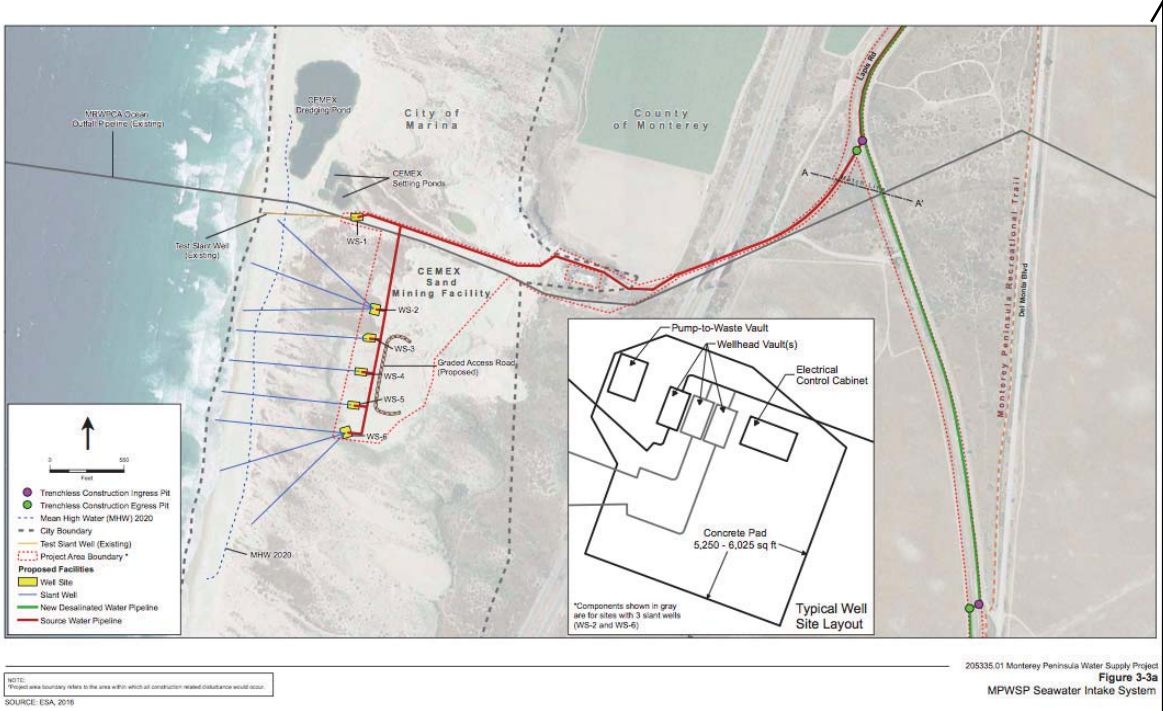


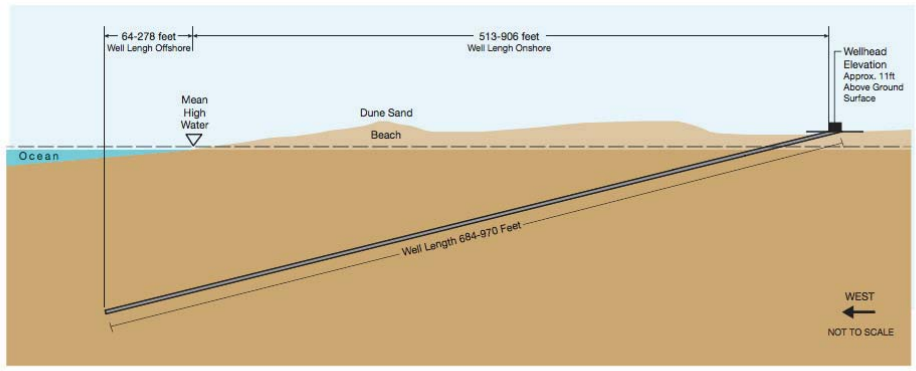
CURE-Sobczynski-1 cont.

Figure 5. Regenerated aspect ratio of the hydro-geological cross section based on 4.2-9 CalAm MPWSP DEIR/EIS Chapter 4 for the test slant well.[37] Restoration of aspect ratio gives better perception of the hydro geological composition.

It is important to note, however, the test slant well is not representative of the final locations and angle of the proposed wells. Figure 6 below from the DEIR/EIS provide information about the location of the proposed slant wells.

[37] DEIR/EIS, at pg. 4.4-9.





3-17

WELL NUMBER	DEPTH OF WELL CASING (BELOW WELL HEAD)	WELL LENGTH (PLAN)	WELL LENGTH ONSHORE (PLAN)	WELL LENGTH OFFSHORE (PLAN)
1	242'	970'	906'	64'
2	242'	970'	757'	213'
3	242'	970'	830'	140'
4	242'	970'	826'	144'
5	242'	970'	780'	190'
6	242'	970'	725'	245'
7	242'	970'	736'	234'
8	242'	970'	NA	NA
9 (Stand-by-2)	242'	970'	692'	278'
Test Slant Well	263'	684'	513'	171'

CURE-Sobczynski-1 cont.

Figure 6. Project's slant well array.[38]

[38] DEIR/EIS, at pgs. 3-15, 3-17.

As one can see, the slant wells will traverse the older dune sand. This dune sand has "high permeability … suitable for the infiltration of water."[39] The proposed slant wells are at an even shallower angle (14 deg) than the test slant well (19 deg).[40] Therefore a greater percentage of the proposed slant wells will traverse the dune sand.

Utilizing the DEIR/EIS's maps and the models below, we have determined that most of the water will be drawn through this older dune sand, which is highly permeable and closest to the submersible pump, thus rendering only the upper third, approximately, of the well productive, unless the packers will be engaged.[41] Without additional details, which the DEIR/EIS does not provide, it is difficult to estimate the intake zone. Well's location figure 14 (see Appendix section in this report) is departing from conceptual presentations in figure 4, patent US 8,056,629 B2, William's 2015 white paper.

By averaging the expected infiltration rate,[42] the DEIR/EIS does not take into account the fact the infiltration rate will vary dramatically based on the sediment profile of the ocean floor and the location of the submersible pump, which will draw water along the shortest path of least resistance. The water flow will not be evenly distributed along the length of the slant well.

CURE-Sobczynski-1 cont.

3. Factors that Influence Infiltration Rate: Inflatable/Deflatable Packers

The DEIR/EIS fails to consider the distribution of infiltration rate due to the internal flow pattern controlled by inflatable/deflatable "packers." The patent describes this packer device as follows:

> *The slant well can be equipped with a submersible pumping system fitted with a dual-packer shroud assembly. Using the dual-packer shroud assembly, the slant well can selectively pump from upper or lower portions of the subsea aquifer, thereby varying feedwater salinity as required to help minimize variations in feedwater salinity due to hydrologic cycles. The dual-packer shroud assembly (DPSA) allows selective production from well screens both above and below the packers (maximum production), well screens above the upper packer only (lower salinity), well screens below the lower packer only salinity), or well screens between the packers (focused salinity).*[43]

Figures 17, 18, 19 of the slant well patent[44] show infiltration zones depending on the packer's activations. Whether the slant well deploys inflatable packers to block the well

[39] DEIR/EIS, at pg. 4.2-67.
[40] Final Environmental Assessment for the California American Water Slant Test Well Project, September 2014, *available at* http://montereybay.noaa.gov/resourcepro/resmanissues/desal_projects/pdf/140912calam-slantwell_ea-final.pdf ("EA, 2014"), at pg. 43.
[41] For a discussion about the packers, see Section III.C. Factors that Influence Infiltration Rate: Inflatable Packers.
[42] DEIR/EIS, at pg. 4.5-52.
[43] Slant Well Patent, 2011, column 3, row 25-40
[44] *Id.*

will impact how the water flows into the slant well. Figure 7 demonstrates the flow rate assuming both packers are deflated, so the entire length of the well is participating as the water feeding source. Even so, my results suggest preferential flow in close proximity of the submersible pump. Since details about inner flow are missing from DEIR/EIS, I cannot provide detailed evaluation of the infiltration zones.

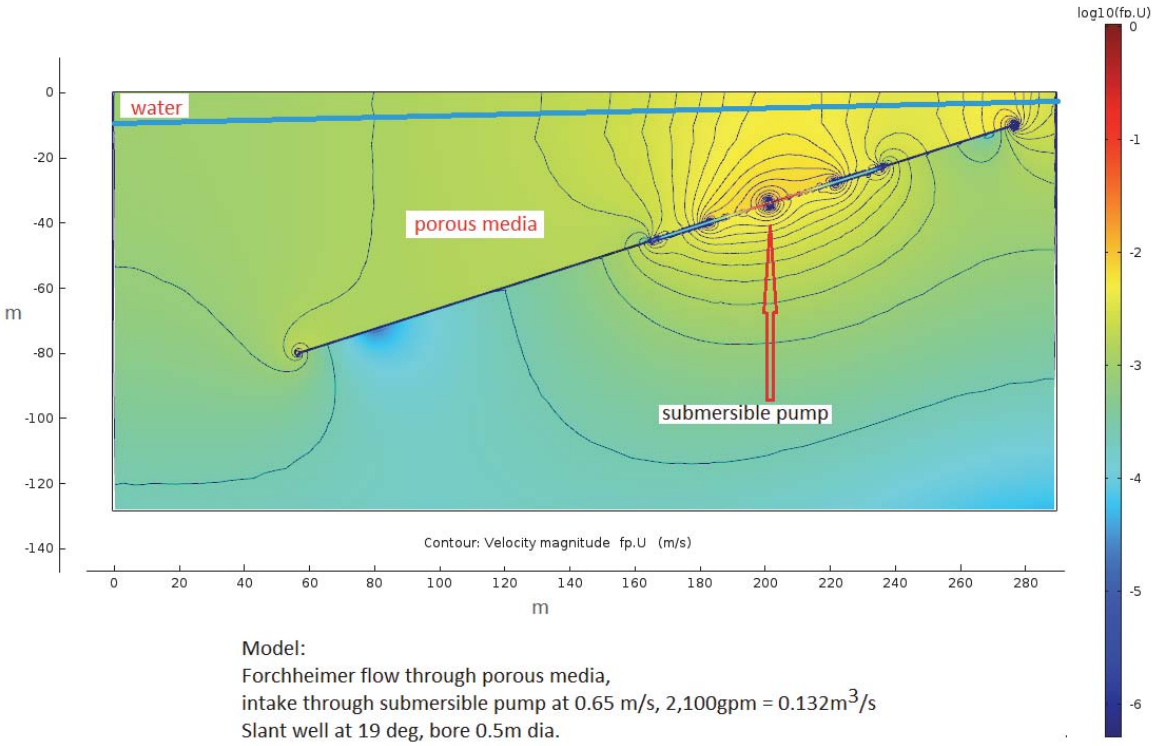


Figure 7. Illustrative model of intake zone velocity field for single slant well, per assumption that all packers are deflated, however it can be noticed that the strongest intake velocity field is above the submersible pump. It is not clear from the DEIR/EIS, how effective the control of the flow inside the bore is and which part of well is active. The invention disclosed in the patent clearly identifies the use of packers as an improvement in slant well technology.[45]

The test slant well appears to have had inflatable packers, but the DEIR/EIS is silent about this feature for the proposed slant wells.

> *This [operations] phase may also include a one-time repositioning of the packer device that is used to isolate one aquifer for testing and pumping. This special operation would involve removal of the submersible pump and pump column, removal of the initial packer, insertion of the second packer, and replacement of the pump. This modification would take 2 to 3 days to accomplish. Equipment and operations required for the repositioning of the device, including temporary laydown of the pump*

CURE-Sobczynski-1 cont.

[45] Slant Well Patent, 2011.

column, would be located within the original construction footprint shown in Figure 3a.[46]

By failing to disclose whether the proposed wells, like the test slant well, will have inflatable packers, and whether they would be deployed, the DEIR/EIS is factually insufficient. If the packers are used, the vertical infiltration rate would be far higher.

4. Factors that Influence Infiltration Rate: Clogging in the Seabed

The most glaring hindrance to water flow is clogging. This can occur at the intake screens and throughout the seabed. To maintain the intake screens, the DEIR/EIS states that the slant wells will need regular cleaning by using mechanical brushes, and possibly inert chemicals.[47] This requires taking the well out of service and brushing the screens. However the slant wells can only be cleaned from the inside, while the subsurface filter media and outer shell will still have substantial and permanent waste buildup.

Dr. Williams admits that clogging can be an issue for slant wells. In his patent, he claims:

CURE-Sobczynski-1 cont.

> *In the past, slant well technology has not been successfully applied to subsea construction of desalination feedwater supplies, as the well screen slots have become clogged during pumping. Once the well screen slot openings are clogged, it becomes difficult or impossible to continue to pump water. Accordingly, there is a need for a reliable slant well system that is able to supply water from near-shore or subsea aquifers to a desalination plant without becoming clogged with fine-grained materials (e.g., fine sands and silts) over time. There is also a need for a method of constructing such a system—especially at low angles below horizontal in order to minimize impacts to inland fresh water sources. <u>The present invention satisfies these needs and provides further related advantages, especially with regard to regulation of feedwater salinity.</u>* [48]

Despite his assurances, the invention did not prevent clogging at the Doheny wells at Dana Point.

> *During the two year pilot testing, the Doheny test slant well produced approximately 3 mgd with relatively stable drawdowns. When it was constructed in 2006, it was test pumped at approximately 2,100 gpm and displayed a well efficiency of 95%. During the extended pilot testing the well efficiency dropped from the original value of 95% in 2006 to 52% in 2012.*[49]

[46] EA, 2014, *available at* pg. 39.
[47] DEIR/EIS, at pg. 3-57.
[48] Slant Well Patent, 2011.
[49] Williams, 2015, at pg, 3.

Lessons learned from the Doheny wells indicated that the pump casing was too small, causing the loss of efficiency,[50] and that sand clogging can impair the well at the construction stage.[51]

> *Design and construction of the full scale slant wells will need to be approached similarly to conventional water well design and drilling, but since the wells will be relatively flat in slope, additional care must be taken in gravel placement and well development. The design and construction will be aided through the experience gained in design and construction of the Test Slant Well. A key to the long-term success of the wells will be to provide thorough development work to assure minimum levels of sand clogging to the gravel pack. Sand clogging can occur over time in a well when it is not properly designed, constructed and/or developed. Causes include too large of well screen slot spacing, too large of gravel size in the gravel pack, gaps in the gravel pack, and most commonly, insufficient development of the well. The well screen and gravel pack size can be properly sized assuming the well designer has good technical capability and experience. Improper well development can occur due to insufficient swabbing, bailing and/or air lifting and due to insufficient development pumping rate and time.*[52]

CURE-Sobczynski-1 cont.

Though Williams has claimed "improvements" that assure clogging will not be a problem for this Project, I challenge his assumptions in Section II, Calculating the Adjusted Infiltration Rate.[53]

Additionally, the DEIR/EIS does not consider the flow rate as it changes due to erosion, compaction, strong wave action, or violent storm events over the 40 year lifetime of the project. This is discussed in further detail in Section B and Section C, below.

B. Calculating the Adjusted Infiltration Rate

My analysis examines the effect of the flow dynamics and water intake pattern through the ocean floor driven by the required pumping rate. By reconstructing models and conducting computational hydro-dynamical flow analysis by the methods of Finite Element Analysis, I have estimated that the infiltration rate of the water through sea floor interface, presented in Figure 9, is a nonlinear function. This has not been adequately explained in the DEIR/EIS.

First, my analysis examines the well geometry in reference to the sea floor slope. Bathymetric charts of the project area and descriptions provided in patent[54], and the

[50] Williams, 2015, at pg. 4.
[51] MWDOC – Final Summary, 2014, at p. 57.
[52] *Id.*
[53] Williams, 2015, at pg. 3.
[54] Slant Well Patent, 2011

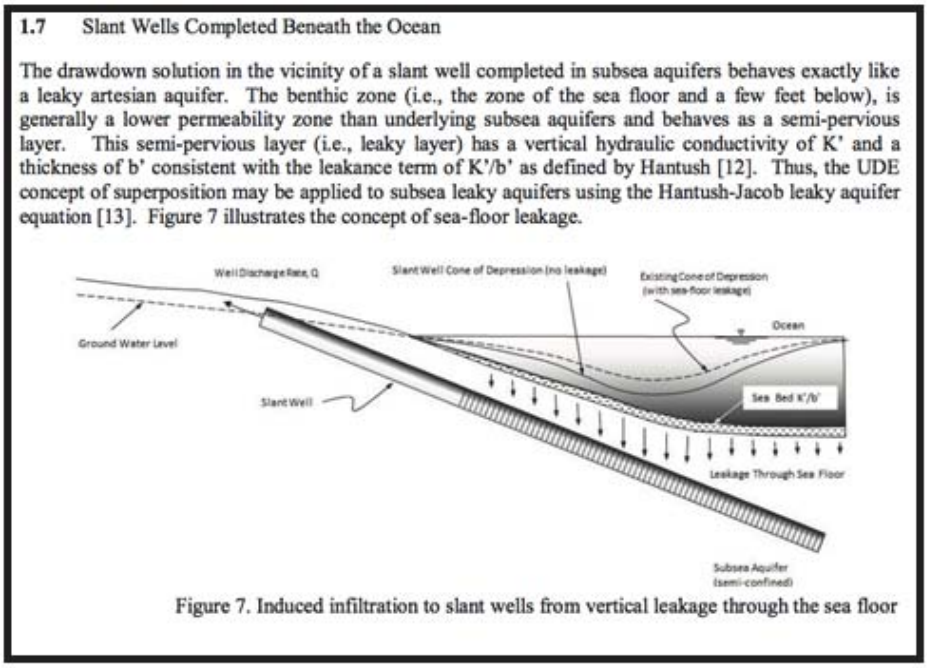
2015 Williams White Paper[55] were used. Second, the analysis looks at the slant wells' pump outflow rate. Third, the analysis applies the hydraulic conductivities of the media, Darcy's and Forchheimer physics laws.[56] Finally, and fourth, computational fluid dynamics (CFD), based on Finite Element Analytical (FEA) method to determine zonal vertical infiltration rates. Note, the DEIR/EIS fails to mention the exact operational flow pattern and does not discuss the inflatable packers. Therefore my modeling did not consider flow control by inflatable packers, rather my modeling assumed only the full well length. If inflatable packers are used, the flow distribution will have to be recalculated.

The initial modeling was performed for a single well pumping with a rate of 2,100 mgd based on the 2015 Williams White Paper.[57] For my qualitative results, I can only compare with the drawings in the patent[58], and drawings published in the 2015 Williams, My qualitative results confirmed that the pumping profile is non linear. Though the proposed slant wells can have a pumping rate of up to 2,500 mgd,[59] the purpose of this initial modeling was to qualitatively demonstrate the pumping profile using CFD[60] methods. The flow profile, is non linear function, which in my expert opinion should apply to the test slant well and the proposed slant wells.

My decision to use the CFD method is to provide more detail about flow dynamics than the general draw down equations used by Williams.[61] Williams refers to this equation as "UDE" in his 2015 White Paper.[62]

CURE-Sobczynski-1 cont.

[55] Williams, 2015.
[56] See Glossary of Terms in Section V.
[57] Williams, 2015, at pg. 3 ("When it was constructed in 2006, it was test pumped at approximately 2,100 gpm and displayed a well efficiency of 95%."); see also EA, 2014 at pg. 39 ("The water flow rate during the operational period would vary from 1,000 gallons per minute (gpm) to 2,500 gpm.")
[58] Slant Well Patent, 2011.
[59] DEIR/EIS, at pg. 4.12-52.
[60] See Glossary of Terms in Section V.
[61] Williams, 2015, at pgs. 7,8.
[62] *Id.* at pgs. 5-7.



1.7 Slant Wells Completed Beneath the Ocean

The drawdown solution in the vicinity of a slant well completed in subsea aquifers behaves exactly like a leaky artesian aquifer. The benthic zone (i.e., the zone of the sea floor and a few feet below), is generally a lower permeability zone than underlying subsea aquifers and behaves as a semi-pervious layer. This semi-pervious layer (i.e., leaky layer) has a vertical hydraulic conductivity of K' and a thickness of b' consistent with the leakance term of K'/b' as defined by Hantush [12]. Thus, the UDE concept of superposition may be applied to subsea leaky aquifers using the Hantush-Jacob leaky aquifer equation [13]. Figure 7 illustrates the concept of sea-floor leakage.

Figure 7. Induced infiltration to slant wells from vertical leakage through the sea floor

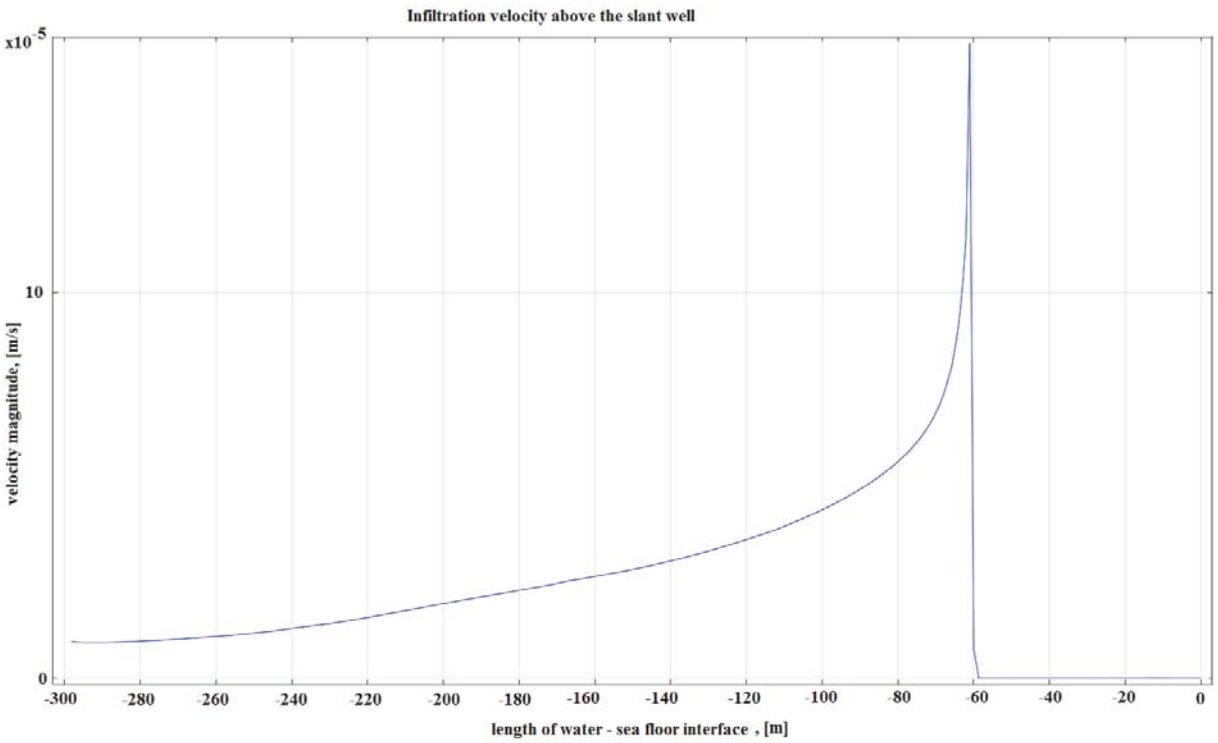
CURE-Sobczynski-1 cont.

Figure 8. 2015 Williams White Paper, figure explaining infiltration.[63]

Contrary to the DEIR/EIS, the flow velocities cannot be approximated by averaging total volume over the area of project field.[64] In fact, other literature has put the infiltration rate at a much higher rate than the DEIR/EIS's estimate of 0.011 mm/sec – 0.016 mm/sec. Inflow rates of 0.1- 2mm/sec are typical with rapid infiltration rates through the sand medium.[65]

However, for the purposes of being conservative in my calculations I did not use this much faster infiltration rate, and rather used the infiltration rate the DEIR/EIS provides. Thus, my calculations started with an infiltration rate based on the average bulk volume flow over 1,000,000 ft^2 flow provided by DEIR/EIS which I selected at 0.015mm/sec, which is within the range provided. I allowed the computational model to self adjust flow dynamics through the iterative steps, without any additional bias or intervention. The result is presented in Figure 9, which shows that at the peak (located at -60 meters or -196 feet) the infiltration velocity is 10x higher than the average infiltration published by EIR/EIS. For this modeling, the submersible pump was modeled at -70m along the x-axis and -18m along the y-axis.

[63] *Id.* at pg. 7.
[64] DEIR/EIS, at pg. 4.5-52.
[65] *Ives, K J (1990). "Deep Bed Filtration." Chap. 11 of Solid-Liquid Separation, 3rd Ed., Svarovsky L (ed). Butterworths. ISBN 0-408-03765-2*; Sand Filter, Wikipedia, *available at* https://en.wikipedia.org/wiki/Sand_filter, and references therein.



CURE-Sobczynski-1 cont.

Figure 9. Infiltration profile above the slant well through the water sea floor interface.

For this modeling, the submersible pump was set at x=-70, y=-18m. I obtained an infiltration rate at the -60m point, which is equal to 0.16 mm/s which is about 10x larger values reported by DEIR/EIS.

Our infiltration rate resulting from careful modeling shows a 10x higher number than what is provided by GeoScience in 2010[66], and which was then used in Jenkins's calculations to determine impacts to marine biology.[67]

[66] Williams, 2010, at pgs. 1-4; Jenkins, 2010., at pgs. 1-8.
[67] Jenkins, 2010, at pgs. 1-8

Calculation of Vertical Infiltration Rate of Ocean Water Migrating Through the Seafloor

The vertical infiltration rate of ocean water migrating through the seafloor in the vicinity of the slant well intake system under full-scale project conditions (30 mgd) can be calculated using the following equation:

$$w = \frac{Kv}{\theta} \bullet \frac{\Delta h}{\Delta x}$$

Where:

- w = Vertical infiltration rate of ocean water migrating through the seafloor (ft/sec),
- Kv = Vertical hydraulic conductivity of seafloor sediments (0.000014 ft/sec),
- θ = Effective porosity of seafloor sediments (0.15),
- Δh = Hydraulic head difference between the ocean surface and ground water levels in the vicinity of feedwater supply wellfield (65 ft),
- Δx = Average vertical distance from the seafloor to the middle of the intake well screen[2] sections (120 ft)

Figure 10. GeoSciences Vertical Infiltration Rate Calculation of Ocean Water Migrating Through the Seafloor, 2010.[68]

CURE-Sobczynski-1 cont.

This vertical infiltration rate 0.016 mm/sec, which Dr. Williams calculated in his 2010 White Paper,[69] was then used to calculate the potential for seabed erosion by Dr. Scott A. Jenkins.[70] Jenkins's calculation for ventilation parameter and infiltration rate is below:

Analysis of Potential for Seabed Erosion: Figure 3 and equation (1) indicate that the percentage increase in wave induced bottom stress grows linearly with the ventilation parameter, $\tilde{V} = w_m / u_m$. To quantify the potential for seabed erosion we calculate this parameter in terms of the size of the reported infiltration rates w_m over the slant well field relative to the threshold velocity for transport, $u_m = u_{crit}$, of the native beach sediment. Figure 4 plots the grain size distribution of the native beach sand taken from the surf zone at Doheney Beach by Reed, et al. 1975. The median grain size is shown to be 0.22 mm (220 microns). Figure 5 gives the threshold velocity for transport (black curve) as a function of median grain size. Inspection of Figure 5 indicates that the threshold velocity for transport for 0.22 mm sized sand is $u_m = u_{crit} = 0.6$ ft/sec. Therefore the ventilation parameter directly over the well field when the wave oscillatory velocity is at the threshold of beach scour is:

$$\tilde{V} = w_m / u_m = \frac{5.1 \times 10^{-5}}{6 \times 10^{-1}} = 8.5 \times 10^{-5} \qquad (2)$$

With this value of ventilation parameter inserted into equation (1) or plotted in Figure 3, the infiltration rate over the well field will cause a net increase in wave induced bottom stress of $\langle \tau_v \rangle / \langle |\tau_0| \rangle = 1\%$.

Jenkins determined that the infiltration rate will increase in wave induced bottom stress

[68] Williams, 2010, at pg. 2.
[69] *Id.*
[70] Jenkins, 2010, at pg. 4.

of 1%.[71] However, if the Williams's infiltration rate is higher than 5.1 x 10^{-5} ft/s, which I demonstrate is possible in my modeling, then this implies a significantly higher stress than what Jenkins calculated. In fact, I calculated the ventilation parameter (to then determine bottom stress) using the same assumption as Jenkins, above, but I was using the infiltration rate from our model.[72] I found that the ventilation parameter yields 9x10^{-4}. This would imply a 10% stress value at the intake zone directly above the well, not 1%.

Since the DEIR/EIS is relying on Williams's and Jenkins's calculation[73] for the impact analysis for this Project, it is in my professional opinion that closer scrutiny and reexamination of the erosion — based on specifics of the actual site — is needed and such request is justified. I have shown that the value of infiltration can be 10x larger than what has been reported, and thus the bottom stress of 1%, calculated by Jenkins and later used by DEIR/EIS is underestimated.

CURE-Sobczynski-1 cont.

[71] *Id.*
[72] *See id.*
[73] DEIR/EIS, at pg. 4.5-52 (referring to the Municipal Water District of Orange County (MWDOC) document which includes Jenkins, 2010 and Williams, 2010 papers); *see also* State Water Resources Control Board, 2014. Appendix I Responses to the External Peer Review of the Proposed Desalination Amendment Associated with the Draft Staff Report Including the Draft Substitute Environmental Documentation For the Proposed Desalination Amendment, *available at* http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/amendment/150320_appendix_i.pdf, at pg. I-19-20 (citing Williams, 2010 and Jenkins, 2010.)

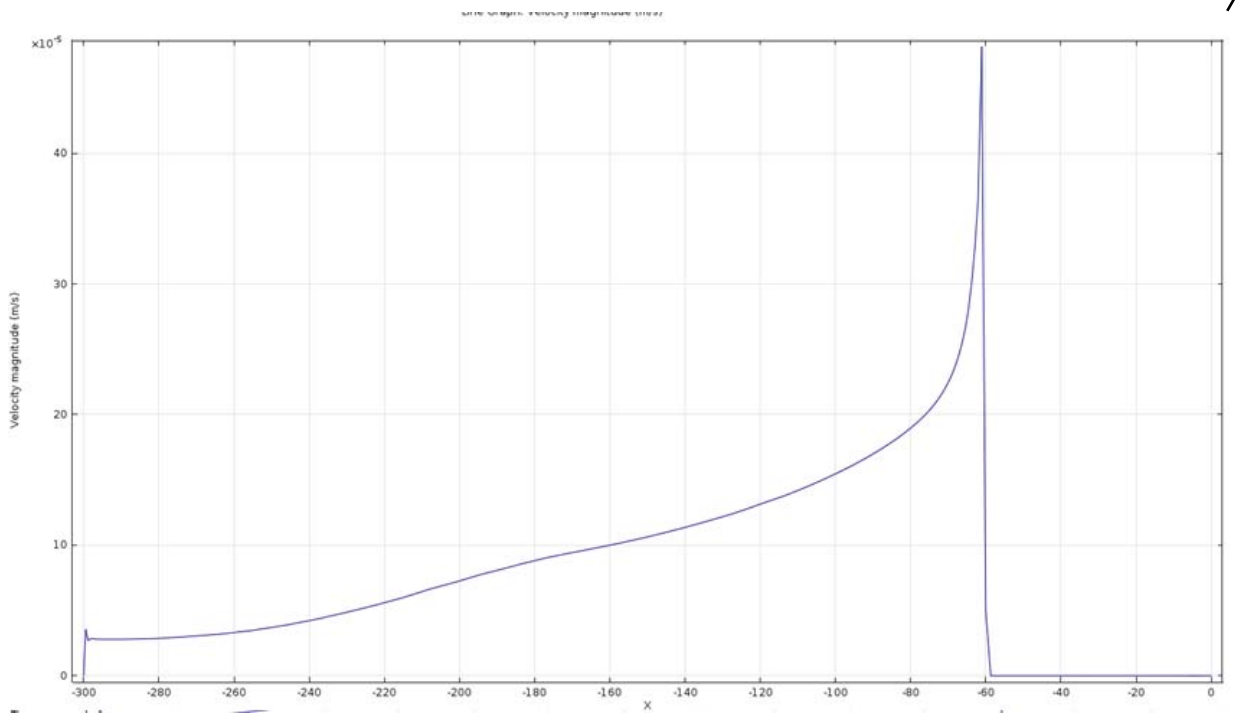


Figure 11. Infiltration rate, modeling of well drilled at 14 deg.

CURE-Sobczynski-1 cont.

The modeling of the well drilled at 14 degrees, resulted in a peak infiltration rate five times higher than my calculations for the 19-degree well. I found the 14-degree well could have an infiltration rate equaling 0.5mm/s. The reason behind such further infiltration increase is that the well will be, in this instance, closer to the sea floor. This result raises a concern that if the pump is operating during a storm then violent wave actions could pierce through the seafloor and be in close proximity to the slant well's screened intake. In such a case high turbidity water will enter the slant well (foregoing the usual natural filtration process)[74] and enter the desalination facilities.[75] This could damage the pre-treatment systems and the RO membrane. However an economical analysis of such catastrophic event is outside my expertise.

C. The DEIR/EIS fails to accurate evaluate the potential buildup of biomass.

CURE-Sobczynski-2

The DEIR/EIS fails to account for the buildup of biomass within the sedimentary strata. The buildup of biomass in the sedimentary strata over time will result in a lower infiltration rate, thus restricting the flux of dissolved oxygen, which can lead to anaerobic conditions for bacteria respiration. A possible result is the release of toxic hydrogen sulfide and other chemicals.

To accurately analyze this impact, the DEIR/EIS must provide existing dissolved

[74] DEIR/EIS, at pg. 1-6 ("The proposed slant wells would draw ocean water through the seafloor sediments, which would pre-filter the seawater for use at the desalination plant.")
[75] DEIR/EIS, at pg. ES-5.

oxygen levels (which it does in 4.3-8, but primarily in the context of salinity and temperature), and the Dissolved Organic Matter (DOM) or Suspended Organic Matter (SOM) levels. The DEIR/EIS proposes that the Dissolved Oxygen level is not less than 7.0 mg/L.[76] However, critically, the DEIR/EIS does not include the Dissolved Organic Matter (DOM), or Suspended Organic Matter (SOM) levels.

The DEIR/EIR does not adequately analyze the issue of biomatter accumulation. It focuses on entrainment and impingement issues of marine organisms in evaluating the marine impact.[77] It provides the following explanation for why entrainment and impingement, will not occur.[78] First, the DEIR/EIS argues the orbital currents at the sea floor are so aggressive that any small micro-organisms near the sea floor will be swept away and will not have the opportunity to settle on the sea floor before being pulled into the sedimentary layers.[79] Second, the DEIR/EIS states the infiltration rate is so low that those forces will be overwhelmed by the orbital currents and thus the slant well's suction will play no role in pulling micro-organisms into the sea floor.[80] These conclusions[81] are based on the work of Jenkins,[82] discussed above, which relied on the infiltration rate (5.1 X 10^{-5} ft/sec) that Williams's found in his 2010 White Paper.[83] Jenkins's conclusion is as follows:

CURE-Sobczynski-2 cont.

> **Conclusions:** Analytic calculations were made to determine the potential for seabed erosion and micro-organism impingement on the seabed due to infiltration rates and pressure gradients induced by the slant well field of the South Orange Coastal Ocean Desalination Project. The calculations were based on infiltration rates and seabed pressure gradients modeled by Geoscience. (2010). While the modeled infiltration rates were found to increase net bottom shear stress by no more than 1% at the onset of erosion, this value is considered statistically insignificant as it is nine times smaller than the error implicit in the net shear stress increases determined under controlled laboratory conditions. Even then, whatever sediment transport is attributable to this 1% increase in bottom stress is both limited to the immediate vicinity of the slant well intake and is insignificant in comparison to naturally occurring seasonal beach profile variation and storm induced erosion. Force balance calculations show that the ocean would have to become perfectly quiescent in order for nano- and netplankton and other neutrally buoyant, freely drifting micro-organisms to become impinged or trapped on the seabed by the vertical pressure gradient induced by the slant well field. Such a quiescent wave climate has never been measured or observed at this site.

In his analysis, Jenkins examines the effects of orbital velocities on organisms occupying the area just above the sea floor. Based on his equations and examination of vertical pressure gradients, Jenkins concludes that nanoplankton and net plankton of a spherical size between 5μm and 20-30μm have no chance of being impinged or trapped

[76] DEIR/EIS, at pg. 4.3-36.
[77] DEIR/EIS, at pg. 4.5-52-53.
[78] DEIR/EIS, at pg. 4.5-53 ("Even though impingement of plankton and larval fish is not expected to occur from the intake of ocean water into the slant wells, the operation of the slants wells could impinge fine organic matter against the sea floor, cause a build-up and change the normal distribution of sediment grain size.")
[79] *Id.* ("Consequently, normal wave generated water velocities at the sea floor locations of the slant wells is predicted to be 8 to 20 times greater than that required for fine-grained material to accumulate on the sea floor over the subsurface slant wells. As a result, there would be no potential for the impingement of fine organic matter on the sea floor or changes to soft substrate habitat.")
[80] *Id.*
[81] DEIR/EIS, at pgs. 4.5-52-53 (referring to SWRCB, 2015 and MWDOC, 2010, which includes Jenkins, 2010 and Williams, 2010 – see explanation of relationship among these references in fn. 14.).
[82] Jenkins, 2010.
[83] Williams, 2010.

on the seabed unless the ocean is completely still.[84]

This, however, is an oversimplification of the fluid mechanics operating on these creatures. I utilized hydro-mechanical theories to demonstrate that particles as large as 10μm can still be trapped in vortices on the sea floor even when the current is at 10m/s. The particles will be caught in a vortex. They may then be subject to the vertical forces of the infiltration rate and will be drawn into the sea floor.

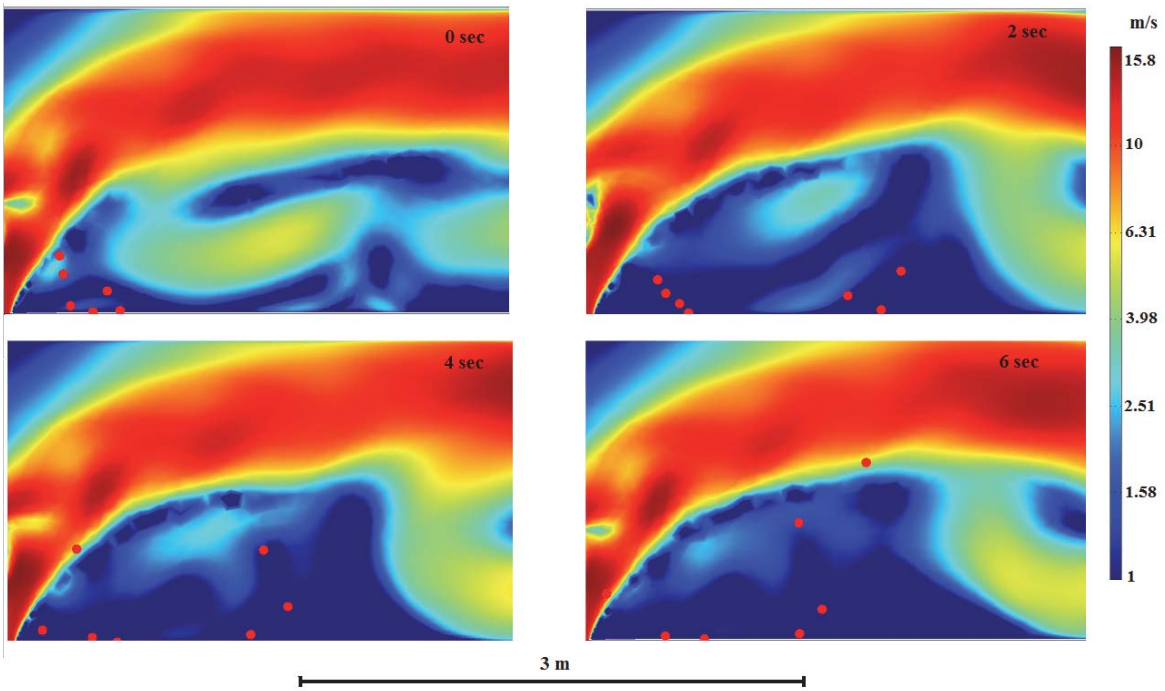


Figure 12. Numerically modeled snapshots of the particles (red dots) of size 10μm trapped by vortexes in highly turbulent current, the pseudo-color surface encodes velocity field ranging from 1 to 15.8 m/s, (3 to 47 ft/s)

CURE-Sobczynski-2 cont.

The DEIR/EIS relies on Jenkins's assertion that no biomatter could ever make it into the sea floor. This is inaccurate. First, the DEIR/EIS should provide existing levels of SOM and DOM from the sea floor to the intake. Second, the DEIR/EIS should reconsider the possibility that SOM and DOM can permeate the sea floor and build up in the sediment above the slant wells. Though the slant wells may be cleaned, the DEIR/EIS provides no proposal for cleaning the subsurface sediment.

This assumption that biomass need not be considered is undermined by the DEIR/EIS itself, which seeks to use the seabed as a "pre-filter"[85]:

[84] Jenkins, 2010, at pg. 8.

[85] Bar-Zeev, E., Belkin, N., Liberman, B., Berman, T., Berman-Frank, I. (2012). *Rapid sand filtration pretreatment for SWRO: Microbial maturation dynamics and filtration efficiency of organic matter.*

The Applicant proposes to use subsurface intakes (slant wells) to supply the desalination plant with source water. The well casings, or pipes, would extend seaward of MHW and would require a Special Use Permit to be present within MBNMS. The proposed slant wells would draw ocean water through the seafloor sediments, which would pre-filter the seawater for use at the desalination plant.[86]

Use of the sediment seafloor as a natural filter to remove bacteria, parasites, and other organic and inorganic impurities, besides sourcing the ocean water is the major driving force for the filtration, see illustration of source water in Figure 1. This is to ensure the water can be treated at the desalination plant without requiring extensive filtering.

Natural filtration in the subsea permeable deposits results in low turbidity and reduction or elimination of seawater reverse osmosis (SWRO) pretreatment.[87]

CURE-Sobczynski-2 cont.

Additionally, studies by Borodovskiy[88] and references contained within that study conclude that one cubic meter of surface sea water contains 0.5-1.5 grams of SOM. The estimated total mass of SOM above this Project's infiltration zone is 90 to 150kg/day. Based on our models, 50% of the SOM's flux will become concentrated within the 30 meter (98 foot) radius in the sand stratum above the highest water intake.

Distribution of the infiltered organic matter in sediment may vary, however once matter enters the filter medium it has no chance to escape, unless the deposit is scrubbed or dredged[89]. The rapid infiltration rate caused by the submersible pump only accelerates the process.

This result — i.e., the sand medium surrounding the intake zone has a high potential for plugging — is seen in other intake systems[90] with engineered filtering medium, such as infiltration gallery systems, not just slant wells.

[86] DEIR/EIS, 1-6.
[87] Williams, 2015 at pg. 1.
[88] Bordovskiy, O. K., 1965. Marine Geology 3 at 33-82 – Elsevier Publishing Company
[89] Hendrix, D., 2010. Fundamentals of Water Treatment Unit Processes, Physical, Chemical , Biological, IWA Publishing, CRC Press ISBN- 978-1-4200-6192-5
[90] Scwd2 Seawater Desalination Intake Technical Feasibility Study, by Kennedy/Jenkins Consultants – September 2011. KIJ Project No. 0868005*03, *available at* http://www.swrcb.ca.gov/water_issues/programs/peer_review/desalination/docs/reports/intake_feasibility_study.pdf. ("Scwd2, 2011")

Offshore Engineered Infiltration Gallery – An offshore engineered infiltration gallery is not expected to be able to reliably provide the required production capacity. The gallery would likely be plugged by fine sediment from winter storm discharge from the San Lorenzo River, which would reduce the production capacity and reliability. The engineered media would likely need to be dredged and replaced every few years, at great expense, and production would be stopped during those periods. Further, large storm events could also potentially reduce production capacity by eroding away the engineered media. Therefore, because an offshore infiltration gallery would have a high potential for plugging and erosion, and would not provide reliable production capacity, this alternative fails the screening level criterion, is not technically feasible and therefore is eliminated from further consideration.

In the case of strong storms, the layers covering the waste can be uncovered, see excerpt from section 7.1.1.1 below.[91] Based on USGS data to protect engineered media for an infiltration gallery, the gallery should be place 30 to 40 feet deep and 3,000 feet offshore. The slant well array is not being proposed to be built at distances of 3000 ft offshore. Therefore there is a risk that storm flows could "dig up" sediment that has accumulated. If toxic material has accumulated due to vertical infiltration, a storm will release the accumulated toxic material, which will spread and contaminate waters severely impacting the environment.[92]

CURE-Sobczynski-2 cont.

7.1.1.1 Wave Energy and Storm Flow Impacts on an Engineered Infiltration Gallery

Section 4 describes the impacts of wave and storm flows on the seafloor off the Santa Cruz coastline. Because wave energy could "dig up" an engineered infiltration gallery in the near-shore area, depending on where the waves are breaking and the orbital energy levels from the waves at the seafloor, an engineered infiltration gallery would need to be located farther offshore in deeper water. In the area near the Santa Cruz Municipal Wharf, Point Santa Cruz helps to protect this area from the predominant ocean wave energy. USGS data indicate that in the area of the offshore alluvial channel, approximately 3,000 ft offshore and approximately 30 to 40 ft depth, the typical wave energy does not cause significant erosion of the seafloor. Therefore, an engineered infiltration gallery would need to be placed at least 3,000 feet offshore (past the end of the wharf) to protect the engineered media from being scoured out by typical storm waves.

Based on this concern raised for infiltration galleries, it is in my opinion that the project has severe deficiencies in terms of planning for long term operations and storm events.

1. <u>Additional Factors that Lead to Bioaccumulation Impact: Colloidal Buildup</u>

CURE-Sobczynski-3

Compounding the issue of collected SOM is the problem of colloidal buildup of organic matter.[93] Colloidal buildup occurs when SOM attaches to clays contained within the sedimentary layers.[94] Once the SOM attaches to the clay, it can continue to grow

[91] *Id.* at pg. 7-2.
[92] *Id.*
[93] Moe, M. A., 1993.The Marine Aquarium Reference Systems and Invertebrates,. ISBN-0-939960-05-2
[94] Stevenson F.J., 1994. Humus Chemistry: Genesis, Composition, Reactions. New York: John Wiley & Sons.

and flourish[95], being supplied by oxygen pulled into the sedimentary layers by the slant well operations.

Thus, as the SOM follows hydrodynamic laws[96] it will bond to clays that are in the soil and directly above the submersible pump. As this detritus builds up above the pump, it will lead to reduced efficiency of the well resulting in clogging. The DEIR/EIS claims it will solve the issue of clogging through the application of mechanical brushes.[97] However, the DEIR/EIS does not account for how it will remove the organic detritus from the sediment above the slant wells. Without cleaning the sediment, the wells will continue to operate at low capacity.

CURE-Sobczynski-3 cont.

The DEIR/EIS is inconsistent with respect to the presence of clay, stating "in the specific area of the slant wells, the materials are dune sands with little to no fine-grained components (silt and clay) or soil components (organic materials) that would impede infiltration."[98] However, the test slant well's borehole lithologic log indicates that clay is present, see borehold lithologic log below.[99] The DEIR/EIS also states that "muds and clay slurry would be generated during the drilling and development of the subsurface slant wells." [100] Thus, the DEIR/EIS recognizes that clay will be present in the sedimentary layers around the well, but then provides no explanation as to how the project will address the buildup of organic matter that adheres to that clay.

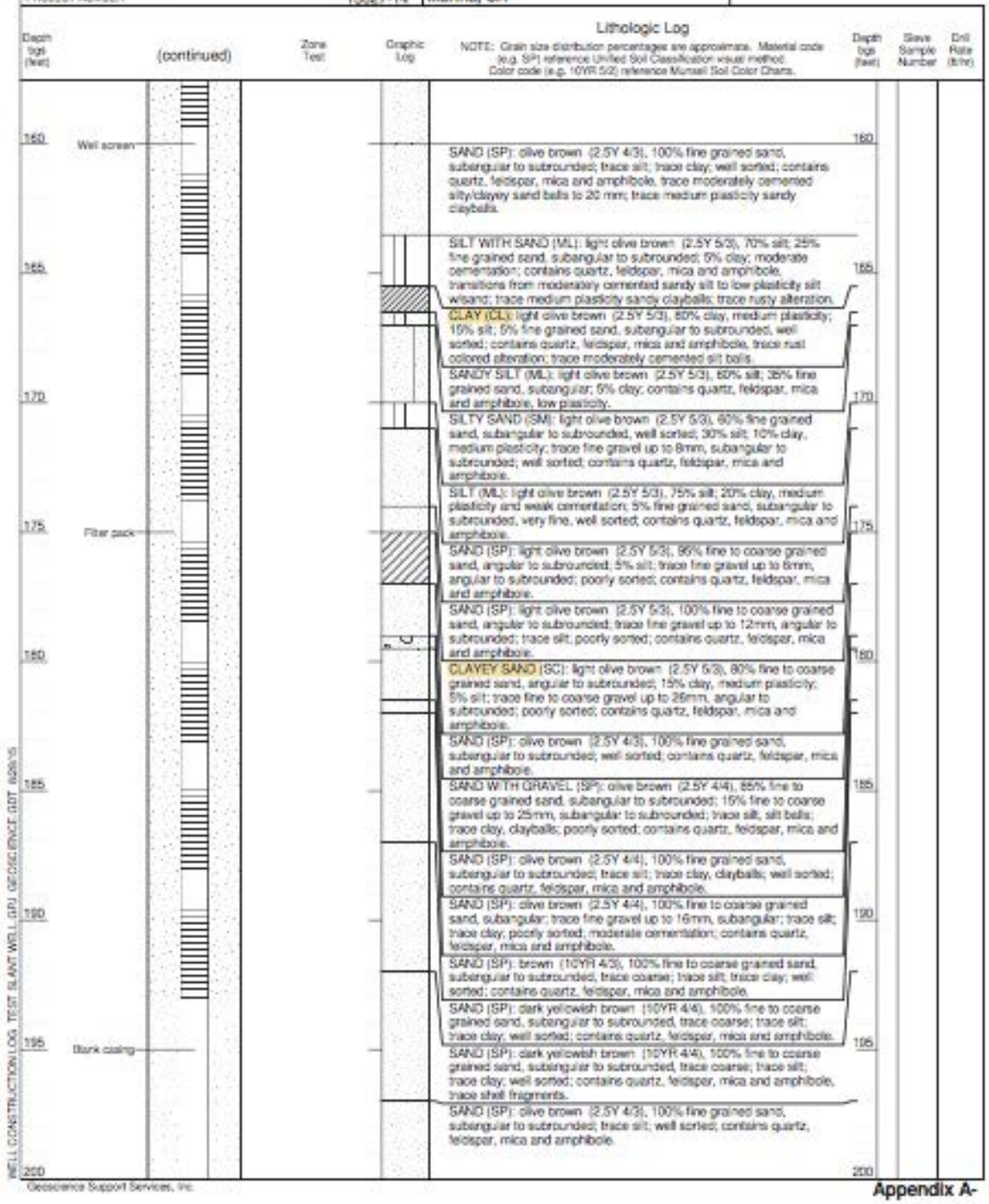
[95] Thurman, E.M., 1985. Organic Geochemistry of Natural Waters. Kluwer Academic, Boston.
[96] Sirivithayapakorn, S., & Keller, A. 2003. Transport of colloids in saturated porous media: A pore-scale observation of the size exclusion effect and colloid acceleration, Water resources research, vol 39 issue 4;. Auset, M, & Keller, A., 2004. Pore-scale processes that control dispersion of colloids in saturated porous media. Water resources research, vol. 40.
[97] DEIR/EIS, at pg. 3-57
[98] DEIR/EIS, at pg. 4.2-67.
[99] MPWSP, Procurement: Source Water Slant Wells RFP, *available at* http://media.wix.com/ugd/28b094_d40d9b99079e40a687789b86742c997b.pdf, at Appx. A (Well Number: Test Slant Well).
[100] DEIR/EIS, at pg. 4.3-39.

GEOSCIENCE
P.O. Box 220
Claremont, CA 91711
Telephone: (909) 451-6650
Fax: (909) 451-6638
www.gssiwater.com

WELL NUMBER
Test Slant Well

BOREHOLE LITHOLOGIC LOG (continued)

CLIENT: RBF/Cal Am
PROJECT NUMBER: 13027-14
LOCATION: Marina, CA



Appendix A-

CURE-Sobczynski-3 cont.

2. **Additional Factors that Lead to Bioaccumulation Impact: Gas Discussion**

In addition to reduced slant well efficiency, the presence of accumulated bio-matter in the sediment presents the threat of the creation of toxic gas. As the bio-matter builds up on the colloidal deposits, it will serve as a nutrient for bacteria. This does not present a problem at first. As long as the slant wells are operational, then fresh, oxygenated sea water will be pulled through the sediment and supply the bacteria with oxygen. However, the DEIR/EIS admits the wells will periodically need maintenance and assumingly those wells would be taken offline.[101] At any given time, only eight wells will be operational, meaning the two on standby can be activated, while one of the eight deactivates.

When the wells go offline, the supply of oxygen will be cut off to the now thriving bacteria colonies. The bacteria will switch to anaerobic respiration. In anaerobic decay, the bacteria reduces organic matter to methane (CH_4), hydrogen sulfide (H_2S), ammonia (NH_3), amines (RNH_2), and methanethiol (CH_3SH).[102] Very few lifeforms can exist in this kind of a toxic environment.[103] CURE-Sobczynski-4

It is unclear how these gases will affect both the Monterey Bay environment as well as the quality of the water extracted by the desalination plant. While any slant well is offline, the hazardous gases will outgas through the sedimentary layers, entering back into the ocean water supply. However, once the slant wells are turned back on, the chemicals can potentially be taken in by the slant wells, leading to toxic corrosion of the slant well itself.

Regardless of the eventual effects, the DEIR/EIS should have considered the presence of these gases, estimated the quantity of the gases, determined how those gases would interact with the environment and the slant well equipment, and provided a mitigation plan. The DEIR/EIS does not account for even the presence of the gas. As such, it is once again deficient.

IV. Conclusion

The DEIR/EIS paints a rosy picture of the functioning of the slant wells in Monterey Bay. It underestimates the vertical infiltration rate and does not considering accumulation of any detritus, and permanent attachment of humic acids in the natural filter body. In reality, and without having been provided the necessary information, we can expect a negative impact on the environment from the slant wells. As it is, the DEIR/EIS fails to consider numerous environmental impacts generated as part of this project and is deficient as a public disclosure document. CURE-Sobczynski-5

[101] DEIR/EIS, at pg. 3-57.
[102] Methanethiol, PubChem, *available at* https://pubchem.ncbi.nlm.nih.gov/compound/methanethiol
[103] Center for Disease Control and Prevention: Environmental Data, Biologic Effects of Exposure, Publication number 74-136, https://www.cdc.gov/niosh/pdfs/78-213b.pdf

If you have any questions about this analysis, I can be reached at rs@chemled-technologies.com.

V. Glossary [104]

- **Forchheimer** assumption requires that the water table will be flat, and groundwater be hydrostatic, i.e. equipotential lines are vertical to water table.

$$\frac{\partial P}{\partial z} = -\gamma = -\rho g$$

$$\frac{\partial h}{\partial z} = 0$$

where $\partial P/\partial z$ is the vertical pressure gradient, γ is the specific weight ρ is the density of water, g is the standard gravity and $\partial h/\partial z$ is the vertical hydraulic gradient.

- **Darcy's law**, at constant elevation is a proportional relationship between the instantaneous discharge rate through a porous medium, the viscosity the fluid and the pressure drop over a given distance.

$$Q = -\frac{\kappa A\,(p_\mathrm{b} - p_\mathrm{a})}{\mu L}\,.$$

Q (units of volume per time, e.g., m^3/s) is equal to the product of the intrinsic permeability of the medium, κ (m^2), the cross-sectional area to flow, A (units of area, e.g., m^2), and the total pressure drop $p_b - p_a$ (pascals), all divided by the viscosity, μ (Pa·s) and the length over which the pressure drop is taking place (L).

- **Computational fluid dynamics** (**CFD**) is a branch of fluid mechanics that

[104] Based in full or partially on articles published in Wikipedia. Forchheimer Assumption, Wikipedia, https://en.wikipedia.org/wiki/Dupuit%E2%80%93Forchheimer_assumption; Darcy's Law, Wikipedia, https://en.wikipedia.org/wiki/Darcy%27s_law; Computational Fluid Dynamics, Wikipedia, https://en.wikipedia.org/wiki/Computational_fluid_dynamics.

uses numerical analysis and data structures to solve and analyze problems that involve fluid flows. Computers are used to perform the calculations required to simulate the interaction of liquids and gases with surfaces defined by boundary conditions. With high-speed supercomputers, better solutions can be achieved. Ongoing research yields software that improves the accuracy and speed of complex simulation scenarios such as transonic or turbulent flows. Initial experimental validation of such software is performed using a wind tunnel with the final validation coming in full-scale testing, e.g. flight tests.

Appendix

Figure 3-9: Infiltration gallery in operation (LBWD, 2008)
(a) Note: At low tide the area above the infiltration gallery is apparent from the "drier sand"

Figure 13. Scwd2,2011 – Seawater Desalination Intake Technical Feasibility Studies, picture shows sand morphology change due to infiltration.[105]

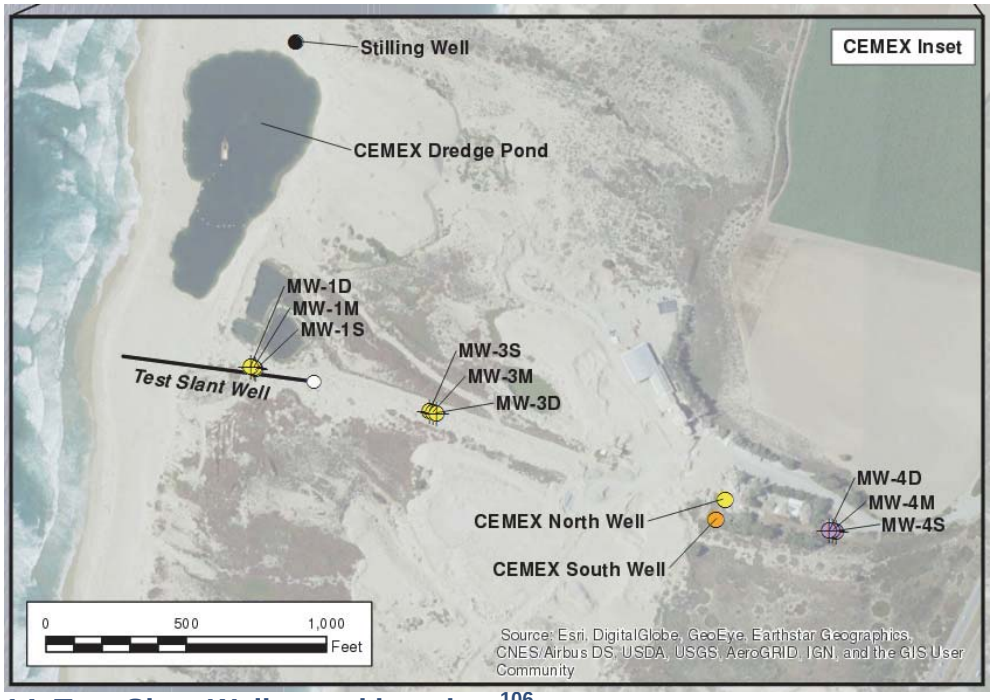
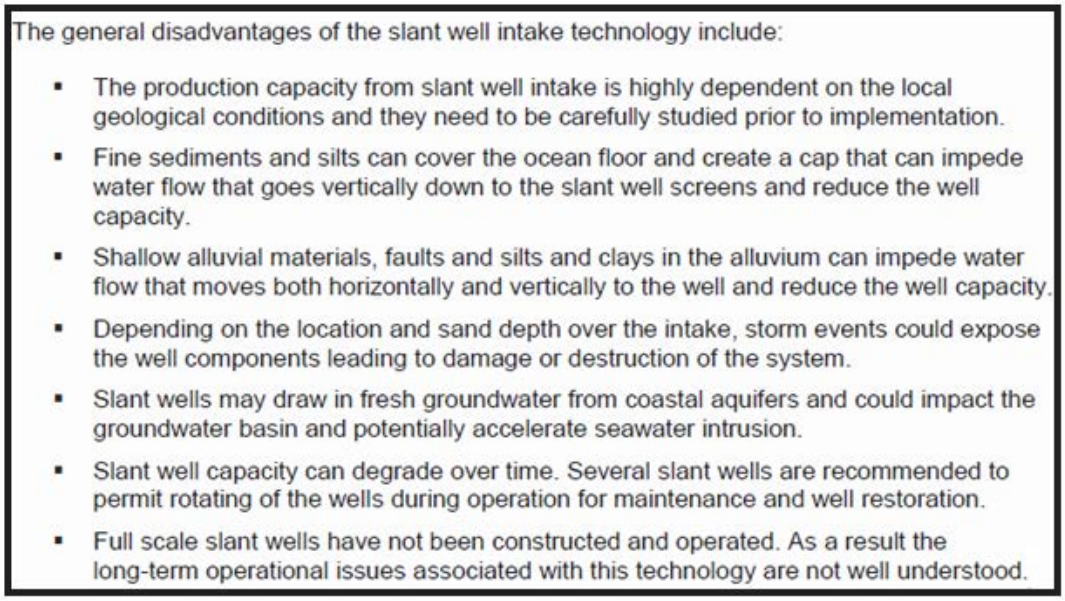


Figure 14. Test Slant Well actual location.[106]

[105] Scwd2, 2011, at pg. 3-11.


The general disadvantages of the slant well intake technology include:

- The production capacity from slant well intake is highly dependent on the local geological conditions and they need to be carefully studied prior to implementation.
- Fine sediments and silts can cover the ocean floor and create a cap that can impede water flow that goes vertically down to the slant well screens and reduce the well capacity.
- Shallow alluvial materials, faults and silts and clays in the alluvium can impede water flow that moves both horizontally and vertically to the well and reduce the well capacity.
- Depending on the location and sand depth over the intake, storm events could expose the well components leading to damage or destruction of the system.
- Slant wells may draw in fresh groundwater from coastal aquifers and could impact the groundwater basin and potentially accelerate seawater intrusion.
- Slant well capacity can degrade over time. Several slant wells are recommended to permit rotating of the wells during operation for maintenance and well restoration.
- Full scale slant wells have not been constructed and operated. As a result the long-term operational issues associated with this technology are not well understood.

Figure 15. Bullet points from Scwd2, 2011[107]

In my professional opinion each presented bullet point[108] is valid and supports my independent analysis.

[106] MPWSP, Test Slant Well Long Term Pumping, Dec 27th, 2016 pg. 14 available from http://media.wix.com/ugd/28b094_e431fc8629c04f13bc89f8e35a047870.pdf.
[107] Scwd2, 2011, at pg. 62.
[108] *Id.*

8.6.3 California-American Water Company (Cal-Am)

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March 29, 2017

Mary Jo Borak, CEQA Lead
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Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS)

Dear Ms. Borak and Ms. Grimmer:

On behalf of California-American Water Company (Cal-Am), the Applicant for the Monterey Peninsula Water Supply Project (Project), we appreciate the opportunity to provide written comments on the Draft EIR/EIS for the Project prepared jointly by the California Public Utilities Commission (CPUC) and Monterey Bay National Marine Sanctuary (MBNMS).

Cal-Am supports the analysis in the Draft EIR/EIS and believes the CPUC and MBNMS have performed an extremely thorough analysis of the Project and fully complied with their responsibilities under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), respectively, to assess the Project's potential adverse environmental impacts.

We understand that the CPUC, through its environmental consultants at Environmental Science Associates, and MBNMS will now begin the process of preparing the Final EIR/EIS for the Project, including responses to comments made on the Draft EIR/EIS, and any necessary corrections and additions to the Draft EIR/EIS. In reviewing the Draft EIR/EIS, Cal-Am identified various areas in the document that would benefit from some technical corrections, clarifications, and/or revisions. Accordingly, to assist the CPUC and MBNMS in preparing the Final EIR/EIS, we are attaching to this letter, as **Exhibit 1**, a matrix containing Cal-Am's suggested technical corrections, clarifications, and/or revisions to the Draft EIR/EIS.

CalAm-1

We believe that the comments and suggestions set forth in the attached matrix are technical corrections that fall within the scope of items to be addressed in the Final EIR/EIS. We have identified no issues that would warrant recirculation of the EIR/EIS per Public Resources Code section 21092.1 and CEQA Guidelines section 15088.5, and 40 Code of Federal Regulations section 1502.19. CalAm-1 cont.

In addition, as **Exhibit 2** to this letter we are providing you with a summary of Cal-Am's legal ability to develop water rights for the Project. This summary is intended to respond to several questions and comments that were raised by members of the public during public workshops on the Draft EIR/EIS in February 2017. As described in detail in this summary, Cal-Am can develop appropriative groundwater rights for the Project with respect to any water it may incidentally pump from the Salinas Valley Groundwater Basin as part of the Project. We hope that this summary helps clarify Cal-Am's position concerning groundwater rights. CalAm-2

Cal-Am fully supports the Project and looks forward to the CPUC's and MBNMS's continued review of the Project. Cal-Am would be happy to respond to any further questions you may have during the CEQA/NEPA process for the Project.

Very truly yours,

Duncan Joseph Moore
of LATHAM & WATKINS LLP

cc: Richard Svindland, California-American Water Company
Kathryn Horning, California-American Water Company
Ian Crooks, California-American Water Company
Robert Donlan, Ellison Schneider Harris & Donlan LLP

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
ES – Executive Summary						
1.	Dear Reviewer Letter	N/A	N/A	CalAm is not defined.	Please define CalAm as California American Water Company.	CalAm-3
2.	ES.2 Project Background	ES-2	First paragraph	The current language is in the Draft EIR/EIS is somewhat vague about exactly what kind of entity CalAm is, and what it provides to customers.	Please clarify that CalAm is a public water utility and that its Service District is the geographic area where it provides water to customers consisting of residential, commercial and industrial uses, among others.	CalAm-4
3.	ES.5.1 Description of Proposed Project	ES-5	First paragraph	Current description should explain what the Source Water Pipeline would do and to where it would convey water.	We suggest clarifying that Source Water Pipeline would convey water from the slant wells to the proposed desalination facility.	
4.	ES.5 The Proposed Project	ES-5	Second paragraph; sentence 2	Current description of the desalination plant should also discuss the proposed treated water storage tanks.	Consider adding text in **bold** to sentence 2 "… equalization tanks, **treated water tanks**, chemical feed . . ."	
5.	ES.5.1 Description of the Proposed Project	ES-6	Footnote 2	The City of Marina did not complete CEQA review of the test slant well project because its MND was not adopted, and instead its denial of the CDP was appealed to the Coastal Commission. The Coastal Commission then became the lead agency for CEQA review of the test well project.	Request that this be clarified in Footnote 2.	CalAm-5
6.	ES.6.5 Alternative 4	ES-10	First sentence	Typo – says Alternative 3 instead of Alternative 4.	Please correct typo.	CalAm-6
7.	ES Summary of Impacts and Mitigation Measures	ES-42	Table ES-2	There is an incorrect reference to the Presidio of Monterey Historic District, which would not be affected by the proposed project.	We request that the text be modified to read: "4.15-1a: Avoidance and Vibration Monitoring for Pipeline Installation in the ~~Presidio of Monterey Historic District, Downtown Monterey, and the~~ Lapis Sand Mining Plant Historic District."	CalAm-7
1. Introduction						
8.	1.4.2 The Monterey Peninsula Water Supply Project	1-9	Paragraph 7; Item 2	Current description of the desalination plant should also discuss the proposed treated water storage tanks.	Consider adding text in bold to sentence 2: "… equalization tanks, **treated water tanks**, chemical feed …"	CalAm-8
9.	1.4.4 Revisions Made in This EIR/EIS	1-11	Footnote 7	Similar to the comment in Executive Summary above, the City of Marina did not complete CEQA review of the test slant well project because its MND was not adopted, and instead its denial of the CDP was appealed to the Coastal	Request that this be clarified in Footnote 7.	CalAm-9

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
				Commission. The Coastal Commission then became the lead agency for CEQA review of the test well project.		CalAm-9 cont.
10.	References – Introduction and Background	1-18		NOAA 216-6A is cited but not placed in the List of References for that section.	Suggest adding citation to NOAA 216-6A.	CalAm-10
2. Water Demand, Supplies, and Rights						
11.	2.4.5 Groundwater Replenishment Project	2-20	Last paragraph of section	The Draft EIR/EIS references a September 15, 2016 CPUC decision allowing Cal-Am to enter a Water Purchase Agreement with the MRWPCA and MPWMD. The decision citation is not provided, although other CPUC decision citations are provided in this chapter. The correct citation is D.16-09-021.	We suggest that CPUC include the citation to this CPUC decision, which is D.16-09-021.	CalAm-11
12.	2.4.6.2 Malpaso Water Company LLC	2-21	Second paragraph of section	We note that the SWRCB recognizes that CalAm's interim use is offsetting Carmel River diversions.	We suggest a minor clarification to describe that excess water not used by Malpaso may be diverted for CalAm's use, and that such diversion offsets CalAm's Carmel River diversions. In other words, it is not an unauthorized diversion by CalAm, because it is under Malpaso's license.	CalAm-12
13.	2.5.3.3 Non-revenue Water Reduction	2-26	Footnote 29	Reference to Section 2.2.2 should be to 2.2.3.	Please revise Footnote 29 to correct reference.	CalAm-13
14.	2.6 Water Rights	2-31	First full paragraph	This paragraph discusses "[n]umerous court cases" but does not cite any cases.	Suggest adding citation to relevant court cases in References section.	CalAm-14
15.	2.6 Water Rights	2-31	Footnote 33	Footnote 33 repeats text in the previous paragraph.	Suggest deleting footnote.	CalAm-15
3. Project Description						
16.	3.1 – Introduction	3-2	First new paragraph	The proposed project would require 10 wells in total, and not nine wells	Suggest addition of a footnote to clarify that the existing test well would be converted to permanent 10th well if project is approved.	CalAm-16
17.	3.1 Introduction	3-2	Footnote 2	Similar to comments above, the City of Marina did not complete CEQA review because its MND for the test slant well project was not adopted, and instead its denial of the CDP was appealed to the Coastal Commission. The Coastal Commission then became the lead agency for CEQA review of the test well project.	Clarify in footnote.	CalAm-17
18.	3.2 Project Components	3-7	First paragraph; Bullet 2	Current description of the desalination plant should also discuss the proposed treated water storage tanks.	Consider adding text in bold to sentence 2: "… equalization tanks, **treated water tanks**, chemical feed …"	CalAm-18

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
19.	3.2 Project Components	3-8	Table 3-1; Row 6, Column 2, Bullet 1	The pretreatment building will be approximately 4,000 sf; not 6,000 sf.	Suggest changing "6,000-square foot" to "4,000-square foot."	CalAm-19
20.	3.2 Project Components	3-8	Table 3-1	Table 3-1 should be updated to clarify the nature of specific project components. Specific text revisions are recommended as noted in the following column.	The description of subsurface slant wells in Table 3-1 should be modified as follows: • Each well site would have one wellhead ~~**vault**~~ (Sites 1, 3, 4, and 5) or three wellhead**s** ~~**vaults**~~ (Sites 2 and 6), ~~**aboveground**~~ mechanical piping **vault** (meter, valves, gauges), one electrical control cabinet, and one pump-to-waste ~~**vault**~~ **basin**. • ~~Except for Site 1 (test slant well site), the aboveground facilities (at Sites 2 through 6) would be built on a concrete pad ranging between 5,250 and 6,025 square feet in area.~~	CalAm-20
21.	Section 3.2 Project Components	3-8	Table 3-1	Table 3-1 should be updated to show the need for two (2) surge vessels on site.	The DESCRIPTION SECTION of source water pipeline in Table 3-1 should be modified as follows: "~~**A**~~ **Two (2)** hydraulic surge ~~**facility comprising valves or hydro-pneumatic**~~ tanks would be located near the collector pipe/Source Water Pipeline connection point, south of the CEMEX access road and inland of the dunes." The PURPOSE SECTION of source water pipeline in Table 3-1 should be modified as follows: "The surge ~~**facility**~~ **tanks** would ~~**control the**~~ **protect the wells and pipeline infrastructure from** hydraulic **surge events (i.e., power loss) that could occu**r in the Source Water Pipeline."	CalAm-21
22.	3.2 Project Components	3-8 & 3-15	Table 3-1	Under the Subsurface Slant Wells portion of the table, the term "#8" is used without further explanation. This also occurs on page 3-15 under the Permanent Slant Wells discussion.	We believe this reference is to well 8 out of the 10 slant wells. We ask that this please be clarified, and suggest that a notation be added to a figure identifying which of the wells is being addressed here.	CalAm-22
23.	3.2 Project Components	3-10	Table 3-1	Brine Storage and Disposal – Brine Discharge Pipeline listed as 30 inch diameter. Correct diameter is 36 inch.	Please revise Brine Discharge Pipeline diameter to 36 inch.	CalAm-23
24.	3.2 Project Components	3-10	Table 3-1; Row 10, Column 2	The current design includes two (not four) large treated water pumps (each 4.8 mgd and 600 hp).	Request changing "- Four 4.8 mgd, 600 hp treated water pumps . . ." to "- Two 4.8 mgd, 600 hp treated water pumps . . ."	CalAm-24
25.	3.2.1 Seawater Intake System	3-13	Figure 3-3a	We believe some minor corrections to this Figure are necessary to show the current slant well layout.	See redlined figures provided. Please see Attachment A to this chart for corrections to this Figure.	CalAm-25
26.	3.2.1 Seawater Intake	3-13	Figure 3-3a	Sizing and specific project components require minor clarifications in this Figure.	We request the following additional minor clarifications to the Figure:	

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	System				Pump-to-Waste ~~**Vault**~~ **Basin (Rip Rap) (12' x 8')** **Mechanical Piping** ~~**Wellhead**~~ Vault(s) **(14' x 8')** Electrical Control Cabinet **– Concrete Pad (12' x 4')** **Graded Area** ~~**Concrete Pad**~~ 5,250 – 6,025 sq ft **ADD:** "Surge Tank Location 1" (See Attachment A – marked-up Figure 3-3a) **ADD:** "Surge Tank Location 2" (See Attachment A – marked-up Figure 3-3a) **ADD:** "HDD Pipeline Route" (See Attachment A – marked-up Figure 3-3a) **ADD:** "Alternative (NO HDD) Pipeline Route" (See Attachment A – marked-up Figure 3-3a). In addition, revise line type to **dashed** for alternative route (Attachment A – marked-up Figure 3-3a) **ADD:** "HDD Pipeline Route" (See Attachment A – marked-up Figure 3-3a) **ADD:** "Typical Surge Tank Layout" (See Attachment B provided with this chart)	CalAm-25 cont.
27.	3.2.1.1 Subsurface Slant Wells	3-15	First paragraph	Reference to City of Marina in CEQA process for the test slant well.	Suggest removing reference to City of Marina in discussion of test well evaluation in accordance with CEQA, since the Coastal Commission was the lead agency.	CalAm-26
28.	3.2.1.1 Subsurface Slant Wells	3-17	Figure 3-3b	The lengths listed for onshore and offshore well lengths appear to require minor corrections. Please see table attached as Attachment C to this chart for values calculated by GEOSCIENCE (and refer to Attachment A – marked-up Figure 3-3a for well naming used for measurements/calculations). The updated well layout was used for the measurements. For comparison, lengths were calculated for current (2015) Mean High Water and the 2020 MHW used on Figure 3-3a.	The markups, from north to south, are: SW-1 Stand-by-1 SW-2 SW-3 SW-4 SW-5 SW-6 SW-7 Stand-by-2 Stand-by-3	CalAm-27
29.	3.2.1.1 Subsurface Slant Wells	3-18	First paragraph	Clarifications to certain project components are needed.	Sites 1 through 6 include the following ~~**aboveground**~~ facilities: **aboveground wellhead(s)**, ~~**one wellhead vault per slant well,**~~ **a below ground** mechanical piping **vault (12' x 6' x 6') for** ~~**(**~~meters, valves, gauges**, etc.)** ~~**)**~~ **per well**, an electrical **enclosure** ~~**control cabinet**~~, and a pump-to-waste **basin** ~~**vault**~~. Each wellhead would be ~~**enclosed in an**~~ **located** aboveground **for ease of maintenance**. ~~**12 foot long, 6 foot wide, and 8 inch**~~	CalAm-28

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
					~~**tall precast concrete vault.**~~ Each slant well would be equipped with **up to** a 2,500 gpm, 300 hp submersible well pump. The electrical controls for operation of the slant wells would housed in a single story, ~~**16**~~**17**-foot long, by ~~**7**~~**10**-foot wide**, 10 foot high** fiberglass ~~**electrical control cabinet**~~ enclosure located at each of the six well sites. Each site would also have a pump-to-waste ~~**vault**~~ **basin** for the percolation of turbid water produced during slant well startup and shutdown. The pump-to-waste ~~**vault**~~ **basin** would **be constructed of Rip Rap material, approximately 1-2 feet deep (12' x 8')** ~~**be a precast 12 foot long, 8 foot wide, and 1 foot tall concrete vault covered with a metal grate and underlain by clean gravel and permeable textile fabric**~~. The new permanent slant wells and associated ~~**aboveground**~~ infrastructure at Sites 2 through 6 would be constructed on a 5,250- to 6,025-square foot ~~**concrete**~~ **graded** pad located above the maximum high tide elevation on the inland side of the dunes ~~**(no concrete pad would be built at Site 1)**~~. A 750-foot long, 42-inch diameter buried ~~**NSF/ANSI 615**~~ certified pipe would collect the seawater pumped from Sites 2 to 6 and convey it to the proposed buried Source Water Pipeline located at the existing CEMEX access road.	CalAm-28 cont.
30.	3.2.1.2 Source Water Pipeline	3-18	Line 1	Source Water Pipeline incorrectly listed as NSF/ANSI 61	Remove NSF/ANSI 61	CalAm-29
31.	3.2.1.2 Source Water Pipeline	3-18	Line 8	"The alignment would continue north along Lapis Road for 0.5 miles."	Revise to "The alignment would continue north within the TAMC ROW, along Lapis Road for 0.5 miles."	CalAm-30
32.	3.2.2.1 Pretreatment System	3-21	First paragraph; Sentences 3 and 4	Sentence 3 describes pretreatment requirements and identifies "membrane filtration" but not multimedia gravity filtration.	Consider revising the text to read "The pretreatment requirements for seawater collected by the proposed slant wells has been determined through operation of the test slant well and pilot program, and would likely include pressure filters or multimedia gravity filters, a backwash supply storage tank, and backwash settling basins. If necessary, the pretreatment system could also include coagulation, flocculation, or membrane filtration."	CalAm-31
33.	3.2.2.5 Brine Storage and Disposal	3-27	First paragraph; line 8	Brine Discharge pipeline listed as 30-inch diameter. Correct diameter is 36 inch.	Please revise to 36-inch diameter.	CalAm-32
34.	3.2.3.2 Desalinated Water Pumps	3-28	First paragraph; Sentence 3	The current design includes two (not four) large treated water pumps (each 4.8 mgd and 600 hp).	Suggest changing "There would be four 4.8 mgd, 600 hp pumps …" to "There would be two 4.8 mgd, 600 hp pumps …"	CalAm-33
35.	3.2.3.3 New Desalinated Water Pipeline	3-29	First paragraph	Minor correction needed to the following language: "… approximately 800 feet to Lapis Road, and continue south along Lapis Road …"	Request revising this language to read "… approximately 800 feet to Lapis Road, and continue south within TAMC ROW along Lapis Road …"	CalAm-34
36.	3.2.3.7	3-35	Second	The draft EIR/EIS should also consider alternative placement of water pipe in the	We request expanding the discussion to include the potential alternative placement of	CalAm-35

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	Castroville Pipeline		paragraph	county road ROW instead of within the TAMC.	pipeline within the County Road ROW along the same general route from Lapis Road and Del Monte, north on Monte Road, across county bridge, continue north in Monte Road ROW to Nashua Road and then continue back to TAMC route.	CalAm-35 cont.
37.	3.2.3.9 Interconnections with Highway 68 Satellite Systems	3-36	Last paragraph	The pipeline route does not include Blue Larkspur Lane, which is currently referenced.	Please revise as follows: "The pipeline would be installed within the rights-of-way of Ragsdale Drive, Lower Ragsdale Drive, and Wilson Drive~~, and Blue Larkspur Lane~~."	CalAm-36
38.	3.2.3.9 Interconnections with Highway 68 Satellite Systems Main System-Hidden Hills Interconnection Improvements	3-43	First paragraph	There are currently four pump stations in this area: Tierra Grande, Lower Tierra Grande, Middle Tierra Grande, and Upper Tierra Grande. The Tierra Grande and Lower Tierra Grande are new pump stations and appear to have been recently upgraded. The Lower Tierra Grande has two pumps with Pump 1 rated at 328 gpm at 195 ft TDH and Pump 2 rated at 370 gpm at 200 ft TDH. The Upper Tierra Grande Booster Station appears to have been recently upgraded to two 237 gpm pumps (not the 350 gpm mentioned in the Draft EIR/EIS). The Middle Tierra Grande Booster Station does require upgrades, as its pumps appear to be in the 165 gpm range.	Please consider revising as follows: "The existing interconnection between the main CalAm distribution system and the Hidden Hills system would be improved by installing approximately 1,200 feet of 6-inch-diameter pipeline along Tierra Grande Drive~~, with a connection to the existing Upper Tierra Grande Booster Station. The Upper Tierra Grande Booster Station has an existing capacity of 129 gpm. A new 350 gpm pump would be added to the booster station. In Addition, the existing pump capacity of the Middle Tierra Grande Booster Station, located on lower Casiano Drive, would be upgraded from 161 gpm to 400 gpm by adding a new 350 gpm pump (CalAm, 2013a)~~ **There are four pump stations in this area (from lowest to highest): Tierra Grande, Lower Tierra Grande, Middle Tierra Grande, and Upper Tierra Grande. The lowest station pumps into the next station and so on. The Middle Tierra Grande Booster Station pumps require an upgrade in capacity to approximately 400 gpm**."	CalAm-37
39.	3.2.4 Proposed ASR Facilities	3-43	General	The Draft EIR/EIS contains a very short discussion of the ASR system.	Suggest describing purpose and function of the existing ASR system so that the reader understands more clearly what the ASR system does.	CalAm-38
40.	3.2.4 Proposed ASR Facilities	3-44	Second paragraph	ASR 5 and 6 wells are incorrectly listed to have a combined injection capacity of 2.2 mgd (1,050 gpm).	Request that the text be revised to explain that the combined injection capacity is 4.3 mgd (3,000 gpm), which is the same as the extraction capacity.	CalAm-39
41.	3.3.2.1 Subsurface Slant Wells	3-48	Second full paragraph	Clarifications to certain project components are needed.	Please consider revising as follows: "The slant wells would be completed using telescoping casing ranging from 22 to 36 inches in diameter and super-duplex 12- to 20-inch diameter stainless steel well screens. A submersible pump would be lowered several hundred feet into each well. To develop the slant wells, each well would be pumped for 2 to 6 weeks during slant well completion and initial well testing. The groundwater pumped from the wells during well development would be discharged to the ocean within the waters of MBNMS via the test slant well discharge pipe and the existing MRWPCA ocean outfall. This well development process would produce a volume of water too great to percolate into the ground at the CEMEX mining area, as compared to the drill phase described above. Once built, **each** ~~**the**~~ well~~**heads**~~ would include **up to** 12-inch-diameter **mechanical** discharge piping (i.e., flow meter, isolation valve, check valve, pump control valve, air **release** valve, and pressure gauge). This discharge **mechanical** piping would **be located in a below ground vault (12' x 6'). The electrical controls would be located in a fiberglass enclosure** ~~**approximately 2 to 3 feet above the ground on an estimated**~~	CalAm-40

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
					~~**6,000 square foot concrete pad, with some of the mechanical and electrical gear covered by a pre-manufactured shelter to protect them from the elements**~~. The discharge piping would then transition underground via trenching and connect to the buried source water pipeline. The wellheads would be accessible and grade level once completed."	CalAm-40 cont.
42.	3.3.4 Pipeline Installation	3-50	Table 3-5	The table shows that construction of the desalination plant would result in 0 cy of excess spoils or construction debris, which is correct. However, we suggest a minor revision to the text associated with construction. In addition, there is an errant comment remaining in the document that needs to be removed. (see LB1 in last row).	It would be helpful in the construction description of the plant to note that cut and fill on the project site will not result in off-site transport of soils	CalAm-41
43.	3.4.1 Operation of the Seawater Intake System, etc.	3-58	Table 5-7	Table includes a typo and references 9.5 mgd for daily production. Daily production is 9.6 mgd as correctly noted in the remainder of the section..	Please correct typo in Table 5-7, as 9.6 mgd is the correct number.	CalAm-42
44.	3.4.5 Power Demand	3-60 to 3-61	First Paragraph	Clarification to power demand numbers is necessary due to the metrics used.	We request the following changes: • "Under existing conditions, the electrical power needed to operate the water supply system in CalAm's Monterey District Service Area is 11,466,000 ~~million~~ kilowatt hours per year (kWh/yr)." • "…the average annual power demand for the Monterey District Service Area would be 63,164,000 ~~million~~ kWh/yr." • "Therefore, the net increase in annual electrical power demand for water production would be approximately 51,698,000 ~~million~~ kWh/yr."	CalAm-43
45.	3.5 Permits, Approvals, and Regulatory Requirements	3-65	Table 3-8; Row 3	CDPH no longer regulates public water systems. The California Environmental Protection Agency, State Water Resources Control Board, Division of Drinking Water regulates public water systems.	Suggest replacing references to "CDPH" with "Division of Drinking Water."	CalAm-44
4. Environmental Setting, Impacts, and Mitigation Measures						
4.1 Overview						
46.	4.1 Overview	4.1-24	Table 4.1-2, Row 60	No location is listed for the Monterey Pipeline and Pump Station	Suggest including location for Monterey Pipeline and Pump Station	CalAm-45
47.	4.1 Overview	4.1-25	Figure 4-1	The Monterey Pipeline is not shown on map with cumulative projects	Suggest including Monterey Pipeline on map.	

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
4.2 Geology, Soils, and Seismicity						
48.	4.2.2.3 Applicable Land Use Plans, Policies, and Regulations	4.2-37 to 4.2-43	Table 4.2-6	Discussions of certain relevant policies disclose a "potential inconsistency" between the project and such policies. The Table is confusing because the project would be consistent with the applicable policies upon the implementation of mitigation (i.e., Impact 4.2-10's conclusion is that the project will be consistent with such policies upon implementation of Mitigation Measure 4.2-9).	Suggest revising Table 4.2-6 to note – for those policies where the project would be potentially inconsistent – that the project would be consistent with implementation of the applicable mitigation measure.	CalAm-46
49.	4.2.4.1 Geotechnical Investigations for Project Facilities	4.2-46	First paragraph	The Draft EIR/EIS indicates that it "used geotechnical information and data derived from project-specific geotechnical studies, including geotechnical investigations conducted for the proposed MPWSP Desalination Plant at Charles Benson Road (PCE, 2014; Zinn, 2014) and the conveyance pipelines (AECOM, 2015)." However, none of these studies are incorporated into the EIR/EIS as an appendix.	Consider including these studies as appendices or providing weblinks to the studies if they are available online.	CalAm-47
50.	4.2.5.2 Operational and Facility Siting Impacts	4.2-69	Impact 4.2-10 (Coastal Erosion/Sea Level Rise)	Although the Draft EIR/EIS correctly describes how the profiles for erosion/sea level rise/storm events established in the modeling for the 2014 study caused CalAm to resite the slant well clusters, the Draft EIR/EIS does not state that the Figures (Profiles 4a and 4b) from the 2014 study (which is attached as Appendix C2) are now no longer current.	Consider revising this in the Final EIR/EIS.	CalAm-48
4.3 Surface Water Hydrology and Water Quality						
51.	4.3.1.3 Surface Water Quality	4.3-9	Footnote 11	Typo - reference to Section 4.3.2.1 should be 4.3.2.2	Please correct typo in Final EIR/EIS.	CalAm-49
52.	4.3.2 Regulatory Framework	4.3-17	Figure 4.3-3	This figure shows areas subject to sea level rise in the Project Area. This figure should also be included and/or referenced in the discussion of sea level rise impacts in Section 4.2.	Please include reference to Figure 4.3-3 (or actual figure) in Section 4.2.	CalAm-50
53.	4.3.2.1 Federal Regulations	4.3-21	Fourth bullet	"EHF" is not defined.	Please define "EHF" in Final EIR/EIS.	CalAm-51
54.	4.3.2.2 State Regulations	4.3-34	First paragraph	Typo requiring minor correction.	Please correct in Final EIR/EIS as follows: "The Monitoring and Reporting Plan would require review and approval by the RWQCB and MBNMS prior to implementation of the MPWSP, and **be** revised if necessary, as part of the NPDES permit process."	CalAm-52
55.	4.3.5.2 Operational and Facility Siting Impacts	4.3-71	Impact 4.3-3	Sentence lacks units of measurement: "Seasonal average temperatures ranged between 11.5 and 14.5 and seasonal salinity levels ranged from 33.3 to 33.9 at the depth of the diffuser."	Please add measurement units.	CalAm-53

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
4.4 Groundwater Resources						
56.	4.4 Groundwater Resources	4.4-1	First paragraph, second sentence	Typo requiring minor correction.	Please revise sentence to read: "Specifically, this analysis focuses on how the proposed subsurface slant wells and aquifer storage and recovery (ASR) system improvements would change the groundwater aquifers adjacent to the coast **and** further inland beneath the Salinas Valley, and would change the groundwater levels, flow direction, and water quality within the Seaside Groundwater Basin."	CalAm-54
4.6. Terrestrial Biological Resources						
57.	4.6.2.2 State Regulations	4.6-99	Second paragraph	The Draft EIR/EIS states that FORA's Draft Habitat Conservation Plan for the former Fort Ord military base is expected to be complete in late 2016.	Determine whether an update to the schedule for the HCP can be provided in the Final EIR/EIS. [Note: This statement is also repeated on page 4.6-252.]	CalAm-55
58.	4.6.5.1 Construction Impacts	4.6-170	Mitigation Measure 4.6-1d	Mitigation Measure 4.6-1d requires that, for work conducting during the non-nesting season, a qualified biologist will evaluate the nature and extent of wintering plover activity in the project area "several days" prior to construction.	We request that a specific number of days or range of days prior to construction be provided for clarity.	CalAm-56
59.	4.6.5.1 Construction Impacts	4.6-179	Mitigation Measure 4.6-1l	Mitigation Measure 4.6-11 requires pre-construction surveys for special-status bats, but does not specifically state when the surveys should occur.	We request that a specific number or days or range of days prior to construction be provided for clarity.	CalAm-57
60.	4.6.5.1 Construction Impacts	4.6-231	Mitigation Measure 4.6-4	Mitigation Measure 4.6-4 requires Cal-Am to perform a comprehensive survey within the project footprint to identify, measure, and map trees subject to local tree removal ordinances, but does not specify when such surveys should be conducted.	We request that a specific number or days or range of days prior to construction be provided for clarity..	CalAm-58
4.8 Land Use, Land Use Planning, and Recreation						
61.	4.8.1 Setting	4.8-5	Figure 4.8-1	The Coastal Zone boundary does not clearly identify that Coastal Zone extends over the ocean.	Suggest revising figure to make clear that Coastal Act governs the area that is seaward of beach.	CalAm-59
62.	4.8.1 Setting	4.8-8	Figure 4.8-3	The Main System-Hidden Hills Interconnection is missing from figure due to the location of the legend.	Suggest providing an alternate figure in the Final EIR/EIS that includes Main System-Hidden Hills Interconnection.	CalAm-60
63.	4.8.1.3 to 4.8.1.12	4.8-9 to 4.8-13	General	Descriptions of pipeline segments do not expressly state that pipelines would be subterranean.	Suggest clarifying that pipelines would be constructed underground and note which pipelines are being constructed in public rights of way.	CalAm-61
64.	4.8.2.1 State Regulations	4.8-16	Fort Ord Reuse Plan	The Draft EIR/EIS is not clear what type of development is allowed within areas governed by Fort Ord Reuse Plan	Suggest clarifying any applicable use requirements/allowances for these properties.	CalAm-62
65.	4.8.2.1 State Regulations	4.8-17	Coastal Act	The discussion of Coastal Act does not make clear that the Coastal Commission has appeal authority over LCP determinations for major public works projects like the MPWSP.	Suggest addressing this fact in technical correction to the text in the Final EIR/EIS.	CalAm-63

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66.	4.8.2.3 Local Regulations	4.8-19	Monterey County Municipal Health & Saf. Code	The discussion of CPUC preemption mentions the CalAm Settlement Agreement.	Consider including the Settlement Agreement as an appendix to the Final EIR/EIS, given that it is being relied on in the analysis.
4.11. Greenhouse Gas Emissions					
67.	4.11.1.1 Climate Change	4.11-2	4.11.1.1	There is no framing of the role desalination can fill in response to a changing climate.	We suggest including a discussion of how desalination is addressed favorably in state policy documents regarding climate change. For example, see *Safeguarding California: Reducing Climate Risk – An update to the 2009 California Climate Adaptation Strategy*, California Natural Resources Agency, at 233-234 (July 2014) ("Droughts are also expected to increase in frequency, duration, and intensity; and drought affects all sectors - impacting public health, biodiversity, agriculture, and the economy. … To mitigate potential shortages during drought, a variety of measures may be utilized. State, regional and local agencies have increasingly been pursuing a strategy of making regions more self-reliant by developing new or underused water resources locally; improving water storage capacity may be another important strategy for preparing for drought risks. For instance, new or underused water resources may come from including: improved water conservation and water use efficiency, expanded water recycling, improved stormwater management, conjunctive use (coordinated management of local surface and groundwater), desalination, and groundwater remediation.")(emphasis added). The *Safeguarding California* Plan also identifies "Actions Needed to Prepare for Climate Risks to California Water Resources." One of those actions is "Diversify Local Supplies and Increase Water Use Efficiency," which provides: "Increasing regional self-reliance and diversification of local water supplies will enable Californians to better respond to changing economic and climactic conditions while ensuring a reliable water supply for the diversity of the state's water needs. California's water agencies utilize a variety of water management measures to improve local water supply reliability. These measures include agricultural and urban water use efficiency, local storage, conjunctive use, increasing stormwater capture and infiltration, recycled water, and ocean and brackish water desalination." *Id.* at 247 (emphasis added). One recommendation to achieve this action is "Develop a coordinated streamlined permitting process for desalination projects that provides strong environmental protection." *Id.* at 249. Another action is "Prepare California for hotter and dryer conditions and improve water storage capacity," which provides "[A] variety of measures may be utilized to mitigate potential shortages during drought, including minimizing reliance on imported water, improved water conservation and water use efficiency, expanded water recycling,

CalAm-64

CalAm-65

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					improved stormwater management, desalination, groundwater remediation, conjunctive use, firming up existing water transfer agreements, and entering into spot transfer or short-term water transfer agreements." *Id.* (emphasis added).	CalAm-65 cont.
68.	4.11.2.2 State Regulations	4.11-8	Mandatory Reporting Requirements	The Draft EIR/EIS contains an imprecise discussion of the applicability of MRR.	We request adding the following sentence to the end of the paragraph: "In addition, many of the proposed project's sources of GHG emissions are not directly subject to CARB's reporting program."	CalAm-66
69.	4.11.2.2 State Regulations	4.11-9	Market-Based "Cap-and-Trade" Compliance Mechanism	The Draft EIR/EIS contains an imprecise discussion of the applicability of cap-and-trade program.	We request adding the following sentence to the end of the paragraph: "In addition, many of the proposed project's sources of GHG emissions are not directly subject to the cap-and-trade program."	CalAm-67
70.	4.11.4.3 Evaluation of GHG Emissions	4.11-14	First paragraph	The last sentence of the paragraph does not flow well from the prior sentence.	Suggest revising sentence to read: "While ~~this particular~~ the 10,000 metric tons CO2e per year significance threshold is not used, indirect emissions associated with electricity consumption are calculated and impacts are fully assessed in this chapter."	CalAm-68
71.	4.11.5 Operational Emissions	4.11-17	Bottom of page	The Draft EIR/EIS incorrectly states: "As of July 2016, state policymakers have not enacted this RPS program expansion into law."	We suggest replacing this sentence with the following: "Senate Bill 350 was signed by Governor Brown on October 7, 2015, codifying the 50% RPS."	CalAm-69
4.12. Noise and Vibration						
72.	4.12.6 Direct and Indirect Effects of the Proposed Project	4.12-34	Mitigation Measure 4.12-1d	The last sentence of Mitigation Measure 4.12-1d states that "Barrier blankets are available with a sound transmission class rating of 32, providing 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014)." It is not clear whether blankets meeting this rating are required.	Recommend clarifying whether blankets meeting this rating will be required.	CalAm-70
4.13. Public Services and Utilities						
73.	4.13.2.2 State Regulations	4.13-7	California Coastal Act	The first paragraph states that a preliminary assessment of MPWSP consistency with Coastal Act priorities concerning designing and limiting new or expanded public works facilities such that they are protective of costal resources "is provided here."	As written, it is unclear what "here" refers to. Consider adding a reference to particular section in which these priorities are discussed, or if discussed in the subsequent paragraphs of Section 4.13.2.2, consider changing "here" to "below." If "here" refers to the entire EIR, consider changing "here" to "in this EIR/EIS."	CalAm-71
74.	4.13.5.1 Construction Impacts	4.13-17	Consistency with Regulatory Requirements	Typo of "L-U6.1."	Revise to "LU-6.1."	CalAm-72
75.	4.13.5.1 Construction	4.13-18	Mitigation Measure 4.13-	Typo. MM 4.13-1c provides: "Construction managers shall hold regular tailgate meetings with construction staff on days when work near high-priority utilities will	Remove em-dash at the end of the sentence.	CalAm-73

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	Impacts		1c	occur to review all safety measures regarding such excavations, including measures identified in the Mitigation Monitoring and Reporting Program and in construction specifications—."		CalAm-73 cont.
76.	4.13.5.1 Construction Impacts	4.13-18	Mitigation Measure 4.13-1e	MM 4.13-1e states that "CalAm or its contractor(s) shall notify local fire departments in advance of any time work that is to be performed in close proximity to a gas utility line, or any time damage to a gas utility line results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety."	We request that the phrase "close proximity" be made more specific so that it provides an objective standard/distance. In addition, please revise sentence as follows: "CalAm or its contractor(s) shall ~~**notify**~~ **meet with** local fire departments in advance of ~~**any time**~~ **commencing** work that is to be performed in close proximity to a gas utility line **to establish a protocol and procedures for notification of work occurring near gas utility lines and a list of emergency contacts, and to provide the local fire department with a copy of the Emergency Response Plan required by Mitigation Measure 4.13-1d**~~**, or any time damage to a gas utility line results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety**~~."	CalAm-74
4.14. Aesthetic Resources						
77.	4.14.3.2 State Regulations	4.14-22	California Coastal Act	The Draft EIR/EIS states that the operation of the project would be potentially inconsistent with Coastal Act policies re: scenic resource protection. Table 4.14-2, which contains a comparison of plans, policies, and goals against the project, does not include Coastal Act policies.	While Table 4.14-2 does include some LCP policies, if there is no desire to include actual policy sections of the Coastal Act, we suggest modifying the language on p. 4.7-22 to clarify that the policies in the table are LCP policies re: scenic resource protection that implement the Coastal Act.	CalAm-75
78.	4.14.6.1 Construction Impacts	4.14-29	Subsurface Slant Wells – Second Paragraph	The Draft EIR/EIS states, "Construction of the remaining subsurface slant wells in the CEMEX active mining area would take approximately 15 months to complete, and could take place anytime throughout the overall 24-month construction duration for the proposed project." However, this sentence does not take into account the durational limitations on slant well construction due to restrictions in the terrestrial bio mitigation measures.	Clarify that construction timing is subject to mitigation measures governing terrestrial bio impacts.	CalAm-76
4.18. Energy Conservation						
79.	4.18.2.2 State Regulations	4.18-6	State of California Integrated Energy Policy	The Draft EIR/EIS only discusses the 2013 Integrated Energy Policy Report (IEPR). The 2015 IEPR was adopted 2/10/2016 and the 2016 IEPR Update is scheduled to be considered for adoption at the CEC's 2/15/2017 meeting.	Update language to address 2015 IEPR and 2016 IEPR Update.	CalAm-77
4.19. Population and Housing						
80.	4.19.1.2 Employment	4.19-3	2nd on page	In the second sentence, the Draft EIR/EIS states that "the county" lost about 1,500 jobs, but does not specify which county.	The language should be clarified (appears to be Monterey County based on context).	CalAm-78
81.	4.19.5 Direct and Indirect Effects of Proposed	4.19-5	Header	Inconsistency noted: the header of section 4.19.5 includes "Indirect Effects," but section 4.19.3 states that indirect impacts are analyzed in the Growth Inducement chapter.	Address inconsistency.	CalAm-79

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	Project					CalAm-79 cont.
4.20. Socioeconomics and Environmental Justice						
82.	4.20.2.3 Local Regulations	4.20-12	Settlement Agreement on MPWSP Desalination Plan Return Water	The first paragraph of section states that "[u]nder this agreement, CCSD will purchase water at a discounted cost pursuant to Item 4, Payment Provisions."	Consider defining CCSD. Also, is the title of subsection should read "Desalination Plant," not "Desalination Plan"	CalAm-80
5. Alternatives Screening and Analysis						
83.	5.3.5 Desalination Plan Site Options Screening Results	5.3-27	First paragraph	The Draft EIR/EIS assumes that a minimum of 10 acres is needed to accommodate desalination plant facilities, but does not explain why this minimum acreage is used.	Recommend providing additional information in comment letter to explain why an alternative site must be at least 10 acres.	CalAm-81
84.	5.4.2.4 Ability to Meet Project Objectives	5.4-11	Second paragraph	The sentence that reads "The GWR Project, when constructed, would provide 3,500 of potable supply for the CalAm service area" contains a typo.	This should read "The GWR Project, when constructed, would provide 3,500 **afy** of potable supply for the CalAm service area."	CalAm-82
85.	5.4 Description of Alternatives Evaluated in Detail	5.4-53	Table 5.4-9 Alternative 5A Facilities Subsurface Slant Wells	Number of well sites needs to be corrected.	We request the following clarifications to the text: • Seven slant wells located the CEMEX site, extending offshore beneath Monterey Bay (the conversion of an existing test slant well into a permanent well plus six new wells at ~~four~~ **five** new well sites) into MBNMS, with four to five wells operating under normal operating conditions but all wells could under certain operating conditions at any given time and two wells maintained on standby. • The slant wells would be grouped into ~~five~~ **six** wells: ~~four~~ **five** sites with one well each and one site with ~~three~~ **two** wells. Each well would have a wellhead ~~vault~~, and ~~aboveground~~ mechanical piping **vault** (meter, valves, and gauges); each well would have one electrical ~~control cabinet~~ enclosure, and one pump-to-waste ~~vault~~ **basin** (same as proposed project).	CalAm-83
86.	5.4 Description of Alternatives Evaluated in Detail	5.4-53	Table 5.4-9 Alternative 5A Facilities Source Water Pipeline	Minor clarifications required	We request the following clarifications to the text: • 2.7 mile longs versus 2.2 miles long in Table 3.1. Verify. • **ADD:** "Two (2) hydraulic surge tanks would be located near the collector pipe/Source Water Pipeline connection point, south of the CEMEX access road and inland of the dunes."	CalAm-84
87.	5.4.7.1	5.4-54	Table 5.4-9;	The current design does not include a "Clearwell Pump Station."	Consider the following changes:	CalAm-85

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	Overview – Description of the Reduced Project		Row 6, Columns 1 and 2		Column 1: Change "Clearwells (Water Storage Tanks) and Clearwell Pump Station" to "Treated Water Storage Tanks" Column 2: Delete "6.4 mgd capacity, 120-horsepower pump"	CalAm-85 cont.
88.	5.4.7.1 Overview – Description of the Reduced Project	5.4-54	Table 5.4-9; Row 7, Columns 1 and 2	Descriptions of the treated water pumps for the 6.4 mgd plant need to be clarified.	Consider the following changes: Column 1: Change "Desalinated Water Pump Station" to "Desalinated Water Pumps" Column 2, Bullet 1: Change "6.4 mgd capacity, 800-horsepower pump . . ." to "Two 3.2 mgd capacity, 400-horsepower pumps and two 1.6 mgd capacity, 200-horsepower pumps" Column 2, Bullet 2: Change "1.4 mgd capacity, 20-horsepower pump …" to "Two 1.4 mgd capacity, 10-horsepower pumps …"	CalAm-86
89.	5.5.5.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing	5.5-116 to 5.5-117	Mitigation Measure ALT 2-Marine-1: Marine Construction Measures	The Draft EIR/EIS includes mitigation measures that apply only to certain alternatives. For example, Mitigation Measure ALT 2-Marine-1: Marine Construction Measures, only applies to alternatives with open-water intakes.	Suggest clarifying that these measures do not apply to the proposed project or any ultimately-approved project that does not include an open-water intake.	CalAm-87
90.	5.5.5.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing	5.5-119	Mitigation Measure ALT 2-Marine-2: Minimization of and Mitigation for Loss of Marine Life and Habitat	The Draft EIR/EIS includes mitigation measures that apply only to certain alternatives. For example, Mitigation Measure ALT 2-Marine-2: Minimization of and Mitigation for Loss of Marine Life and Habitat, only applies to alternatives with open-water intakes.	Suggest clarifying that these measures do not apply to the proposed project or any ultimately-approved project that does not include an open-water intake.	CalAm-88
91.	5.5.6.5 Direct and Indirect Effects of Project Alternative 2 – Open-Water Intake at Moss Landing	5.5-144	Last paragraph	There appears to be a missing word in the sentence: "Construction of the Alternative 2 intake would have the potential for indirect impacts on sensitive habitats, as none are located adjacent to sites where construction of the intake would occur."	May need to be revised to say: "Construction of the Alternative 2 intake would **not** have the potential for indirect impacts on sensitive habitats, as none are located adjacent to sites where construction of the intake would occur.	CalAm-89
92.	5.5.12.6 Direct and Indirect Effects of	5.5-250 to 5.5-251	Mitigation Measure ALT 3-NO:	The Draft EIR/EIS includes mitigation measures that apply only to certain alternatives. For example, Mitigation Measure ALT 3-NO: Operational Performance Noise Standard for Data Center Generators, only applies to	Suggest clarifying that this measure does not apply to the proposed project.	CalAm-90

Comment #	Section Name	Page #	Paragraph or Table #	Issue	Suggested Resolution	
	Alternative 3 - the Monterey Bay Regional Water Project		Operational Performance Noise Standard for Data Center Generators	Alternative 3.		CalAm-90 cont.
93.	5.5.12.7 Direct and Indirect Effects of Alternative 4 - the Peoples' Moss Landing Water Desalination Project	5.5-253 to 5.5-254	Mitigation Measure ALT 4-NO: Operational Performance Noise Standard for Desalination Facilities and Pump Station	The Draft EIR/EIS includes mitigation measures that apply only to certain alternatives. For example, Mitigation Measure ALT 4-NO: Operational Performance Noise Standard for Desalination Facilities and Pump Station, only applies to Alternative 4.	Suggest clarifying that this measure does not apply to the proposed project.	CalAm-91
94.	5.5.15.4 Direct and Indirect Effects of Alternative 1 – Slant Wells at Potrero Road	5.5-298	Mitigation Measure ALT 1-CULT (Conduct Subsurface Investigation)	The Draft EIR/EIS includes mitigation measures that apply only to certain alternatives. For example, Mitigation Measure ALT 1-CULT (Conduct Subsurface Investigation), only applies to Alternatives 1, 2, 3, and 4.	Suggest clarifying that this measure does not apply to the proposed project.	CalAm-92
Appendix G2						
95.	Appendix G2		Title Page	The word "Trussel" is misspelled in the title of Appendix G2.	The title should read: "Trussel**l** Technologies Inc. Technical Memorandum, Response to CalAm MPWSP DEIR"	CalAm-93

From: Ian Crooks [mailto:Ian.Crooks@amwater.com]
Sent: Tuesday, March 13, 2018 2:58 PM
To: Eric Zigas <EZigas@esassoc.com>
Subject: APM

Eric –

CalAm submits the attached revised Applicant Proposed Measure 4.4-3 for inclusion in the Final EIR/EIS. Also attached is a redline comparing the revised measure to the version included in the Draft EIR/EIS. CalAm-94

Please let me know if you have any questions.

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www.amwater.com

Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage.

Prior to the start of MPWSP slant well construction, CalAm, working with MCWRA, shall develop a groundwater monitoring and reporting program (the "Program") to the satisfaction of MCWRA. All costs of Program development and implementation shall be borne by CalAm either directly or through funding of MCWRA's staff, consultants and Program activities. The Program shall augment the MCWRA's existing regional groundwater monitoring network to focus on the area that could be affected by the proposed slant wells. The geographic area of the Program shall be within the model domain of the North Marina Groundwater Model, also referred to as NMGWM^{2016} and include the Dune Sand Aquifer, the 180-Foot Aquifer, the 400-Foot Aquifer and the Deeper Aquifer (i.e., the 900-Foot Aquifer) of the Salinas Valley Groundwater Basin (the "Monitoring Area"). The purpose of the Program is to ensure that owners of existing public or private groundwater supply wells within the Monitoring Area on the date the MPWSP commences slant well pumping ("Active Supply Wells") suffer no harm as a result of MPWSP slant well pumping. The elements of the Program proposed under this measure are described below.

1. A network of monitoring wells has been completed on and near the CEMEX property as part of the CalAm test slant well project. These well clusters monitor water elevation and quality at various depth intervals within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the Program's monitoring network. These existing monitoring wells are subject to relocation, replacement, or substitution by new or other monitoring wells developed as part of the Program as determined by MCWRA.

2. In addition, using information from the Groundwater Extraction Management System (GEMS) maintained by MCWRA and from the State Water Resources Control Board's Division of Drinking Water, CalAm, in coordination with MCWRA, shall identify Active Supply Wells in the Monitoring Area and offer to owners of identified Active Supply Wells the opportunity to participate in the Program for groundwater elevation and water quality monitoring. The owners of Active Supply Wells in the Monitoring Area will receive at least 60 days' notice (via email, if available, and via certified mail) of the opportunity to participate in the Program, and may elect in writing to participate in the Program as to their Active Supply Wells ("Participating Active Supply Wells"). This opt-in process must occur sufficiently in advance of MPWSP slant well pumping so that information on pre-MPWSP conditions can be obtained for each Participating Active Supply Well. Prior to the start of MPWSP slant well pumping, an independent California-certified hydrogeologist retained and directed by MCWRA (the "Hydrogeologist") shall evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, flow rates, and drawdown) of each Participating Active Supply Well to develop pre-pumping data for each well. Water elevation and quality monitoring pursuant to the Program shall begin

following initial groundwater well assessment, and shall continue at intervals specified in the Program (e.g., more frequently at the beginning of MPWSP slant well pumping and less often after stabilization of groundwater levels) until the well owner ceases pumping from the monitored well, or until the well owner agrees that monitoring is no longer required.

3. Prior to the start of MPWSP slant well pumping, CalAm and MCWRA shall review the current (as updated if needed) inventory of monitoring wells within the Monitoring Area, and identify locations within the Monitoring Area lacking monitoring coverage and that warrant monitoring in order to evaluate potential effects on Participating Active Supply Wells from MPWSP slant well pumping. Based upon that review, MCWRA may require that CalAm fund the installation of new monitoring wells in the Monitoring Area to be installed before MPWSP slant well pumping begins. The number of new monitoring well sites in the Monitoring Area and the location of those new monitoring well sites shall be determined by MCWRA. The area of groundwater monitoring under the Program may be extended outside of the Monitoring Area if warranted to evaluate potential MPWSP slant well pumping effects on Participating Active Supply Wells and recommended by the Hydrogeologist.

4. The groundwater data developed through the Program shall be collected by or provided to MCWRA at intervals identified in the Program, but in no event longer than 45 days from such data being obtained, to evaluate whether MPWSP slant well pumping is causing consistent and measurable drawdown of local groundwater levels that is distinguishable from seasonal or multi-year groundwater level fluctuations. In the event that MCWRA identifies a consistent and measurable drawdown in groundwater levels and determines that such drawdown is potentially attributable to MPWSP slant well pumping and independent of seasonal or multi-year groundwater level fluctuations or any regional trends, the Hydrogeologist shall then determine if the observed degree of drawdown would damage or otherwise adversely affect any existing Participating Active Supply Wells. Adverse effects from lowered groundwater levels in Participating Active Supply Wells may include water elevation acute and long-term declines that draw water below pump intakes, causing cavitation due to exposure of the well screen, reduced well yields and pumping rates, increased energy costs to power the well, or changes in groundwater quality indicating that MPWSP slant well pumping is drawing lower quality water toward the well. Active Supply Wells that are not Participating Active Supply Wells will be considered for a determination by the Hydrogeologist of potential damage or adverse effects reasonably attributable to MPWSP slant well pumping (as described above) if substantial, credible evidence is submitted by the owners of such Active Supply Wells concerning damage or adverse effects at such wells, and such effects are verified by CalAm and the Hydrogeologist.

5. If the Hydrogeologist determines that a Participating Active Supply Well or an Active Supply Well that Cal-Am and the Hydrogeologist have verified for damage or adverse effects pursuant to Section 4 above has been damaged or otherwise negatively affected by MPWSP slant well pumping, CalAm and the Hydrogeologist shall coordinate with the well owner to develop and implement a mutually agreed upon course of action. Such course of action may include but not be limited to repairing or deepening the existing well, restoring groundwater yield by improving well efficiency, facilitating an interim or long-term replacement of water supply, constructing a new well, or compensating the owner for increased pumping costs. Any interim or long-term replacement water supply shall be of the same or better quality (i.e., potable or non-potable) and predicted quantity as the existing supply of the Active Supply Well and shall be suitable for the purposes served by the existing Active Supply Well. Before CalAm undertakes any course of action to remedy the MPWSP slant well pumping effects on an Active Supply Well, the Hydrogeologist shall authorize such action and provide notice of such action to MCWRA.

Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage.

Prior to the start of MPWSP slant well construction, ~~the project applicant~~CalAm, working with ~~the~~ MCWRA, shall ~~fund and~~ develop a groundwater monitoring and reporting program ~~that expands the current~~(the "Program") to the satisfaction of MCWRA. All costs of Program development and implementation shall be borne by CalAm either directly or through funding of MCWRA's staff, consultants and Program activities. The Program shall augment the MCWRA's existing regional groundwater monitoring network to ~~include~~focus on the area ~~near~~that could be affected by the proposed slant wells. ~~Once expanded, the program will monitor groundwater levels and water quality within the area where groundwater elevations are anticipated to decrease in~~ The geographic area of the Program shall be within the model domain of the North Marina Groundwater Model, also referred to as NMGWM^{2016} and include the Dune Sand Aquifer ~~and~~, the 180-~~FTE~~Foot Aquifer, the 400-Foot Aquifer and ~~within at least one mile outside of the predicted radius of influence. The area of groundwater monitoring shall be determined by MCWRA and the MPWSP HWG.~~the Deeper Aquifer (i.e., the 900-Foot Aquifer) of the Salinas Valley Groundwater Basin (the "Monitoring Area"). The purpose of the Program is to ensure that owners of existing public or private groundwater supply wells within the Monitoring Area on the date the MPWSP commences slant well pumping ("Active Supply Wells") suffer no harm as a result of MPWSP slant well pumping. The elements of the ~~groundwater monitoring program~~Program proposed under this measure are described below.

~~• Using a current survey of wells within the pumping influence of the slant wells, CalAm will offer to private and public well owners the opportunity to participate in a voluntary groundwater monitoring program to conduct groundwater elevation and quality monitoring. The voluntary groundwater monitoring program shall include retaining an independent hydrogeologist to evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, and flow rate) of participating wells prior to the start of slant well pumping. Water elevation and quality monitoring shall begin following initial groundwater well assessment.~~

~~• Based on a review of the well network of voluntary well owners, CalAm will identify areas lacking adequate groundwater data and if deemed necessary, install new monitoring wells. These new wells would be in the 180-Foot Aquifer.~~

1. ~~• Seven clusters~~A network of monitoring wells ~~were recently~~has been completed on and near the CEMEX property as part of the CalAm test slant well project. These well clusters monitor water elevation and quality at various ~~depths~~depth intervals within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the Program's monitoring network. These existing monitoring wells are subject to relocation, replacement, or substitution by new or other monitoring wells developed as part of the Program as determined by MCWRA.

2. **In addition, using information from the Groundwater Extraction Management System (GEMS) maintained by MCWRA and from the State Water Resources Control Board's Division of Drinking Water, CalAm, in coordination with MCWRA, shall identify Active Supply Wells in the Monitoring Area and offer to owners of identified Active Supply Wells the opportunity to participate in the Program for groundwater elevation and water quality monitoring. The owners of Active Supply Wells in the Monitoring Area will receive at least 60 days' notice (via email, if available, and via certified mail) of the opportunity to participate in the Program, and may elect in writing to participate in the Program as to their Active Supply Wells ("Participating Active Supply Wells"). This opt-in process must occur sufficiently in advance of MPWSP slant well pumping so that information on pre-MPWSP conditions can be obtained for each Participating Active Supply Well. Prior to the start of MPWSP slant well pumping, an independent California-certified hydrogeologist retained and directed by MCWRA (the "Hydrogeologist") shall evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, flow rates, and drawdown) of each Participating Active Supply Well to develop pre-pumping data for each well. Water elevation and quality monitoring pursuant to the Program shall begin following initial groundwater well assessment, and shall continue at intervals specified in the Program (e.g., more frequently at the beginning of MPWSP slant well pumping and less often after stabilization of groundwater levels) until the well owner ceases pumping from the monitored well, or until the well owner agrees that monitoring is no longer required.**

3. **Prior to the start of MPWSP slant well pumping, CalAm and MCWRA shall review the current (as updated if needed) inventory of monitoring wells within the Monitoring Area, and identify locations within the Monitoring Area lacking monitoring coverage and that warrant monitoring in order to evaluate potential effects on Participating Active Supply Wells from MPWSP slant well pumping. Based upon that review, MCWRA may require that CalAm fund the installation of new monitoring wells in the Monitoring Area to be installed before MPWSP slant well pumping begins. The number of new monitoring well sites in the Monitoring Area and the location of those new monitoring well sites shall be determined by MCWRA. The area of groundwater monitoring under the Program may be extended outside of the Monitoring Area if warranted to evaluate potential MPWSP slant well pumping effects on Participating Active Supply Wells and recommended by the Hydrogeologist.**

4. ~~• Using the~~**The** groundwater data developed through the ~~**voluntary well monitoring program and data gathered at the new monitoring wells, CalAm will**~~**Program shall be collected by or provided to MCWRA at intervals identified in the Program, but in no event longer than 45 days from such data being obtained, to** evaluate whether ~~**project**~~**MPWSP slant well** pumping is

causing ~~a~~**consistent and** measurable ~~**and consistent**~~ drawdown of local groundwater levels ~~**in nearby wells**~~ that is distinguishable from seasonal **or multi-year** groundwater level fluctuations. In the event that **MCWRA identifies** a consistent and measurable drawdown ~~**is identified, CalAm will**~~**in groundwater levels and determines that such drawdown is potentially attributable to MPWSP slant well pumping and independent of seasonal or multi-year groundwater level fluctuations or any regional trends, the Hydrogeologist shall then** determine if the observed degree of drawdown would damage or otherwise adversely affect ~~**active water supply wells**~~**any existing Participating Active Supply Wells**. Adverse effects from lowered groundwater levels in ~~**existing active groundwater supply wells can**~~**Participating Active Supply Wells may** include ~~**cavitation26 due to exposure of the well screen,**~~ water elevation **acute and long-term** declines that draw water below pump intakes, **causing cavitation due to exposure of the well screen,** reduced well yields and pumping rates, ~~**and**~~**increased energy costs to power the well, or** changes in groundwater quality indicating that ~~**project**~~**MPWSP slant well** pumping is drawing lower quality water toward the well. ~~**Adverse effects would only occur in active wells; inactive wells would not**~~ **Active Supply Wells that are not Participating Active Supply Wells will** be considered for ~~**mitigation.**~~**a determination by the Hydrogeologist of potential damage or adverse effects reasonably attributable to MPWSP slant well pumping (as described above) if substantial, credible evidence is submitted by the owners of such Active Supply Wells concerning damage or adverse effects at such wells, and such effects are verified by CalAm and the Hydrogeologist.**

~~**• If it is determined that a nearby active groundwater well has been damaged or otherwise negatively affected by the project pumping of the slant wells, the project applicant shall coordinate with the well owner to arrange for an interim water supply and begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well.**~~

5. If the Hydrogeologist determines that a Participating Active Supply Well or an Active Supply Well that Cal-Am and the Hydrogeologist have verified for damage or adverse effects pursuant to Section 4 above has been damaged or otherwise negatively affected by MPWSP slant well pumping, CalAm and the Hydrogeologist shall coordinate with the well owner to develop and implement a mutually agreed upon course of action. Such course of action may include but not be limited to repairing or deepening the existing well, restoring groundwater yield by improving well efficiency, facilitating an interim or long-term replacement of water supply, constructing a new well, or compensating the owner for increased pumping costs. Any interim or long-term replacement water supply shall be of the same or better quality (i.e., potable or non-potable) and predicted quantity as the existing supply of the Active Supply Well and shall be suitable for the purposes served by the existing Active Supply Well. Before CalAm undertakes any course of action to

remedy the MPWSP slant well pumping effects on an Active Supply Well, the Hydrogeologist shall authorize such action and provide notice of such action to MCWRA.

8.6.4 Carmel River Steelhead Association (CRSA)

Carmel River Steelhead Association
501 (c)(3) TIN 77-0093979
P.O. Box 1183
Monterey, CA 93942

CPUC/MBNMS
c/o ESA
550 Kearney
San Francisco, CA 94108

March 22, 2017

RE: DEIR/DEIS MONTEREY PENINSULA WATER SUPPLY PROJECT

Gentleman:

The Carmel River Steelhead Association (CRSA) has been involved in water issues on the Monterey Peninsula, especially in regards the Carmel River, for forty years and makes the following comments on the Draft EIR/EIS for the Cal-Am Monterey Peninsula Water Supply Project.

CRSA has been in favor of this project since the beginning and is still in favor of the project. We do have one comment or item we would like added to the Final EIR/EIS when issued.

In reading the document we fail to see where it notes how Cal-Am will use its remaining legally permitted water; specifically when the pumping of that water will occur. We have been told on many occasions that Cal-Am will pump the majority of its legally permitted water during the wet season or when the river is running above 120 cubic feet per second. We have also been told that Cal-Am must pump some water during the dry season to keep their pumps and treatment facilities operational, but that necessary summer pumping would be at a minimum.

CRSA feels it is necessary to include language in the Final EIR/EIS that spells out the Cal-Am pumping regime once the Monterey Peninsula Water Supply Project is complete or the benefit to Carmel River Steelhead will not be as significant as required. If such a request is in the scope of this EIR/EIS then CRSA insists it be added to the document.

CRSA-1

Sincerely,

Brian LeNeve
President CRSA

Carmel River Watershed Conservancy
PO Box 223833, Carmel, CA 93922

Board of Directors:
Michael Waxer, President
Paul Bruno, Vice President
Abbie Beane, Treasurer
Gabriela Alberola, Secretary
Lorin Letendre, Exec Dir
Catherine Stedman
Andy Magnasco
Vince Voegeli
Rafael Payan

February 27, 2017

CPUC/Monterey Bay National Marine Sanctuary
c/o Environmental Science Associates
550 Kearney Street, Suite 800
San Francisco, CA 94108

RE: Draft Environmental Impact Statement for the Monterey Peninsula Water Supply Project

The Carmel River Watershed Conservancy wishes to express its support for the Monterey Peninsula Water Supply Project and in particular the proposed desalination plant with subsurface seawater intake system.

It is our strong belief that this Project is the most likely project that has been proposed that will increase the in-stream flows in the Carmel River and improve the chances of recovery of the South Central California Steelhead (a federally listed threatened species). Like any project, there are obstacles that must be overcome (such as permits to be issued) and mitigations that will be necessary, but the alternative proposed water supply project would also be required to test subsurface intake wells and that would greatly delay that project, possibly beyond the extension that has been granted by the SWRCB.

CRWC-1

Our Conservancy conducted the first watershed-wide assessment of the Carmel River Watershed in 2004-05 with a grant from the SWRCB, and developed the Watershed Assessment and Action Plan from that project. That Action Plan was revised in 2007 and 2015, and one of the highest-priority actions was "Support implementation of a water supply project that minimizes the export of water from the Carmel River basin during the dry season that causes a chronic reduction in flow and meets the goals of State Water Resources Control Board Order 95/10." In addition, the NOAA's National Marine Fisheries Service has issued a South-Central California Steelhead Recovery Plan (December 2013) that recommends as a "Critical Recovery Action" for the Carmel River to "Develop and implement alternative off channel water supply project to eliminate or decrease water extractions from the channel…" (page 7-12). The Carmel River has been over-drafted for decades to supply the water needs of the

Carmel River Watershed Conservancy
PO Box 223833, Carmel, CA 93922

Board of Directors:

Michael Waxer, President
Paul Bruno, Vice President
Abbie Beane, Treasurer
Gabriela Alberola, Secretary
Lorin Letendre, Exec Dir
Catherine Stedman
Andy Magnasco
Vince Voegeli
Rafael Payan

Monterey Peninsula, and to eliminate such over-drafting an alternative water supply is absolutely essential.

The Water Supply Project's desalination plant is the only proposed project that is likely to provide such an alternative water supply source in sufficient quantity to preclude further over-drafting of the Carmel River and its acquifer and thereby restore high stream flows for much of the year that are critical to the recovery of our steelhead populations. Supplemented by the Aquifer Storage and Recovery (ASR) and the Pure Water Monterey Groundwater Replenishment (GWR) projects, this proposed desalination plan would enable California American Water to choose to take only its legal right of 3,376 acre feet of water annually from the Carmel River and its acquifer. While the River might still dry up in portions during the dry season and in drier water years, the amount of water flowing in the River will be substantially higher than it is now during those times. That is our goal if we are to accomplish our mission to restore the health and beauty of the Carmel River and watershed.

CRWC-1 cont.

Sincerely,

Lorin Letendre
Executive Director

MITCHELL CHADWICK

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916-462-8887
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March 29, 2017

VIA ELECTRONIC MAIL AND U.S. MAIL

Mary Jo Borak
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c/o Environmental Science Associates
550 Kearny Street, Suite 800
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Karen Grimmer
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Building 455a
Monterey, CA 93940

Re: CalAm Monterey Peninsula Water Supply Project Revised Draft EIR-EIS

Dear Ms. Borak and Ms. Grimmer:

I submit this letter on behalf of my client, CEMEX, for public comment on the Revised Draft Environmental Impact Report Environmental Impact Statement (DEIR/EIS) prepared for the Monterey Peninsula Water Supply Project (MPWSP or "Project"). The Project is proposed by California American Water Company ("CalAm"). The DEIR/EIS was prepared jointly by the California Public Utilities Commission (the "Commission"), as the lead agency under the California Environmental Quality Act (CEQA), and the National Oceanic and Atmospheric Administration (NOAA), Monterey Bay National Marine Sanctuary (MBNMS), as the lead agency under the National Environmental Policy Act (NEPA). The DEIR/EIS was released for public review and circulation in January 2017, and the public review period was subsequently extended until March 29, 2017. If, after public comment and review, the Commission approves the Project as proposed, CalAm will install ten subsurface slant wells on an existing CEMEX property with an active sand mine, known as the Lapis Site. The slant wells would provide water to a new desalination plant capable of producing 10,750 acre-feet per year of potable water.

The Commission previously issued a Draft EIR for the Project on April 30, 2015. CEMEX reviewed that Draft EIR and, on September 30, 2015, submitted a timely formal comment letter to the Commission. (Attachment A hereto.) CEMEX notes that, unfortunately, many of the concerns raised in that prior letter almost one and a half years ago still have not been addressed in the DEIR/EIS. As summarized in CEMEX's prior comment letter, CalAm proposes co-locating the slant wells and other Project-critical infrastructure on CEMEX's 400-acre Lapis Site, which CEMEX currently uses for active mining operations. The Lapis Site, which is located in the northern part of the City of Marina, has been actively and continuously mined since 1906 under a constitutionally-protected vested right to operate a sand production business. (See, e.g., Lapis Site Reclamation Plan approved by City of Marina in August 1989.) In addition, the Lapis

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Site is subject to an approved reclamation plan pursuant to the Surface Mining and Reclamation Act (SMARA). (See Cal. Pub. Res. Code §§ 2710 et seq.)

To the extent that any of CEMEX's prior comments from 2015 are not addressed in the DEIR/EIS, CEMEX reincorporates those comments with this letter. Furthermore, the failure of this letter to comment on any other DEIR/EIS inconsistencies with CEMEX's operation processes and rights and CEMEX's property rights should not be considered agreement by CEMEX with any such misstatements or construed as a waiver of any rights or remedies to which CEMEX may be entitled. In this context I submit the following comments for the Commission's consideration when preparing the Final EIR/EIS.

I. CEMEX's Global Comments on the DEIR/EIS Regarding Project Use of CEMEX Property

A. The 1996 Annexation Agreement speaks for itself, and the DEIR/EIS must analyze the impacts of a potential injection well on CEMEX property.

The DEIR/EIS states that an "issue to be resolved" and an "area of controversy" regarding CalAm's proposed use of subsurface slant wells to withdraw source water for the Project includes "whether CalAm has the legal right to extract groundwater from the Salinas Valley Groundwater Basin (SVGB)." (DEIR/EIS, p. ES-13.) This issue implicates the *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* (the "Annexation Agreement") executed in 1996 by the Marina Coast Water District (MCWD), the Monterey County Water Resources Agency (MCWRA), the owners of the Armstrong Ranch, RMC Lonestar ("RMC," CEMEX's predecessor in interest for the Lapis Site), and the City of Marina. The DEIR/EIS discusses the Annexation Agreement in section 2.6.4.

DEIR/EIS section 2.6.4 includes an additional discussion of whether CalAm has the legal right to extract groundwater from the SVGB. The DEIR/EIS concludes that implementation of the Project will be compatible with the Annexation Agreement, because CalAm "could conceivably construct and employ an injection well on CEMEX property." (DEIR/EIS, p. 2-42.) First, the Annexation Agreement speaks for itself, so CEMEX does not consider the DEIR/EIS's interpretations to be binding in any way regarding that Agreement. Second, the DEIR/EIS must analyze the impacts on CEMEX's property and active sand production operations of constructing an injection well on CEMEX property, since the DEIR/EIS acknowledges construction of the well is a reasonably foreseeable outcome of the Project.

CEMEX-1

B. CalAm's construction and Project operation ground disturbance will need to be addressed in a reclamation plan amendment.

Disturbance of land proposed by CalAm for construction and operation of the subsurface slant wells and the source water pipeline on the Lapis Site will need to be accounted for and addressed by a reclamation plan amendment in effect for CEMEX's operations pursuant to the

CEMEX-2

requirements of SMARA. (See Cal. Pub. Res Code § 2777.) DEIR/EIS section 4.17.1.2 states that "CEMEX, as the land owner, would need to amend the Reclamation Plan to include the construction and operation of the slant wells in the retired portion of CEMEX property and the source water pipeline underneath the CEMEX access road." (DEIR/EIS p. 4.17-3.) The DEIR/EIS does not address necessary coordination or cost of this undertaking. As CalAm is proposing this Project necessitating a reclamation plan amendment, CalAm must indemnify CEMEX for the monetary cost of any increase in CEMEX's reclamation obligations. As noted previously, CEMEX has an established vested right to mine the property, so the DEIR/EIS's reference to potential review by state and federal agencies does not reduce CalAm's obligations to either prepare or bear the cost of a reclamation plan amendment.

CEMEX-2 cont.

C. Project construction, operation, and mitigation must be consistent with the Mine Safety and Health Administration Requirements.

As previously noted by CEMEX, the DEIR/EIS does not address how CalAm will ensure compliance with the federal Mine Safety and Health Administration (MSHA) and the California Division of Occupational Safety and Health (also known as "Cal/OSHA"), Division of Mining and Tunneling, mine safety requirements. Section 4.7 should be revised to address this issue, and its current failure to do so is improper.

The proposed siting of the Project on an active mine site requires compliance during construction, operation, and decommissioning with MSHA and Cal/OSHA. The DEIR/EIS fails to address site-specific safety issues in any appreciable detail. For example, the DEIR must include a mitigation measure that commits CalAm to chocking tires of parked construction vehicles.

CEMEX-3

Considering the fundamental importance of safe operations on an active mine site and CEMEX's potential MSHA liability for CalAm's actions relating to the Project, the Commission must ensure through a condition of approval or other legal instrument that CalAm both indemnifies CEMEX for its actions and obtains its own Mine Identification Number from MSHA, so that CalAm will be the entity cited for any potential violations it commits, rather than CEMEX. This revision to the DEIR/EIS could be coordinated with the Health and Safety Plan required by DEIR/EIS mitigation measure 4.7-2a. (DEIR/EIS p. 4.7-29.) For these same reasons, CalAm must coordinate with CEMEX personnel to review the Traffic Control and Safety Assurance Plan, and the DEIR/EIS mitigation measure 4.9-1 should be updated to reflect this requirement.

CEMEX-4

D. CalAm's revisions to the Project, including well and pipeline locations and construction schedules, should be coordinated with CEMEX to ensure they do not interfere with operations and reclamation activities.

CEMEX-5

Due to revisions to the locations and configurations of the slant wells, CalAm must coordinate with CEMEX to review the revised Project design and ensure that no adverse impacts to

CEMEX's sand production operations and reclamation activities will occur. (DEIR/EIS p. 3-13, Figure 3-3a.) Additionally, the DEIR/EIS now describes the need for new aboveground and underground power lines at the Lapis site. (DEIR/EIS p. 3-44.) The location of these power lines should also be reviewed by and coordinated with CEMEX to ensure that the location will not interfere with its operations and reclamation activities. Finally, sections 3.3.2, 3.3.9, and 3.4 of the DEIR/EIS describe the construction activities and schedule associated with construction and maintenance of the slant wells. (DEIR/EIR pp. 3-47, 3-55, 3-57.) Construction activities and maintenance, as well as the location of temporary facilities, should also be coordinated with CEMEX to ensure locations and activities will not interfere with its operations and reclamation activities.

CEMEX-5 cont.

II. The DEIR/EIS Does Not Sufficiently Address Potentially Significant Geologic, Soils, and Seismicity impacts

The geology and soils analysis concludes that there will be no impact from subsidence associated with the subsurface slant wells on CEMEX's property. (DEIR/EIS p. 4.2-66.) This conclusion is based on the assumption that the slant wells will be drawing water from offshore coastal aquifers. However, the groundwater resources section acknowledges the slant wells could draw some portion of inland groundwater from the underlying aquifer. (DEIR/EIS p. 4.4-60.) Thus, potential impacts to CEMEX's property due to subsidence from the slant wells drawing some portion of groundwater must be analyzed.

CEMEX-6

In addition, the slant wells appear to be located in an area of moderate to high liquefaction susceptibility, but the potential impacts of liquefaction on the slant wells, including associated above-ground structures, are not addressed. (DEIR/EIS p. 4.2-60 to 4.2-61.) The potential for seismic influence to damage the slant wells, and any related impacts to CEMEX's on-going mining operations must be addressed.

CEMEX-7

Furthermore, the DEIR/EIS concludes that, based on the relocation of slant wells, the wells would remain buried and not exposed until sometime after 2060. (DEIR/EIR p. 4.2-70.) However, Mitigation Measure 4.2-9 requires that the wells be abandoned before the slant wells are exposed. (DEIR/EIS p. 4.2-71.) Thus, the DEIR/EIS must address necessary coordination with CEMEX on the abandonment procedure for the slant wells.

CEMEX-8

III. The DEIR/EIS Does Not Adequately Address Potentially Significant Hydrology Impacts to CEMEX's Property and Active Operations

A. Potential surface hydrology impacts to CEMEX's property must be analyzed.

CEMEX-9

The DEIR/EIS states that any flood flows diverted by the electrical control cabinets "would not affect other properties or structures." (DEIR/EIS p. 4.3-117.) However, the DEIR/EIS does not

address whether flows diverted by the electrical control cabinets and other surface infrastructure will have an impact within the CEMEX active mining area or otherwise interfere with CEMEX's operations. The DEIR/EIS should be revised to address this issue.

CEMEX-9 cont.

The DEIR/EIS also states that the slant wells would be designed to withstand inundation, so that there would be no significant risk of damage from flooding due to sea level rise. (DEIR/EIS p. 4.3-119.) Elsewhere, the DEIR/EIS concludes that impacts to the slant wells due to sea level rise will be insignificant because the wells will be decommissioned before sea level rise impacts occur. (DEIR/EIS p. 4.2-71 to 4.2-72.) Due to this inconsistency, the DEIR/EIS must consider the potential impacts to CEMEX's property of operating inundated slant wells in flood conditions.

CEMEX-10

B. The Groundwater Monitoring Program must be expanded to account for CEMEX's water supply well and drawdown impacts in the 400-foot aquifer.

The DEIR/EIS discussion for Impact 4.4-3 notes that aquifers underlying the slant wells, including the 400-foot aquifer, "are projected to exhibit a response to MPWSP slant well pumping." (DEIR/EIS, p. 4.4-59.) As demonstrated in Figure 4.4-16, CEMEX's production well will be subject to a one foot drawdown under both the 0% and 3% return water scenarios. To reach this estimate, the DEIR/EIS analysis for Impact 4.4-3 relies on modeling for the extent of pumping influence in the 180-FTE Aquifer. (DEIR/EIS p. 4.4-57, citing Appendix E2.)

As noted in CEMEX's comment letter on the prior draft EIR, the reliability of the groundwater drawdown model was assessed using well pumping data from the test slant well. (Appendix E2.) Based on this model, the DEIR/EIS concludes that groundwater drawdown impacts, including impacts to CEMEX's well, will be less than significant. (DEIR/EIS p. 4.4-68.) Despite this conclusion, the DEIR/EIS includes an applicant proposed mitigation measure to expand an existing regional groundwater monitoring program to include the Dune Sand Aquifer and the 180-FTE Aquifer.

CEMEX-11

Specifically, Mitigation Measure 4.4-3 proposes an expansion of the current regional groundwater monitoring network to include monitoring of groundwater levels "in the Dune Sand Aquifer and the 180-FTE Aquifer." (DEIR/EIS, p. 4.4-74.) While the measure references well monitors in the 400-foot aquifer, it is not clear that the measure applies to the 400-foot aquifer. Since the Project could result in drawdown under 0% and 3% water return scenarios, Mitigation Measure 4.4-3 must be revised to include monitoring of the 400-foot aquifer to ensure that the Project does not adversely impact CEMEX's existing water production well. In addition, the Mitigation Measure only requires mitigation if CalAm determines drawdown is resulting in adverse impacts. This measure fails to identify a performance standard for measuring when an adverse effect might trigger mitigation. Since this determination is left to CalAm's discretion, the mitigation measure is unenforceable and illusory.

Furthermore, as noted in CEMEX's prior comment letter on the 2015 draft EIR, Mitigation Measure 4.4-3 must not only be developed prior to Project construction, the requisite agency must also *approve* the submitted plans prior to Project construction. Agency approval of an applicant-developed mitigation program is necessary to ensure mitigation is not impermissibly deferred. CEMEX-12

C. The DEIR/EIS should be revised to sufficiently analyze and address Project drawdown impacts on the Lapis site.

i. The DEIR/EIS geologic description of CEMEX's dredge pond is not accurate.

The DEIR/EIS analysis of Impact 4.4-3 also considers whether the Project will have an impact on CEMEX's existing dredge pond or on the current sand mining operations. The DEIR/EIS states that the water level for CEMEX's dredge pond is assumed to be 10 to 20 feet deep. (DEIR/EIS, pp. 4.4-70 to 4.4-71.) CEMEX-13

The DEIR/EIS assumptions regarding the dredge pond and related settling ponds for analysis of Impact 4.4-3 is not accurate. As noted in CEMEX's prior comment letter, the depth of the dredge pond is allowed to 30 feet, not 10 to 20 feet as assumed in the DEIR/EIS. In addition, CEMEX's property consists of either "Qd" (seafloor deltaic deposits) or "Qd" (dunes) , as shown on Figure 4.4-3. Therefore, the DEIR/EIS should be revised to reflect appropriate assumptions for CEMEX's site, including the allowable 30 foot depth of the dredge pond and appropriate hydrogeologic layers underlying the site.

ii. The DEIR/EIS fails to analyze impacts that drawdown could have on vegetation.

The DEIR/EIS analysis lacks an evaluation of the impacts that drawdown would have on existing vegetation at the Lapis site. The DEIR/EIS must be revised to ensure that CalAm is responsible for adverse impacts that drawdown may have on vegetation on CEMEX's property. At minimum, Mitigation Measure 4.4-3 should be extended to monitor drawdown impacts on vegetation and provide remediation for adverse impacts to the extent that monitoring determines that any impacts are caused by drawdown. CEMEX-14

iii. The DEIR/EIS modeling of impacts to CEMEX's dredge pond is insufficient.

The DEIR/EIS concludes drawdown impacts to CEMEX's dredge pond will be less than significant, despite the potential for pumping at the slant wells to cause a drawdown response. The DEIR/EIS reasons that tidal influences and recharge will offset any drawdown impacts. CEMEX-15

(DEIR/EIS pp. 4.4-71 to 4.4-72.) CalAm supports this conclusion by extrapolating results from pumping the test slant well.

In September 2014, CalAm simulated test slant well pumping for eight months at 2,500 gpm and determined that a drawdown of 1 foot at the dredge pond was attributable to pumping at the test well. Based on the measured results and localized model, the DEIR/EIS concludes that "there is a possibility that additional drawdown would occur" during the Project's operation of 10 slant wells. (DEIR/EIS, p. 4.4-71.) The DEIR/EIS reaches this conclusion based on the localized CEMEX model, which is intended to simulate "the response of the Dune Sand Aquifer in its second, third, and fourth vertical layers." (*Ibid.*) Thus, the DEIR/EIS still appears to assume that the depth of CEMEX's dredge pond corresponds to the second and third layers. (*Ibid.*) However, during Hydrogeology Working Group sessions, suggestions were made that the dredge pond is more appropriately assigned to the first layer (Ocean Floor), which suggestion is reflected in Table 3.1 of Appendix E-2. (DEIR/EIS, Appendix E-2, p. 15.) However, it does not appear that the updated 2016 model was incorporated in the analysis of drawdown impacts to CEMEX's dredge pond, or that the first layer is modeled at all. (DEIR/EIS pp. 4.4-71 to 4.4-72.)

The modeling cited in the DEIR/EIS focuses on the aquifer response, rather than providing any localized models of the dredge pond response. As a result, the DEIR/EIS fails to identify or analyze estimated drawdown at the dredge pond during operation of all 10 slant wells. Rather, the DEIR/EIS concludes that tidal fluctuations in the dredge pond water levels of up to eight feet per year, along with recharge, would mask any drawdown impacts associated with operating the Project. (DEIR/EIS pp. 4.4-71 to 4.4-72.) This conclusion does not appear to be consistent with the DEIR/EIS or physical conditions on CEMEX's site. For example, aquifer drawdown in the area of the slant wells could reach 10 to 20 feet or more, as shown in Figure 4.4-13, but no similar estimates are provided for drawdown at the dredge pond. In addition, tidal fluctuations in the dredge pond are not eight feet, which actually represents the maximum amplitude of the open ocean tide.

CEMEX-15 cont.

The DEIR/EIS asserts that data collection from a water-level transducer indicated that "the water level in the dredge pond was not being influenced by the pumping of the test slant well." (DEIR/EIS p. 4.4-71.) This statement is inconsistent with the prior statement in the DEIR/EIS that test slant well pumping resulted in a one-foot drawdown in the dredge pond. (*Ibid.*) Discrepancies such as these call into question the DEIR/EIS's current analysis and reliance on aquifer modeling of drawdown impacts to estimate potential impacts to CEMEX's dredge pond.

The DEIR/EIS cumulative impacts analysis also concludes that the Project will not result in significant adverse cumulative impacts. However, the DEIR/EIS notes that groundwater pumping from this Project and a potential MCWD desalination plant could cause "some degree of well interference and increased drawdown." (DEIR/EIS p. 4.4-90.) Localized impacts to CEMEX's well and dredge pond are not modeled or analyzed. Thus, it's unclear how the

DEIR/EIS reaches the conclusion that cumulative drawdown impacts to CEMEX's dredge pond or ongoing mining operations will be less than significant without mitigation.

Ultimately, the DEIR/EIS does not sufficiently connect the dots between its analysis of drawdown impacts on CEMEX's dredge pond and the DEIR/EIS conclusion that any such impacts will be less than significant. CEMEX recommends that the groundwater monitoring program required by Mitigation Measure 4.4-3 also be extended to CEMEX's dredge pond to ensure that Project operations do not actually result in significant impacts to CEMEX's operations. Specifically, Mitigation Measure 4.4-3 should be revised to also include ongoing monitoring of the water level transducer in the dredge pond. In addition, at specified levels of dredge pond drawdown, the CalAm wells should have to be shut down until the water level recovers in the dredge pond.

CEMEX-15 cont.

IV. The DEIR Should Be Revised to Ensure That Mitigation for Biological Resource Impacts Will Not Interfere With CEMEX's Operations and Obligations

A. Mitigation measures for biological resource impacts should be revised in coordination with CEMEX.

The DEIR/EIS discussion for Impact 4.6-1 concludes that impacts due to construction of the subsurface slant wells and the source water pipeline will result in significant impacts for certain species and habitats. (DEIR/EIS pp. 4.6-124 to 4.6-132; pp. 4.6-134 to 4.6-138; pp. 4.6-186 to 4.6-188; pp. 4.6-189 to 4.6-190.) The DEIR/EIS concludes that these impacts can be reduced to less than significant upon implementation of certain mitigation measures. (*Id.* at p. 4.6-131; p. 4.6-136; p. 4.6-204.) These same mitigation measures are applied to ensure other impacts, such as periodic maintenance of the slant wells, will not result in significant impacts to terrestrial biological resources. (See DEIR/EIS pp. 4.6-235; 4.6-244 to 4.6-255.)

CEMEX-16

As a general matter, DEIR/EIS discussion of these Mitigation Measures does not address whether implementation of the Mitigation Measures are consistent with or otherwise will not interfere with CEMEX's pre-existing operations on the Lapis Site. Therefore, CalAm should revise these Mitigation Measures in coordination with CEMEX. At a minimum, the terrestrial biological Mitigation Measures applicable to construction, operation, or maintenance of the subsurface slant wells and the source water pipeline should be revised to account for CEMEX's pre-existing operations on the Lapis Site as follows:

- Avoidance and minimization measures required under Mitigation Measure 4.6-1c (general avoidance and minimization measures) should not affect CEMEX's operations and reclamation activities;
- Seasonal construction limitations under Mitigation Measure 4.6-1d should not interfere with, and should be distinguished from, existing operations;

- The habitat mitigation and monitoring plan under Mitigation Measures 4.6-1d (Protective Measures for Snowy Plover), 4.6-1e (Avoidance and Minimization Measures for Special-Status Plants), 4.6-1f (Avoidance and Minimization Measures for Smith's Blue Butterfly, 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl) and 4.6-1n should be reviewed and developed for consistency with CEMEX's already-existing reclamation plan;
- Habitat restoration efforts under Mitigation Measure 4.6-1f that are proposed to occur onsite at the Lapis Site, if any, must be coordinated with CEMEX and limited to areas disturbed by CalAm operations within the Lapis Site; and
- Any relocation efforts under Mitigation Measure 4.6-1g that are proposed to occur onsite at the Lapis Site, if any, must be coordinated with CEMEX as CalAm does not own the Lapis Site and has limited rights with respect to its activities on the Lapis Site and its ability to encumber, access, or otherwise use the surface property at the site.

In addition, all biological mitigation measures need to be consistent with CEMEX's usage of existing operational areas and access roads. For example Mitigation Measures 4.6-1d, 4.6-1e, and 4.6-1f all call for restoration of habitat impacted during construction. These Mitigation Measures should be revised in coordination with CEMEX to ensure that any rehabilitation or restoration efforts do not improperly affect the portions of the Lapis Site that CEMEX uses for its active operations (*e.g.*, no rehabilitation of the mining access road). In addition, any rehabilitation must be consistent with existing reclamation requirements for the site under SMARA. Failure to coordinate with CEMEX's existing sand production activities and obligations could render the mitigation measure ineffective or illusory (e.g., a mitigation on surface property impacted by on-going mining operations would not actually result in any effective mitigation).

CEMEX-16 cont.

Similarly, the Project Description section of the DEIR states that for site clearing and preparation generally, "[u]pon completion of construction activities, the construction contractor would … contour the construction work areas and staging areas to their original profile, and hydroseed or repave the areas, as appropriate." (DEIR/EIS, p. 3-46.) CalAm has not consulted with CEMEX regarding the timing, location, or scope of any proposed reclamation or re-contouring of the Lapis Site. The DEIR/EIS should be revised to require that, after full construction buildout on the Lapis Site, CalAm must reclaim the Project area to an appropriate end use consistent with CEMEX's existing use or otherwise coordinate with CEMEX regarding its role and share of responsibility/obligations under a reclamation plan amendment.

B. CEMEX disagrees with the DEIR's characterization of jurisdictional water features on the Lapis Site.

The DEIR/EIS states that "surface waters within the study area [are regarded] as potentially jurisdictional." (DEIR/EIS p. 4.6-2.) This includes the dredge pond and related facilities located on CEMEX's property. (DEIR/EIS pp. 4.6-210 to 4.6-211; see also DEIR/EIS p. 4.6-248.)

CEMEX-17

CEMEX disagrees with any implication in the DEIR/EIS that these areas within CEMEX's property are wetlands and with the DEIR/EIS's overall characterization of waters on the Lapis Site as jurisdictional. The subject features are all industrial process ponds. In addition, the DEIR/EIS statements regarding the water features on the Lapis Site are unwarranted because none of the described water features are within the Project's construction/ground disturbance footprint. (*See* DEIR Figure 4.6-1a, p. 4.6-11.)

In any case, the DEIR/EIS concludes that impacts to all described features would either be less than significant or reduced to less than significant following implementation of mitigation measures. (*See generally* DEIR/EIS Impact 4.6-3, pp. 4.6-209 to 4.6-212.) As noted above, implementation of any such mitigation measures must be coordinated with CEMEX's active operations and the existing reclamation plan requirements for the site.

CEMEX-17 cont.

V. CEMEX Disagrees With the DEIR's Characterization of Structures on the Lapis Site as Potentially Significant Cultural Resources

The DEIR/EIS states that the CEMEX facility was determined to be a Historic District eligible for listing in the National Register and California Register under Criteria A/1 (association with an important event) and Criteria C/3 (architectural merit). (DEIR/EIS p. 4.15-21.) The DEIR/EIS further states that the direct and indirect area of potential effects ("APE") for the source water pipeline encompasses the Lapis Sand Mining Plant Historic District (the "Mining District"). (See DEIR/EIS, p. 4.15-23.) Though survey efforts did not identify any archaeological resources in the portion of the source water pipeline direct APE located within the CEMEX facility, the DEIR/EIS states that the area surrounding the pipeline alignment is generally considered to have a high potential for buried cultural resources associated with prehistoric populations and Native Americans. (DEIR, p. 4.15-29.)

CEMEX-18

CEMEX disagrees with the DEIR/EIS analysis and conclusion that the CEMEX facility is eligible for listing in the National and California Registers. CEMEX does not believe that the site is properly considered a historic district, especially because the facility is currently in operation and has been a working facility since its inception.

In the end, the DEIR/EIS concludes that "[n]o historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are within the direct or indirect APE of all project components." (DEIR/EIS p. 4.15-45.) CEMEX agrees with this conclusion and requests that the earlier analysis suggesting that the facility is eligible for listing be updated for consistency with the DEIR/EIS conclusion for impact 4.15-1.

VI. The DEIR/EIS Analysis of Potential Impacts to Mineral Resources in Section 4.17 is Inaccurate and Not Supported by Substantial Evidence

DEIR/EIS section 4.17 acknowledges that Project construction could delay movement of vehicles at the site and otherwise cause minor disruptions to CEMEX's operations. (DEIR/EIS, pp. 4.17-8 to 4.17-9.) However, the DEIR/EIS concludes that these construction-related impacts and any temporary loss of mineral resources would be less than significant. (*Ibid.*) The DEIR/EIS reaches this conclusion without providing any substantial evidence. In fact, the Project would interfere with a valuable operation that produces sand for numerous needs in our society. The current DEIR/EIS's failure to understand that impact is inaccurate and legally incorrect.

CEMEX-19

We request that the DEIR/EIS be revised to address all of these issues. Thank you for your consideration of these comments on behalf of CEMEX.

Sincerely yours,

MITCHELL CHADWICK LLP

Patrick G. Mitchell

Enclosures: Attachment A [CEMEX 2015 Draft EIR Comment Letter]

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Citizens for Just Water

March 20, 2017

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Re: Draft Environmental Impact Report/Environmental Impact Statement
Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

Citizens for Just Water is a citizens group on the Monterey Peninsula and an identified party by the CPUC in this matter. Just Water provides the following written comments regarding the Draft Environmental Impact Report/Environmental Impact Statement (hereinafter DEIR/EIS) issued in January 2017 for the above-referenced California American Water Company (CalAM) project. Just Water respectfully requests these comments be made part of the administrative record for all state and federal proceedings relating to this project.

CALAM HAS NO WATER RIGHTS IN THE SALINAS VALLEY GROUNDWATER BASIN AND HAS NO VIABLE LEGAL CLAIM TO ACQUIRE RIGHTS

CalAM erroneously represents that the MPSWP is "designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean" (DEIR/EIS p. 2–30). The proponent's statement that the source water is from "the submerged lands of the Monterey Bay National Marine Sanctuary" is a *flagrant misrepresentation* (DEIR/EIS p. 3–15), but necessary to the assertion that it is pumping seawater, and that no water right is needed for seawater extraction (See 2–37). CJW-1

The brackish water of the SVGB is the intended water source for the project—not the ocean. This is even more obvious as "the slant well clusters were moved farther inland" to address the issue of coastal erosion (DEIR/EIS p. ES–16).

The DEIR/EIS makes clear the Project will extract and export groundwater from the Salinas Valley Groundwater Basin and specifically the 180' aquifer—not the ocean. In fact, all

subsurface slant well pumping by the MPWSP will be from the 180' aquifer of the SVGB. CalAM has no overlying rights, no prescriptive rights, and no appropriative rights to groundwater in the SVGB (see DEIR/EIS 2-30 to 2-31). The Project seeks certification of its DEIR/EIS on *an unsupported assertion* that there "is a sufficient degree of likelihood" that CalAM will have the necessary water rights (see DEIR/EIS 2-30). The absurdity of Project approvals under these circumstances is obvious.

CJW-1 cont.

The SVGB is already critically overdrafted. **There is no surplus water.** Thus, CalAM will not be able to perfect water rights in the basin.

The overdraft has contributed to the eastward (inland) intrusion of seawater in both the 180' and the 400' aquifers for at least 70 years. Since the planning for the Project commenced, there has been new intervening legislation on groundwater management. In September 2014, the State of California passed the Sustainable Groundwater Management Act (SGMA) and the Department of Water Resources designated the 180'/400' subbasin of the Salinas Valley Groundwater Basin as **among 21 basins that are "critically overdrafted" in California**. **SGMA directs restoration of these basins as a top priority**.

According to this first-ever regulatory legislation enacted by the state as to groundwater, local governments are to manage groundwater supplies, including the adoption of a "groundwater management plan." The management plan is to maintain and maximize long-term reliability of groundwater resources, prevent significant depletion of groundwater over the long term, and prevent degradation of groundwater quality. The 180'/400' "critically overdrafted" subbasin of SVGB is assigned by SGMA for immediate improvement. It is also the proposed site for this Project, *owing to the asserted degradation of its water quality.* **The DEIR/EIS fails to address this conflict of interests.**

CJW-2

In the DEIR/EIS, the proponent relies on its conclusion that water in the aquifer at the CEMEX site is useless to those with rights to it. The SGMA directive to restore the SVGB sits in direct contradiction to CalAM's *proclaimed ability* to acquire water rights due to the brackish condition of the aquifer. In this instance, the quality of the water is not determinative of rights to the aquifer water.

The DEIR states (page 4–37),

> The proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an

> irrigation supply. Rather, when considering seawater intrusion and water surface elevations in the 400-Foot Aquifer, the proposed project may have a positive contribution to the sustainable management of groundwater.

This is untrue. SVGB users continue to pump from the 180' and the 400' aquifers. The aquifer water has beneficial uses to those with water rights, including MCWD. With the development and implementation of the required groundwater sustainability plan, that pumping will continue and foreseeably increase.

Secondly, the assertion that the Project may have a positive contribution to the sustainable management of groundwater is *unsubstantiated* in the DEIR/EIS and is included simply as a gratuitous statement. A self-serving, unsupported claim needs to be deleted from the document.

CJW-2 cont.

The DEIR/EIS is silent as to a basis in the law for the acquisition of water rights in the Basin. Rather, the allegation of an ability to acquire legal rights to water in the near future is premised upon proponent's self-serving assertions in a convoluted narrative in the DEIR/EIS. The DEIR/EIS does little more than dismiss the project opponents' concerns about CalAM's lack of rights to source water in the SVGB. Although the writers of the DEIR/EIS attempt to obfuscate this legal issue, **CalAM has failed consistently to make a credible legal argument for the acquisition of any rights to pump from the SVGB.** CalAM has had years to try, and had it the ability to do so under California law, it would have. The extraordinary expenditure of ratepayer funds on this Project without water rights is egregious. The CPUC should not allow CalAM to continue expending additional funds on a Project without water rights. There are alternatives available for CalAM to develop its Project with legally acquired source water.

The CPUC is not the arbiter of whether CalAM possesses water rights for the project, and nothing in the DEIR/EIS should be construed as the CPUC's opinion regarding such rights (see Chapter 2.6). The Project should <u>not</u> move forward. **All approvals, including certification of the DEIR/EIS should be stopped immediately.** The project is not feasible without water rights (see Chapter 2.6).

CJW-3

THE EXPORT OF WATER TO THE CAL AM SERVICE AREA IS PROHIBITED BY CALIFORNIA LAW.

As clearly shown in Appendix E-2, all Project wells are, in fact, in the 180' layer of the aquifer. The slant design does not achieve the objective of ocean intake.

CJW-4

Monterey County Water Resources Agency Act provides:

> The Legislature finds and determines that the agency is developing a project which will establish a substantial balance between extraction and recharge within the Salinas River Groundwater Basin. For the purpose of preserving that balance, **no groundwater from that basin may be exported for any use outside the basin, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export.** If any export of water from the basin is attempted, the agency may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that exportation of groundwater. [Emphasis added.]

Basin groundwater may not be exported for use outside the Basin for any purpose. This prohibition is certainly applicable both to the selling and the arrogation of Basin water.

In support of its arrogation of Basin water, CalAM asks the CPUC to accept a distinction between "brackish/ unusable" water (pumped from their slant wells) versus potable, fresh water. In the section 2.6.2 (Pg. 127), CalAM accurately states **brackish water is "a combination of ocean water and water that originated from the inland aquifers of the Basin".** Whether drawing water from the aquifer inland from the mean high tide or seaward of mean high tide, the source water is from the same aquifer at the Project's CEMEX location. However, CalAM continues to focus exclusively on the "unusable" aspect of brackish water and not on the association of brackish water with fresh water aquifers. This distinction between brackish water as completely different from fresh water is intentionally promoted to support the *false claim* that "fresh water is not withdrawn by the project". **Contrary to CalAM's position, water quality is not determinative of the right to export. The prohibition against exportation of water under the Agency Act is applicable to any and all water extracted from the Basin.**

CJW-4 cont.

CalAM has *neither* the right to pump water from the SVGB, nor the right to export Basin water to sell in its service area to customers. Conversely, MCWD has no right to take water from the Carmel River or the Seaside Basin, which CalAM does. MCWD may not take source water protected for other public and private water agencies defined by law regardless of need. Reciprocity of enforcement of these legislative protections is critical throughout the State of California. It is not within the authority of the CPUC to make exceptions, or ignore the law. Changes to state legislation is the only means to remove the prohibition for the export of SVGB water.

The Project proposes to return to the SVGB a small fraction of the water extracted and exported. [DEIR/DEIS 2-22 to 2-23] **The Project proponent erroneously assumes it is required to**

return *only* that percentage of water it characterizes as "fresh water" to the Basin. CalAM's plan to return the "fresh water" to Castroville Seawater Intrusion Project Distribution Systems [DEIR/EIS 1-12] does not ameliorate the Agency Act prohibition to exporting water. The majority of the water will be exported to the CalAM customers on the Monterey Peninsula, matched by an approximate equal amount exported to the bay. The amount the project intends to return is a very small percentage of the amount taken. The Project's scheme of amelioration is creative, but woefully inadequate to protect those harmed by an unlawful taking. The lack of concern for the harm to MCWD ratepayers is spotlighted by the Project's failure to consider delivery (return) of the fresh water to the local purveyor from which it was taken – MCWD. This fact is yet another example of the overall failing of the DEIR/EIS to identify the harm this Project will wreak if sited at the CEMEX property.

If there is scientific evidence that water extracted from Marina and returned to Castroville will "benefit" the water source of MCWD it is not set forth in the DEIR/EIS.

CJW-4 cont.

In Section 4.4.2.3 the proponent makes the following statement relative to the Agency Act:

> The Agency Act further authorizes the MCWRA to commission groundwater studies to determine whether any portion underlying its territory is threatened with the loss of useable groundwater supply and to adopt an ordinance prohibiting further extraction of groundwater from an area and depth defined by the MCWRA.

The proposed CEMEX location is within the jurisdiction of the MCWRA and the Agency Act. Not only does the Agency Act apply, but the MCWRA is empowered to prohibit further extraction of groundwater at the CEMEX location. CalAM's self-proclaimed exclusion of its geographical location from the Act is without merit. The CPUC is *without authority* to make a ruling as to whether the 180'/400' subbasin of the SVGB at the CEMEX property is beyond the scope of the Agency Act and the authority of the MCWRA.

SVGB Users Have Been Assessed Millions of Dollars, Over Decades, for the Protection and Recharge of SVGB Aquifers

CJW-5

Monterey County Water Resources Agency levies assessments on water consumers within Zones 2 and 2A to fund its efforts to manage the quality and quantity of water within these zones. Millions of dollars have been assessed and invested in projects intended to ensure the SVGB provides a long-term, sustainable water supply for Basin users. CalAM has contributed nothing to the protection of this groundwater resource. The foreseeable impact of the Project is adverse to the investment made to date and counterproductive to continuing efforts supported by public tax

dollars. The Project's end users (CalAM ratepayers) are not required to pay their fair share of these taxes. Ratepayers within Zones 2 and 2A will bear the tax obligation for them. **This is harm.**

CJW-5 cont.

CalAM Fails to Establish No Harm to Legal Users of SVGB

As clearly shown in Appendix E–2, all Project wells are, in fact, in the 180' layer of the aquifer, regardless of slant design. The CalAM MPWSP mischaracterization of brackish water as "unusable" water attempts to obfuscate that the slant wells are accessing the 180' aquifer, a current source of regional water and a prospective source for additional users with the buildout of former Fort Ord properties. MCWD has previously demonstrated its ability to restore brackish water to potable with its own small desalinization plant (located within a ½ mile of the Project's current test well).

With rights to the water and as a Groundwater Sustainability Agency under the Sustainable Groundwater Act, MCWD is obligated to manage and improve water quality in the 180' aquifer. As the 180' and 400' aquifers will be the source of an additional 5200 AFY to meet production requirements, any increase in salinity and any reduction in available water in the Basin will be harmful. **The taking of water by CalAM's project is harmful.**

CJW-6

Concerns regarding an inadequate water supply for everyone with rights in the SVGB are not new; nor were these concern precipitated by the siting of the Project at the CEMEX property. But the Project's location at CEMEX and the planned pumping of source water from SVGB have elevated fears of an inadequate supply to a top priority.

It is well accepted by every agency, entity, and user that the SVGB is in overdraft—simply stated, the demands on the Basin exceed its yield of potable water. Experts from many scientific disciplines have reviewed the same materials and given opinions as to the ability of the Basin to provide water for the our increasing needs over time. The Army knew it had water problems on Fort Ord at least a decade before base closure. At page 86 of a study done by the Army Corps of Engineers in 1986, entitled "Long-range Water Supply Development for Fort Ord, California," seawater intrusion is identified as the adverse outcome of increased pumping near the coast, and is credited with fouling wells on the fort. Seawater contamination resulted in the Army's drilling of a new well field further inland. The ineffectiveness of this corrective measure as a long-term solution is noted in the report. "The installation realizes that this is an interim measure and the Army needs to eliminate the reliance on local groundwater for other than backup supplies." **The recognition of a regional problem is made clear with the inclusion of this observation in the 1986 Army report, "Marina's water problems are very similar."**

The Army abandoned the installation without a new water project. Now in 2017, MCWD stands in the shoes of the Army as the water purveyor for 28,000 acres of land. In place and instead of 13,500 soldiers and fewer than 4000 civilian workers on the base, the Fort Ord Reuse Plan assumes growth to a population of 37,000 and the creation of 18,000 jobs. Thirty years later, there is no new water project for those dependent upon the SVGB aquifers.

In 1993, the U.S. Army and Monterey County Water Resources Agency executed an agreement setting forth how MCWD will take over water services for the 28,000 acres of land. Therein the right to pump 6600 AFY is "transferred" and a pumping limit for the former fort property is established. 6600 AFY was the highest volume ever pumped by the Army (in 1984)—not a historical average. The agreement specifically states that the pumping of 6600 AFY is permissible until a new water supply project becomes available. The Basin's ability to provide the source of 6600 AFY was unsupported and dubious in 1993.

Clearly, the demands of *another water purveyor* in the Basin is inadvisable at present. ***There is no more water.***

CJW-6 cont.

The reports issued over the last thirty years, including those whose data is represented in the "Historic Seawater Intrusion Map[s]" for the 180' and 400' aquifers produced by the Monterey County Water Resource Agency, affirm more pumping from the Basin is irresponsible, as the threatened harm is irreversible. The DEIR/EIS do not provide sufficient scientific proof that an alternative result will occur with a significant increase in pumping. Those dependent upon the Basin for survival and livelihood need the CPUC to demand that CalAM meet the legal requirement of proving "no harm." The degree of review in the DEIR/EIS fails miserably to establish that proof.

Any increased salinity in the Basin constitutes harm, as the cost of purification increases and MCWD necessarily passes that added expense to its ratepayers. Any lowering of the water level in the aquifer is harm, as the cost of extraction will increase and MCWD will necessarily pass the added expense to its ratepayers. Any need for wells to be sited in more remote locations to avoid conflict with the Project will necessitate higher costs for pipes and pumping—again, harm.

The ability of MCWD to rely on the SVGB to continue to provide water to its *existing 30,000 ratepayers and deliver water to its reasonably foreseeable customer increase* (to whom delivery commitments have been made)—*at reasonable rates*—is questionable in 2017. The limitations of the SVGB are presently undefined; there is simply a lack of information. This lack of information precludes any finding that the Project will cause no harm.

Representations and Omissions in the DEIR/EIS Are Misleading.

The footnote on page 1–11 of the DEIR/EIS states, "In November 2014 the City of Marina and the California Coastal Commission completed their CEQA review." This statement infers that both the California Coastal Commission and the City of Marina approved some aspect of the test-well project. This representation ignores City of Marina's rejection of the permit for the test slant well. The DEIR gives the impression that this is a non-controversial project. **This is not true.** CJW-7

The April 2012 CalAM Application A.12-04-019 (CalAM, 2012) seeking CPUC approval to build, own, and operate a desalination facility for water supply (the MPWSP) incorporates many of the same elements previously analyzed in the Coastal Water Project EIR. What the DEIR/EIS fails to identify, however, are the significant differences between the Coast Water Project EIR and the MPWSP, all of which are critical to any proof of "no harm" to current users of the SVGB. Namely, this Project is an invasion of a neighboring water jurisdiction without invitation, without water rights, without compliance with state law and county ordinance, and without regional benefits within the invaded jurisdiction. CJW-8

CalAM Fails to Utilize and Rely on Accepted Standards of Good Scientific Inquiry

CalAM has short-shrifted standard research protocol.

- **CalAM Failed to Establish Meaningful Baseline Information as Required Before Installing the Test Slant well**

The DEIR states that "the EIR/EIS takes as its baseline the existing condition on or about October 5, 2012" (Section 4.1.3). Protocol and common sense indicate that sampling one day's data as a baseline for a complex system with fluctuations as to season, tide, rainfall, etc., will not yield a meaningful baseline for analysis. Without such a baseline, projections cannot be made with confidence. The Hydrogeologic Working Group does not present or explain its baseline. Without this information, there is no basis to evaluate impacts. The omission of this analysis is reason to reject certification. CJW-9

- **Failure to Exploit Electrical-Resistivity Tomography Imaging**

CalAM unreasonably rejects use of electrical-resistivity tomography (ERT) for mapping seawater intrusion and the fragile hydrogeology of the SVGB. ERT is readily available, data rich, non-intrusive, and low cost. ERT data can be expected to significantly reduce the degree of uncertainty. Readily attainable imaging is especially critical in the high-risk context of water. CalAM's failure to use ERT amounts to gross negligence in today's technological environment. CJW-10

The proponents of the project knew of the availability of this technology and the value it would add to the preparation of the DEIR/EIS for the Project in 2014. A degree of certainty as to the predicted outcomes is necessary for any CEQA review and for the determination that no harm will result if the Project is approved. The *degree of uncertainty in predicted outcomes* would be greatly reduced with use of ERT mapping of seawater intrusion and the fragile hydrogeology of the SVGB at the CEMEX property and surrounding area. The DEIR/EIS is silent as to any degree of uncertainty in its predicted outcomes.

The DEIR/EIS warns the siting of the intake wells is critical to preventing increased seawater intrusion and further harm to the aquifer. The following cautionary statement is found in Subsurface Intakes, Appendices I1-3.

> In general, source water derived from subsurface intakes requires significantly less filtration when compared to raw seawater (SGD, 1992). **However, if not appropriately sited, subsurface intakes can adversely affect coastal aquifers and increase the risk of saltwater intrusion in freshwater aquifers** (CCC, 2004). [Emphasis added.]

CJW-10 cont.

Better knowledge of the hydrogeology of the SVGB for placement of Project intakes in the aquifer is a significant benefit ERT mapping would reveal.

A Stanford University research team under the leadership of Professor Rosemary Knight was denied access to the location of the Project when it collected imaging of the Monterey Bay coastline. Inclusion of the CEMEX property within the scope of the Stanford research was free, and was readily understood to produce beneficial understanding of the aquifer where the Project is intended. Use of the imaging at CEMEX in 2015 would also have added to the knowledge and understanding of the SVGB aquifers, the interrelations between its shallow and deeper layers, and the impacts of the test slant well.

CalAM's failure to take advantage of available and affordable scientific study likely to produce relevant data is inexcusable. It is a fair inference that denial of access at CEMEX in 2015 for collection of relevant data was antagonistic to the standards for rigorous study of impacts when preparing environmental impact reviews.

Should the proponent assert it was solely the decision of CEMEX to deny access to the site of the Project, **CalAM has had the ability to utilize ERT technology independent of the Stanford study and opted not to.** The DEIR/EIS does nothing more than acknowledge the availability of the technology and the work of Rosemary Knight. The Project proponent elected to summarily dismiss ERT, which has been proven to be a tool that would provide a greater degree of certainty

as to the effects of the project on the Basin. CPUC should not endorse this selective review. If selective inquiry and review is allowed by the CPUC, environmental impact reports become a meaningless exercise. The DEIR/EIS is incomplete without requiring ERT mapping. CJW-10 cont.

- **There Are No Successful, Operating Slant Wells for Subsurface Ocean Desalination Anywhere in the World**

The DEIR/EIS offers no historical data or refers to any successful operation of sub surface ocean intake slant well for use in desalination. The one test slant well at the CEMEX site is the only feasible source for data relevant to this Project, and this well has had multiple disruptions in its operation. The proponent provides no other data regarding the viability and long term performance of slant wells delivering desalinated water to customers—because none exist.

Use of slant well technology for subsurface ocean desalination has been resoundingly unsuccessful or infeasible. A review of slant well projects in an article *Yield and Sustainability of Large Scale Slant Well Feedwater Supplies for Ocean Water Desalination Plants* (2015) by Dennis Edgar Williams identified communities considering slant well projects in the State of California. As of 2016 the following communities mentioned in the article rejected use of slant well technology for production of water to meet municipal demands.

- Cambria opted for a brackish-water-reclamation plant in 2014.
- Oxnard is developing a treatment facility for brackish groundwater without use of slant-wells.
- Huntington Beach rejected the Poseidon slant well in 2014 after tests showed unacceptable amounts of groundwater uptake and increased salt water intrusion.
- Dana Point had test wells and began the EIR process in June 2016. No slant well providing water to the community to date.
- Camp Pendleton is still in feasibility studies.
- Long Beach has not adopted or completed any slant well project.
- Oceanside is developing a desalinater without slant well technology.
- The Santa Cruz Water District 2 Task Force dropped consideration of slant wells in 2013.

CJW-11

The DEIR/EIS's silence as to examples of existing use of slant well technology for subsurface ocean intake in similar circumstances cannot be ignored by the CPUC when weighing and considering the Project alternatives. Other communities concluded slant wells are costly, experimental and not equal to less costly, proven technologies to meet municipal water demands.

Without historical use in other communities and data from successful projects, the DEIR/EIS offers little proof that placement of slant wells into the 180' layer of the aquifer will not increase seawater intrusion. Nor is the proponent able to support the continued investment of vast amounts of money into unproven slant well intakes. Approval for this project cannot be based

on the modeling of its one test well at CEMEX. This test well has provided insufficient data for (a) a predictable outcomes to be extrapolated; and (b) information necessary for siting of the multiple intakes proposed by the Project *so as to avoid the harm of increased seawater intrusion.* The lack of data creates an unacceptable degree of uncertainty and leaves the SVGB users with an unacceptably high risk of harm.

CJW-11 cont.

The CPUC should exclude an unproven technology in an environment where risk to existing water sources, dependent populations, and the operations of existing water purveyors is high.

CalAM has Alternatives

Just Water supports CalAM in its endeavor to secure a new water supply. This must not be achieved at the expense of other water purveyors and citizens who will be adversely affected. CalAM has alternative technologies available and alternative source-water locations, which are less likely to harm the SVGB or any other protected water source. Pursuit of an alternative less likely to impair MCWD's ability to supply affordable, sustainable, long-term water to Marina and Fort Ord populations is mandatory.

CJW-12

With the lack of success of slant well technology, a different location and a different extraction are much more likely to succeed in the delivery of water to those needing it on the Monterey Peninsula.

For the reasons set forth above, Just Water respectfully requests you deny certification of the DEIR/EIS and reject any other pending approvals of the Project.

Very truly yours,

Just Water
By Juli Hofmann
C4JustWater@gmail.com

Just Water
By Kathy Biala

8.6.8 Coalition of Peninsula Businesses (CPB)

Coalition of Peninsula Businesses
A coalition to resolve the Peninsula water challenge to
comply with the CDO at a reasonable cost

Members Include: Monterey County Hospitality Association, Monterey Commercial Property Owners Association, Monterey Peninsula Chamber of Commerce, Carmel Chamber of Commerce, Pacific Grove Chamber of Commerce, Monterey County Association of Realtors, Community Hospital of the Monterey Peninsula, Associated General Contractors – Monterey District, Pebble Beach Company

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March 28, 2017

CPUC/MBNMS

c/o Environmental Science Associates

550 Kearney Street, Suite 800

San Francisco, California 94108

Transmitted by fax to 415-896-0332 and e-mail to MPWSP-EIR@esassoc.com

Comments on draft EIR/EIS for Monterey Peninsula Water Supply Project

Dear ESA:

The Coalition of Peninsula Businesses submits these comments on the draft Environmental Impact Report/draft Environmental Impact Statement (EIR/EIS) prepared for the Monterey Peninsula Water Project on behalf of the Monterey Peninsula organizations and entities listed above and their thousands of members, associates, and employees.

Generally speaking, the EIR/EIS seems well-prepared and comprehensive. We find some parts a little troubling and those are listed below.

Chapter 2 - Water Demand, Supplies, and Water Rights

Operating the desal modules at full capacity was earlier estimated to require operation at 98% of capacity all day every day of the year. That strikes us as an unrealistic method of operation that far exceeds the optimum operation of 80% of capacity and further dictates that a more relaxed schedule be planned. CPB-1

The water supply schedules reflect a slight excess of proposed supply over the ten-year average of experienced demand, but the ten-year period includes years of increasing demand for water conservation to the point where average water per capita consumption is among the lowest, possibly the lowest, in California. It is necessary to plan a water supply for a more relaxed water conservation ethic in the future after the Peninsula's water supply is no longer constrained by extreme conservation measures or legal decisions. CPB-2

The demand schedules do not seem realistically to reflect the need to return fresh water to the Salinas Valley Groundwater Basin to avoid legally prohibited exportation of water from that basin and to avoid harm to basin water users. CPB-3

The demand schedules also do not seem to reflect non-revenue water. Cal Am has rarely met its goal of reduced non-revenue (unaccounted for water or system losses of water). CPB-4

Chapter 6 – Other Considerations at Section 6.3 et seq and Appendix J2

The Monterey Peninsula Water Supply Project does not anticipate developing enough water to supply various local jurisdictions within the Cal Am service area for their General Plan Build-out needs; this seems extremely shortsighted.

The marginal costs of planning and building enough capacity now are small in comparison to the eventual cost of adding that capacity later.

The increase in environmental damage would also be marginal if sufficient capacity were planned now. CPB-5

The Cal Am service area would be far better served if the General Plan Build-out needs are addressed now so that the area avoids another expensive (multi-million dollars) and time consuming process (a decade or more) later.

An added benefit of adding the increased capacity now is that the desal modules could be operated for the immediate future on a much more relaxed schedule than the required and unrealistic 98% of capacity currently anticipated according to the testimony of Cal Am's Director of Engineering Richard Svindland.

Section 6.3 et seq. of Chapter 6 and Appendix J2 do a reasonable good job of analyzing the impacts of future development planned for in the General Plans of the various local CPB-6

jurisdictions within the Cal Am service area. With a little minor tweaking this EIR/EIS combined with the local jurisdiction certified General Plans (and their equivalents) could be sufficient to provide a reasonable basis for a small expansion of the Monterey Peninsula Water Supply Project to eventually provide enough water for all the Monterey Peninsula area's foreseeable future needs.

CPB-6 cont.

Appendix E-1 – Lawrence Berkeley National Laboratories Peer Review

The vetting of the work of the Hydrologic Working Group (HWG) by Lawrence Berkeley National Laboratories (LBNL) was encouraging in the sense that the results of the work paralleled closely the original findings of the (HWG) but one finding in the peer review report was troubling. LBNL found what could be a serious shortcoming in the hydrostratigraphy modeling – the absence of the Salinas Valley-Fort Ord Aquitard (SV-FOA) – and states the absence "could potentially change the impact assessments." It is incredibly important that the absence of the SV-FOA be explained in more detail and the resulting impact assessments changes, if any, be detailed.

CPB-7

Chapter 5.6 – Environmentally Superior Alternative/Preferred Alternative

We note that early on this section states that "… no alternative stands out from the others as eliminating all significant and unavoidable, long-term environmental effects." The combination of a smaller desal with the purchase by Cal Am of GWR water is given the nod as superior/preferred but this judgment ignores some key facts.

The now-approved water purchase agreement whereby Cal Am is committed to buying GWR water contains several provisions that allow for less than expected GWR water production for limited periods of time (essentially two or three year periods of production of significantly less than the 3,500 acre feet per year of "normal" production relied on to determine the size of the smaller desal interspersed with the anticipated "normal" production).

How is the Monterey Peninsula to deal with less water production than needed for up to several years at a time – go into emergency rationing again and again? That seems a poor way to plan for the Monterey Peninsula's water supply and contradictory to the goal of the California Public Utilities Commission to ensure adequate water service to Cal Am customers.

CPB-8

Brine discharge issues

We are not expert in analyzing brine disposal issues, so we leave those areas to the Monterey Peninsula Regional Water Authority and others to comment on.

Coalition of Peninsula Businesses comments are intended to be helpful

We offer these comments to be helpful and help strengthen the EIR/EIS. We are very much in favor of the project and want it to be constructed as quickly as possible.

Very truly yours,

John Narigi, Chair
General Manger, Monterey Plaza Hotel and Spa

Bob McKenzie
Consultant to the Coalition of Peninsula Businesses

January 17, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

To whom it may concern:

DeepWater Desal LLC (DWD) is currently developing the Monterey Bay Regional Water Project (MBRWP) in Moss Landing, California. MBRWP would consist of a drinking water desalination plant co-located with a seawater-cooled data center. The objective of the MBRWP is to provide a reliable water supply to the entire region, which is affected by seawater intrusion and surface water shortages. The MBRWP is currently undergoing a very thorough environmental review of the project that includes information that was not yet available to Environmental Science Associates (ESA) at the time of their preparation of the DEIR/DEIS. The MBRWP sponsors believe it is premature to make determinations of significance on a project without having all the information on that project. DWD-1

While DWD understands the logic in comparing the impacts of the Cal Am proposed project to a version of the MBRWP scaled down to supply only the Monterey Peninsula, DWD is not proposing a scaled down desalination facility. A scaled down desalination facility would not meet the objective of being a regional water source. The region has water challenges that extend beyond the peninsula, and DWD feels strongly that water customers who are outside of CalAm's more affluent Monterey Peninsula franchise, many of whom reside in disadvantaged communities, deserve to have their needs treated with equal importance. DWD-2

Finally, it is DWD's belief that the scenario in the Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/DEIS) of "either/or" is not correct. It is highly likely, as the DEIR/DEIS points out in several places that both projects will be constructed. This means that the construction of the CalAm Desalination project would not result in the avoidance of the impacts related to the DWD project. While understanding the DEIR/DEIS process has a very specific set of requirements for how projects are compared, we feel it necessary to point out that there are no additional environmental impacts that would arise from CalAm entering into a water purchase agreement with the MBRWP. It would result in the avoidance of the impacts related to construction of the CalAm project, except the construction of a single pipeline, while still providing potable water to the remainder of the region not served by the CalAm desalination project DWD-3

With those caveats, DWD submits the following comments on the DEIR/DEIS for the CalAm Monterey Peninsula Water Supply Project.

7532 Sandholdt Rd., Suite 6, Moss Landing, CA 95039 Phone: 831-632-0616

General Project Description/Scaled Alternative Description

Comments 1 – 6 are strictly technical in nature and related to the DEIR/DEIS description of the MBRWP. As stated above, while we are providing information about a scaled down version of our desalination project, there is no proposal to build such a plant since it would not be a regional facility. DWD-4

1. Table 5.3-1 (p. 5.3-11):

Table 5.3-1 on p. 5.3-11 of the DEIR/DEIS referring to Intake 9 states:

> "*From the screened intakes, raw seawater would flow by gravity through the intake pipeline to an onshore wet well and pump station.*"

The proposed MBRWP does not include a wet well at the pump station on Dolan Road. Water is pumped, rather than gravity flow, due to the significant depth that would be required at the pump station for a wet well.

Strike "flow by gravity through the intake pipeline to an onshore wet well and pump station" and replace with "would be pumped to an onshore pump station." DWD-5

2. Section 5.3.3.9 p. 5.3-17 (para. 2):

Paragraph 2 on p. 5.3-1 of the DEIR/DEIS referring to Intake 9 states:

> "*Seawater would be conveyed from the intake structure to an onshore pump station via a 42-inch diameter subsurface intake pipeline.*"

The DEIR/DEIS states on page 5.3-16, paragraph 4, that for analysis of the MBRWP as an alternate project, the size would be scaled down to 9.6 MGD water production. A 9.6 MGD plant would require a 36" diameter intake pipeline.

Change pipeline size to 36" diameter.

3. Table 5.3-2 (p. 5.3-20):

Table 5.3-2 on p. 5.3-20 of the DEIR/DEIS referring to Outfall Option 7 states: DWD-6

> "*Brine would discharge from the desalination facility to the offshore discharge diffuser structure via one proposed subsurface 36-inch-diameter discharge pipeline.*"

"Operation of the outfall would include a multi-jet linear diffuser that would be located on the seafloor, and that would consist of five separate standing pipe risers emerging from a single 36-inch pipe manifold."

The DEIR/DEIS states on page 5.3-16, paragraph 4, that for analysis of the MBRWP as an alternate project, the size would be scaled down to 9.6 MGD water production. A 9.6 MGD plant would require a 24" diameter discharge pipeline. A 9.6 MGD plant would require a single 24" pipeline manifold and three standing pipe risers.

Change pipeline size to 24" diameter. **Change** pipeline manifold size to 24". **Change** number of standing pipe risers to three.

DWD-6 cont.

4. Section 5.3.4.7
p. 5.3-26 (para. 5):

Paragraph 5 on p. 5.3-26 of the DEIR/DEIS referring to Outfall Option 7 states:

"The multi-jet diffuser structure would be located on the seafloor and would consist of standing pipe risers emerging from a single 36-inch pipe manifold that would be connected to the end of the discharge pipeline."

The DEIR/DEIS stated that for analysis of the MBRWP as an alternate project, the size would be scaled down to 9.6 MGD water production. A 9.6 MGD plant would require a 24" diameter discharge pipeline.

Change pipeline size to 24" diameter.

5. Section 5.4.5.1
p. 5.4-21 (para. 2):

Paragraph 2 on p. 5.4-21 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

"Also, the intake design would be similar to the intake facility design in Alternative 2, but the Alternative 3 structures would be larger (two intake pipes for Alternative 3 versus one intake pipe for Alternative 2) to accommodate a larger project."

DWD-7

The dual pipelines for the MBRWP are for 100% redundancy to allow for maintenance or in case of failure. Either one of the two pipelines will handle the entire flow needed for the larger project.

Change "to accommodate a larger project" to read "to provide redundant intake and discharge ability."

6. Section 5.4.5.1
p. 5.4-31 (para. 5):

DWD-8

Paragraph 5 on p. 5.4-31 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*Three data center buildings are planned and a fourth building would be a modular data center that could be constructed in the future.*"

The modular data center is a landing pad for portable, self-contained server modules. The landing pad consists of a concrete pad and utility connections for the server modules. The landing pad will be completed with initial construction.

Change sentence to read "Three data center buildings and a concrete landing pad for modular data center equipment are planned."

DWD-8 cont.

Geology, Soils, and Seismicity

7. Table 5.3-4 (p. 5.3-31):

Table 5.3-4 on p. 5.3-31 of the DEIR/DEIS referring to Intake Option 9, referring to impacts related to exposure of people or structures to seismically induced ground-shaking, liquefaction and lateral spreading, and exposure of structures to coastal erosion and bluff retreat caused by sea level rise, states:

> "***Decreased.*** *No coastal erosion or bluff retreat impact. All other impacts would be similar to those of the proposed project.*"

It is our understanding that the slant wells identified for the proposed project are located in an identified liquefaction zone. Because sands or other saturated granular layers are required for liquefaction, and they are also required for the passage of seawater through the ground into a slant well, the potential for damage to the proposed project intake from liquefaction is high. This could result in permanent damage to slant wells and could constitute a public health emergency if an alternate source of water is not available.

DWD-9

The Liquefaction Map cited in the document is Ninyo & Moore, 2005. The more recent 2015 Stanford University Liquefaction Susceptibility Zones map for Monterey County (Attachment 1) shows that the DWD pipelines pass through two small areas of liquefaction susceptibility. One area is at the HDD launch site, and the other is the Moss Landing sand spit.

Studies conducted after the 1989 Loma Prieta earthquake involving boreholes on the Moss Landing sand spit show that there is liquefaction potential in the upper 30' of soils. At the sand spit, the pipeline is nearly 200 feet below grade. It is also approximately 160 feet directly below the power plant discharge pipelines which were not damaged during the Loma Prieta earthquake because they were well below the liquefaction zone. The intake pump station at Dolan Road is located on the Moss Landing Power Plant facility in an area

with a lower water table and medium-dense to dense sands. During the Loma Prieta earthquake, there was no evidence of liquefaction on the plant site (Mejia, 1998). The pump station structure extends to 30' below ground, well below any possible liquefaction zone.

Following the Loma Prieta earthquake, side scan sonograms also documented liquefaction that took place offshore. Evidence of liquefaction was seen at depths of 9-12 meters, much shallower than the proposed intake (Greene, 1991)

Based on data collected following the Loma Prieta earthquake, damage to the intake as a result of liquefaction is geologically unlikely. This is a lesser impact than the possible impact of liquefaction on the proposed slant well intakes. Failure of the intake would result in a threat to health and human safety.

DWD-9 cont.

Change "No coastal erosion or bluff retreat impact" to read "No coastal erosion or bluff retreat impact and reduced impact related to liquefaction."

Mejia, Lelio H. "Liquefaction at Moss Landing." *The Loma Prieta, California, Earthquake of October 17, 1989—Liquefaction* 1551-B (1998)

Greene, H. Gary, et al. "Offshore and onshore liquefaction at Moss Landing spit, central California—Result of the October 17, 1989, Loma Prieta earthquake." *Geology* 19.9 (1991)

8. Table 5.3-6 (p. 5.3-44):

Table 5.3-6 on p. 5.3-44 of the DEIR/DEIS referring to Desalination Plant Site Option 3 states:

> *"**Increased** --In addition to the impacts identified for the proposed project, this desalination site option could expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise and coastal flooding. Other surface water hydrology and water quality impacts would be similar to the proposed project."*

DWD-10

The MBRWP plant site is outside of both the tsunami inundation area and the 100-year flood zone. The Pacific Institute California Flood Risk: Sea Level Rise Moss Landing Quadrangle (Attachment 2) places the plant site outside of the 100-year floodplain even with the inclusion of a 55" sea level rise as well.

Strike "In addition to the impacts identified for the proposed project, this desalination site option could expose people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise and coastal flooding", **add** "The plant site is not located in a 100-year flood zone, even considering sea level rise." and **change** impact to "Similar".

Terrestrial Biological/Land Use

9. Table 5.3-4 (p. 5.3-36):

Table 5.3-4 on p. 5.3-36 of the DEIR/DEIS referring to Intake Option 9 states:

> *"**Increased.** Intake location would conflict with agricultural zoning and the potential to otherwise result in the conversion of farmland to nonagricultural use. New mitigation measure(s) would be required."*

DWD-11

Monterey County Land Use Plan North County (1982) designates all property to be disturbed for the intake as Industrial - Coast Dependent – Heavy (Attachment 3). The developed areas of the intake consist only of the pump station site. Even if this site were not zoned Industrial - Coast Dependent – Heavy, the location is an existing rail line on power plant property, and the location could not be used for agriculture due to past contamination (soil and water) and compaction issues. No construction activities are proposed for any lands zoned Agricultural. No mitigation would be required.

Strike sentence and **change** impact to "Similar."

Marine Biological Resources

10. Table 5.3-4 (p. 5.3-32):

Table 5.3-4 on p. 5.3-32 of the DEIR/DEIS referring to construction activities of Intake Option 9 states:

> *"**Increased**. Impacts would be increased, except for the impact on the movement of fish or wildlife species during construction. New mitigation measures would be required to reduce the impacts resulting from entrainment and impingement to less than significant."*

DWD-12

The DEIR/DEIS incorrectly identifies entrainment and impingement in impacts related to the construction of the MBRWP seawater intake. Entrainment and Impingement are operational impacts but are not construction related impacts.

Strike the words "resulting from entrainment and impingement."

11. Table 5.3-4 (p. 5.3-32):

DWD-13

Table 5.3-4 on p. 5.3-32 of the DEIR/DEIS referring to operational impacts of Intake Option 9 states:

"Operational impacts associated with impingement and entrainment would be greater and could be substantial if feasible mitigation were not available."

See response to Item 13 below.

Strike "and could be substantial if feasible mitigation were not available," **add "**and would require mitigation to reduce impacts to less than significant."

DWD-13 cont.

12. Section 5.5.5.6 p. 5.5-122 (para. 5):

Paragraph 5 on p. 5.5-122 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

"*Additionally, Alternative 3 would draw up to 55 mgd of source water (compared to 24.1 mgd for the proposed project and Alternatives 1 and 2) through a screened open-water intake. A preliminary assessment determined that northern anchovy, Pacific sardines, white croaker, sanddab, rockfish, smelt, sculpin, Dungeness crab, cancer crabs, and unidentified larval fish would all be entrained (Tenera Environmental, 2014).*"

The Tenera report (Tenera, 2014, p ES-12) identifies the marine impact due to entrainment and impingement as less than significant due to ". . . a combination of low flows of the proposed intake relative to a large source water volume, the abundances and life history characteristics of fish species susceptible to entrainment, and the siting characteristics of the intake in deeper water and at the head of Monterey Submarine Canyon ". The report details the source water studies completed by DWD that led to this determination. Samples were collected at two different depths, day and night, between June 2012 and June 2013. Samples were taken to the laboratory, where all fish and target invertebrate larvae were removed, counted, and identified. Length was determined for a representative number of larval fish during each survey using an image capture and analysis system. The length data and estimates of larval growth rates were used to determine the age of the larval fish captured. Individuals longer than 30 mm (1.18 in) were considered non-entrainable because of their size. This is because they would be too large to physically pass through the proposed 1mm wedgewire screen on the intake or they have reached the stage in development that would allow them to swim away from the intake.

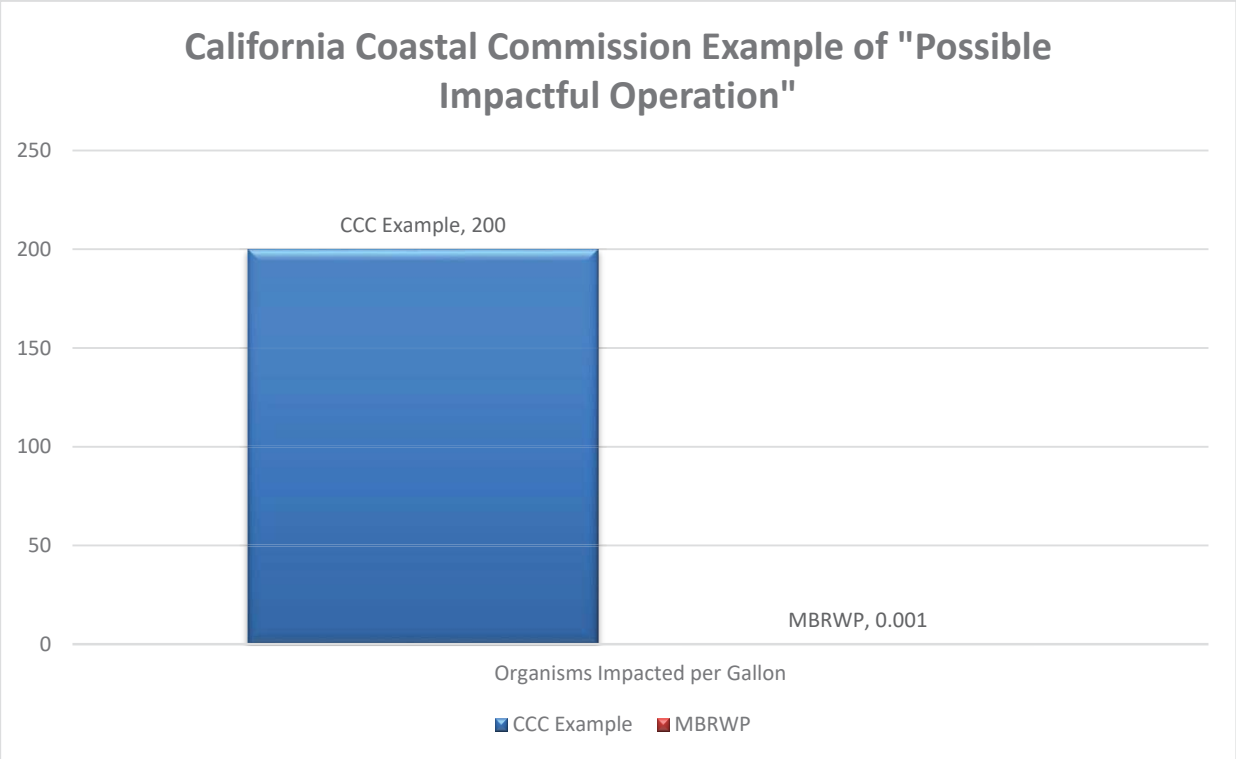
DWD-14

The best method, according to California State environmental agencies and scientists working in the field (see Steinbeck et al. ; Desal amendment, etc.), for assessing the intake impact due to entrainment is to calculate an estimate of proportional mortality. This estimate represents the number of deaths within a fish or invertebrate population due to effects of the intake relative to the estimated number in the source water population that is at risk of entrainment. The estimates of larval losses in the Tenera (2014) report ranged

from 0.009 – 0.109% for the various fishes analyzed based on an intake volume of 63 MGD. An addendum to the report (Tenera, 2016) was prepared using the final intake volume of 49 MGD and included adjustments to account for the depth of the intake and the use of a 1.0 mm wedgewire screen at the intake. The proportional mortality estimates for the six main species identified in the addendum ranged from 0.007 – 0.077%. In other words, between seven-thousandths, and seventy-seven hundredths of one percent of the larval populations identified within the source water would be at risk due to the intake, dependent on species. The high estimate was for CIQ goby and the low estimate for KGB rockfish. The estimates in the addendum were lower because the average concentration of total fish larvae through the entire water column at the intake site was estimated at 0.002088 larvae per gallon, while the estimate of number of larvae in deep water at the intake location was 0.001026, approximately half the number of larvae per gallon in the entire water column. This concentration is also less than a third of the estimated average concentration inside Moss Landing Harbor (0.003615 larvae per gallon). Based on this information, the intake for the MBRWP is proposed to be located at a depth that minimizes impacts.

DWD-14 cont.

While there is no direct quantitative threshold for significance, Chapter 5 of the Seawater Desalination and the California Coastal Act report (CCC, 2004) states "a desalination facility producing 50 million gallons per day of drinking water would pull in at least 100 million gallons per day of seawater and discharge at least 50 million gallons per day of highly saline brine. Since each gallon of seawater can contain hundreds of organisms, this amount of water could have significant adverse effects on marine life and water quality at the local or regional level." It is unclear what the estimate of hundreds of organisms cited in the CCC report represents, but since zooplankton and diatoms have such large numbers and reproduce rapidly, they typically would not be included in the number of organisms that would be impacted. Therefore, the assumption can be made that this number only includes fish and target invertebrate larvae, which are the focus of all scientific impact assessments done to date in California. For comparison to hundreds of organisms per gallon which “may be significant,” the MBRWP intake assessment shows that only a single fish larva will be entrained per approximately 1,000 gallons of intake water. Clearly not significant compared to the CCC example.



DWD-14 cont.

Fisheries Management Plans

Intake assessments in California and throughout the United States have historically been focused on fishes because of the potential for impacts to fish populations if large losses occurred to a severely depleted or listed population. One of the reasons that the proportional mortality estimates discussed above provide the best basis for determining the significance of the effects of the intake is because the results provide the same type of information used in fishery management. Groundfish fisheries in Washington, Oregon, and California are managed under the Pacific Coast Groundfish Fishery Management Plan (FMP) (PSFC 2016). This approach to fisheries management was approved by the U.S. Secretary of Commerce and implemented in 1982. The plan was implemented to better manage fish populations that overlapped state boundaries. Before the FMP, there was a lack of uniform of regulations across states. The plan covers all the Federal waters between the borders with Canada and Mexico and separates the coast into five management areas. Monterey Bay is part of the Monterey management area which extends from just south of Point Sur north to approximately Cape Mendocino. The FMP covers 85 species including all species of rockfish, and species such as cabezon, kelp greenling, and lingcod that are usually associated with shallow habitats.

The FMP, which is updated on a regular basis, is used as the guidance document in setting fishing limits. The current plan was issued in March 2016 with the most recent amendment (Magnuson-Stevens Act Provisions; Fisheries off West Coast States; Pacific Coast Groundfish Fishery; 2017–2018 Biennial Specifications and Management Measures; Amendment 27) published in February 2017. This amendment established allowable fishing limits for 2017–2018. The catch limits established by the regular plan amendments are designed to prevent overfishing while achieving the optimum yield from each fish species.

The goal of the FMP is to provide planning information for the seafood industry, protect recreational fishing, and maintain the health of fish populations. It develops allocation and harvest targets for each species that support a maximum sustainable yield (F_{MSY}) while allowing for self-sustaining fish populations. The plan is based on a conservative approach that assumes a high degree of uncertainty in the accuracy of the estimates used in the models.

Blue Rockfish

For impact comparison purposes, we will look at blue rockfish. This is an important fishery species with a management plan, which is largely restricted to nearshore areas along the central coast which are most likely to be subject to entrainment. While there is also information on pacific sanddab and northern anchovy, these species have distributions out into deeper water and over large areas of the coast. Because of the much larger geographic distribution of these species compared with blue rockfish, any project impacts on these species would be less than the impacts on blue rockfish. The Addendum identified a proportional mortality for blue rockfish due to MBRWP intake of 0.014%, meaning that the increased mortality of blue rockfish larvae due to effects of the intake is 14-hundredths of one percent of the local source population.

DWD-14 cont.

The maximum sustainable yield of 50% for rockfish that was identified in the 2016 FMP, was also used in a stock assessment for blue rockfish (Key et al. 2008). It identified the threshold biomass impact for overfishing as follows:

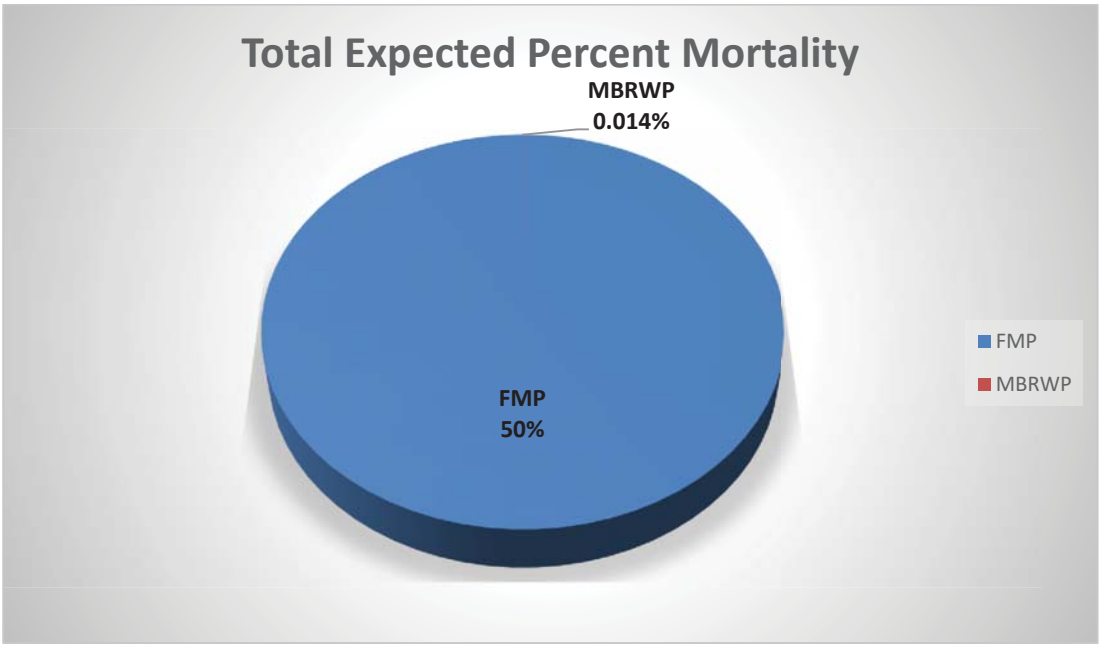
"This assessment uses the default target rate of F50% (equivalent to F_{MSY} of 50%) used for rockfishes on the West coast of the US. Under Pacific Fishery Management Council (PFMC) Groundfish management policy, if the current spawning biomass of the stock falls at or below 25% of the unexploited biomass, the stock is considered overfished. Under the state's guidelines, the stock is considered overfished at or below 30% of the unexploited biomass. Unfished spawning biomass was estimated to be 2077 million larvae in the base model, with the target stock size at 831 million larvae. The base model estimated that the stock could support a maximum sustainable yield (MSY) of 275 metric tons."

The implementation of management controls on several fisheries in California based on information in stock assessments has helped the recovery of many populations. For example, the blue rockfish sport catch from Monterey Bay area ports has increased over the five years from 2011 to 2015 by 300% (RecFin data accessed February 7, 2017).

The FMP recognizes that recommended levels of fishing will result in a reduction in both the spawning biomass and the average lifetime egg production of the females in the population. Using this same logic, the proportional mortality estimate used in the intake assessment for the MBRWP can be compared to acceptable fishing mortality within a population. A proportional loss due to intake entrainment will also translate directly to an equivalent loss in the adult population.

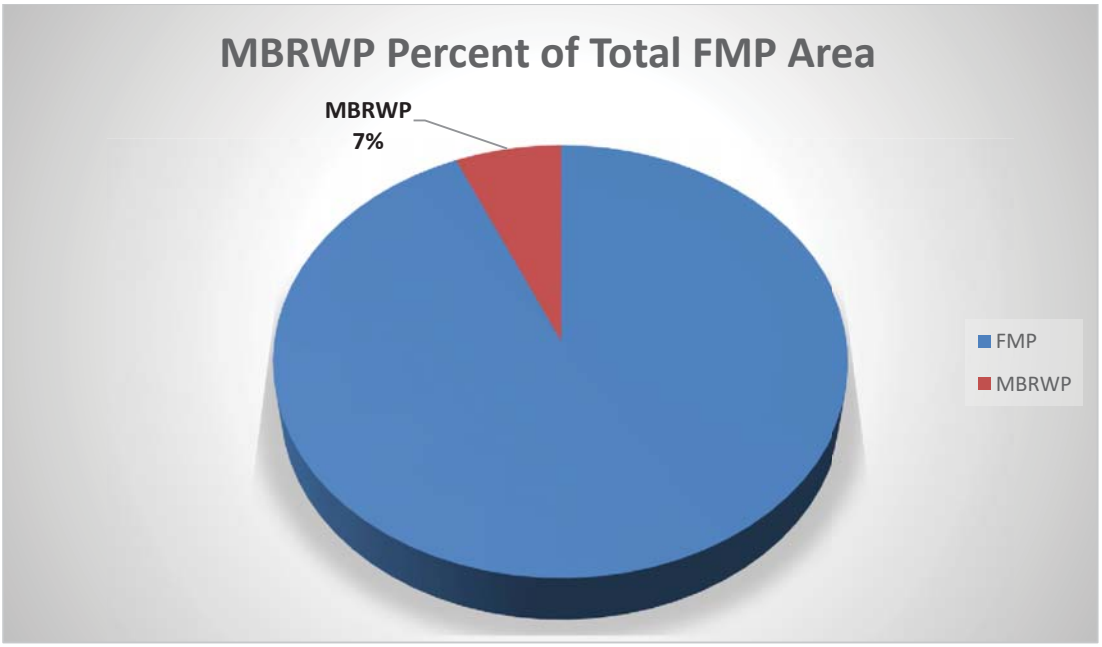
The fishing mortality of 50% used in the blue rockfish stock assessment model is over 3500 times higher than the estimated loss to blue rockfish due to entrainment of 0.014%. As noted in the blue rockfish stock assessment (Key et al. 2008), fisheries managers are concerned when the stock falls below levels representing 25–30% of the estimated unfished biomass. As you can see from the pie chart below, .014% is such a small portion of the allowable FMP impact that it is difficult to see. An additional source of local population mortality of 0.014% due to entrainment is not significant. It would have no material effect on the population when fishery managers are evaluating population effects with a fishing mortality rate of 50%.

DWD-14 cont.



It is also important to recognize that the estimated proportional mortality from the MBRWP intake on a species such as blue rockfish would occur in a limited area of approximately 8 to

12 mi (13 to 19 km) of shoreline inside Monterey Bay. Although this represents 20 to 25% of the shoreline of Monterey Bay, the actual rocky reef or kelp bed adult habitat for blue rockfish along this area of Monterey Bay is much smaller. As shown in the back-projections from the intake and map of hard substrate in Monterey Bay (Attachment 4), the areas with natural hard rocky substrate in Monterey Bay are limited to the north and south edges of the Bay and not the area potentially subject to entrainment. We have concluded that most rockfish larvae collected during sampling were probably spawned along the breakwater and other rocky locations associated with the Moss Landing Harbor. Including this additional Moss Landing Harbor habitat, the total shoreline area of Monterey Bay that could potentially be subject to entrainment due to the MBRWP intake represents approximately 7% of the coastline from Point Conception to the Oregon border used in the blue rockfish assessment.



The previously discussed entrainment loss impacts compared to the acceptable FMP impacts are reduced even further due to the small area impacted. **Entrainment losses represent an additional source of mortality to the population of less than a thousandth of a percent (0.14% entrainment over only 7% of total planning habitat). This number is much too small to show graphically in comparison to the levels of fishing mortality used in the blue rockfish FMP, and therefore not a material impact.**

In addition to comparing the expected mortality rate due to entrainment with rates of fishing mortality, the estimated mortality can also be compared with the range of variation in the population. Since fishing mortality affects adult and juvenile populations, a more valid

DWD-14 cont.

comparison of the effects of entrainment is the variation in the numbers of fish larvae that successfully develop into juvenile fish. This transition is also referred to as "recruitment." The blue rockfish assessment (Key et al., 2008) includes estimates of recruitment from 1998–2007, the life stage potentially subject to increased larval mortality due to entrainment. The estimates ranged from low of 735,000 in 2006 to a high of 7,792,000 in 1998. With a 95% confidence interval, the estimates range from approximately 50% of the annual estimate of recruitment, to greater than 100%. Given this range of variation in the annual estimate of recruitment, a 0.014% increase in larval mortality due to entrainment would not have any effect on the larger population subject to the FMP. The same type of information presented here could also be compiled for the other fishes included in the assessment to support the conclusion that the entrainment losses due to the DWD intake would be less than significant.

The finding of a "substantial" or "significant" effect under CEQA should have some basis. Applying scientific principles to the determination of a "substantial" or "significant" effect would require that an effect is compared to some baseline number and assessed regarding an identified threshold for impact. When fisheries managers set a threshold for overfishing for blue rockfish, it is to maintain a sustainable population. That identified threshold is the allowable fishing catch limit. In the absence of any established threshold for entrainment losses, fishing limits provide a guide for determining the magnitude of actual effects on fish populations. An increase of 0.014% in mortality of blue rockfish larvae due to entrainment, along 8 to 12 mi (13 to 19 km) of shoreline inside Monterey Bay, is more than 3500 times lower than the allowable levels of fishing mortality over the hundreds of miles of coastline from Point Conception north to the Oregon border. This level of loss could never be detectable given the variation in the annuals levels of recruitment to the population. The independent comparisons with allowable fishing mortality and the variation in recruitment, as well as the other information presented in the intake assessment, support the conclusion that the effects of the intake would be less than significant.

DWD-14 cont.

Add "These impacts are less than significant due to the small proportion of the larval populations subject to entrainment mortality, either on the local population or the larger population subject to the Fisheries Management Plan."

California Coastal Commission. "Seawater Desalination and the California Coastal Act." (2004).

Key, M., A. D. MacCall, J. Field, D. Aseltine-Neilson, and K. Lynn. 2007. The 2007 Assessment of Blue Rockfish (Sebastes mystinus) in California. Available at: http://www.pcouncil.org/wp-content/uploads/KeySAFE_BlueRF_Jan08.pdf

Pacific Fishery Management Council. 2016. Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery. Portland, OR. March 2016. Available at: http://www.pcouncil.org/wp-content/uploads/2016/03/GF_FMP_FINAL_Mar2016_Mar282016.pdf

DWD-14 cont.

13. Section 5.5.5.6 p. 5.5-122 (para. 6):

Paragraph 6 on p. 5.5-122 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*The potential ETM/APF for this alternative was estimated at greater than 40 acres (Luster, 2016), and similar to Alternative 2, would require mitigation.* ***Mitigation Measure ALT 2-Marine-2*** *would be required to minimize and mitigate for impacts on marine biological resources, but similar to Alternative 2, residual impacts may remain due to the uncertainty of the efficacy of the mitigation."*

NOAA implementation of NEPA requires the analysis of "the direct, indirect, and cumulative environmental impacts of the proposed action and the alternatives in clear terms and with sufficient information to ensure the professional and scientific integrity of the discussion and analysis" (NOAA, 2017). CEQA requires an agency to evaluate the factual and scientific data to determine whether an impact may be significant. Impacts, in either case, can be determined to be significant (requiring mitigation) or insignificant. The Ocean Plan Amendment, in contrast, treats all marine life impacts as requiring offsetting mitigation through the ETM/APF approach at a 95% confidence level ***regardless of significance***. Therefore, there is neither a legal or practical justification for basing a significance determination on the extent of ETM/APF calculations resulting from Ocean Plan Amendment required mitigation. Where scientific information on the actual impacts of impingement and entrainment are available, as in this case, they are required to be used to determine significance under CEQA/NEPA.

DWD-15

Also, the ETM/APF estimate was based on preliminary information, before finalization of the Tenera Intake Assessment and Addendum which includes the reduction of impact related to the wedgewire screen and is calculated based on the final proposed plant flow. This document was made available to ESA for review. This document is the basis for the required ETM/APF calculation. The California Coastal Commission is currently peer reviewing this document to assure there is adequate information to calculate the ETM/APF. An opinion based on preliminary documentation in the absence of a completed ETM/APF calculation does not meet the legal standard of "the direct, indirect, and cumulative environmental impacts of the proposed action and the alternatives in clear terms and with sufficient information to ensure the professional and scientific integrity of the discussion and analysis" (Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities, (NOAA, 2017).

National Oceanic and Atmospheric Administration. "Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities." (2017)

Strike entire paragraph and **change** finding to less than significant based on results and conclusions in Tenera Intake Assessment.

DWD-15 cont.

14. Section 5.5.5.6
p. 5.5-124 (para. 2):

Paragraph 2 on p. 5.5-124 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*In addition to physical impacts, Alternative 3 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its open water intake and lack of a combined discharge. Guidelines state:*
>
> • *All desalination plants should be designed and sited to avoid and minimize impingement and entrainment to the extent feasible. Project proponents should investigate the feasibility of using subsurface intakes as an alternative to traditional intake methods.*
> • *Project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges."*

DWD-16

The DWD project was determined by the proponent, partially using CalAm scientific evidence of bore hole analysis, to not be feasible for meeting project objectives using a subsurface intake. Initial subsurface feasibility material was available to ESA for review. In addition, locations available to DWD for subsurface intake have either been identified in this DEIR/DEIS prepared by ESA as infeasible due either to hydrogeological conditions or failure of the option to provide enough water for even the smaller CalAm plant due to pulling in 12% groundwater from the critically over drafted, and soon to be regulated, Salinas Basin. The proponent is coordinating with the State Water Resources Control Board to finalize a subsurface feasibility study for review. DWD also spent a year doing marine testing to determine the least impactful site for the intake. These activities show compliance with the Ocean Plan. See comments addressing Discharge feasibility in Item 16.

Strike entire section, **add** "MBRWP is expected to be in compliance with regard to its open water intake and lack of combined discharge due to current, ongoing regulatory activities, and **reevaluate** without assuming inconsistence with MBNMS Desalination Guidelines (NOAA, 2010) in Whole Project Analysis.

Brine Discharge

15. Section 5.5.3.6
p. 5.5-49 (para. 4):

DWD-17

Paragraph 4 on p. 5.5-49 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*Model analysis (Jenkins, 2016) identified discharges from Alternative 3 would occasionally (1 day out of 3.4 years) exceed the significance threshold of 2 ppt above natural background salinity at the BMZ boundary by a small margin (i.e., by 0.15 ppt).*"

The model analysis provided to ESA identified that under a very particular set of circumstances, there is a 0.08% chance of exceeding 2ppt at the BMZ by 0.15. Circumstances required for this situation include the data center using no water for cooling, a Davidson current, and the desalination plant undergoing start-up activities. Jenkins goes on to say "This amount is within the sampling error of standard monitoring equipment. Possible over limit cases are not statistically significant, therefore under all practical, measurable, long-term ocean conditions, DWD meets the dilution standards of the Ocean Plan Amendment" (Jenkins, 2016, pp 129-131).

The discharge louvers have been modified slightly in a recently revised report. The current diffuser design has more jets at a lower velocity which minimize the size of the BMZ while simultaneously minimizing turbulent shear impacts and sediment resuspension. There are no longer any modeled exceedance outcomes. This report will be provided for your review under separate cover.

DWD-17 cont.

Jenkins, Scott. "Brine dilution analysis for DeepWater Desal, LLC." (2016).

Delete sentence: "Model analysis (Jenkins, 2016) identified that under very specific operational circumstances, there is a 0.08% (1 day out of 3.4 years) probability that discharges from Alternative 3 would exceed the significance threshold of 2 ppt above natural background salinity at the BMZ boundary by a small margin (i.e., by 0.15 ppt).

Add sentence: "Option 3 meets all measurable dilution standards of the Ocean Plan Amendment".

16. Section 5.5.3.6
p. 5.5-52 (para. 3):

Paragraph 3 on p. 5.5-52 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*In addition to physical impacts, Alternative 3 may be inconsistent with MBNMS Desalination Guidelines (NOAA, 2010), with regard to its lack of a combined discharge compared to the proposed project, which would use an existing outfall. One of the guidelines states: "project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges.""*

DWD-18

The MBRWP EIR/EIS is evaluating a combined discharge using the power plant cooling water. This was identified in the Project Narrative provided to ESA. This option is only feasible if the Moss Landing Power Plant will agree to allow it, which they have not done to

date. If MLPP agrees, MBRWP will use this discharge method. Therefore, MBRWP is following the requirement to investigate the feasibility of diluting brine effluent by blending. The Ocean Plan Amendment states that "Multiport diffusers are the next best method for disposing of brine when the brine cannot be diluted by wastewater and when there are no live organisms in the discharge (California Ocean Plan, 2015, p. 41)." If the Moss Landing Power Plant isn't agreeable to accepting brine for blending, a multiport diffuser will be used (the proposed project since the MLPP has not agreed to accept the brine). Therefore, the DWD project is not inconsistent with the Ocean Plan Amendment.

DWD-18 cont.

Strike entire paragraph, **add** "MBRWP is expected to be in compliance with MBNMS Desalination Guidelines (NOAA, 2010) based on current, ongoing regulatory activity."

17. Section 5.5.3.6
p. 5.5-49 (para. 5):

Paragraph 5 on p. 5.5-49 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*As described in detail in Section 4.3.2.2 for the proposed project, the Ocean Plan includes monitoring and reporting requirements for the operation of new desalination facilities (Section III.M.4, "Monitoring and Reporting Program"; SWRCB, 2016b). A monitoring and reporting plan has not been defined and proposed as part of Alternative 3; as such and similar to the proposed project, Alternative 3 would not be consistent with the Plans, Policies, and Regulations described in Section 4.3, Surface Water Hydrology and Water Quality. This would be a significant impact and would result in an increased level of impact compared to the proposed project, which could be reduced to less than significant with the implementation of* ***MM 4.3-4****. Therefore, Alternative 3 would result in the* ***same impact conclusion*** *for salinity compared to the propose project, less than significant with mitigation. "*

DWD-19

DWD agrees with this statement, but it conflicts with the statement quoted in Item 18. **Correct** contradictory statement on page 5.5-53, paragraph 4 (see Item 18).

18. Section 5.5.3.6
p. 5.5-53 (para. 4):

Paragraph 4 on p. 5.5-53 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*As discussed above, Alternative 3 discharges would exceed the 2 ppt salinity significance threshold by 0.15 ppt and could exceed Ocean Plan water quality objectives for PCBs. Because proponents of the DeepWater Desalination Project have not demonstrated methods of compliance with the Ocean Plan objectives that are protective of beneficial uses, and feasible mitigation strategies have not yet been identified, Alternative 3 in combination with other cumulative projects would result in significant and unavoidable cumulative impacts on ocean water quality and Alternative 3 would*

have a cumulatively considerable contribution to such effects (significant and unavoidable).”

Paragraph 3 on page 4.3-124 of the DEIR/DEIS states that “it is conservatively determined that under the assessed discharge scenarios, operational discharges from implementation of the MPWSP could exceed Ocean Plan water quality objectives for certain constituents. This would result in a significant impact, and because the Ocean Plan water quality objectives are based on the effects of cumulative impacts on ocean water quality, an exceedance of water quality objectives also would represent a cumulatively considerable contribution to a potential significant cumulative impact. The proposed project contribution would be minimized to a less-than-significant level by implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** and **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives).”** This statement recognizes that even though the proposed CalAm project discharges could exceed water quality objectives, mitigation measures would reduce impacts to less than significant.

Paragraph 2 of pas 4.3-91 says “The analysis and reporting conducted as part of the Plan shall determine the need for corrective actions to be implemented in the form of the design features and operational measures prescribed in **Mitigation Measure 4.3-5** to reduce identified impacts to less-than-significant levels.” The plan referenced is the Water Quality Monitoring Plan identified in Mitigation Measure 4.3-4. The DEIR/DEIS recognizes that this plan is required to receive an NPDES permit, (para. 4, p. 4.3-124). Therefore, MBRWP, if permitted, will have a plan for water quality monitoring in place that has been reviewed and approved by the RWQCB and MBNMS.

DWD-19 cont.

The DEIR/DEIS recognizes the use of granular activated charcoal as a method of removal for PCB’s (para. 5, p. 4.3-105). It also recognized that actions required for Mitigation Measure 4.3-5, such as the use of granular activated charcoal to remove PCB’s, must be informed by the results of Mitigation Measure 4.3-4, the monitoring plan.

Paragraph 3 of page 5.5-3 of the DEIR/DEIS states “Where applicable, mitigation measures that are applied to the proposed project in Chapter 4 are applied to potentially significant impacts of the alternatives.” Mitigation Measure 4.3-4 is clearly applicable to MBRWP and Mitigation Measure 4.3-5 can’t be determined until 4.3-4 is in place, it would be inconsistent with the rest of the document to not provide credit for Mitigation Measures 4.3-4 and 4.3-5,

Strike “Because proponents of the DeepWater Desalination Project have not demonstrated methods of compliance with the Ocean Plan objectives that are protective of beneficial uses, and feasible mitigation strategies have not yet been identified, Alternative 3 in combination with other cumulative projects would result in significant and unavoidable cumulative impacts on ocean water quality and Alternative 3 would have a cumulatively considerable contribution to such effects (significant and unavoidable).” **Add** “The implementation of **Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)** and **Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding**

Water Quality Objectives) would ensure that brine constituents from Alternative 3, such as PCBs, are discharged at concentrations below Ocean Plan requirements. Thus, Alternative 3 in combination with other cumulative projects would not have a cumulatively considerable contribution to a potential significant cumulative impact related to such effects."

DWD-19 cont.

Whole Project Comparison

19. Section 5.4.5.4
p. 5.4-38 (para. 5):

Paragraph 5 on p. 5.4-38 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*An additional 6.5 miles of product water pipeline would be required to connect the alternative to the proposed project's pipelines in Marina;"*

The proposed pipeline routing between Castroville and the connection to the CalAm project in Marina has been revised to match the proposed Castroville Pipeline (CalAm project). This pipeline will connect to the Salinas Pipeline which is included in the 25 miles of additional pipeline for the project. Since the Castroville pipeline is included in the CalAm DEIR/DEIS to deliver return water to Castroville, the impacts of the pipeline between Castroville and the point of connection in Marina have already been considered in the proposed project. No additional "new" pipeline is needed to connect the peninsula to the MBRWP transmission line in Castroville.

DWD-20

Strike this portion of the sentence.

20. Section 5.5.2.6
p. 5.5-17 (para. 3):

Paragraph 3 on p. 5.5-17 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline).*"

No additional pipeline is required between Castroville and the point of connection in Marina (see item 19).

Strike "6.5 miles of desalinated water pipeline to connect with the CalAm system and".

21. Section 5.5.2.6
p. 5.5-17 (para. 3):

Paragraph 3 on p. 5.5-17 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

"*The alternative would also include 6.5 miles of desalinated water pipeline to connect with the CalAm system and up to an additional 25 miles of pipelines to convey the desalinated water to other areas (total of 31.5 miles of additional pipeline).*"

DWD-20 cont.

No additional pipeline is required between Castroville and the point of connection in Marina (see item 19).

22. Section 5.5.5.6 p. 5.5-122 (para. 2):

Paragraph 2 on p. 5.5-122 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

"*Similar to Alternative 2, mitigation would be required to reduce the short and long-term impacts of construction on marine biological resources in MBNMS. Although implementation of* ***Mitigation Measure ALT 2-Marine-1*** *or similar measures would reduce this impact, it would not be reduced to a less-than-significant level for the same reasons described for Alternative 2. Therefore, compared to the proposed project, the construction of Alternative 3 could result in a substantially increased impact on marine biological resources including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans during construction and would result in an* ***increased impact conclusion*** *compared to the proposed project; significant and unavoidable even with implementation of* ***Mitigation Measure ALT 2-Marine 1****.*"

DWD-21

The reasons referenced for Alternative two in this paragraph state "residual impacts may remain significant due to the sensitivity of the resources. Therefore, the construction of Alternative 2 could result in an increased impact on marine biological resources including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans during construction". Potential effects from Alternative 3 construction include temporarily suspended sediment, underwater noise, and burial or displacement of organisms in the construction areas. Tenera in the MBRWP Marine Resources Assessment (2016) states "The degree of effect depends on the relative area of disturbance compared to the overall habitat and community, either locally or regionally, and the types of species." They found that "effects are also considered temporary and localized and would not result in substantial effects on marine resources."

NOAA has provided the following Interim Sound Threshold Guidance:

For continuous and intermittent sound sources, the Level A (injury) and Level B (behavioral disruption) thresholds for marine mammals are 180-, and 120-dB re 1 µPa root mean square (RMS), respectively (NOAA Interim Sound Guidance). NOAA Fisheries and USFWS have used 150 dBRMS as the threshold for behavioral effects on ESA-listed fish species, such as salmon for most biological opinions evaluating pile driving (Technical Guidance for Assessment and

Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. California Department of Transportation November 2015). This was based on information that sound pressure levels above 150 dBRMS can cause temporary behavioral changes that could affect the ability of fish to avoid predators. NOAA Fisheries staff indicated at the June 2008 FHWG meeting that they do not expect exceedance of the 150 dBRMS behavior threshold to trigger any mitigation requirement (Fisheries Hydroacoustic Working Group 2008). Underwater noise levels from HDD installation will not be of concern until the ocean floor is breached. Noise levels related to this are typically less than those for vibratory installation of piles (120 dB re 1 micropascal) and for a much shorter duration. Therefore the sound associated with HDD drilling is expected to be below Level B thresholds.

DWD-21 cont.

Suspended sediments would also be a temporary effect "because of the localized nature of the disturbance (area of the HDD drill head where it emerges) compared to the very large areas of undisturbed habitat in the project region, and because recolonization and recovery would likely occur within a year or less. Also, mobile individuals such as fishes, marine mammals, and sea turtles would be able to leave disturbed areas during construction and return to these areas after construction is completed." (Tenera 2016).

Based on this information, construction impacts should have been found to be LSM.

Change "significant and unavoidable" to "less than significant with mitigation."

23. Section 5.5.18.6
p. 5.5-330 (para. 3):

Paragraph 3 on p. 5.5-330 of the DEIR/DEIS referring to Whole Project Alternative 3 states:

> "*Operations and maintenance of the data center and cooling system would require 150 megawatts (MW) of electrical power) resulting in a substantial increase compared to the proposed project, which requires less than 6 MW. This energy demand would be 25 times the net energy demand of the proposed project, and represents approximately half of the County's electricity usage in 2014 (PG&E, 2015). This additional energy load could substantially constrain local and/or regional energy supplies if not adequately addressed by PG&E."*

DWD-22

The MBRWP is proposing to connect directly into PG&E's Coburn tower transmission line and be transferred through a new dedicated distribution line to a dedicated substation. DWD has met with PG&E to discuss the best way to connect to their system and will follow up with a formal Interconnect Study that will identify any impacts. The loads for Monterey County are a small portion of the capacity in the Moss Landing transmission infrastructure, which was designed to handle the production of the Moss Landing Power Plant, and the MBRWP load will be half again as small. PG&E has indicated there are currently no power constraint issues in the Moss Landing transmission system. As the offtaker DWD will be required to pay for any upgrades to the PG&E system as a result of system transmission

constraints due to the project. MBRWP will also purchase power from the wholesale market, rather than directly from PG&E. So there will be no effect to PG&E supplied power available to the region.

Change "This additional energy load could substantially constrain local and/or regional energy supplies if not adequately addressed by PG&E." to "Any constraint on local and/or regional power transmission will be identified by PG&E and mitigated by MBRWP" before interconnection.

DWD-22 cont.

DeepWater Desal, LLC appreciates the opportunity to comment on the DEIR. To reiterate, the objective of the MBRWP is to provide a regional water supply, not just a supply for the Monterey Peninsula. For this reason, while MBRWP may be a suitable alternative to the CalAm project, the CalAm project would not meet the project objective of MBRWP. We do not believe it is accurate to present the projects as an either/or scenario. It is highly likely, as the DEIR/DEIS points out in several places that both projects will be constructed. This means that the construction of the CalAm Desalination project would not result in the avoidance of the impacts related to the DWD project.

DWD-23

We understand that the DEIR/DEIS process has a very specific set of requirements for how projects are compared, but feel it necessary to point out that CalAm entering into a water purchase agreement with the MBRWP would not result in any environmental impacts over and above the CalAm proposed project. Also, while DWD understands the logic in comparing the impacts of the Cal Am proposed project to a scaled down version of the MBRWP, a scaled down desalination facility would not meet the objective of being a regional water source. In reality, the projects are complimentary and address the many water challenges of the greater region.

DWD-24

If you have any questions regarding these comments, please contact me at (831) 632-0616 or by email at kim@dwdesal.com.

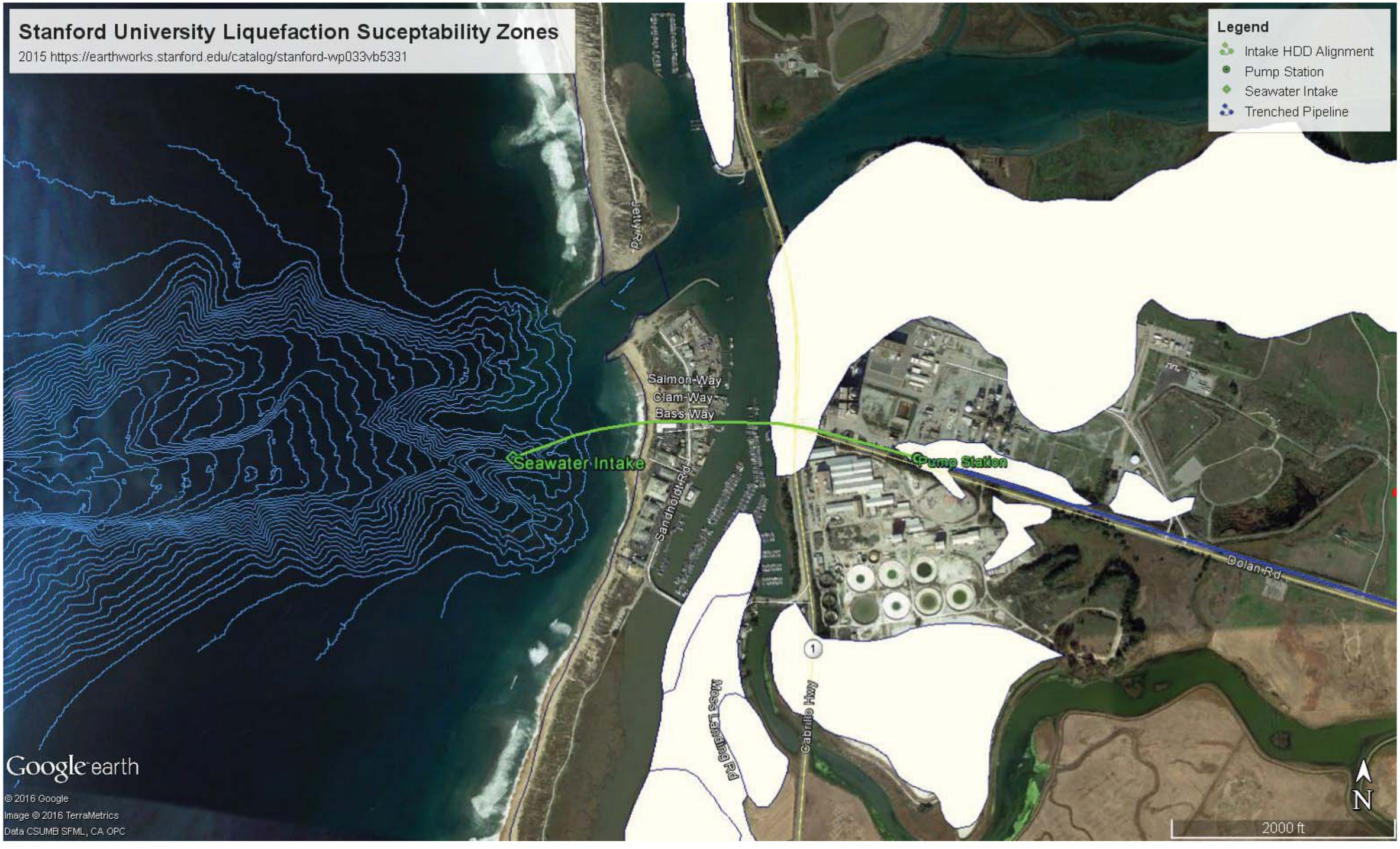
Sincerely,

Kim Adamson
General Manager
DeepWater Desal LLC

Attachments:
1.) Stanford University Liquefaction Susceptibility Zones map
2.) Pacific Institute California Flood Risk: Sea Level Rise Moss Landing Quadrangle map
3.) Monterey County Local Coastal Plan Land Use Designations map
4.) Back Projections and Rocky Habitat for Blue Rockfish map

DWD-25

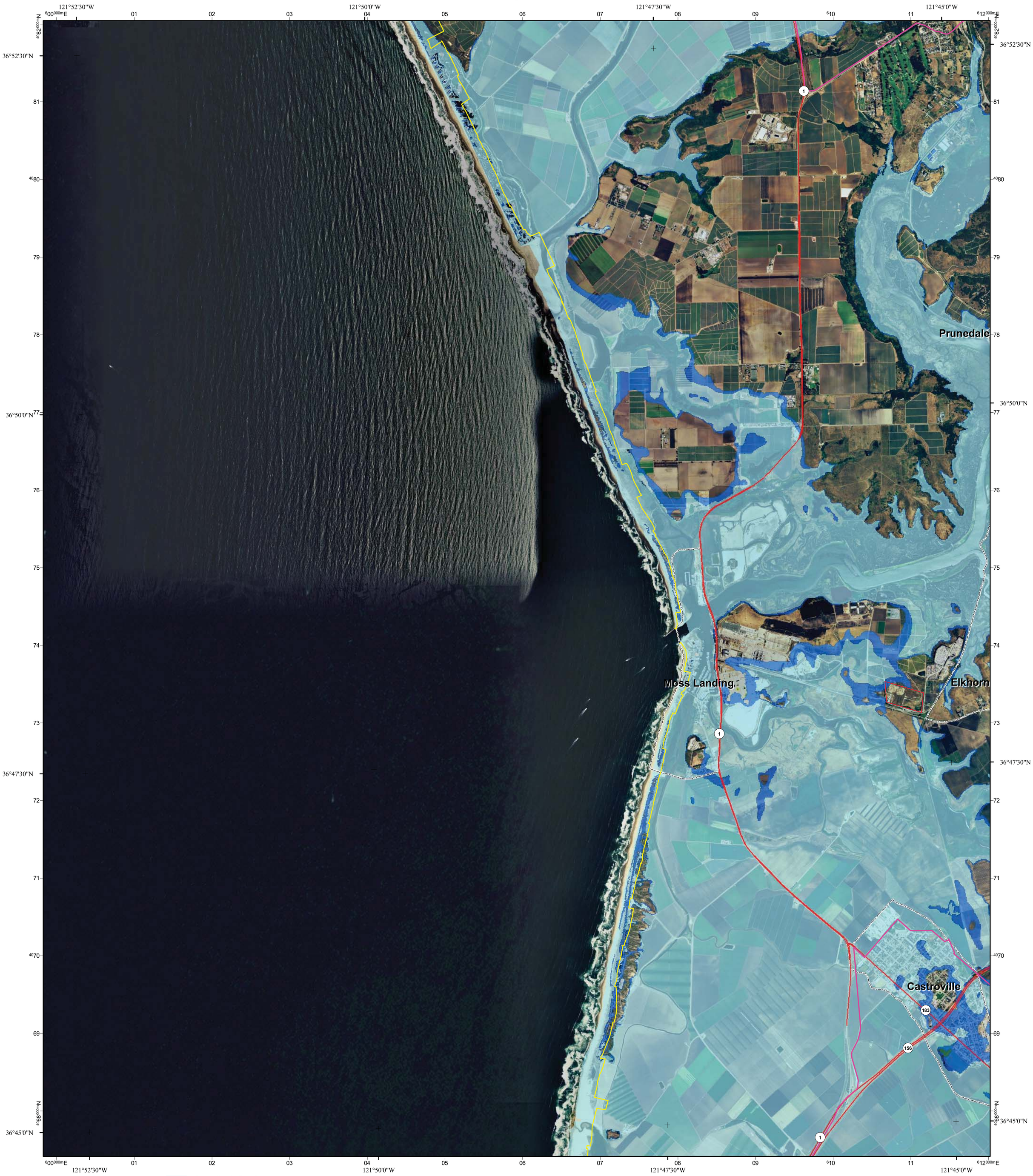
ATTACHMENT 1


Stanford University Liquefaction Suceptability Zones
2015 https://earthworks.stanford.edu/catalog/stanford-wp033vb5331
Legend
Intake HDD Alignment
Pump Station
Seawater Intake
Trenched Pipeline
Jetty Rd
Salmon Way
Clam Way
Bass Way
Seawater Intake
Pump Station
Sandhold Rd
Dolan Rd
1
Moss Landing Rd
Cabrillo Hwy
Google earth
© 2016 Google
Image © 2016 TerraMetrics
Data CSUMB SFML, CA OPC
N
2000 ft

ATTACHMENT 2

PACIFIC INSTITUTE

California Flood Risk: Sea Level Rise
Moss Landing Quadrangle



Interstate
US Highway
State Highway
County Highway

Current Coastal Base Flood (approximate 100-year flood extent)
Sea Level Rise Scenario Coastal Base Flood + 1.4 meters (55 inches)
Landward Limit of Erosion High Hazard Zone in 2100
Coastal Zone Boundary

0 0.25 0.5 1 1.5 2
Miles
0 0.5 1 2 3
Kilometers

This information is being made available for informational purposes only. Users of this information agree by their use to hold blameless the State of California, and its respective officers, employees, agents, contractors, and subcontractors for any liability associated with its use in any form. This work shall not be used to assess actual coastal hazards, insurance requirements, or property values and specifically shall not be used in lieu of Flood Insurance Studies and Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).

Data Sources: US Geological Survey, Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coastal ServicesCenter (CSC), Scripps Institution of Oceanography, Phillip WIlliams and Associates, Inc. (PWA), US Department of Agriculture (USDA), California Coastal Commission, and National Aeronautics and Space Administration (NASA). Imagery from ESRI and i-cubed.

Created by the Pacific Institute, Oakland, California, 2009.

Project funded by the California Energy Commission's Public Interest Energy Research Program, CalTrans, and the California Ocean Protection Council

Grid coordinates:
UTM Zone 10N meters
NAD83 GCS degrees

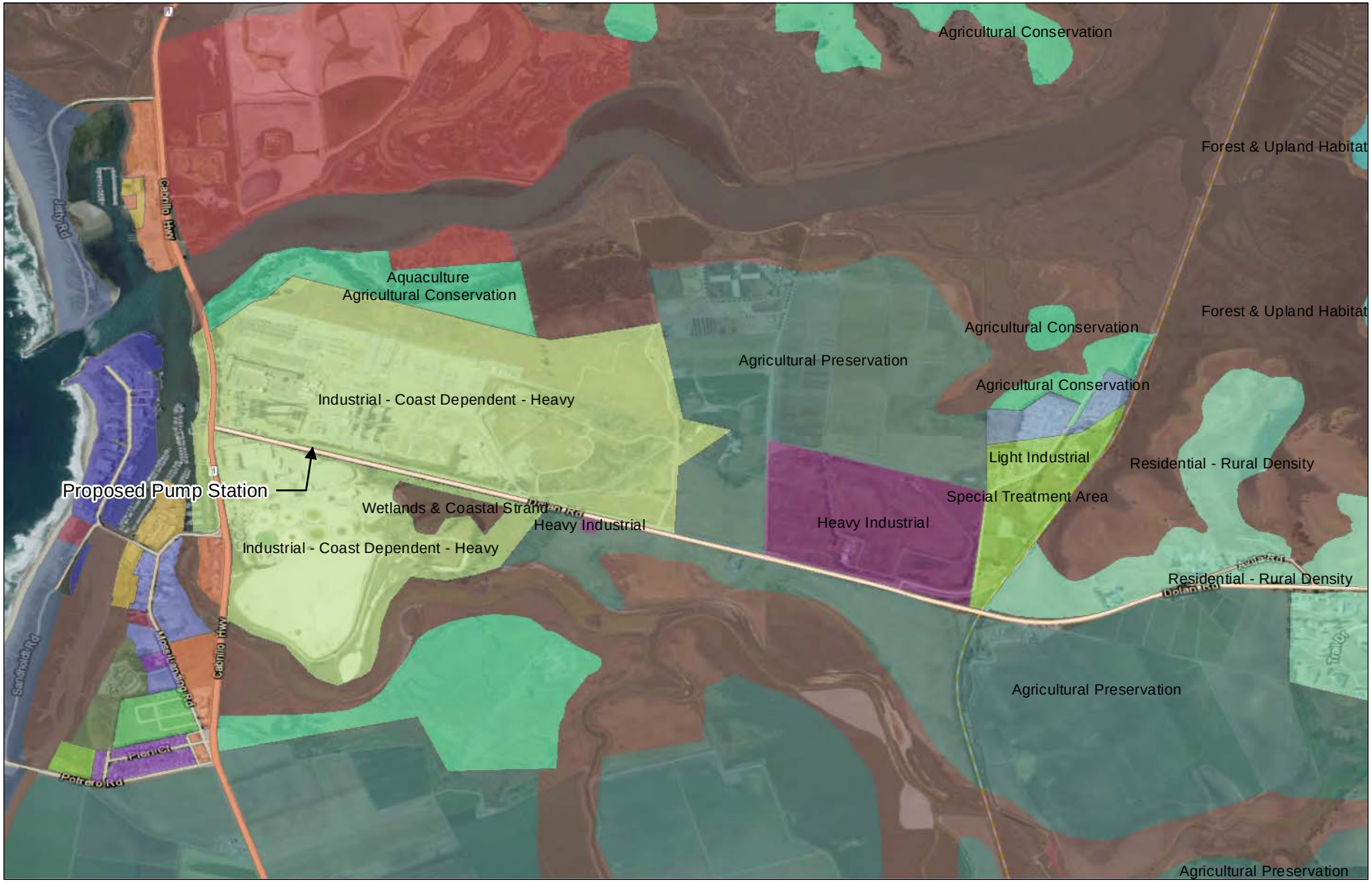
Adjoining Quadrangles:

1	2	3
4		5
6	7	8

1: Soquel
2: Watsonville West
3: Watsonville East
4: *not printed*
5: Prunedale
6: Monterey OE N
7: Marina
8: Salinas

Map extents match USGS 7.5 minute topographic maps

ATTACHMENT 3



Source: Monterey County 2016

Monterey County Local Coastal Plan Land Use Designations

Monterey Bay Regional Water Project

8.6.10 Ecological Rights Foundation (ERF), the Center for Biological Diversity (CDB), and Our Children's Earth Foundation (OCEF)

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March 29, 2017

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California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Bldg 445a
Monterey, CA 93940

Dear Ms. Borak and Ms. Grimmer:

I submit these comments on behalf of Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation, regarding the Draft Environmental Impact Report/ Environmental Impact Statement ("EIR/EIS") for the Monterey Peninsula Water Supply Project (Project), and proposed desalination plant ("Facility"). As described in detail below, the EIR/EIS is fundamentally inadequate, and meaningful public review and comment are precluded given its flawed analyses. Once the EIR/EIS is fixed, under CEQA and NEPA it must be recirculated for public review and comment. ERF-1

The EIR/EIS Insufficiently Describes Baseline Environmental Conditions

CEQA requires an accurate description of the existing "baseline" environmental conditions in order to understand a project's potential impacts. CEQA Guidelines § 15125(a). The EIR must describe the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published. CEQA Guidelines § 15125(a). Similarly, under NEPA, agencies must identify baseline environmental values in adequate detail. 40 C.F.R. §1501.2(b). To determine whether a project may cause significant impacts, an Environmental Assessment must consider the context and the intensity of impacts. Id. at 1508.27. As "significance" varies with a project's setting, "context" includes the affected region, the affected interests, and the locality. *Id*. "Intensity" refers to impact severity and requires consideration of an area's unique characteristics." *Id*., 1508.27(b)(3). ERF-2

The EIR/EIS does not satisfy these basic requirements in its descriptions of marine and terrestrial environments. For example, the EIR/EIS reports that the largest source of contaminants is agricultural runoff into the Pajaro and Salinas Rivers. Seasonal data collected by the Central Coast Long-term Environmental Assessment Network (CCLEAN) between 2001 and 2013 indicate numerous instances where water quality objectives and human health alert levels in Monterey Bay were exceeded due to the presence of contaminants (CCLEAN, 2011 and 2014). Nearshore waters of Monterey Bay have failed to meet the Ocean Plan water quality objective for the protection of human health (i.e., concentrations are higher than numeric water quality objectives) for PCBs, Dieldrin, chlordanes, and DDTs. PCBs in the northern portion of Monterey Bay have increased significantly since 2006 and annual average concentrations across all samples have increased exponentially (CCLEAN, 2014). Yet, despite the Project's proximity to the Salinas River, and despite the acknowledgment that Monterey Bay water quality and contaminant concentrations are relevant, since the seawater extracted from the

bay through the subsurface intakes would be used as source water for the MPWSP Desalination Plant, the EIR/EIS does not discuss the concentrations of these contaminants of concern in the water or sediments near the proposed slant wells or outfall.

The EIR/EIS states that the Ocean Plan and NPDES permit monitoring requirements will require the facility operator to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge prior to commencement of construction. "To achieve this requirement, the owner or operator is required to conduct biological surveys (e.g., Before-After Control-Impact studies) that evaluate the differences between biological communities at a reference site and at the discharge location before and after the discharge commences. The pertinent regional water board uses the data and results from the surveys and any other applicable data for evaluating and renewing the requirements set forth in a facility's NPDES permit (in the case of the proposed project, the MRWPCA's outfall)." EIR/EIS 4.3-33. The same baseline environmental information is necessary to the evaluation of potential environmental impacts under CEQA and NEPA.

Local, site-specific baseline data on chemical concentrations in water and sand/sediment is particularly needed in this instance, due to the Project's co-location with the MRWPCA Regional Wastewater Treatment Plant. In winter months, secondary treated wastewater from the Treatment Plant is discharged to Monterey Bay through a diffuser positioned 11,260 feet offshore at a depth of approximately 100 feet. The Wastewater Treatment Plant is a source of numerous pollutants, and thus the water quality and sediment quality in the local environment may be significantly different, with likely higher concentrations of chemical and biological contaminants, than the water and sediment quality of Monterey Bay generally. The EIR/EIS acknowledges that the amendment process for the Wastewater Treatment Plant's NPDES Permit "would require an extensive water quality assessment, which would involve MRWPCA (as the discharger defined in the current NPDES Permit) and/or CalAm (as a contributor of a new discharge) to perform testing and monitoring of the water quality of the discharges, including the testing of the source water drawn from the subsurface water intake wells and piped to the MPWSP Desalination Plant and assessing the resulting water quality of the discharges from the MPWSP Desalination Plant." A similar water and sediment quality assessment is necessary at this stage, to establish the environmental baseline, and to adequately evaluate the Project's potential impacts.

ERF-2 cont.

The EIR/EIS unjustifiably relies on what it describes as a "long-term monitoring study of the ocean outfall," for the assertion that there have been "no effects from the outfall discharge on benthic communities, or biological accumulation of contaminants in tissue" and that "[n]o effects were observed on the physical and chemical properties of the sediments and water column except adjacent to the outfall." In fact, the cited report, "Analysis of MRWPCA Marine Outfall Benthic Monitoring Program" was prepared for Monterey Regional Water Pollution Control Authority by ABA Consultants in 1999, identifies scores of reasons why the existing monitoring data is flawed and insufficient to establish a baseline of environmental data for assessing marine impacts. The ABA report makes the following conclusions:

- The sampling methodology and design has changed over the time frame of sampling, between 1977 and 1994. This limits the comparisons that can be done within the data set and severely restricts the utility of the data. It cannot be emphasized strongly enough that a consistent sampling design is necessary for long term studies to be useful.

ERF-3

- Chemical analysis of sediments followed a standardized list of metals that was derived from studies at other sites and was inapplicable for the local area. It is not clear whether these trace metals have elevated concentrations in the effluent reaching Monterey Bay. Properly conducted chemical analysis require clean techniques, well-trained researchers, and are expensive, so it is important that we be sure that the analyses conducted are pertinent. The chemicals currently analyzed are simply a generic "laundry list" compiled from requirements in other areas that may not be of concern in this location. Carefully selecting appropriate indicators that may include chemicals not on the EPA list and may not include some standard tests as relevant for the area is an important way to customize a sampling strategy.

- Bioaccumulation studies were discontinued after 1991 and only conducted for metals.

- Arsenic concentrations increased over time at all sediment sampling stations.

- The species used for the bioaccumulation work, *Citharichthys stigmaeus* and *Crangon nigromarnlata,* were usually the most abundant species captured in trawls near the outfall. Unfortunately, these are highly mobile species whose chemical body burden may not reflect the local conditions accurately. Since these species are known to undergo substantial seasonal migrations, the concept of adjacent "impacted" and "control" stations was inappropriate.

- There has been an increase in the abundance of crustaceans and a decrease in the numbers of echinoderms. The general pattern suggested is an increase in mobile epifauna *(Hemilamprops californica, Zeugophilomedes oblonga)* and opportunistic species (magelonids) and a decrease in sessile species *(Dendraster excentriws, Tellina modesta),* predators *(Nephtys cornuta)* and sensitive species *(Rlzepoxynius abronius)* (Figure 14). Together, the results suggest increasing disturbance in the benthic community within 2 m of the outfall;

- Because of the change in station locations in 1994, comparisons with previous years' data must be made with caution. The value of the data set for detecting changes and long-term patterns is greatly reduced by the location change; only when no station differences are found can data sets be compared between years, and there is no way to look for potential effects of the outfall. Less than half of the groupings (11 of 25) can be compared over the entire time frame of data collection; 10 more partial comparisons can be made. The station location change has greatly compromised the utility of the data, both for outfall monitoring, and for comprehensive long-term ecological research.

- The stations would be particularly useful if the scope of the chemical analyses was enlarged to include pesticide screening; pesticides are of far more concern in Monterey Bay then the metals analysed for around the outfall.

ERF-3 cont.

The Federal Register Notice for this Project was issued on August 26, 2015. The EIR/EIS uses a 2012 baseline and does not provide adequate support for the assertion that "environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions." By relying on a 2012 baseline, rather than a 2015 baseline, the EIR/EIS may not

ERF-4

neglect recent changes in relevant environmental factors, such as habitat use or loss, and recent increases in Monterey Bay shoreline erosion. ERF-4 cont.

The EIR/EIS Is Vague and Inconsistent as to the Purpose and Need for the Project.

Under CEQA an EIR must include a statement of objectives sought by the proposed project. The statement of objectives should include the underlying purpose of the project. CEQA Guideline 15124 (b). Under NEPA the agency must provide consistent information about important aspects of the Project that are crucial for an informed consideration of project impacts.

The EIR/EIS is vague and inconsistent as to the purpose of the Project. After review of the EIR/EIS, the reader does not know if the purpose is (1) to replace existing water supplies or (2) replace existing supplies and expand water supplies, or (3) authorize otherwise prohibited activities.

The EIR/EIS at pdf 3 states "The purpose of the MPWSP is to replace existing water supplies for CalAm's Monterey District service area."

The EIR/EIS at section "ES.3.1 Cal Am Project Objectives" doesn't state the purpose of the Project, but does state 9 primary and 3 secondary objectives.

The EIR/EIS at section "ES.3.2 MBNMS Purpose and Need" states the "purpose of these proposed [federal] actions are to authorize otherwise prohibited activities to occur within MBNMS, to ensure that the State and Federal permits and the proposed project comply with MBNMS regulations, and to ensure that MBNMS resources are protected by requiring terms and conditions that may be necessary. The need for MBNMS action is to respond to CalAm's request in accordance with NMSA regulations and to protect sanctuary resources." ERF-5

EIR/EIS section 1.3 states that "The MPWSP is needed to replace existing water supplies" that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources.

Yet, EIR/EIS section 2.3 states that "Based on State Water Board Orders 95-10 and 2009-0060 and the Seaside Groundwater Basin adjudication, CalAm must develop a replacement water supply to meet existing demand in its Monterey District service area. **In addition, CalAm proposes** to provide sufficient supply to meet demand associated with the development of existing legal lots of record, Pebble Beach water entitlements in the Del Monte Forest area, and tourism demand under improved economic conditions within its service area."

These are not hypothetical concerns. As a factual matter if the Project purpose is to replace existing water supplies approximately 12,351 acre feet per year (afy) will be required, however if the purpose includes expanding water supply an additional 2,005 afy is required.

As a legal matter, CEQA Guideline 15124 (b) explain that a clearly written statement of objectives, that includes the project purpose, aids in development of a reasonable range of alternatives, as well as any statement of overriding considerations.

The EIR/EIS Fails to Adequately Analyze the Project's Potential Adverse Impacts on Monterey Bay Marine Life

Impingement of Organisms

Desalination intake technologies can pose major mortality threats to marine organisms if they impinge species on the seafloor or entrain species. Impingement occurs when organisms are trapped against the seafloor or the screens of intake pipes due to the constant force of water being drawn in. Entrainment occurs when very small organisms are sucked through the screens, into the pipes, and are killed within the facility during the desalination process. It is acknowledged that CalAm's proposed slant well intake design is meant to have a lessened effect on marine life by not intruding into the ocean and reducing impingement and entrainment. The EIR/EIS claims that the project will completely "eliminate" the risk of impingement or entrainment of marine life, (though sources indicate a slant well system has never been used in a full-scale desalination plant).[1] In a seeming contradiction, the 2015 DEIR concluded that "impacts from the operation of the slant wells could involve impingement of organisms against the seafloor."[2] Eliminating impingement may be true of larger marine life that typically fall prey to open water intake systems, but this technology may introduce its own negative impacts on epifaunal and infaunal organisms that live on and within the seafloor sediment, respectively. Plankton, eggs, and fish larvae are common inhabitants of this zone and may be threatened by a slant well intake pipe.[3] Subsurface slant well intake systems utilize the sandy seafloor as a preliminary filter, but also draw in organisms that inhabit this zone.[4] Squid are a valuable commodity in Monterey Bay.[5] The species *Dorytheuthis opalescens*, a native to the North American coast, for example, is protected from commercial fishing outside of fisheries because squid "demand…now exceeds supply."[6] Because squid lay their eggs in the sediment of the seafloor, they may be more greatly impacted by a subsurface intake system if they are harmed by impingement and are trapped on the seafloor. As noted in the DEIR, "a relatively small magnitude effect…could be considered significant if the species is rare and highly susceptible to disturbance."[7]

ERF-6

Brine Discharge and Hypoxia

The Project will produce up to 14 million gallons per day of high-salinity brine during the desalination process. EIR/EIS 4.3-64. The Project plans to discharge that brine through the Monterey Regional Water Pollution Control Agency's existing outfall and into Monterey Bay. Id. 4.3-64. The discharge will occur within the federally protected Monterey Bay National Marine Sanctuary, which contains "habitats that support extensive marine life," including "numerous special-status" marine species. Id. 4.5-2, 4.5-8.

ERF-7

1 Cooley, H., Ajami, N., and Heberger, M., Key Issues in Seawater Desalination in California, December 2013:9.
2 Draft Environmental Impact Report for the Monterey Peninsula Water Supply Project, State of California Public Utilities Commission, 2015:4.5-25.
3 Dickie, P., Making Water: Desalination: Option or Distraction for a Thirsty World, 2007:13.
4 Paper, W., *Overview of Desalination Plant Intake Alternatives*, June 2011:2.
5 Latham, B. and Reeb, C., Inked in Black: The value of market squid in Monterey Bay.
6 Ibid.
7 Draft Environmental Impact Report for the Monterey Peninsula Water Supply Project, State of California Public Utilities Commission, 2015:4.5-25.

Brine byproduct may not be easily dispersed in the ocean. According to Carol Reeb (a marine scientist at Stanford Hopkins Marine Lab), the density of concentrated brine causes it to sink and form an oxygen-starved layer, "like Saran Wrap,"[8] that suffocates marine life; brine discharge is "the most immediate threat to marine/estuarine life."[9] This dense byproduct accumulates on the seafloor, restricting oxygen exchange and creating hypoxic (oxygen deficient) environments. "Hypoxia is lethal to squid eggs, halibut, Dungeness crab and anything else that lives on the sandy seafloor."[10] The discharge can also contain "caustic chemicals"[11] at dangerously concentrated levels which can harm benthic organisms in ways that are not yet entirely understood. Squid, for example, lay their fragile eggs in the sandy seafloor of this benthic zone for protection, and detecting the impacts that brine has on them and other organisms "may take many years to observe."[12] These smaller benthic organisms, which may provide food sources to countless other marine species,[13] are potentially the most at-risk species and have not received adequate attention in the Cal Am DEIR. The EIR/EIS addresses the possibility of brine sinking to the seafloor. After hearing public concerns about an effect known as "Coanda attachment" which could result in substantially reduced dilution, or a dense saline plume that forms a connection to and travels along the sea floor. In response to this concern, modeled the anticipated discharge to see if this effect was likely to occur. Roberts (2016). It is unclear, however, whether the model considered the impact of the slant wells vertical infiltration rate in the area of sea floor through which seawater would be taken into the wells – approximately 1,000,000 square feet.

ERF-7 cont.

The EIR/EIS analysis of potential brine discharge impacts were based on predicted salinity at the edge of the Zone of Initial Dilution (ZID), 100 meters from the point of discharge. EIR/EIS at 4.5.4. The EIR/EIS cites the Ocean Plan limits on salinity of receiving water from desalination plant discharges - a daily maximum of 2 parts per thousand (ppt) above natural background salinity as measured no further than 100 meters (328 ft) horizontally from each discharge point (known as the brine mixing zone [BMZ]). For the MPWSP, the BMZ represents an area of approximately 27 acres based on the existing outfall diffuser structure. EIR/EIS Figure 4.3-7. This approach is insufficient as it ignores potential impacts that may occur within the BMZ, including impacts on special-status species including the California gray whale, the Southern sea otter, and bottom dwelling and foraging fish, which may live in or pass through the BMZ, as well as impacts benthic organisms and the reef-like marine community that has developed on the discharge outfall itself.

ERF-8

The EIR/EIS acknowledges, elevated salinity and its impact on marine ecology, both within and outside of the ZID, is one of the "major concerns associated with coastal desalination projects." A report commissioned by the State Water Resources Control Board to evaluate the impacts and management of brine discharges, (cited in the EIR/EIS) found "benthic infaunal communities and sea grasses are the most sensitive to the acute effects of concentrate discharge." Management of Brine Discharges to Coastal Waters: Recommendations of a Science Advisory Panel, Southern California Coastal Water Research Project ("SCCWRP Report") at 9. Yet "very few studies" have examined the sublethal impacts of long-term brine exposure on marine life and data on impacts to California biota

ERF-9

8 Reeb, Carol, Letter to State Water Board Members, April 5, 2012:3.
9 Ibid:1.
10 Abraham, Kara, Company says it can flip one of desal's biggest problems, brine discharge, into an asset, July 16, 2015.
11 Ibid.
12 Abraham, Kara, Company says it can flip one of desal's biggest problems, brine discharge, into an asset, July 16, 2015.
13 Ibid.

"are extremely limited." SCCWRP Report at 9, 11. Given this uncertainty, the SCCWRP Report recommends that salinity levels at the ZID boundary be limited to an increase of either 2 parts-per-thousand ("ppt") or 5% above pre-project ambient salinity levels, whichever is less. The EIR/EIS acknowledges that a 5% increase would be the equivalent of a 1.7 ppt salinity increase above ambient conditions, but instead basis its impact analysis on the 2 ppt threshold of significance, which represents more than a 17% increase over the 1.7 ppt threshold recommended by the SCCWRP Report. While the 2 ppt threshold aligns with the regulatory standard adopted in the recent Ocean Plan Amendment, the EIR lacks substantial evidence to justify why the 2 ppt threshold is more appropriate for the Project than a 5% increase above ambient salinity (1.7 ppt) threshold recommended by the SCCWRP Report. CEQA and NEPA analyses require such an explanation.

ERF-9 cont.

The public has also raised concerns that the Project's brine analysis is susceptible to modeling error because the existing outfall and its diffusers were not designed for brine discharge. There is limited scientific literature studying mixing scenarios for a horizontal discharge of undiluted brine like the discharge that the Project proposes, as most existing studies have been conducted for inclined jets which increase the initial mixing of the plume. Fewer studies are available to characterize the mixing of negatively buoyant plumes from horizontally-oriented discharge ports. Additionally, most of the studies looking at desalination impacts on marine environments lack quantitative data, adding uncertain and demanding caution when making environmental decisions about introducing this technology at such a large scale.[14] Due to the importance and sensitivity of the Monterey Bay marine environment, the cost of developing the Facility, and the fact that it will produce and discharge such significant amounts of brine each day, the Project must be held to rigorous standards for its potential impacts.

ERF-10

Another common critique of brine byproduct disposal is that the salt can be harnessed and used for other purposes. For example, salt extraction technology may triple the revenue of desal facilities, while eliminating brine byproduct altogether.[15] Alternatives to brine disposal are not sufficiently evaluated in the EIR/EIS.

ERF-11

Toxic Substances

As reported in the Monterey Peninsula Water Supply Project Hydrogeologic Investigation Technical Memorandum, results of water quality sampling in isolated aquifer zones at the Cemex facility, collected via exploratory boreholes between February and March 2014, found elevated levels of hydrocarbons throughout the aquifer zones, including 1,2-Dichlorobenzene-d4; 1,3-Dimethyl-2-nitrobenzene; 1-Br-2-Nitrobenzene; Tetrachloro-meta-xylene (TCMX). The sampling also discovered elevated levels of pesticides, including aminomethylphosphonic acid (AMPA) and 2,4-dichlorophenoxyacetic acid (DCPAA). AMPA, the primary degradation product of glyphosate in plants, soil and water. AMPA's chemical structure is very similar to that of glyphosate, recently determined by the International Agency for Research on Cancer to be a probable human carcinogen. The State of California has determined it will include glyphosate on its list of known carcinogens. Elevated levels of AMPA were found throughout the aquifer layers at every screen interval sampled.

ERF-12

14 Roberts, D.A., Knott, N.A., and Johnston, E.L. Impacts of Desalination Plant Discharges on the Marine Environment: A Critical Review of Published Studies, October 2010.
15 Abraham, Kara, Company says it can flip one of desal's biggest problems, brine discharge, into an asset, July 16, 2015.

The EIR/EIS states that "former industrial, commercial, and military activities in the region have resulted in soil and groundwater contamination from spills, leaking underground tanks, unlined chemical disposal sites, and inadvertent disposal of chemicals". The EIR/EIS also concludes that "within the CEMEX area, the NMGWM projects that groundwater elevations could decrease and that decrease could incrementally affect groundwater flow directions. If there are nearby inland sites that are remediating contaminated groundwater in the same aquifers and that are located within the radius of influence of the slant wells, then the pumping of the slant wells could potentially interfere with those remediation activities, pulling contaminated groundwater into currently uncontaminated areas and degrading the existing water quality. This would violate the state policy of maintaining the existing water quality. A significant impact would occur if the proposed project created a condition that would violate water quality standards or otherwise degrade water quality." However, the EIR/EIS makes no mention of the contaminants found in the local aquifer. At a minimum, the environmental impacts analysis should 1) identify possible sources of the contaminants, including any known plumes that may migrate toward the slant wells, 2) discuss relevant water quality screening values, 3) analyze the impacts of the contaminants on the source water, and 4) discuss the potential for the contaminants to concentrate in brine, and, if so, any potential adverse impacts to marine life from the brine disposal. Additionally, the Cemex Lapis Sand Plant, which has been in operation since 1906, is a potential source of groundwater contamination that is not addressed in the EIR/EIS.

ERF-12 cont.

ERF-13

The EIR/EIS Table 4.7-1 incorrectly appears to incorrectly identify the Fort Ord Operable Unit 1 as "Closed – Groundwater cleanup completed". According to the State Water Resources Control Board GeoTracker database, Operable Unit 1 (OU1) is the Fritzsche Army Airfield Fire Drill Area site. It originally consisted of a groundwater plume (primarily TCE) and some source area soil contamination (primarily TCE). The soil contamination has been successfully remediated, leaving only the groundwater plume. Since identification of an off-site (outside the former Ft. Ord boundaries) portion of the groundwater plume in 2005, this plume is typically defined as consisting of two parts: the on-site and off-site portions. See, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=DOD100220600

ERF-14

The EIR/EIS states that "[r]outine backwashing of the pretreatment filters would occur each day. Backwashing the pretreatment filters would require that a chlorine solution (sodium hypochlorite, similar to bleach) be added to the backwash water supply to control bacterial growth on the filters. . . [a]pproximately 0.4 million gallons per day (mgd) of decanted backwash water may be pumped to the Brine Discharge Pipeline, blended with brine produced by the RO system, and discharged to the existing MRWPCA ocean outfall. The volume of sodium hypochloride to be used, its likely concentrations in discharge water and potential adverse impacts to the marine environment are not adequately addressed.

ERF-15

Additional Flaws in the Analysis of Biological Impacts

The EIR/EIS does not disclose that California fully protected species are present in the study area, nor consider the impacts of the Project on these species. The EIR/EIS entirely fails to consider the impacts of the Project on the fully protected California Brown Pelican. Calif. Fish & Game Code §3511. The California Brown Pelican roosts in the Monterey Bay National Marine Sanctuary. Nor does the EIR/EIS disclose that the Pacific right whale, the northern elephant seal (Mirounga angustirostris), and Southern sea otters (Enhydra lutris nereis) are California fully protected mammals. Calif. Fish & Game

ERF-16

Code §4700. The EIR/EIS does not consider whether the Project violates their California fully protected species status. The EIR/EIS also fails to discuss potential impacts to dungeness crab, a species with high ecological and regional economic importance.

There could be unanticipated effects on benthic and pelagic communities in the vicinity of the discharge, or on individual members of protected species that feed, pass through or otherwise spend time in high brine concentration areas near the Facility's outfall. Yet, there is insufficient discussion and support for findings regarding impacts of elevated brine concentrations on these animals and their food sources.

ERF-16 cont.

The EIR/EIS Fails to Adequately Analyze the Potential Adverse Impacts on Snowy Plovers

A portion of the Project will occur on land currently used by the western snowy plover, a threatened species under the federal Endangered Species Act (ESA). Due to significant concerns with the Project detailed in the below comments, we urge the Commission to modify Project approval for the following reasons:

• The Commission has failed to meet its obligations under state and federal law by not analyzing all Project impacts on the plover, including slant well maintenance and operational activities, permanent loss of western snowy plover habitat, beach erosion, sea level rise and cumulative impacts from neighboring property.

• The Project, as currently proposed, will result in the likely take of the threatened western snowy plover, which is an important coastal natural resource. Because mitigation measures are likely insufficient to avoid take of listed species caused by construction and operation of the Project, CalAm needs to prepare a Habitat Conservation Plan (HCP) in support of an application for an Incidental Take Permit to avoid liability under the Endangered Species Act (ESA).

ERF-17

Endangered Species Act

The Endangered Species Act (ESA) affords broad protections to threatened and endangered species. The ESA is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[16] Its fundamental purposes are "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [and] to provide a program for the conservation of such endangered species and threatened species . . . ."[17]

To achieve these objectives, the ESA directs the USFWS to determine which species of plants and animals are "threatened" and "endangered" and place them on the list of species afforded protection under the ESA.[18] An "endangered" species is one "in danger of extinction throughout all or a significant portion of its range," and a "threatened" species is "likely to become endangered in the near future throughout all or a significant portion of its range."[19] Once a species is listed, the ESA provides

16 *Tennessee Valley Auth. v. Hill* ("Hill"), 437 U.S. 153, 180 (1978).
17 16 U.S.C. § 1531(b).
18 16 U.S.C. § 1533.
19 *Id*. at §§ 1532(6), (20).

a variety of procedural and substantive protections to ensure not only the species' continued survival, but also its ultimate recovery. The Supreme Court has noted that "Congress has spoken in the plainest words, making it clear that endangered species are to be accorded the highest priorities."[20]

Section 9 of the ESA prohibits any "person" from "taking" or causing take of any member of an endangered species.[21] This take prohibition also applies to threatened species such as the western snowy plover.[22] The term "take" is defined broadly, need not be lethal, and includes to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" or cause another to do so.[23] The USFWS has further defined "harass" to include "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, including breeding, feeding, or sheltering."[24] In addition, "harm" is defined to "include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[25]

The ESA's legislative history supports "the broadest possible" reading of the prohibition against take.[26] "Take" includes direct as well as indirect harm and need not be purposeful.[27] Present or future harms qualify as take: "an imminent threat of harm . . . falls easily within the broad scope of Congress' definition of 'take.'"[28]

The ESA authorizes private enforcement of the take prohibition through a broad citizen suit provision. "[A]ny person may commence a civil suit on his own behalf to enjoin any person, including . . . any . . . governmental instrumentality or agency . . . who is alleged to be in violation of any provision of [the ESA] . . . ."[29] Citizens may seek to enjoin both present activities that constitute an ongoing take and future activities that are reasonably likely to result in a take.[30] Courts have held that "the language and legislative history of the ESA, as well as applicable case law, support our holding today that a showing of a future injury to an endangered or threatened species is actionable under the ESA [citizen suit provisions]."[31] 50 F.3d at 783. Upon a showing of "imminent threat of injury to wildlife," the injury requirement of the Secretary's definition of "take" and "harm" would be satisfied.[32] The ESA's citizen suit provision also provides for the award of costs of litigation, including reasonable attorney and expert witness' fees.[33]

ERF-17 cont.

20 *Hill*, 437 U.S. at 194.
21 16 U.S.C. § 1538(a).
22 *Id.* at § 1533(d); 50 C.F.R. § 17.31.
23 16 U.S.C. § 1532(19).
24 50 C.F.R. § 17.3.
25 *Id.*
26 *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 704-05 (1995).
27 *Id.* at 704; *see also Nat'l Wildlife Fed'n v. Burlington N. R.R.*, 23 F.3d 1508, 1512 (9th Cir. 1994).
28 *Forest Conservation Council v. Rosboro Lumber Co.*, 50 F.3d 784, 785 (9th Cir. 1995).
29 16 U.S.C. § 1540(g).
30 *Nat'l Wildlife*, 23 F.3d at 1511.
31 *Forest Conservation Council v. Rosboro Lumber Company*, 50 F.3d 781, 783 (9th Cir. 1995)
32 *Id.*; see also *Animal Welfare Institute v. Beech Ridge Energy*, 675 F.Supp 2d 540 (D. Md. 2009) (enjoining construction of wind turbines until an ITP is obtained by developer to protect Indiana Bat).
33 16 U.S.C. § 1540(g)(4).

Under section 10 of the ESA, a non-federal entity such as a developer can avoid potential liability for taking a threatened species by obtaining an incidental take permit.[34] In exchange for permission to "take" a listed species pursuant to an ITP, the permit applicant must commit to implement a plan that "conserv[es]" – *i.e.*, facilitates the recovery of – the species.[35] This plan is called a Habitat Conservation Plan and it must delineate "the impact which will likely result from such taking" and the "steps the applicant will take to minimize and mitigate such impacts . . . ."[36]

Snowy Plover Background

The western snowy plover (*Charadrius nivosus nivosus*) is one of the least numerous shorebirds in North America and the Pacific coast population of the western snowy plover was federally listed as threatened in 1993.[37] Historically, thousands of western snowy plovers nested along the California coast.[38] However, by 1980, the western snowy plover had disappeared from significant parts of its coastal California breeding range, and biologists estimate the breeding population along the coast has now dwindled to less than 1,500 birds.[39]

The population has continued to decline despite publication of the recovery plan and protection under the ESA. Habitat degradation – often from beach-front recreation and development – has caused the western snowy plover's population to decline over the past century.[40] Because western snowy plover habitat consists of unstable sandy shorelines, it is "highly susceptible to degradation by construction of seawalls, breakwaters, jetties, piers, homes, hotels, parking lots, access roads, trails, bike baths, day-use parks, marinas, ferry terminals, recreational facilities, and support services." [41] Unstable coastal habitat also makes western snowy plovers vulnerable to climate change, since sea level rise and erosion decrease their habitat area.[42]

ERF-17 cont.

Insufficient Analysis of Impacts to Snowy Plover

The EIR/EIS insufficiently examines the impacts of the Project on the snowy plover. First, the Project will significantly reduce important western snowy plover habitat along the shoreline of Monterey Bay, including historic nesting and foraging habitat on and immediately adjacent to the Project site.

ERF-18

34 16 U.S.C. § 1539(a)(1)(B).
35 *Id.* at §§ 1539(a)(1)(B), (a)(2)(A); *see also Sierra Club v. U.S. Fish & Wildlife Serv.*, 245 F.3d 434, 441-42 (5th Cir. 2001) ("'[c]onservation' is a much broader concept than mere survival" because the "ESA's definition of 'conservation' *speaks to the recovery of a threatened or endangered species*" (emphasis added)).
36 16 U.S.C. § 1539(a)(2)(A).
37 Morrison RIG, BJ McCaffery, RE Gill, SK Skagen, SL Jones, GW Page, CL Gratto-Trevor, BA Andres. 2006. Population estimates of North American shorebirds, 2006. Wader Study Group Bulletin 111:66-84; 58 Fed. Reg. 12864 (Mar. 5, 1993)
38 WesternSnowyPlover.org. n.d. Western Snowy Plover Natural History and Population Trends. *Adapted from U.S. Fish and Wildlife Western Snowy Plover Pacific Coast Population Draft Recovery Plan*, May 2001. Available at: <http://www.westernsnowyplover.org/pdfs/plover_natural_history.pdf> (Accessed 14 Nov 2014). *See also* Thomas SM, JE Lyons, BA Andres, EE T-Smith, E Palacios, JF Cavitt, JA Royle, SD Fellows, K Maty, WH Howe, E Mellink, S Melvin, T Zimmerman. 2012. Population Size of Snowy Plovers Breeding in North America. Waterbirds 35(1):1-14.
39 *Ibid*.
40 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751..
41 *Id.*, 34.
42 Thomas 2012, Population Size of Snowy Plovers Breeding in North America (2012).

As the EIR/EIS recognizes, impacts from construction of the nine subsurface slant wells and conversion of the test well to a permanent well "would be significant." EIR/EIS 4.6-129. The nine acre construction footprint for the wells is located within potential nesting habitat and the construction would result in the temporary loss of eight acres and the permanent loss of one acre of potential wintering habitat. In addition, "construction noise and vibration, earthmoving activities, vegetation clearance, and nigh lighting associated with installation of the [wells] . . . could also impact plovers by causing temporary flight of breeding birds, nest abandonment, or nest failure." *Id*. "Human presence and construction noise and activities" would be a significant impact. *Id.* at 4.6-130. In addition to the direct impacts of the Project that reduce western snowy plover habitat, sea level rise and erosion linked to climate change will also contribute to reduction of plover habitat.

The EIR/EIS states that mitigation measures, such as construction during non-breeding season and other avoidance techniques, will reduce impacts to the western snowy plover to below the level of significance. *See* Mitigation Measure 4.6-1d: Protective Measures for Snowy Plover. However, even if this is true for construction activities, the EIR/EIS inadequately evaluates the impacts to plovers during maintenance and operational activities. Because anthropogenic disturbance is the primary threat to the western snowy plover, numerous biologists have concluded that protecting occupied sites from human disturbance and associated domestic animals may be essential to the conservation and recovery of the species.[43] Operational and maintenance activities have the potential to cause significant impacts and must be more closely examined.

ERF-18 cont.

As the EIR/EIS states, continual disturbance of this six-acre slant well site for maintenance purposes "may preclude plovers from nesting in this location in the future." EIR/EIS 4.6-235. "Therefore, this would be a permanent loss of up to 6 acres of western snowy plover habitat." *Id.* However, unlike the discussion of mitigation measures to be adopted for construction activities, the EIR/EIS limits mitigation resulting from maintenance activities to restoration actions beyond the Project site. "Permanent loss of western snowy plover habitat will be compensated, at a minimum ratio of 2:1, or as otherwise negotiated with USFWS, through actions to enhance existing degraded habitat." EIR/EIS 4.6-170. The EIR/EIS does not attempt to analyze mitigation measures that could be taken on-site to reduce take of endangered plovers. Nor is there a discussion on whether enhancement of degraded habitats would fully compensate for the loss of the six acres lost due to Project activities.

In addition, the EIR/EIS fails to examine the operational impacts of the Projects, and the slant wells in particular, to snowy plovers. While the simultaneous operation of the 10 wells pumps "would generate a noise level of approximately 66 dBA at 50 feet," and 57 dBA at 150 feet, the EIR/EIS concludes that the pumps would not impact plovers at the site. However, plovers may be significantly closer than 50 feet away from the well pumps, and the examples the EIR/EIS uses to justify the cumulative impacts are not persuasive. For example, while crashing waves of the Pacific Ocean may register at 57 dBA at 300 feet, and machinery and mining vehicles associated with CEMEX operations register at 85 dBA at 50 feet, and there is noise associated with traffic on Highway 1, the impacts from noise sources may be as much related to proximity as they are decibel level, and there is no analysis in the EIR/EIS which suggests that snowy plovers could tolerate yet another source of anthropogenic noise. Just because the

ERF-19

43 United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751. *See also* Brindock KM, MA Colwell. 2011. Habitat Selection by Western Snowy Plovers During the Nonbreeding Season. Journal of Wildlife Management 75(4):786-793.

"noise level from pump operations would be less than the combination of these existing sources" does not mean that pump noises would have no impact – if anything, the cumulative effects of these noise sources in combination with the new pumps may drive plovers away from the site. EIR/EIS 4.6-237. These cumulative effects from the pumps and neighboring properties must be considered in the analysis of noise impacts. Additionally, the EIR/EIS fails to analyze the potential impacts on snowy plovers from the vibrations caused by the well pumps. ERF-19 cont. ERF-20

CalAm Must Prepare a Habitat Conservation Plan

As a result of the activities associated with the slant wells and pumps, the incidental take of snowy plovers is highly likely. To comply with the mandates of the ESA, CalAm must prepare a HCP in support of an application for an Incidental Take Permit (ITP) to avoid liability under the ESA.

Incidental take of a snowy plover is likely to occur as a result of habitat displacement, construction and maintenance activities, and operation noise and vibrations from the well pumps. Not only will the Project permanently and temporarily remove habitat from plover use, but the impacts of the Project in combination with other neighboring uses, in addition to the ongoing threats of sea level rise and beach erosion, will harm the plover and contribute to its population decline. Because "take" is broadly defined to "include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering," and the mitigation measures proposed are unlikely to bring impacts to a less-than-significant level, resulting in take in the form of harm and harassment, CalAm must fulfill its obligations under the ESA Section 10 and apply for an ITP. 16 U.S.C. § 1539(a)(1)(B). ERF-21

The Analysis of Cumulative Marine Biological Impacts is Flawed.

CEQA Guideline 15130(b)(3) requires an EIR to define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.

There is no explanation of why the geographic area (north of Moss landing Harbor south to the northern limits of Sand City) is chosen, nor why the "area within 5 miles of shore" is chosen. EIR/EIS 4.5-67. ERF-22

The EIR/EIS posits a 2 step filter for whether projects are considered as part of the cumulative marine impact analysis: projects (1) within the [unexplained] geographic scope and (2) whose impacts could overlap with those of the Project. This second step - impacts which overlap - is not an approach explained in the EIR/EIS, nor sanctioned by CEQA or NEPA, and therefore appears improper. Further, the EIR/EIS seems to exclude projects characterized as having "very localized construction impacts," without any rationale or explanation why. ERF-23

The EIR/EIS improperly excludes from the cumulative marine impact analysis the City of Sand City Coastal Desalination Project (No. 6) which will utilize four seawater extraction wells. ERF-24

The EIR/EIS also improperly excludes the 90-inch Bay Avenue Outfall Phase I (No. 43) which will discharge and breach the sand bar periodically. ERF-25

In identifying potential cumulative growth-inducing effects, the EIR/EIS states that "[s]everal of the planned future cumulative projects identified in Table 4.1-2 would provide new sources of potable water supply in Monterey County. The Monterey Bay Regional Water Project (DeepWater Desal) (No. 34) would provide water to the City of Salinas as well as parts of Santa Cruz County. If both the MPWSP and DeepWater Desal were approved, water from DeepWater Desal could be used to support growth in other nearby areas such as northern Monterey County." Yet the EIR/EIS improperly excludes from the cumulative marine impact analysis the Peoples' Moss Landing Desal Project. The EIR/EIS states the Peoples' Moss Landing Water Desal Project and the proposed Project "would not both be implemented to serve the same customers." EIR/EIS 4.1-21. The Draft Process Design Report for The People's Moss Landing Water Desal Project does not so limit the People's Desal Project or mention the Monterey Peninsula Water Supply Project. ERF-26

Similarly, the EIR/EIS states that "it is expected that either the DeepWater Desal Project (No. 34) or The Peoples' Moss Landing Desal Project (No. 57), but not both, would be constructed and operated in the reasonably foreseeable future." EIR/EIS 4.5-70. The Draft Process Design Report for The People's Moss Landing Water Desal Project does not support this asserted limitation. It is not certain if multiple desalination sites will or will not be constructed, but because they have also begun their CEQA environmental review processes, they are legitimate and "reasonably foreseeable and probable future" projects that need to be considered. Combined, the impacts from the Cal Am project and these other proposed sites may be "considerable…or…increase other environmental impacts. CEQA Guidelines, § 15355.

In fact, it appears that the EIR/EIS has focused on the DeepWater Desal Project to the exclusion of The Peoples' Moss Landing Desal Project because "the DeepWater Desal is the largest of the other two desal projects and further along in environmental review." EIR/EIS 4.5-67-68. This "larger and farther along" approach for excluding projects from cumulative analysis is not condoned by CEQA or NEPA.

By excluding The People's Moss Landing Water Desal Project, the EIR/EIS has not considered the People's open bay seawater collection and brine discharge in its cumulative marine impact analysis. ERF-27

The EIR/EIS appears to individually consider the other projects (No. 31, 35, 47, and 34) "in the evaluation of the proposed project," but fails to consider the Project **in combination with** all of these projects. For example, the EIR/EIS states that the "test slant well (No. 47) was considered in the evaluation of the proposed project." Separately, the RUWAP Recycled Water Element (No. 35) was considered "in combination with the proposed project," but not in combination with all of the identified projects. ERF-28

In considering the RUWAP Recycled Water Element (No. 35), the EIR/EIS appears to improperly terminate any consideration of whether cumulative impacts would be significant after stating that the "RUWAP Recycled Water Element in combination with the proposed project would be **within the range** analyzed under Impact 4.5-4; that impact was determined to be less than significant." This "within the range" approach contradicts CEQA - which defines cumulative impacts as the change in ERF-29

the environment resulting "from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." CEQA Guideline 15355, subd. (b). Simply because the project specific impacts were insignificant does not mean that the cumulative impacts will be insignificant, nor that the Project impacts will not make a considerable contribution to cumulative impacts.

Further, the EIR/EIS fails to disclose which Impact 4.5-4 "range" it is referring to. The reader does not know if the EIR/EIS is referring to impingement of marine organisms, entrainment, to impingement of fine organic matter, salinity, dissolved oxygen, or some other criteria. This is important information. Salinity effects, for example, are species-specific. Within the Zone of Initial Dilution, the EIR/EIS admits that areas could be unsuitable for spawning of squid as a result of the Project alone. EIR/EIS 4.5-60.

ERF-29 cont.

The EIR/EIS repeatedly avoids consideration of cumulative impacts by improperly relying on findings of Project-specific insignificance determinations. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. CEQA Guideline 15355, subd. (b). Simply because the Project-specific impacts were insignificant does not mean that the cumulative impacts will be insignificant nor that the Project impacts will not make a considerable contribution to cumulative impacts.

ERF-30

The cumulative **construction** impacts discussion is flawed as it only considers the impacts of construction of the Monterey Peninsula Water Supply Project. The cumulative construction impacts discussion is further flawed because while the EIR/EIS acknowledges potential impacts from release of drilling fluids, it does not consider the cumulative impacts from such releases.

ERF-31

In considering the cumulative salinity impacts of the DeepWater Desal project, the EIR/EIS improperly considers only "the two projects," (EIR/EIS p. 4.5-69), not the cumulative impacts of these two projects with all other reasonably foreseeable projects.

ERF-32

The EIR/EIS is flawed as it minimizes the cumulative salinity impacts based on "the distance between the DeepWater Desal proposed outfall and the existing outfall proposed for use by the MPWSP (i.e., 31,511 feet; 9,605 meters) leads to the determination that there is no expectation of the two BMZs [brine mixing zones] reaching each other or intermixing discharge waters." The 2012 Science Advisory Panel technical report prepared for the California Water Resources Control Board, entitled "Management of Brine Discharges to Coastal Waters" explains that "brine mixing zone" may be too myopic a focus and suggests that brine "far field" impacts should also be consider. The paper explains at section 6.1 that

> It is important to understand the distinctions between near field, mixing zones, and other related terms that are often associated with wastewater discharges. These are discussed further in Appendix D. The near field is a hydrodynamic, or physical, concept. It is the region where mixing of the effluent is influenced and affected by

ERF-33

> discharge parameters. The physical processes are primarily entrainment caused by shear between the buoyant jet (either positively or negatively buoyant), an internal hydraulic jump where the plume impacts a boundary (e.g., sea floor) or water surface and transitions to horizontal flow, and entrainment in the horizontally spreading layer. The near field ends where the self-induced turbulence collapses under the influence of the induced density stratification. **The layer then spreads as a density current of some finite thickness.** Ultimately, ambient diffusion due to oceanic turbulence is responsible for most mixing and dilution; this region is known as the far field. **The rate of mixing and dilution in the far field is much slower than in the near field**. A mixing zone is a regulatory concept that will generally encompass most, or all, of the near field.

ERF-33 cont.

Appendix D of that same paper explains that "the mixing zone may not correspond to actual physical mixing processes."

The EIR/EIS Does Not Sufficiently Address the Project's Energy Use or Cumulative Impacts from Greenhouse Gas Emissions

The high energy requirements of desalination contribute to climate change and ocean acidification, using desalination is a tradeoff of a short-term water problem for a long-term climate disruption. Action to address climate change has become ever more urgent with each passing day. The federal government confirmed that 2014 was the hottest year ever recorded. (NASA 2015.) In the National Climate Assessment released by the U.S. Global Change Research Program, experts make clear that "reduc[ing] the risks of some of the worst impacts of climate change" will require "aggressive and sustained greenhouse gas emission reductions" over the course of this century (Melillo, 2014.) California has a mandate under AB 32 to reach 1990 levels of greenhouse gas emissions by the year 2020, equivalent to approximately a 15 percent reduction from a business-as-usual projection. (Health & Saf. Code § 38550.) The state Legislature has found that failure to achieve greenhouse gas reduction would be "detrimental" to the state's economy. (Health & Saf. Code § 38501(b).) Most recently, Governor Brown issued Executive Order B-30-15 establishing that California must reduce greenhouse gas emissions 40 percent below 1990 levels by 2030 to avoid major climate disruptions, resulting in such impacts as increased temperatures and wildfires, and a reduction in snowpack and precipitation levels and water availability.

ERF-34

Although some sources of greenhouse gas emissions may seem minor, climate change is a problem with cumulative impacts and effects. (*Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, (9th Cir. 2008) 538 F.3d 1172, 1217 ("the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis" that agencies must conduct).) One source or one small project may not appear to have a significant effect on climate change, but the combined impacts of many sources can drastically damage California's climate as a whole. Therefore, CEQA and NEPA require that an EIR/EIS fully disclose and analyze a project's greenhouse gas emissions and contribution to climate change and ocean acidification, including both direct and indirect impacts. (CEQA Guidelines, § 15064.)

Desalination facilities are notorious energy hogs. The EIR/EIS notes the facility would result in "long-term high energy consumption of substantial amounts of electricity, including electricity produced from non-renewable resources." The reverse osmosis process to remove the salt from seawater

involves passing the water through a series of filters at very high pressures which, at such a large scale of production, requires an enormous amount of energy. The proposed slant well subsurface intake technology will require even more energy to haul source water into the facility. In both economic and environmental terms, the desalination process is costly.

Although the desalination process would not itself emit greenhouse gases, the high energy use means a high consumption of fossil fuels and extensive environmental impacts associated with their use. The greenhouse gas emissions associated with increased consumption of fossil fuels may actually contribute to water shortages,[44] and thus solidify desalination as only a temporary fix and actually counter-productive in the long-run. The project will produce significant and unavoidable impacts even with mitigation on climate change and emissions.[45]

Energy intensive desalination may make sense to combat water shortages in certain areas of the world, where population already vastly exceeds available water resources because the cost of "the energy and CO2 for desalination [is] comparable to current values obtained from importing water hundreds of miles overland"[46] but this is not the case in Northern California, and is certainly not the case here, where the desalination facility is specifically sized to service future development and population growth.

ERF-34 cont.

CEQA requires that an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. CEQA Guideline 15130, subd. (a). The EIR/EIS determines that the Project's greenhouse gas effect is cumulatively considerable, but fails to properly discuss the cumulative impacts. This EIR improperly focuses solely on construction and operational impacts of the Project alone - without consideration of the greenhouse gas effect of the Project **in combination with** past, present and reasonably foreseeable project. By definition, the "cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." CEQA Guideline 15355, subd. (b).

Further, CEQA requires that the discussion of cumulative impacts reflect the severity of the impacts and their likelihood of occurrence. CEQA Guideline 15130(b). The Draft EIR contains no discussion of the severity of the cumulative greenhouse gas impacts.

The DEIR/DEIS Fails in its Assessment Growth Inducing Impacts

To comply with CEQA, an EIR must discuss the ways in which the proposed project could affect economic or population growth in the vicinity of the project and how the characteristics of the project could result in other activities with adverse impacts to the environment [CEQA Guidelines Section 15126.2(d)].

ERF-35

Specifically, CEQA Guidelines Section 15126.2(d) states that an EIR must:

44 Dickie, Phil, Making Water: Desalination: Option or Distraction for a Thirsty World?, June 2007.
45 Draft Environmental Impact Report for the Monterey Peninsula Water Supply Project, State of California Public Utilities Commission, 2015:4.11-15.
46 Reeb, Carol, Letter to State Water Board Members, April 5, 2012.

> "Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment"

Economic growth refers to the extent to which a proposed project could cause increased activity in the local or regional economy. Economic and population growth can be induced in a number of ways, including through the elimination of obstacles to growth, or through the stimulation of economic activity. Elimination of obstacles to growth refers to the extent to which a proposed project removes infrastructure limitations or removes regulatory constraints that could result in growth. For example, an increase in the capacity of utility or road infrastructure that is installed as part of the proposed project could allow either new or additional development in the surrounding areas. Increases in the population may tax existing community service facilities, requiring new facilities, the construction of which could cause potentially significant environmental impacts.

This is clearly the case in the Monterey Bay Area, which currently suffers from traffic congestion, overcrowded schools, depleted water basins, urban and industrial stormwater pollution, and overtaxed wastewater treatment and conveyance facilities. In short, the region's infrastructure is inadequate to accommodate current demands. Yet, as proposed, the Facility is designed to produce significantly more water than the current service area demand. The Facility's capacity was specifically designed to include estimated water needs for developing all currently vacant lots of record, and "bounce back" of the area's tourism industry, in addition to a replacement supply. In fact, providing sufficient water supplies to serve existing vacant legal lots of record, and accommodating tourism demand under recovered economic conditions, are stated "fundamental" objectives of the Project. (Goals that are perhaps at odds with another "fundamental" objective of minimizing project costs and associated water rate increases.) As the CEQA Guidelines recognize, development and population growth have numerous primary and secondary environmental impacts that must be analyzed in an EIR, including traffic impacts, air pollution, greenhouse gas emissions, and water pollution. Instead of evaluating these reasonably foreseeable impacts of the project, the EIR/EIS improperly writes off that analysis as an obligation of municipal planning processes.

ERF-35 cont.

In addressing potential cumulative growth-inducing effects, the EIR/EIS identified a number of planned projects that would provide new sources of potable water supply in Monterey County. "The Monterey Bay Regional Water Project (DeepWater Desal) (No. 34) would provide water to the City of Salinas as well as parts of Santa Cruz County. If both the MPWSP and DeepWater Desal were approved, water from DeepWater Desal could be used to support growth in other nearby areas such as northern Monterey County. The RUWAP Desalination Element (No. 31) would serve the Marina Coast Water District's Ord Community with approximately 1,000 afy of potable supply." It concludes that "[g]rowth induced by one or more of these cumulative water supply projects in combination with the proposed project would result in secondary effects of growth in Monterey County that are similar to,

ERF-36

but would likely be more severe and widespread than, those summarized above in Table 6.3-9; these impacts including increased traffic, noise, and air pollution and loss of open space and biological resources." However, none of these, or other likely impacts, are adequately described or analyzed in the EIR/EIS.

ERF-36 cont.

The EIR/EIS Provides Insufficient Analysis of Preferred Alternatives to Desalination

There is general consensus that brine discharge, and entrainment/ impingement from intake systems are serious threats to marine life. These concerns are reflected in California's recently adopted desalination policy. Monterey Bay is a particularly valuable environment, for both ecological and commercial reasons. In 2010, MBNMS, in collaboration with the California Coastal Commission, California Central Coast Regional Water Quality Control Board, and NOAA Fisheries, published Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary which implement the desalination action plan included in the MBNMS Final Management Plan. Stressing the importance and sensitivity of the Monterey Bay environment, the Guidelines state:

- Desalination should only be considered when other preferable alternatives for meeting water needs, such as increased conservation and wastewater recycling are maximized or otherwise determined not feasible, and it is clear that desalination is a necessary component of the region's water supply portfolio;

- Project proponent should provide a complete evaluation of the need for a desalination plant. This should include a background of the water supply situation and discussion and evaluation of alternatives that have been considered to obtain the necessary volume of water; including the potential to use other economically and environmentally preferable alternatives including increased conservation, brackish water desalination, and wastewater recycling to meet some or all of the water needs of a proposed project;

ERF-37

The EIR/EIS does not adequately consider the New Monterey Peninsula Water Conservation and Rationing Plan, which outlines a target water production goal of 12,002 afy,[47] nearly satisfying the service area demand of 12,270 afy, and fails to adequately evaluate the feasibility of desalination alternatives, such as wastewater and storm water reclamation, watershed restoration, and climate appropriate landscaping.

Thank you for your consideration of these issues.

Sincerely,

Fredric Evenson, for
Ecological Rights Foundation
Center for Biological Diversity
Our Children's Earth Foundation

47 2016 Monterey Peninsula Water Conservation and Rationing Plan. February 17, 2016.

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forU

Fort Ord Rec Users

March 24, 2017

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Re: Draft Environmental Impact Report/Environmental Impact Statement
Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

Fort Ord Rec Users (forU) is a community organization comprised of individuals and groups with a shared vision to preserve and enhance recreational use and the natural habitat of the former Fort Ord. ForU provides the following comments regarding the Draft Environmental Impact Report/Environmental Impact Statement (hereafter DEIR/EIS) issued in January 2017 for the California American Water Company (CalAM) project. ForU respectfully requests these comments be made part of the administrative record for all state and federal proceedings related to this project.

The planned source water for the CalAM Project will be the 180' aquifer of the Salinas Valley Groundwater Basin (SVGB). This source is not seawater, as erroneously represented in the DEIR/EIS. CalAM seeks approval to pump up to 27,000 AFY of brackish water from the 180' aquifer of the SVGB. FORU-1

A. BACKGROUND

It is undisputed that CalAM has no water rights in the SVGB. Among those with water rights in the SVGB is the public water purveyor for the City of Marina and the former Fort Ord, Marina Coast Water District (MCWD).

Governing agencies cannot effectively evaluate feasibility, nor reliably make any finding that harm will not occur, without a full understanding of the existing obligations of those with legal rights to water in the SVGB.

Former Fort Ord land consists of 28,000 acres—equivalent to the square footage of the City and County of San Francisco. The controlling agency for the reuse of Fort Ord, the Fort Ord Reuse Authority (FORA) was created by legislation in 1994 in the Fort Ord Reuse Authority Act (CA Government Code Section 67650 et seq.) The County of Monterey and cities of Marina, Seaside, Del Rey Oaks, Sand City, Salinas, Pacific Grove, Carmel, and Monterey developed and adopted the Fort Ord Reuse Plan in 1997, in cooperation with the United States Army, Marina Coast Water District, University of California, California State University, Monterey Peninsula College, Monterey Unified School District, and Transportation Agency of Monterey County, among other entities. FORU-2

The plan sets forth the addition of 6,160 new homes on the former base, as well as commercial square footage and the growth of California State University, Monterey Bay, whose student population is expected to quadruple to 25,000 in ten years. The total population planned for former Fort Ord is 37,000 persons, on properties primarily within lands belonging to the County of Monterey, Marina, and Seaside.

To understand the scope of this planned growth, note that Marina has a population of about 22,000 and Seaside, 28,000. For the 6,160 dwellings anticipated, only 685 residential permits were issued from 1997–2016. More than 2,000 homes are presently approved and entitled—but unbuilt—within City of Marina's as-yet-undeveloped portion of the former fort. **The demands of this planned growth will be a heavy burden**—and the strain on our severely limited water resources is yet to be felt.

One-hundred percent (100%) of the water source for this Fort Ord growth is the SVGB, and most of the production is required to come from the 180' and 400' aquifers. In 1993, the U.S. Army transferred to the Monterey County Water Resources Agency 6,600 AFY of water from the SVGB, as part of its transfer of Fort Ord land to the civilian sector. (See Agreement No. A-06404 "Agreement Between the United States of America and the Monterey County Water Resources Agency Concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency.")

The recorded "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" was entered into by land-owning jurisdictions, MCWD, the City of Marina, and Monterey County Water Resources Agency in 1996 and remains an enforceable agreement today. The express purpose of the agreement is to reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin. The agreement sets forth terms and conditions for annexation in the future, however, the pumping limitations on the three aquifers of the SVGB were effective immediately. In particular, this annexation agreement specifies that MCWD is to limit its pumping of the 900' aquifer to a maximum of 1400 AFY for Fort Ord and **the balance of 5,200 AFY is to be sourced from the 180' and 400' aquifers.**

FORU-2 cont.

Of importance to any ruling on this MPWSP are MCWD's rights and needs in the upper aquifers of the SVGB. To meet its water production for the build-out of Fort Ord, MCWD is restricted to the upper aquifers as its source for 5200 of the 6600 AFY. CalAM seeks project approval to pump up to 27,000 AFY from *the same aquifer.*

Through an agreement executed June 7, 2000, and recorded June 23, 2000, the U.S. Army transferred all water rights and water infrastructure to MCWD, which became the water purveyor for the entire 28,000 acres of former Fort Ord. (See Article 5., Water and Sewer Rights, of the "Memorandum of Agreement Between the United States of America, Acting by and Through the Secretary of the Army, United States Department of the Army and the Fort Ord Reuse Authority for the Sale of Portions of the Former Fort Ord Located in Monterey County, California." In 1998, FORA entered into a "Water/Wastewater Facilities Agreement" dated

March 31, 1998, with MCWD. This agreement adopts and affirms the pumping limitations of the above-referenced 1993 and 1996 agreements, to wit:

(a) a maximum of 1400 AFY from the 900' foot aquifer for former Fort Ord land; and

(b) up to 5200 AFY from the 180' and 400' aquifers

to serve all present and future development. These figures are intended to serve current users and those "reasonably expected to use" water in the future with the build-out of Fort Ord.

FORU-2 cont.

These facts are recited because your understanding of the burgeoning population growth and development of the 28,000 acres served by MCWD is critical in considering any approvals for any project that competes for pumping rights in the severely overdrafted SVGB.

B. CALAM IS PUMPING FROM THE SALINAS VALLEY GROUNDWATER BASIN

CalAM is pumping water from the SVGB, not "seawater" as represented.

1. CalAM erroneously represents the MPSWP as "designed to take supply water from the ocean via underground slant-wells that draw water from the earth underneath the ocean." (DEIR/EIS/EIS p. 2–30)

2. All subsurface slant-well pumping by the MPWSP will be from the 180' aquifer of the SVGB—not from "the submerged lands of the Monterey Bay National Marine Sanctuary." (DEIR/EIS p. 3–15)

3. The brackish coastal water of the SVGB is the intended water source of the project. This reality became glaringly obvious when "the slant well clusters were moved farther inland" to address coastal erosion. (DEIR/EIS p. ES–16)

FORU-3

C. CALAM HAS NO WATER RIGHTS IN THE SALINAS VALLEY GROUNDWATER BASIN—THE PROJECT IS NOT FEASIBLE.

CalAM has neither water rights in the SVGB nor a credible legal claim to the supply water for this project. The project must therefore be deemed out of the question.

1. CalAM admits it has no legal right to extract groundwater from the Salinas Valley Groundwater Basin.

FORU-4

2. To establish a feasible claim to water rights, CalAM must prove no other legal user of water is injured. Existing users of the SVGB, including MCWD will be injured if this project is approved. FORU-4 cont.

3. Alternatives exist by which CalAM and the Peninsula may secure water. FORU-5

D. GROUNDWATER FROM SVGB MUST STAY IN THE SVGB UNDER STATE LAW

Parties with legal rights to SVGB water have grave concern as to the adequacy of SVGB aquifers for current and future water demand. This problem is not considered in the environmental review. FORU-6

1. MCWD pumping is to increase from current levels of 3,000–4,000 AFY to 10,000 AFY with the build-out of Fort Ord. Of this total, 5200 AFY must be taken from the 180' and 400' aquifers. MCWD and others with water rights are presently pumping from these aquifers.

2. Water produced by the CalAM project will be exported from the SVGB in defiance of state law. None of the water produced by the MPSWP will serve City of Marina or Fort Ord. FORU-7

E. CALAM FAILS TO PROVE NO HARM

Overpumping of the 180' and 400' SVGB aquifers has increased seawater intrusion over the past 70 years (Monterey County Water Resources Agency Historic Seawater Intrusion Map 12-16-2014). FORU-8

CalAM admits a critical issue is whether implementation of the MPWSP and operation of the slant well will exacerbate seawater intrusion in the SVGB. CalAM has failed to provide credible evidence that its pumping of an additional 27,000 acre feet per year will have any other result than acceleration of seawater intrusion.

F. CALAM FAILS TO DISCLOSE THE DEGREE OF UNCERTAINTY IN ITS MODELING

There is little knowledge of the interconnections between the 180', 400', and 900' aquifers of the SVGB; the risks the project poses to the SVGB are therefore unknown and unpredictable. Yet these aquifers are the sole sources of water for Marina and Fort Ord. FORU-9

Increased pumping will further degrade the quantity and quality of water, making water more expensive to those dependent upon the SVGB, including MCWD customers. CalAM's project modeling lacks baseline data and therefore lacks analytical context. CalAM's failure to follow scientific process is unacceptable. FORU-10

G. CAL AM REJECTS USE OF CREDIBLE TECHNOLOGY THAT CAN REDUCE UNCERTAINTY

CalAM unreasonably rejects use of electrical-resistivity tomography (ERT) for mapping seawater intrusion and the fragile hydrogeology of the SVGB. ERT is readily available, data rich, non-intrusive, and low cost. ERT data can be expected to significantly reduce the degree of uncertainty. Readily attainable imaging is especially critical in the high-risk context of water. CalAM's failure to use ERT amounts to gross negligence in today's technological environment. FORU-11

H. THERE HAVE BEEN NO SUCCESSFUL, COMPLETED SLANT WELLS FOR SUBSURFACE OCEAN DESALINATION ANYWHERE IN WORLD

CPUC has shown poor diligence in its evaluation of technical, legal, and financial challenges. To date, there is no convincing evidence that the project is a viable option for water procurement for the Monterey Peninsula. FORU-12

1. Santa Barbara, Dana Point, and Santa Cruz are among those entities that explored, rejected, or abandoned slant-well technology.

2. Breakdowns and interruptions in the operation of the CalAM test well raise doubts as to the reliability and appropriateness of the technology.

3. There is no consideration or review of test results in the DEIR/EIS. (DEIR/EIS p. 3–15)

4. The uncertainty of a successful slant-well project weighs heavily against the investment of **public** funds, resources, and trust.

FORU-12 cont.

I. CALAM'S PROJECT IS *UNJUST.*

CalAM's source-water facility is within the jurisdiction of a public water agency, MCWD. CalAM's operations will interfere with and harm MCWD's ability to provide water to its 30,000 ratepayers and the anticipated development of Fort Ord at a *reasonable cost*; yet the DEIR/EIS dismisses MCWD's rights and responsibilities in a single line, citing MCWD's potential political interference. Assessment of adverse impacts of a project under CEQA is NOT synonymous with "harm or injury" to water-rights holders. The un-rightful taking of water from the SVGB is injurious to those with water rights and therefore legally sufficient and appropriate for denial of this project.

FORU-13

CalAM's stated purpose is to appropriate water to which it has no right and export it to users on the Monterey Peninsula. A just regional perspective forbids that one water purveyor take unlawfully from another, especially to benefit the wealthy and influential at the expense of the politically weak.

1. CalAM's arrogation of SVGB water will greatly impair and diminish MCWD's ability to provide an affordable, long-term, sustainable water supply for the City of Marina and Fort Ord.

2. The value of homes and businesses in Marina will be further suppressed by the addition of a *third* regional plant within the city's sphere of influence. Marina already shoulders the adverse environmental burdens and stigma of proximity to regional wastewater and waste facilities.

FORU-14

3. The project degrades Marina's coastline and undermines the benefits intended by

FORU-15

the designation of Marina State Beach and Fort Ord Dunes State Park. FORU-15 cont.

4. The project sacrifices the people of Marina's publicly controlled water purveyor, Local Coastal Plan, local vision, and future prospects to the interests of a profit-seeking corporation with a long history on the Monterey Peninsula of aggressive self-dealing. FORU-16

For the foregoing reasons Fort Ord Rec Users request the CPUC deny certification of the Draft Environmental Impact Report/Environmental Impact Statement issued in January 2017 for the California American Water Company (CalAM) project and deny project approval. FORU-17

Respectfully submitted,

Margaret Davis

For FORT ORD REC USERS
5 Via Joaquin Suite C
Monterey CA 93940
info@forU.us

8.6.12 Just Water (JW)

JUST WATER
A CITIZENS ACTION GROUP

PETITION TO STATE AND LOCAL PUBLIC AGENCIES REGARDING THE CAL-AM SLANT WELL DESALINATION PROJECT (MPWSP) SITED ON CEMEX PROPERTY IN THE CITY OF MARINA.

We, the undersigned, oppose further project/permit approvals for Cal-Am's Slant Well project for one or more of these reasons:

- Cal-Am has ***no water rights*** in the Salinas Valley Groundwater Basin. JW-1
- This project has ***inadequate proof of "No Harm"*** to the Basin from seawater intrusion. JW-2
- Cal-Am plans to ***take groundwater from Marina Coast Water District*** (MCWD) jurisdiction and pump it to another jurisdiction. JW-3
- This project ***ignores regional justice*** for a sustainable and protected water source. JW-4

Just Water promotes the fair and equitable use and development of sustainable water resources without adverse consequences to the needs and rights of any others.

	PRINT NAME	SIGNATURE	ADDRESS AND CITY
1	Cindy Atalima		484 Sunrise Place Marina, CA 93933
2	Genghis Atalima		" " " " " "
3	~~Keith Mitchell~~	~~K Mitchell~~	
4	Jill Stoffers		274 Weber Ct Marina, CA 93933
5	Martha Ayon		PO Box 2687 Salinas, Ca 93902
6	Efrem Valentin		13917 Sherman Blvd East Garrison CA 93933
7	Maria Ceja		13917 Sherman Blvd East Garrison CA 93933
8	Rebecca Henrikson		13601 Sherman Blvd East Garrison, CA 93933
9	John Perry		353 RANDOLPH AVE MARINA, CA 93933
10	Sean Brown		

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	PRINT NAME	SIGNATURE	ADDRESS AND CITY
1	Michele		Visalia
2	Charles Pokovich	Charles Pokovich	Marina
3	Anna		Marina, CA
4	Martha		Salinas
5	William Pierce		Salinas
6	Don Larson		Marina
7	Abraham Hdz		Marina
8	LARISE BAKER	Larise Baker	Seaside
9	Darin DeLeon		Marina
10	Nicole Irigoyen		Marina

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	PRINT NAME	SIGNATURE	ADDRESS AND CITY
1	Berenice Melchor	Berenice Melchor	235 Live oak Rd. Royal oaks, CA 95076
2	Susan	Susan Nine	70 Via Encanto Monterey, CA
3	MARK		" "
4	BOB NORRIS	Bob Norris	407 MILRAY CT, MARINA, CA
5	Linda Norris		407 Milray Ct Marina CA
6	VANLUONG		1712 W. SHARON RD SANTA ANA, CA 92706
7	Joei Beganho	Joei Beganho	637 Carmelita Dr #10 93901
8	Jesus Higuera		321 Hatten Rd Seaside, CA
9	Mary Keesling	Mary Keesling	138 10th ST Pacific Grove 93950
10			

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	PRINT NAME	SIGNATURE	ADDRESS AND CITY
1	Melvina Sanchez-Vega		418 West Street Salinas, CA 93901
2	Nancy Gutierrez		832 W. 2ND St. Hollister, CA 95023
3	Richard Boynton		251 Hillcrest Ave. Marina CA 93933
4	Jazmin Jurado		2134 N Main St Salinas, CA 93906
5	RIO TURRINI-SMITH		25631 Ryan place carmel, ca
6	Levi Stafford		2110 DALY AVE San Luis Obispo, CA
7	Darcy Russak		26070 Rio Vista Dr Carmel CA 93923
8	Gilbert Nuñez		191 Paddon Pl Apt 6
9	Steve Crean		55 Sacheo valley pinedale
10	TRINA WILLIAMS		403 HAMILTON AVE SEASIDE CA 93955

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	PRINT NAME	SIGNATURE	ADDRESS AND CITY
1	Vanessa Barbosa		221 MORTIMER LN. Marina CA, 93933
2	Melvin Jimenez		1522 Berylwood Cir Salinas, CA 93906
3	CHRISTINE STHAN		24 SUSAN ST ROYAL OAKS, CA 95076
4	Phillip Pinson		24 SUSAN ST ROYAL OAKS, CA 95076
5	Lori Everman		3139 Crestview Court Marina CA 93933
6	Angela M Taylor		3100 Eucalyptus St #4 Marina CA 93933
7	Blake O'Neal		555 ocean Ave Monterey, CA 93933
8	Guna Hebbar		295 Quebrada Del Mar Marina, CA 93933
9	V. JULIAN		1597 HIGHLAND, SEASIDE 93955
10	Jacinto M. Salcedo		1805 Wedemeyer Ct Marina, CA 93933

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PRINT NAME	SIGNATURE	ADDRESS AND CITY
1 Kristen Martinez	Kristen Martinez	11041 Geil St Castroville
2 Sara Galindo	Sara Galindo	3246 Steven Ct Marina, CA 93933
3		
4		
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March 27, 2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108
mpwsp-eir@esassoc.com

SUBJECT: DRAFT EIR/EIS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT

Dear Staff:

LandWatch Monterey County has reviewed the draft EIR/EIS for the Monterey Peninsula Water Supply Project (MPWSP) and seven (7) alternatives. The MPWSP includes a 9.6 millions gallons/day (mgd) desalination plant combined with Aquifer Storage and Recovery (ASR), PureWater Monterey County and transmission infrastructure. An alternative, which includes a 6.4 mgd desalination plant combined with ASR and the PureWater Monterey County Project (Alternative 5a), was determined to be the environmentally superior project. We have the following specific comments:

1. The DEIR states, "In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water." (DEIR p. 2-35) Please explain the source of these percentages and why they were selected for analysis. Please also explain how the upper limit of 12% was determined. LWMC-1

2. Table 5.2 (Appendix E2) includes data regarding the amount of return water required for various scenarios. Under a 12% scenario for the CEMEX site for the years 2012 and 2073, total return water is 2,085 acre-feet/year (af/yr). Table 2-4 (DEIR p. 2-18) identifies produced water in excess of demand of between 1,936 af/yr and 2,636 af/yr. Under a 12% scenario for the Potrero Road site for the years 2012 and 2073, total return water is identified as 3,242 af/yr. Thus, under various scenarios, there would be insufficient water to meet demand. Please explain how the MPWSP meets project demand under these conditions. LWMC-2

3. The DEIR states, "The Management Plan indicates that the population of CalAm's entire Monterey District was 99,396 in 2010 and that the combined population of the main system and the Bishop, Hidden Hills, and Ryan Ranch satellite distribution systems, which would also be served by the proposed project, was 95,972." (DEIR p. 2-15) Please explain why the combined population of 95,972 is less than the population of CalAm's entire district. LWMC-3

4. The DEIR states, "The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR/EIS should be construed as the CPUC's opinion regarding such LWMC-4

rights, except to the extent that the CPUC must determine whether there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible." (DEIR p. 2-30) Please identify the criteria the CPUC will use to determine if the project is feasible. Since the question of whether or not CalAm has water rights will only be resolved until after project approval, please address how water rights will be considered under the criteria.

LWMC-4 cont.

5. The DEIR identifies project greenhouse gas emissions (GHG) emissions total 8,370 metric tons per year as a significant and unavoidable impact (DEIR Table 4.11-5). Preparation of a GHG Emission Reduction Plan is the proposed mitigation measure.

   The deferral of the formulation of that plan, which is not known to be feasible, is not permissible. *Communities for a Better Environment v. City of Richmond* (*"CBE v. Richmond"*) (2010) 184 Cal.App.4th 70, 94; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 308-309.

   Deferral is also precluded because no performance specification is provided. The requirement that the Plan be "state-of-the-art" is not a meaningful performance specification because it fails to provide objective criteria for success. *CBE v. Richmond, supra,* 184 Cal.App.4th at 95.

   Regarding the purchase of cap and trade offsets, the DEIR concludes,

   > The fossil fuel power plants that would generate the electricity that would be used by the project are already subject to and participate in CARB's cap-and-trade program. For these reasons, it does not make practical sense to recommend mitigation to offset emissions associated with PG&E's power portfolio because those emissions have already been regulated pursuant to cap-and-trade legislation and are therefore considered to be consistent with CARB's current strategy for reducing GHG emissions consistent with the State's GHG reduction goals. As a result, this EIR/EIS focuses on mitigation strategies that are aimed at reducing the project's consumption of electricity from PG&E's electrical power grid. (DEIR P. 4.11-19)

   The DEIR's stated threshold of significance is 2,000 tons of CO2e. As long as emissions have not been mitigated below that significance threshold, the impact remains significant. Accordingly, the project must implement all feasible mitigation because CEQA bars project approval "if there are feasible alternatives . . . or mitigation measures available" that would substantially lessen the project's significant environmental effects. P.R.C., § 21002; Guidelines, § 15021(a).

   There is no basis for the DEIR's claim that mitigation via offsets is not "practical." A business may buy GHG emission allowances under the cap-and-trade system from other entities that have reduced emissions below the amount of allowances held.

   The EIR should be revised to propose additional mitigation, including purchase of GHG emission offsets under the cap and trade program or under some other arrangement for purchase of offsets.

LWMC-5

6. Since the proposed project and environmentally superior project would generate surplus water (DEIR Table 2-4), a smaller, less energy-demanding desalination plant should be feasible. The EIR should be revised to propose and evaluate a smaller scale alternative that reduces significant and unavoidable climate change impacts.

LWMC-6

7. Chapter 6's analysis of growth inducement resulting from the proposed project finds that the allocation of the hospitality industry bounce-back is 200 af/yr over-estimated (DEIR p. 6-16). It

LWMC-7

further finds that there are no sufficient data to support the estimate of 1,180 af/yr for lots of record (DEIR 6-17). The EIR should be revised to propose and evaluate a smaller scale alternative that reduces output by at least the amount of the over-estimated bounce-back as well as the amount of surplus water discussed in comment 6 above because a smaller scale alternative would reduce significant and unavoidable impacts such as climate change impacts.

LWMC-7 cont.

8. The DEIR also concludes that once the water is allocated to local jurisdictions by the MPWMD, it could be used for any land uses including the 325 af/yr for the Pebble Beach Entitlement and the 500 af/yr for the hospitality industry. (DEIR 6-17) The finding that the 2005 af/yr could be used for any purpose, just not those identified above, is inconsistent with the following project objectives of the MPWSP:

> Provide sufficient water supplies to serve existing vacant legal lots of record; and accommodate tourism demand under recovered economic conditions.

This finding identifies a major flaw in the project and undermines its credibility given the overwhelming support for water for legal lots of record. Without a limitation on the use of 1,810 af/y for legal lots of record, the same issue in future applications will emerge if water for legal lots is allocated to other land uses and the need for legal lots remains unmet.

LWMC-8

Instead of estimating the growth potential associated with 2005 af/yr beyond existing demand, the analysis is based on the assumption that the water for growth is addressed in adopted general plans and their environmental documents. The DEIR provides an extensive list of significant impacts identified in various general plans and concludes that the growth would be significant and unavoidable. The most recently adopted general plans by local jurisdictions within the boundary of the MPWMD is 2010. All others were adopted between 1994 and 2005. Any conclusions regarding the significance of impacts is underestimated because base-line conditions have changed dramatically during the past 20 plus years, e.g., traffic, green house gas emissions, visual degradation, scenic and biological resources, etc.

Based on an assumption of 0.25 af/yr per dwelling unit, a total of 8,020 dwelling units could be constructed within the MPWMD. The impacts of over 8,000 dwelling units would be staggering, e.g., at 9.5 trips per unit, a total of 76,190 trips would be added to an already over-burdened transportation system. While this represents a worst-case scenario, it identifies a potential outcome that was unintended by those who have supported the proposed project.

LWMC-9

The DEIR should be revised to include a mitigation measure limiting the use of water in excess of current demand to the actual future demand for lots of records, hospitality bounce-back and the Pebble Beach entitlement to those uses.

If the CPUC determines that such mitigation is not legally feasible, the EIR should be revised to identify a potentially significant impact if surplus water is used for purposes other than lots of records, hospitality bounce-back and the Pebble Beach entitlement. This determination should be coupled with a finding under CEQA Guidelines § 15091(a)(2) that the required mitigation in the form of water allocation priorities is "within the responsibility and jurisdiction of another public agency" and that "such changes have been adopted by such other agency or can and should be adopted by such other agency." In this case, those other agencies may include local land use control jurisdictions and the MPWMP.

LWMC-10

9. The DEIR states:

> 2.6.4 Effect of Annexation Agreement
> In 1996, the MCWRA, the MCWD, the City of Marina, the owners of Armstrong Ranch and then owners of the CEMEX property (RMC Lonestar) entered into an *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* ("Annexation Agreement").37 The agreement established a framework for management of groundwater from the Basin and included terms and conditions for the annexation of lands (including the Armstrong Ranch and CEMEX properties) to MCWRA's benefit assessment zones as a financing mechanism to fund groundwater resource protection and reduction of seawater intrusion (MCWD, et al. 1996).
>
> Under the Annexation Agreement, MCWD's authority to withdraw potable groundwater from the Basin would be limited to 3,020 afy year until such time as a plan for development of a long-term potable water supply capable of mitigating seawater intrusion was developed and implemented. <u>If and when the Armstrong Ranch property were annexed to MCWD's benefit assessment zones</u>, non-agricultural use of Basin groundwater withdrawn from that property would be capped at 920 afy. If and when the CEMEX property was annexed to MCWD's benefit assessment zones, withdrawal of groundwater from that property would be capped at 500 afy." (DEIR, p. 2-41, emphasis added.)

LWMC-11

The 1996 Annexation Agreement states:

> 7.2 Quantity Limitations. <u>Commencing on the effective date of this Agreement and Framework</u>, Lonestar shall limit withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 afy of groundwater. (Annexation Agreement attached, emphasis added).

The DEIR's statement that the 500 afy limitation is contingent on annexation is inconsistent with the statement in the Annexation Agreement that the limitation occurs on the effective date of the agreement.

10. In developing thresholds of significance for groundwater impacts, the DEIR purports to take cognizance of the forms of potential injury identified by the SWRCB 2913 opinion on water rights and groundwater harms. (DEIR, 4.4-52.) However, the DEIR's identified thresholds of significance do not include "a reduction in groundwater elevations that requires users to expend additional pumping energy to extract water from the Basin" as specified by the SWRCB opinion (DEIR, p. 4.4-52 (listing SWRCB's "foreseeable injuries").) Instead, in defining and applying significance thresholds, the DEIR only considers reductions in groundwater elevations to be a significant impact if that reduction leads to physical damage from exposed screens of wells or reduced well yields. (DEIR, p. 4.4-41 (thresholds of significance), p. 4.4-68 (project-specific impact conclusion), p. 4.4-90 (cumulative impact conclusion).) The EIR should be revised to assess whether the acknowledged permanent reduction in groundwater elevations would requires users to expend any additional pumping energy. If so, the EIR must specify and apply a threshold of significance for increased pumping energy use as well as a threshold for what constitutes a considerable contribution for increased pumping energy use in the cumulative context, as discussed below.

LWMC-12

Furthermore, the DEIR does not define what constitutes a significant reduction in well yields due to lower groundwater levels, even though the DEIR implies that some level of reduced yield would be a significant impact. The EIR should be revised to specify and apply a threshold of significance for reduction in well yields as well as a threshold for what constitutes a considerable contribution to reduced well yields in the cumulative context, as discussed below

LWMC-13

11. Cumulative analysis must consider all sources of "related impacts," including those past, present, and potential future projects. Guidelines, § 15130(a)(1), (b); *Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 394 (omission of foreseeable future sources is error); *Environmental Protection Information Center v. California Dept. of Forestry and Fire Protection* ("*EPIC*") (2008) 44 Cal.4th 459, 525 (omission of relevant past sources is error). Thus, CEQA requires an agency to identify cumulative sources either by listing the projects or by providing "a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect." Guidelines, § 15130(b)(1)(A), (B).

    The DEIR provides a list of future projects that it uses for cumulative analysis of various resource area impacts. (DEIR, pp. 4.1-15 to 4.1-24.) This list includes numerous future water-using projects that would contribute to impacts groundwater resources, such as development of residential and commercial land uses in the Salinas Valley Groundwater Basin ("SVGB"). Many of the future water-using projects are located within the western half of the Pressure Area, which is the geographic scope identified as the area of cumulative effect for the cumulative water supply analysis. (DEIR, p. 4.4-87 to 4.4-88.) Many other projects are outside of the Western half of the Pressure Area, but would still contribute to that cumulative effect. For example, pumping in the Eastside Area is known to contribute to the depletion of the Pressure Area and to seawater intrusion.

    LWMC-14

    The DEIR's analysis of cumulative groundwater resource impacts purports to use the "list of projects" approach to identifying future projects that affect the groundwater resources rather than the "summary of projections" method. (DEIR, p. 4.4-88.) However, the DEIR includes in that list of projects only three projects, all of which are water supply or groundwater management projects: RUWAP, SVWP Phase II, and the Interlake Tunnel. Omission of future water-using projects within the geographic scope of the cumulative analysis is an error. The thresholds of significance and analysis are based on effects such as aquifer depletion and seawater intrusion, and these effects are clearly determined by total groundwater demand from all sources.

    The groundwater analysis in DEIR Appendix E-2 contains a future impact scenario for the year 2073, but the only variable that was apparently changed in that scenario is the sea level assumption. There is no indication in the EIR that the 2073 scenario incorporates a revised groundwater demand projection for the 2073 scenario. If the analysis did incorporate any revision to demand assumptions, it should be made clear how it was derived and what projects were included from the list of projects in the DEIR's Table 4.1-2.

    The EIR should be revised and recirculated to either 1) explain and provide any revision to future demand assumptions used in the cumulative analysis, or 2) provide a cumulative impact analysis that includes the effect of future water demand within the SVGB that contributes to the cumulative effects of aquifer depletion and seawater intrusion.

Furthermore, it is inappropriate to treat water management and water supply projects that are intended to mitigate existing impacts to the aquifer as projects that cause related impacts because the kind of impacts that matter in cumulative analysis are adverse impacts. Indeed, the DEIR's discussion of the significance of cumulative impacts appears to rely on the expected additional benefits of these projects. Since these proposed future projects are neither certain nor identified as enforceable conditions of this project's approval, their beneficial effects should not be assumed in evaluating cumulative significance. Mitigation must be enforceable. Guidelines, § 15126.4(a)(2). LWMC-15

12. An agency may not arbitrarily limit the geographic scope of cumulative analysis or omit relevant projects. *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721-724 (error to confine cumulative air quality analysis to County where evidence showed impacts were caused by basin-wide sources); *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1213-1214 (ignoring other impact sources was "overarching legal flaw"). Thus, an agency must "define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used." Guidelines, § 15130(b)(3), emphasis added; *Citizens to Preserve the Ojai v. County of Ventura* (1985) 126 Cal.App.3d 421, 126 Cal.App.3d at 430 (failure to explain limited scope of cumulative analysis is error). LWMC-16

    The DEIR limits the geographic scope of analysis to the western half of the Pressure Area. (DEIR, p. 4.4-87.) The EUIR must be revised to explain the basis of that geographic limitation.

    Again, note that CEQA distinguishes the geographic scope of the "area affected by the cumulative effect" and the identification of the "conditions contributing to the cumulative effect." Guidelines, § Guidelines, § 15130(b)(1)(A), (B). Thus, even if the geographic scope of the area affected by the project were limited to the western half of the Pressure Area, groundwater pumping in other areas that also contributes to the cumulative effect should be identified in the "list of projects" or "summary of projections."

13. The DEIR states that in evaluating cumulative impacts, where its analysis finds that the cumulative impacts of past, present, and future projects would be significant and adverse, the DEIR then determines whether the project's contribution would be considerable. (DEIR, p. 4.1-13.) This approach would be consistent with CEQA's requirement for a two-step process that requires an agency to make the following determinations: (1) whether the impacts of the project in combination with those from other projects are cumulatively significant, and (2) if so, whether the project's own effect is a considerable contribution. Guidelines, § 15130(a); see Kostka and Zischke, *Practice Under the California Environmental Quality Act* (2nd Ed., 2011 Update), §§ 13.39. 15.52. However, as explained below, both the step-one and step-two determinations should be made explicitly, because an agency must first determine the severity of the cumulative impact in order to determine whether the project contribution is "considerable." LWMC-17

    Cumulative analysis must recognize that "considerable contribution" threshold may be an "individually minor" impact where the resource is severely degraded. In particular, an EIR may not conclude a cumulative impact is insignificant merely because the project's individual contribution to an unacceptable existing condition is, by itself, relatively small. *Los Angeles Unified School Dist. v. City of Los Angeles* ("*LAUSD*") (1997) 58 Cal.App.4th 1019, 1025-1026 (rejecting EIR's reasoning that individually minor noise increments would necessarily be cumulatively insignificant); *Communities for a Better Environment v. California Resources Agency* ("*CBE v. CRA*") (2002) 103 Cal.App.4th 98, 117-118, 121 (invalidating CEQA

Guidelines provision that de minimis impacts are necessarily less than considerable). Thus, the proper threshold for the step two determination whether a project's contribution to an existing significant impact is considerable must reflect the severity of the cumulative problem: "the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant." *CBE v. CRA, supra*, 103 Cal.App.4th at 120. *see also* Guidelines, §§ 15355(b), 15065(a)(3); LAUSD, supra, 58 Cal.App.4th at 1024-25.

LWMC-17 cont.

The DEIR identifies three potential cumulative impacts: substantial depletion or interference with groundwater supplies, violation of groundwater standards, and degradation of water quality standards. (DEIR, p. 4.4-88). However, the DEIR fails to clarify whether each of these three potential cumulative impacts to groundwater resources are significant. That is, for each of these potential cumulative impacts, there is no "step-one" determination as to whether there is a significant cumulative impact from all projects taken together, and, if so, how severe that impact is. Without that determination, there is no basis to conclude that this project's contribution is less than considerable. As explained, determining the threshold for "considerable contribution" requires assessment of the severity of the cumulative impact. *CBE v. CRA, supra*, 103 Cal.App.4th at 120.

LWMC-18

The EIR should be revised to provide an assessment as to whether all existing and future projects result in a significant cumulative impact by causing substantial depletion or interference with groundwater supplies, violation of groundwater standards, or degradation of water quality standards. If so, the EIR should identify the severity of that impact and the threshold for determining whether an additional project would make a "considerable contribution."
The EIR's discussions of "direct and indirect effects," e.g. the project-specific analyses in Impact 4.4-3 and 4.4-4, use a threshold of significance that represents the level of effect that would be considered significant if caused by the project by itself. However, even if these project-specific impacts are not by themselves significant, they may nonetheless constitute a considerable contribution to significant cumulative impacts.

The failure to consider cumulative depletion or interference with groundwater supplies is particularly problematic. As discussed below, without the return water provisions, the project would make a considerable contribution to an existing significant cumulative impact, i.e., the aquifer depletion and declining groundwater levels in the Pressure Subarea. The EIR should acknowledge that the return water provisions are essential mitigation for this contribution.

LWMC-19

In particular, the EIR concludes that the change in available water supply in the SVGB caused by the project itself is less than significant in part because the area of influence, measured by the zone suffering a one-foot drawdown, extend only about 4 miles without the mitigating effects of the return water provision. (DEIR, p. 4.4-47 to 4.4-59.) This conclusion is in the discussion of "direct and indirect effects," i.e., the project-specific impacts. However, the EIR fails to consider whether a drawdown of less than one foot may nonetheless be a considerable contribution to a significant cumulative impact, particularly in the context of declining groundwater levels due to all cumulative projects.

Clearly, there is a significant cumulative impact in the form of declining groundwater levels and aquifer depletion in the Pressure Subarea.[1] The Pressure Subarea is one of the eight subbasins

LWMC-20

[1] Brown And Caldwell, State of the Salinas River Groundwater Basin, January, 2015, available at http://www.mcwra.co.monterey.ca.us/hydrogeologic_reports/documents/State_of_the_SRGBasin_Jan16_2015.pdf.

making up the Salinas Valley Groundwater Basin (SVGB).[2] Overdraft in the Pressure Subarea has averaged about 2,000 acre-fee per year ("afy") from 1944 to 2014, and the Basin as a whole is "currently out of hydrologic balance by approximately 17,000 to 24,000 afy."[3] Pumping from the Basin has exceeded recharge since the 1930s, causing seawater intrusion as inland groundwater elevations dropped below sea level, permitting the hydraulically connected seawater to flow inland.[4]

The California Department of Water Resources (DWR) is required by the Sustainable Groundwater Management Act to designate as "critically overdrafted" basins those groundwater basins for which "continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."[5] DWR identified the 180/400-Foot Aquifer of the Salinas Valley Groundwater Basin as critically overdrafted in January 2016.[6]

LWMC-20 cont.

The DEIR acknowledges that a "net deficit in aquifer volume" would be a significant impact. (DEIR 4.4-41.) Accordingly, the current groundwater pumping from all cumulative projects is clearly causing a significant cumulative impact in the form of aquifer depletion leading to a net deficit, i.e., the serious and continuing overdraft conditions identified by DWR and the MCWRA reports. The DEIR also acknowledges that declining groundwater levels are a significant impact, at least if they lead to well yield reductions or exposed screens and pumps. (DEIR, p. 4.4-41).

Again, the current groundwater pumping from all cumulative projects is clearly causing a significant cumulative impact in the form of declining groundwater levels in the Pressure Area.[7] The project will make some contribution to the net deficit in aquifer volume and declining groundwater levels because it will change the balance of flows and remove water from the aquifer so as to cause a permanent depression in groundwater elevations. The DEIR acknowledges that the project, without provision of return water, would cause a drawdown of 1 foot in areas that are 4 miles inland. It would also cause drawdowns of some lesser magnitude in areas farther than 4 miles. These impacts would be mitigated by provision of return water. The EIR should be revised

LWMC-21

[2] MCWRA, Protective Elevations to Control Seawater Intrusion in the Salinas Valley ("Protective Elevations"), 2013, p. 2, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/documents/ProtectiveElevationsTechnicalMemorandum.pdf; Brown and Caldwell, State of the Salinas River Groundwater Basin, 2015, Section 3.

[3] Brown And Caldwell, State of the Salinas River Groundwater Basin, January, 2015, pp. 6-3, available at http://www.mcwra.co.monterey.ca.us/hydrogeologic_reports/documents/State_of_the_SRGBasin_Jan16_2015.pdf.

[4] MCWRA, Protective Elevations, pp. 4—5; Brown and Caldwell, State of the Basin, pp. 2-4, 5-2; MCWRA, Salinas Valley Water Project Draft EIR ("SVWP DEIR"), 2001, pp. 1-2 to 1-8, available at http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_I/documents/DEIR_EIS_2001/2001%20SVWP_DEIR_2001.pdf.

[5] DWR, Critically Overdrafted Basins, available at http://www.water.ca.gov/groundwater/sgm/cod.cfm.

[6] DWR, Critically Overdrafted Basins (1/2016), available at http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf.

[7] As discussed above, the DEIR only considers falling groundwater levels to be a significant impact if it results in physical damage due to exposed screens or pumps or reduced well yields. It fails to consider increased energy costs from higher lifts as a significant impact even though identified in the SWRCB 2013 opinion. Nor does it actually define what constitutes a significant reduction in well yields due to lower groundwater levels, even though the DEIR implies that some level of reduced yield would be a significant impact.

to identify this as a considerable contribution to a significant cumulative impact and to identify the return water provisions as essential mitigation.

LWMC-21 cont.

Furthermore, the DEIR dismisses the impact of aquifer depletion based on the argument that that the zone of the 1-foot drawdown does not extend beyond the 500 mg/L seawater intrusion boundary. Although the magnitude of drawdown attenuates with distance, the EIR fails to evaluate drawdown effects of less than one foot. Thus, the DEIR provides no evidence that a drawdown effect of at least some magnitude would not occur in inland areas south of the seawater intrusion boundary that do enjoy potable water quality. Even if the drawdown in areas of potable water were less than the DEIR's arbitrarily selected one-foot drawdown threshold for significant project-specific impacts, the drawdown may nonetheless be a considerable contribution to the significant cumulative impact of aquifer depletion and declining groundwater levels. The DEIR simply fails to consider this.

LWMC-22

14. The DEIR's rationale to dismiss the impact of aquifer depletion, that the zone of the 1-foot drawdown does not extend beyond the 500 mg/L seawater intrusion boundary and so does not affect potable water use, is not supportable for another reason. The DEIR admits that there are at least two sources of competing demand for the non-potable or brackish water in the project: existing wells are used for non-potable purposes ("minor irrigation and dust control") and foreseeable future source wells for the MCWD desalination facility would also draw brackish water. (DEIR, p. 4.4-90). Because there are existing and foreseeable uses for non-potable water drawn by the project, the depletion of this supply cannot be dismissed out of hand as less than significant.

LWMC-23

Sincerely,

Michael DeLapa
Executive Director

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VIA E-MAIL (MPWSPEIR@ESASSOC.COM)

CPUC/Monterey Bay National Marine Sanctuary
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Re: Comments of Pebble Beach Company on Cal/Am Monterey Peninsula Water Supply Project Draft EIR/EIS
Our File: 2037.29635

Ladies and Gentlemen:

Our firm represents Pebble Beach Company ("PBC"). The Draft EIR/EIS ("DEIR") for the Cal/Am Monterey Peninsula Water Supply Project ("MPWSP") addresses the water entitlements granted to PBC by the Monterey Peninsula Water Management District ("MPWMD") in several sections of the DEIR. We wish to make clear in these comments the panoply of rights which attach to the Pebble Beach water entitlements.

In Section 2.3.3.1, describing the Pebble Beach Water Entitlements, the DEIR correctly recites that the water entitlements were granted by MPWMD in exchange for PBC's guarantee of financing for the CAWD-PBCSD Wastewater Reclamation Project. PBC has guaranteed a total of $33.9 million in debt instruments and funded an additional $33 million directly, for a total financial commitment to the Wastewater Reclamation Project of nearly $67 million. This project is presently supplying approximately 1,000 acre feet per year ("afy") of water to meet all of the needs of the eight Del Monte Forest golf courses and certain athletic fields.

I. HISTORY

We have enclosed a more complete history of the Wastewater Reclamation Project and the Pebble Beach water entitlements for the record. A summary of that history is as follows. PBC-1

{THJ-6413139;3}

Due to insufficient legal rights for Cal-Am's withdrawals from the Carmel River, the State Water Resources Control Board ("SWRCB") issued Orders limiting the amount of water Cal-Am can withdraw from the Carmel River. This limitation has had the effect, on a general basis, of precluding water for new development within the Cal-Am service, with some exceptions. One of these exceptions is the Pebble Beach water entitlement, which has its genesis in the Carmel Area Wastewater Services District ("CAWD") – Pebble Beach Community Services District ("PBCSD") Wastewater Reclamation Project ("Recycled Water Project").

In 1989, MPWMD and PBC entered into an agreement in which PBC guaranteed financing for a wastewater reclamation project designed to reclaim approximately 800 afy of wastewater for irrigation use on golf courses and other open space in the Del Monte Forest. The recycled water would conserve approximately 800 afy of Cal-Am potable water then being used to irrigate these areas. The project was to be constructed and operated by CAWD and PBCSD. In return for its fiscal guarantee, MPWMD granted PBC a water entitlement of 365 afy of potable water for specific "benefited" properties in the Del Monte Forest. MPWMD granted two other property owners who also participated in the agreement an additional 15 afy entitlement for Areas S and W in the Del Monte Forest, for a total of 380 afy.

In 1994, CAWD and PBCSD completed construction of the Recycled Water Project and began supplying treated water. Between 1994 and 2008, the Recycled Water Project supplied on average about 750 afy of recycled water for irrigation of the eight golf courses and other recreational areas in the Del Monte Forest. During this period, the recycled water supply was supplemented with potable water usage of approximately 250 afy.

PBC-1 cont.

To eliminate the use of potable water, in 2005 PBC agreed to fund upgrades to CAWD's recycled water facilities to address salinity issues, and to fund the retrofit of the Forest Lake Reservoir owned by PBCSD to provide additional recycled water storage capacity. By 2011, due to these upgrades, the Recycled Water Project was capable of providing about 1,000 afy of recycled water – an amount sufficient to meet the irrigation demands of the golf courses and other open space areas served by the Recycled Water Project, without any use of potable water.

By virtue of its funding of the Recycled Water Project, PBC has enabled the conservation of far more potable water (through replacement with recycled water) than the 365 afy potable water entitlement granted to it. Thus, it has been consistently determined that the use of the Pebble Beach water entitlement does not result in a net increase in withdrawals from the Carmel River. In fact, it has resulted in a net benefit.

The MPWMD-PBC agreement, including as modified in 2004, identifies the water entitlement as a vested property right and allows PBC the right to reallocate the water entitlement among its properties, as well as the ability to sell up to 175 afy of its remaining entitlement to other Del Monte Forest property owners for residential use, provided that the annual water usage among all of PBC's properties and buyers' properties does not exceed the

aggregate 365 afy water entitlement granted to PBC. As of the end of 2017 PBC has sold approximately 140 afy in this fashion to other Del Monte Forest property owners. PBC-1 cont.

II. Proper Classification of the Pebble Beach Water Entitlements.

The DEIR in Section 2.3.3 treats the Pebble Beach water entitlements as one of the "Other Service Area Demand Assumptions", as if the MPWSP is necessary to serve it as "future demand." However, the facts indicate that the Pebble Beach water entitlements total of 365 afy must be classified as "Existing Demand" of the Cal-Am system. As explained in the attached Memorandum, the Pebble Beach water entitlement is described as "an irrevocable, divisible binding entitlement to potable water, *as a vested property right and interest*, in and for the Benefitted Properties, for use on and by the Benefitted Properties." The Fiscal Sponsorship Agreement with MPWMD recites that the "Water Entitlement evidenced by each Water Use Permit … shall not be terminated or diminished by reason of any water emergency, *water moratorium or other curtailment on the setting of meters for the Cal-Am water system*, and … shall not be subject to diminishment or revocation except as provided [in circumstances not applicable here]." Further, Cal-Am in its Ancillary Project Costs Agreement with PBC to provide service to the properties owned by holders of the Pebble Beach water entitlements has covenanted that *Cal-Am shall at all times reserve, and have the capability of providing, an amount of Water sufficient to meet its service obligations to all of such properties, and shall not serve or commit service of Water to other persons or entities which would, at any time, have the effect of impairing such capability.* PBC-2

The point is that the Pebble Beach water entitlements must be treated and classified as "Existing Demand" because Cal-Am has an obligation to serve the full 365 afy of the water entitlements no matter what, i.e., even if the MPWSP (or any other water supply project) is not realized. We recognize that the full 365 afy is not being delivered currently by Cal-Am, and in that sense may affect project sizing to make sure it is accounted for. But it must be accounted for as "Existing Demand" because Cal-Am is obligated to serve the entire 365 afy from whatever sources are currently available to it.

III. The Pebble Beach Water Entitlements Are Not Growth-Inducing.

With these considerations in mind, the effect of the Pebble Beach water entitlements cannot be classified as "growth inducing" (see DEIR p. 6-14). The use of water represented by the Pebble Beach water entitlements must be satisfied no matter what, from Cal-Am's existing sources if necessary, whereas the other demand uses (e.g., lots of record, hospitality industry rebound) are dependent on realization of the MPWSP (or some other new source of supply). Stated differently, water is not a constraint to any growth utilizing the Pebble Beach water entitlements. PBC-3

IV. MPWMD and the County Do Not Have the Power to Allocate the Pebble Beach Water Entitlement.

Further, the DEIR on page 6-17 mistakenly assumes that MPWMD has the power to allocate (specifically to the County) the unused portion of the Pebble Beach water entitlement as part of its allocation program. This is emphatically not the case. Only PBC has the power to utilize and/or assign portions of the PBC water entitlement, and only (at least presently) for properties in Del Monte Forest. Water entitlements that are assigned to owners other than PBC must be used for residential use (as defined by MPWMD). The use and/or assignment of portions of the water entitlement is not considered an "allocation" by MPWMD under its allocation program or in any other sense. It is simply the exercise of the rights granted to PBC and other holders of the Pebble Beach water entitlements. Thus, the assumption that the County, based on an "allocation" from MPWMD, could elect to then "allocate" portions of the Pebble Beach water entitlement to "other development" (i.e., development other than that for which use of the Pebble Beach water entitlement is authorized) is not realistic – and could not occur without the concurrence of PBC. PBC-4

Thank you for the opportunity to comment on the DEIR.

Very truly yours,

FENTON & KELLER
A Professional Corporation

Thomas H. Jamson

Thomas H. Jamson

THJ:tob

Attachment

cc: David Stivers, Executive Vice-President, Real Estate, and General Counsel, Pebble Beach Company (via email)

Mark Stilwell, Senior Real Estate Advisor, Pebble Beach Company (via email)

David Stoldt, General Manager, MPWMD (via email)

David Laredo, Esq. (via email)

Robert E. Donelan, Esq., Ellison, Schneider & Harris, LLP for Cal-Am (via email)

John O'Hagan, Assistant Deputy Director, Permitting and Enforcement Branch, Division of Water Rights, SWRCB (via email)

{THJ-641319;}

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March 23, 2017

CPUC/MBNMS
c/o Environmental Science Associates
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Dear Sirs/Madams,

We appreciate the opportunity to comment on the revised Draft Environmental Impact Report/Statement (the document, hereafter) for the Monterey Peninsula Water Supply Project (MPWSP). Point Blue Conservation Science (founded as Point Reyes Bird Observatory in 1965) is a non-profit 501c3 organization dedicated to conserving birds, other wildlife, and their ecosystems through science, partnerships and outreach. Point Blue has been studying the population of western snowy plovers (*Charadrius nivosus nivosus*) at the slant well portions of the MPWSP project site and in the greater Monterey Bay area for more than 30 years. I personally have monitored plover activity at the project site for more than 15 years (1996-2013).

We are pleased to see that the revised document addresses the points that Point Blue raised in our June 2015 letter. However, we still have some minor concerns about the impacts analysis to the plover and offer the following information for consideration to better address impacts.

1. Changed Habitat Conditions

- As noted in the document, the beaches west of the slant well portions of the project site are important for wintering plovers and the slant well project site itself historically has been used by wintering plovers. In the past two years, this outer beach habitat has been reduced as a result of intense winter storms that have caused beaches to narrow significantly and become lower in elevation. This pattern of habitat loss is likely to continue with increasing frequency and intensity of coastal storms projected due to climate change (see below).

- The outer beach to the south of the slant well site receives frequent visitation from pedestrians with unleashed dogs under current management policies. Thus we suggest reclassifying the disturbance regime of the area from "relatively undisturbed" to "disturbed" (4.6 – p. 130 and 136). Point Blue-1
- Though the impact of a temporary reduction of wintering habitat at the inland slant well site during the construction phase seems like a minor impact, when combined with recent habitat losses and high levels of disturbance from unleashed dogs at the outer beach wintering sites, the temporary habitat loss is likely to have a greater impact than stated in the document. Point Blue-2

2. Climate Change

- The habitat at the proposed slant well site has the potential to become more important for both nesting and wintering plovers over time due to long-term habitat reductions on the outer beach caused by sea level rise (SLR) associated with global climate change. The predicted effects of SLR include reduced beach width, more frequent storm inundation of beaches, and gradual inland retreat of the beach margin towards the slant well project site.
- As overall habitat area for plovers is incrementally reduced by construction of the project and from current storm patterns and long-term climate effects, the impacts of human-caused disturbance on the remaining habitat and on snowy plovers also will intensify. Point Blue-3
- At Point Blue, we strongly believe that considering the effects of climate change is a critical component of effective conservation planning. In the document, considerable attention has been paid to the effects of SLR (via the long-term erosion rate, p. ES-16) in the planning and siting of the slant wells; however the cumulative impacts analysis of the project on snowy plovers and the subsequent mitigation plan for plovers may be inadequate without consideration of the impacts of climate change.

3. Mitigation Plan

- The current mitigation concept for plovers is combined with the mitigation concept for plants and mentions the option of stabilization of dune sands (Mitigation Measure 4.6 1d - p. 170). Whereas this strategy may be beneficial to some species of dune plants, stabilization is not consistent with the habitat needs of plovers. Plovers occupy open primary successional habitat with low-lying plants, and sites with relatively unobstructed view-sheds are preferred for nesting (Point Blue unpubl. data). This ecological requirement should be incorporated into revegetation plans that cover current or historic plover habitat, including at the more inland slant well site. Point Blue-4
- Also, under Mitigation Measure 4.6 1d, 8b (p. 4.6 – 170), we recommend that Point Blue-5

mitigation funds be directed toward existing restoration programs in areas where recreational impacts to plovers are adequately managed. Sites that do not meet these criteria should not be considered suitable mitigations for impacts to plover wintering or breeding habitat unless management is improved.

Point Blue-5 cont.

- The concept of a mitigation ratio is good; however the proposed minimum 2:1 ratio may not be an adequate minimum ratio given the previous points related to "Changed Conditions" and "Climate Change" (above) and the significant amount of plover nesting that has occurred at the proposed slant well site over the past two decades. We suggest increasing the minimum ratio.

Point Blue-6

Thank you very much for consideration of this information.

Sincerely,

Kriss Neuman

Kriss Neuman, Waterbird Ecologist

cc: Ellie Cohen, President and CEO, Point Blue Conservation Science

Catherine Hickey, Conservation Director, Point Blue Conservation Science

Gary Page, Principal Scientist, Point Blue Conservation Science

cc: Jacob Martin, US Fish and Wildlife Service

8.6.16 Public Trust Alliance (PTA)

CPUC/MBNMS

c/o Environmental Science Associates

550 Kearny Street, Suite 800, San Francisco, CA 94108

March 27, 2017

Dear Commission and Sanctuary,

On behalf of our members who are ratepayers in Monterey and our members who are the beneficiaries of the public trust resources in Monterey as Californians, Public Trust Alliance submits the following comments on the Draft Environmental Impact Report/ Environmental Impact Statement on the CalAm Monterey Peninsula Water Supply Project. The analysis in this EIR/EIS does not meet the standards of CEQA or NEPA and must be corrected. Specifically:

1) The assessment of water demand fails to account for the improvements in water use efficiency implemented by the people and businesses of Monterey and as a result uses an unrealistically high estimate of system demand. This in turn means the analysis of growth inducing impacts is inaccurate.
2) The range of alternatives is unrealistically limited to only desalination as a potential supply source in Monterrey. Several potential sources are presented and then ignored, while findings of infeasibility for others are not supported by substantial evidence.
3) The project is inconsistent with the Guidelines for a use permit from the Monterey Bay National Marine Sanctuary ("MBNMS") and findings of consistency are not supported by substantial evidence.
4) The analysis of sea level rise and flooding uses out of date estimates that the DEIR/EIS points to as flawed. This requires reanalysis of the exposure to erosion and flooding.
5) The potential growth inducing impacts are incorrectly analyzed and underestimated.
6) The errors in estimates of growth inducing impacts renders the analysis of the indirect impacts incorrect throughout, especially with respect to traffic, recreational resources and greenhouse gas emissions.
7) The analysis of greenhouse gas emissions fails to incorporate the emissions attributable to the project through growth inducement.

8) The proposed mitigations for greenhouse gas emissions are neither effective nor valid as a matter of law under CEQA.
9) The proposed project fails to comply with the requirements to reasonably allocate the state's water resources under the California Constitution.

Given the significant and fundamental problems with the analysis in the DEIR/EIS, we urge the Commission and MBNMS to correct these issues and recirculate the DEIR/EIS such that the public may review the impacts and that the Commission may engage in informed decision-making based on a more accurate and reasonable assessment of the far-reaching impacts of this project.

1. **The Assessment of Water Demand is greatly exaggerated, resulting in greater water for new development.**
    a. **The estimate of existing system demand ignores mandatory and voluntary conservation programs.**

The analysis of existing system demand inappropriately ignores the history of water conservation measures that have limited the possibility of increases in total system demand in the service area to 2010 levels. The failure to consider the enduring reductions in water use resulting from these conservation measures means that the estimated service demand is too high. This in turn means that should the people of Monterey continue to conserve as they have and the conservation measures installed continue to reduce demand, the project will result in substantially more water being available to induce new development.

The analysis of water demand in the DEIR/EIS assumes, unrealistically, that the interannual variation in water supply is due solely to random variation across years and not due to any systematic trend in water use. However, Monterey Peninsula has been subject to a series of mandatory and voluntary measures to improve water efficiency (e.g., see label measures listed in Figure 1.1.) Because many of these measures are permanent (e.g., installation of new fixtures and tighter standards for new development), these gains in water efficiency cannot be expected to reverse due to the normal variation in peak demand or the return of wetter water years. Thus, it is unrealistic to anticipate such high demand from existing users who have moved sharply to conserve water. These measures are not going to be reversed, as the hardware is already installed, and new construction and renovations would be subject to tighter standards than prevailed twenty or even seven years ago. As noted the peak demand is to be determined based on the prior ten years, but that record shows the last ten years continue a trend of greater efficiency and reduced demand that has continued across many business cycles over the last 20 years (see Figure 1 for the

PTA-1

Figure 1.1 Declining Demand over 20 years on the Monterrey Peninsula

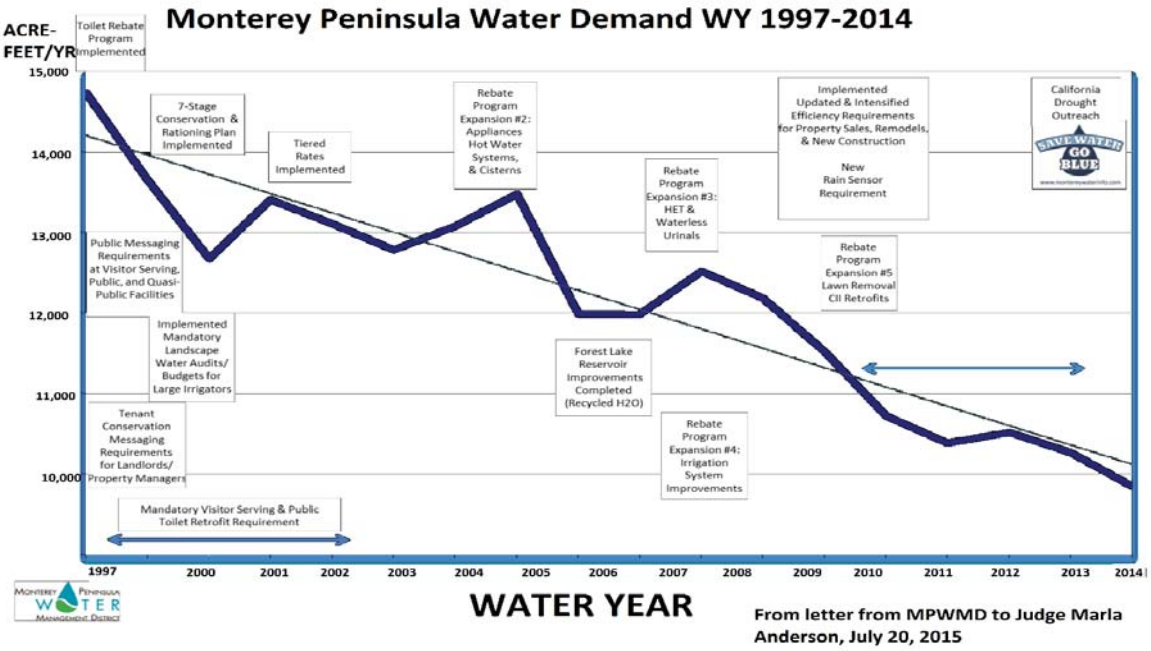
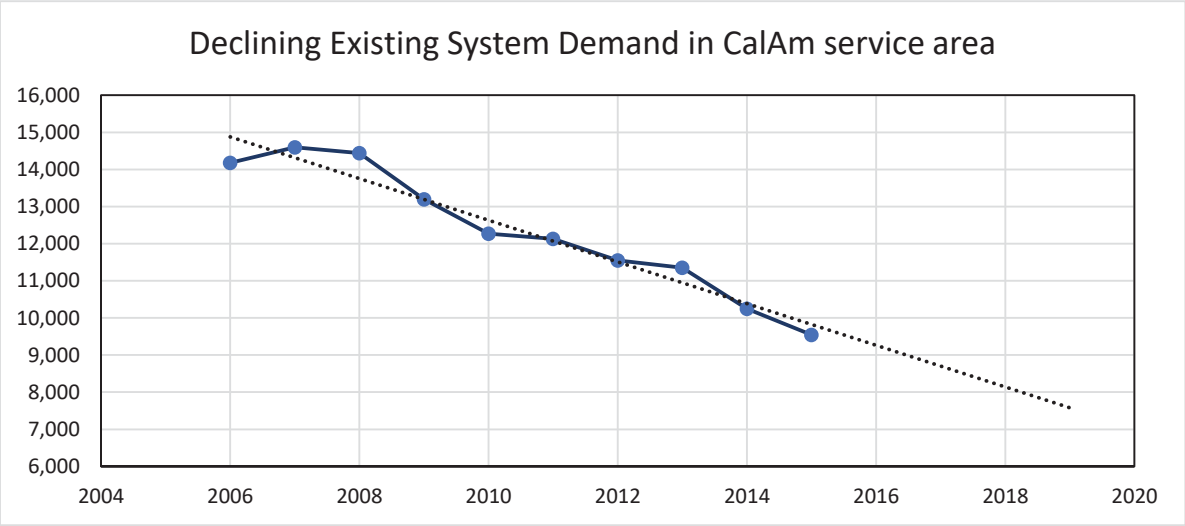


Figure 1.2 Declining Existing System Demand in CalAm service area (AFY by year)



declining demand on the Monterey Peninsula and the list of water conservation measures implemented driving that decline.). As noted repeatedly throughout the DEIR/EIS, state and local authorities have taken heroic steps to require and incentivize increased conservation and have been dramatically successful

PTA-1 cont.

in doing so. Failing to take these trends into account serves to dramatically understate the environmental impacts of this project.

In fact, the data presented demonstrate that a much lower estimate of 2019 maximum system demand is supported by substantial evidence. Table 2-2 demonstrates a sharp decline in existing demand of roughly 600 AFY/ year. Furthermore, peak demand has not exceeded the trendline by more than 1,400 AFY in any year since 1997. Under those trends, the average system demand would be expected to be approximately 7,800AFY. Using the historical record of deviations from the trend, that would suggest a more reasonable estimate of maximum system demand in 2019 of 10,200 AFY, not 12,250 AFY as estimated in the current DEIR/EIS. Thus, accounting for the impacts of mandatory and voluntary permanent conservation efficiency gains that have resulted from conscious effort and mandatory programs, the system demand that would be expected to exist in 2019 would be considerably lower than the 12,250 AFY estimate used here.

PTA-1 cont.

Of course, the environmental impacts of such an error would be to free up additional water for new construction above and beyond the some 2,000 AFY described in the DEIR/EIS. Indeed, should current trends in conservation hold, the underestimate would likely double the water available to new development to over 4,050AFY. Naturally, this would exacerbate growth inducing impacts above what is estimated and potentially in excess of what has been analyzed in this DEIR/DEIS. As a result of the provision of water for ghost demand that no longer exists, the excess supply for new development would be on the order of 3,700 AFY, not the 1,755 used in this DEIR/DEIS. The implications of this error are further analyzed in Section 6 below.

b. The estimate of a 500 AFY allotment to increased hotel occupancy is not supported by substantial evidence.

Similar issues arise in the overestimate of increased water use for "rebound" of the hospitality industry. In fact, the 500 AFY number cited as the water demand by a recovered hotel occupancy rate has no basis in the evidence presented in the DEIR and is substantially higher than any increment over existing supply supported by evidence. Here, the key question is the elasticity of demand in response to increased occupancy rates. The DEIR/EIS relies entirely upon CalAm's estimates based on "discussion with industry representatives" (also known as guestimates), rather than any analysis of the actual trends and data available. We remind the Commission that CEQA's definition of "substantial evidence" does not include "[a]rgument, speculation, or unsubstantiated opinion or narrative...." (CEQA Guidelines 15384.)

PTA-2

By contrast, the DEIR/EIS markedly ignores the analysis of MPWMD, which derived a substantially lower estimate of the increase due to increased occupancy based on the relationship between occupancy and water Use. Based on that evidence based methodology, a 7 percent increase in occupancy would increase by 194 AFY. In addition, as noted above, even this estimate is likely too high, because it relies upon past relationships between occupancy and water use, and therefore does not incorporate changes in that relationship due to the numerous improvements in water efficiency have been made between 2011 and 2017. Therefore, at most the best estimate of the reasonable increment due to greater occupancy based in substantial evidence is 194AFY. The difference between the 500AFY assumed here and the 194 AFY based on substantial evidence would also become available to support additional growth, increasing that total by some 300AFY to approximately 4,050 AFY.

PTA-2 cont.

c. Table 13 water is inappropriately excluded from analysis

We also note that the DEIR/DEIS analysis of Table 13 water is inconsistent. The DEIR does not include Table 13 water as available supply, because such water is available only in wet years. Thus, while the DEIR does not incorporate increases in supply during wet years, the DEIR does incorporate increased demand during wet years. Naturally if the higher system demand estimates of 12,252 AFY used in the DEIR/EIS is chosen because of expected increases in demand during wetter years, then the supply rebound from Table 13 water must also be incorporated into the supply total to accommodate that peak annual demand as well. Furthermore, it is not necessarily true that this water is only available in wet year, since the DEIR/DEIS notes that this water is available to storage though the ASR project, and so could be used in dry years as well. Thus, estimates of total supplies should include some annualized accounting of Table 13 water that could either be used for wet year peak demand or stored for dry year demand.

PTA-3

2. The range of alternatives is unreasonably narrow and precludes *any* water supply solution other than desalination.

As noted in the DEIR/EIS, the analysis must consider feasible alternatives which would reduce significant impacts. (CEQA Guidelines 15126.6, *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376). While the choice of alternatives is subject to the rule of reason, the choice of alternatives must not presuppose the ultimate decision by the agency.

PTA-4

Here, the entirety of the alternatives selected all involve desalination and all other alternatives are dismissed, even though several options have been considered and held for further analysis. Eliminating all non-desalination options as "infeasible" is particularly astonishing in a state that gets its water supply almost entirely from sources other than desalination. Such a narrow range of alternatives clearly presupposes that the solution to Monterey's water supply issues must be a desalination plant, which means that the impacts inherent to desalination cannot be avoided by any means whatsoever. Similarly, NEPA also requires the consideration of common sense alternatives. Here, that means looking at other potential water supply sources other than desalination, even if those alternatives are not within the jurisdiction of the lead agency. 40 CFR §1502.14 (c)).

The elimination of several alternatives is however not supported by substantial evidence. "Feasible" means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (Pub Res. Code s 21061.1). Demonstrating that options are not feasible would require substantial evidence that is not present in the DEIR/EIS. In fact, several options have been discarded with little or no analysis as "not as promising." At minimum, each of the "hold" options under Plan B not shown to be infeasible should be brought forward. Although they may have drawbacks of various kinds, few involve the substantial environmental and energy impacts of desalination. Until these have been reviewed in greater detail, the Commission is in no position to make an informed decision regarding the relative merits of these less environmentally destructive approaches.

PTA-4 cont.

In particular, the Interlake Tunnel was rejected based on perceived difficulties on obtaining rights to any of the more than 50,000 AFY that project would develop. However, we note that the inability to obtain rights is predicated on the rights passing to the property owners and other stakeholders. However, since the project itself is contingent on funding from a Proposition 218 election that has not yet occurred, today the final disposition of those rights remains as yet undetermined. Given the failure of past attempts to fund the project in Sacramento (e.g., AB 1585) and other opposition to the structure of the project, it is far from certain that the rights could not be obtained. For example, it remains entirely potentially feasible for CalAm to offer funding for some component of the project, reducing the burden on local tax payers, in exchange for some portion of the rights to the developed water.

As noted in the EIR, the SWRCB points out that "[d]eveloped water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial

means as a new water source." Since much of the water that would be diverted in the Interlake Tunnel would otherwise flow to the sea, this should constitute "developed water." Furthermore, when it comes to the rights to such water, "[t]he key principle of developed water is if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized." Thus, to the extent that a project to develop water if no lawful user is harmed, Cal-Am could potentially obtain the rights to water developed through the Interlake Tunnel by contributing to the project in exchange for rights to a water supply that might otherwise not be developed. Thus, in absence of substantial evidence that such an arrangement is not possible, especially in light of the difficulties in obtaining financing for the project, elimination of this project from consideration as an alternative is inappropriate.

We also note that the Interlake Tunnel would be superior to the proposed project in that the proposed project fails to meet two of CalAm's and the Commission's objectives: namely to "[m]inimize energy requirements and greenhouse gas emissions per unit of water delivered" and to '[m]inimize project costs and associated water rate increases." As discussed below, desalination uses extraordinary quantities of energy with associated greenhouse gas emissions. Thus, the proposal could not be fairly characterized to minimize energy requirements. Furthermore, CalAm requires not more than 30% of the potential developed water from the Interlake Tunnel Project, suggesting that CalAm could potentially obtain water rights from funding a third of the project costs of $25 million. Spending some $322 million on a desalination cannot be said to "minimize project costs" in light of a possible project costing under 5% as much.

In addition, several other possible alternatives do not appears to have been considered including a combination of increased conservation funding, maximizing wastewater recycling, and other sources of water that may not be as favorable, but absent substantial evidence that they are concretely infeasible, they must be carried forward as reasonable lower cost and environmentally favorable alternatives.

PTA-4 cont.

3. The Proposed project is inconsistent with several elements of the MBNMS Guidelines.

The DEIR/EIS appears to erroneously conclude that the special use permit by MBNMS would be consistent with the guidelines for desalination within the sanctuary. For example, the guidelines state that "[d]esalination should only be considered when other preferable alternatives for meeting water needs, such as increased conservation and wastewater recycling are maximized or otherwise determined not feasible, and it is clear that desalination is a necessary component of the region's water supply portfolio."

PTA-5

However, as noted above there is no substantial evidence that waste water recycling has been maximized. For instance, the GWR program appears to be successful in recycling waste water on a limited basis and similar projects could be developed. Also, wastewater from the Salinas Valley may be potentially recyclable to acceptable standards, but is not analyzed here nor demonstrated to be infeasible. Thus, there is no substantial evidence that the project meets this guideline.

Furthermore, this DEIR singularly fails to "identify measures available to reduce electricity use and related emissions" and to mitigate for all remaining emissions." As discussed below, the DEIR/EIS fails to consider several potential mitigation measures that could fully mitigate greenhouse gas emissions, but instead relies on a standardless and unenforceable "good faith efforts" to offset some 20% of emissions as mitigation. This approach is facially not consistent with this Guideline. (DEIR at 6-50)

PTA-5 cont.

Finally, as described below, the DEIR/EIS relies on an entirely inadequate estimate of sea level rise and potential erosion. Consequently, the project also fails to meet the Guidelines that "[d]esalination plants in MBNMS should not contribute to coastal retreat and should not be designed to anticipate the possibility of installing coastal armoring at any time in the future to protect the plant or its infrastructure from effects of coastal erosion, wave action of sea level rise." As described below, greater sea level rise than estimated here is likely to contribute to greater erosion and an unspecified risk of coastal armoring being required in the future.

4. The DEIR/EIS underestimates the level of sea level rise and fails to consider changes in the best science regarding sea level rise.

The DEIR/EIS uses estimates of sea level rise that are out of date and too low. As the DEIR/EIS acknowledges, sea level rise estimates have steadily increased in the last few years as prior estimates have been shown to have failed to incorporate substantial effects, such as ice melt from Antarctica or Greenland which alone may double prior estimates.[1] Indeed, the three citations cited in the DEIR/DEIS show increasing sea level-rise estimates by 2100. Inexplicably, the DEIR uses the oldest estimate of the three of 55 inches in Figure 4.3-1, rather than the most recent estimate from the gold standard of climate change assessments, the Assessment Report of the IPCC from 2016. As cited in the Assessment Report, the mean sea level rise is now expected to be in excess of 20 feet, not under 5 feet as is used in this DEIR/EIS. In fact, recent scientific information has come to light since the 2014 *Analysis of Historic and Future*

PTA-6

[1] R.M. DeConto & D. Pollard (2016) Contributions of Antarctica to past and future sea-level rise. Nature 531:591-597. doi:10.1038/nature17145

Coastal Erosion with Sea Level Rise study by ESA. Thus, the estimates of both flooding and coastal erosion are certainly lower than the substantial evidence presented both here and in the DEIR/EIS itself.

Given that level of sea level rise, clearly, both erosion and flooding is likely to have substantially greater impacts on the project and greatly increase the potential need for coastal armoring to eventually protect the project. In light of new information in the Assessment Report and additional recent studies, the DEIR underestimates the degree to which the project will expose significant structures to erosion and flooding. To the extent that such impacts will necessitate sea walls, the project would also be inconsistent with the Coastal Act and MBNMS guidelines. Thus, the conclusions regarding the impacts of sea level rise and flooding cannot be seen as supported by substantial evidence, when the evidence in the DEIR/EIS itself contradicts the foundational assumptions of the analysis.

PTA-6 cont.

5. **Growth inducing impacts are not properly analyzed nor attributed to the project**

   a. **The DEIR/EIS inappropriately fails to analyze induced growth based on an inappropriate application of environmental review of local general plans.**

The DEIR/EIS improperly excludes the impacts of the project as indirect growth based on a theory that they do not occur or are not attributable to the project because the growth may have been included in the analysis of various general plans. Certainly, it is not controversial that "[w]ater supply capacity to serve new development would remove water supply limitations as an obstacle to such development and would be considered growth-inducing under CEQA and NEPA." (DEIR at 6-20.)

However, the analysis of that growth cannot be avoided or ignored simply because it may have been considered in environmental review of entirely different projects. While the impacts of growth may have been previously analyzed under general plans, CEQA requires a comparison to *existing physical conditions*, not the conditions that may have been permitted but have not yet. This point was recently reemphasized by the California Supreme Court: "A long line of Court of Appeal decisions holds, in similar terms, that the impacts of a proposed project are ordinarily to be compared to the actual environmental conditions existing at the time of CEQA analysis, rather than to allowable conditions defined by a plan or regulatory framework. This line of authority includes cases where a plan or regulation allowed for greater development or more intense activity than had so far actually occurred...." (*Communities for a Better Environment v South Coast Air Quality Management Dist.* (2010) 48 Cal. 4th 310, 320. See also, *Woodward Park Homeowners Assn., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, *Christward Ministry v. Superior Court* (1986) 184 Cal.App.3d 180.)

PTA-7

As acknowledged in the DEIR/EIS, most if not all of the general plans characterized the future development planned for as being contingent upon the development of new water supplies to support that development. Indeed, the DEIR/EIS concedes that "[a]ll of the jurisdictions cite limited water supply as a key factor limiting planned development within their boundaries." In several instances, development permits have been limited by the available water supply at levels even below those considered in the general Plans. Thus, the provision of additional water will allow for additional development that otherwise would not have occurred. Consequently, there will be changes in the existing physical environment that would not otherwise occur with the provision of the additional water in this proposal. Under CEQA case law, the authorized levels of environmental impact are immaterial to the assessment of the physical changes in the environment that would occur and those changes must be considered throughout.

Furthermore, the DEIR/EIS should disclose throughout that the prior analyses of buildout found significant and unavoidable impacts, and not simply conclude that there are no significant impacts from development by ignoring those analyses. For example, the DEIR/EIS relies on the analysis of induced growth in the Monterrey General Plan, but fails to disclose in its discussion of greenhouse gas emissions attributable to the project that the environmental documents for the 2007 Monterrey County General Plan Update concluded that "buildout within the County beyond 2030 is determined to make a considerable and unavoidable contribution to cumulative GHG emissions and global climate change." (Draft EIR for the 2007 Monterey County General Plan Update, at 4.16-38.) Thus, the DEIR/EIS should not ignore that the induced growth has already been found to result in considerable and unavoidable contributions to cumulative GHG emissions and global climate change.

PTA-7 cont.

Furthermore, the DEIR/EIS is correct in determining that growth in excess of that previously analyzed requires additional analysis and disclosure and would be a potentially significant impact for failure to be consistent with general plans. "A project that would induce growth that was inconsistent with those plans and policies could result in adverse environmental impacts not previously addressed in the CEQA review of those plans" (DEIR at 6-26.)

b. The amount of water made available to new development is vastly too low and therefore fails to capture induced growth in excess of planned growth.

As noted above, the estimate of system demand of 12,270 AFY is likely over 2,000AFY too high, once conservation measures are taken into account. This has the effect of freeing that additional water to new development. However, we also note that even the allotment to "meet anticipated future demand"

PTA-8

includes water supplies for currently undeveloped lots of record. As the DEIR/EIS acknowledges, development of these lots that would not occur without water supplies by definition is new development and must also be included in the estimate of water available for new development. Furthermore, as the DEIR/EIS also acknowledges, some portion of the 500 AFY for rebounded hotel use also could be diverted to new development to the extent that 500AFY is an overestimate. Furthermore, the allocations for SVGB return would also be available for future development in 25 years' time and should be properly included in the estimates of increased water available for development.

The total amount that would be available for development, either in 2019 or in 2044 is included below.

Table 6.1 – FUTURE WATER DEMAND AND AVAILABLE SUPPLIES UNDER CONSERVATION ASSUMPTIONS.

Category	Water for new Development
TOTAL SUPPLIES	**16,294 AFY**
Service Area Demand after Conservation Measures	10,200AFY
Hospitality bounce-back	194 AFY
Supply available for other uses	**5,900 AFY**
6%/12% SVGB return	1,620 AFY/3,240 AFY
Surplus for future development (2019)	4,280/2,660 AFY
Total for Future Development	**5,900 AFY**
Future Supply Needs Revised/Reduced	**3,526 – 2820 AFY**
MPWSP supply for Future Development as % of future needs	**75% (12% SGVB return, no conservation) to 152% (6% return, with conservation)**
MPWSP supply in 2044	**209% of need.**

PTA-8 cont.

Thus, a full accounting of the conservation effects, the overestimate of hospitality demand and inclusion of all new development suggests that the MPWSP may supply up to twice as much water for new development as was analyzed under prior general plans. Given the track record of conservation over the last twenty years, known factors reducing future per capita consumption in new and existing development, and CalAm's track record of consistently overestimating demand, a fully informed analysis of growth

inducing impacts must include an analysis of the growth inducing impacts should the state and local conservation estimates be successful, as they have been in the past.

The DEIR/EIS must analyze potential growth in excess of planned growth that may result from a failure to adequately predict the degree of conservation. As demonstrated above, should the extensive conservation measures implemented by state and local authorities result in permanent and continuing decline, the present project may allow for induced growth that exceeds planned growth by over 50%. Given the substantial evidence underlying this possibility, the DEIR/EIS should disclose and assess that potential more fully so that the Commission may determine whether approval of the project and the attendant potential explosion of growth is in the public interest.

PTA-8 cont.

6. **Land Use and recreational and traffic impacts are underestimated for failure to account for induced growth.**

In fact, as acknowledged in Section 6.3, the project would have growth inducing impacts and these are likely substantially underestimated. As discussed below, since this growth represents a change in the existing physical environment that would not occur but for this project, these impacts are fairly attributable to the project. To the extent that the underestimate in existing demand causes growth to exceed that previously analyzed in any general plan CEQA documents, this induced growth has not heretofore been analyzed. Since the EIR/EIS document is to assess both direct and *indirect* impacts, as well as cumulative impacts, such that these indirect impacts must be evaluated throughout.

In particular, the conclusions in Section 4.8.5. that the project would not have the effect of increasing housing or residents in the area is directly contradicted by the acknowledgement of the growth-inducing impacts of increased water supply in Section 6.3. Furthermore, the conclusion that the project would not cause increased use of existing neighborhood and regional parks and other facilities is similarly not tenable. Indeed, the project specifically calls for water to supply an expanded tourist industry that very clearly would be directed at use of regional parks and other facilities. The analysis of traffic impacts utterly fails to incorporate any indirect or cumulative impacts of induced growth. Whether or not these impacts were previously analyzed for some different project, these changes from the existing physical environment that would not occur but for this project must be incorporated into the analysis.

PTA-9

7. **The DEIR/EIS fails to incorporate increased greenhouse gas emissions attributable to induced growth.**

As discussed above, the impacts of induced growth are fairly attributable to the project. While many impacts are difficult to discern and under the control of local governments, the greenhouse gas emissions from induced growth can be assessed regardless of where and how new development proceeds. Since those contributions from induced growth have been deemed cumulatively considerable to the contributions of greenhouse gasses to the atmosphere in prior general plan analyses, these analyses must be carried forward and disclosed in the DEIR/EIS to facilitate informed decision making. PTA-10

8. **The mitigation measures for indirect greenhouse gas emissions are both legally and technically inadequate.**

Greenhouse gas emissions are clearly a major concern and serious environmental impact of desalination plants generally. As noted in the DEIR/EIS, water production and distribution is already a major component of the state's water use and GHG emissions. Consequently, CARB requires water projects to reduce the magnitude and intensity of energy use by 20 percent through implementation of energy-efficient production, treatment, and conveyance infrastructure. Furthermore, Executive Order B-30-15 directs state agencies such as the Commission to factor climate change into planning decisions. Both considerations cut heavily against engaging in energy intensive water production such as desalination unless there is truly no other option. PTA-11

The DEIR/EIS appropriately uses the local agency standard for non-emitting land uses of 2,000 metric tons CO_2eq as a significance threshold and correctly determines that the project is greatly in excess of that threshold.

However, the DEIR/EIS singularly fails to identify obvious mitigation measures as required by CEQA. CEQA Guidelines in fact require consideration of energy conservation measures, such as measures to increase reliance on renewable energy. CEQA Guidelines 15126.4(a)(1)(C). Indeed, alternative fuels or renewable energy supplies are not specifically called out for consideration and discussion at all, despite the clear call for consideration of such measures under CEQA Guidelines, Appendix F, II.D.4. Indeed, these measures are required to be considered, and may include off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions. CEQA Guidelines 15126.4(c)(3).

The notion that the CPUC of all agencies deems the reduction of carbon emission "unavoidable" simply beggars belief. In fact, establishing mitigations to reduce emissions below the significance threshold is not complicated and squarely within the Commission's expertise. Reducing the emissions of the project from the aggregate carbon emissions of 8,370 metric tons would involve the production of procurement of enough renewable energy to account for 6370 metric tons, or 12,043,302 pounds of CO_2e. At the quoted rate of PG&E's mix of 290 pounds per MWh, this works out to obtaining an additional 48,425MWh per year of renewable power, either through construction of onsite solar, contracting independently or through PG&E for supplemental renewable power, or some combination thereof. For example, a very modest size solar farm could produce this power. In fact, this quantity of power could be obtained with a solar array of slightly over 140 acres, according to NREL calculations requiring 2.9 acres per GWh of annual energy production.[2] We note that the 46-acre site itself would provide for potentially enough space for fixed tilt photovoltaics to produce some 16 GWH onsite, or over a quarter of the total. Furthermore, given that Power Purchase Agreements for solar and other renewables are close to grid parity, the economic costs associated with purchasing renewable power would be far from prohibitive. In fact, regardless of what those costs are, they are properly included as a cost of energy intensive water production. If such mitigation measures render the project too costly, then price signals will have appropriately forced a conclusion that the project is not feasible when mitigation for environmental impacts are properly accounted for. In such a case, presumably one of the other alternatives would become the properly preferred alternative.

PTA-11 cont.

We note also that the approach to measuring energy usage is inappropriate. The estimate of energy use by the project makes little sense, since subtracting existing water system electricity use from the project's demand assumes that none of the existing supplies and operations would be ongoing. This is not consistent with the discussion of existing supplies. The marginal increase should be for the full emissions associated with the plant, without subtraction of energy use for infrastructure that would be continuing.

PTA-12

In addition, the DEIR/EIS approach to mitigation is wholly inadequate under CEQA. First, disregarding a significance threshold simply because one cannot imagine mitigations is not a legitimate approach under CEQA. Under CEQA the DEIR/EIS is to evaluate the impacts to the physical environment, whatever they may be, and the failure to see an effective mitigation is not a valid reason to ignore the potential significance of an impact. As demonstrated above, mitigation measures for carbon

[2] S. Ong, C. Campbell, P. Denholm, R. Margolis, and G. Heath (2013) National Renewable Energy Lab Land-Use Requirements for Solar Power Plants in the United States, NREL Technical Report NREL/TP-6A20-56290

impacts from electricity use are both well understood and feasible. Here, the plant will use extensive electricity and those emissions have a significant contribution to statewide GHG emissions, regardless of whether the Commission can envision a method for reduction or not.

Second, the structure of the mitigation measure 4.11-1 is not valid under CEQA, because the energy reduction plan represents both deferred mitigation and non-binding mitigation. To be valid, mitigations measure must be fully enforceable through some legally binding instrument. CEQA Guidelines 15126.4(b)(2). "Good faith" efforts are standardless and do not constitute legal mitigation measures. Furthermore, imposing a mitigation measure to require a plan to develop mitigations constitutes inappropriate deferred mitigation. Since the results, if any, of such a plan cannot be in any way assessed, such measures cannot constitute a valid mitigation measure. Courts have been entirely clear that future efforts to identify mitigation measures are not adequate as mitigation measures under CEQA. (See, e.g., *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70))

PTA-12 cont.

Finally, we also note that the project also fails to comply with CARB's mandates to employ less energy intensive water infrastructure. Whether compared to alternatives, such as the Interlake Tunnel, recycling or water purchases or existing supplies, such as diversion from the Carmel River, the project would consume vastly greater quantities of energy. Therefore, the Commission can determine not only that the project would not reduce energy consumption, but that that the desalination plant would greatly increase the energy use per acre-foot of water by employing particularly energy intensive production methods. Thus, it is clear that this project is not consistent with CARB's mandates.

PTA-13

As a consequence of the above analysis, we recommend that the Commission protect the public trust atmospheric resources by imposing a requirement that CalAm obtain or produce onsite sufficient renewable power to reduce emissions below the 2,000 metric tons CO2eq per year (by our estimate, 48,425MWh per year of renewable power)

9. The project as proposed fails to safeguard and reasonably allocate the state's public trust resources.

Finally, CEQA requires consideration of whether the project would conflict with any applicable policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (CEQA Guidelines, Appendix G, Section X(b).) In fact, Article X, section 2, requires that "the waste or unreasonable use or unreasonable method of use of water be prevented." (California Constitution, Article X.) The present project fails to prevent the unreasonable use of water and represents just such an

PTA-14

unreasonable method of use. In addition, the California Water Code has long favored domestic use over agricultural use. Here, the Commissions fails to uphold its public trust responsibilities and violates this provision of the Constitution by failing to even consider alternative water supplies that divert water from lower priority uses such as water intensive agriculture or recreation to use by urban domestic users. Insofar as this project uses an environmentally damaging, resource intensive, and expensive method to avoid such diversion, this proposal represents an unreasonable method of use, and facilitates, rather than prevents, the unreasonable use of water.

Under the California Constitution, the Commission has a continuing duty of supervision over the allocation of water resources. Although reallocations of the state's public trust water resources lie within the jurisdiction of the State Water Resources Control Board, the Commission can make a finding under CEQA Guidelines 15091(a)(2) to recommend that the State Water Resources Control Board can and should be adopt mitigation measures for the unreasonable use of the state's public trust waters by reallocation of water resources to higher priority domestic water users from lower priority agricultural or recreational uses.

PTA-14 cont.

CONCLUSION

For the foregoing reasons, Public Trust Alliance requests that the Commission reanalyze the issues above a recirculate the DEIR/EIS with adequate mitigation measures of the likely impacts of the project.

Respectfully submitted,

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Comment on MPWSP - Cal Am A1204019

Public Water Now (PWN) objects to two significant omissions in the January 13, 2017 DEIR/EIS.

1. The shutdown of MLPP once-through cooling ocean intakes in 2017.
2. Recent legislative mandates in the Sustainable Groundwater Management Act.

1. **Shutdown of MLPP once-through cooling ocean intakes in 2017 is a massive new positive impact on the marine ecology and environment.**

The CA Energy Commission is not mentioned in the list of agencies having a role in this project. Only one state agency is listed, the CSU Monterey Bay.

This omission of the CEC relates to the massive change taking place at the Moss Landing Power Plant (MLPP), and the associated environmental benefits.

There is no discussion of the planned shutdown of major water-cooled turbines at the Moss Landing Power Plant (MLPP). There is no mention of this in the list of projects that may contribute to cumulative impacts. The shut-down of Units 6 and 7 will occur in 2017. This will terminate a high volume of open ocean intake for once-through cooling. The capacity for Units 6 and 7 intake is 320mgd.

PWN1-1

How could the DEIR/EIR team miss the largest change on the local marine environment in decades? And directly adjacent to proposed projects? And not see the beneficial impacts? And not see a relationship to the alternatives analysis?

The only discussion of the shutdown issue was in Appendix I, Intake Option #7 – Disengaging Basin at Moss Landing Power Plant (Water from Spent Cooling System) (page I2-5 to 7). Throughout the entire discussion, no mention was made of the reduction of ocean intake, and no reference to the benefits on the marine environment. The shutdown was presented only as a complicating factor, leading to unpredictable planning for use in a proposed desal.

Had the beneficial impact of the shutdown received adequate attention, there would have been mitigating positive circumstances in order to continue to consider all the projects at Moss Landing. By not mentioning the shutdown, the DEIR could only muster negative references to 'complications'.

All alternative water supply projects located in the Moss Landing area use ocean water intakes. One is subsurface intake (Cal Am), and three are screened ocean intake (Cal Am, Peoples, and Deep Water). A full evaluation of those alternatives should include some information on the reduction of ocean intake by MLPP, which is a plus to Elkhorn Slough and the ocean marine ecology. This is important because this volume reduction is far greater, by several magnitudes, than any new ocean intake for nearby desal facilities.

PWN1-1 cont.

While the DIER/EIS comments negatively about ocean intake, this omission leaves the picture only half told. The DEIR is one-sided and narrow. It excludes a new and enormous positive environmental impact on the ocean, which could be a balancing comment about desal ocean intakes.

Please include this fact and a related analysis. Or please explain why it is not relevant as an offset to negative impacts. Surely when the DEIR looks out 40, 60, 100 years, this shutdown in 2017 is a major omission. This fact and a related analysis should be included.

Such omissions shows how a DEIR can be slanted to favor one project over others. This shortcoming reveals just how a key and fundamental omission can distort the analysis of alternatives, weaken the quality of analysis, and weaken the overall DEIR/EIS.

Please add this analysis and make the presentation of fact and opinion relevant and valid. Otherwise, this hole, this omission, makes the DEIR extremely vulnerable.

2. Sustainable Groundwater Management Act is ground-breaking legislation that has a nexus with MPWSP.

PWN1-2

There is no mention in the DEIR/EIS nor the Appendices of the Sustainable Groundwater Management Act (SGMA).

This far-reaching state legislative mandate applies to all local water jurisdictions in California. There are implications of this law for the MPWSP. The production of a water supply specifically from the over-drafted Salinas River Basin obviously intersects with SGMA. Responsibilities of Marina Coast Water District intersects with Cal Am's plans and MCWD's plans. The DEIR/EIS should at least mention the potential for a nexus.

PWN1-2 cont.

Mitigations may have a nexus with SGMA.

Will the CPUC continue to claim it has authority superior to local governments so long as Cal Am operates its wells? The nexus may lead to disputes over jurisdiction and response.

The DEIR is not a treatise on legal matters, yet it addresses the water rights issues in great detail and over many pages. It appears that the CEQA/NEPA team felt comfortable including documents like the SWRCB memo that supported the MPWSP and its need for water rights. Did the team find it convenient to omit other material that could have supported other options? And if not other options, at least the SGMA could have presented a connection to future scenarios.

Please add comments on the potential inter-connection. At least address the timing, and explain away the nexus if there are no implications. Or explain where there may be inter-connections, but at a later date. To leave it unmentioned puts a blind eye on the most significant new state legislation affecting future water management and supply issues. To ignore it completely, when the DEIR contains many comments on related matters, is to leave a major topic and issue unaddressed. This omission is another major deficiency. Please add it, or at least comment on it's relevancy or not.

PWN1-3

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DEIR/EIS on MPWSP Released January 13, 2017

Public Water Now Comments (georgetriley@gmail.com)

Page	DEIR Reference, Quotes	Comment	
	ES.2 Project Background		
Q1 ES-2	The water supply challenges facing CalAm and the Monterey Peninsula are substantial and have been well-documented in a number of venues including the SWRCB, the Monterey County Superior Court, the CPUC, and the California Legislature.	Also in the local media. Very well documented are the many failures by Cal Am management. Cal Am over-drafted the Carmel River. Cal Am contributed to over-drafting Seaside Groundwater Basin. Cal Am initiated 3 supply projects after the initial CDO in 1995, and all failed or were discontinued. Will ESA include more context on the Peninsula challenges?	PWN2-1
Q2 ES-2	In September 2015, after considering the Draft EIR comments and based on conversations with MBNMS and internal CPUC deliberations, the CPUC Energy Division announced that the Draft EIR would be modified and recirculated.	The conflict of interest with Cal Am's hydrogeologist was the trigger for review. That weakness continues within the heralded Hydrogeologic Working Group (HWG). Will this context be included in future documents?	PWN2-2
Q3 ES-5	...subsurface slant wells (eight active and two on standby) extending offshore into the submerged lands of MBNMS... ...extract 24.1 million gallons per day (mgd) of source water through the seafloor in MBNMS.	These statements declare Cal Am intention to mine seawater from under the ocean floor. Yet the project has 90% of all intake screens inland of the sea floor. The statements are misleading. Surely the DEIR/EIS team knows these facts. Will these statements be clarified in the Final DEIR?	PWN2-3
Q4	Footnote 2. In October 2014,	This is misleading. There were Mitigated Negative	PWN2-4

ES-6	MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, the City of Marina and the California Coastal Commission completed their CEQA review.	Declarations. Not much of a review. Furthermore, City of Marina voted against the project. Will this be explained, in order to be factual? Otherwise the narrative is biased, or suggests a bias. That does not help this document.	PWN2-4 cont.
Q5 ES-13 to 17	ES.8 Areas of Controversy and Issues to be Resolved	Therer is absolutely no mention of Cal Am's invasion of a neighboring public water jurisdiction (Marina Coast Water District) to take its water for diminished supply in Cal Am's area (Monterey Peninsula). This is significant because the environmental impacts from the MPWSP are direct impacts on the MCWD jurisdiction. To ignore this aspect of Cal Am's project location is to abandon relevancy to the real world. Regional perspectives are expected in the DEIR. Yet this aspect is totally missing. Nothing seems more proof of an incomplete DEIR than to ignore this fact. Will the Final EIR address this huge omission?	PWN2-5
Q6	Comment/Question	While it is an embarrassment to the entire Peninsula that Cal Am mismanaged our local water supply sources (Carmel River and Seaside Groundwater Basin), it is not the responsibility of MCWD or the City of Marina to jeopardize or compromise its own water supply source and cause harm to its own customers and citizens in order to rescue Cal Am from the hardship it has inflicted on its own customers. The law protects MCWD from such injury. The CPUC must do the same.	PWN2-6
Q7 ES-13	"The proposed subsurface slant wells at CEMEX would extend offshore..." "...the subsurface slant wells would draw seawater... from beneath the ocean floor..."	Here and elsewhere, the specific description is 'under the ocean or sea floor'. Yet the fact is that the test well has been known to only be about 5-10% under the 'ocean or sea floor'. 90-95% of the intake screens are located inland of the mean high water (MHW) line. This fact is not even a footnote in the numerous references to 'under the ocean or sea floor'. This is consistently misleading. Will the intended and engineered locations of the slant well intakes, and the planned intake system, be accurately described? To ignore this fact is to compromise the accuracy of the DEIR, which then undermines the purpose of the DEIR. Will you please add corrections and clarifications as appropriate? Will this be addressed?	PWN2-7
Q8	Several state and federal regulatory	Nowhere in the DEIR is language from SWRCB or	PWN2-8

ES-16	and permitting agencies (SWRCB, California Coastal Commission (CCC)) will not consider permitting an open-water intake unless a subsurface intake has been deemed infeasible or would result in greater environmental impacts.	CCC documents that describe the 'feasibility' criteria. Also the CEQA law provision re 'feasibility' is omitted. This omission leaves it to the ESA writers to wing it on language. Since 'feasibility' is a common theme throughout intake discussions in this DEIR, will the Final EIR include specific language so the record is accurate and complete?	PWN2-8 cont.
Q9 ES 2-35	Footnote34. The EIR/EIS preparers have also had the benefit of working closely with, and receiving input from, the Hydrogeologic Working Group (HWG) that was formed as a result of the proposed settlement in the CPUC proceeding on the MPWSP. The HWG is composed of experts representing myriad parties in the CPUC proceeding with diverse interests related to the Basin, including but not limited to the Monterey County Farm Bureau, the Salinas Valley Growers Association and CalAm. The EIR/EIS preparers obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions.	The DEIR fails to include a key fact that may have a bearing on the credibility of the HWG. One member representing Cal Am (Dennis Williams of Geoscience) holds the patent on the exact technology used in this project. The potential bias from the patent holder is apparent to any observer. In fact this conflict of interest was pointed out, and the CPUC admitted this conflict, and changed its evaluation team because of it. This seemingly obvious bias continues with Williams/Geoscience in the HWG, which in turn compromises the credibility of the HWG. Please explain how this bias is not a reason to question the credibility of the HWG. Or please explain why this fact is helpful to the credibility of the HWG.	PWN2-9
	Chapter 1, Intro and Background		
Q10 1-6	1.3.2 MBNMS Purpose and Need for Proposed Actions Four federal proposed actions are addressed in this document and consist of the following: 1) authorization of a Coastal Development Permit to be issued by the City of Marina for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface seawater intake system;...	This is misleading. The CA Coastal Commission over-ruled the denial of the Coastal Development Permit by City of Marina. The language ignores the contentious nature of that process, ignores a jurisdictional denial, and the over-ruling by a state agency. The narrative sugarcoats the history, and seems to be a political message that the DEIR is telling all the facts, and in the context that approval is a normal conclusion. The DEIR is not presenting an objective view. Where does 'trust' fit, and where does it fail? This DEIR is showing a bias.	PWN2-10
Q11	Footnote 4 The Applicant proposes to use subsurface intakes (slant wells) to supply the desalination plant with	Here, as elsewhere throughout the proposed project discussion, the proposed project design consistently refers to source water being extracted from under the	PWN2-11

	source water. The well casings, or pipes, would extend seaward of MHW...	sea floor. Yet the recommended project allows intakes from under the overlying land (not the overlying ocean), inland of the Mean High Water line, which is a sharp and significant difference in water rights. The lack of noticing this difference within the document is a major shortcoming of this DEIR. Will this be corrected with appropriate notes and language?	PWN2-11 cont.
Q12 1-8	1.4.1 The Coastal Water Project Footnote 5. The North Marina Project alternative included most of the same facilities as the previously proposed Coastal Water Project and, like the previously proposed Coastal Water Project, would only provide replacement supplies to meet existing demand. The key differences between this alternative and the previously proposed Coastal Water Project were that the slant wells and desalination plant would be constructed at different locations (Marina State Beach and North Marina, respectively), and the desalination plant would have a slightly greater production capacity (11 mgd versus 10 mgd).	This comment that MPWSP parallels the Coastal Water Project is vastly inaccurate, and the intent is insincere. The Coastal Water Project included these huge differences: 1) Had public ownership 2) consistent with County Ordinance, 3) vertical wells, 4) with water rights, 5) was regional, 6) did not require NEPA review, and 7) was not an invasion of another water jurisdiction. To state unequivocally that these projects are very similar is to ignore the facts. When such bias is noted, and not corrected, the entire DEIR shows itself to be inadequate, to be fanciful not factual, and to seem to serve a political purpose rather than a factual and science-based purpose. Will corrective language be included?	PWN2-12
Q13 1-9	It (old Regional Desal Project) included vertical seawater intake wells...	The loose language about seawater, brackish water, contaminated water, intruded seawater, and fresh water does not add clarity for the reader. The Regional Desal Project intended to take brackish water, not seawater. Will this be corrected?	PWN2-13
Q14 1-9	The Coastal Water Project Draft EIR and Final EIR are available for review during normal business hours at the CPUC, 505 Van Ness Avenue, San Francisco, California.	This is a slap in the face to the Monterey Peninsula. Same with the notice of this DEIR release. Many documents backing up this DEIR are available in SF, at CPUC offices. Why not on the Peninsula, where the project is located? The DEIR is complicated enough, without making it even more difficult to access the information.	PWN2-14
Q15 1-9	1.4.2 The Monterey Peninsula Water Supply Project In April 2012, CalAm submitted Application A.12-04-019 (CalAm, 2012), asking the CPUC's permission to build, own, and operate a desalination facility for water supply.	But this DEIR omits reference to the differences, all of which are critical to many locals: Invasion of neighboring water jurisdiction without invitation, without water rights, without compliance with County ordinance, without regional benefits within the invaded jurisdiction.	PWN2-15

	This project is the MPWSP. The MPWSP incorporates many of the same elements previously analyzed in the Coastal Water Project EIR...		PWN2-15 cont.
Q16 1-11	Footnote: ...In November 2014, the City of Marina and the California Coastal Commission completed their CEQA review....	This implies City of Marina gave its approval. In fact, it specifically denied the permit. CCC over-ruled the City. The suggestion of shared approvals here is a bias. Will this bias be removed?	PWN2-16
	CHAPTER 2 Water Demand, Supplies, and Water Rights		
Q17 2-13	2.3.3.2 Hospitality Industry Rebound	Although the DEIR includes much data on population and housing projections, nowhere does the DEIR relate the data to actual per capita water consumption. For instance, Cal Am documents and this DEIR continues to suggest that one acre foot of water supports four average families for one year. But actual conservation data suggests that one AFY will support at least 5 average families, thus suggesting a growth inducing impact that is 25% higher than DEIR calculations. Please explain why current per capita water use is not applied to growth inducing impacts. Please explain the relationship between population projections and conservation data on per capita use, and growth inducing impacts. Or please explain why the DEIR does not contain such analysis.	PWN2-17
Q18 2-15	The Management Plan indicates that the population of CalAm's entire Monterey District was 99,396 in 2010 and that the combined population of the main system and the Bishop, Hidden Hills, and Ryan Ranch satellite distribution systems, which would also be served by the proposed project, was 95,972.	Please explain the discrepancy between these population numbers. A population of 99,396 in the entire Monterey District but when additional areas are added in, the population is lower at 95,972.	PWN2-18
Q19 2-16	2.3.4.2 Urban Water Management Plan Demand Estimates The Management Plan presents CalAm's calculation of baseline, interim (2015) target, and 2020 target per-capita water use rates for the Monterey District as required by	These data undermine the DEIR statements about growth inducement potential. When the DEIR "assumed the 115 gpcd rate", it ignored the fact that current usage is about one-half that amount. As a minimum, the DEIR should include calculations of growth inducing impact that include known facts on current consumption. What is the rational to omit	PWN2-19

	Senate Bill 7: the baseline, 2015, and 2020 per-capita use rates were be 144, 131, and 118 gallons per capita per day (gpcd), respectively. But the Monterey District's actual 2010 per-capita water use was 115 gpcd, which was less than its 2020 reduction target, and the Management Plan projections of future water demand between now and 2030 assumed the 115 gpcd rate. Appendix K-4 SWRCB staff calculated that annual average residential per capita usage in CalAm's Monterey District service area from June 2014 through May 2016 was 55 to 57 gallons per capita per day, based on reporting required under emergency conservation regulations. This level is in the lowest 12 percent of urban users in the state (SWRCB, 2016).	current facts? Please explain these differences in baseline information and how they relate to growth inducing impacts.	PWN2-19 cont.
Q20 2-22	2.5.1 Salinas Valley Groundwater Basin Return Water The amount of SVGB groundwater included in the source water is expected to decrease over time (CalAm et al., 2016b).	How does the theory that MPWSP wells will draw more groundwater toward the pumping locations support the statement that groundwater in the source water will decrease over time? Two problems. 1. These are contradictions. 2. The limited duration of continuous test slant pumping produces insufficient data to make that conclusion. What is the duration period that is sufficient for these conclusions? Please explain.	PWN2-20
Q21 2-22 to 23	Discussion of Return Water	Completely omitted is the option to return water to a customer in the Marina Coast Water District. Such an obvious option shows short-sightedness, if not a bias. This is serious since the DEIR is supposed to evaluate all apparently implementable alternatives. How can such an obvious option be overlooked? Please analyze this option, or please explain this omission.	PWN2-21
Q22 2-32 to 40	2.6.1 State Water Resources Control Board Report and 2.6 Water Rights	In the entire discussion on SWRCB report and water rights, not one mention is made that the project is located within the jurisdiction of MCWD. MCWD has rights and responsibilities. To ignore MCWD, to assume there is no effect on MCWD, to not even mention this elephant in the room, shows an	PWN2-22

		intentional effort to avoid the subject. This omission by SWRCB is astounding. Omission in this DEIR/EIS is even more astonishing. It must be corrected. Please explain this DEIR/EIS omission, and/or why it is not worthy of discussion. Furthermore, to incur millions of dollars of expenditures (and ratepayer liability) without having obtained the fundamental water right, is surely putting the cart before the horse. This would not be happening if the corporation were using its own money! Please explain why it is acceptable to proceed without an appropriate water right.	PWN2-22 cont.
Q23 2-34	Specifically on the topic of the return options for any fresh water drawn from the Basin by the MPWSP, the (SWRCB) Report provides: Cal-Am could use one of several possible options to replace any fresh water it extracts from the Basin. Cal-Am could return the water to the aquifer through injection wells, percolation basins, or through the CSIP. Cal-Am would need to determine which of these methods would be the most feasible, and would in fact, ensure no harm to existing legal users. The feasibility analysis would depend on site-specific geologic conditions at reinjection well locations and at the percolation areas. <u>These studies need to be described and supported in detail before Cal-Am can claim an appropriative right to export surplus developed water from the Basin.</u> Report at 39. (Underlining added.)	This suggestion by the SWRCB that "These studies need to be described and supported in detail..." seems to have been overlooked; mainly because MCWD was not included in the options. Until an assessment is made about a MCWD option, this DEIR/EIS is deficient. Please correct this substantive omission.	PWN2-23
Q24 2-35	Footnote 34: The EIR/EIS preparers have also had the benefit of working closely with, and receiving input from, the Hydrogeologic Working Group (HWG) that was formed as a result of the proposed settlement in the CPUC proceeding on the MPWSP. The HWG is composed of experts representing myriad parties in	This footnote affirms that the preparers did not consult with Marina Coast Water District, the site of Cal Am's MPWSP. Such omission shows a bias not to collect perspective on the full range of issues, nor to understand the potential impact in that locality and the region. This neglect is significant, and undermines the thoroughness of the DEIR. Please explain the rationale for excluding MCWD services from impact analyses.	PWN2-24

	the CPUC proceeding with diverse interests related to the Basin, including but not limited to the Monterey County Farm Bureau, the Salinas Valley Growers Association and CalAm. The EIR/EIS preparers obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions.		PWN2-24 cont.
Q25 2-35	Once the test well results are complete, the modeling will be verified and will be re-run as warranted.	When will the test results be complete? When a final report be issued? Where are the thresholds defined so that 'meeting them' will be understandable? How and under what circumstances will 'success' be attained? There is no deadline, no threshold date, no identified objectives, except to keep on collecting. What does this DEIR statement mean? When will the HWG be terminated? When will termination even be discussed? Will it be a factor? Since the test slant well is a 'test', there needs to be a plan for a final report. What is it? Please explain how this will occur.	PWN2-25
Q26 2-35	Thus, the full panoply of evidence concerning the project's relationship to groundwater (and thus water rights) may continue to evolve and be refined throughout the CPUC proceeding.	This statement admits that the CPUC decision may be made without a full availability on data, and without a concluding analysis and understanding of evolving issues. This is especially true on two strategic and significant matters: 1) The test well analysis has no precise ending date because it does not have threshold targets for test well performance. 2) Water rights are not on any time line, and its lack is a threat to MPWSP feasibility. As costs accrue, these omissions and unresolved issues create a formidable liability for ratepayers. Any clarity in this DEIR would be helpful. Please address these matters.	PWN2-26
Q27 2-35	2.6.2 Project Water Rights As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells.	"...cannot project the amount of Basin water that is expected to be drawn into the supply wells." ??? Really? Cannot project the amount! What is the test well all about? Are its data not included, or are they too sketchy, or unreliable, or erratic, or incomplete? This statement undermines the value of the "test" nature of the test slant well. It also undermines credibility regarding project feasibility. What is the reason for the statement? Please explain what is meant. Furthermore, how can the DEIR conclude a 'no harm' if this is the observation? No evidence suggests no	PWN2-27

		reason to conclude 'no harm'.	PWN2-27 cont.
Q28 2-35	Footnote 34: The EIR/EIS preparers have also had the benefit of working closely with, and receiving input from, the Hydrogeologic Working Group (HWG) that was formed as a result of the proposed settlement in the CPUC proceeding on the MPWSP. The HWG is composed of experts representing myriad parties in the CPUC proceeding with diverse interests related to the Basin, including but not limited to the Monterey County Farm Bureau, the Salinas Valley Growers Association and CalAm. The EIR/EIS preparers obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions.	The HWG does not represent 'diverse interests'. It does not the Monterey Peninsula, nor does it represent ratepayer or consumer or public interests. All three HWG members (Cal Am, FB, SVWC) represent private owner and profit-seeking interests. Cal Am is entirely self-serving, and needs no explanation. Farm Bureau and Salinas Valley Water Coalition represent agriculture owners, and are specifically desiring that absolutely no fresh groundwater leaves the Basin, which is the law under the Agency Act (described in 2.6.3 of this section). All three have proprietary interests in the fresh water component. To present the HWG as representing a broad interest is ludicrous. And to say (see Q27) that the modeling cannot predict the amount of Basin water drawn into the wells makes the cost of the HWG a waste. Based on this DEIR narrative, the cost of the HWG should not be passed onto ratepayers. Please explain the representation on the HWG. Please be more honest with the facts, and be less misleading in the process.	PWN2-28
Q29 2-38	Citing the SWRCB report: The feasibility analysis would depend on site-specific geologic conditions at reinjection well locations and at the percolation areas. These studies need to be described and supported in detail before Cal-Am can claim an appropriative right to export surplus developed water from the Basin.	Such a study(ies) was not cited in the list of references. Were these studies undertaken? Were there any efforts to conduct such a study? Who sponsored the studies? Were they evaluated by the DEIR/EIS consultants? Please explain what research material was reviewed in relation to this SWRCB instruction. Please explain this reference and what was done about it.	PWN2-29
Q30 2-38	CalAm proposes to deliver fully desalinated water to end users for use in lieu of existing groundwater production from the SVGB. The two points of delivery would be (i) to the Castroville Community Services District (CCSD) to supply water for municipal purposes (e.g., typical drinking, bathing, sewer, watering and other non-agricultural water uses) and (ii) to the Castroville Seawater Intrusion Project (CSIP) pond or directly into the reclaimed water CSIP pipe for use by the agricultural users that obtain water through CSIP.	This scenario is fully developed and analyzed. But CEQA requires an assessment of other possible scenarios. One obvious alternative, containing the identical approach, is to return water to Marina. It is closer with less construction, has the identical seawater intrusion dilemma, uses groundwater from the SVGB, will cause less environmental disturbance, be less expensive. How could this alternative have been overlooked? Please analyze this option, and change your conclusion. Or explain why it would be more damaging than the return water plan with delivery to Castroville and CSIP. In either case, a new narrative is needed. This omission is another crevice in the foundation intended by this DEIR/EIS.	PWN2-30

	Under these return water locales, the clean desalinated water would be provided for municipal or agricultural use (respectively) in lieu of pumping Basin water in an amount equal to the quantity of return water.		PWN2-30 cont.
Q31 2-40	Citing the SWRCB report: As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach.	The SWRCB report refers many times to the project plans for intake to be 'seaward of the beach'. The DEIR/EIS ignores the fact that intake screens are dominantly located landward of the beach, NOT seaward of the beach. This DEIR contains multiple figures showing the slant well layout on the land, terminating very near the Mean High Water line, yet it fails to make clear that the intake screens are located under land, not under the sea. This distinction is huge, but is omitted. Why? There needs to be an entirely new section explaining this, and showing just why the question of water rights is so critical. Seaward water rights are not at issue. But landward water rights have volumes of court documents and case law that govern it. To omit the fact of landward screened intakes is a fatal omission, rendering this part of the DEIR/EIS misleading, if not fallacious. The fact of intake screen locations being omitted suggests a bias. Please explain these omissions. Also the DEIR should be recirculated if these facts are clarified. Please explain why recirculation is not warranted if that is the conclusion.	PWN2-31
Q32 3-8	**CHAPTER 3 Description of the Proposed Project** **3.2.1 Seawater Intake System** **3.2.1.1 Subsurface Slant Wells** TABLE 3-1 FACILITIES SUMMARY FOR THE PROPOSED PROJECT	There is no description of the plan for location of intake screens. This omission calls attention to its absence. ESA and others know the intake screens are to be located dominantly 'landward of the sea'. This is critical to the question of water rights. The DEIR is expected to be full disclosure. It is not. Why not? Please explain why the intake screen locations, even in general terms, is omitted from the DEIR. Any new language of explanation would justify recirculation, since it is such a critical piece to the determination of water rights and ultimate feasibility considerations.	PWN2-32
Q33 3-13	Figure 3-3a MPWSP Seawater Intake System	Figure 3-3a clearly shows the plan for well locations. By simple observation, intake screens are landward. This surely did not escape the attention of the consultants. The DEIR has not explained intake screen locations. This is a major omission.	PWN2-33

		Another significant omission is the obvious questions from looking at Figure 3-31. The terminus of all slant wells appear to be are within Marina city boundaries. Or is the terminus in the Sanctuary? Those two lines showing the city boundary and the Mean High Water line are different. Or are they in fact different? This needs an explanation. And if this figure is wrong, what other diagrams and representations have omissions or errors. Credibility is at stake here. Please explain.	PWN2-34
Q34 3-15	The environmental effects associated with construction and operation of the test slant well were evaluated in accordance with CEQA and NEPA requirements by the City of Marina/California Coastal Commission (CCC) and MBNMS in November 2014, respectively.	This overly simplistic language ignores the opposition and rejection of the permit for the test slant well by the City of Marina. The objection was over the Mitigated Negative Declaration. Full transparency is compromised here. The appearance here is of a non-controversial project. This is not true, and transparency is the victim.	PWN2-35
Q35 3-16, 17	TABLE 3-2 LENGTH OF PERMANENT SLANT WELLS SEAWARD OF 2020 MEAN HIGH WATER (MHW) LINE (feet) "+ env" stands for envelope of change that accounts for the alongshore variability in shore profile. "storm" considers the potential erosion from a large (100-year) coastal storm.	Table 3-2 is an obvious attempt to emphasize the part of the well being under the ocean. Yet the Figure diagram shows the wells ending under the shore. The Table and the Figure clearly do not line up and do not represent the facts. The extra effort to calculate variables related to a 100 year coastal storm does show sensitivity to the issue of where intake screens are located. But this appears to be more of an intent to magnify the illusion that intake screens will be substantially under the ocean, given several 100 year storm events. This is a sham on facts and an exaggerated logic. It is a devious attempt to argue beyond facts in order to support the conclusions. Shame on the writers and final editors. Please explain why the Table and the Figure do align. Please correct them. Or please explain how these data and graphics apply to the facts for the life cycle of the project (which is clearly not 100 years).	PWN2-36
Q36 3-19	"The nine new permanent slant wells would be approximately 700 to 800 feet long at a minimum angle of approximately 14 degrees below horizontal..." and "...angles of 19 degrees for the test	Where is there evidence that another departure from the test well angle of 19 degrees is a good idea. What engineering report supports this plan? Remember, this is the first time this slant well test for ocean intake has ever gotten this far. There needs to be some effort to prove, or show evidence, that new plans, never applied to date, have a likelihood of success. But where is that evidence? It is not in this DEIR. If design problems emerge during construction, would	PWN2-37

	slant well and 14 degrees for all other slant wells off the horizontal toward the Monterey Bay." (Pg 4.2-59)	this untested design and experiment be continued as an experiment of the backs of ratepayers? Or would responsibility fall on Cal Am stockholders? A minimum of curiosity is expected by the consultants, or by CPUC, especially for something that has never been operational before. How many experiments is Cal Am allowed to have? When will CPUC require proof, or at least supporting evidence? Please provide evidence that 9 wells at 14 degrees from horizontal have some likelihood of success. Without some evidence, this is hope triumphing over proof. Please address this.	PWN2-37 cont.
Q37 4.1-8	**4.1.3 Baseline Conditions** The baseline for this EIR/EIS is the existing condition on or about October 5, 2012, which is when the CPUC issued a Notice of Preparation (NOP) for the proposed project... and Since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate.	Was there a specific report on 'the baseline'? Was there a report that got updated with 'baseline data as appropriate'? Where is that report? Please cite this report. Please provide a link to or cite the source(s) of that report. If there was not such a report, what data base or data files were referred to that were updated as appropriate? One major failing in the work of the Hydrogeologic Working Group is the lack of a baseline that is presented and explained for comparison purposes. Without such a baseline, projections cannot be made with confidence. The evidence of a baseline is missing. Please explain how the project (or maybe the HWG) baselines were developed, who has them, how they have been resented to the professionals and the public. Please explain if they have been released to the public, and where and how they are accessed.	PWN2-38
Q38 4.2-69	The subsurface slant wells would originate at an above-ground well head vault behind the beach and radiate out a distance of between 900 and 1,000 feet at an angle of 19 degrees off the horizontal for the existing test slant well and about 14 degrees for all other slant wells off the horizontal toward the Monterey Bay.	The 14 degree angle has never been drilled for seawater intakes. Are there potential complications or impacts from such a sharp angle, like maintenance and cleaning? The ability to maintain such shallow angled screened intake pipes that have never been tried before. This requires some investigation. This DEIR fails to pursue this question. Please provide support that this question is irrelevant, or provide analysis.	PWN2-39
Q39 4.4-6 to 8	The upper portions of the proposed slant wells at the CEMEX site would have well screens installed across them, and would draw water from	By describing the use of the Dunes Aquifer by Cal Am, and by omitting the plan of Marina Coast WD to use the same source, this DEIR/EIS ignores a major impact of the MPWSP. This omission is substantial.	PWN2-40

	these deposits. (Dunes Aquifer and 180' aquifer) Page 4.4-8	By this omission, the DEIR avoids any evaluation of cumulative impacts on this aquifer, thus creating a fatal flaw. Please explain this omission, and the reason for not including analysis of this impact.	PWN2-40 cont.
Q40 4.4-42	Special Condition 11 of the Coastal Development Permit, "Protection of Nearby Wells," requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long term pumping tests (Geoscience 2015b). The long-term pumping test began in mid-April 2015, and results are available at http://www.watersupplyproject.org/#!test-well/c1f1l.	The "long term pumping test" has never been defined. It was intended to test impacts from 'continuous pumping'. Cal Am suggested it was to be 18 to 24 months. However there were major interruptions in the pumping period that started in April 2015. Pumping stopped completely from 6/5/15 to 10/27/15 (more than 4 months) for CCC permit violations. Pumping stopped again from 3/4/16 to 5/2/16 (2 months) for an outfall repair. (Documented in HWG reports) There has been continuous pumping for about 7 months (May 2016 thru December 2016) before the DEIR went to print and released in January 2017. This is less than one-half the 18 months proposed. The DEIR does not include any relevant continuous pumping data (12 months or longer). This is not acknowledged in the DEIR. To ignore the plan for continuous pumping tests, and to suggest there has been continuous pumping from April 2015 is wrong. It is dishonest to the analysis, and to decision makers and the public. Please explain why these facts were omitted. Or please explain why continuous pumping is not a factor in a feasibility analysis, or in environmental considerations. Or add it, and adjust the Final EIR to include it.	PWN2-41
Q41 4.13-7	4.13 Public Services and Utilities 4.13.2.2 State Regulations California Coastal Act The MPWSP has been designed to accommodate existing and projected future demand consistent with the General Plans (and Local Coastal Programs) of the jurisdictions in CalAm's service area. As future development in the service area would need to be consistent with General Plan and Local Coastal Program requirements, the project would not conflict with Coastal Act policies related to public works facilities.	The MPWSP is not consistent with Marina's Local Coastal Plan. The EIR/EIS needs to verify if its statement is true. Litigation has been initiated over this very point. Please be transparent here. Please verify this point, and explain it and its relevancy as appropriate.	PWN2-42

Q42 4.13-11	TABLE 4.13-2 APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO PUBLIC SERVICES AND UTILITIES	Marina's Local Coastal Plan is omitted from this table. Did the consultants review Marina's LCP and its requirements? This plan is so important to local planning goals, and the impact of the MPWSP on that region. Ignoring it does not make it go away. Please add it and an analysis to the DEIR. Or please explain why it is not necessary to include it in Cumulative Impacts discussions.	PWN2-43
Q43 5.3-1	**5.3 Alternatives Development, Screening and Evaluation Process** Footnote 6: NEPA requires alternatives to be reasonable, or feasible, which could include consideration of whether the alternative is capable of complying with regulations governing desalination plants in order to receive the required regulatory approval.	The DEIR/EIS needs criteria and clear definitions on what constitutes 'reasonable or feasible'. With so much emphasis on the unproven test well, and the lack of history with subsurface ocean intake, the DEIR/EIS should include a few remarks on these definitions. If undefined, who defines it? Is it in the mind of the reader? The purpose of the CEQA and NEPA requirement is to be transparent on the benchmarks of protection and feasibility. The DEIR/EIS needs criteria and definitions on what is reasonable and feasible. Please explain these terms. Will you add such clarifications? If not, please explain why not.	PWN2-44
Q44 5.3-3,4	5.3.1.2 MBNMS Guidelines for Desalination Plants Key relevant guidelines include: Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project.	The DEIR does not explain why such collaboration was not initiated with MCWD. Even though the short history of the Regional Desal Project was included, there was no update on a potential two-party option (Cal Am and MCWD). Especially so when Cal Am's project is in the jurisdiction of MCWD, Regardless, the DEIR/EIS and the MBNMS must meet its obligations. This potential collaboration between MPWSP and MCWD should be discussed If denied as workable, then explain it. But to ignore it is to ignore the nose on your face. Please explain why this MBNMS guideline for collaboration was not addressed in the DEIR/EIS.	PWN2-45
Q45 6-6 and 6-13	**6.3.2 Relationship between Land Use Planning and Water Supply** and **6.3.5 Growth-Inducement**	(Also see Q17) Although the DEIR includes much data on population and housing projections, nowhere does the DEIR relate the data to actual per capita water consumption. For instance, Cal Am documents and this DEIR continues to suggest that one acre foot of water supports four average families for one year. But actual conservation data suggests that one AFY will support about 5 families, thus suggesting a growth	PWN2-46

	Potential	inducing impact that is 25% higher than DEIR calculations. Please explain why current per capita water use is not applied to growth inducing impacts. Please explain the relationship between population projections and conservation data on per capita use, and growth inducing impacts. Or please explain why the DEIR does not contain such analysis.	PWN2-46 cont.
	APPENDICES		
Q46	**Appendix E2** Results of Test Slant Well Predictive Scenarios Using the Focused CEMEX Area Model DRAFT by Geoscience 8-Jul-14 5.0 FINDINGS ▼ Based on preliminary ground water modeling, the salinity in the test slant well increases with time approaching 96% ocean water after 16 months of pumping. Data collected during the long-term pumping test will be used to establish salinity trends. (pg 15)	"Long-term" is not defined. How long is this? Cal Am schedule calls for an 18 to 24 month period. CA Coastal Commission agreed when it issued the test well permit. The prediction was to reach 96% ocean water salinity after 16 months of continuous pumping. It has not happened. No specific document in the DEIR/EIS supports this prediction to reach 96% salinity. In fact, there is no supporting document that a continuous pumping test protocol has been identified or pursued. 'Continuous' has never been defined. This DEIR claims to include pumping data, but it leaves out the fact that there have been serious interruptions in pumping durations. Interruptions are a fact, and have been reported in HWG documents, but this DEIR completely omits all discussion of it. The most recent period of continuous pumping is about 6-7 months. This is far short of the "16 months", and embarrassingly so, for the DEIR. This is a failure of the 'test protocol'. And it is a serious flaw in this DEIR. Please explain the failure to include a discussion of the actual continuous pumping periods, the interruptions, and those effects on continuous pumping data and analysis. This shortcoming in the DEIR is so large that a truck can drive through it. No operational sub-ocean intake slant well exists anywhere in the world. How can the DEIR be legitimate when there is no specific continuous pumping data that can justify moving ahead? This flaw has to be corrected. Please explain why the data is inadequate, or irrelevant. But please address it.	PWN2-47
Q47	**APPENDIX C3** Exploratory Borehole Results. Monterey Peninsula Water Supply Project	Comment/Question This was the first report by the Hydrogeologic Working Group put in place to steer and oversee the	PWN2-48

	Hydrogeologic Investigation Technical Memorandum (TM1) Summary of Results - Exploratory Boreholes dated July 8, 2014	scientific component of Cal Am's MPWSP. In 70 pages of narrative, there is not one mention of establishing a baseline. The bore holes were to provide data for comparisons. But the baseline data points were never established. The baseline became a moving target. And it became essentially useless for making projections. Or it became useful for not being precise. What is true? What do professional statistical experts say about a baseline? All say baselines are critical. And especially so for an experimental project like this one. Yes, projections can be made by tracking and plotting data points, but the point of a baseline is to help form judgments about 'progress' (or impacts or cautions). The failure to establish a baseline meant there was no way to judge progress. Four significantly qualified scientifically-trained professionals failed to address this fundamental requirement for an experiment – start with a base line. This 'test' well was described as new and needing to pass a generally-described (by SWRCB) objective to be 'feasible'. The California Coastal Commission coastal development permit (A-3-MRA-14-0050) (and amended permit A-3-MRA-14-0050-A1) required measurements. This omission of a baseline shows the lack of focus on 'evaluation' of the test. Please explain why a baseline was not established. Or please explain what is considered the baseline that is not in the HWG report.	PWN2-48 cont.
Q48 Pg 1 of Report	EXECUTIVE SUMMARY 1.1 Introduction The investigation and findings described in this Technical Memorandum are the result of collaborative planning and discussions among the hydrogeologic experts that represent key stakeholders for groundwater use and management in the Salinas Valley and Monterey Peninsula area of central California. The Hydrogeologic Working Group (HWG) consisted of the following experts: Mr. Tim Durbin and Mr. Martin Feeney (both representing the Salinas Valley Water Coalition and the Monterey County Farm Bureau), Mr. Peter Leffler	This Appendix C3 proudly promotes the composition of the HWG, and the representatives. After this report in 2014, a conflict of interest was discovered involving Dennis Williams, Cal Am and CPUC. Leaving this scandal unexplained, while the report here is prominently displayed, leaves the impression that the membership and representation are the same and that there is no reason to be skeptical. There is so much more to this picture. If the DEIR/EIS is to be credible, it must air the dirty laundry that emerged. Ignoring it only suggests that any negative information is to be avoided, all in the service to approve Cal Am's MPWSP. This is a serious shortcoming, and specifically leaves the impression that things are OK. Many know the conflict of interest history. Omission leaves doubt, and undermines credibility. Please explain the	PWN2-49

	(representing CalAm), and Dr. Dennis Williams (representing the CPUC CEQA Team). The HWG was formed as a result of a 2013 Settleme nt Agreement among parties to an ongoing CPUC-proceeding resulting from CalAm's proposed Monterey Pe ninsula Water Supply Project, to revie w and approve the scope of field inve stigation and development of a hydro geologic conceptual model from whic h to construct the groundwater modeli ng tools. The names of the HWG me mbers are presented here to indicate the general agreement among the members on the core findings of the investigative work described herein.	circumstances and the differences after this HWG report was issued. If credibility is the soul of a DEIR, then you lose some with glaring omissions.	PWN2-49 cont.
Q49 Pg 1 of report	Hydrogeologic Working Group (HWG) "The HWG was formed as a result of a Settlement Agreement among parti es to an ongoing CPUC-proceeding r esulting from CalAm's proposed Mon terey Peninsula Water Supply Project, to review and approve the scope of fi eld investigation and development of a hydrogeologic conceptual model fro m which to construct the groundwater modeling tools."	1.a) Dennis Williams and his company Geoscience owns international patents for slant well design and installation. Williams subcontracted to Cal Am AND the CPUC for evaluating the substance of test well modeling, data collection, and evaluation. Cal Am did not disclose to CPUC, nor the other members of the Hydrogeologic Working Group, that Williams had these patents. This conflict of interest, and not reporting it, continues to haunt the project.	PWN2-50
Q50	Re Technical Memo 1, July 8, 2014, page 1, in DEIR (Appendix C3)	The HWG is currently composed of four members retained by these entities. Cal Am, Farm Bureau, Salinas Valley Water Coalition. FB and SVWC narratives are from their websites: 1. Cal Am, the sponsor of the slant well and desal project, has 2 representatives: a) Dr. Dennis Williams (Geoscience) and b) Peter Leffler. Re 1a. The CPUC determined there was a conflict of interest and terminated its involvement with Williams/Geoscience.	PWN2-51

		This conflict is extremely serious because first, Williams/Geoscience can profit the most by a successful slant well test, and second, is helping to determine if the test is successful. A more astonishing conflict of interest is hard to find. Both Cal Am representatives are serving in support of a positive outcome for Cal Am. The possibility of bias in favor of the project is obviously high. And this undermines its credibility. 2. Monterey County Farm Bureau: (from its website): "Our organization serves as a collective voice for farmers and ranchers and provides information, benefits and services to our members. We...offer individual farmers and ranchers the opportunity to unite with others who share their concerns and interests, so they can speak with one powerful voice at the local, state and national levels." The Farm Bureau representative serves the interests of agriculture. There is no presumption that the Farm Bureau rep serves interests of Peninsula ratepayers nor regional urban interests. 3. Salinas Valley Water Coalition (from its website): "SVWC supports an appropriate and just solution to the water problems of the Salinas Valley.... The Coalition Board of Directors and its' members are committed to maintaining an active role in the Salinas Valley in an effort to ensure these goals." The SVWC rep also serves agricultural interests. It does not represent Peninsula ratepayers or regional urban interests. Both FB and SVWC are dominantly interested in protecting the Agency Act forbidding the export of Salinas Basin groundwater. Their roles are self-serving, and are not relative to the context of 'feasibility' or viability of slant wells. Missing from representation are public agency interests by Monterey Peninsula Water Management District (MPWMD), Marina Coast Water District (MCWD), and Monterey County Water Resources Agency. Specifically MPWMD and MCWD could have represented ratepayer and regional urbanized	PWN2-51 cont.

		interests. This omission of ratepayer and urban interests is a marked shortcoming for input and analysis. These omissions are notable. The existing HWG is a highly self-interested group in a key role. If this can be explained, it should be. Otherwise the self-serving nature will continue.	PWN2-51 cont.
Q51 Pg 50 of report	5.4 Determining Average Central California Coast Seawater Quality Average salinity estimates for the central California coastal region were established based on historical salinity measurements taken at …....	The baseline for salinity must be reported and used in the narrative. Cal Am Engineer Rich Svindland recently reported the salinity to be about 92%. The question is what is the denominator for calculations. Is the seawater composition from the central coast seawater TDS an average of 33,694 PPM, or is it the Monterey Bay TDS average that is closer to 35,000 PPM. When the denominator is a lower number the calculation will generate a larger percentage. If the denominator was 35,000 the result would be about 89% TDS. Numbers don't lie. Therefore it is important that accurate baseline data be clear and be presented. Where are the citations for the TDS values used in this analysis? What studies confirm the relevancy of using the lower TDS base? Please explain why one is more accurate than the other, and cite the sources. Can you please bring together the vernacular and the science.	PWN2-52

Q52 ** Not included in the DEIR /EIS	*NOT INCLUDED IN THE DEIR/EIS* *Coastal Development Permit amendment A-3-MRA-14-0050-A1 -Page 3* **SPECIAL CONDITIONS** This **Special Condition** modifies **Special Condition 11** as initially imposed by the Commission in Coastal Development Permit A-3-MRA-14-0050. Standard Conditions 1-5 and Special Conditions 1-10 and 12-17 of that permit shall remain in full force and effect**. Special Condition 11** now requires: "**Protection of Nearby Wells**, PRIOR TO STARTING PROJECT-RELATED PUMPING TESTS, the Permittee shall install monitoring devices at a minimum of four wells on the CEMX site, within 2000 feet of the test well, and one or more offsite wells to record groundwater and salinity levels with the wells and shall provide to the Executive Director the baseline groundwater and Total Dissolved Solids ("TDS") levels in those wells prior to commencement of pumping from the test well. (Underlining added.)	The DEIR narrative does not mention this requirement from the Coastal Commission. It is not in the Appendices. It is clearly a required protocol for evaluating the test slant well impacts. It is fundamental to the adequacy of the test. It is fundamental to the determination of 'feasibility'. It is fundamental to computer modeling. Where is this required report? What are the inputs from the HWG? Where is it published for public access? What are the baseline data? Where in the DEIR/EIS is this baseline information referred to? Please add it to the DEIR/EIS. Or please explain why it is not appropriate to be included or even referenced.	PWN2-53
Q53	**APPENDIX E2**	Comment/Question: Nowhere in this Appendix, and the extensive discussion of return water modeling, is there a single mention of returning water to the Marina Coast Water District, the very site where the extraction occurs. This was clearly an option, but it was ignored. This is a major oversight, and diminishes the integrity of the DEIR. Please explain this omission. Or please give adequate attention to this option.	PWN2-54

Q54 Pg 1172	HydroFocus GW Model North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios November 23, 2016 6.0 Uncertainty "...we quantify the uncertainty in model-calculated drawdown to hydraulic conductivity and the assumed allocation of extracted groundwater..." (pg 41 of report)	See comment below re pg 1174 (Q55).	
Q55 Pg 1174	7.0 Summary The most likely sources of error in the superposition NMGWM2016 arise from uncertainty associated with modeled boundary conditions including sea level rise, specified hydraulic conductivity values, and assumed project operations including pumping rates and relative contributions of groundwater in aquifers represented by Model Layer 2 and Model Layer 4 to total slant well pumping. (pg 43 of report)	Applying data from a new ERT survey would be helpful here, to help quantify the baseline data, and to add specificity to the model, and thereby produce more accurate projections. It would surely reduce uncertainty. If new ERT data were available for a wide swath of relevant territory, it would be enormously useful to the modelers. But would the data be useful to DEIR consultants? Probably. If available, please include it in an updated analysis?	PWN2-55
Q56 Pg 1182	NMGWM(2016) section lines. Figure 3.2a from HydroFocus GW Model North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios November 23, 2016	The computer model is cited here. Its section lines show a distance of 5 miles between A-A1 and C-C1; 3 miles between C-C1 and B-B1; and 2 miles between D-D1 and E-E1. Huge assumptions need to be made for these distances. New ERT data would eliminate these gaps, and would replace assumptions with facts. Would the DEIR consultants (ESA) include new ERT data in an updated analysis?	PWN2-56
Q57 Pg 1230	Example Problem, Figure A1.1	The superposition of interpolated data creates a decent picture. But analysis from an ERT data base would create a far more accurate picture. An ERT project will be conducted for much of the MPWSP area. If ERT data is produced, will the consultants be interested in reviewing it? If so, would the two Lead Agency teams produce a supplemental DEIR/EIS?	PWN2-57
Q58 I2-11	**Appendix I2** A potential constraint to the implementation of slant wells at this	Nowhere in the discussions on Cal Am's location of its slant wells is there mention that it is located squarely in another water jurisdiction – Marina Coast Water District. Even here, it references location in general, but not the fact that Cal Am is located in the MCWD	PWN2-58

	location is Marina Coast Water District's existing 300 acre-foot/year desalination (currently non-operational) and associated intake well, as well as MCWD's plans for developing a future 1.5-mgd (or larger) desalination facility that would include development of a subsurface seawater intake system on nearby/adjacent property. Implementation of subsurface slant wells for the MPWSP at this same location could result in well interference.	jurisdiction, only nearby. There are references to potential "interference", but no analysis of this potential. MCWD has its responsibilities and rights to resources within its jurisdiction, including water rights and engineering options. Nowhere are these issues mentioned. The DEIR seems biased in favor of the MPWSP project because of these omissions. Such a bias can be removed if a more thorough analysis of impacts on MCWD plans were included, and various aspects of 'potential interference' were described. Moreover the issue of mitigation is ignored in regard to "interference' with MCWD. Will a new mitigation analysis be conducted? Will this omission be corrected? Can the DEIR be considered a fair assessment of 'potential harm" if these matters are omitted? Please explain these omissions.	PWN2-58 cont.
Q59 Pg 1579	**Appendix J1.** Cited from the CalAm Coastal Water Project Final Environmental Impact Report as certified on December 17, 2009 The submittal expressly excludes development on lands located within the former Fort Ord army base, which has another water supply source (MCWD). (Page 8-18)	There are 29 pages of description of Peninsula plans. Yet MCWD plans are reduced to the quoted one line, made in 2009. This shortcoming misleads the decision makers that MCWD does not count. Yet it has been acknowledged that the MPWSP may interfere with MCWD plans. Please explain how this DEIR can refer to an interference, but not address it. Please explain how MCWD plans are irrelevant to the DEIR analysis of cumulative impacts.	PWN2-59
Q60 pg 1385	**APPENDIX G2** Trussel Technologies Inc. Technical Memorandum, Response to CalAm MPWSP DEIR In contrast, the test slant well water is considered the "worst-case" water because the seawater it is drawing is not fresh. Figure 3 shows that it could take up to four years for the slant well to be drawing 96% seawater, and the well has only been operating intermittently since April 2015. (pg 4 of report)	There is little discussion of Cal Am's target to reach 96% salinity for its project ocean intake supply. This target has larger implications, since it relates to return water required by the Agency Act, the mitigation for extraction, question of 'no harm', and the cost to Peninsula ratepayers. Furthermore it is tied to project feasibility. There needs to be some assurance that targets have detailed support. Especially significant targets like this. There is no engineering or other report mentioned in the DEIR on how this target is expected to be met. The only mention in Trussel's report "it could take up to four years" is only an educated guess. This educated guess is based on data from 2014, and completely precedes all test slant well data. The HWG data over the past 6 months shows the	PWN2-60

		percent of seawater pretty much stuck on 92%. It would be beneficial for the FEIR to disclose how Cal Am made a determination that the seawater component would go to 96%. This crucial omission leaves one to assume the details are there. But without citing them, the DEIR is deficient. Please explain how the proposed project, and the test well, gives proof that the 96% target will be met. Or please explain the reason this issue does not need to be analyzed.	PWN2-60 cont.
Q61 Pg 1386	Figure 3 Time for Slant Well to Pull 96% Seawater (GeoScience 2014b).	Figure 3 is based on 2014 data. This is far too dated to be useful. Recent HWG data tracks salinity up to 92%. But the curve has flattened out, no longer projecting a consistent increasing pattern toward 98%. There is current information. It must be reviewed. Otherwise this part of the DEIR is based on false hope. Please review this data. Please add it and the associated analysis. Furthermore, a new ERT survey would shed important light on this.	PWN2-61

Public Water Now (PWN)
Letter 3 (PWN3)

To: MPWSP DEIR/DEIS Team
From: Public Water Now, George T. Riley
Subject: Feasibility of Slant Wells
Date: March 27, 2017

Why are we hung up on slant wells? The State Water Resources Control Board has demanded that entities seeking to pump ocean water for desal must consider subsurface intakes first, if feasible. Four site specific criteria are proposed, again if feasible: site, design, technology and mitigation.

But since the world has never used slant wells for ocean intake, the question of 'feasibility' must include factors and conditions beyond the site. The science of evaluation must go beyond engineering. It must include cost, and objective science, and issues of harm, and advisability in the face of all factors.

So far, Cal Am engineering has been perhaps OK. Outside of inefficient permit processing with Marina, exceeding the Coastal Commission permit limits, and a funky outfall design that failed in a winter storm, it could be called 'passable'. But many other factors have been ignored, or are being sidelined. Look at events so far. PWN3-1

Cal Am and other supporters agreed to form the Hydrogeologic Working Group (HWG) to design and evaluate test slant well data collection and analysis. It started poorly. The HWG did not establish a baseline for later comparisons. Then it got caught with a conflict of interest whereby Cal Am's consultant (Dennis Williams of Geoscience) was retained by the CPUC without knowing about two matters of importance: Williams held patents on the technology being used, and Williams also worked for Cal Am. Cal Am admitted to knowing about both, and not informing the CPUC until the conflict of interest was revealed by Public Water Now. PWN3-2

The HWG continues in a less than informative way. Cal Am claims the HWG has 20 months of data. This is misleading. Two major interruptions occurred: 4 months for exceeding permit thresholds, and another 2 months for its funky outfall design that failed in a recent storm. It has not been 20 months of continuous pumping. PWN3-3

The HWG was expected to produce a report to be useful for required environmental reviews, which had a deadline of March 27, 2017. The report was expected to help determine if harm has occurred to the Salinas Basin. There is still no HWG report. Besides, the science for determining 'harm' has been very shallow. This weakness will haunt the project. PWN3-4

Cal Am project description states it "shall focus its production from a shallow portion of the aquifer system, sometimes referred to the Sand Dunes Aquifer..." This is the fresh water aquifer that Marina Coast Water District (MCWD) hopes to develop for its customer base. Harm to overlying water rights holders includes seawater intrusion, and lose of source water. This is a head-on collision largely because Cal Am has invaded another water jurisdiction, and has not acquired any water rights to any water in the Salinas Basin. PWN3-5

Furthermore Cal Am sold the public, and many public agencies, on its plan to draw water from under the Bay. All that has changed. Now most water will be pumped from aquifers inland of the coastline, not from under the Bay, and from the fresh water Dunes Aquifer within the jurisdiction of MCWD. PWN3-6

If that is not enough, the HWG has a biased composition, on top of its conflict of interest. It has 4 members - 2 for Cal Am, and 2 for agricultural interests. There are no representatives for local water agency or city interests, nor ratepayer interests. Therefore expect a biased report, if there is one. PWN3-7

Feasibility questions, so far, have served Cal Am interests. Its focus has been only on site specific criteria: site, design, technology and mitigation.

Other factors must be considered, particularly because the initial review process has been compromised and is too narrow. These include:

1. History. No ocean intake slant wells exist. Therefore this is an experiment. Our community should not be expected to embrace a new unproven technology for the bulk of our water supply without a robust evaluation.

2. Cost of the experiment. All costs are based on one test well in Orange County. No operational experience exists. Costs estimates for long term maintenance and replacement are speculative guesses. For such an experiment, grant funds must be allocated. After all, state agencies are pushing this experiment. Ratepayer pocketbooks must not be exposed to such unknowns.

3. Cost of long range operations. This needs more input than Cal Am engineers and consultants. There must be a more robust evaluation of long range projections of demand and the cost of meeting that demand. It should include comparisons to other supply options. And it could include potential changes required by the new Sustainable Groundwater Management Act.

4. Timeliness. The State's Cease and Desist Order (CDO) had deadlines. The community has expectations. Cal Am is forcing its experiment and the CDO deadlines onto the community without adequate time for evaluation.

5. Quality and history of the sponsor. Cal Am has no water supply success on the Peninsula. It has failed in three previous attempts on traditional engineering approaches – a dam, power plant water intake and discharge, and vertical wells for desal. And we are expected to rely on this company for an experimental solution? Stranded costs falling on ratepayers is the norm. And it looks like another failure is quite possibly in the works. PWN3-8

6. Other options. Cal Am has other options. It could seek another engineering solution, such as Ranney wells. There are competitors to Cal Am for a desal supply. Two private entrepreneurial ventures may have traction locally, and could be encouraged to join the race for cost, schedule, design and management comparison. vOther source waters could be evaluated, consistent with the current low level of actual water use.

7. Leadership. Cal Am has not been a dependable partner for water projects. It has avoided partnering with the major Peninsula water agency, MPWMD. It has reneged on three partners for the regional desal project, Monterey County, MCWRA and MCWD. Cal Am has pressured the MCWD to stretch its interpretation of permitting regulations to advance slant well tests. The atmosphere for cooperation on slant wells has been soured by Cal Am's careless approach to permitting.

The most frightening fact is this language in the Large Settlement Agreement being supported by all the major players in Cal Am's project: "...whether a source water project or program is feasible shall be determined by California American Water." (Sect 5.3) This is the fox guarding the hen house.

This appeal is to the DEIR/EIS review team, the Peninsula Mayors Water Authority, local water agencies, and others claiming a role in leadership. It goes without saying that ratepayers are interested.

PWN contends that the current track for determining 'feasibility' is inadequate and inappropriate. Unless other relevant feasibility factors are clearly identified and rigorously evaluated, the money pit of slant wells should be abandoned.

8.6.18 Salinas Valley Water Coalition (SVWC) and Monterey County Farm Bureau (MCFB)

March 29, 2017

VIA ELECTRONIC MAIL
MPWSP-EIR@esassoc.com

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California Public Utilities Commission
c/o Environmental Science Associates
550 Kearney Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
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Monterey, CA 93940

Re: Joint Comments of Salinas Valley Water Coalition and Monterey County Farm Bureau on January 2017 CalAm Monterey Peninsula Water Supply Project Environmental Impact Report/Environmental Impact Statement

Dear Ms. Borak and Ms. Grimmer:

The Salinas Valley Water Coalition (SVWC) is a not-for-profit organization comprised of agricultural landowners, farmers and businesses within the Salinas Valley. The SVWC's primary purpose is to participate in various governmental proceedings in order to preserve the water rights of its members, to protect their water resources and to affect water policy decisions in a manner that provides this protection while sustaining agricultural production and quality of life.

The Monterey County Farm Bureau (MCFB) is a California not-for-profit organization founded in 1917 that represents family farmers and ranchers in the interest of protecting and promoting agriculture throughout Monterey County. MCFB strives to improve the ability of those engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of our local resources.

Community participation is essential to any project and is critical to obtaining support for that project. Toward that end, we appreciate the efforts made by Applicant California American Water Company (Cal-Am) and various agencies to reach out to the Salinas Valley agricultural community to discuss how the use of wells to produce source water for the Monterey Peninsula Water Supply Project (MPWSP) will affect the Salinas River Groundwater Basin (SRGB or Basin[1]) — the source of water supply on which the Salinas Valley's agricultural economy depends.

SVWC/MCFB-1

[1] Note: The terms Salinas River Groundwater Basin and Salinas Valley Groundwater Basin are both used in the DEIR. The Salinas River Groundwater Basin, or SRGB, is the term referenced in the Monterey County Water Resources Agency Act. The SRGB is the area of the Salinas River and the Valley that is recharged by the alluvium of the Salinas River.

After analyzing the MPWSP's first Draft EIR, the SVWC and MCFB submitted comments describing serious flaws in the Draft EIR's conclusion that use of wells to produce source water for the MPWSP would not substantially deplete the overdrafted Salinas River Groundwater Basin (Basin) and cause significant direct, indirect and cumulative impacts. Those comments showed that the MPWSP's use of wells to produce source water from the overdrafted SRGB would cause significant adverse impacts and explained why the MPWSP would be infeasible as a result of Cal-Am's lacking the groundwater rights needed to operate production wells in the overdrafted groundwater Basin.

After the comment process closed on the MPWSP's first Draft EIR, the SVWC, MCFB, Cal-Am and other parties negotiated and executed an agreement that would avoid significant impacts to the Basin and make the MPWSP feasible with respect to groundwater rights. The Settlement Agreement on MPWSP Desalination Plant Return Water, commonly referred to as the "Return Water Settlement Agreement" (RWSA), would return to the Basin the portion of source water that the MPWSP's wells produce from Basin groundwater (as opposed to seawater). Under the RWSA, the "Return Water" would be delivered for use in lieu of existing groundwater pumping in the area threatened by seawater intrusion — so that there would be no net increase in Basin groundwater use as a result of ongoing MPWSP well production. In other words, approval and performance of the RWSA would mean that the MPWSP's ongoing well production would have a net-zero impact on Basin groundwater on which the Salinas Valley's farms, families and workplaces depend. In turn, that net-zero impact on Basin groundwater would make the MPWSP legally feasible by avoiding conflict with prior groundwater rights of the Basin's overlying landowners and prior appropriators, like the Castroville Community Services District (CCSD). And finally, the net-zero impact on Basin groundwater would avoid significant adverse physical impacts to the Basin and to the remarkable agricultural economy it sustains.

SVWC/MCFB-1 cont.

The Salinas Valley suffers from seawater intrusion that has degraded groundwater quality. Members of the SVWC, MCFB and other landowners have paid decades of costly assessments to fund development and operation of groundwater recharge projects—including two reservoirs (Nacimiento and San Antonio), the Castroville Seawater Intrusion Project (CSIP), and the Salinas Valley Water Project (SVWP). The purposes of those projects are to recharge the SRGB to assure water availability during the irrigation season, to stop seawater intrusion, to bring the SRGB into hydrologic balance, and to manage the SRGB for long term sustainability. The two reservoirs capture high winter streamflows from Salinas River tributaries for gradual release into the porous Salinas River bed during the dry season to recharge Salinas River underflow and the SRGB (direct recharge). The CSIP delivers highly treated municipal wastewater for agricultural irrigation use in lieu of groundwater pumping (in lieu recharge). And the SVWP modified and reoperates Nacimiento Reservoir to increase its yield for increased recharge releases into the Salinas River (more direct recharge) and to supply a new surface water diversion for increased CSIP water deliveries in lieu of groundwater pumping (more in lieu recharge).

SVWC/MCFB-2

The hundreds of millions of dollars in groundwater recharge investment by the SVWC and MCFB members and other Salinas Valley landowners sustains an $8 billion agricultural economy that generates more than 76,000 jobs. The Salinas Valley's agricultural economy depends on irrigation with Basin groundwater.

The MPWSP's Proposed Use of Wells to Produce Source Water From the Overdrafted Salinas River Groundwater Basin Risks Making the Monterey Peninsula's Water Supply Solution Legally Infeasible

SVWC/MCFB-3

To help solve the Monterey Peninsula's water supply problems, the MPWSP proposes to construct eight slant wells in the Salinas River Groundwater Basin to pump 26,995 acre-feet per year (AFY) of source

water to deliver approximately 10,753 AFY (9.6 million gallons per day [MGD]) of desalinated water for Cal-Am's urban service area within the Monterey Peninsula — outside the Basin. The 6.4 MGD alternative would produce 7,168 AFY of source water to deliver approximately 3,010 AFY of desalinated water for the Peninsula.

The Draft EIR/S explains that the Basin experiences approximately 51,000 AFY of overdraft (Draft EIR/S at p. 4.4-19.) Accordingly, the Draft EIR/S correctly concludes that use of Basin wells to produce source water for the MPWSP's desalination process will make the project legally infeasible, because there is no surplus groundwater available for new appropriative uses — unless the well production would be undertaken without causing injury to overlying and prior appropriative groundwater rights. (DEIR/S at 2-30 to 2-32 ["what rights factors in as a key project feasibility issue"].)

The Draft EIR/S asserts that "[t]he area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinty." (DEIR/S at p. 4.4-60.) From there, the Draft EIR/S erroneously asserts that the MPWSP's production of brackish groundwater exceeding state water quality objectives for chlorides and total dissolved solids (TDS), by definition, cannot injure prior groundwater rights (i.e., overlying rights of farmers and prior appropriative rights of the CCSD) — unless the MPWSP well production directly causes acute impacts, like dewatering nearby wells currently being used for agricultural irrigation or potable water supply. (DEIR/S at pp. 2-35 to 2-37.)

SVWC/MCFB-3 cont.

The preceding assertion of the DEIR/S is wrong and risks misleading the Commission into concluding that the MPWSP's use of Basin wells to produce source water might be legally feasible, even if the MPWSP does not return to the Basin the portion of produced source water originating as Basin groundwater (instead of seawater).

First, the Draft EIR/S admits that as a result of the MPWSP's well production, "changes in water quality could be realized within the first 5 years of project operation," that "throughout the life of the project, local groundwater quality around the slant wells and within the cone of depression could change from the brackish quality it is now to higher salinity groundwater . . . because the slant wells would draw in the brackish water that is currently in the aquifer formation and seawater would flow in to replace it." (DEIR/S at p. 4.4-76.) New water quality degradation caused by MPWSP pumping would injure the Basin and Basin groundwater rights, unless it is offset. Without an offsetting water quality improvement effect, the MPWSP's pumping would injure prior groundwater rights in the Basin, making the use of Basin wells to feed the MPWSP infeasible from a water rights perspective.

Second, as the tension between water demand and water supplies continues to intensify, competition is building for degraded water supplies – like municipal wastewater or groundwater that cannot be beneficially used without treatment (e.g., tertiary treatment of wastewater or desalting of brackish groundwater). The notion that degraded water supplies that fail to meet state water quality objectives are per se "surplus" is an anachronism that defies modern water management reality.

SVWC/MCFB-4

For example, there is competition for recycled wastewater produced by the Monterey Peninsula Water Pollution Control Authority and many other municipal wastewater treatment agencies across the state. Municipal wastewater that used to be considered a costly disposal problem is now a coveted water resource. With respect to the SRGB's brackish groundwater, the Draft EIR/S describes competing demands for non-potable, brackish groundwater in the project area, including "minor irrigation and dust

control" and potential future source wells for at least one other, unrelated desalination project. (DEIR/S at 4.4-90.)

Further, in Southern California's adjudicated West Coast Basin, the Superior Court in 2007 ruled that a desalting plant's use of wells to produce brackish groundwater exceeding state water quality objectives must stop operating unless its owner leases adjudicated pumping rights to cover well production. That was so, absent consideration of whether the desalter's pumping harmed nearby wells. (*See* Joint Stipulation and Order re Operation of Goldsworthy Desalter, *California Water Service Company v. City of Compton,* Los Angeles County Superior Court Case No. C506-806 [filed July 24, 2007], attached hereto as **Exhibit A.**) Further, the West Coast Basin adjudication Judgment regulates production of highly contaminated groundwater for industrial cleanup sites under a "nonconsumptive water use right" requiring that "essentially all such produced water is returned without quality impairment, to the aquifer of the Basin from which the same was produced." (Exh. B Judgment at 59:1-6, attached hereto as **Exhibit B**.) The fundamental groundwater rights principles underlying the desalter order and nonconsumptive use right point to the need for the Return Water Settlement Agreement in the SRGB.

If the Commission were tempted to embrace the anachronistic position that brackish groundwater exceeding water quality objectives is per se surplus unless its production dewaters third party wells, it would be committing the MPWSP to a significant legal feasibility – and defensibility — problem when there is no need to do so.

SVWC/MCFB-4 cont.

Approval of the Return Water Settlement Agreement Would Ensure that MPWSP Well Production Is Legally Feasible

The solution to the MPWSP's water rights feasibility problem is for the Commission to approve the Return Water Settlement Agreement that already has been approved by the Applicant, the Monterey County Water Resources Agency (MCWRA), the Monterey Peninsula Water Management District, the Monterey Peninsula Regional Water Authority, LandWatch Monterey County, the Salinas Valley Water Coalition, the Monterey County Farm Bureau and other parties.

The Return Water Settlement is legally necessary if the Commission is going to approve a project allowing the Monterey Peninsula to take water pumped from the Salinas River Groundwater Basin wells. Absent Return Water, the MPWSP will be legally infeasible from a water rights perspective and also will violate the MCWRA enabling act prohibition against exporting groundwater from the overdrafted Basin. Absent Return Water, litigation is certain.

The MPWSP's Well Pumping Will Cause Significant Adverse Environmental Effects, Unless the Return Water Settlement Agreement is Approved and Implemented

The Draft EIR/S states that the MPWSP would have a significant adverse effect on groundwater resources of the overdrafted Basin if, among other things, "[e]xtraction from the subsurface slant wells substantially depleted groundwater in the SVGB such that there would be a net deficit in aquifer volume." (DEIR/S at 4.4-41.)

SVWC/MCFB-5

The Draft EIR/S states that the MPWSP would have significant cumulative impacts on groundwater resources if they would substantially deplete or interfere with groundwater supplies, violate water quality standards, or degrade water quality. (DEIR/S at 4.4-88.)

The Draft EIR/S admits that, based on groundwater effects modeling: "If the proposed project did not return any water, localized depressed groundwater levels would persist in the three affected aquifers throughout the life of the project." (DEIR/S at p. 4.4-60.) That impact would be a significant direct impact to groundwater resources. It also would be a significant cumulative impact to groundwater resources, because the MPWSP's reduction in groundwater levels would be a considerable contribution to an existing condition of overdraft (i.e., existing substantial depletion).

The attached Technical Memorandum from consulting groundwater engineer Timothy Durbin explains that "the DEIR's groundwater impacts analysis supports the need to approve and implement the proposed Return Water Settlement Agreement ("RWSA")." The Technical Memo is attached as **Exhibit C** hereto. Mr. Durbin has reviewed the RWSA and is a member of the Hydrological Working Group that has reviewed the groundwater effects modeling used in the current Draft EIR/S. Mr. Durbin explains that the RWSA "will help to ensure that operation of slant wells to produce source water for the MPWSP desalination process will not substantially deplete groundwater resources within the Salinas River Groundwater Basin and would help prevent the source water production from making a contribution to ongoing depletion of the groundwater resources . . . ."

SVWC/MCFB-5 cont.

Based on the preceding significance criterion, and the Draft EIR/S's groundwater effects modeling, the Commission's approval and the Applicant's implementation of the Return Water Settlement Agreement as an enforceable component of the MPWSP is necessary to avoid significant adverse impacts with respect to groundwater resources. And based on the criterion for cumulative impacts, implementation of the Return Water Settlement Agreement is necessary to avoid a significant cumulative impact to groundwater resources.

The approval of the Return Water Settlement Agreement by the Applicant and other necessary parties (e.g., MCWRA, CCSD) shows this component of the MPWSP is feasible. Failure to approve the Return Water Settlement Agreement would result in a significant impact despite the availability of feasible mitigation, which would violate the California Environmental Quality Act (CEQA).

"From the time the slant wells begin pumping, and throughout the life of the project, local groundwater quality around the slant wells and within the cone of depression could change from the brackish quality it is now to higher salinity groundwater." (DEIR/S at 4.4-78.) However, the DEIR/S incorrectly concludes that impact is less than significant, because "the localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users." (DEIR/S at 4.4-76.)

SVWC/MCFB-6

The Draft EIR/S states that the MPWSP would have a significant adverse effect on groundwater resources of the seawater-intruded Basin if, among other things, the project's well production would "[v]iolate any ground water quality standards or otherwise degrade groundwater quality," including "exacerbating seawater intrusion . . . ." (DEIR/S at 4.4-41.)

As noted above, the Draft EIR/S admits that as a result of the MPWSP's well production, "changes in water quality could be realized within the first 5 years of project operation," that "throughout the life of the project, local groundwater quality around the slant wells and within the cone of depression could change from the brackish quality it is now to higher salinity groundwater . . . because the slant wells would draw in the brackish water that is currently in the aquifer formation and seawater would flow in

to replace it." (DEIR/S at p. 4.4-76.) That is an admission that the MPWSP's well production will cause water quality degradation — unless the degradation is offset.

Here, the Return Water Settlement Agreement would offset water quality degradation by delivering Return Water for use by CCSD and CSIP in lieu of existing groundwater pumping along the coast, which in turn will help to stop seawater intrusion from degrading Basin water quality. If the Commission approves, and the Applicant implements, the Return Water Settlement Agreement, the significant adverse water quality impact of the MPWSP's well production will be mitigated to a less-than-significant level.

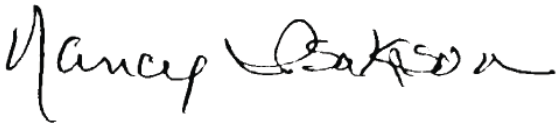
SVWC/MCFB-6 cont.

The SVWC and the MCFB believe that there is substantial agreement amongst the settling parties of the RWSA that provides a pathway in providing a solution that offers multiple benefits to the groundwater users of SRGB, CCSD and CSIP.

SVWC/MCFB-7

On behalf of the SVWC and the MCFB, we thank you for the opportunity to provide comments on the DEIR/S.

Sincerely,



Nancy Isakson, President
Salinas Valley Water Coalition

Sincerely

Norm Groot, Executive Director
Monterey County Farm Bureau

Attachments:

Exhibit A: July 24, 2007, Stipulation & Order re Desalter need for pumping right in *California Water Service Company v. City of Compton,* Los Angeles County Superior Court Case No. C506-806

Exhibit B: December 5, 2014, Amended Judgment, *California Water Service Company v. City of Compton,* Los Angeles County Superior Court Case No. C506-806 (pleadings cover page and table of contents and Exhibit B)

Exhibit C: February 23, 2017, Technical Memorandum, Timothy J. Durbin Inc. Consulting Hydrologists re Monterey Peninsula Water Supply Project DEIR, and curriculum vitae

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March 29, 2017

Via E-Mail and U.S. Mail

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Re: Surfrider Foundation's Comments on Draft Environmental Impact Report/Statement – Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

This firm represents Surfrider Foundation regarding the California Public Utilities Commission's consideration of an application for a certificate of public convenience and necessity for California-American Water's proposed Monterey Peninsula Water Supply Project (the "Project"). Surfrider is a non-profit organization dedicated to the protection and enjoyment of the world's ocean, waves and beaches. In particular, Surfrider's work focuses on five key areas: beach access, clean water, coastal preservation, ocean protection, and preventing marine plastic pollution. While Surfrider is generally supportive of the Project, it continues to have reservations regarding the Project's size, specific design features, and potential impacts to the Monterey Bay National Marine Sanctuary (the "Marine Sanctuary").[1] Surfrider-1

The Project will provide replacement water that the applicant, California American Water ("Cal-Am"), must acquire to reduce its present over-pumping of the

[1] Surfrider commented on the Commission's original draft EIR for the Project, which was circulated for public review in 2015. Surfrider also submitted scoping comments on the National Oceanic and Atmospheric Administration's Notice of Intent to prepare the DEIS in 2015. To the extent that they remain relevant to the current DEIR, Surfrider incorporates its prior comments by this reference, and restates them below.

Carmel River and comply with a State Water Resources Control Board Cease and Desist Order. *See* SWRCB Order WR 2009-0060. The importance of the Project for protecting the Carmel River means that its environmental review must be of the highest quality and must fully support the PUC's decision. The current Draft Environmental Impact Report/Statement ("DEIR") does not, and without revision will not, meet these standards.

As identified below, the DEIR falls short of requirements of the California Environmental Quality Act ("CEQA"), Public Resources Code section 21000 *et seq*., the CEQA Guidelines, California Code of Regulations, title 14, section 15000 *et seq*. ("CEQA Guidelines") and the National Environmental Policy Act ("NEPA"), 42 U.S.C. section 4321 *et seq*. The DEIR should likewise confirm that the Project has complied with all elements of the Marine Sanctuary's regulations that apply to the proposed Project activities.[2]

Surfrider-1 cont.

The Commission and the Marine Sanctuary (collectively, the "Agencies") must resolve the DEIR's multiple deficiencies before they may legally grant the requested Project approvals. Surfrider therefore urges the Agencies to remedy the identified defects in the DEIR's analysis and mitigation, and to adopt all feasible mitigation to reduce the Project's environmental impacts.

I. The DEIR Fails to Adequately Mitigate the Project's Contribution to Climate Change.

Analysis and mitigation of the Project's climate change impacts are particularly important because the global economy has already exceeded the atmosphere's capacity to absorb additional greenhouse gas emissions without risking catastrophic and irreversible consequences. Therefore, even seemingly small additions of greenhouse gas emissions into the atmosphere will create cumulatively significant impacts. *See Communities for a*

Surfrider-2

[2] For instance, we note that the DEIR includes only an incomplete discussion of the requirements necessary for the Marine Sanctuary to "authorize" otherwise prohibited Project activities like the proposed brine discharge. *See* DEIR 1-7 (citing 15 CFR § 922.49(a)). The final environmental document must contain evidence that the applicant has complied with all sections of the applicable regulations, including 15 CFR section 922.49(a)(1), which mandates that the applicant notify NOAA within 15 days of submitting its application to the Commission for authorization of an otherwise prohibited activity.

Better Environment v. Cal. Resources Agency (2002) 103 Cal.App.4th 98, 120 ("[T]he greater the existing environmental problems are, the lower the threshold for treating a project's contribution to cumulative impacts as significant."); *Center for Biological Diversity v. National Highway Traffic Safety Administration* (9th Cir. 2007) 508 F.3d 508, 550 ("[W]e cannot afford to ignore even modest contributions to global warming."). Here, the DEIR correctly recognizes that the Project will lead to significant greenhouse gas emissions, yet fails its statutory duty to identify legally adequate and feasible mitigation measures to minimize the Project's contribution to climate change.

The DEIR measures the Project's contribution to the cumulative impact of global climate change. It anticipates that multiple sources will contribute to the Project's total greenhouse gas emissions. Because desalination plants require large quantities of electricity to operate, much of the Project-related greenhouse gas emissions occur indirectly through the carbon emissions from energy production. In addition to indirect greenhouse gas emissions from electricity consumption, other sources include emissions from construction, operation of diesel emergency generators, vehicle trips necessary for Project operation, loss of carbon sequestration, and degassing from brine storage. DEIR at 4.11-17.

The DEIR evaluates the Project's climate-change contribution against different thresholds of significance. 4.11-10. For each one, it determines that the Project will have a significant impact from greenhouse emissions. DEIR at 4.11-15. When an agency's analysis indicates that a proposed project will have a significant project-specific or cumulative impact, the agency must identify and adopt feasible mitigation measures to address that impact. CEQA Guidelines § 15126.4(c).

Here, the DEIR proposes two mitigation measures to reduce greenhouse gas emissions from Project operations and construction. The first measure requires Cal-Am to submit a plan for PUC approval before Project construction that (1) describes potential greenhouse gas emissions in detail, and (2) requires Cal-Am to identify and incorporate "feasible" energy recovery and conservation technologies. That measure likewise obligates Cal-Am to make "good faith efforts" to use up to 20 percent power energy for the Project.[3] DEIR at 4.11-19.

Surfrider-2 cont.

[3] The identified sources of renewable power are installation of onsite solar photovoltaic panels and methane gas from the Monterey Regional Waste Management District's adjacent landfill-gas-to-energy facility.

The second measure requires a Cal-Am consultant to prepare a "Construction Equipment Efficiency Plan" that "identifies specific measures that Cal-Am (and its construction contractors) will implement" to reduce construction-related energy use. Cal-Am must also submit that plan for approval before beginning Project construction. DEIR at 4.11-20, 4.18-16. Thus, in both instances, the DEIR defers formulation of the specific mitigation requirements to an uncertain future date.

An EIR generally may not defer evaluation of mitigation until a later date. CEQA Guidelines §§ 15126.4(a)(1)(B). CEQA allows a lead agency to defer mitigation only when three narrow, specific prerequisites are met: (1) an EIR contains criteria or performance standards to govern future actions implementing the mitigation; (2) practical considerations preclude development of the measures at the time of initial project approval; and (3) the agency has assurances that the future mitigation will be both "feasible and efficacious." *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 94-95; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 669-71; CEQA Guidelines § 15126.4(a)(1)(B).

The DEIR fails these standards. First, it does not show why the Agencies cannot develop definite and enforceable mitigation measures now. The DEIR lacks any evidence demonstrating that more precise greenhouse gas mitigation requirements cannot be formulated. Cal-Am and the Agencies appear to have all of the information required to formulate a conservation plan and to determine whether and how much renewable electricity will be available. At the very least, DEIR can produce a clear menu of options and calculate potential emissions reductions from each. Similarly, the Agencies can evaluate all currently-known construction efficiency standards now, instead of shielding those measures from public review by deferring this mitigation.

Courts have recognized that the DEIR's approach of deferred mitigation violates CEQA precisely because it undermines informed decisionmaking and public participation:

> "[t]he success or failure of mitigation efforts . . . may largely depend upon management plans that have not yet been formulated, and have not been subject to analysis and review within the EIR . . . . A study conducted after approval of a project will inevitably have a diminished influence on decisionmaking. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization

Surfrider-2 cont.

> of agency actions that has been repeatedly condemned in decisions construing CEQA."

Communities for a Better Environment, 184 Cal.App.4th at 92.

Nor is this mitigation feasible or efficacious. *See id.* at 94-95. The DEIR itself reveals the deficiency of its vague, deferred mitigation measures. It states that it "cannot substantiate that the mitigated greenhouse gas emissions would be reduced to a less-than-significant level." DEIR at 4.11-23. The DEIR cannot do so because the proposed mitigation is so uncertain that it is impossible to know whether it will come close to reducing greenhouse gas impacts below identified significance thresholds.

The DEIR thus necessarily concludes that the Project's greenhouse gas emissions will cause a significant impact even after adopting the proposed mitigation measure. The DEIR cannot, however, simply determine that an impact is significant and unavoidable and ignore its mitigation obligations. *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 653. The Agencies must adopt any and all feasible mitigation to reduce those impacts. CEQA § 21002 ("[A]gencies should not approve projects as proposed if there are . . . feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." Surfrider-2 cont.

In light of the admitted failure of its improperly deferred mitigation, the DEIR must consider whether formulating and adopting additional mitigation measures could further reduce the Project's greenhouse gas emissions and the extent of such reductions.

The Agencies should consider whether the following measures would reduce the Project's greenhouse gas emissions below the DEIR's thresholds, and adopt those that would:

- Incorporate the U.S. Green Building Council's LEED or comparable standards for energy- and resource efficient building during pre-design, design, construction, operations and management;
- Design buildings for passive heating and cooling, and natural light, including building orientation, proper orientation and placement of windows, overhangs, skylights, etc.;
- Design buildings for maximum energy efficiency including the maximum possible insulation;

- Reduce the use of pavement and impermeable surfaces;
- Require water reuse systems;
- Maximize water conservation measures in buildings and landscaping, using drought tolerant plants in lieu of turf, planting shade trees;
- Install the maximum amount of solar photovoltaic panels available onsite, including solar canopies over parking areas
- Install solar water heating systems to generate all of the Project's hot water requirements;
- Install electric vehicle and plug-in hybrid vehicle charging stations to reduce emissions from vehicle trips;
- Install energy storage systems to ensure that the energy generated can be used on-site;
- Require recycled, low-carbon, and otherwise climate-friendly building materials such as salvaged and recycled-content materials for building, hard surfaces, and non-plant landscaping materials;
- Minimize, reuse, and recycle construction-related waste;
- Landscape to preserve natural vegetation and maintain watershed integrity;
- Use low or zero-emission construction vehicles.

Surfrider-2 cont.

The Agencies should also follow the lead of other agencies that have approved energy-intensive projects and require Cal-Am to purchase carbon offsets for the Project's greenhouse gas emissions. The DEIR argues against offsets by claiming that indirect emissions from electricity use would be governed by the state's cap and trade program and therefore do not need be offset. DEIR at 4.11-20. This position is faulty for multiple reasons. First, the cap and trade program is currently scheduled to end in 2020. In contrast, the Project has a 40-year planned life. DEIR at 4.11.11. Consequently, there is no guarantee that California's cap and trade program will regulate power-generating emitters for the bulk of the Project's life.

Surfrider-3

Second, even if cap and trade remains in place past 2020, it does not control emissions from out-of-state electrical-generation sources. In 2015, over a third of California's electricity was imported from out of state, a large percentage of which came from coal and natural gas combustion.[4] The DEIR cannot assume, as it does, that the indirect greenhouse gas emissions associated with the Project's electricity use will be entirely regulated by *California*'s cap and trade program.

Finally, roughly 20 percent of the Project's greenhouse gas emissions directly result from Project construction or operations that would not be subject to cap and trade regulation. DEIR at 4.11-16 through 4.11-17. If these greenhouse gas emissions cannot be mitigated through other means, then the Agencies must require that they are mitigated through emission offsets.

Surfrider-3 cont.

II. The DEIR Must Adequately Evaluate and Mitigate Coastal Erosion Impacts.

A. CEQA Requires Evaluation of Coastal Hazard Impacts.

The DEIR claims that information on potential Project impacts stemming from sea level rise and coastal erosion are only for "information purposes" and are not required as part of the CEQA analysis. DEIR at 4.2-45 (citing *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 ("*CBIA*")). Regardless of CEQA's requirements, under NEPA, federal agencies also consider environmental hazards' potential impacts on a project. *See, e.g., Fuel Safe Wash. v. FERC* (10th Cir. 2004) 389 F.3d 1313, 1331-32 (evaluating an EIS's consideration of seismic hazards).

Surfrider-4

Additionally, the DEIR misstates the applicable CEQA standard. In *CBIA*, the court held that "CEQA *generally* does not require an analysis of how existing environmental conditions will impact a project's future users or residents." *Id.* at 386 (emphasis added). But this general rule is subject to a significant exception. When the project exacerbates existing environmental hazards, an agency must consider "how such worsened conditions could affect a project's future users or residents." *Id.* at 389.

Here, the DEIR admits that the Project will contribute to global climate change, which will exacerbate various climate-related impacts including sea level rise. DEIR at 4.11-18. CEQA therefore mandates that the Agencies adequately evaluate and mitigate

[4] *See* http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html.

potential impacts related to sea-level rise and attendant coastal erosion. This analysis is not simply for "information purposes" and is subject to CEQA's legal standards and requirements.

Surfrider-4 cont.

B. The DEIR Should Ensure that Mitigation Measures Related to Coastal Erosion Impacts Are Adequate.

The DEIR notes that Cal-Am has revised its Project proposal to locate wellheads for the two southernmost slant well clusters 400 feet inland, behind the existing sand dunes at the proposed intake site. DEIR at 4.2-60. Surfrider had previously raised concerns regarding the original slant well locations proposed in Cal-Am's application because future coastal erosion and storms could compromise the wellheads.[5] Surfrider believes that relocating the slant wells inland helps avoid these foreseeable impacts and is consistent with Surfrider's previous recommendations in this proceeding. Consequently, while Surfrider does not advocate for any particular slant well site, Surfrider supports the decision to revise the Project to move the wellheads inland to more protected locations.

Surfrider-5

Even with this revised wellhead location, however, the DEIR's analysis reveals that the northernmost wellhead cluster (located at the CEMEX sand mining property) will become exposed by erosion and potentially compromised under extreme storm conditions by 2060.[6] *See* Figure 4.2-7. The DEIR thus proposes Mitigation Measure 4.2-9, which requires annual monitoring of coastal retreat at the CEMEX site and relocation of the northernmost well cluster if and when data indicates that slant wells are expected to become exposed within five years.

CEQA requires that an EIR contain sufficient evidence to indicate that a mitigation measure is adequate to reduce a potentially significant impact to a less-than-significant level. *See National Parks & Conservation Assn. v. County of Riverside* (1999) 71 Cal.App.4th 1341, 1366. Yet the DEIR does not demonstrate that Mitigation Measure 4.2-9 can adequately reduce the identified erosion impact. First, Measure 4.2-9 does not

[5] *See* A.12-04-019, Testimony of Bradley Damitz on Behalf of Surfrider Foundation (February 22, 2013) at 6-7.

[6] The DEIR's "erosion profiles" are predicted beach cross-sections perpendicular to the waterline. These profiles attempt to depict how the beach and dune profile will retreat landward in response to sea-level rise, erosion, and storm events over different time horizons.

specify how Cal-Am should calculate when threatened exposure is five years away, thus triggering planning and permitting for slant well relocation.

Using simple average erosion rates is not sufficient. As the DEIR shows elsewhere, a single 100-year storm event could erode the dune profile near the site by roughly 130 feet inland. DEIR at Figure 4.2-7 (compare 2060 erosion profile with the profile showing the combined impact of 2060 erosion and a 100-year storm event). This single-event erosion is roughly equivalent to the average erosion that would be expected to occur over twenty years. *See id.* (compare 2040 erosion profile with 2060 erosion profile).

Every year brings a possibility of such an extreme storm event. And as has been noted at Commission workshops on climate adaptation, "the frequency and magnitude of [storm] extremes" is expected to "increase markedly" with climate change.[7] The 2015-2016 El Nino was one of three strongest on record and brought unprecedented levels of erosion to the California coast, especially in sediment-deprived areas like the CEMEX site.[8]

Surfrider-5 cont.

In fact, the CEMEX site might be even more threatened than the DEIR reveals. The beach and dune profile used for the test well erosion analysis is actually located to the south of the CEMEX sand mining operation. The DEIR does not evaluate how sand mining activities will further exacerbate coastal erosion, claiming that "No data is available to quantify the uncertainty in adjacent beach and dune erosion related to sand mining activities." DEIR Figure 4.2-7, n. 3. Thus, the potential magnitude of erosion at this location is very likely greater than the DEIR reveals.

The mitigation measure's proposed monitoring and DEIR's erosion projections overlook the possibility that extreme climate and storm events, like those associated with last year's El Nino, could erode the beach to within the range of a single storm's erosion at the especially vulnerable CEMEX site. While that risk exists, the measure could fail to

[7] *See* Dan Canyan, "Planning for climate change on top of already high climate variability" at pdf p. 16, available at www.cpuc.ca.gov/NR/rdonlyres/52D8EFC3-B79C-4854-8714-DB8151C8664F/0/Dan_Cayan_CEC_PUC_27JULY2015_Web.pdf.

[8] *See* Nature Communications, Extreme oceanographic forcing and coastal response due to the 2015-2016 El Nino, available at http://www.nature.com/articles/ncomms14365#s1.

trigger relocation in time. This possibility undermines the DEIR's conclusion that this mitigation measure is sufficient to avoid significant erosion impacts.

At a minimum, to address this flaw in the DEIR's erosion analysis and to fully protect against large storm events, Mitigation Measure 4.2-9(1) should be revised to read:

> CalAm shall conduct annual monitoring of the rate of coastal retreat relative to the slant wells at the CEMEX site. The data shall be used to estimate the year at which the wells and associated pipelines have 5 years before exposure, assuming that at least one 100-year storm event will occur within that exposure timeframe.

Surfrider-5 cont.

Finally, even if the DEIR is properly revised to protect from 100-year storm events at CEMEX, the DEIR lacks any information indicating whether the 5-year period will allow sufficient time to plan and permit the necessary decommissioning and relocation of the threatened slant wells. The DEIR must substantiate the time threshold for removal and replacement of the northernmost slant well cluster, especially in light of the extended permitting process that has been required for the test well for this very Project.

III. The DEIR Should Consider Alternatives that Reduce the Size of the Desalination Plant.

A proper analysis of alternatives is essential to comply with CEQA's mandate that significant environmental damage be avoided or substantially lessened where feasible. Pub. Res. Code § 21002; CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d); *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433, 443-45. The primary purpose of CEQA's alternatives requirement is to explore alternatives to proposed actions that will reduce or avoid their adverse impacts on the environment. *Watsonville Pilots Ass'n v. City of Watsonville* (2010) 183 Cal.App.4th 1059, 1089. Therefore, the discussion of alternatives must focus on project alternatives that are capable of avoiding or substantially lessening any significant effects of the project, even if such alternatives would impede to some degree the attainment of the project objectives or would be more costly. CEQA Guidelines § 15126.6(b); *see also Watsonville Pilots,* 183 Cal. App. 4th at 1089 ("[T]he key to the selection of the range of alternatives is to identify alternatives that meet most of the project's objectives but have a reduced level of environmental impacts"); 40 C.F.R. § 1502.14 (CEQ regulations describing the alternatives analysis as "the heart of the environmental impact statement").

Surfrider-6

Here, the DEIR improperly circumscribes its analysis of potential Project alternatives. Specifically, it fails to consider an alternative that reduces the desalination plant's size within either the large desalination plant project scenario or the smaller desalination plant plus groundwater replenishment variant ("GWR Alternative"). By reducing the desalination plant's size, such an alternative could reduce the Project's net greenhouse gas, brine discharge, and groundwater impacts. *See, e.g.,* DEIR at 5.6-7.

Surfrider-6 cont.

In fact, a reduced-Project alternative is very likely feasible. As Surfrider has raised previously in this proceeding, Cal-Am justifies the size of the proposed Project on the basis of artificially inflated demand projections. The DEIR carries forward these inflated demand assumptions in multiple ways, including (1) unsupported assumptions about future water use for tourism and undeveloped "lots of record," and (2) the arbitrary assumption that future water use will be similar to water use in 2010 when, in fact, water use in Cal-Am's service area has fallen dramatically every year for the past decade.[9] If the DEIR revises the Project's demand assumptions to accurately portray future water use, it will show that a reduced Project alternative not only is environmentally superior, but is also feasible.

Surfrider-7

Significantly, the DEIR's alternatives analysis already recognizes the environmental benefits of reducing the size of the Project's desalination component. The DEIR labels one version of the GWR Alternative as an environmentally superior alternative to the larger desalination scenario. DEIR at 5.6-7. The DEIR recognizes that because the GWR Alternative includes a smaller desalination plant, it would reduce the Project's long-term and "more severe" operational impacts related to groundwater and greenhouse gas emissions. *Id.* Other potentially significant operational impacts, like potential water quality impacts from brine discharge, would also diminish as the proposed desalination plant becomes smaller. Thus, the DEIR correctly shows that reducing the desalination plant's size will reduce the Project's most significant environmental impacts.

Surfrider-8

Despite the environmental gains realized by further reducing the size of the desalination plant, the DEIR does not consider an alternative that can shrink the plant's size independent of the GWR Alternative. As part of the No Project alternative, the DEIR analyzed foreseeable water conservation and water recycling measures within Cal-Am's service district that could partially offset a water supply shortfall if the Project is not

[9] http://www.watersupplyproject.org/system-delivery.

built. DEIR at 7-184 through 7-196. The DEIR rejects a No Project alternative because it does not provide sufficient water to fully satisfy the impending water deficit in Cal-Am's service district and achieve other Project objectives. *Id.* at 7-197. But the DEIR inexplicably fails to consider whether these conservation measures, demand offsetting measures (including conservation pricing), or new local water projects (such as the Pacific Grove Local Water Project or Pebble Beach Recycled Water Project Phase II) could be combined with the Project to reduce the size of the desalination plant and its long-term environmental impacts. CEQA requires the DEIR to consider such a Project alternative, especially considering that it could reduce the Project's "most severe" environmental impacts under either large-desalination or GWR Alternative scenarios. *See Watsonville Pilots Ass'n*, 183 Cal.App.4th at 1087.

Surfrider-8 cont.

IV. Cal-Am Should Monitor for and Mitigate Any Brine-Related Impacts.

Surfrider notes that the DEIR has substantially revised its brine dispersal modeling to provide greater information regarding the location and salinity of brine plumes associated with the Project's discharge. While the DEIR's modeling indicates that the plumes will not increase background salinity above 1.56 ppt at the zone of initial dilution boundary, it is important that Cal-Am monitor actual discharge conditions to confirm that the Project will not degrade marine water quality or significantly impact marine organisms more than the models suggest.

Surfrider-9

Surfrider generally supports the DEIR's proposed monitoring program, which substantially complies with the core elements of the monitoring program from the Brine Settlement Agreement (which Surfrider, Cal-Am, and other parties filed with the Commission on June 14, 2016). *See* Mitigation Measure 4.3-4. Surfrider also supports additional monitoring for potential impacts to marine life that might occur even if the Project's discharge otherwise falls below established salinity and effluent standards.

Surfrider is concerned, however, that the proposed biological monitoring lacks meaningful thresholds to determine when impacts to the benthic community or other organisms would trigger corrective measures. The DEIR states that a monitoring plan shall require that no "statistically significant" change to the benthic community occur from the Project's operations. DEIR 4.3-89. But the DEIR does not disclose the level of statistical significance that will actually trigger relocation. Without such a standard, it would be impossible for the Agencies or Cal-Am to determine when impacts to the benthic community or other marine life become statistically significant. The DEIR should therefore formulate and explain these standards for the monitoring plan.

Surfrider-10

V. The DEIR Must Consider Cumulative Impacts from Other Proposed Desalination Projects in the Project's Vicinity.

The DEIR asserts two other proposed desalination projects—the People's Project and DeepWater Desal Project—would develop supplemental water supplies to serve the same Cal-Am customers as the proposed Project. *See* DEIR 4.3-123. However, the DEIR asserts that the People's Project and this Project could not both be implemented since their purposes and customers would largely be the same. Therefore, the DEIR does not consider the People's Project to be a reasonably foreseeable project in the cumulative scenario, and does not consider its cumulative impacts.

As to DeepWater Desal, the DEIR notes that water could be provided to other customers in Santa Cruz County or the City of Salinas, and that project could be approved in addition to this Project. Therefore, the DEIR does consider cumulative impacts of the DeepWater Project. In seeming contradiction, however, the DEIR later notes that either DeepWater Desal or the People's Project could be built, but not both. Yet the DEIR still only considers DeepWater Desal for cumulative impact purposes. *See* DEIR 4.5-67. Surfrider-11

Surfrider agrees that the existing water need cannot possibly justify the development of these other projects, if this Project moves forward. However, there is no binding prohibition on building either or both of the People's or DeepWater desalination projects if this Project is built. Without assurance that these other proposals cannot move forward if Cal-Am's Project is approved, the DEIR cannot assume that some combination of these three projects will not create cumulative impacts in the region. Unless such a binding restriction exists, the DEIR must consider all cumulative impacts from both the DeepWater and People's projects.

VI. Conclusion.

For all of the reasons described above, the Agencies should revise the DEIR to provide the public all of the information required to understand the Project's potentially significant environmental effects and prescribe mitigation measures to address those impacts. Surfrider-12

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

Edward T. Schexnayder

cc: Sarah Damron, Surfrider Foundation
Staley Prom, Surfrider Foundation
Antony Tersol, Surfrider Foundation Monterey Chapter

873814.4

8.6.20 Water Ratepayers Association of the Monterey Peninsula (WRAMP) Letter 1 (WRAMP1)

Water Ratepayers Association of the Monterey Peninsula
Post Office Box 146
Carmel, California 93921

20 February 2017

Mary Jo Borak, CEQA Lead **California Public Utilities Commission** **c/o Environmental Science Associates** **550 Kearny Street, Suite 800** **San Francisco, CA 94108** **Maryjo.Borak@cpuc.ca.gov**	**Karen Grimmer, NEPA Lead** **Monterey Bay National Marine Sanctuary** **99 Pacific Avenue** **Building 455a** **Monterey, CA 93940** **Karen.Grimmer@noaa.gov**

Dear Ms. Borak and Ms. Grimmer:

The following pages of this attachment contain comments by me in behalf of Water Ratepayers Association of the Monterey Peninsula (aka Water Plus) on the Monterey Peninsula Water Supply Project 2017 draft EIR/EIS.

Please let me know if you have any questions about these comments.

Thank you.

Most respectfully,

Ron Weitzman
President, Water Ratepayers Association of the Monterey Peninsula (aka Water Plus)

Water Ratepayers Association of the Monterey Peninsula
Post Office 146
Carmel, California 93921

20 February 2017

The MPWSP "Return Water" Proposal is Counterfactual and Illegal

Because Cal Am has no water rights in the Salinas Valley, it has proposed in the MPWSP to draw its source water primarily from the sea via slant wells near the shore. WRAMP1-1

Its test well shows that not all the water to be drawn will come from the sea, however. WRAMP1-2

Much of it will come from aquifers in the Salinas River groundwater basin. Even if Cal Am had water rights in the valley, its project would still face a legal hurdle. The state Agency Act prohibits the exportation of *any* valley groundwater outside the valley: "[N]o groundwater from that basin may be exported for any use outside the basin." Quoting that from the Agency Act on p. 2-39, the 2017 MPWSP draft EIR/EIS observed earlier, on p. 2-31, that "if Cal Am does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove infeasible." So, the feasibility of the MPWSP depends on its making the groundwater that its wells extract somehow disappear. WRAMP1-3

That is where the "return water" doctrine comes in. The draft 2017 EIR/EIS explained that doctrine thoroughly and succinctly on p. 4.4-49 (italics added): "The MPWSP proposes to return a certain fraction of water (referred to here as return water) extracted by the slant wells to water users in SVGB [Salinas Valley Groundwater Basin] as desalinated product water. As a brief review, the Agency Act does not allow groundwater pumped from the SVGB to be expelled for any use outside the SVGB . . . Since the groundwater in this area has been intruded by seawater for decades, the proposed slant wells at CEMEX would extract brackish water, which is a mixture of ocean water and water originating from the inland aquifers of the basin. *The freshwater portion of the brackish source water that originated from the inland aquifers would constitute the proposed return water. To achieve consistency with the Agency Act, the MPWSP proposes to return the*

freshwater component of the brackish water that is extracted through the slant wells. The exact quantity of water to be returned annually would vary and would be determined each year using a mathematical formula. However, for groundwater modeling and impact analysis purposes in this EIR/EIS, it is estimated that somewhere between O and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin . . . through deliveries of up to 800 afy of desalinated product water to the Castroville Community Services District (CCSD). This water would be piped to the CCSD and the CSIP [Castroville Seawater Intrusion Project] and provided to water customers instead of their pumping an equal amount from the ground. This method of returning water is referred to as in-lieu recharge because the delivered water would reduce the need to pump ground water in corresponding quantities. The NMGWM [North Monterey Ground Water Model] accounts for the O to 12 percent range by simulating the aquifer response in the various scenarios with a 0, 3. 6, and 12 percent returned product water.''

Translating the return-water doctrine into action, Cal Am in a 2 August 2016 settlement agreement with a number of other parties to the CPUC proceeding on the MPWSP, an agreement not yet approved by the CPUC, proposed to circumvent its lack of rights to Salinas Valley groundwater and to satisfy the state Agency Act's prohibition of the exportation of groundwater from the Salinas River groundwater basin by returning to the valley a small fraction of the water extracted and exported from the valley, about half exported as purified water to the Monterey Peninsula and the remainder to the bay. On the face of it, this proposal appears to make no sense, and in fact it does not make sense, but Cal Am and its settlement partners justify it by claiming that almost all of the water to be drawn by its slant wells from aquifers beneath the

WRAMP1-4

shoreline consists of seawater percolated directly from the bay. This claim seems reasonable enough to win many supporters. What could possibly be wrong with it? WRAMP1-4 cont.

The answer is "plenty." First of all, Cal Am has not investigated or, if it has, not reported, the chemical composition of the dissolved solids in the water extracted from its test well to determine if those dissolved solids consist of sodium chloride in an amount characteristic of seawater.[1] In a 26 May memorandum to the Marina Coast Water District, hydrogeologist Curtis Hopkins reported that the chemical composition of the total dissolved solids in well water along the shoreline does not in fact include sodium chloride in an amount characteristic of seawater but consists instead of a blend of other dissolved solids, mostly calcium chloride and calcium carbonate. Hopkins explained this finding as follows: "[T]he groundwater perched above the Salinas Valley Aquitard equivalent flows toward the coast and results in a downward recharge where the aquitard layer thins (or ends) and provides freshwater recharge into the coastal unconfined Dune Sand Aquifer and the underlying 180-Foot Aquifer," providing "in the Marina Subarea . . . an effective layer preventing seawater intrusion … all along the coast … that effectively forms a linear recharge barrier within a mile of the shoreline." **This memorandum by Hopkins is conspicuously absent in the 2017 MPWSP draft EIR/EIS**. Evidently, the return-water doctrine is based not on chemistry, but on sophistry, to circumvent the illegality of extracting and exporting subsurface water from the Salinas Valley. WRAMP1-5 WRAMP1-6

Return water is the fraction of fresh water in well water estimated to come from inland groundwater, the remainder assumed to come directly from seawater. The fraction computed is not a fraction of *water*, however. It is a fraction of *total dissolved* WRAMP1-7

[1] Table 4.4-4 on p. 4-4-22 of the 2017 MPWSP draft EIR/EIS compares the chemical composition of the total dissolved solids in seawater with the chemical composition of the total dissolved solids in water drawn from the test well on 19 May 2016, but the comparison involves chemical elements (ions) rather than compounds.

solids (TDS) in a liter of water. Reported as a percent, that fraction is the proportion of the TDS in test-well water that comes from the 180-foot aquifer computed from the expression of the test-well TDS as a weighted average of the known inland aquifer TDS and the known seawater TDS, the first weight being the proportion of aquifer TDS and the second the proportion of seawater TDS in the well water.[2] The computation relies on the correctness of the assumption that all the non-inland-aquifer TDS in the well water comes from directly-intruded seawater. The return-water doctrine is that compliance with the Agency Act requires only the return to the Salinas Valley groundwater basin of the percentage of fresh water in the well water that comes from the inland aquifer, that percentage considered to be equal to the percentage of inland-aquifer TDS in the well water. As noted earlier, the 2017 MPWSP draft EIR/EIS indicates that this percentage is no larger than 12.

WRAMP1-7 cont.

Just as the facts concerning water composition indicate otherwise, however, so the facts concerning the percentage of return water also indicate otherwise. Field data, reported by HydroFocus on p. 28 in Appendix E2 of the 2017 MPWSP draft EIR/EIS, show that one-third of the groundwater drawn by the test well comes from the 180-foot aquifer, not 12 percent or less, and that two-thirds comes from the Dune Sand aquifer, none of the water coming directly from the sea, according to the Hopkins memorandum cited earlier.[3] Likewise, most of the TDS in the well water comes from the Dune Sand aquifer which, computed from the return-water formula with weights equal to one-third and two-thirds, contains 38 percent more TDS than seawater. That makes sense

WRAMP1-8

[2] Appendix D of the 2 August 2016 joint-parties settlement agreement filed with the CPUC presents this formula.

[3] The return-water doctrine also underestimates the freshwater contribution of basin groundwater by using the amount of TDS in the inland 180-foot aquifer prior to seawater intrusion. The seawater-intruded 180-foot aquifer directly supplying water to the well site contains a much greater amount of TDS. That is the amount of TDS that should be used to determine the basin contribution of fresh water at the well site. Even seawater-intruded aquifers can contain over 96.5 percent fresh water.

considering the industrial activity that has been going on for years at the CEMEX well site. Conclusion: Existing and reported data, a critical portion of which is absent from the 2017 MPWSP draft EIR/EIS, indicate that 100 percent of the fresh water extracted by MPWSP wells must be returned to the Salinas River groundwater basin to comply with the Agency Act. The return-water doctrine indicating the percent should be no larger than 12 is contrary to the facts. To apply it would be illegal.

WRAMP1-8 cont.

In numerous filings with the CPUC, Water Plus has tried to expose this fatal flaw in the MPWSP, but Cal Am has so far successfully dodged the issue procedurally by persuading the CPUC to exclude most of those filings from the official record on the MPWSP proceeding. Frustrated by that impasse, the Water Plus board decided to take the issue to court. The attached petition for a writ of mandate filed with the Monterey Superior Court last November is the current amendment of the version filed originally earlier in the year.

WRAMP1-9

Summary. In the MPWSP, Cal Am has proposed to replace the illegality of over-pumping water from the Carmel River groundwater basin with the illegality of pumping and exporting water from the Salinas River groundwater basin. The return-water doctrine is the company's attempt to circumvent the second of those illegalities. As proposed, this doctrine is counterfactual and its application would fail to meet the requirements of state law.

WRAMP1-10

Recommendation. A fatally-flawed return-water doctrine being at the core of the MPWSP, Water Plus (aka Water Ratepayers Association of the Monterey Peninsula) recommends that the CPUC either order Cal Am to go back to the drawing board or to purchase water from one of two competing desalination projects as soon as the project has a certified EIR/EIS, just as the CPUC has done for Pure Water Monterey.

WRAMP1-11

Water Ratepayers Association of the Monterey Peninsula (WRAMP) Letter 2 (WRAMP2)

Mary Jo Borak
California Public Utilities Commission

Dear Ms. Borak,

Thank you for your prompt response.

You are suggesting the problem may exist in the input files. That does not make sense. MODEFLOW output would not exhibit the anomalies I observed without manipulation of the program's output in a postprocessor, regardless of the input data. That is because MODEFLOW output would never yield a statistically significant non-zero correlation between calibrated and error values prior to post-processing. To do so would produce calibrated and error value variations that together either fell short of or exceeded the variation of observed measurements. Falling short would mean some of the observed-measurement variation was neither predicted nor unpredicted by the model, and exceeding would mean some of the observed-measurement variation was both predicted and unpredicted by the model. Such MODEFLOW results would be illogical and impossible prior to post-processing.

The data manipulation must have occurred in post-processing. Otherwise, how do you explain the zero correlation between calibrated and error values for the 900-foot aquifer, an aquifer untapped by the proposed intake wells?

The EIR/EIS indicates that LBNL and HydroFocus did not use the proprietary Groundwater Vistas program used by Geoscience as a package including MODEFLOW. If that is true, as you confirm, did LBNL and HydroFocus use a postprocessor that, together with MODEFLOW, confirmed the results obtained by Geoscience? If so, please email me the computer code for that postprocessor, *the very same* postprocessor they used. If they used different postprocessors, I would like particularly the computer code for whatever program or programs HydroFocus used to process and output the results obtained from MODEFLOW. I would also like to know who may have provided that postprocessor to HydroFocus. Thank you.

WRAMP2-1

Most respectfully,

Ron Weitzman

Water Ratepayers Association of the Monterey Peninsula (WRAMP)
Letter 3 (WRAMP3)

Ms. Borak:
Thank you for your reply. I understand from it that you are **not** going to provide me the postprocessor computer program that HydroFocus used to put the MODEFLOW output data in the form of the file you sent me in response to my request during the comment period for the previous EIR. The reason I requested that postprocessor is that I believe it must contain the computer code that is the source of the corruption of the model output data for the 180-foot aquifer. That corruption is so massive as to render the model output data for the 180-foot aquifer useless for any purpose other than to provide evidence of data tampering. Please also consider this letter a comment on the DEIR/DEIS. Thank you.
Respectfully,
Ron Weitzman

WRAMP3-1

Water Ratepayers Association of the Monterey Peninsula (WRAMP) Letter 4 (WRAMP4)

Water Ratepayers Association of the Monterey Peninsula
Post Office Box 146
Carmel, California 93921

16 March 2017

Mary Jo Borak, CEQA Lead **California Public Utilities Commission** **c/o Environmental Science Associates** **550 Kearny Street, Suite 800** **San Francisco, CA 94108** **Maryjo.Borak@cpuc.ca.gov**	**Karen Grimmer, NEPA Lead** **Monterey Bay National Marine Sanctuary** **99 Pacific Avenue** **Building 455a** **Monterey, CA 93940** **Karen.Grimmer@noaa.gov**

Dear Ms. Borak and Ms. Grimmer:

The following pages of this attachment contain comments by me in behalf of Water Ratepayers Association of the Monterey Peninsula (aka Water Plus) on the Monterey Peninsula Water Supply Project 2017 draft EIR/EIS.

Please let me know if you have any questions about these comments.

Thank you.

Most respectfully,

Ron Weitzman
President, Water Ratepayers Association of the Monterey Peninsula (aka Water Plus)

Water Ratepayers Association of the Monterey Peninsula
Post Office 146
Carmel, California 93921

16 March 2017

Fallacy of the Return Water Doctrine (for People who have had 1st-year Algebra)

According to Appendix D of the Joint Motion for Approval of the Settlement Agreement on Desalination Plant Return Water filed with the CPUC on 2 August 2016, the return-water doctrine depends upon the equation expressing the total dissolved solids (TDS) in well water (W_{TDS}) as a weighted average of the TDS in groundwater (G_{TDS}) and the TDS in seawater (S_{TDS}): WRAMP4-1

$$W_{TDS} = XG_{TDS} + (1 - X)S_{TDS} ,$$

the weights being the proportion of groundwater (X) and the proportion of seawater (1 – X) in the well water. The solution of this equation for X yields the proportion of TDS in the well water that comes from groundwater:

$$X = \frac{S_{TDS} - W_{TDS}}{S_{TDS} - G_{TDS}} .$$

Proponents of the return-water doctrine consider this to be the proportion of return water, which is the proportion of fresh water extracted and exported from groundwater in the Salinas Valley that needs to be returned to the valley groundwater basin to satisfy the state Agency Act's prohibition of the exportation of groundwater from that basin.

WRAMP4-1 cont.

Solution of this equation for X requires knowledge of the three different TDS values on the right side of it. Little dispute exists about two of the values:

S_{TDS} = 33500 and W_{TDS} = 31076,

33,500 being an acceptable approximation and 31,076

being determined from the test well. The third value, G_{TDS}, however, is subject to dispute.

Proponents of the return-water doctrine assume this value to be equal to the TDS in the 180-foot aquifer at the inland edge of seawater intrusion into that aquifer, generally agreed upon to be equal to about 500. On this assumption, the amount of extracted and exported fresh water that needs to be returned to the Salinas Valley to satisfy the Agency Act is equal to about 7 percent:

WRAMP4-1 cont.

$$X_{500} = \frac{33500-31076}{33500-500} = \frac{2424}{33000} = .073 .$$

Why the dispute? Three major reasons:

Reason 1. Despite a TDS as high as 33,500, seawater still contains 96.5 percent fresh water (pure H_2O). The return-water doctrine assumes that all that

WRAMP4-2

fresh water accompanying the 3.5 percent TDS in the seawater intruded into the 180-foot aquifer comes from the sea and therefore cannot be considered to be groundwater which, without seawater intrusion, consists of even a greater percentage of fresh water. The fact is, however, that, once intruded into the aquifer, the 96.5 percent fresh water in the intruded seawater becomes part of the groundwater because it is now water under the ground. All the water in the 180-foot aquifer, regardless of its source, is groundwater.

WRAMP4-2 cont.

One of Water Plus's attorneys provided the following helpful analogy. The rain falling into your neighbor's water-containment barrels belongs to your neighbor. Even though the water comes from the sky, you cannot use it later on to water your garden. It is not your water. It belongs to your neighbor. Likewise,

even though much of the water in the 180-foot aquifer comes from the sea, it is not water you can use because it belongs to the 180-foot aquifer, which captured it and which the Agency Act prohibits you from using.

So, if 500 is not the correct value to use for G_{TDS}, then what is? According to Table 2 of the Hydrological Working Group Monthly Report #15 (p.44), the TDS in Monitoring Well 4 (MW4) for the 180-foot aquifer was equal to about 22,600 on 11 January 2017. The HWG claims this represents a steady-state value. Taking this to be the appropriate value for G_{TDS}, obtained from the 180-foot aquifer just outside the pumping well's cone of depression, we must conclude that the return-water percentage is equal to, not 7 percent, but 22 percent:

WRAMP4-2 cont.

$$X_{22,600} = \frac{33500-31076}{33500-22600} = \frac{2424}{10900} = .222 \ .$$

Reason 2. Twenty-two percent might be the correct return-water percentage if all the groundwater in the well water came from the 180-foot aquifer, but it does not. According to HydroFocus on p. 28 in Appendix E2 of the MPWSP EIR/EIS, as much as 66 percent of the groundwater in the well water comes from the Dune Sand aquifer, only the remaining 34 percent coming from the 180-foot aquifer. So, a tacit, though critical, assumption of the return-water doctrine is plainly incorrect. The Dune Sand aquifer is largely free of seawater intrusion, and therefore, prima facie, much of the fresh water in the well water must come from Salinas Valley groundwater, most likely a percentage much larger than 22.

WRAMP4-3

Reason 3. The MPWSP EIR/EIS failed to cite the 26 May 2016 memorandum to the Marina Coast Water

WRAMP4-4

District by hydrogeologist Curtis Hopkins in which he showed that none of the water in the test well comes directly from the sea. That being the case, all the fresh water in the well must come from the Salinas Valley groundwater basin. The meaning is clear: All the fresh water extracted and exported from that basin must be returned to it to avoid violation of the Agency Act. Equally clearly, without its return-water foundation, the MPWSP cannot work.

WRAMP4-4 cont.

Recommendation. The CPUC must dismiss the MPWSP proceeding before Cal Am can claim repayment from ratepayers of any additional ratepayer money spent on the project. In fact, ratepayers should be responsible for no money spent on that project at least from the time Water Plus filed its first motion to dismiss the proceeding.

WRAMP4-5

8.6.1 Responses to Comments from Ag Land Trust

8.6.1.1 Responses to Comments from Ag Land Trust – Letter 1

ALT1-1 The EIR/EIS does not evaluate or recommend mitigation for the test slant well pumping for several reasons. First, the construction and existing operation of the test slant well under its current permits and authorizations is not part of the proposed project; rather, the conversion of the test slant well to a permanent well was described as part of the proposed project in EIR/EIS Section 3.2.1.1. Therefore, the impacts of the test slant well as currently installed and operated are not attributable to the proposed project. Second, the California Coastal Commission (CCC), not the CPUC, issued a Coastal Development Permit (CDP) for the test slant well; the CPUC had no jurisdiction to evaluate or authorize the test slant well. As described in Master Response 11, CalAm Test Slant Well, the CCC and MBNMS, in their independent CEQA and NEPA analyses of the test slant well, adopted necessary mitigation measures relevant to that project, and the results of test slant well pumping have not indicated a degradation of groundwater quality attributable to the test slant well operation. To the extent that the comment expresses concerns over the effects of the proposed project, see EIR/EIS Section 4.4, Groundwater Resources, which indicates that the project will not adversely impact the quality or quantity of water available to Ag Land Trust. With respect to water rights, see EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights.

ALT1-2 Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources, evaluate groundwater quality and quantity, which indirectly relate to agricultural production in the Salinas Valley Groundwater Basin. That analysis identifies less-than-significant impacts on existing users of wells that may be affected by the proposed project, including agricultural users (such as Ag Land Trust, whose wells in the vicinity of the proposed slant wells at CEMEX are identified in EIR/EIS Table 4.4-10). Because the proposed project would not affect groundwater quality or levels in a way that would adversely affect existing agricultural users, it would not result in a change in the existing environment that would indirectly result in the permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. No purchase and conversion of such lands is projected to occur as a result of the proposed project; thus, there would be no loss of employment or displacement of farmworkers associated with such conversion. See also response to comment MCRMA-5 in Section 8.5.4.

Regarding the topic of groundwater pumping from the basin, water rights issues are addressed in the Master Response 3, Water Rights.

ALT1-3 CEQA and NEPA require that the respective lead agencies provide specific opportunities for public involvement. These opportunities include the scoping process (described EIR/EIS Section 1.5.1 and in Appendix A) and the public review and comment period following the release of the draft environmental document (described

in EIR/EIS Section 1.5.2). Ag Land Trust has regularly contributed to these processes with timely submittals, for example, with a November 9, 2012, scoping letter included in Appendix A. However, no scoping comment was received from Ag Land Trust in response to the NEPA Notice of Intent issued by NOAA in August 2016.

The visit to the Ag Land Trust farm described in the comment, occurred following the release of the April 2015 Draft EIR. The Draft EIR had stated that "Ag Land Trust has indicated that it has one well that is active and located about one-mile northeast of the proposed slant wells in the agricultural fields" but that field reconnaissance could not locate the well and the SWRCB did not have any record of a well at the location indicated by Ag Land Trust. Representatives of the Lead Agencies contacted the Ag Land Trust after the release of the April 2015 Draft EIR to inquire about a site visit to its wells, and received the following email response: "The Ag Land Trust, in compliance with CEQA, is already preparing comments on your draft EIR and we will submit those comments and all documents previously delivered to the CPUC before your deadline of June 30, 2015. The Trust [would be] willing to arrange to show our farm to you after the comment period is completed so that you may fully evaluate our comments, and others that you may receive, with the facts and physical conditions that exist near the "project area" prior to your determinations regarding both the adequacy of the Draft and/or the significant adverse impacts to adjacent potable groundwater resources and productive coastal farmland (and loss of farm workers' jobs) that would be required to be identified/mitigated in the Final EIR." (Ag Land Trust, 2015)."

The comment period on the April 2015 Draft EIR was extended to September 2015, and the Ag Land Trust submitted timely comments on the April 2015 Draft EIR. In October 2015, the representatives of the Lead Agencies again inquired with Ag Land Trust about a site visit; a field visit was conducted on December 15, 2015, and field notes were prepared (ESA, 2016). Much of what was communicated verbally at the site visit confirmed information that was provided by the Ag Land Trust in its comments on the April 2015 Draft EIR. The representatives of the Lead Agencies viewed two Ag Land Trust wells during the December 15, 2015 site visit. Subsequently, both of these wells (the "Big Well" and the "Small Well") were identified as active wells in the current EIR/EIS; see EIR/EIS Table 4.4-10).

ALT1-4 See Master Response 1, EIR/EIS Authorship. The analyses and conclusions in the EIR/EIS reflect the independent judgment of the Lead Agencies; therefore, the CPUC and MBNMS, not the consultants, are responsible for the scope, content, adequacy, and objectivity of the EIR/EIS.

Impacts on groundwater resources are evaluated in EIR/EIS Section 4.4, Groundwater Resources. Known active supply wells within the vicinity of the proposed MPWSP slant wells are shown in EIR/EIS Table 4.4-10 and in Figures 4.4-14 (Dune Sands Aquifer), 4.4-15 (180-FTE Aquifer), and 4.4-16 (400-Foot Aquifer) and are considered in the impact analysis under Impacts 4.4-3 and 4.4-4. The Ag Land Trust "Small Well"

(14S/2E-18C1) is screened within the 400-Foot Aquifer, and its location relative to the 1-foot response resulting from proposed project pumping is shown in Figure 4.4-16. The project's impact on water availability and water quality related to this well would be less than significant as explained in EIR/EIS Section 4.4.5.2. The "Big Well" is screened within the 900-Foot Aquifer and modeling indicates that no impacts would occur in the 900-Foot Aquifer as a result of proposed project pumping; see Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin.

The Lead Agencies acknowledge receipt of the first letter of objection (2006), as well as copies of correspondence since 2006 including to and from the CCC, Monterey County Water Resources Authority (MCWRA), and The Law Offices of Michael Stamp, provided as attachments to the comment. The Lead Agencies have considered this correspondence and attachments. Many of these attachments are in regard to the test slant well, the relevance of which to the proposed project is described in response to comment ALT1-1. See also response to comment ALT1-3.

ALT1-5 The CPUC exceeded the public noticing requirements of CEQA Guidelines Section 15087 by providing an approximately 75-day public review and comment period of the Draft EIR/EIS beginning in January 2017. The Lead Agencies mailed a Notice of Availability (NOA) and a 2-CD set of the Draft EIR/EIS to every organization and individual who previously requested such notice (including Mr. Del Piero and Ag Land Trust; see EIR/EIS Appendix A1, p. A1-2), at the same time that a Notice of Completion was mailed to the Office of Planning and Research. That NOA/CD mailing included 390 recipients. Owners and occupants of all properties contiguous with or within 300 feet of a proposed project feature (and alternative proposed project feature) were also mailed a copy of the NOA. That mailing included approximately 2,410 addresses from the latest equalized assessment roll and with the NOA/CD mailing, satisfied CEQA Guidelines Section 15087(a). The Lead Agencies also published the NOA as a quarter-page advertisement in the Monterey Herald on January 13 and 27 and February 6, 2017; and in the Carmel Pinecone on January 13 and February 3, 2017. The NOA was also published in the Federal Register on January 13, 2017, and it was posted on the project website at http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/ann_and_sched.html.

ALT1-6 For responses to the comment letters referenced in this comment, see: Section 8.6.20, Responses to Comments from Water Ratepayers Association of the Monterey Peninsula; Section 8.7.18, Responses to Comments from Larry Parrish; Section 8.7.2, Responses to Comments from David Beech; Section 8.7.1, Responses to Comments from Michael Baer; Section 8.7.22, Responses to Comments from Nancy Selfridge; Section 8.7.3, Responses to Comments from Kathy Biala; Section 8.6.7, Responses to Comments from Citizens for Just Water; Section 8.6.17, Responses to Comments from Public Water Now (signed by George Riley); and Section 8.7.11, Responses to Comments from Myrleen Fisher. No comments received on the Draft EIR/EIS were signed "Water Plus."

The Lead Agencies acknowledge receipt of the attachments to ALT Comment Letter 1, and note that the additional information and objections raised in those attachments and correspondence consist primarily of comments on the test slant well and the April 2015 Draft EIR. Note also that the comment letter and attachments do not raise issues that would require revisions to or recirculation of the Draft EIR/EIS. See also response to comment ALT1-4 and MR-3, Water Rights.

8.6.1.2 Responses to Comments from Ag Land Trust – Letter 2

ALT2-1 See response to comment ALT1-3.

ALT2-2 See Master Response 3, Water Rights. There is no evidence to indicate that the project would effect a taking of land or water rights.

ALT2-3 Master Response 12, The North Marina Groundwater Model (v. 2016), explains that the North Marina Groundwater Model (NMGWM) that was used for the 2015 version of the North Marina Groundwater Model ($NMGWM^{2015}$) was peer reviewed by Lawrence Berkeley National Laboratory (LBNL, see EIR/EIS Appendix E1), and how the Lead Agencies' hydrogeology consultant (HydroFocus) revised the $NMGWM^{2015}$ consistent with LBNL's recommendations, and incorporated additional improvements (see EIR/EIS Appendix E2). These efforts were undertaken under contract to and direction of the Lead Agencies and not the Hydrogeologic Working Group (HWG). All of this information was also provided in the EIR/EIS Appendices E1 and E2. See Master Response 1, EIR/EIS Authorship; the consultants that form part of the CEQA/NEPA team are contractually obligated to the CPUC and MBNMS, as co-Lead Agencies. See Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, regarding the HWG. See also Master Response 11, CalAm Test Slant Well, Section 8.2.11.4, regarding the baseline water levels and total dissolved solids (TDS) levels established prior to the long-term pump test in the report titled *Baseline Water and Total Dissolved Solids Levels* referenced in EIR/EIS Section 4.4, Groundwater Resources, as Geoscience, 2015b. Finally, see Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3, regarding the use of superposition in the analysis based on the 2016 version of the NMGWM ($NMGWM^{2016}$).

ALT2-4 The comment does not specify what available data was omitted, and does not specify or clarify what impacts it is referring to. Impacts on groundwater resources are presented in Section 4.4, Groundwater Resources, of the Draft EIR/EIS. See also response to comments ALT1-2 and ALT1-3.

ALT2-5 See response to comment ALT1-3. Both the "Small Well" and "Big Well" are acknowledged as active wells in EIR/EIS Section 4.4, Groundwater Resources. The comment does not convey the manner in which the proposed project may have an impact on the dune restoration projects, or that the EIR/EIS omitted important information regarding unmitigated significant and adverse environmental impacts.

Potential project impacts on dune habitat are described in EIR/EIS Section 4.6, Terrestrial Biological Resources. See also response to comment ALT1-2 and ALT1-3.

The Lead Agencies acknowledge receipt of the attachments to ALT Comment Letter 2. The comment letter and attachments do not raise issues that would require revisions to or recirculation of the Draft EIR/EIS. See also response to comment ALT1-4 and Master Response 1, EIR/EIS Authorship; the CPUC and MBNMS, not the consultants, are responsible for the scope, content, adequacy, and objectivity of the EIR/EIS.

8.6.1.3 Responses to Comments from Ag Land Trust – Letter 3

ALT3-1 Receipt of the attachments is acknowledged. As acknowledged in EIR/EIS Section 2.6, Water Rights, one of the three relevant types of water rights in the Salinas Valley Groundwater Basin is "overlying rights whereby those who own land atop the Basin may make reasonable use of groundwater on such overlying land." Further, EIR/EIS Section 4.4, Groundwater Resources, acknowledges Ag Land Trust's two existing, active wells. The documents provided in the comment letter do not present new information that would affect the analysis of project water rights or impacts on groundwater resources.

ALT3-2 Receipt of the July 2009 water analysis report is acknowledged. This report does not identify the date that the sample was drawn, or from which well; thus, it is unclear which aquifer was the source of the sampled water. Regardless, both of the Ag Land Trust wells (the "Big Well" and "Small Well" as described in response to comment ALT1-3) are identified as active water supply wells in EIR/EIS Table 4.4-10, and thus have been considered in the EIR/EIS analysis of potential project impacts on water quality in Impact 4.4-4. Neither the comment nor the water analysis report provides evidence of an intentional omission of significant adverse impacts necessitating revision to or recirculation of the Draft EIR/EIS.

References

Ag Land Trust, 2015. E-mail from Ag Land Trust to Eric Zigas, May 25, 2015.

ESA, 2016. Field notes from site visit with Ag Land Trust.

8.6.2 Responses to Comments from California Unions for Reliable Energy

8.6.2.1 Responses to Comments from California Unions for Reliable Energy – Main Letter

CURE-1 See responses to comments MCWD-78 and MCWD-79 in Section 8.5.2.

CURE-2 The Draft EIR/EIS at page 4.2-71 acknowledges that "the anticipated future presence of the test slant well on the beach due to coastal retreat would result in a significant impact." As noted by the commenter, Mitigation Measure 4.2-10 would reduce the impact to less than significant and only applies to the wells that become vulnerable to the effects of coastal retreat. Impact 4.2-10 has been revised to include a discussion of the secondary impacts of this mitigation measure (i.e., of abandonment of the converted test slant well). Unlike the test slant well as currently permitted, which unless converted to a production well pursuant to further permits would be decommissioned per the terms of its CDP, there is no decommissioning phase of the proposed MPWSP. See also response to comment MCWD-80 in Section 8.5.2.

CURE-3 See responses to comments MCWD-78 and MCWD-79 in Section 8.5.2.

CURE-4 See responses to comments MCWD-78, MCWD-79, and MCWD-82 in Section 8.5.2. For the reasons explained therein, the 20- to 25-year "useful life" used in project cost amortization calculations is not equivalent to a time period after which the slant wells would necessarily be decommissioned. Therefore, the suggestion that the slant wells would need to be replaced after 20 to 25 years is not applicable.

CURE-5 The slant wells are described in EIR/EIS Section 3.2.1.1 (see Draft EIR/EIS pages 3-7 and 3-15 through 3-18) which includes details of the slant wells, a plan view map of the well layout (Figure 3-3a), Table 3-2 that lists the lengths of the permanent wells seaward of MHW, and an illustrative cross-sectional view of the subsurface slant wells. This description of the slant wells is adequate to allow for the necessary evaluation of impacts under CEQA and NEPA. As noted correctly by the comment, the test well's purpose was to inform the design of the proposed slant wells. See response to comment Beech2-8 in Section 8.7.2 and Master Response 11, CalAm Test Slant Well, Section 8.2.11.7 for an explanation of the proposed 14-degree angle of the slant wells.

CURE-6 As noted by the commenter and EIR/EIS Section 3.3.2.1, the pump would be lowered several hundred feet into each well. See response to comment CURE-Sobczynski-1. As noted in EIR/EIS Section 3.2.2.2, the 24.1 mgd of source water would run through a first pass and partial second pass through the RO membranes (see Table 3-1), which is why a simple calculation of a 42 percent recovery rate multiplied by the feedwater supply rate does not yield the 9.6 mgd of product water. The EIR/EIS explains how

the project would catch-up on production following a 2-day shutdown in Table 3-7. As noted in the text in Section 3.4.1, any fluctuations in daily production would not affect total monthly production.

CURE-7 Unlike the test slant well, the production wells would not include an inflatable/deflatable packer. See also response to comment CURE-Sobczynski-1.

CURE-8 Degradation of the slant wells due to biofouling and/or corrosion is not discussed because as noted on Draft EIR/EIS page 3-48, the wells would be completed with super-duplex stainless steel well screens, to avoid corrosion and biofouling. The EIR/EIS disclosed the technical characteristics of all proposed project components, facilities, and activities, and evaluated the environmental impacts thereof in accordance with CEQA and NEPA requirements. See also responses to comments MCWD-78 and MCWD-79 in Section 8.5.2 regarding decommissioning.

CURE-9 See Master Response 10 regarding CEQA and NEPA baseline, as well as responses to comments CURE-10 through CURE-17, below.

CURE-10 A detailed and comprehensive assessment of impacts to receiving ocean water quality from operational discharges and associated impacts to marine biological organisms is presented in EIR/EIS Sections 4.3 and 4.5. Section 4.3.1 and Appendices D1 through D3 present detailed baseline water quality information specific to Monterey Bay, including site-specific water quality data for the area immediately surrounding the MRWPCA outfall diffuser, sufficient for assessing the potential impacts from implementation of the MPWSP. Under Impact 4.3-5, baseline water quality data is utilized to conservatively assess impacts from a wide range of water quality constituents present in operational discharges (see Table 4.3-15 for a comprehensive list of constituents assessed).

Regarding the ionic composition of seawater and the common ion effect within the context of the desalination process, the reverse osmosis process, when applied to desalination of seawater, typically rejects major ions and salts at approximately the same ratio. The ratio of major ions and salts in the brine concentrate would be approximately the same as those ratios in the ambient seawater. However, as discussed in the comment, the interactions of various constituents and parameters related to water chemistry are complex and water quality data is not available for all constituents, parameters, and potential interactions. While the water quality assessment conducted for the EIR/EIS is comprehensive in scope and range of potential contaminants assessed under varying ocean season conditions under a variety of operational discharge scenarios, it is acknowledged under Impact 4.3-5 that a compliance determination could not be made for a number of constituents due to insufficient available data. In the absence of such data, it was conservatively concluded that the MPWSP could result in a significant impact on receiving ocean water quality.

Significant impacts related to the discharge of unknown contaminants, and associated impacts on marine biological resources that may result from disturbance or adverse water quality conditions, would be reduced to a less-than-significant level by implementing Mitigation Measures 4.3-4 and 4.3-5. Mitigation Measure 4.3-4, which includes consideration of impacts to marine organisms related to toxicity from operational discharges (such as may occur due to ionic imbalance or resulting precipitates), would ensure that monitoring be conducted in the immediate vicinity of the outfall diffuser within the area of influence. Monitoring would include benthic community health and aquatic life toxicity. Mitigation Measure 4.3-4 ensures that all collected data is assessed against defined performance standards and that corrective actions are implemented in the case that performance standards are not met. Mitigation Measure 4.3-5 requires CalAm to perform an extensive water quality assessment as part of a waste disposal study. Specifically, CalAm would be required to analyze MPWSP operational discharges for the full range of regulated water quality constituents specified in the Ocean Plan *as well as NPDES water quality requirements* (italics added for emphasis), in accordance with protocols approved by the RWQCB. Should performance standards for marine organisms or water quality criteria not be met, a suite of corrective actions is detailed for implementation as part of Mitigation Measure 4.3-5.

As described in Section 4.3.2 and further discussed under Impact 4.3-5, in order for MRWPCA to commingle MPWSP brine with wastewater, the associated NPDES permit will need to be updated and amended to reflect the physical and chemical changes in the commingled effluent plume. As part of the NPDES amendment or update, Whole Effluent Toxicity (WET) testing will be required, representing an integrated approach for assessing the potential for toxicity of discharges occurring under the various proposed operational discharge scenarios (e.g., brine only, brine with waste water, etc.). The primary objective of WET testing is to ensure that effluent released from industrial and municipal facilities into the nation's waters does not cause unacceptable levels of toxicity to aquatic life. To determine whether an effluent has the potential to be toxic, WET tests are performed on various aquatic test species. Specifically, WET testing is a standardized measure of the aggregate toxic effect of an effluent (such as brine or a brine/municipal wastewater mix) measured directly by a toxicity test and is used to evaluate biological impacts of discharges for NPDES permitting. Ion imbalances can cause a toxic response in a WET test.

Toxicity cannot be measured analytically. Chemical analyses are practical only when all potential constituents present in an effluent are known. WET testing assesses the combined toxic effects of all constituents of an effluent, known or unknown. The use of biological testing provides a means to evaluate the impact of chemical and physical mixtures at the site of discharge and, consistent with Mitigation Measure 4.3-4, will consider benthic species and/or species most relevant to the site. As discussed in detail in EIR/EIS Sections 4.3 and 4.5, benthic habitat is of primary concern for effluents that are denser than seawater and sink to the bottom. For these reasons, full ionic

composition testing is not practical, but WET testing is sufficient to assess the potential impact or toxic effect of water constituents, including ionic constituents.

CURE-11 See responses to comments CURE-8, regarding biofouling, and CURE-Sobczynski-3, regarding clay in the area of the slant wells. It would not be possible to have an algal bloom inside of the slant wells. Algal blooms are the result of a combination of environmental factors including available nutrients, temperature, sunlight, ecosystem disturbance (stable/mixing conditions, turbidity), hydrology (river flow and water storage levels) and the water chemistry (pH, conductivity, salinity, carbon availability). The insides of the slant wells would have no sunlight; therefore, an algal bloom would not be possible.

See EIR/EIS Section 4.5.1 for a discussion of the marine resources environmental baseline.

CURE-12 See response to comment CURE-Owens-1.

CURE-13 See reponse to comment CURE-Owens-3.

CURE-14 See response to comment CURE-Owens-4 and CURE-Owens-5.

CURE-15 See response to comment CURE-Owens-8.

CURE-16 EIR/EIS Section 4.6.1.8, Special-Status Species, includes a thorough discussion of the status of western snowy plover within the project area and the potential for this species to occur within the project area based on known occurrence records and habitat conditions. See Draft EIR/EIS page 4.6-50. This information provides an adequate baseline to evaluate potential project impacts on this species. See responses to comments CURE-Owens-4, CURE-Owens-9, and CURE-Owens-10.

CURE-17 NEPA (40 CFR 1502.15) requires that an EIS "succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives." The setting presented in EIR/EIS Section 4.20, as well as in other Chapter 4 sections referenced by Section 4.20, provides an adequate description of the affected environment relevant to potential project impacts. As described in Draft EIR/EIS Sections 4.3 and 5.5.3 and Sections 4.20 and 5.5.20, respectively, the proposed project and alternatives would not have adverse project-level or cumulative impacts related to drinking water contamination or unemployment. Therefore, incorporation of information sourced from CalEnviroScreen on existing drinking water contamination or unemployment (in addition to information from other sources already described and cited on such topics in Sections 4.3 and 4.20) is not necessary to understand the effects of the proposed project and alternatives.

CURE-18 Responses to general comments on the adequacy or accuracy of the Draft EIR/EIS analysis of various resources are provided where the commenter provides further

specificity. Regarding impacts on ocean water quality, see response to comment CURE-19. Regarding impacts on marine resources, see responses to comments CURE-20 through CURE-28. Regarding impacts on biological resources, see responses to comments CURE-29 through CURE-32. Regarding impacts on air quality, see responses to comments CURE-33 through CURE-37 and CURE-40. Regarding impacts on public health, see responses to comments CURE-38 and CURE-39. Regarding impacts related to vibration, see responses to comments CURE-41 and CURE-42. Regarding impacts related to decommissioning, see response to comments CURE-1 through CURE-3 and CURE-43.

CURE-19 The EIR/EIS does not omit assessment of impacts on ocean water quality or marine biological resources within the Zone of Initial Dilution (ZID), nor does it state that excessive constituents within the ZID would not result in a potentially significant impact. The analyses presented in EIR/EIS Sections 4.3.5 and 4.5.5 assess site-specific impacts of the project, including cumulative impacts (see EIR/EIS Sections 4.3.6 and 4.5.6), related to water resources and marine biological resources from the point of discharge out to various regulatory compliance points and beyond. The analyses presented in EIR/EIS Sections 5.5.3 and 5.5.5 assess similar site-specific impacts of the proposed alternatives, including cumulative impacts, related to water resources and marine biological resources. The impact analyses include assessment of compliance with various relevant regulations, including the California Ocean Plan narrative requirements and numeric WQOs. Additionally, an assessment of impacts on water quality and marine organisms in the area immediately surrounding the point of discharge was conducted for impacts that may occur even if regulatory compliance is achieved, as discussed in EIR/EIS Sections 4.3.5 and 4.5.5.

Impact 4.3-4 relating to water quality standards presents an assessment of incremental salinity increases above ambient, from the point of discharge to the edge of the ZID (18 to 55 meters from point of discharge), and to the edge of the Brine Mixing Zone (BMZ; 100 meters from point of discharge), as well as an assessment of potential changes to dissolved oxygen concentrations and the risk of an occurrence of hypoxia. This analysis focuses not solely on Ocean Plan compliance, but also with waste discharge requirements issued by the Regional Water Board. These water quality results are then utilized under Impact 4.5-4 (see EIR/EIS Section 4.5.5.2) to assess impacts on marine habitat and organisms from the point of discharge to the edge of the ZID (i.e., within the ZID) and to the edge of the BMZ (i.e., within the BMZ). The analyses presented under Impact 4.5-4 describe, for example, that due to the predicted incremental salinity increases considered within the context of various representative species' salinity tolerances, the area outside the ZID and within the BMZ would continue to be suitable for squid spawning. The area within the ZID, however, could become unsuitable for squid spawning if the area exceeding 2 ppt above ambient were to contact the seafloor, which modeling demonstrates it would not; see EIR/EIS Figure 4.3-10. And the impact analysis presents a quantified assessment of the potential loss of habitat area within the ZID and within the context

of total available squid spawning habitat within the Monterey Bay area if it were to contact the seafloor, which is estimated to be approximately 0.0042 to 0.0163 percent of the suitable spawning habitat available in the area. The impact analysis presented in Section 4.5.5.2 similarly assesses and quantifies unanticipated effects on benthic and pelagic communities in the vicinity of the discharge.

Under Impact 4.3-5, the potential for operational discharges to increase the concentrations of a wide range of constituents is assessed and it is concluded that, due to gaps in available data, it is possible that Ocean Plan water quality objectives would be exceeded as a result of operational discharges. It was therefore conservatively concluded that the MPWSP could result in a significant, yet mitigable, impact related to water quality. Similar to the analyses presented for salinity and dissolved oxygen, the water quality results presented under Impact 4.3-5 are then utilized under Impact 4.5-4 (see EIR/EIS Section 4.5.5.2) to assess and quantify impacts to marine habitat and organisms from the point of discharge to the edge of the ZID (i.e., within the ZID). Additionally, the transfer of bioaccumulated contaminants from benthic infauna to higher trophic levels as well as to predators from prey is assessed for the area around the point of discharge independent of regulatory compliance at the edge of the ZID.

Regarding impacts relating to ionic imbalance, the potential for complex chemical interactions, and associated toxicity effects on marine wildlife and human health, see response to comment CURE-10. Regarding comments related to mitigating potentially significant effects related to operational discharges and ocean receiving water quality see responses to comments CURE-10, Surfrider-11 and Surfrider-12 in Section 8.6.19, Marina-39 and Marina-41 in Section 8.5.1, and ERF-10 in Section 8.6.10.

The use of environmentally inert biodegradable additives proposed for use as part of construction (e.g., well drilling) and maintenance (e.g., well screen cleaning) is comprehensively assessed in EIR/EIS Section 4.3.5.1 (water quality) as well as under other resource topics (see Section 4.5.5.1 for an assessment of impacts to marine organisms from the use of environmentally-inert biodegradable additives for construction and maintenance activities). As described, the use of such materials, if discharged directly, could adversely affect water quality in Monterey Bay or other down gradient receiving waters. Consistent with the described regulatory requirements relevant to such actions (e.g., General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities [Order No. 2009-0009, NPDES No. CAS000002]), any effluent containing environmentally inert biodegradable materials would be pumped to a storage container or portable holding tank where any chemical residuals and sediment would settle out for offsite hauling and disposal. Additional detailed analyses relating to the use of environmentally inert biodegradable additives are presented in EIR/EIS Section 4.7.5 (hazards and hazardous materials).

CURE-20 The EIR/EIS impact conclusion would remain the same, even if the infiltration rate calculated by Dr. Sobczynski was used in the analysis. See response to comment CURE-Sobczynski-1.

CURE-21 As the Draft EIR/EIS stated on page 3-48, a submersible pump would be lowered several hundred feet into each well. That would put the pump in the upper third of the well, and approximately 300 to 400 feet inland from mean high water in 2020. See response to comment CURE-Sobczynski-1.

CURE-22 See response to comment CURE-Sobczynski-1.

CURE-23 See responses to comments CURE-7 and CURE-Sobczynski-1.

CURE-24 See response to comment CURE-Sobczynski-2.

CURE-25 See response to comment CURE-Sobczynski-1.

CURE-26 See response to comment CURE-Sobczynski-1.

CURE-27 See response to comment CURE-Sobczynski-2.

CURE-28 EIR/EIS Section 4.1.7 presents the methods used to evaluate cumulative impacts, and lists projects in Table 4.1-2 that may have cumulative effects when combined with the impacts from the proposed project or alternatives discussed in the Draft EIR/EIS. There are two other desalination proposals for the Moss Landing area of Monterey Bay, and they are listed Table 4.1-2 as Project No. 34, Monterey Bay Regional Water Desalination Project (DeepWater Desal, described in Section 5.4.5) and Project No. 57, the People's Moss Landing Water Desalination Project (People's Project, described in Section 5.4.6). Both of these projects propose to utilize screened open water intakes for source water, and not subsurface intakes. The EIR/EIS evaluates these projects in the cumulative analyses as proposed by their applicants, and does not speculate on their use of subsurface intakes. It is not clear why the organic matter that originated in the ocean would contaminate the ocean upon its release. See also response to comments CURE-Sobczynski-1, CURE-Sobczynski-2, and CURE-Sobczynski-4 and Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario.

CURE-29 See responses to comments CURE-Owens-5 and CURE-Owens-6.

CURE-30 See responses to comments CURE-Owens-11, CURE-Owens-12, CURE-Owens-13, and CURE-Owens-17.

CURE-31 See response to comment CURE-Owens-27.

CURE-32 See response to comment CURE-Owens-28.

CURE-33 For responses to comments related to substantial evidence supporting the air quality impact analysis, including documentation of such evidence in the EIR/EIS and administrative record, refer to responses to comments CURE-Fox-6 through CURE-Fox-10.

CURE-34 For responses to comments related to the adequacy of the construction air quality mitigation measures, refer to responses to comments CURE-Fox-12 through CURE-Fox-40.

CURE-35 See responses to comments CURE-Fox-41 through CURE-Fox-51.

CURE-36 See responses to comments CURE-Fox-54 through CURE-Fox-62.

CURE-37 See responses to comments CURE-Fox-63 through CURE-Fox-70.

CURE-38 See responses to comments CURE-Fox-71 through CURE-Fox-78.

CURE-39 See responses to comments CURE-Fox-79 through CURE-Fox-105.

CURE-40 See responses to comments CURE-Fox-106 through CURE-Fox-122.

CURE-41 This comment is a summary of comments CURE-Fox-137 through CURE-Fox-150, which are responded to in depth at responses to comments CURE-Fox-137 through CURE-Fox-150.

CURE-42 The proposed project would not be constructed in the vicinity of any of historic buildings or structures in the City of Monterey. As shown in Figure 3-2 (Draft EIR/EIS p. 3-5), the only project component within the City of Monterey would be a portion of the Ryan Ranch-Bishop Interconnection Improvements. This component is not located near any of the properties listed in the City of Monterey's Vibration Control Plan. No additional analysis is warranted for potential vibration impacts to historic buildings or structures in the City of Monterey because no project construction would occur near these structures.

CURE-43 See responses to comments MCWD-78, MCWD-79, and MCWD-82 in Section 8.5.2.

CURE-44 See responses to comments CURE-Owens-7, CURE-Owens-14, CURE-Owens-17, CURE-Owens-20, CURE-Owens-21, CURE-Owens-22, CURE-Owens-23, CURE-Owens-24, and CURE-Owens-25.

CURE-45 This comment provides legal background for arguments in comments CURE-46, CURE-47, and CURE-48; see responses to these substantive comments below.

CURE-46 Compliance with the law is not a discretionary action and is required as a condition of certification of the project and approval of permits. This includes the regulations discussed in the Regulatory Framework of every impact analysis section and also the regulations cited by the commenter relating to the Ocean Plan and NPDES permit

process. Regulations are enforceable because (1) the project applicant cannot acquire certification of the EIR without committing to comply with all relevant and applicable regulations and (2) the various permitting agencies will not approve of permits that do not include compliance with all relevant and applicable regulations.

CURE-47 See response to comment CURE-Owens-2.

CURE-48 Compliance with the law is not a discretionary action and is required as a condition of certification of the project and approval of permits. This includes the regulations discussed in the Regulatory Framework of every impact analysis section and also the regulations cited by the commenter. Regulations are enforceable because (1) the project applicant cannot acquire certification of the EIR without committing to comply with all relevant and applicable regulations and (2) the various permitting agencies will not approve of permits that do not include compliance with all relevant and applicable regulations.

CURE-49 See response to comments MCWD-168 and -170. The reverse osmosis system proposed by CalAm, described in EIR/EIS Section 3.2.2.2, would be modular and would comprise six active and one standby module, each capable of producing 1.6 mgd of desalinated water. The EIR/EIS did not identify any impacts that would need to be lessened or avoided by using packaged desalination systems.

CURE-50 EIR/EIS Section 6.3.3 presents the requirements of CEQA Guidelines Section 15126.2(d); the growth inducement analysis in the EIR/EIS Section 6.3 adheres to those guidelines and the NEPA requirements. As discussed in Section 6.3.5, some water provided by the proposed project would replace supplies that are no longer available to CalAm to meet existing demands. Water supply used to meet existing demands would not be available to serve additional growth and would not be growth inducing. As also discussed in Section 6.3.5, the project would provide some water supply to serve new development that cannot currently be served because existing supplies are limited. Supply provided for this purpose would be growth-inducing. For example, the EIR/EIS states that "water supply that would serve currently vacant lots of record would remove water supply limitations as an obstacle to the development of these lots and would induce growth under CEQA and NEPA" (see Draft EIR/EIS page 6-17). The analysis of the proposed project's growth inducement was evaluated in this EIR/EIS, and not in a negative declaration.

With respect to water quality, the EIR/EIS Section 4.3 addresses non-point source as well as point source discharge impacts (see Table 4.3-8). Urban runoff is a nonpoint source discharge regulated under the NPDES General Permit WDRs for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). As described on Draft EIR/EIS pages 4.3-40 and 4.3-41, Monterey County and its cities are permittees regulated by the Phase II Municipal General Permit, which requires regulated small MS4s to develop and implement best management practices, measurable goals, and timetables for implementation, designed to reduce the discharge

of pollutants to the maximum extent practicable and to protect water quality. As described in the cumulative impact analysis in Section 4.3.6, in July 2013, the Central Coast RWQCB adopted Resolution No. R3-2013-0032, which prescribes new Post-Construction Requirements for projects that create or replace 2,500 square feet or more of impervious area and receive their first discretionary approval for design elements after March 6, 2014. The requirements of the Resolution are implemented through the Monterey Regional Stormwater Management Program and NPDES Municipal Stormwater Permit. The stormwater requirements are part of a regional program designed to address the potential cumulative effects of past, present, and foreseeable projects within the region; adherence to these requirements would ensure hydrology and water quality effects related to the alteration of drainage patterns would not cause a significant cumulative impact. Accordingly, the NPDES General Permit requirements are themselves measures based, in part, on the consideration of cumulative effects on receiving waters; therefore, discharges would be within parameters considered not to result in a cumulatively significant effect on water quality.

Discharges from the MRWPCA outfall would be point source discharges that are currently regulated by RWQCB Waste Discharge Requirements (WDRs) for the Monterey Regional Water Pollution Control Agency Treatment Plant (Order No. R3-2014-0013, NPDES Permit No. CA0048551). As described on Draft EIR/EIS pages 4.3-42 and 4.3-43, the NDPES permit incorporates the Ocean Plan water quality objectives to ensure the protection of the beneficial uses of Monterey Bay, and would need to be amended to include brine discharges prior to the implementation of the MPWSP and operation of the MPWSP Desalination Plant. The EIR/EIS evaluates water quality constituent concentrations in effluent discharged to Monterey Bay via the MRWPCA outfall for multiple discharge scenarios including brine-only, and brine combined with varying flows of secondary treated wastewater.

Table 4.3-16, referenced in Footnote 640 in this comment, presents the results of the MPWSP Operational Discharge Scenarios and does not, as the comment states, indicate the levels of contaminants are already at the brink of exceeding Ocean Plan thresholds. The table presents results of the brine discharge modeling and demonstrates which constituent, under which operating scenario, would come closest to its Ocean Plan water quality threshold. In response to comments on the Draft EIR/EIS received from MRWPCA, however, 60 additional modeling runs were conducted for this Final EIR/EIS and as a result, Tables 4.3-15 and 4.3-16 have been revised accordingly. See response to comment MRWPCA-9 and the revised Appendices D1and D3 in this Final EIR/EIS for more information on this additional modeling. The additional modeling confirmed, and the Final EIR/EIS maintains the conclusion of a potentially significant impact due to possible exceedences of Ocean Plan water quality thresholds for 2 constituents (that are contained in the wastewater, and not the brine) and data gaps regarding Ocean Plan compliance for 10 other constituents. The implementation of Mitigation Measures 4.3-4 and 4.3-5 would result in an impact determination of less than significant with mitigation.

Because this is a water supply project, the water demands anticipated as a result of development of the general plans was compared with the portion of MPWSP supply that would be available for new development. The analysis in EIR/EIS Section 6.3 does show that growth supported by the proposed project would be consistent with growth anticipated in adopted general plans. The general plan future water supply needs were prepared by the MPWMD in 2006 in consultation with cities in the CalAm service area, Monterey County, and Monterey Peninsula Airport District, as described in EIR/EIS Section 2.5.3.4. The future supply needs identified in 2006 have since been updated as warranted, as recently as 2015, as shown in Table 2-5. In most cases the updated estimates reduce the jurisdiction's original demand estimate; in one case, for the City of Seaside, the estimate increased to account for new development not previously considered, consistent with a concern raised in this comment. The amount of water provided by the project would not fully meet demands associated with general plan buildout, nor does the project propose to serve general plan buildout.

The growth inducement analysis in EIR/EIS Section 6.3.6 makes clear that growth that is consistent with adopted plans can result in significant environmental impacts, and impacts that are cumulatively significant. In fact, the analysis determined that the indirect growth inducing impacts of the proposed project would be significant and unavoidable.

EIR/EIS Section 4.1.7 explains that the cumulative impact analysis in the respective EIR/EIS sections considers the impact on the environment which may result from the incremental impact of the proposed project when added to other past, present, and reasonably foreseeable future actions. The growth inducement potential of cumulative water supply projects is addressed in Section 6.3.7.

The reference to "The Port" in this comment is unclear; no Port entity is participating as a lead or responsible agency or project sponsor of the MPWSP; this part of the comment may concern a different project.

Table 6.3-9 in Section 6.3.6 and Table J2-1 in Appendix J2 have been revised to refine and clarify impacts identified in the adopted general plans of service area jurisdictions. These revisions do not change the conclusion that the indirect growth inducing impact of the proposed MPWSP would be significant and unavoidable.

CURE-51 The above responses to this comment letter demonstrate that the EIR/EIS satisfies both CEQA and NEPA procedural and evidentiary standards. The EIR/EIS and revisions included in the Final EIR/EIS adequately describe the project and environmental setting, sufficiently address potential impacts to the environment, proposes adequate mitigation measures, and provides sufficient alternatives. For these reasons, the Lead Agencies are not required to recirculate a revised Draft EIR/EIS.

8.6.2.2 Responses to Comments from California Unions for Reliable Energy – Fox Letter

CURE-Fox-1 The third paragraph of the comment includes incorrect information about the project size. As stated in Section ES 5.1 and throughout the EIR/EIS, the project would produce approximately 10,750 acre-feet per year (afy) of desalinated water, and nine new slant wells would be constructed. In addition, approximately 22 miles of pipeline would be constructed under the proposed project, not 30 miles.

CURE-Fox-2 The comment includes a bullet list introducing the themes of the subsequent comments. For detailed responses to each of the specific comments, refer to responses to comments CURE-Fox-3 through CURE-Fox-152. With respect to comments on the April 2015 Draft EIR, as described on Draft EIR/EIS pages 1-10 and 1-11, per CEQA Guidelines Section 15088.5(f)(1), regarding the treatment of comments when recirculating a substantially revised, complete EIR, the CPUC need not provide individual responses to comments received on the April 2015 Draft EIR, and such responses are therefore not provided in this EIR/EIS. Instead, the comments received on the April 2015 Draft EIR by September 2015 are part of the administrative record of this proceeding, and key substantive comments and themes of comments received on the April 2015 Draft EIR have been addressed in the appropriate sections of this EIR/EIS. Accordingly, no individual responses to the referenced July 2015 letter are provided.

CURE-Fox-3 The commenter's experience and credentials are noted.

CURE-Fox-4 The comment is a summary statement of the types of air pollutants that would be generated during construction and operation of the project, which are consistent with the analysis in EIR/EIS Section 4.10, Air Quality.

CURE-Fox-5 For responses to comments related to the adequacy of the construction air quality mitigation measures, refer to responses to comments CURE-Fox-19 through CURE-Fox-40.

CURE-Fox-6 Documentation related to the operational emissions estimates was provided in Draft EIR/EIS Appendix G1.1 on pages labeled G1.1.8 (On-Road Operational Criteria Pollutant Emissions), G1.1.10a (Proposed Action Emergency Generator Testing Criteria Pollutant Emissions), G1.10b (Alternative 3 Emergency Generator Testing Criteria Pollutant Emissions), and G1.1.12 (GHG Operational Emissions – includes five pages). For each category of operational emissions estimates, emission factors and usage assumptions used to derive emissions estimates were provided.

Documentation related to emissions estimates for construction-related worker and hauling trips was provided in Draft EIR/EIS Appendix G1.1 on pages

labeled G1.1.3 (Construction Worker Auto and Truck Trips), G1.1.6 (Construction Criteria Pollutant Exhaust Emissions – includes seven pages), and G1.1.13 (EMFAC 2014 On-Road Emission Factors). For each category of construction-related emissions estimates, emission factors and usage assumptions used to derive emissions estimates were provided. The construction-related fugitive dust emissions were inadvertently omitted from Draft EIR/EIS Appendix G1.1. Appendix G1 Section G1.1.7, Construction Fugitive Dust, has been inserted into Final EIR/EIS Appendix G1.1 between sections G1.1.6 and G1.1.8. And while this additional data does not amount to significant new information, it also does not change the impact determination.

Although this page was inadvertently omitted from the Draft EIR/EIS Appendix G1, Draft EIR/EIS Air Quality Section 4.10.4, Approach to Analysis, did include a comprehensive discussion of the methods and formulas used to estimate construction-related fugitive dust emissions, including identification of the specific emission factors and the associated regulatory reference documents (refer to Draft EIR/EIS page 4.10-19). Thus, the Draft EIR/EIS provided adequate opportunity for the public to independently review the Lead Agencies' conclusions regarding the significance of the Project's construction and operational emissions.

In addition, pursuant to its February 8, 2017 Public Records Act request, the unlocked Appendix G1 spreadsheet, including Section G1.1.7 (Fugitive Dust), was provided to Adams Broadwell Joseph & Cardozo on February 13, 2017.

CURE-Fox-7 For the EMFAC 2014 model inputs (assumptions) and outputs, refer to Draft EIR/EIS Appendix G1, Section G1.1.13, EMFAC 2014 On-road Emission Factors. All emissions factors used to estimate on-road operational and construction emissions are for running exhaust, with the exception of factors for particulate matter, which include running exhaust as well as brake and tire wear factors. The units for running exhaust and the wear factors are grams per mile, so are summed for the PM10 and PM2.5 emission factors. Emissions of running loss and diurnal/resting loss, idling, and hot soak and start would be negligible for this project and were not estimated.

CURE-Fox-8 See response to comment CURE-Fox-7, above.

CURE-Fox-9 See responses to comments CURE-Fox-6 and CURE-Fox-7, which demonstrate that the EIR/EIS did include the underlying technical data necessary to verify estimates of the project's impacts. As the unlocked Appendix G1 spreadsheet was provided to Adams Broadwell Joseph & Cardozo on February 13, 2017, it is clearly part of the administrative record for this project.

CURE-Fox-10 See responses to comments CURE-Fox-6 and CURE-Fox-7, which demonstrate that the Draft EIR/EIS provided adequate opportunity for the

public to independently review the Lead Agencies' conclusions regarding the significance of the project's construction and operational emissions.

CURE-Fox-11 For responses to individual comments on mitigation to reduce NO_x emissions, refer to responses to comments CURE-Fox-12 through CURE-Fox-40.

CURE-Fox-12 Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements. Refer to response to comment MBARD-1 in Section 8.5.3.

CURE-Fox-13 Regarding the use of Tier 4 equipment, Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements and/or alternatively powered equipment, where feasible. See Response MBARD-1 in Section 8.5.3.

As indicated by the commenter, it is likely that Tier 4 equipment would be available locally; however, because the availability of Tier 4 equipment at the time of construction cannot be substantiated at this time, the exclusive use of such equipment during construction cannot be assumed. Nonetheless, Mitigation Measurement 4.10-1a requires CalAm and/or its contractors to make efforts to obtain high-tiered equipment or, as revised in response to comment MBARD-1 in Section 8.5.3, construction equipment powered by electricity, natural gas, propane, ethanol blends, or gasoline, where feasible. A requirement to obtain Tier 4 equipment from vendors within 1,000 miles of the project site would be overly burdensome to CalAm and its construction contractor(s) and could result in overall higher amounts of diesel exhaust emissions due to tractor truck hauling that could be required to transport the equipment over such distances.

The commenter also suggests that if Tier 4 equipment for construction of the project cannot be obtained, the lower-tier, higher emitting engines used should be retrofitted to meet Tier 4 standards. Given that the majority of equipment that would be used to construct the project would be owned by a third party, such a mitigation requirement would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria. As revised, Mitigation Measure 4.10-1a includes requirements for all available feasible equipment emission controls, and includes the requirement that CalAm or its construction contractor provide documentation to the CPUC from two local heavy construction equipment rental companies that indicates that the companies do not have access to Tier 4 equipment or alternatively powered equipment. Additional revisions to Mitigation Measure 4.10-1a are not warranted.

CURE-Fox-14 Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements. Refer to Response MBARD-1. No Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared for the MPWSP.

CURE-Fox-15 It is true that the measure references idling limits required by State law; however, the intent of the measure in the EIR/EIS was primarily to increase

awareness of the law by requiring signs to be posted that would be viewed by construction workers at all access points to construction areas, which is not a State requirement. However, in response to this comment and in recognition that idling-related NOx emissions would contribute to overall NOx emissions that result in a significant unavoidable impact during construction, Mitigation Measure 4.10-1b has been revised to clarify the requirement to post signage, to require that CalAm and/or its contractors prepare and maintain a written idling policy and distribute it to all equipment operators, and to lower the idling time limit for off-road diesel engines to 2 minutes (all other engines remain subject to existing law).

Pursuant to the Mitigation Monitoring, Reporting, and Compliance Program (MMRCP) that would be prepared for the project or an alternative if approved, the CPUC would be required to ensure that CalAm and its contractors effectively implement all mitigation measures, including Mitigation Measure 4.10-1b.

CURE-Fox-16 For specific discussion of each of the identified measures, see responses to comments CURE-Fox-17 through CURE-Fox-38.

CURE-Fox-17 Per the requirements of Mitigation Measure 4.18-1, Construction Equipment Efficiency Plan, CalAm would be required to implement procedures to ensure that all construction equipment is properly tuned and maintained at all times (see EIR/EIS Section 4.18, Energy Conservation, Impact 4.18-1 discussion). Therefore, this suggested measure already was incorporated in the Draft EIR/EIS.

CURE-Fox-18 As described in response to comment MBARD-1 in Section 8.5.3, Mitigation Measure 4.10-1a has been revised to include requirements for construction equipment powered by electricity, natural gas, propane, ethanol blends, or gasoline, as an alternative to Tier 4 diesel engines, where feasible.

CURE-Fox-19 See response to comment CURE-Fox-18.

CURE-Fox-20 Per the requirements of Mitigation Measure 4.18-1, CalAm would prepare a Construction Equipment and Vehicle Efficiency Plan that identifies the specific measures that CalAm (and its construction contractors) would implement to increase the efficient use of construction equipment to the maximum extent feasible and to ensure that construction activities are conducted in a fuel-efficient manner (see Draft EIR/EIS Section 4.18, Energy Conservation, Impact 4.18-1 discussion). Implementation of Mitigation Measure 4.18-1 would achieve the apparent intent of the commenter's suggested measure. Mitigation that would reduce emissions by limiting simultaneous construction activities would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria, as explained in detail in response to comment MBARD-5 in Section 8.5.3.

CURE-Fox-21 Implementation of Mitigation Measure 4.18-1, described above, would achieve the apparent intent of the commenter's suggested measure.

CURE-Fox-22 Beginning in 1975, most gasoline-powered vehicles have been required to be equipped with catalytic converters per U.S. Environmental Protection Agency (USEPA) exhaust emission regulations. In addition, State aftermarket catalytic converter requirements include the prohibition of installing used catalytic converters, as well as standards for new aftermarket catalytic converters. Thus, the existing gasoline-powered equipment fleet is equipped with catalytic converters, and there is no need for the suggested measure.

CURE-Fox-23 See response to comment CURE-Fox-15.

CURE-Fox-24 As described in Impacts 4.10-3 and 4.10-5, air quality impacts on sensitive receptors would be less than significant. Therefore, no mitigation is required to reduce such impacts; though mitigation measures recommended to reduce other air quality impacts would further reduce emissions affecting sensitive receptors.

CURE-Fox-25 This measure is the same as that listed in comment CURE-Fox-21, and is addressed in response to comment CURE-Fox-21.

CURE-Fox-26 This measure is the same as that listed in comment CURE-Fox-20, and is addressed in response to comment CURE-Fox-20.

CURE-Fox-27 Final EIR/EIS Mitigation Measure 4.18-1, *Construction Equipment and Vehicle Efficiency Plan*, has been revised as follows to include a requirement to provide worker carpooling options.

> **Mitigation Measure 4.18-1: Construction Equipment <u>and Vehicle</u> Efficiency Plan.**
>
> CalAm shall contract a qualified professional (i.e., construction planner/energy efficiency expert) to prepare a Construction Equipment Efficiency Plan that identifies the specific measures that CalAm (and its construction contractors) will implement as part of project construction and decommissioning to increase the efficient use of construction equipment <u>and vehicles</u> to the maximum extent feasible. Such measures shall include, but not necessarily be limited to: procedures to ensure that all construction equipment is properly tuned and maintained at all times; <u>requirement to provide options for worker carpooling;</u> a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; and identification of procedures (including the routing of haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner. The plan shall be submitted to CPUC and the Sanctuary for review and approval at least 30 days prior to the beginning of construction activities and at least 30 days prior to the beginning of decommissioning activities.

CURE-Fox-28 Mitigation Measure 4.10-1a has been revised to include requirements for construction equipment to be alternatively powered, including powered by methanol, propane, and natural gas, where feasible. See response to comment MBARD-1 in Section 8.5.3.

CURE-Fox-29 Mitigation Measure 4.10-1a has been revised to include requirements for construction equipment to be alternatively powered, where feasible. See response to comment MBARD-1 in Section 8.5.3.

CURE-Fox-30 Given that the majority of construction equipment would be owned and operated by a third party, a mitigation requirement to modify construction equipment engines with retrofits would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria. As revised, Mitigation Measure 4.10-1a includes requirements for all available equipment that meets the highest USEPA-certified tiered emission standards, and includes the requirement that CalAm or its construction contractor provide CPUC documentation from two local heavy construction equipment rental companies that indicates that the companies do not have access to Tier 4 equipment or alternatively powered equipment for any given equipment need. Additional revisions to Mitigation Measure 4.10-1a are not warranted.

CURE-Fox-31 Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements or alternatively powered equipment, where feasible. See response to comment CURE-Fox-13.

CURE-Fox-32 Given that the majority of construction trucks would be owned by a third party, a mitigation requirement to convert part of the construction truck fleet to natural gas would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria. However, as described above, Mitigation Measure 4.10-1a has been revised to include requirements for alternatively powered equipment, such as natural gas, where feasible.

CURE-Fox-33 As described in response to comment MBARD-1 in Section 8.5.3, Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements or alternatively powered equipment where feasible. These revisions would have the same effect as requiring the use of new or rebuilt equipment where feasible.

CURE-Fox-34 A recent study has indicated mixed results related to the ability of heavy-duty hybrid construction equipment to reduce emissions compared to conventional construction equipment (Johnson, et al., 2013). As part of the study, the University of California, Riverside College of Engineering – Center for Environmental Research and Technology facilitated the deployment of ten hybrid bulldozers and six hybrid excavators within eight California-based fleets. Hundreds of hours of in-use dozer and excavator activity were observed

and logged at six locations to develop typical in-use hybrid dozer and excavator duty cycles.

The findings of the study suggest that although the use of the hybrid construction equipment resulted in consistent reductions of carbon dioxide (CO_2) emissions of between 14 and 16 percent compared to emissions from the conventional equipment, hybrid construction equipment emissions of nitrogen oxides (NO_x) were up to 13 percent higher than emissions from the conventional construction equipment, and hybrid construction equipment emissions of particulate matter were up to 27 percent higher than emissions from the conventional construction equipment. Given the mixed results of this study, and the potential for the use of hybrid off-road construction equipment to increase emissions of NO_x (already a significant and unavoidable impact as described in Section 4.10) and particulate matter relative to the use of conventional off-road construction equipment, the Lead Agencies have not incorporated the suggested measure into project mitigation measures.

CURE-Fox-35 The California Air Resources Board (CARB) approved the Tractor-Trailer Greenhouse Gas regulation to reduce greenhouse gas emissions produced by certain heavy-duty tractor-trailers. The regulation requires the use of USEPA SmartWay verified aerodynamic technologies and low rolling resistance tires on vehicles operating on California highways. The compliance deadline for the regulation was January 1, 2013, for tractors and January 1, 2017, for trailers (CARB 2012). Therefore, the suggested measure has not been incorporated since it is already required in California and therefore would not further reduce emissions.

CURE-Fox-36 See responses to comments CURE-Fox-15 and CURE-Fox-24, which explain that equipment and vehicle idling during construction would be addressed by requiring signs to be posted at all access points to construction areas that identify the idling limit requirements per Mitigation Measure 4.10-1b. No evidence has been provided that indicates use of idling reduction technology would result in meaningful exhaust emission reductions compared to the recommendations identified in Mitigation Measure 4.10-1b. The suggested measure has not been incorporated.

CURE-Fox-37 This measure is the same as that listed in comment CURE-Fox-32, and is addressed in response to comment CURE-Fox-32.

CURE-Fox-38 The cited sources recommend the use of equipment idle reduction and control, engine preventive maintenance, equipment operator training, ultra-low sulfur diesel and biodiesel, equipment retrofit technologies, engine upgrades, and equipment electrification. As discussed in previous responses to comments, Mitigation Measure 4.10-1a has been revised to include Tier 4 equipment use requirements or alternatively powered equipment, where feasible. See response

to comment MBARD-1 in Section 8.5.3. Use of newer equipment that meets Tier 4 emission standards and/or use of alternative fuels, including electricity, is consistent with these USEPA recommendations to reduce diesel equipment emissions. Mitigation Measures 4.10-1b addresses equipment idle reduction and control. Mitigation Measure 4.18-1 addresses engine preventive maintenance and operator training.

CURE-Fox-39 The construction mitigation program for the project would be carried out by CPUC through implementation of its MMRCP. Mitigation Measure 4.18-1 already requires implementation of procedures to ensure that all construction equipment is properly tuned and maintained at all times.

CURE-Fox-40 For discussion of each of the identified measures, including whether or not they are considered to be feasible and have been incorporated into the Final EIR/EIS, refer to responses to comment CURE-Fox-17 through CURE-Fox-38. All feasible mitigation measures have been incorporated as described therein, and no new significant impacts or substantially more severe significant impacts have been identified. Therefore, these comments do not provide a compelling reason to recirculate the Draft EIR/EIS.

CURE-Fox-41 As stated in the first paragraph of Impact 4.10-4 on Draft EIR/EIS page 4.10-31, it is acknowledged that indirect emissions of criteria pollutants associated with electricity use from the regional power grid are not addressed in the Draft EIR/EIS air quality analysis, because it would be impractical and impossible to do so with any certainty.

CURE-Fox-42 The statement quoted from the Monterey County General Plan EIR about the indirect impacts of water supply projects is acknowledged. To the extent feasible, all relevant indirect impacts on water resources, biological resources and energy conservation have been analyzed in the EIR/EIS. The Monterey County General Plan EIR air quality analysis (Monterey County, 2008) did not address or quantify indirect emissions of criteria pollutants associated with electricity usage.

CURE-Fox-43 Basic understandings of the energy sources, their emission rates, and their locations are critical to conducting a meaningful analysis relative to the potential for the project to contribute to a violation of an ambient air quality standard since attainment of standards is based on the amount of pollutants generated within specific geographical air basins. This is different than analysis for greenhouse gas (GHG) emissions, where it is appropriate to estimate indirect emissions associated with electricity use because GHG emissions have global climate change implications that are not limited to specific locations.

The comment includes reference to an EIR prepared over 10 years ago, apparently as evidence that EIR air quality analyses “routinely” include

indirect emissions from electricity generation. This evidence is not persuasive for that argument. In addition, the sentence referenced in the comment from the Monterey Bay Air Resources District's (MBARD)[1] 2008 CEQA Guidelines is out of context. The comment omits the footnote at the end of the referenced sentence, which identifies the air district's definition of "indirect sources" relative to its significance thresholds for criteria pollutants. As shown below, indirect sources are defined as mobile sources in the footnote explaining the referenced sentence:

> Indirect emissions come from mobile sources that access the project site but generally emit off-site; direct emissions are emitted on-site (e.g., stationary sources, onsite mobile equipment). (MBARD, 2008, p. 5-4)

When discussed in proper context, the commenter's suggestion that the Draft EIR/EIS should include quantification of criteria pollutants relative to the project's electricity use is not supported.

CURE-Fox-44 Although the Lead Agencies agree that indirect emissions of criteria pollutants would not be limited to the air basin of the project location, there must be some evidence to identify what other air basins should be considered. With regard to electricity use for the project, there is no way to ascertain with specificity where the electricity would be generated, so it would be speculative to attempt to identify other air basins that should be considered. Furthermore, significance thresholds for criteria pollutants are specific to the air district, and govern emissions that occur on a project basis within the air basin. Thus, including indirect emissions from facilities outside the air basin would be inconsistent with the MBUAPCD's guidance on the use of significance thresholds.

CURE-Fox-45 The sources of electricity for Pacific Gas and Electric Company (PG&E)'s power grid are known, but it is not known which of those sources would generate the electricity that would be used by the project. In this situation, a worse-case analysis is not required. CEQA does not require the lead agency to engage in speculation about impacts that are not reasonably foreseeable (CEQA Guidelines §15145) and NEPA does not require a worst-case analysis when confronted with incomplete or unavailable information (40 CFR §1502.22). The reason the EIR/EIS does not include any of the information that would be required to estimate indirect criteria pollutant emissions associated with electrical use is that the information is unknown, and for the Lead Agencies to suggest otherwise would have been overly speculative.

Also refer to responses to comments CURE-Fox-43 and CURE-Fox-44.

[1] The Monterey Bay Air Resources District was formerly known as the Monterey Bay Unified Air Pollution Control District (MBUAPCD)

CURE-Fox-46 As explained in response to comment CURE-45, neither CEQA nor NEPA require an analysis of the "maximum plausible" (i.e., worst case) scenario for indirect emissions from stationary sources already subject to air district permitting. For the specific responses related to the commenter's emission estimates for project electricity use, see to responses to comments CURE-Fox-47 through CURE-Fox-50.

CURE-Fox-47 The assumption that electricity for the project would be generated by an uncontrolled gas turbine plant is not supported by evidence. To the contrary, as shown in Table 4.18-1 on Draft EIR/EIS page 4.18-3, only 25 percent of PG&E's electric power mix as of 2015 was generated by natural gas plants, and it is unrealistic to assume that all electricity generated by such plants would occur under startup/shutdown or uncontrolled conditions, nor is such an assumption supported by evidence.

CURE-Fox-48 As explained in response to comment CURE-Fox-47, the calculation in the comment is based on overly speculative assumptions about the emissions from PG&E-provided electricity, and likely overestimates NOx emissions by using unrealistic and unnecessary worst-case assumptions. Further, as clarified in response to comment CURE-FOX-43, the MBARD's significance threshold for NOx is only applicable to direct (on-site) and indirect (off-site *mobile source*) emissions, and all MBARD thresholds are only applicable to sources within the North Central Coast Air Basin because they have been set based on the need to attain and maintain ambient air quality standards (AAQS) within the Basin. The comment includes no evidence to suggest that the emissions would be generated within the North Central Coast Air Basin.

CURE-Fox-49 See responses to comments CURE-Fox-47 and CURE-Fox-48 regarding the speculative nature of the commenter's emission estimates. Based on evidence and analysis provided in the Draft EIR/EIS, the Project would generate NOx emissions in excess of the MBUAPCD's NOx significance threshold with or without mitigation. See, e.g., Table 4.10-5, Estimated Maximum Daily Construction Emissions (pounds/day).

CURE-Fox-50 Even if it could be assumed that all electricity for proposed project operation would be generated at the Gateway Generation Station (a 600-megawatt (MW) power station in Antioch), an assumption not supported by evidence, the use of the maximum daily emissions of NOx from the entire power plant is grossly over-conservative compared to the energy needs of the project, which would amount to a net increase in electrical demand of approximately 6 MW, or 1 percent of the capacity of the Gateway Generating Station.[2] At most, this would add approximately 12 pounds per day (1,152*0.01) to the total

[2] 51,698 MWh/year (Draft EIR/EIS page 4.18-16) is equivalent to approximately 6 MW. (51,698MWh/year)* (year/365day)*(day/24hour) = 5.90 MW.

operational NOx emissions, which would not cause an exceedance of the MBARD significance threshold. However, for the reasons stated in this response and in responses to comments CURE-Fox-41 through CURE-Fox-49, this is not an appropriate approach to estimating operational criteria air pollutant emissions.

CURE-Fox-51 The Lead Agencies do not agree that the maximum daily emissions associated with the Gateway Generation Station should be disclosed as a significant impact associated with the MPWSP for the reasons described above in response to comment CURE-Fox-50. Therefore, mitigation to offset emissions generated at the Gateway Generation Station is not warranted or appropriate.

CURE-Fox-52 For the reasons described in responses to comments CURE-Fox-43 through CURE-Fox-51, the lead agencies do not agree with the commenter that the EIR/EIS should include quantification of indirect criteria pollutant emissions associated with electricity use from PG&E's power grid.

CURE-Fox-53 See responses to comments CURE-Fox-54 through CURE-Fox-70 for specific responses to this summary comment.

CURE-Fox-54 The summary of general NO_2 emissions and its sources is acknowledged. See responses to comments CURE-Fox-55 through CURE-Fox-69 for specific responses to NO_2 and NOx-related comments.

CURE-Fox-55 As stated in the first sentence of Section 4.10.4.2 on Draft EIR/EIS page 4.10-18, for the purposes of the air quality evaluation, the NO_x significance threshold represents emissions of all NO_x, including NO_2. The Draft EIR/EIS disclosed a significant and unavoidable impact due to the project's potential to contribute to an exceedance of the ozone and NO_2 standards (see Impact 4.10-1, *Impact Conclusion*, discussion in EIR/EIS Section 4.10.5.1).

The NO_x emission threshold of 137 pounds per day that was used to make that impact determination is based on California Clean Air Act (CCAA) offset requirements identified in Monterey Bay Air Resources District Rule 207, *Review of New or Modified Sources*. Rule 207 does not identify a CCAA offset requirement for NO_2; however, it does identify 150 pounds per day NO_x (as NO_2) as the emissions where Best Available Control Technology (BACT) requirements apply (MBUAPCD, 2011).

As stated in Section 3.3 of Rule 207:

> In no case shall the emissions from the new or modified stationary source, or in conjunction with other increases in emissions, cause or contribute to the violation of an ambient air quality standard or exceed any air quality increment…" and "In making this determination the

> District shall take into account the mitigation of emissions through offsets obtained pursuant to this Rule.

All pollutants with ambient air quality standards are applicable to Rule 207; however, the NO_x and NO_2 limits discussed above are likely focused on ozone standards as opposed to NO_2 standards because, as illustrated in EIR/EIS Table 4.10-1, ozone concentrations in the air basin are higher than NO_2 concentrations and the ambient air quality standards for ozone are more stringent compared to NO_2. The fact that Rule 207 does not include an offset requirement for NO_2 indicates that the MBARD did not identify a need to address the potential for an NO_2 ambient air quality standard to be exceeded when it adopted this rule. Nonetheless, in the absence of an NO_2-specific significance threshold, the Lead Agencies determined it was prudent to use the NO_x significance threshold as such.

CURE-Fox-56 The adverse health effects of NO_2 are acknowledged. The project-related NO_2 emissions have been evaluated relative to the NO_2 ambient air quality standards. See response to comment CURE-Fox-55.

CURE-Fox-57 As indicated in EIR/EIS Section 4.10.1.2, it is acknowledged that NO_x and SO_2 can convert in the atmosphere to sulfates and nitrates, thereby contributing to fine particulate matter emissions; this section also acknowledges contributions of SO_2 to acid rain formation. However, similar to the formation of ozone, such conversions are highly variable and occur due to complex chemical reactions in the atmosphere generally downwind and at some distance from the original emission sources. Current air pollution emission estimating models, such as CalEEMod that was used to estimate project construction emissions, are not capable of estimating secondary pollutant emissions such as these, and the Lead Agencies are not aware of any established methods or guidance available to estimate those emissions that would be associated with the project. The analysis in EIR/EIS Section 4.10 follows established guidance from MBARD for estimating and mitigating, as needed, construction emissions of criteria pollutants.

CURE-Fox-58 The project-related NO_2 emissions have been evaluated relative to the NO_2 ambient air quality standards. The federal annual average secondary ambient air quality standard for NO_2, which is designed to protect public welfare, including damage to crops, is the same as the primary standard at 0.053 parts per million (ppm). The Draft EIR/EIS disclosed a significant and unavoidable impact due to the project's potential to contribute to an exceedance of the NO_2 standards (see Impact 4.10-1, *Impact Conclusion* discussion in EIR/EIS Section 4.10.5.1). Also see response to comment CURE-Fox-55.

CURE-Fox-59 Impacts associated with construction-related NO_2 emissions were evaluated in the Draft EIR/EIS relative to the MBARD mass emissions significance threshold for NO_x. See response to comment CURE-Fox-55.

CURE-Fox-60 There is no annual average ambient air quality standard for NO_x and the EIR/EIS presents no ambient concentrations for NO_x. EIR/EIS Table 4.10-includes recorded maximum hourly concentrations of NO_2. Annual average NO_2 concentrations were not included in Table 4.10-1 because those concentrations are very low relative to the standards. For example, CARB data suggest that the maximum annual average NO_2 concentrations for years 2011 through 2015 was 0.006 parts per million (ppm) (CARB, 2017). This represents one fifth of the State NO_2 ambient air quality standard of 0.030 ppm.

The EIR/EIS evaluated NO_2 emissions and disclosed a significant and unavoidable project-related impact for the potential to contribute to an exceedance of the NO_2 standards (see Draft EIR/EIS page 4.10-24). See response to comment CURE-Fox-55.

CURE-Fox-61 Impacts associated with construction-related NO_2 emissions were evaluated in the Draft EIR/EIS relative to the MBARD's mass emissions significance threshold for NO_x. See response to comment CURE-Fox-55.

CURE-Fox-62 It is not apparent that the significance thresholds used by the counties listed in the comment were developed to assess impacts other than those related to the ozone ambient air quality standards, nor why these thresholds would be applicable to emissions generated in the North Central Coast Air Basin. Shasta County is not in attainment of state ozone standards, and Colusa County has been in attainment only since 2013, following the preparation of the BAAQMD source cited in the comment for these thresholds (CARB, 2016a; BAAQMD, 2009). Mendocino and Modoc Counties, both of which *are* in attainment of ozone standards, have notably higher significance thresholds for NOx than Shasta and Colusa Counties, in many cases higher than the MBUAPCD thresholds used in the Draft EIR/EIS. All of the air basins in California, including the North Central Coast Basin and all basins in which the counties cited in the comment are located, have been in attainment of NO_2-specific state ambient air quality standards for at least the last 20 years (CARB, 2016b), so the cited thresholds do not provide evidence that the districts mentioned have developed these thresholds to address anything other than ozone concentrations. Regardless, impacts associated with NO_x and NO_2 emissions were evaluated in the Draft EIR/EIS relative to the MBUAPCD's mass emissions significance threshold for NO_x. See response to comment CURE-Fox-55.

CURE-Fox-63 For a detailed response about why the health risk assessment (HRA) conducted for the project did not evaluate the health effects of speciated emissions of ROG, see response to comment CURE-Fox-78.

CURE-Fox-64 The commenter appears to suggest that the significance of NO_x as a respiratory irritant was not evaluated in the Draft EIR/EIS because air dispersion modeling was not performed. The Lead Agencies note that this comment seems to contradict comment CURE-Fox-62, which recommends use of one out of a group of other mass (weight-based) emissions thresholds similar to that used in this EIR/EIS, as opposed to a concentration-based threshold that would require a dispersion modeling analysis, as is recommended by this comment. See also response to comment CURE-Fox-55.

CURE-Fox-65 See response to comment CURE-Fox-55.

CURE-Fox-66 With respect to the health-related properties of NO_2 that are unrelated to its property as an ozone precursor, the MBUAPCD CEQA Guidelines do not provide a significance threshold for NO_2 alone. The Basin does not come close to exceeding ambient air quality standards for NO_2 as shown in Table 4.10-1.

CURE-Fox-67 See response to comment CURE-Fox-57.

CURE-Fox-68 See responses to comments CURE-Fox-55 through CURE-Fox-67. As explained therein, the EIR/EIS adequately addresses concerns related to the effects of NO_2 as an air pollutant.

CURE-Fox-69 The comment states that other air districts that are in attainment of state and federal ozone standards have established significance thresholds for NOx of 25 lb/day to 180 lb/day, but goes on to suggest that Shasta County provides an appropriate threshold of 25 lb/day that should be applied to the project's NOx emissions. However, as described in response to comment CURE-Fox-62, Shasta County is in non-attainment of ozone standards, and indeed identifies ozone pollution as "the major air contamination concern" in the county (Shasta County, 2004, p. 6.5.02).

The Lead Agencies disagree that the project operational emissions of NO_x should be considered significant because they would exceed Shasta County's "Level A" threshold of 25 pounds per day of NO_x. Shasta County's Level A thresholds are designed to identify the level at which appropriate best available mitigation measures should be applied. Shasta County's "Level B" thresholds serve as significance criteria by screening for a level of significance that would require the preparation of an EIR. Shasta County's guidance suggests that if project emissions can be reduced to below Level B thresholds, a mitigated negative declaration can be prepared, and if emissions exceed the Level B threshold even after application of Shasta County's uniform mitigation approaches and offsets, then an environmental impact report must be prepared (Shasta County, 2004). Notably, Shasta County's Level B thresholds for NO_x and ROG are 137 pounds per day, which are equivalent to MBARD's NO_x and ROG thresholds of significance used to evaluate operational emissions that

would be associated with the MPWSP. Therefore, these thresholds provide no new information for assessing the significance of the proposed project's NOx emissions.

CURE-Fox-70 The commenter's estimated electricity-related emissions for the project not only use speculative assumptions that are not supported by evidence, but also includes use of an overly conservative emissions estimate not scaled properly for the project. See response to comment CURE-Fox-50, which explains why the Lead Agencies properly identified no significant operational NOx impact.

CURE-Fox-71 For responses to the commenter's more specific individual comments that are summarized in this comment, see responses to comments CURE-Fox-72 through CURE-Fox-78.

CURE-Fox-72 Construction activities associated with Wells ASR-5 and ASR-6 were evaluated in the HRA conducted for the EIR/EIS. Those wells make up the construction site identified as the ASR Injection/Extraction Wells Site in EIR/EIS Table 4.10-6, Maximum DPM Concentrations, Cancer Risks, and Chronic Health Indices. As the comment acknowledges, the ASR Injection/Extraction Wells was evaluated in the HRA and in the EIR/EIS.

CURE-Fox-73 As indicated in Section 4.10.4, Approach to Analysis, pipeline construction activities were not evaluated in the HRA conducted for the project because they would proceed linearly at a rate of 150 feet to 250 feet per day, which would limit the duration of exposure for any given receptor. The Office of Environmental Health Hazard Assessment (OEHHA) does not recommend assessing cancer risk for projects lasting less than 2 months at the maximum exposed individual resident (OEHHA, 2015). Factoring the daily progress rate of proposed pipeline construction, individual receptors along the pipeline routes would be exposed to construction emissions for periods that would be substantially less than 2 months. Therefore, the EIR/EIS's approach to evaluating health risk associated with pipeline construction is consistent with OEHHA guidance.

CURE-Fox-74 The excerpts of the OEHHA 2015 guidance cited by the commenter are acknowledged.

CURE-Fox-75 The comment is incorrect. For health risk related to construction of the Carmel Valley Pump Station, in addition to evaluating exposures of 3 months after birth, exposures were also evaluated for 3 months prior to birth, for a total exposure period of 6 months. This approach to analysis is consistent with OEHHA guidance.

CURE-Fox-76 The MBARD recommends the use of 10 in one million as a cancer risk threshold, and has not identified a more stringent threshold for short-term

exposure periods. In addition, OEHHA's 2015 guidance includes calculations that account for higher risks for infants. That 2015 guidance was used to calculate the health risks described in the EIR/EIS. The 2015 guidance includes a factor that accounts for the higher breathing rates of infants. That same 2015 guidance also includes age sensitivity factors (ASFs) for infants. The ASFs increase risks by a factor of 10 for exposure during the third trimester to age 2 years, and by a factor of 3 for exposure during ages 2 through 15 years. These ASFs and the higher breathing rates for infants were used to estimate the risks shown in the EIR/EIS. Consequently, both the risk approach and the risk thresholds used in the EIR/EIS correctly evaluate potential health risks to infants.

CURE-Fox-77 The EIR/EIS uses the 10 in a million threshold recommended by the MBARD's CEQA guidance document (MBUAPCD, 2016). The comment does not provide evidence to support the suggestion that a 1 in a million threshold would be more appropriate. The cited source for this suggestion is a presentation on surface water quality and refers to human-health-based criteria to protect people from consumption of fish, shellfish, and drinking water. This is not relevant to the air quality analysis prepared consistent with MBARD's CEQA Guidelines.

CURE-Fox-78 Appendix D of OEHHA's 2015 Guidance describes risk assessment procedures to evaluate emissions from diesel-fueled engines. According to Section 2.3 of Appendix D, there may be certain situations where an evaluation of the speciated chronic or acute health effects of diesel exhaust may be warranted if requested by the local air district.

OEHHA has established a chronic reference exposure level (REL) for inhalation of diesel exhaust, which is the REL used in the Draft EIR/EIS chronic health risk analysis. However, Appendix D of the OEHHA 2015 Guidance states that the local air district may elect to require a multi-pathway analysis if: 1) reliable data are available to speciate diesel exhaust; and 2) the district feels that such an analysis is warranted. Speciation of diesel exhaust would need to include both metal and ROG components. The MBARD recommends using its current CEQA guidance to conduct health risk assessments, which does not require speciation of diesel exhaust (MBARD, 2017). Since the air district's guidance does not require a multi-pathway, speciated analysis to evaluate diesel exhaust chronic hazards, the approach used in the Draft EIR/EIS was the correct approach for evaluating the project's chronic health risks.

OEHHA has not developed an acute REL for diesel exhaust. To analyze acute health risks from diesel exhaust, the exhaust would need to be speciated into its metal and ROG constituents. Appendix D of OEHHA's 2015 guidance states that acute health risks from diesel exhaust could be estimated if: 1) reliable data are available to speciate diesel exhaust; and 2) the district feels that such an analysis is warranted. The MBARD was also asked about the need for an acute

hazard analysis from diesel exhaust. The air district recommends using its current CEQA guidance to conduct HRAs, which does not require speciation of diesel exhaust to evaluate acute risks. The air district indicated that their preferred option would be not to estimate the chronic and acute health hazards of speciated diesel exhaust, but instead require the use of Tier 3 and Tier 4 equipment to minimize diesel emissions (MBARD, 2017). Mitigation Measure 4.10-1a in the EIR/EIS does just that by minimizing diesel emissions, including the ROG component of diesel exhaust, by requiring all construction equipment meets the highest USEPA-certified tiered emission standards.

CURE-Fox-79 The information on Valley Fever provided by the commenter is acknowledged.

CURE-Fox-80 The information on Valley Fever provided by the commenter is acknowledged. For discussion about the commenter's specific concerns related to the Draft EIR/EIS analysis on sensitive receptor exposure to *coccidioides immitis* spores, refer to Responses CURE-Fox-81 through CURE-Fox-105, below.

CURE-Fox-81 The Draft EIR/EIS statement regarding the substantial decline in cases of Valley Fever in 2014 and the inference that Valley Fever appears to be decreasing locally in Monterey County was based on facts available at the time of its writing. However, based on new information, the Final EIR/EIS Section 4.10.1.4, *Valley Fever*, has been revised as follows:

> ~~Incidences of Valley Fever appear to be decreasing locally in Monterey County.~~ Cases of Valley Fever in Monterey County between 2011 through 2013 ranged between 68 and 75~~3~~ cases per year, which equaled rates of 16.2~~0~~ to 17.8~~3~~ cases per populations of 100,000. In 2014 and 2015, cases of Valley Fever dropped substantially to ~~19~~ 20 and 34 cases, respectively, which were equal to ~~a~~ rates of 4.7~~5~~ and 7.9 per population of 100,000, respectively (CDPH, 2016~~5~~);~~.~~ however, the unofficial number of Valley Fever cases in 2016 rose back to pre-2014 levels with 78 cases (MCHD, 2017).

The following revision and new reference have been added to the Final EIR/EIS Air Quality Section 4.10 references.

> California Department of Public Health (CDPH), 2016~~5~~. Yearly Summaries of Selected General Communicable Diseases in California, 2011 – 201~~5~~4, last updated June 2016~~5~~.
>
> Monterey County Health Department (MCHD, 2017). Personal communication between Kristine Michie, Epidemiologist/Project Manager I at Monterey County Health Department, and Matt Fagundes, Environmental Science Associated, May 22, 2017.

CURE-Fox-82 The EIR/EIS points out that construction activities associated with the project would result in localized ground disturbing activities similar to those that occur continually within the County as a result of other construction projects, and that therefore the project would not result in a substantial increase in spore release compared to existing and ongoing ground disturbance. This is the basis for the conclusion that construction of the project would not represent an increased risk to public health (see Impact 4.10-3). In this context and consistent with the EIR/EIS analysis, the Lead Agencies agree that County residents that have been exposed to *coccidioides immitis* spores are part of environmental baseline.

CURE-Fox-83 It is acknowledged that the higher the concentration of PM_{10} and $PM_{2.5}$ fugitive dust emissions in the air from disturbed soils that contain *coccidioides immitis* spores, the greater the potential would be to cause the spores to become airborne and inhaled. That is why implementation of Mitigation Measure 4.10-1c is referenced due to its potential to control spore-containing dust from becoming airborne (see Impact 4.10-3, Draft EIR/EIS page 4.10-28). The measure requires application of fugitive dust control measures to ensure that fugitive dust that could contain *coccidioides immitis* spores would be controlled to the maximum extent feasible.

The EIR/EIS does not suggest that previous exposure to the spores guarantees immunity to Valley Fever.

CURE-Fox-84 The comment provides no supporting evidence for the claim that earth-disturbing activities that would occur under the project would increase the amount of *coccidioides immitis* spores in the atmosphere, other than identifying the total area of disturbance that would be associated with the project. Although there is a potential that some of the soil disturbed during construction of the project would contain spores, and could thus release them into the atmosphere as a result of project construction, the Lead Agencies are not aware of any evidence that suggests that these soils definitively contain the spores. Thus, there is no basis to conclude that impacts would be significant. Nonetheless, as described in response to comment CURE-Fox-83, implementation of Mitigation Measure 4.10-1c would have the potential to control spore-containing dust from becoming airborne.

CURE-Fox-85 Valley Fever-related less-than-significant impacts identified in the EIR/EIS are discussed in terms of increased risk to public health in general (see Impact 4.10-3). It is acknowledged that people who have jobs where dirt and soil are disturbed, including construction workers that would be associated with the project, may have a higher risk of getting infected than others. It is important that workers understand the potential hazards related to their work and how to protect themselves. Employers also have responsibilities to control

workers' exposure to hazardous materials, including spores that cause Valley Fever. For worker safety laws designed to protect workers from exposure to spores that cause Valley Fever that must be implemented by the project, refer to the response to Marina-99.

CURE-Fox-86 It is acknowledged that the potentially exposed population would be larger than the number of project construction workers and that *coccidioides immitis* spores can stay entrained within the atmosphere longer than some fractions of particulate matter; however, no evidence has been provided by the comment to support the claim that dust raised during construction of the project would expose a large amount of people to spores hundreds of miles away. Instead, the comment includes reference to a discussion that appears to be related to the most severe dust storm on record that occurred in Bakersfield in 1977 (NOAA, 2008). Such a storm does not represent reasonably foreseeable conditions.

CURE-Fox-87 The Draft EIR/EIS does not argue that prior exposure to *coccidioides immitis* spores confers immunity to Valley Fever. Instead, it discloses that much of the population of Monterey County has already been exposed to *coccidioides immitis* spores and would continue to be exposed because of the various earthmoving activities that occur as a result of agricultural and construction activities throughout the region; thus, the project would not represent a substantial increase in exposure compared to existing conditions. Construction activities associated with the project would result in similar localized ground disturbing activities to those that occur continually within the County and the project would not result in a substantial overall increase in spores emitted to the atmosphere that would represent an increased risk to public health (see EIR/EIS Impact 4.10-3).

CURE-Fox-88 See response to comment CURE-Fox-85.

CURE-Fox-89 See response to comment CURE-Fox-85.

CURE-Fox-90 As pointed out in comment CURE-Fox-91, and as evidenced by the Monterey County Health Department's recommended prevention measures (2017), dust control is an important defense against Valley Fever infection.

The commenter indicates that the Draft EIR/EIS does not contain any mitigation that specifically addresses fine particulate matter ($PM_{2.5}$) as a subset of PM_{10}. Although it is acknowledged that Mitigation Measure 4.10-1c is required to reduce construction related PM_{10} impacts to a less-than-significant level, its implementation would also reduce emissions of $PM_{2.5}$.

CURE-Fox-91 See response to comment CURE-Fox-90.

CURE-Fox-92 The connection between the small size and potential low settling rate of *Coccidiodes* spores and the effectiveness of Mitigation Measure 4.10-1c is

unclear; in fact, the intent of Mitigation Measure 4.10-1c is to reduce the potential for spore-containing dust to become airborne in the first place.

CURE-Fox-93 It is acknowledged that on an annual basis, Valley Fever infections in California tend to peak during the late summer and early fall when conditions are driest.

CURE-Fox-94 The potential effect of drought periods on Valley Fever infection rates is acknowledged.

CURE-Fox-95 Valley Fever-related impacts associated with the project are considered to be less-than-significant as described in Impact 4.10-3; therefore, additional mitigation measures to further reduce the potential impact are not warranted. Further regarding valley fever, see Response to comment CURE-Fox-85.

Regarding construction-related PM10 emissions and fugitive dust control more generally, see EIS/EIS Mitigation Measure 4.10-1c (Construction Fugitive Dust Control Plan). The actions recommended in this mitigation measure, including watering active construction areas multiple times daily; covering all trucks hauling soil, sand, and other loose materials; applying water or non-toxic soil stabilizers on unpaved access roads, parking areas, and staging areas at construction sites; hydroseeding or applying non-toxic soil stabilizers to inactive construction areas; and replanting vegetation in disturbed areas as quickly as possible; among other actions, are consistent with the County of Monterey Health Department's *coccidioidomycosis* prevention guidance (Monterey County Health Department, 2017).

See also EIR/EIS Mitigation Measure 4.6-1p (Control Measures for Spread of Invasive Plants), which requires that tools, equipment, and vehicles be cleaned before entering and leaving worksites (e.g., wheel washing stations at project site access points). While not specifically developed to address a risk of transporting cocci outside endemic areas, the implementation of Mitigation Measure 4.6-1p would reduce the risk of spores being transported on- or off site on project equipment, vehicles, or other items.

CURE-Fox-96 See responses to comments CURE-Fox-85 and CURE-Fox-95. The commenter's preference for use of trenchless methods to construct pipelines (as described in the EIR/EIS) is acknowledged; however, because no significant impact has been identified, there is no basis to require that CalAm use trenchless construction methods to reduce the potential to release spores.

CURE-Fox-97 See responses to comments CURE-Fox-85 and CURE-Fox-95.

CURE-Fox-98 Mitigation Measure 4.10-1c has been revised at the request of MBARD to require all active construction areas to be watered at least three times daily. See responses to comments CURE-Fox-95 and MBARD-8 in Section 8.5.3.

CURE-Fox-99 The daily sweeping required by Mitigation Measure 4.10-1c would be conducted with water sweepers that are designed to control fugitive dust.

CURE-Fox-100 See response to comment CURE-Fox-95.

CURE-Fox-101 See response to comment CURE-Fox-95.

CURE-Fox-102 See response to comment CURE-Fox-95.

CURE-Fox-103 See responses to comments CURE-Fox-85 and CURE-Fox-95. As noted in the Greentech Media article cited in the comment, the remedy to the Antelope Valley air district notices of violation included the implementation of dust control measures that had been shown to work in other parts of the valley, and to comply with the provisions of the company's conditional use permit ("They have been told it is time to use things to control dust that have worked elsewhere in the valley," Hickling told the town council. "Fines are not issued unless [the company] fails to correct the problem. They have to demonstrate they have dealt with the dust, re-vegetation and landscaping issues as outlined in the CUP.") (Trabish, 2013). A different company's noncompliance with a different air district's rules and regulations to control construction dust is not evidence that the applicant for this project will fail to comply with applicable permit obligations and other requirements.

CURE-Fox-104 The comment regarding construction workers that contracted Valley Fever in San Luis Obispo is noted. See response to comment CURE-Fox-85 for more information about construction worker exposure to valley fever.

CURE-Fox-105 See responses to comments CURE-Fox-85 and CURE-Fox-95.

CURE-Fox-106 The comment is an introductory statement summarizing comments on the greenhouse gas (GHG) emissions analysis conducted for the project. For responses to the commenter's individual comments, see responses to comments CURE-Fox-107 through CURE-Fox-136.

CURE-Fox-107 See responses to comments CURE-Fox-108 through CURE-Fox-136 for responses that address the commenter's specific concerns regarding the Draft EIR/EIS GHG mitigation measures.

CURE-Fox-108 In *Keep Berkley Jets Over the Bay Committee v. Board of Port Commissioners of the City of Oakland*, the court found that an EIR for a project with a significant and unavoidable environmental impact must sufficiently explore the significant environmental effects created by the project, and that the EIR's approach of simply labeling the effect "significant" without accompanying analysis of the project's impact is inadequate to meet the environmental assessment requirements of CEQA (CNRA, 2001).

The EIR/EIS GHG emissions analysis did not simply label the effect of project-related GHG emissions significant without an accompanying analysis of the project's impact. EIR/EIS Section 4.11.5 includes a robust analysis and quantification of the GHG emissions that would be associated with the project and included discussion of whether or not these emissions would be consistent with the State's GHG emissions reduction goals. Impact 4.11-1 provides a quantitative estimate of total amortized GHG emissions of the project and acknowledges that unmitigated emissions would exceed the 2,000 metric tons per year significance threshold. Mitigation measures are then described that would require that construction activities be conducted in a fuel-efficient manner (Mitigation Measure 4.18-1), and that a GHG emissions reductions plan be implemented (Mitigation Measure 4.11-1). See response to comment USEPA-4 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS.

CURE-Fox-109 The comment is a general statement that suggests the GHG mitigation measures identified in the EIR/EIS are unenforceable, ambiguous, and do not include all feasible mitigation. See responses to comments CURE-Fox-110 through CURE-Fox-136 for responses that address the commenter's specific concerns regarding the Draft EIR/EIS GHG mitigation measures.

CURE-Fox-110 See response to comment USEPA-4 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS.

On-site solar power is one of the options provided in revised Mitigation Measure 4.11-1. However, regarding the comment that renewable generation sources should be built to provide 100 percent of the project's energy demand, this would not be feasible given the continuous and constant nature of the project's electricity demand and the scope of the renewable facilities that would be required. It is not reasonable to assume that 100 percent of the project's energy demand could be met by constructing dedicated renewable energy generation sources, such as solar and wind power. In addition, the size and nature of the renewable facilities would result in their own potentially significant environmental impacts.

Solar power for the project's electricity demand is only possible during hours of sunlight. For example, a solar power proposal considered by County of Monterey was predicted to generate electricity for approximately 7 hours per

day on an annual average (County of Monterey, 2014). Because the energy demand for the project is constant and continuous, this would equate to only 30 percent of the energy demand for the project. Assuming 30 percent of the project's electricity demand could be met by solar power generation, and 1 acre of solar plant in Monterey County can generate approximately 242 megawatt-hours (MWh) per year of electricity,[3] the solar plant would have to be over 63 acres in size, which would be equivalent to more than 2.5 times the size of the proposed MPWSP Desalination Plant. Such a conversion of land use to supply only 30 percent of the project's energy demand would have its own environmental and legal challenges that would be akin to a separate energy generation project, which the Lead Agencies do not consider to be fitting mitigation for this water supply project.

With regard to wind power, wind turbines generate electricity for fewer hours per day on average then solar power. For example, a wind turbine proposal considered by the City of Soledad was estimated to generate electricity for approximately 5 hours per day on an annual average (City of Soledad, 2013). This would represent an opportunity to satisfy approximately 21 percent of the project's electricity needs. Assuming that 1.5-MW wind turbines can each generate up to 2,700 MWh per year (City of Soledad, 2013), four wind turbines could satisfy approximately 21 percent of the project's energy needs. Based on research conducted by the National Renewable Energy Laboratory, the average land requirements for 1 MW of wind power ranges from 30 to 141 acres (NREL, 2013). Therefore, development of four 1.5 MW wind turbine towers would require up to 843 acres. It should also be noted that each turbine would be approximately 340 feet tall (City of Soledad, 2013). The conversion of land use that would be required to supply only 21 percent of the project's energy demand would have its own environmental and legal challenges that would be akin to a separate energy generation project, which the Lead Agencies do not consider to be reasonable mitigation for this water supply project.

CURE-Fox-111 See responses to comments USEPA-4, CURE-Fox-108, and CURE-Fox 110. The Lead Agencies do not agree that no regard is needed relative to the intra-year timing of when renewable energy facilities constructed for the project would generate electricity. As discussed in response to comment CURE-Fox-110, the electricity demand for the project would be continuous and constant, while power output from any renewable generation facility that would be built to provide power for the project would only be available to offset up to 30 percent of the daily load on annual-average basis.

[3] Based on the specifications of a 3,000-acre solar power plant recently evaluated by Monterey County that would have a capacity of 726.9 gigawatt-hours (GWh) per year (County of Monterey, 2014).

Procuring renewable energy through the Green Tariff Shared Renewables program does not appear to be an appropriate mitigation measure under CEQA. Per CEQA Guidelines Section 15126.4(c)(3), off-site measures can be used to mitigate GHG emissions impacts; however, they should include "offsets that are not otherwise required." This is interpreted to mean that offsets must be additional to baseline conditions of the project.

PG&E's Solar Choice program is part of its Green Tariff Shared Renewables Program and was created to expand access to renewable energy resources. The program offers a way for customers to meet their electrical needs with generation from renewable energy resources. For new enrollees in the Solar Choice program, the purchased solar energy is sourced from existing solar resources in PG&E's renewables portfolio, while new projects are built specifically for the program. Although these projects currently exist, PG&E refers to them as "incremental" because they will not be counted toward California's Renewable Portfolio Standards (PG&E, 2017). Therefore, the Lead Agencies do not consider this type of mitigation to be viable. However, other feasible offset options are provided in revised Mitigation Measure 4.11-1.

CURE-Fox-112 See response to comment USEPA-4 for the revised Mitigation Measure 4.11-1, which includes revised performance standards for the preparation and implementation of the Emissions Reduction Plan, consistent with CEQA Guidelines Section 15126.4(a)(1)(B).

CURE-Fox-113 Implementation of Mitigation Measure 4.11-1 would be strictly enforced by the CPUC pursuant to the MMRCP that would be legally binding pursuant to a Commission decision that would approve the project.

The comment cites *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) as evidence that Mitigation Measure 4.11-1 is inadequate because it is vague and undefined; however, in that case, the court found that the cumulative impact analyses in the subject EIRs were legally defective because they were too narrowly defined, which understated the true impacts of the project, and thereby undermined any effort to provide adequate mitigation measures (CNRA, 2017a). This case does not support the commenter's position.

Kings County Farm Bureau v. County of Hanford (1990) is also not directly relevant. In the context of the comment, the concern for that case was focused on whether a groundwater mitigation agreement was relied upon for a finding of no significant impact (CNRA, 2017b). In the case of the Draft EIR/EIS, Mitigation Measure 4.11-1 was found to reduce the carbon footprint of the proposed project, but the impact associated with GHG emissions was found to remain significant and unavoidable because it is not possible to substantiate numerically that the GHG emissions would be reduced to a less-than-

significant level based on the information available. However, see response to comment USEPA-4 for text of the revised Mitigation Measure 4.11-1. Also see responses to comments CURE-Fox-110 through CURE-Fox-112.

CURE-Fox-114 As stated in the first sentence of Mitigation Measure 4.11-1, CalAm would be required to have a qualified professional prepare the GHG Emissions Reduction Plan. However, the first sentence of the measure has been revised as follows to identify what would constitute a qualified professional:

Mitigation Measure 4.11-1: GHG Emissions Reductions Plan.

(a) ***Energy Conservation Technologies*****.** CalAm shall have a qualified professional (a licensed mechanical engineer or other appropriately certified professional approved by the CPUC) prepare and submit a GHG Emissions Reduction Plan (Plan) to the CPUC ~~and the Sanctuary~~ for approval prior to the start of project construction activities.

CURE-Fox-115 The CPUC would confirm that Mitigation Measure 4.11-1 (and all approved mitigation measures) is properly implemented and would ensure that reporting would be conducted pursuant to the MMRCP.

CURE-Fox-116 See response to comment USEPA-4 for text of the revised Mitigation Measure 4.11-1, which includes additional measures to reduce or offset project operational GHG emissions. With implementation of this measure, total project GHG emissions would be less than significant (including amortized annual construction emissions), and further mitigation related to construction emissions would not be required.

CURE-Fox-117 See response to comment CURE-Fox-116.

CURE-Fox-118 See response to comment CURE-Fox-116.

CURE-Fox-119 Community energy conservation and demand management programs such as those recommended in the comment require third party voluntary participation and agreements. As separate programs that would not be under CPUC or MBNMS jurisdiction or CalAm's control, the Lead Agencies could not guarantee a level of participation that would be required to achieve meaningful energy savings. For these reasons, this mitigation approach was eliminated from further consideration. See response to comment USEPA-4 for text of the revised Mitigation Measure 4.11-1, which includes additional measures to reduce or offset project operational GHG emissions. With implementation of this measure, the impacts related to GHG emissions would be less than significant, and the measure suggested in the comment would not be required.

CURE-Fox-120 See response to comment USEPA-4 for text of the revised Mitigation Measure 4.11-1, which includes additional measures to reduce or offset project operational GHG emissions, including the purchase and retirement of carbon offsets.

CURE-Fox-121 See response to comment CURE-Fox-119, which also applies to water conservation programs such as those recommended in the comment.

CURE-Fox-122 As explained in Section 4.11.2.2, State Regulations, this executive order does not contain any requirements that would have to be complied with directly by the proposed project; however, future actions taken by the State to implement the goals of Executive Order S-3-05 may affect the project, depending on the specific implementation measures that are developed.

For discussion of the ability of solar power to supply 100 percent of the project's electricity demand, refer to response to comment CURE-Fox-110. In addition to a solar plant, the comment recommends installation of a battery storage facility, which could increase the daily amount of available power from a solar plant by several hours. Assuming that a battery storage facility could double the amount of available electricity output associated with a solar power plant to 60 percent of the project electricity demand, the size of the solar plant would have to be over 126 acres in size, which would be equivalent to more than five times the size of the proposed MPWSP Desalination Plant. A solar plant of this size would have its own environmental and legal challenges that would be akin to a separate energy generation project, which the Lead Agencies do not consider to be fitting mitigation for this water supply project.

CURE-Fox-123 See response to comment CURE-Fox-27 for changes to Mitigation Measure 4.18-1 subsequent to the Draft EIR/EIS. Mitigation Measure 4.18-1 is sufficient as drafted; it identifies specific measures that CalAm (and its construction contractors) would be required to implement as part of the Construction Equipment Efficiency Plan. The measures include, but are not limited to, procedures to ensure that all construction equipment is properly tuned and maintained at all times; a requirement to provide options for worker carpooling; a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; and identification of procedures (including the routing of haul trips) that would be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner.

The amount of electricity and indirect energy consumption that would be associated with construction of the project is currently unknown and cannot be estimated as it would be too speculative given existing data. (see Draft EIR/EIS, p. 4.18-15.) More important, the precise plan of construction as to timing of elements, sequencing, and the precise exact types of construction equipment to be employed, etc., cannot be known until the project is approved,

a contractor in is hired, and construction level plans are available. Therefore, it is premature to prepare a fully-developed construction equipment efficiency plan at this time. Deferral of the specifics of mitigation ("the details of exactly how mitigation will be achieved") is permissible so long as the mitigation measures commit the project applicant to mitigation and list alternatives to be considered, analyzed, and possibly incorporated into a mitigation plan. (*California Native Plant Soc. v. City of Rancho Cordova* (2009), 172 Cal.App.4th 603, 621; see also *City of Hayward v. Board of Trustees of the California State University* (2015) 242 Cal.App.4th 833, 855-856.)

CURE-Fox-124 In this context, a "qualified professional" is defined as a construction planner/energy efficiency expert (see Impact 4.18-1in EIR/EIS Section 4.18, Energy Conservation). The Lead Agencies disagree that a registered civil engineer would possess a more appropriate qualification than a construction planner/energy efficiency expert to prepare the mitigation plan.

CURE-Fox-125 For responses relative to the specific mitigation recommendations, see responses to comments CURE-Fox-126 through CURE-Fox-133, below.

CURE-Fox-126 See response to comment CURE-Fox-17.

CURE-Fox-127 See responses to comments CURE-Fox-15 and CURE-Fox-23.

CURE-Fox-128 See response to comment CURE-Fox-12.

CURE-Fox-129 As stated in Section 4.13.1.3, *Solid Waste Services*, all solid waste generated by project construction or operation would be disposed of at the Monterey Peninsula Landfill or diverted for recycling or reuse at the Monterey Materials Recycling Facility. The materials that would be targeted by operators at the materials recovery facility include paper, cardboard, bottles and cans, commercial waste, wood waste and yard waste, and construction and demolition debris. An additional mitigation measure to require reuse and recycling of construction and demolition waste is not warranted.

CURE-Fox-130 Mitigation Measure 4.10-1a, Equipment with High-Tiered Engine Standards, has been revised to include requirements for construction equipment to be alternatively powered, where feasible. Refer to response to Comment MBARD-1.

As described in the Air Quality Impact 4.10-1 conclusion, construction of the proposed project could contribute to an exceedance of a state and/or federal standard for ozone and NO_2 based on the estimated maximum daily mass emissions levels of NO_x. Therefore, use of biodiesel fuel is not considered to be viable mitigation to reduce project GHG emissions during construction because its exhaust can include NO_x emissions 20 percent higher than exhaust from

standard diesel fuel (Rincon, 2014), which would substantially increase the severity of the significant and unavoidable air quality impact. Furthermore, because amortized construction emissions associated with the project would only account for less than five percent of the total project GHG emissions, even if all construction-related GHG emissions could be avoided, the overall project emissions would continue to exceed the significance threshold (see EIR/EIS Table 4.5-5). Such a mitigation requirement would do little to reduce the significant GHG emissions impact, but could substantially increase the severity of the significant air quality impact. The mitigation recommendation has not been incorporated. See also response to comment USEPA-4 which contains the revised text of Mitigation Measure 4.11-1.

CURE-Fox-131 Identification of procedures (including the routing of haul trips) that would be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner would already be required pursuant to Mitigation Measure 4.18-1, Construction Equipment and Vehicle Efficiency Plan (see Impact 4.18-1 in EIR/EIS Section 4.18, Energy Conservation).

CURE-Fox-132 Pursuant to the MMRCP that would be implemented for the project, the CPUC would be required to ensure that CalAm and its contractors effectively implement all mitigation measures. The CPUC would have an on-site third-party mitigation monitor that would note any problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CPUC. In addition, pursuant the program, the CPUC would conduct tracking/reporting on the implementation of mitigation measures.

CURE-Fox-133 See response to comment CURE-Fox-27.

CURE-Fox-134 CalAm would not solicit construction contractors for the MPWSP until after the project has been approved. At this point in the planning and review process, information about the actual construction equipment (e.g., the years equipment engines were produced) is not available. However, equipment inventory assumptions for each project component, including equipment horsepower ratings, hours of equipment use, equipment fuel types, and construction phasing, have been estimated for the Draft EIR/EIS analysis and are included in EIR/EIS Appendix G.1, Air Quality and Greenhouse Gas Emissions Estimates.

CURE-Fox-135 See response to comment CURE-Fox-132. The requested changes to Mitigation Measure 4.18-1 are not warranted.

CURE-Fox-136 See responses to comments CURE-Fox-118 through CURE-Fox-135.

CURE-Fox-137 Predicted vibration levels presented in Table 4.12-10 of the Draft EIR/EIS were calculated using FTA equations for vibration propagation on pages 11 and

12 of their document *Transit Noise and Vibration Impact Assessment*, cited in EIR/EIS Section 4.12.

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance

PPV (ref) is the reference vibration level in in/sec at 25 feet

D is the distance from the equipment to the receiver.

Reference vibration levels at 25 feet were taken directly from FTA's Table 12-2 in the same document. As an example, for a Bore/Drill Rig the reference vibration level at 25 feet is 0.089 inches per second, as indicated in Table 4.12-10 of the Draft EIR/EIS. Applying this vibration level in the above equation yields a resultant vibration level at 50 feet (for the ASR-5 and ASR-6 wells) of 0.031 inches per second. All other values in Table 4.12-10 were calculated in a similar fashion.

CURE-Fox-138 While the analysis in Impact 4.12-3 of the Draft EIR EIS is accurate, the impact conclusion paragraph on Draft EIR/EIS page 4.12-48 summarized the analysis incorrectly and is amended as indicated below:

Impact Conclusion

Construction of the subsurface slant wells, MPWSP Desalination Plant, ~~Pipeline to the CSIP Pond, Brine Discharge Pipeline~~ and Source Water Pipeline would result in less-than-significant vibration impacts with regard to structural damage, and no impact with regard to human annoyance. Construction of the Castroville Pipeline, ASR-5 and ASR-6 Wells, ~~Terminal Reservoir,~~ ASR ~~Conveyance Pipeline, ASR Recirculation Pipeline, ASR Pump-to-Waste~~ Pipelines, Ryan Ranch-Bishop Interconnection Improvements, Carmel Valley Pump Station, and Main System-Hidden Hills Interconnection Improvements would result in less-than-significant vibration impacts with regard to both structural damage and human annoyance. There could be significant vibration impacts related to structural damage and human annoyance from construction of the ~~Castroville Pipeline and Source Water Pipeline, as well as~~ the new Desalinated Water Pipeline and new Transmission Main where trenchless construction methods are required for these pipelines. However, with implementation of the mitigation measures identified above, all significant construction vibration impacts would be reduced to a less-than-significant level.

Additionally, Table 4.12-10 has been revised to reflect that no historic structures are located within distances of concern along these pipelines and the threshold of 0.3 inches per second applies. Consequently, the references to Mitigation Measure 4.15-1a have been deleted from Section 4.12.

Mitigation Measure 4.12-3 establishes a performance standard for addressing potential vibration impacts related to human annoyance and building damage and provides numerous measures of achieving this standard. As a practical matter, reducing vibration from rollers to below the building damage threshold would involve a minor reduction from 3.1 PPV to 2.9 PPV, which could be achieved with alternative compaction methods in areas close to structures.

With respect to addressing human annoyance impacts, Mitigation Measure 4.12-3 identifies restriction of construction activities to daytime hours. Given that installation of sheet piles for a given trench pit would take only a few hours and compaction using rollers could also be completed in proximity to receptors in a few hours, human annoyance effects of vibration would not occur during times when most people sleep and would only be perceptible for a brief period of time, if at all.

CURE-Fox-139 See response to comment CURE-Fox-138.

CURE-Fox-140 The City of Monterey's Vibration Control Plan addresses vibration impacts on historic structures in the Spanish Royal Presidio, in the Monterey Old Town National Historic Landmark District, near historically significant buildings, and in the Presidio of Monterey Historic District. The proposed project would not be constructed in the vicinity of any of historic buildings or structures in the City of Monterey.

CURE-Fox-141 The suggested measure is already incorporated into Mitigation Measure 4.12-3 on page 4.12-48 of the Draft EIR/EIS.

CURE-Fox-142 The suggested alternative shoring method, as well as the suggested alternative compaction method described in comment CURE-Fox-145, has been added to Mitigation Measure 4.12-3, as indicated below:

a. Vibration monitoring shall be conducted for the first 500 feet of pipeline construction for each segment to confirm vibration levels do not exceed the above vibration threshold. If vibration levels exceed the limits of this mitigation measure, construction practices shall be modified to use smaller types of construction equipment or excavator-mounted compaction wheels, operate the equipment in a manner to reduce vibration, or use alternate construction methods (such as use of manual shoring jacks), and monitoring shall continue for an additional 200 feet or until construction practices meet the required vibration levels. The monitoring in this

mitigation measure shall be repeated if the construction methods change in a manner that would increase vibration levels, or when structures are closer to the limits of construction than previous vibration monitoring have confirmed is below the vibration thresholds.

CURE-Fox-143 The suggested mitigation measure is incorporated into Mitigation Measure 4.12-3 on page 4.12-48 of the Draft EIR/EIS but with an implementing distance standard that addresses non-historic structures.

CURE-Fox-144 The suggested mitigation measure does not apply to proposed use of rollers or sheetpile drivers that have been identified as potential sources of vibration impacts.

CURE-Fox-145 See response to comment CURE-Fox-142.

CURE-Fox-146 The suggested mitigation measure does not apply to the proposed project, which would not impact historic structures as indicated in Impact 4.15-1 of the Draft EIR/EIS.

CURE-Fox-147 Mitigation Measure 4.12-3 on page 4.12-48 of the Draft EIR/EIS already identifies a requirement for vibration monitoring. The proposed project would not impact historic structures, as indicated in Impact 4.15-1 of the Draft EIR/EIS.

CURE-Fox-148 The suggested mitigation measure is already incorporated into Mitigation Measure 4.12-3 on page 4.12-48 of the Draft EIR/EIS.

CURE-Fox-149 The suggested mitigation measure appears to be taken from a proposed scope of work, as identification of a specific manufacturer of seismograph is not a necessary component of the mitigation measure. The monitoring task could be adequately performed by a number of different available seismograph types.

CURE-Fox-150 See response to comment CURE-Fox-140.

CURE-Fox-151 See response to comment CURE-42. The New Monterey Pipeline was previously included as part of the proposed project. However, it is no longer part of the proposed project and no components of the proposed project would be constructed in the vicinity of any historic buildings or structures in the City of Monterey.

8.6.2.3 Responses to Comments from California Unions for Reliable Energy – Owens Letter

CURE-Owens-1 The Draft EIR/EIS includes a thorough description of the regional environmental setting in Section 4.6.1.3, Regional Terrestrial Biological Resources, and describes the regional significance. On page 4.6-7 of this section, the Draft EIR/EIS states, "Monterey County is situated at the confluence of the San Francisco Bay, Central Coast, and South Coast Range floristic provinces. As a result, the flora of Monterey County is some of the most diverse in California. Monterey County represents the southern and northern population range limits of many rare species endemic to the northern and southern portions of the state, respectively." The Draft EIR/EIS describes the existing biological resources present, or potentially present, in the project area and evaluates potential project and cumulative impacts on these resources as required by CEQA and NEPA.

CURE-Owens-2 As noted in the comment "*Where the effect of the potential conflict would be significant*, feasible mitigation is identified to resolve or minimize that conflict" (emphasis added). The impact analysis in Section 4.6.5 finds that not all "potential conflicts" identified at the screening level in Section 4.6.2.3 would result in significant impacts; therefore, not all require mitigation under CEQA and NEPA. As disclosed in Impact 4.6-4, the project would have impacts on resources that could meet Marina LCLUP's definition of primary and secondary habitat, including species identified in the LCLUP's list of sensitive species and others not on that list. The commenter correctly notes that CalAm would be required to comply with independently enforceable requirements of agencies with jurisdiction. Such requirements are indeed effective independent of any reference in an EIR/EIS. Nevertheless, Mitigation Measure 4.6-2a requires CalAm to consult with the CCC and local jurisdiction (e.g., City of Marina) to verify the extent of ESHA within or adjacent to portions of the proposed project within the Coastal Zone (see Final EIR/EIS Section 4.6,1.5 for a description of the identification process to date) as part of the process of obtaining a Coastal Development Permit(s), and Mitigation Measure 4.6-2b requires CalAm to implement avoidance, minimization, and compensation measures for impacts on ESHA and primary habitat. Restoration and mitigation activities required for compensation lands under Mitigation Measure 4.6-2b would be included in the Habitat Mitigation and Monitoring Plan (HMMP) (Mitigation Measure 4.6-1n) which CalAm must implement after developing and submitting to the appropriate resource agencies, including the CCC and local jurisdictions, for approval prior to project construction. The EIR/EIS's mitigation measures appropriately place the responsibility for interpreting the local coastal plan policies in the hands of the applicable jurisdiction(s) considering and approving a Coastal Development Permit, and stipulate that the project shall not move forward until CalAm has heeded that interpretation. See response to comment CURE-Owens-4 regarding protocol surveys.

CURE-Owens-3 See response to comment CURE-Owens-2. The Draft EIR/EIS does consider seaside painted cup (*Castilleja latifolia* ssp. *latifolia*) and Eastwood's ericameria (*Ericameria fasciculata*). See the discussion of Monterey coast paintbrush (*Castilleja latifolia*) and Eastwood's goldenbush (Ericameria fasciculata), respectively in Section 4.6.1.8, Special-Status Species, for a discussion of the potential for these species to occur in the project area. The Final EIR/EIS includes an analysis of potential impacts on globose dune beetle (*Coelus globosus*) and Salinas kangaroo rat (*Dipodomys heermanni goldmani*) in Section 4.6.5; these analyses do not identify any new or substantially more severe significant impacts compared to the Draft EIR/EIS.

CURE-Owens-4 EIR/EIS Section 4.6.1.2, Information Sources and Survey Methodology, describes the numerous biological field surveys that have been conducted within the project area between 2012 and 2016. These surveys include a combination of reconnaissance-level field surveys and focused and protocol-level surveys for some species. Over 60 days of field surveys were conducted by experienced professional biologists well-versed in the local flora and fauna and also experienced in the standards and data requirements for CEQA and NEPA compliance. The EIR/EIS evaluates the potential for special-status species and sensitive natural communities to occur within the project area based on the results of these numerous surveys as well as multiple other sources, including, but not limited to CNDDB records, USFWS records, CNPS records, and several biological reports prepared in the region. The EIR/EIS evaluates potential impacts on these sensitive biological resources based on their potential to occur. See Section 4.6.4, Approach to Analysis for a discussion of this impact analysis. Protocol-level surveys are not required for all CEQA/NEPA documents. For example, under CEQA, where there is sufficient, current information regarding biological resources to determine potential impacts on sensitive biological resources and develop mitigation measures, new protocol surveys would not be necessary. The fact that additional studies might be helpful does not mean that they are legally required. (See e.g., *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383.) Generally, NEPA requires high quality, accurate data with scientific integrity.

In response to a Public Records Act request, the GIS data and all field survey notes used to support the determinations regarding potential to occur and impact analysis were provided to Adams Broadwell Joseph & Cardozo on March 15, 2017.

Comments regarding the adequacy of mitigation measures for impacts on sensitive species are addressed below where the commenter provides further specificity.

CURE-Owens-5 See the response to CURE-Owens-4 in regard to the need for focused and protocol level surveys and to the approach to analysis. Section 4.6.1.8,

Special-Status Species, includes a general description of the location of the nearest occurrence record for each special-status species with a moderate to high potential to occur at the site. The Draft EIR/EIS does not rely solely on CNDDB occurrence records or results from the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Species. Results from the CNDDB and CNPS information have been used, along with an evaluation of habitat conditions and life history of each special-status species, to determine whether a special-status species has potential to occur within the project area. Additionally, many observations of these species were documented as part of the multiple biological surveys conducted within the project area between 2012 and 2016, in part for the specific purpose of obtaining primary source data for analysis of the proposed project.

The entire Section 4.6, Terrestrial Biological Resources, includes a thorough description of existing conditions. Section 4.6.1, Setting/Affected Environment, provides a thorough description of the existing site conditions including vegetation communities and habitat types, sensitive natural communties, wetlands and other waters, wildlife movement corridors, special-status species, and critical habitat based on the surveys listed in Section 4.6.1.2, Information Sources and Survey Methodology. Section 4.6.1.8, Special-Status Species, includes a description of each special-status species with a moderate or high potential to occur in the project area and includes a description of where each species has been observed in or around the project area during the surveys listed in Section 4.6.1.2. All of these observations are included on maps and spreadsheets that are in the administrative record for this EIR/EIS. This information and the GIS shapefiles were sent to CURE on March 15, 2017. This information was used to evaluate the potential for species to occur in the project area, determine whether impacts would be significant, and recommend mitigation measures where necessary to reduce impacts to less than significant. The cited sentence in the comment, "The impact analysis described in this section is based on special-status species observations available to Environmental Science Associates (ESA) as of June 20, 2016," is not intended to be read as a citation to a specific study or reference. The meaning of this statement is that the analysis in the Draft EIR/EIS was based upon all materials *available to* ESA as of that date – those materials have been referenced and included in the administrative record as described above.

With regard to the wetland delineation, wetland delineation mapping has been conducted by AECOM as part of its biological surveys conducted in support of the project. As described on Draft EIR/EIS page 4.6-35 in Section 4.6.1.6, wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC were mapped in the project's study area during wetland mapping conducted by AECOM and other field studies conducted by ESA between 2012 and 2016. A wetland delineation report, based on some of these field surveys, has been

prepared and is referenced in the Final EIR/EIS. Additionallly, the USFWS National Wetland Inventory (NWI) was queried to identify wetlands and other waters within or adjacent to the study area. In the absence of a wetland verification by the USACE, RWQCB, and CCC, and based on the best available information from numerous surveys, the EIR/EIS conservatively assumes that all areas mapped as potential wetlands or waters during surveys conducted by ESA and AECOM between 2012 and 2016, by the NWI, and in the wetland delineation would be considered potentially jurisdictional by the USACE, RWQCB, and/or CCC. A wetland delineation will be submited to the USACE, RWQCB, and CCC as part of project permitting, which is separate from the CEQA/NEPA analysis. In response to this comment, the text in Section 4.6.1.6, Wetlands and Other Waters has been revised to clarify these assumptions. See the response to comment MCWD-134 for the revised text. Additionally, in response to this comment, the following text from Draft EIR/EIS pages 4.6-69 and 4.6-70 has been revised as shown:

> The occurrence potential for special-status species considers the habitat requirements and life history of the individual species, site-specific reconnaissance-level biological surveys (habitat assessments) of the project area, and focused and protocol-level surveys of special-status species at select facility locations as described in Section 4.6.1.2.

CURE-Owens-6 See responses to comments CURE-Owens-4 and CURE-Owens-5. If CDFW or USFWS require additional focused and protocol surveys for federal and/or state-listed species in support of permit approvals, CalAm will be required to conduct these surveys. These permitting approvals are separate from this CEQA/NEPA analysis.

CURE-Owens-7 See response to comment CURE-Owens-5. Results from the plant surveys described in Section 4.6.1.2, Information Sources and Survey Methodology, are included in the description for each special-status species with a moderate or high potential to occur in the project area in Section 4.6.1.8, Special-Status Species.

Mitigation Measure 4.6-1e provides appropriate and adequate measures to ensure that impacts on special-status plants are reduced to less than significant. This measure has been revised in response to comment CDFW-4. The revised measure would ensure that impacts on special-status plant species are reduced to less than significant regardless of the size the population. It stipulates that impacts on special-status plants shall be avoided where possible, and if impacts cannot be avoided, then measures to minimize impacts shall be implemented. Regardless of the number of plants, CalAm would be required to implement these avoidance and minimization measures. The revised measure includes compensatory mitigation requirements that would ensure 1:1 ratios for temporary impacts and 2:1 ratios for permanent impacts and performance

standards to ensure that the restoration areas have either similar cover or a similar number of species as the impacted area. Regardless of the size of the impact, compensatory mitigation would be provided at least twice the size of the impact area, and restoration areas would be required to have similar conditions to those in the area affected.

This measure does not rely on "last-minute" pre-construction surveys to document special-status plant occurrences nor does it rely upon an assumed presence of a special-status species. Rather, the measure requires that focused botanical surveys be conducted during the appropriate blooming period prior to ground disturbance to determine the presence and abundance of special-status species specific to that season or year. Implementing these surveys will ensure that special-status plants are accurately documented within the project area prior to construction, and mitigation applied in accordance with the performance standards outlined in adopted measures.

CURE-Owens-8 See response to comment CURE-Owens-4. Figures 4.6-2a through 4.6-2c include a list of species with CNDDB occurrence records in the project area. The exact locations of special-status species records are not included in this public document in accordance with the CNDDB Data Use Guidelines (2011). Per the CNDDB Data Use Guidelines, "the concern is that, while it is important that the CNDDB information is available to those whose job it is to conserve species, there is the very real possibility that some people will use the detailed location information to do harm to a species or its habitat. Because of the sensitivity of the data, we try to limit the level of location detail that is made readily available to the public." In response to this comment, Figures 4.6-2a through 4.6-2c have been revised to include the CNDDB disclaimer.

Section 4.6.1.8, Special-Status Species, includes a general description of the location of the nearest occurrence record for each special-status species with a moderate to high potential to occur at the site.

CURE-Owens-9 The conservation status of western snowy plover is acknowledged in EIR/EIS Section 4.6.1.8, Special-Status Species. As described on page 4.6-2 of the Draft EIR/EIS, ESA requested western snowy plover occurrence data within the project area from Point Blue Conservation Science (i.e., data not published in their annual report), but Point Blue Conservation Science has not provided this data because they have not received authorization from CEMEX to share data specific to the CEMEX property with the Lead Agencies. This remains accurate as of publication of the Final EIR/EIS. In the absence of this information, ESA has relied on multiple western snowy plover resources to describe the status of western snowy plover in the project area. These resources are cited on Draft EIR/EIS page 4.6-50 in Section 4.6.1.8 and

include a Point Blue Conservation Science Publication, *Nesting of the Snowy Plover in the Monterey Bay Area, California in 2015* (a more recent version of the 2012 report cited in the comment's footnote 41), unpublished western snowy plover monitoring data provided in the *Technical Memorandum Biological Resources Assessment MPWSP Exploratory Borings Program Package 1 – CEMEX Active Mining Area*, as well as a letter from Kriss Neuman, Waterbird Ecologist, Point Blue Conservation Science, describing historic western snowy plover nest observations in the backdunes of the CEMEX active mining facility. All materials referenced in the Draft EIR/EIS were made available to the public during the public review period for the Draft EIR/EIS. The Final EIR/EIS relies on all of this information to acknowledge the high potential for this species to nest and winter in and around the project area. See the response to comment CURE-Owens-4, which explains that CEQA and NEPA do not require protocol-level surveys. The EIR/EIS provides sufficient information, based on the best available information, regarding the status of western snowy plover in the project area to adequately determine potential impacts on this species. Impacts are acknowledged to be potentially significant, and effective, multi-faceted mitigation measures are recommended to reduce these impacts.

Note that permitting under laws such as the federal Endangered Species Act (FESA) is a separate process from the CEQA and NEPA process and is being undertaken by CalAm and permitting agencies (e.g., USFWS) concurrent with and following CEQA and NEPA review. The Lead Agencies anticipate that the permitting process will result in additional specific mitigation requirements, and Mitigation Measure 4.6-1d, item 1, requires compliance with all avoidance and minimization measures required by USFWS as part of the FESA Section 7 consultation between the ONMS and USFWS, in addition to the actions specified in this mitigation measure.

CURE-Owens-10 See the response to comment CURE-Owens-4, which explains that CEQA and NEPA do not require protocol-level surveys. The Draft EIR/EIS references construction of the test slant well as an example of a similar, albeit smaller, project that has been implemented in the same project area and that used some of the same construction methods as would the proposed project. This example demonstrated that for the smaller-scale test slant well project, take of western snowy plover was avoided. The Draft EIR/EIS acknowledges that the scope of work for the test slant well is smaller than the scope of work for the proposed project. The revised Mitigation Measure 4.6-1d provides measures to reduce impacts from the proposed project and takes into account the scale of the proposed project.

The Draft EIR/EIS provides a description of the number of western snowy plovers in the breeding population in the Monterey Bay for context. In response to this comment, the Final EIR/EIS has been revised to include the

number of nests observed in the Marina subregion in 2015 and 2016. This information is based on breeding season surveys conducted along the beach, west of the project area. While protocol-level breeding season surveys have not been conducted within the project area, Mitigation Measure 4.6-1d requires CalAm to engage a qualified biologist to perform one year of surveys during the nesting season preceding construction. Additionally, the number and location of nests fluctuates year to year, so future predictions on the number of plovers that may occur within the project disturbance area during future construction are based on estimates. The EIR/EIS uses the best available information to analyze impacts and provide mitigation to reduce impacts to less than significant. This is based on the approach to analysis as described in Section 4.6.4.

CURE-Owens-11 The locations and primary constituent elements of western snowy plover critical habitat are described on Draft EIR/EIS pages 4.6-68 and 4.6-69. The EIR/EIS evaluates potential impacts on western snowy plover critical habitat and requires implementation of mitigation measures to reduce potential impacts to less than significant. See Impacts 4.6-2 and 4.6-7, which evaluate impacts, including direct and potential indirect impacts from foot traffic outside the construction area, trash and debris from construction, and/or the spread of invasive species, on snowy plover critical habitat that may result from construction of the subsurface slant wells (Draft EIR/EIS page 4.6-187) and Source Water Pipeline (Draft EIR/EIS page 4.6-190). These are the only project components that would have the potential for indirect impacts on snowy plover critical habitat. As stated on Draft EIR/EIS page 4.6-68, portions of the new Transmission Main and new Desalinated Water Pipeline alignments are located a minimum of 0.2 to 0.6 mile (1,000 to 3,000 feet) from snowy plover critical habitat. As shown on Figure 4.6-3, the closest portion of these pipelines to snowy plover critical habitat is an approximately 2-mile portion of the new Transmission main that would be located west of Highway 1 along the Transportation Agency for Monterey County (TAMC) right-of-way. Dunes separate the TAMC right-of-way from the snowy plover critical habitat (located on the beach) in this location, providing visual and topographical separation between the critical habitat and proposed construction activities, in addition to the 1,000-foot distance. Along other portions of these pipeline alignments, the distance to critical habitat is greater and intervening roadways (e.g., Highway 1) provide additional separation. No indirect effects on snowy plover critical habitat are anticipated from the new Transmission Main or new Desalinated Water Pipeline.

CURE-Owens-12 The Draft EIR/EIS acknowledges that loss of western snowy plover habitat (both breeding and wintering) and impacts on individual breeding and wintering birds would be a potentially significant impact. Construction impacts on western snowy plover are described in Impact 4.6-1, construction

impacts on western snowy plover critical habitat are described in Impact 4.6-2, operational impacts on western snowy plover are described in Impact 4.6-6, and operational impacts on western snowy plover critical habitat are described in Impact 4.6-7. Within those impact discussions, the proposed mitigation measures to reduce impacts on western snowy plover, including impacts on individuals and on habitat, to less than significant include Mitigation Measures 4.6-1a through 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2b, 4.12-1b, and 4.14-2. Several of these measures have been revised to provide clarification or for consistency with permitting applications. The revised measures are provided in Final EIR/EIS Section 4.6.

Implementation of the measures described above would ensure that impacts on western snowy plover, including breeding and wintering birds, are reduced to less than significant. The revised Mitigation Measure 4.6-1d specifically requires that work be conducted during the non-breeding season if feasible and if it is not feasible, then measures would be implemented to avoid and minimize impacts on nesting birds. For work in the non-nesting season, measures will be implemented to avoid direct impacts on western snowy plover. Additionally, the measure specifies clear compensatory mitigation and performance standards for loss of habitat. As described in Impact 4.6-6, periodic maintenance of the subsurface wellsevery 5 years is assumed to result in a permanent loss of approximately 6 acres of habitat, because this area of habitat would be subject to repeated disturbance. Per revised Mitigation Measure 4.6-1d, this would be compensated at a minimum 3:1 ratio and would reduce the impact from the loss of western snowy plover habitat to less than significant.

In response to this comment, the following text revisions have been made in the “Subsurface Slant Wells” subsection of Impact 4.6-1 in Section 4.6.5.1:

> The 9-acre construction footprint for the subsurface slant wells is located within potential nesting habitat and construction of the nine subsurface slant wells and conversion of the test well to a permanent production well ~~during the breeding season~~ would result in the temporary loss of 8.0 acres (for temporary construction disturbance to areas that would be restored) and permanent loss of 1.0 acre (for new permanent above-ground facilities) of potential ~~wintering~~ habitat.

In response to this comment, the following text revisions have been made in the “Source Water Pipeline” subsection of Impact 4.6-1 in Section 4.6.5.1:

> Construction work within the western end of the proposed Source Water Pipeline would result in the temporary (since the construction area would be returned to pre-construction conditions and birds may breed in the area following construction) loss of approximately 0.2 acre of potential ~~nesting~~ habitat (some of this area may overlap with the impact area for the

subsurface slant wells as described above), a significant impact. The remainder of the Source Water Pipeline would be constructed away from the beach and foredunes where plovers typically nest and would not result in the temporary loss of plover ~~breeding~~ habitat.

CURE-Owens-13 In response to this comment, Mitigation Measure 4.6-1d has been revised to clarify the performance standards that CalAm must meet to obtain approval for work that cannot be completed during the non-nesting season. These performance standards would ensure that even if work extends into the breeding season (in instances where drilling is partially complete at the end of the non-breeding season and cannot be suspended until the next non-breeding season), avoidance and minimization measures will be implemented to ensure that nesting snowy plovers would not be significantly impacted. For wintering plovers, Mitigation Measure 4.6-1d has been revised to include a performance standard to ensure that plovers are not directly impacted by construction by implementing avoidance and minimization measures. Once the project has advanced beyond the preliminary design phase and the development of construction-level plans make it practicable to do so, then appropriate site-specific avoidance and minimization measures shall be determined and submitted to the Lead Agencies and USFWS for review and approval in final design submittals as required by Mitigation Measure 4.6-1d Subpart 3a, and implemented when determined to be necessary under Subparts 3d and 3e of this measure. Additionally, the selection and placement of these measures would vary depending on the exact location or the number of western snowy plovers present in the work area, their relation to existing vegetation and topography, individual sensitivity, weather conditions, etc., none of which can be known at this time. The process by which CalAm would identify feasible measures during final design, and obtain concurrence from lead and permitting agencies, has been clarified in revised Subpart 3a of Mitigation Measure 4.6-1d. The Lead Agencies have no authority over USFWS permitting or enforcement actions. However, regardless of any measures that are required as part of the permitting process, CalAm will still be held to the measures and performance standards described in Mitigation Measure 4.6-1d; the most stringent measures and performance standards will prevail whether they are EIR/EIS mitigation measures or permit conditions. Regarding the comment's claim that the permitting agencies may be pressured to authorize work during the breeding season, this portion of the comment does not address this specific project or the adequacy or accuracy of the Draft EIR/EIS; regardless, the underlying premise has been addressed by the revisions to Mitigation Measure 4.6-1d, which identify specific criteria and performance standards to apply both during breeding and non-breeding seasons.

Contrary to the commenter's claim, the Draft EIR/EIS does not conclude that impacts on western snowy plover by development of their habitat would be

avoided due to the fact there is abundant habitat nearby for them to relocate, forage, and breed. Rather, although the Draft EIR/EIS describes on page 4.6-129 and 4.6-130 that the abundance of suitable wintering habitat north and south of the site may provide alternative wintering habitat for the short-term, temporary displacement of wintering birds during construction, temporary and permanent impacts on wintering birds and western snowy plover habitat are nonetheless found to be potentially significant. Implementation of Mitigation Measure 4.6-1d would reduce impacts to western snowy plover habitat (both wintering and breeding) to less than significant. The text of the impact analysis has been revised to clarify this impact. See CURE-Owens-12 for this revised text.

CURE-Owens-14 The Draft EIR/EIS analyzes the potential direct and indirect impacts described in this comment in Impact 4.6-1 and Impact 4.6-6, and cumulative impacts are addressed in Impact 4.6-C. As described in these impact analyses, implementation of Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, and 4.6-1d (as revised in the Final EIR/EIS, where applicable) would ensure that direct and indirect impacts on western snowy plover from human disturbance would be reduced to less than significant. These measures have been designed to ensure that a biological monitor will oversee construction, construction will be limited to the project boundary, a trash abatement program will be implemented to reduce the attraction of predators, nesting surveys will be conducted if work will occur during the nesting season, pre-construction surveys will be conducted, and other measures will be implemented to ensure that work would not cause an adult to abandon an active nest or young, change an adult's behavior so it could not care for an active nest or young, or directly impact individual plovers. The comment does not address the adequacy of these mitigation measures. The significance threshold used in this EIR/EIS to determine if impacts on special-status species would be significant is described in Section 4.6.4, Approach to Analysis. As stated therein, CEQA Guidelines Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species. "Substantial" is further defined in Section 4.6.4 as a function of the magnitude or intensity and duration of the impact, rarity and context of the affected resource, and susceptibility of the affected resource to disturbance. These factors have been used to determine that project impacts on western snowy plover would be significant, as well as to determine that with implementation of avoidance and minimization measures required in the mitigation measures listed above, impacts would be reduced to a less-than-significant level.

CURE-Owens-15 The information provided in this comment (summarizing case studies of how human activities affect western snowy plover) has been reviewed and considered by the EIR/EIS preparers. It does not present new information that would affect the impact analysis and significance conclusions in Section 4.6,

Terrestrial Biological Resources, because the analysis in that section already acknowledges the potential for human activities to adversely affect plovers and their habitat. Specifically, Impact 4.6-6 concludes that project construction and ongoing maintenance would result in the permanent loss of up to 6 acres of western snowy plover habitat. The proposed project would not have an effect related to recreational use of the project site or adjacent areas.

CURE-Owens-16 This comment is a summary of comments CURE-Owens-11, CURE-Owens-12, CURE-Owens-13, and CURE-Owens-14. See the responses to those comments above.

Additionally, the commenter asserts that future development of the HMMP as part of mitigation is improper. Mitigation Measure 4.6-1d has been revised to include specific performance standards and compensation requirements that will be fully incorporated and described in the HMMP. The HMMP is described in Mitigation Measure 4.6-1n. Once the design has progressed beyond the preliminary design phase and the development of construction-level plans make it practicable to do so, the exact avoidance and minimization measures (among those listed in Mitigation Measure 4.6-1d, Subpart 3a) would be determined in consultation with the Lead Agencies and USFWS based on the exact impact area (see revised Mitigation Measure 4.6-1d for clarification of this process). CEQA and NEPA do not require a plan to be prepared prior to project approval if the mitigation measure includes performance standards and monitoring requirements and it is in impractical to prepare the plan prior to approval.

CURE-Owens-17 Comments regarding the lack of conservation strategies for western snowy plover in plans and policies adopted by the City of Sand City are beyond the scope of the proposed project, which would not be subject to Sand City plans and policies in any event. Similarly, comments regarding the lack of compliance with USFWS recommendations by cities and developers of other projects are also beyond the scope of the proposed project. As described in EIR/EIS Section 4.1.7, CEQA and NEPA require that an EIR/EIS cumulative impacts analysis consider the combination of the individual effects of two or more projects. Thus, the cumulative analysis for impacts on western snowy plover focuses on the physical environmental impacts of projects in the cumulative scenario, in combination with the physical environmental impacts of the proposed project.

CURE-Owens-18 The revised Mitigation Measure 4.6-1d requires that permanent loss of western snowy plover habitat be compensated at a minimum ratio of 3:1 and states that compensation may be in the form of on-site or off-site creation, restoration, enhancement, or preservation of habitat for western snowy plover. As described in Impact 4.6-1 and 4.6-6, implementation of this mitigation measure, as well as other mitigation measures, would reduce potential impacts on western snowy

plover to less than significant and no additional mitigation is required. As described in Impact 4.6-C, the incremental effects of the MPWSP would not result in a significant cumulative effect on western snowy plover.

CURE-Owens-19 The technical basis for the claims made in this comment are not clearly explained so this response provides clarification regarding the MPWSP slant well source water and the potential for slant wells to impact the groundwater available to the dune plants. The source of the fresh water available to the dune plants is precipitation and moisture from fog, which infiltrates into the dune surface and remains perched within the upper dune sand sediments. As indicated by the measurements of the groundwater level underlying the CEMEX area (see Appendix E-3), the brackish groundwater in the Dune Sands Aquifer that would contribute to the MPWSP slant well feedwater is 20 to 35 feet below the surface of the dunes. The perched freshwater available to the dune plants is not thought to be in hydraulic connection with the brackish Dune Sand Aquifer and water surface fluctuation in the aquifer would not translate to the upper perched freshwater. Furthermore, the slant wells have solid casing under the dunes with the screened sections beginning deeper and towards Monterey Bay so the slant wells screens would not pull on and capture the fresh water perched in the upper regions of the dunes. While the temporary localized disturbance of the dunes during construction and maintenance of slant wells is anticipated, as discussed in Section 4.6.5.1, Construction Impacts, and Section 4.6.5.2, Operational and Facility Siting Impacts, long-term operations of the slant wells would not directly affect the dune hydrology or intercept the naturally perched fresh water available to the dune plants.

CURE-Owens-20 CalAm would be required to implement all mitigation measures that become requirements in any permits or authorizations. This would include respecting the authority of the Lead Biologist, or other biological monitors, to stop work in accordance with provisions of adopted mitigation measures. Regarding the comment's claim that the biological monitors may be pressured by construction contractors, this portion of the comment does not address this specific project or the adequacy or accuracy of the Draft EIR/EIS. The comment correctly states that a project applicant (i.e., CalAm) has the authority to oversee its contractors; simultaneously, CalAm would have the legal responsibility to successfully carry out mitigation requirements, and the CPUC has the authority to enforce these measures. As the CEQA Lead Agency, CPUC proposes mitigation measures in this EIR/EIS, not CalAm. The assurance of the Lead Biologist's and biological monitors' authority to stop work or otherwise carry out their responsibilities in the mitigation measures, including reporting of violations, also is under the enforcement authority of the CPUC.

In response to this comment, Mitigation Measure 4.6-1a has been revised to clarify that

> "Work shall proceed only after the construction-related hazards to special-status species and habitats are removed and, if a special-status wildlife species is present, work shall proceed only if the species is no longer at risk of injury or death."

Further, in response to this comment and others, Subpart 10 of Mitigation Measure 4.6-1c has been revised to clarify that

> "If special-status wildlife species are found on the site immediately prior to construction or during project construction, construction activities shall cease in the vicinity of the animal until the animal moves on its own (if possible, as determined by the Lead Biologist or biological monitor) outside of the project area ~~(if possible)~~."

It is not practical to stipulate at what point it would be possible for an animal to move of its own volition. This would depend on the health and status of the animal and site conditions, which cannot be predicted. Further, Subpart 10 of Mitigation Measure 4.6-1c has been revised to clarify that avoidance, minimization, and relocation requirements for specific resources are provided in resource-specific mitigation measures and shall be followed (e.g., Mitigation Measure 4.6-1f describes the relocation requirements for Smith's blue butterfly, while Mitigation Measure 4.6-1h describes the relocation (exclusion) requirements for western burrowing owl).

CURE-Owens-21 See responses to comments CURE-Owens-4 and CURE-Owens-5 regarding the need for protocol surveys and where in the EIR/EIS the results from completed surveys and other sources of information are presented. See response to comment CURE-Owens-7 regarding the adequacy of Mitigation Measure 4.6-1e, as revised.

CURE-Owens-22 See response to CURE-Owens-4 regarding protocol surveys. Multiple biological surveys have been conducted within the project area (see Section 4.6.1.2, Information Sources and Survey Methodology). All occurrences of the host plants for Smith's blue butterfly observed in the project area during the surveys conducted in Section 4.6.1.2, as well as from other relevant biological resources documents, are described in Section 4.6.1.8.

Subpart 1 of Mitigation Measure 4.6-1f does not inappropriately defer mitigation. It does state that CalAm would be required to implement all avoidance and minimization measures imposed by USFWS, through its Biological Opinion, to comply with the Federal Endangered Species Act (FESA). CalAm would be bound to comply with FESA whether this item is listed in the measure or not. Mitigation Measure 4.6-1f does not rely solely on compliance with USFWS avoidance and minimization measures, but includes avoidance, minimization, and compensation measures in Subparts 2 through 5 to reduce impacts on Smith's blue butterfly to less than significant.

Subpart 2 of Mitigation Measure 4.6-1f does not innappropriately defer mitigation and does not prevent a thorough analysis of mitigation efficacy. This measure requires that plants be mapped and avoided where possible, and where they cannott be avoided, the measure includes minimization and compensation requirements subject to specific, enforceable performance standards to reduce the impact to less than significant.

Mitigation Measure 4.6-1f requires a minimum 2:1 compensation ratio for permanent impacts on habitat. Subpart 5 of this measure has been revised to specify performance measures for compensatory mitigation.

Although the commenter suggests that the measure limit work to outside of the Smith's blue butterfly flight season based on a recommendation in the USFWS 1984 Smith's Blue Buttefly Recovery Plan (USFWS, 1984), a recent Programmatic Biological Opinion prepared by USFWS for Highway 1 Management Activities that Affect the Smith's Blue Butterfly (USFWS, 2008) does not contain a similar measure, and so it has not been incorporated into EIR/EIS mitigation. USFWS did not provide any comments on the inadequacy of the Draft EIR/EIS or any of the mitigation measures; however, Subpart 1 of Mitigation Measure 4.6-1f specifies that CalAm and its construction contractor(s) shall implement all measures required by USFWS in its Biological Opinion; therefore, if USFWS determines that the 1984-era recommendation is applicable to this project and includes it in the Biological Opinion, CalAm will be required to implement it.

Although Impact 4.6-1 does not include the exact number of plants that would be impacted, it describes the approximate acreage of Smith's blue butterfly that would be impacted by construction, which is sufficient to describe the impacts and determine appropriate mitigation. The revised Mitigation Measure 4.6-1d includes performances standards that would ensure that mitigation areas have either similar cover or number of host plants to the impact area.

CURE-Owens-23 See response to comment CURE-Owens-4 regarding focused surveys. Mitigation Measure 4.6-1g requires that a qualified biologist conduct focused pre-construction surveys for black legless lizard, silvery legless lizard, and coast horned lizard to identify these species and, if present, relocate them outside of the project area. These surveys include walking transects for visual coverage specifically to identify coast horned lizard and hand raking soil and leaf litter specifically to identify legless lizards. The commenter does not describe or include a citation with information describing other habitats that these species may forage and move within beyond those recognized in the Draft EIR/EIS (the cited resources pertain to desert habitats not present at the project site). The Lead Agencies and the qualified biologists among their EIR/EIS consultants have described the habitats in the project area known to be used by these species based on the accounts and information cited in the EIR/EIS and consider the

EIR/EIS descriptions and analyses of these species to be adequate and supported by substantial evidence. The commenter insinuates that visual surveys may not adequately detect coast horned lizard. Coast horned lizard is designated a species of special concern by CDFW. CDFW does not provide a survey protocol for this species. In the absence of a standard survey protocol for this species, the Draft EIR/EIS has incorporated a survey protocol based on this species life history, EIR/EIS consultant's experience surveying for this species, and mitigation measures that have been approved for other similar projects. Based on the above, visual surveys have been proposed to identify coast horned lizard during pre-construction surveys for this species.

Regarding the relocation plan, see response to comment MCWD-120.

Mitigation Measure 4.6-1c has been revised to prohibit the use of insecticide.

CURE-Owens-24 Mitigation Measure 4.6-1i has been revised to include a measure for continuous monitoring, and if continuous monitoring is not feasible, then a no-disturbance buffer shall be maintained. This measure has been revised per the recommendation from CDFW, the entity that oversees the California Fish and Game Code, which protects nests or eggs of any bird, hawks, and owls. USFWS typically does not require pre-construction nesting survey reports. Mitigation Measure 4.6-1i includes avoidance and minimization measures to avoid take of birds protected under the Migratory Bird Treaty Act. A take permit would not be required if take is avoided. To allow for the remote possibility that the applicant may require a take permit, Mitigation Measure 4.6-1i has been revised.

If a bird initiates a nest within the vicinity of a construction activity that was started in the non-breeding season, it is common, accepted practice to assume that the bird is acclimated to that same type of construction activity. Subpart 3 of Mitigation Measure 4.6-1i has been revised to clarify that no surveys are required as long as a similar type of construction continues.

CURE-Owens-25 As described in Mitigation Measure 4.6-1n, the HMMP itself would not address the need for compensatory mitigation. Rather, compensatory mitigation requirements and ratios for permanent impacts on special-status species and sensitive natural communities are described in the revised species- and sensitive natural community-specific mitigation measures listed in Impacts 4.6-1 and 4.6-2. These measures, as revised, also include clarification of performance standards and monitoring durations. The HMMP required under Mitigation Measure 4.6-1n would include all of these requirements in a comprehensive plan.

CURE-Owens-26 The Draft EIR/EIS requires several measures to ensure that impacts on black legless lizard, silvery legless lizard, and coast horned lizard are reduced to less than significant. Mitigation Measure 4.6-1a requires a qualified biologist or

qualified biological monitor to be onsite during all fencing and ground disturbance activities to monitor for special-status species; in the event that several monitors are needed to cover the active construction sites, CalAm would be required to provide for this need. Subpart 9 of Mitigation Measure 4.6-1c requires installation of exclusion fence around all areas where special-status reptiles have potential to occur to ensure that these species do not enter the project construction area, including roadways within construction areas where shown in Chapter 3 figures. Subpart 10 of Mitigation Measure 4.6-1c requires that if any special-status wildlife species is observed in the project area, work shall be halted, and the animal either be allowed to move on its own or be relocated. Mitigation Measure 4.6-1g requires extensive pre-construction surveys to identify any special-status lizards within the work area and requires development and implementation of a relocation plan to identify suitable locations to relocate any special-status lizards observed in the work area. Per Mitigation Measure 4.6-1g, the relocation sites would be assessed to determine that they are not overpopulated and have suitable habitat conditions, which would facilitate success of relocation efforts. Traffic would be restricted by limiting vehicle speeds to 15 miles per hour on roads within the project sites, as described in subpart 3 of Mitigation Measure 4.6-1c. These measures are consistent with the commenter's recommendations, do not constitute deferred mitigation, and would avoid and minimize impacts on special-status lizards.

CURE-Owens-27 As defined in EIR/EIS Section 4.6.1.7, wildlife movement corridors "link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development." As the commenter states, some wildlife species utilize agricultural and developed areas. However, these types of habitats do not serve as unobstructed or undisturbed wildlife movement corridors for the majority of wildlife species. The presence of human disturbance, including tilling, cultivation of crops, harvesting, paving, grading, traffic, recreation, etc., will separate less disturbed areas and limit wildlife movement between these areas. As described in 4.6.3, Evaluation Criteria, the majority of the site is within or adjacent to developed or disturbed areas that do not serve as wildlife movement corridors, or are already in an impaired state. Since the majority of the work would occur within these developed or disturbed areas, the majority of work would only create short-term temporary impacts, and this work would be implemented in segments, the project would have no impact on migratory wildlife corridors and no mitigation is required.

CURE-Owens-28 The EIR/EIS acknowledges that the proposed project would conflict with the City of Marina's LCLUP policies governing protection of Primary and Secondary Habitats. See Impact 4.6-4.

8.6.2.4 Responses to Comments from California Unions for Reliable Energy – Sobczynski Letter

CURE-Sobczynski-1 The potential for impingement of organisms or fine particulate matter on the seafloor is evaluated in Impact 4.5-4 in the EIR/EIS. While various experts may have different methodologies and conclusions on infiltration rates at particular locations along a well's screen, the purpose of the analysis of Impact 4.5-4 is to determine the potential for the impingement of marine organisms or fine organic matter on the seafloor, or changes to soft substrate habitat, as a result of proposed project pumping.

While the California Ocean Plan notes that subsurface intakes collect water through sand sediment, which acts as a natural barrier to organisms and thus eliminates impingement and entrainment, EIR/EIS Section 4.5.5.2 explains that a key and fundamental concern about desalination facilities is the potential for impingement and entrainment of marine organisms during the intake of seawater. The Lead Agencies independently calculated the infiltration rate of the slant wells at the seafloor in Impact 4.5-4, assuming only the seafloor seaward of Mean High Water (MHW) would be affected. The commenter introduces a series of variables that could affect the calculation of the infiltration rate – including the location of the submersible pump in the well column, the sediment profile, the use of inflatable packer(s), and clogging in the seabed – to support a conclusion that the Draft EIR/EIS underestimates the infiltration rate.

It is correct that the pump would be located in the upper third of the well (approximately 300 to 400 feet inland from MHW in 2020), and water would flow through the Dune Sands and 180-Foot Equivalent (FTE) Aquifers (aka Terrace Deposits) at different rates (see EIR/EIS Appendix E1). The EIR/EIS does not address the use of inflatable/deflatable packers in the production wells since unlike the test slant well, inflatable packers are not included in the proposed project.

The commenter notes that the shallower section of the slant wells would pump from older dune sands (Dune Sand Aquifer) and the deeper section of the slant wells would pump from the deeper Terrace Deposits (180-FTE Aquifer) and states this sediment profile was not accounted for in the model. However, the sediment profile from which the slant wells would pump from is shown in Figure 4.4-3. The existing Test Slant Well is shown as pumping from both geologic units and the proposed slant wells would also be constructed across and pump from both units. Although the materials of both units are expected to be highly permeable, the shallower dune sand unit is expected to be more permeable than the deeper terrace deposits. As discussed in Appendix E2, the modeling takes this into account by assigning a higher hydraulic conductivity to the Dune Sand relative to the Terrace Deposits. The North Marina Groundwater Model (NMGWM) assigns a hydraulic conductivity of 150 feet per day to the Dune

Sand Aquifer and 50 feet per day to the 180-FTE Aquifer, as listed on Table 5.1 of Appendix E2. As a result, the modeling indicates that the ratio of water sources from the dune sand to terrace deposits is anticipated to be 66/34 percent, also listed in Table 5.1.

Several of the comments on clogging in the seabed challenge conclusions drawn by Williams 2015, which is a presentation Dr. Williams gave at the International Desalination Association World Congress on Desalination and Water Reuse. The commenter also makes repeated references to Williams 2010 and Jenkins 2010, both of which were prepared in support of the 2016 California Ocean Plan amendment, and address the Doheny Ocean Desalination Project and the Dana Point Test Well, and not the MPWSP. However, the EIR/EIS referred to but did not rely directly on Williams 2010, Jenkins 2010, or Williams 2015 for the impact analysis.

The commenter concludes that the EIR/EIS-calculated infiltration rate of 0.011 to 0.016 millimeters per second (mm/sec) underestimates the infiltration rate at the seafloor and thus underestimates the potential for clogging on the seafloor. When each factor introduced by the commenter is considered, the commenter asserts that the infiltration rate of a 19-degree slant well would be 0.16 mm/sec at its peak above the submersible pump, and 0.01 mm/sec at the well bore end. The commenter also opines that the infiltration rate for a proposed 14-degree angle slant wells would be 0.48 mm/sec but does not state if this rate would be over the pump or at the well bore end; it is assumed he meant inside or adjacent to the well casing. The commenter apparently concludes that his estimate of 0.48 mm/sec directly over the well pump would also occur at the seabed/ocean interface. Regardless of what the infiltration rate is at the pump, the infiltration rate at the seabed/ocean interface would be less since the pressure exerted by the pump at any given point in three-dimensional space would decrease with increasing distance from the pump. As an example, a vacuum cleaner will exert noticeable suction on your hand if held close to the nozzle but much less noticeable suction if held a few feet away. Similarly, the variable pressure distribution inside and next to the slant well will make little noticeable difference farther away from the slant well. Instead, the pressure created by the pump would generally radiate out in all directions, preferentially pulling in water along the paths of least resistance. Since the distance to open water without the restriction of sediment is to the ocean, the majority of flow will come from the ocean.

The EIR/EIS presents the swimming speeds of plankton, invertebrates, and larval fish in Table 4.5-8, which range from 0.2 mm/sec to 600 mm/sec, with all but phytoplankton and protozoa having swimming speeds above 0.5 mm/sec. The EIR/EIS concludes that "studies of invertebrate plankton have found swimming speeds substantially exceed the estimated vertical infiltration rate for the MPWSP slant wells (see Table 4.5-8) by several orders of magnitude. Therefore, no impingement from slant well operations is expected to occur." If the infiltration

rate reached levels calculated by the commenter at the well bore end, the conclusion drawn in the EIR/EIS would still be the same since an infiltration rate of 0.01 mm/sec would be exceeded by swimming speeds. The infiltration rate of 0.48 mm/sec calculated by the commenter for a well at 14 degrees would also be (marginally) exceeded by swimming speeds; if that infiltration rate were to occur above the well pump, it would be several hundred feet inland of MHW, as previously established, and impingement would not occur at all due to the inland location. Thus, clogging of the seafloor due to the impingement of plankton, invertebrates, and larval fish would not occur.

The same holds true for the potential impingement of organic matter on the seafloor. As the Draft EIR/EIS states on page 4.5-53, "normal wave generated water velocities at the seafloor locations of the slant wells is predicted to be 8 to 20 times greater than that required for fine-grained material to accumulate on the sea floor over the subsurface slant wells. As a result, there would be no potential for the impingement of fine organic matter on the sea floor or changes to soft substrate habitat." Thus, clogging of the seafloor due to the impingement of organic matter would not occur.

Based on the above-described considerations, while the methodologies, assumptions, and estimates by various experts on infiltration rates may vary, the ultimate conclusion of a less-than-significant impact on marine organisms from impingement remains unchanged. Therefore, no edits were made to the Draft EIR/EIS in response to this comment.

CURE-Sobczynski-2 The potential for impingement of organisms or fine particulate matter on the seafloor is evaluated in Impact 4.5-4 in the Draft EIR/EIS. As further explained in the response to comment CURE-Sobczynski-1 above, the clogging of the seafloor due to the impingement of plankton, invertebrates, larval fish, and organic matter would not occur. There would be no buildup of biomass due to the pumping of the slant wells. Without the buildup of biomass, the commenters speculation regarding changes to the dissolved oxygen and the resultant buildup of hydrogen sulfide buildup would also not occur.

Draft EIR/EIS Section 4.5.5.2 presents the operational and facility siting impacts of the MPWSP and presents a quote on page 4.5-52, from the California Ocean Plan that subsurface intakes eliminate impingement and entrainment. Footnote 81 in the comment letter suggests that since the Ocean Plan was cited, and since the quoted passage from the Ocean Plan included a reference to MWDOC, 2010, which included Jenkins, 2010 and Williams, 2010, that the conclusions reached in the Draft EIR/EIS are based on Jenkins' work. In fact, the analysis on impingement of marine organisms and organic matter on the seafloor was prepared independently by the Lead Agencies as previously noted in response to

comment CURE-Sobczynki-1, and relies on the data and assumptions presented in the section, and does not rely directly on Williams, 2010 and Jenkins, 2010.

In addition, even if the infiltration rate of slant wells on the seafloor would be as described in the comment (see response to comment CURE- Sobczynski-1 above), the analysis in the Draft EIR/EIS of impingement of marine organisms or organic matter on the seafloor still would not warrant revisions since the recalculated rates are exceeded by the orbital velocities of ocean waves presented in the Draft EIR/EIS on page 4.5-53 (i.e., 250 cm/sec to 600 cm/sec).

It is correct that the filter medium can be scrubbed from inside the well as the EIR/EIS describes in Section 3.4.1, and from the surrounding sediment through airlifting and blasting. However, the relevance to the proposed project of comments about suspended organic matter (SOM) that may become concentrated in the sand above an infiltration gallery is not clear, since the MPWSP does not propose to utilize an infiltration gallery. Nor is it clear why the SOM that originated in the ocean, and which is not a regulated contaminant, would contaminate the ocean upon its release.

CURE-Sobczynski-3

The complete sentence on Draft EIR/EIS page 4.3-39 in Section 4.3.2.2 that is referenced in the comment, regarding discussion of state regulations as they relate to surface water quality, reads as follows: "The muds and clay slurry generated during the drilling and development of the subsurface slant wells *and the proposed ASR-5 and ASR-6 Wells in the Fitch Park military housing area would fall under the category of 'Water Supply Well Drilling Muds*"' [emphasis added]. The sentence is not providing evidence of clay at the slant wells; it is discussing the waste discharge requirements in the RWQCB General Discharge Waiver.

A local geologic cross-section is shown in EIR/EIS Figures 4.2-3 and 4.4-3, and a cross-section of the test slant well is provided in the Baseline Water and Total Dissolved Solids Levels Technical Memorandum referenced in EIR/EIS Section 4.4 as Geoscience, 2015b. As described in EIR/EIS Section 4.4.1.2, the Terrace Deposits of the 180-FTE Aquifer are composed of former alluvial fan and river floodplain deposits, possibly with some marine terrace deposits that contain sand, silt, and gravel now buried under the coastal dunes. Clays are minimally present and would not be present in the sedimentary layers around the slant wells. In addition, well yield is determined by the coarse-grained sediment – little to no water is provided by the clays. If substantial clay deposits were present, then the well yield would be poor and the project infeasible. The results of the test slant well indicate that the well yield is good and the proposed project is feasible. The postulated build-up of organic matter around clays, if any, would therefore, have a negligible effect on well yield.

The Salinas Valley Aquitard (SVA), on the other hand, is a blue or yellow sandy clay formation up to 100 to 150 feet thick that lies mostly north of and generally parallel to the northwest-flowing Salinas River. The SVA thins and becomes discontinuous away from the centerline of the unit and at the Pacific Ocean, and was not observed in the exploratory borings at the CEMEX site. Thousands of vertical wells throughout the Salinas Valley penetrate the Salinas Valley aquifers, and most of them penetrate the clay that is the SVA. The concern about organic matter build-up on the clay is not necessarily unique to slant wells, and the extensive utilization of wells in the Salinas Valley that do not experience this issue suggests that it would not be of concern during project operation.

CURE-Sobczynski-4 EIR/EIS Appendix E2 Section 5.3 describes the slant well capture zone as the three-dimensional volume of aquifer that contributes the water extracted by the wells; see Master Response 8, Project Source Water and Seawater Intrusion. In map view, the capture zone is a two-dimensional surface that delineates the underlying aquifer volume and becomes the primary source for the wells. The model-calculated, steady-state ocean water capture zone for the proposed slant wells is shown in Appendix E2 Figure 5.6. Turning off one well among the 10 wells would not create an impermeable barrier within the capture zone. Rather, the distances between two adjacent wells would simply increase. The operating wells would continue to produce 24.1 mgd of oxygenated water that would move through the large well capture zone. Therefore, if biomatter were to build up on colloidal deposits above an inactive well, the water would not stagnate and respiration of bacteria would not become anaerobic.

EIR/EIS Section 4.11.5 includes a discussion of the project's CO_2 off gassing, and the total metric tons is quantified in Table 4.11-4. See also EIR/EIS Appendix G2, and responses to comments from William Bourcier in Section 8.7.4 for a further discussion of GHG off-gassing from the slant wells.

CURE-Sobczynski-5 As discussed above in the responses to comments CURE-Sobcyznski-1 through CURE-Sobcyznski-4, the Draft EIR/EIS presents all of the necessary relevant and supporting information in support of the impact conclusions.

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8.6.3 Responses to Comments from California American Water Company

CalAm-1 The Lead Agencies' responses to CalAm's suggested technical corrections, clarifications, and/or revisions in Exhibit 1 of this letter are addressed in individual comment responses below.

CalAm-2 This comment regarding water rights is noted. Additional discussion of water rights is provided in Master Response 3, Water Rights.

CalAm-3 The requested clarification has been made.

CalAm-4 The requested technical corrections and clarifications have been made.

CalAm-5 Footnote 2 in the Executive Summary has been revised as follows:

> In October 2014, MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, ~~the City of Marina and~~ the California Coastal Commission completed its ~~their~~ CEQA review.

CalAm-6 The requested technical correction has been made.

CalAm-7 Reference to Mitigation Measure 4.15-1a has been removed from Table ES-2 in the Executive Summary. Further, the Lead Agencies have revised the Impact Conclusion subsection under Impact 4.12-3 in Section 4.12, Noise and Vibration, to clarify that no significant vibration impact would occur from construction of the Source Water Pipeline. This clarification is consistent with the analysis provided for the Source Water Pipeline (see Draft EIR/EIS page 4.12-44), which explains that potential impacts from both open-trench and trenchless construction of the Source Water Pipeline would be less than significant (or that no impact would occur). Also consistent with this analysis and the clarification made in the Impact Conclusion subsection, reference to Mitigation Measure 4.15-1a. This reference was made inadvertently; no Mitigation Measure 4.15-1a is recommended in Section 4.15, Cultural and Paleontological Resources, and no mitigation is required for impacts on historic resources during construction because as described in Impact 4.15-1 in Section 4.15, no such impact would occur.

CalAm-8 The requested clarification has been made.

CalAm-9 The footnote in question in Chapter 1 has been revised to reflect that in September 2014, the City of Marina declined to adopt its Initial Study and Mitigated Negative Declaration and denied CalAm's CDP application for development of the test slant well, and in November 2014, the CCC approved the CDP application on appeal and documented its compliance with CEQA requirements.

CalAm-10 An in-text citation (NOAA, 2016) and reference for NOAA Administrative Order 216-6A have been added to Chapter 1.

CalAm-11 A citation and reference to CPUC Decision 16-09-021 was provided in Draft EIR/EIS Section 2.4.5. See Draft EIR/EIS page 2-20, "(CPUC, 2016)," and page 2-44, where the reference for this in-text citation for Decision 16-09-021 is provided. The paragraph referenced in the comment has been clarified to provide the decision number in addition to the in-text citation.

CalAm-12 The requested clarification has been made.

CalAm-13 The requested technical correction has been made.

CalAm-14 Section 2.6, Water Rights, has been updated to cite authority in the noted location.

CalAm-15 Section 2.6, Water Rights, has been revised to remove the repeated text.

CalAm-16 The requested clarification has been made.

CalAm-17 Footnote 2 in Chapter 3 has been revised as described in response to comment CalAm-9.

CalAm-18 The requested clarification has been made.

CalAm-19 The clarification that the pretreatment building would be 4,000 square feet in size and not 6,000 square feet has been made in Table 3-1, under the Desalination Facilities heading in the Pretreatment System row, and in the second paragraph of Section 3.2.2.1, Pretreatment System.

CalAm-20 The description of subsurface slant wells in Table 3-1 has been clarified as follows:

- Each well site would have one wellhead ~~vault~~ (Sites 1, 3, 4, and 5) or three wellheads ~~vaults~~ (Sites 2 and 6), ~~aboveground~~ mechanical piping <u>vault</u> (meter, valves, gauges), one electrical control cabinet, and one pump-to-waste ~~vault~~ basin.

- ~~Except for Site 1 (test slant well site), the aboveground facilities (at Sites through 6) would be built on a concrete pad ranging between 5,250 and 6,025 square feet in area.~~

CalAm-21 The requested clarification has been made.

CalAm-22 EIR/EIS Figure 3-3a identifies the wells from north to south; the test slant well is identified as SW-1, and the southern-most well is identified as SW-10. The text in the second bullet for the Subsurface Slant Wells in Table 3-1 has been clarified to indicate that the wells extend

"seaward of the Mean High Water (MHW) line (i.e., within MBNMS, except SW-#~~8~~10 which would not extend past the MHW line; see Table 3-2 and Figure 3-3a)."

In addition, the text from Draft EIR/EIS page 3-15 has been clarified in the same manner.

CalAm-23 The clarification that the Brine Discharge Pipeline would be 36 inches in diameter and not 30 inches has been made in Table 3-1, under the Brine Storage and Disposal Facilities heading in the Brine Storage and Disposal row, and in the first paragraph of Section 3.2.2.5, Brine Storage and Disposal.

CalAm-24 The clarification that there would be two large treated water pumps and not four has been made in Table 3-1, under the Desalinated Water Conveyance and Storage Facilities heading in the Desalinated Water Pumps row, and in the first paragraph of Section 3.2.3.2, Desalinated Water Pumps.

CalAm-25 Figure 3-3a has been revised to make the clarifications described in the comment.

CalAm-26 The requested clarification has been made.

CalAm-27 Figure 3-3b has been revised to make the clarifications described in the comment.

CalAm-28 The requested clarifications have been made, with the exception that details regarding the size of aboveground wellheads have not been removed, as no replacement details were provided by CalAm.

CalAm-29 The requested clarification has been made.

CalAm-30 The clarification that the pipeline alignment would be located within the TAMC ROW has been made in Section 3.2.1.2.

CalAm-31 Two clarifications have been made regarding pretreatment in Section 3.2.2.1: (1) that multimedia gravity filtration is more likely than not a required process, and (2) that coagulation, flocculation, and membrane filtration are processes that will be included in pretreatment only if necessary.

CalAm-32 See response to comment CalAm-23.

CalAm-33 See response to comment CalAm-24.

CalAm-34 The clarification that the pipeline alignment would be located within the TAMC ROW has been made in the first paragraph of Section 3.2.3.3.

CalAm-35 The requested clarification has been made.

CalAm-36 The requested clarification has been made.

CalAm-37 Reference to the Upper Tierra Grande Booster Station and related upgrades has been removed.

CalAm-38 A brief description of the purpose and function of the ASR system has been added as a clarification in the second paragraph of Section 3.2.4.

CalAm-39 The combined injection capacity of ASR 5 and 6 wells has been revised to 4.3 mgd (3,000 gpm) in the third paragraph of Section 3.2.4.1.

CalAm-40 The requested clarifications regarding Subsurface Slant Wells have been made in the sixth paragraph of Section 3.3.2.1.

CalAm-41 Section 3.3.3 has been revised to clarify that no import or export of fill material would be necessary during construction of the desalination plant.

CalAm-42 The referenced Table 5-7 does not exist in Chapter 3. The Lead Agency interprets comment 42 to reference 3-7. Daily production has been revised from 9.5 mgd to 9.6 mgd in Table 3-5 in Section 3.4.1.

CalAm-43 The requested clarifications have been made.

CalAm-44 The requested clarification regarding the fact that CDPH no longer regulates public water systems has been addressed. CDPH has been replaced in Row 4 of Table 3-8 with the correct agency: California Environmental Protection Agency, State Water Resources Control Board, Division of Drinking Water.

CalAm-45 The clarification regarding the location of Project No. 60 (Monterey Pipeline and Pump Station) has been added to Table 4.1-2, Cumulative Projects. The Project has also been added to Figure 4-1, Cumulative Projects.

CalAm-46 The introductory text for Table 4.2-6, Applicable Regional and Local Plans and Policies Relevant to Geology, Soils, and Seismicity, explains that this table is provided to screen policies for further discussion. That more detailed discussion is provided in the referenced impact discussion. This is true for all other Applicable Regional and Local Plans and Policies tables in all of the Chapter 4 resource sections.

CalAm-47 All of the references listed in the Final EIR/EIS are available at https://drive.google.com/drive/u/2/folders/0B63ty1hxcSNhV2JvMU15UW9VcHc

CalAm-48 Although the profiles shown in Figure 4.2-8 and discussed in the 2014 study have not changed, the proposed slant well locations have changed since the 2014 study. The text describing the Coastal Profile (Vertical Erosion Estimates) in Section 4.2.4.5, Coastal Retreat Study has been revised to clarify that the initially proposed locations

for the nine new slant wells are shown on the coastal profiles in Appendix C2 (whereas relocated slant wells are shown on Figure 4.2-8).

CalAm-49 The requested clarification has been made.

CalAm-50 The requested reference to Figure 4.3-3, Areas Subject to Sea Level Rise in the Project Area, has been added to Section 4.2, Geology, Soils, and Seismicity in Section 4.2.1.3, Sea Level Rise and Coastal Erosion, and in Section 4.2.4.5, Coastal Retreat Study.

CalAm-51 The requested clarification has been made regarding the definition of EFH. A definition of EFH, which stands for "Essential Fish Habitat" has been added to Section 4.3.2.1.

CalAm-52 The requested clarification has been made.

CalAm-53 In response to the comment, and to make units consistent within the section, the last sentence of the first paragraph on page 4.3-71 of the Draft EIR/EIS has been revised as follows:

> Seasonal average temperatures ranged between ~~11.5 and 14.5~~ 52.7°F and 58.1°F and seasonal salinity levels ranged from 33.3 to 33.9 ppt at the depth of the diffuser.

CalAm-54 The requested clarification has been made.

CalAm-55 A clarification/update has been added to Section 4.6.2.2 State Regulations, regarding the FORA *Draft Installation-Wide Multispecies Habitat Conservation Plan* publication schedule.

CalAm-56 In Mitigation Measure 4.6-1d, subpart 5, "several days" has been revised to "no more than 3 days" prior to construction.

CalAm-57 Mitigation Measure 4.6-1l, Subpart 2 has been revised to clarify that a qualified biologist will conduct pre-construction surveys within 14 days prior to disturbance of trees or structures identified as potential bat roosting habitat or active roosts.

CalAm-58 Mitigation Measure 4.6-4 has been revised to clarify that the tree survey shall be performed at least 30 days prior to start of planned ground disturbance or tree removal.

CalAm-59 Figure 4.8-1 has been revised to show that the Coastal Zone extends over the ocean.

CalAm-60 There are no parks, conservation areas, golf courses, or trails in the vicinity of the Main System-Hidden Hills Interconnection. Therefore, revising Figure 4.8-3 to include this component (e.g., by changing the scale of the figure) would not provide

additional information relevant to the analyses, and would reduce the scale of relevant resources shown in the figure.

CalAm-61 The cited sections describe the land use and recreational setting for the pipeline alignments. The placement of pipelines below ground is appropriately described in the impact analysis portion of Section 4.8, Land Use, Land Use Planning, and Recreation.

CalAm-62 Consistency with the Fort Ord Reuse Plan (including allowable/compatible uses such as subterranean pipelines) is addressed in Table 4.8-2.

CalAm-63 The requested clarification has been made in Section 4.8.2.2

CalAm-64 The settlement agreement is cited as CalAm, 2012, and included in the references list. All materials referenced in the Draft EIR/EIS were made available to the public during the review period for the Draft EIR/EIS, and will remain available (with updates and additions, as applicable) after publication of the Final EIR/EIS.

CalAm-65 The Lead Agencies acknowledge the discussion of desalination facilities in California policy documents such as Safeguarding California: Reducing Climate Risk – An update to the 2009 California Climate Adaptation Strategy (California Natural Resources Agency, 2014) as cited in the comment. However, inclusion of the recommended text would not affect the conclusions reached in Section 4.11, Greenhouse Gas Emissions. Because it would not change the conclusions in the analysis of impacts or comparison of alternatives, the recommended discussion has not been incorporated.

CalAm-66 Clarification has been added to Section 4.11.2.2 under the heading “Mandatory Reporting Requirements” regarding the fact that many of the project’s sources of GHG emissions are not directly subject to CARB’s mandatory reporting program.

CalAm-67 Clarification has been added to Section 4.11.2.2 under the heading “Market-Based “Cap-and-Trade” Compliance Mechanism” regarding the fact that the fossil fuel power plants that would generate the electricity that could be used by the project are already subject to and participate in CARB’s cap-and-trade program.

CalAm-68 The requested clarification has been made.

CalAm-69 Section 4.11.5 has been clarified to indicate that SB 350 has been signed into law.

CalAm-70 The cited Mitigation Measure 4.12-1d establishes a performance standard of 60 dBA, Leq at a distance of 50 feet for construction noise related to the ASR-5 and ASR-6 wells. The additional discussion regarding the attenuation capabilities of barrier blankets was included to demonstrate that the performance standard is achievable. However, the degree of attenuation for these blankets cited in the mitigation measure

may be more than necessary to achieve the identified performance standard. Consequently, the mitigation measure has been rewritten, as indicated below, to clarify that such blankets represent one of many options available to the applicant or its contractors.

> Additionally, acoustic barriers and/or enclosures shall be used with a goal of reducing noise from well drilling activities to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area. There are a number of options available to achieve this performance standard. Barrier blankets are available with a sound transmission class rating of 32, ~~providing~~ which can provide 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014). The realized sound transmission reduction of barrier blankets need be sufficient to achieve the performance standard of 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area.

CalAm-71 The California Coastal Act subsection of Section 4.13.2.2, State Regulations, discusses MPWSP consistency with Coastal Act policies concerning public facilities, and the requested text clarification has been made.

CalAm-72 The requested clarification has been made.

CalAm-73 The requested clarification has been made.

CalAm-74 The requested clarification has been made.

CalAm-75 The requested clarification has been made in Section 4.14.3.2.

CalAm-76 The requested clarification has been made in Section 4.14.6.1

CalAm-77 Section 4.18.2.2 has been revised to reflect the most recent Integrated Energy Policy Report.

CalAm-78 The requested clarification that "the county" refers to "Monterey County" has been made in Section 4.19.1.2.

CalAm-79 Section 4.19.3 states that "The impacts *of growth* that could be indirectly induced by the MPWSP are addressed in Section 6.3, Growth Inducement" (emphasis added). Other indirect impacts related to the evaluation criteria in Section 4.19.3 are addressed in Section 4.19.5; no change has been made.

CalAm-80 The requested revisions have been made.

CalAm-81 EIR/EIS Section 5.3.5 explains that since the desalination facilities described for the proposed project would be required at any of the desalination plant site options, and since the proposed project would include a minimum of 15 acres of impervious surfaces (see EIR/EIS Section 3.2.2), a minimum of 10 acres was assumed for the alternative sites. However, as noted in Table 5.3-3, each plant site option has

adequate acres and the 10-acre minimum was not a constraint. The minimum acres could have been assumed to be more or less, and the conclusions would not be any different.

CalAm-82 The requested clarification has been made.

CalAm-83 The requested revisions have been made. However, CalAm provided a subsequent revision to the slant well layout (Ian Crooks, 2018) and the EIR/EIS text has been revised accordingly.

CalAm-84 The requested revisions have been made.

CalAm-85 The requested clarification has been made.

CalAm-86 The requested clarifications have been made.

CalAm-87 The clarification that Mitigation Measure ALT 2-Marine-1 would not apply to the proposed project or to any project that does not include an open water intake has been added to Section 5.5.5.5.

CalAm-88 The clarification that Mitigation Measure ALT 2-Marine-2 would not apply to the proposed project, or to any project that does not include an open water intake has been added to Section 5.5.5.5.

CalAm-89 The requested clarification has been made.

CalAm-90 The clarification that Mitigation Measure ALT3-NO would not apply to the proposed project has been added to Section 5.5.12.6.

CalAm-91 The clarification that Mitigation Measure ALT4-NO would not apply to the proposed project has been added to Section 5.5.12.7.

CalAm-92 The clarification that Mitigation Measure ALT1-CULT would not apply to the proposed project has been added to Section 5.5.15.4.

CalAm-93 The spelling of “Trussell” in Appendix G2 has been corrected.

CalAm-94 CalAm provided a subsequent comment on the Draft EIR/EIS. As a result, Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage, has been revised accordingly.

Reference

Crooks, Ian. 2018. E-Mail to Eric Zigas. March 12.

8.6.4 Responses to Comments from Carmel River Steelhead Association

CRSA-1 CalAm's legal entitlement to 3,376 afy from the Carmel River system established in State Water Resources Control Board (SWRCB) Order 95-10 is a composite right made up of CalAm's pre-1914 appropriative right of 1,137 afy, its riparian right of 60 afy, and its post-1914 appropriative right at Los Padres Dam of 2,179 afy (License 11866). In Order 95-10, CalAm's pre-1914 direct diversion right is treated as a year-round right, with a season of diversion from January 1 through December 31. In contrast, CalAm's right to divert water to storage behind Los Padres Dam is limited to the season of October 1 through May 31. Thus, of the 3,376 afy entitlement, only 1,197 afy (pre-1914 and riparian rights) are currently not subject to seasonal restrictions. Similarly, Monterey Peninsula Water Management District's (MPWMD) and CalAm's SWRCB permits to divert water for the ASR Phase 1 and 2 projects include requirements to maintain minimum mean daily instream flows for the protection of fisheries and wildlife and other instream uses (as noted in Section 2.4.3), as does CalAm's permit to divert Table 13 water (discussed in Section 2.4.6.1). CalAm's existing Carmel River water rights are not part of the proposed project and thus are not analyzed in this EIR/EIS. However, implementation of the MPWSP and ASR programs is expected to provide CalAm with the operational flexibility to minimize its summer diversions to the greatest extent feasible.

8.6.5 Responses to Comments from Carmel River Watershed Conservancy

CRWC-1 The Lead Agencies acknowledge the Carmel River Watershed Conservancy's support for the proposed project and for Alternatives 5a and 5b, which would provide a desalinated water supply supplemented by the Pure Water Monterey Groundwater Replenishment Project.

8.6.6 Responses to Comments from CEMEX

CEMEX-1 The comment letter from CEMEX on the April 2015 Draft EIR has been received and comments are considered in the following responses since CEMEX incorporated the 2015 comments into the current comment letter.

With respect to the Annexation Agreement, please see Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement. In accordance with revisions to EIR/EIS Section 2.6, Water Rights, it is not expected that an injection well would be constructed on the CEMEX property; therefore, it is not part of the proposed project and is not required to be analyzed in this EIR/EIS.

CEMEX-2 The comment is acknowledged, but addresses processes outside of the scope of the CEQA and NEPA review of the proposed project. CalAm's responsibility to prepare or bear the cost of preparing a reclamation plan amendment is a matter to be addressed between CalAm and CEMEX.

CEMEX-3 The slant wells would be constructed on a previously disturbed, retired portion of the CEMEX sand mining facility, south of the access road. This location would not interfere or interact with the ongoing sand mining operations located north of the access road and further inland. Other than the well heads, the wells and piping would be located underground. CalAm and its contractors would be required to implement all applicable worker and construction site safety laws and regulations. Environmental review under CEQA and NEPA should assume that the applicant complies with such applicable laws and regulations such that no further mitigation measures are warranted to ensure that duty is met. Further, Mitigation Measure 4.7-2a requires the implementation of a site-specific Health and Safety Plan as required by and in accordance with 29 CFR 1910.120. CalAm's responsibility to indemnify CEMEX for CalAm's actions at the CEMEX site is a matter to be addressed in agreements between CalAm and CEMEX and is outside of the scope of the EIR/EIS.

CEMEX-4 As stated on page 4.9-24 of the Draft EIR/EIS, the traffic control and safety assurance plan (Mitigation Measure 4.9-1) shall be developed on the basis of detailed design plans for the approved project, and shall include, but not necessarily be limited to, the elements listed on pages 4.9-24 to 4.9-26. The following additional element is added to the list of measures that could be included in the traffic control and safety assurance plan:

- Consult with non-jurisdictional parties (e.g., CEMEX), as appropriate, regarding strategies for reducing increased traffic on roads that would provide access to construction work areas.

CEMEX-5 CEMEX and CalAm mutually entered into an "Agreement for Temporary Investigatory Easement, Option for Permanent Easements, and Joint Escrow Instructions" on November 4, 2014. Subsequent to the release of the Draft EIR/EIS

in January 2017, CEMEX and the California Coastal Commission entered into a Consent Settlement Agreement dated July 13, 2017, that acknowledges the CalAm-CEMEX Option. See Master Response 14, CEMEX Settlement Agreement. CalAm will need to coordinate activities on the property with CEMEX or the new owners in accordance with the agreements between CalAm and CEMEX. In addition, EIR/EIS Section 4.17, Mineral Resources, found that the proposed project would have a less-than-significant impact on the mining operations at CEMEX.

CEMEX-6 Subsidence impacts were fully addressed in the EIR/EIS, including potential effects on the CEMEX property. The EIR/EIS conclusion that subsidence would not constitute a significant impact on the CEMEX lands was not based on the assumption that the slant wells would draw water from offshore coastal aquifers, as the comment suggests. Rather, the analysis considered the possibility of some inland groundwater being drawn into the supply wells. As explained in Section 4.2 Geology, Soils, and Seismicity, in Impact 4.2-8, sand- and gravel-rich soils are less prone to subsidence because the larger grains comprise a skeleton less dependent on water pressure for support. As shown on Figure 4.2-3, about the upper 200 feet of materials beneath the CEMEX facility, where the deeper extent of drawdown would occur, is primarily composed of sands and gravels. The maximum estimated amount of drawdown centered on the proposed slant wells area is estimated to be on the order of tens of feet at most. The maximum drawdown estimated at any of the onsite monitoring wells is less than 18 feet in Well MW-1M (see Appendix E2, Figure 5.2). In addition, because the subsurface slant wells would draw water from the offshore coastal aquifers, seawater would replace the water pumped from the slant wells, as discussed in Section 4.4, Groundwater Resources. The continuous replacement of water would keep the pore spaces between the grains filled with water, further supporting the granular structure. Consequently, the soil structure above the slant wells would be unable to subside as a result of pumping and there would be no impact from subsidence impacts associated with the subsurface slant wells. Thus, this area would not be susceptible to subsidence and no revisions were made in response to this comment.

CEMEX-7 EIR/EIS Figure 4.2-5, which shows the liquefaction potential, shows that the area where the well heads of the slant wells would be constructed on the CEMEX site is an area of moderate liquefaction potential. The risks from liquefaction are high in sandy areas with shallow groundwater (e.g., Castroville Pipeline and Source Water Pipeline portions within the Salinas River floodplain). The well heads would be set back from the beach behind the sand dunes, where the depth to groundwater would be deeper, thus reducing the risk (see Impact 4.2-4). In addition, as discussed in Section 4.2.4, Approach to Analysis, the proposed project components would undergo a final geotechnical investigation and CalAm would implement all geotechnical recommendations in design and construction of the project to resist damage from seismic shaking. Because the slant wells would not be located in an area with high liquefaction potential, they would not be expected to experience

damage from liquefaction. The secondary risk to the existing CEMEX structures resulting from liquefaction impacts affecting the slant wells would be very low.

CEMEX-8 Mitigation Measure 4.2-10, Slant Well Abandonment Plan, has been revised in response to this comment, to require that the slant well abandonment plans be prepared and implemented in coordination with the property owner.

CEMEX-9 In response to the comment, the discussion of Impact 4.3-9 under "Subsurface Slant Wells" (see Draft EIR/EIS page 4.3-116) has been revised as follows:

> As shown in Figure 4.3-2, the subsurface slant wells and associated structures would be located within or adjacent to the 100-year coastal flood hazard area. The subsurface slant wells would be constructed at the western terminus of the CEMEX access road and just south of the CEMEX settling ponds. The ~~E~~electrical control cabinet at each well site (Figure 3-3a) would be a single-story structure 16 feet long by 7 feet wide. Any flood flows associated with 100-year coastal flooding diverted by the electrical control cabinet would be diverted to the sandy areas immediately surrounding the cabinet, ~~still~~ within the CEMEX active mining area, and would be temporary in nature, ~~and~~ highly localized in extent, and would not affect other properties or structures or otherwise interfere with CEMEX operations. The wellheads and supporting structures would extend at a maximum height of 2 feet above the ground surface and would not impede or redirect flood flows in the area. Therefore, the impact would be less than significant.

CEMEX-10 Impact 4.2-10 assess impacts related to coastal erosion patterns, beach erosion, and bluff retreat following implementation of the project and considers such hazards within the context of sea level rise as a predicted environmental condition that could adversely affect certain components of the project sometime in the future. Impact 4.3-11 focuses only on the long-term impacts related to exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise. As discussed in detail under Impact 4.3-11, because the subsurface slant wells would be constructed underground (and are not designed for human occupancy) and designed to withstand inundation, these facilities would not be subject to a significant risk of damage, injury, or loss from flooding due to sea level rise. Impacts on the CEMEX active mining area related to coastal flooding and inundation of project components is discussed in detail under Impact 4.3-9 (see also response to comment CEMEX-9).

CEMEX-11 As the commenter correctly notes, Applicant Proposed Measure 4.4-3 has been proposed by CalAm. The EIR/EIS determination under Impact 4.4-3 is less than significant, and the Lead Agencies have not recommended mitigation to reduce this impact. However, Applicant Proposed Measure 4.4-3 would be incorporated into the Mitigation Monitoring and Reporting Plan (MMRP), which would be approved

concurrently with the MPWSP or an alternative. Thus, the Lead Agencies would be responsible for enforcing this measure, including approval of the expansion of the regional groundwater monitoring program as contemplated by Applicant Proposed Measure 4.4-3.

The CEMEX production well, also referred to as the "South Well," is currently the only active production well at the site; however, it cannot be accessed for monitoring. The "North Well" collapsed and is no longer in use (Villalobos, 2017). Groundwater conditions beneath the CEMEX site would be monitored continually after MPWSP start-up using CalAm's monitoring well clusters 1, 3, and 4. Groundwater Monitoring Well 3-D and 4-D are screened in the 400-Foot Aquifer (similar to the South Well) and thus conditions in the 400-Foot Aquifer would be continually monitored through CalAm's monitoring program, even if the South Well is not accessible. If excessive drawdown is identified in Monitoring Wells 3-D and 4-D, it would be expected that a similar response would be occurring in the South Well. Response to South Well pumping has also been observed in the Monitoring Well 4-S and 4-M. Moreover, if well yields decrease substantially in the South Well, it would be an additional indicator of excessive drawdown caused by the slant well pumping. Applicant Proposed Measure 4.4-3 has been revised to clearly state that wells in the 400-Foot Aquifer will be monitored and conditions will be corrected under the measure if the wells are found to be adversely impacted by MPWSP pumping. Thus, the Applicant-proposed measure includes monitoring conditions in the 400-Foot Aquifer and applies to wells screened in that aquifer, as stated in Applicant Proposed Measure 4.4-3. Ameliorative actions under this measure would be triggered if drawdown exposes the well screens, damages the well, and/or decreases yield in a production well. This includes wells screened in the 400-Foot Aquifer. These triggers represent the performance standard within Applicant Proposed Measure 4.4-3 given that action would be taken to address and alleviate project effects if any of the triggers occur.

CEMEX-12 See response to comment CEMEX-11.

CEMEX-13 Text in EIR/EIS Section 4.4.5.2 regarding the allowable dredge pond depth and the underlying geologic materials has been updated to reflect the information provided in this comment. This information does not change any of the impact conclusions in the EIR/EIS.

CEMEX-14 Applicant Proposed Measure 4.4-3 is not mitigation for a significant impact, and is not intended to nor does it address potential drawdown effects on vegetation. See response to comment CURE-Owens-19 in Section 8.6.2 regarding the source of the water available to dune plants, which do not rely on groundwater in the aquifers intersected by proposed slant well screens.

CEMEX-15 In addition to the analysis presented in Impact 4.4-3 of the EIR/EIS, details on the potential effects of pumping on the CEMEX dredge pond are provided in EIR/EIS Appendix E3, Section 2.4.5.3. As shown in Table 3.1 of EIR/EIS Appendix E2, the CEMEX dredge pond was not represented in the 2015 version of the North Marina Groundwater Model ($NMGWM^{2015}$) but was represented in the 2016 version of NMGWM ($NMGWM^{2016}$, which informed the EIR/EIS analysis) as constant head cells in Layer 1 (ocean) to represent the effect of the dredge pond. Moreover, the initial head of the dredge pond was not represented in $NMGWM^{2015}$ but was in $NMGWM^{2016}$ as active cells with initial heads equal to mean sea level. Therefore, the $NMGWM^{2016}$ did not necessarily model the effects of the proposed slant well pumping on the dredge pond specifically, because the active cells representing the dredge pond behave the same as the active cells representing the ocean since the dredge pond is tidally influenced. As stated in the comment, the EIR/EIS analysis considered the CEMEX model simulation completed in September 2014 and based on that, hypothesized that full scale MPWSP pumping could result in additional lowering of the dredge pond water levels, but added that when compared to daily tidal fluctuations, the decline in surface water levels from slant well pumping would be masked by the consistent recharge and tidal influence of the ocean.

As discussed in the EIR/EIS in Section 4.4.4.1, Subsurface Investigations, and in Impact 4.4-3, CalAm installed a pressure transducer in the dredge pond at the beginning of the Test Slant Well long-term pumping test and data were collected from April 2015 to October 2015. The dredge pond was breached on October 28th, 2015 and the transducer was eventually buried. Transducer data show that dredge pond levels may have been affected by test slant well pumping as evidenced by the slight increase (about 1 foot) in pond levels that occurred when the pump was turned off on June 5, 2015 (see Appendix E-3, Figure 2.1). The data also show, however, that tides and dredge operations influence pond levels and that under non-pumping conditions, pond levels fluctuate as much as 2 feet. Water levels are maintained in the dredge pond because it is hydraulically connected to the ocean through the sand and occasional breaches during storms. Consistent with the findings in the EIR/EIS, water level fluctuations due to dredging and tides would have a much greater effect on dredge pond water levels than the MPWSP slant well pumping. As stated in the EIR/EIS (Impact 4.4-3), the impact would be less than significant because, while there may be slight changes in dredge pond levels from MPWSP pumping, the magnitude of change would not interfere with recharge or inhibit mining operations primarily because the dredge pond is hydraulically connected to the ocean and constantly recharged by ocean water. Since the dredge pond is located within the 1-foot drawdown, and the Applicant proposed measure includes the area within the 1-foot drawdown (plus one mile), the dredge pond could be included in the groundwater monitoring program. However, the sand mining operation at CEMEX will be closed by 2020, the dredge mining operations will cease and the pond will be restored. See Master Response 14, CEMEX Settlement Agreement.

The text in the EIR/EIS has been updated to discuss the full set of dredge pond data collected between April and October 2015.

CEMEX-16 The mitigation measures for biological impacts that are listed in the EIR/EIS and that are of concern to the commenter – Mitigation Measures 4.6-1c through 4.6-1h – are all avoidance and minimization measures and all address activities that would be occurring inside the project area boundary, as delineated on EIR/EIS Figure 3-3a. As described in Master Response 14, CEMEX Agreement, CEMEX has granted an easement to CalAm for the wells and the pipelines that are proposed on the CEMEX property. As noted in Section F(3)(e) of the easement option, "CalAm shall minimize the impact to the Greater CEMEX Property by confining its activities to the footprint within the Option Property." As noted in Section F(3)(f) of the easement option, "To the extent CalAm is required to perform remediation activities in connection with its activities, CalAm shall be able to use the property subject to the Permanent Easements to fulfill any such obligations." Compliance with Mitigation Measures 4.6-1c through 4.6-1h would not interfere with any CEMEX pre-existing mining operations, reclamation activities, or access. In implementing the mitigation measures, CalAm would be obligated to comply with and limited to its rights under its agreements with CEMEX on use of the CEMEX land.

Subsequent to the publication of the Draft EIR/EIS, the CCC, the California State Lands Commission, and the City of Marina reached an agreement with CEMEX in July 2017 to end the sand mining operations. As a result of the July 2017 Settlement Agreement, the property will no longer be owned by CEMEX by 2020, and the deed restriction placed on the property as a result of the Settlement Agreement must preserve the open space and habitat values of the property, and must reflect that improvements to provide low-impact passive recreation, public access, and public education, removal activities, and activities to restore native habitat will be consistent with existing easements or other rights of record; see Master Response 14, CEMEX Settlement Agreement. Mitigation Measure 4.6-1n is the Habitat Mitigation and Monitoring Plan (HMMP) and it shall be implemented at all areas where special-status species habitat or sensitive natural communities will be restored, created, or enhanced to mitigate for project impacts either prior to, concurrently with, or following project construction and its implementation. Mitigation Measure 4.6-1n would outline measures to be implemented, depending on the mitigation requirements, to restore, improve, or re-establish special-status species habitat, sensitive natural communities, and critical habitat. To that end, CalAm's HMMP may or may not focus the restoration activities on the CEMEX property, but the sand mining operations would have ceased, and CEMEX would no longer be the property owner.

In response to this comment, Mitigation Measure 4.6-1c has been revised to clarify that existing access roads within the CEMEX site will be returned to their existing use.

CEMEX-17 As described in the Draft EIR/EIS, a final wetland delineation report has not been verified by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and California Coastal Commission (CCC). A wetland delineation report, based on some of these field surveys, has been prepared and is referenced in the Final EIR/EIS. In the absence of a verified wetland delineation by the USACE, RWQCB, and CCC, the Draft EIR/EIS conservatively assumes that any wetland or water feature mapped during field surveys conducted for the proposed project, mapped in the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), and mapped in the wetland delineation report is potentially jurisdictional. The wetland delineation report would need to be approved by the agencies to determine the limits of jurisdictional wetlands and waters within the project area. In response to this comment, the text in Section 4.6.1.6, Wetlands and Other Waters has been revised to clarify these assumptions. See the response to comment MCWD-134 in Section 8.5.2 for the revised text.

CEMEX-18 As described on Draft EIR/EIS page 4.15-21, in its cultural resources investigation and evaluation for the test slant well, SWCA determined that the Lapis Sand Mining Plant was a Historic District eligible for listing in the National Register of Historic Places and the California Register of Historical Resources under Criteria A/1 (association with an important event) and Criteria C/3 (architectural merit). The SHPO concurred with this recommendation, see EIR/EIS Section 7.1.3, and the Lead Agencies defer to the SHPO's concurrence.

The proposed Source Water Pipeline would be installed within the boundaries of the Historic District; however, the buildings and structures that contribute to the district are outside of the direct and indirect APE for the proposed project. Therefore, no further consideration of the architectural components of this resource was deemed necessary for the proposed project. Since publication of the Draft EIR/EIS, the SHPO concurred with a finding of No Adverse Effects to Historic Properties for the proposed project, see EIR/EIS Section 7.1.3.

CEMEX-19 As discussed in EIR/EIS Section 4.17, Mineral Resources, although mining operations would experience minor disruptions during project construction, access for mining vehicles would continue during construction, access to the dredge pond would continue during construction, and mining operations would continue throughout project construction. Also, as stated on Draft EIR/EIS page 4.17-8, "since CEMEX facility operators mine sand from the dredging pond, which is continuously replenished by sand that is washed over the berm, the siting of the subsurface slant wells in the CEMEX active mining area would not interfere with sand mining activities or adversely affect the availability of mineral resources for future recovery." For those reasons, Section 4.17 supports the conclusion that construction-related impacts would be less than significant.

As discussed on Draft EIR/EIS pages 4.9-24 and 4.9-25 in Section 4.9, Traffic and Transportation, Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan) has been developed for the project as a whole and applies to all project components and associated construction activities. Mitigation Measure 4.9-1 includes several requirements that would be applicable to the CEMEX access road, including maintaining alternate one-way traffic flow past the construction zone where possible, restoring roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress, and complying with roadside safety protocols to reduce the risk of accidents.

In addition, Mitigation Measure 4.9-6 applies to all proposed facilities and associated construction activities and requires that CalAm repair roads damaged by project-related construction vehicles to a structural condition equal to that which existed prior to construction activities.

The following text addition has been made in Section 4.17, Mineral Resources, Impact 4.17-1, under the Impact Conclusion heading:

> For a discussion of mitigation measures that would apply to all project components related to traffic control and safety, as well as roadway rehabilitation, see Section 4.9, Traffic and Transportation, Impacts 4.9-1 and 4.9-6.

References

Villalobos, Brian, 2017. Personal Communication between Brian Villalobos, Geoscience Support Services, Inc., and Pete Hudson, Sutro Science, August 14, 2017.

8.6.7 Responses to Comments from Citizens for Just Water

CJW-1 This EIR/EIS was prepared by the CPUC as the CEQA lead agency, and Monterey Bay National Marine Sanctuary (MBNMS) as the NEPA lead agency; see Master Response 1, EIR/EIS Authorship. See also Master Response 2, Source Water Components and Definitions, and Master Response 3, Water Rights.

CJW-2 EIR/EIS Section 4.4.1 presents the setting/affected environment for groundwater resources, and the proposed project's consistency with the Sustainable Groundwater Management Act (SGMA) is presented in Section 4.4.2.2. As summarized in Section 4.4.2.2, SGMA became effective January 1, 2015, and gives local agencies the authority to manage groundwater in a sustainable manner. A Groundwater Sustainability Plan will be prepared by the local groundwater agency that describes how users of groundwater within the basin would manage and use groundwater in a manner that can be sustainably maintained during the planning and implementation horizon without causing undesirable results. SGMA defines undesirable results as follows:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply;
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies;
- Significant and unreasonable land subsidence that substantially interferes with surface land uses, and;
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

A summary of the analyses to address each undesirable result identified in SGMA has been added to Final EIR/EIS Section 4.4 in Impacts 4.4-3 (groundwater supplies and recharge) and 4.4-4 (groundwater quality) under the subheadings "Consistency with Regulatory Requirements." Based on those discussions, the project would not result in any of the six undesirable results cited in SGMA; therefore, the proposed project would be consistent with SGMA, and SGMA would not restrict the project's ability to pump groundwater as proposed. See also Master Response 6, Sustainable Groundwater Management Act.

MCWD supplies would not be affected by the proposed project; see EIR/EIS Table 4.4-10, Master Response 2, Source Water Components and Definitions, and Master Response 3, Water Rights, Section 8.2.3.7, and Master Response 8, Project Source Water and Seawater Intrusion. Furthermore, the text prepared by the Lead Agencies (not the proponent) on Draft EIR/EIS page 4-37 is neither self-serving,

because the Lead Agencies do not represent the interests of the Applicant, nor gratuitous, because NEPA requires the analysis of beneficial as well as adverse impacts. The assertion is substantiated by the EIR/EIS text that follows the quote provided in the comment: "Regarding the former [seawater intrusion], groundwater modeling shows that the proposed project would retard the advance and limit the ultimate inland extent of seawater intrusion. With respect to the latter [water surface elevations in the 400-Foot Aquifer], by returning in-lieu desalinated water to the CCSD, the proposed project would provide recharge benefits to groundwater levels in the 400-Foot Aquifer." This supports the conclusion on Draft EIR/EIS page 4.4-37 that, ". . . the proposed project would not conflict with the SGMA."

CJW-3 The topic of water rights is not typically addressed in an EIR/EIS. It is a legal matter that is rarely relevant to the question of whether a proposed project being evaluated under CEQA or NEPA would generate impacts on the environment. The issue of water rights is addressed in this EIR/EIS in Section 2.6 as a matter of project feasibility. See also Master Response 3, Water Rights, specifically Section 8.2.3.2 regarding the sequence of approvals vis-s-vis water rights. As noted, there is no state or local agency with authority to approve CalAm's water rights for the MPWSP. As stated on page 35 of the State Water Resources Control Board (SWRCB) Final Review of CalAm's MPWSP (EIR/EIS Appendix B2), "No permit is required by the State Water Board to acquire or utilize appropriative groundwater rights."

CJW-4 As noted in EIR/EIS Table 3-1, "The slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP." As explained in Section 3.2.1.1, "Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin." See also Figure 4.4-3; Master Response 2, Source Water Components and Definitions; Master Response 3, Water Rights; and Master Response 4, The Agency Act and Return Water.

CJW-5 EIR/EIS Section 4.4.1.3 presents the Groundwater Enhancement Programs in the SVGB that are described by the commenter. EIR/EIS Section 4.4.5.2 found impacts on the groundwater basin resources, and therefore, impacts to these enhancement projects, to be less than significant.

CJW-6 See Appendix E2, Section 5.1, which states: "the slant wells will be screened in both the Dune Sand Aquifer and 180-FT Aquifer." See also quoted text in response to comment CJW-4. The existing MCWD 300-afy desalination plant is located 1-mile south of the test slant well, and has not been operational for at least a dozen years due to corrosion of the pipes and pumps.

EIR/EIS Section 4.4.4 presents the approach to analysis while Section 4.4.5 presents the direct and indirect effects of the proposed project on groundwater resources, and concludes the impacts would be less than significant. The analysis is supported by groundwater modeling that is described in Appendix E2. As described in Applicant Proposed Measure 4.4-3, the cost and responsibility for mitigating the unlikely effects of increased salinity or lowered groundwater levels would fall on CalAm, and not the well owners or ratepayers of MCWD.

See also Master Response 8, Project Source Water and Seawater Intrusion.

CJW-7 See Master Response 11, CalAm Test Slant Well. Specifically, Section 8.2.11.2 describes the City of Marina's review process and clarifies that the city declined to adopt its *Draft Initial Study and Mitigated Negative Declaration for the California American Water Slant Test Well Project.* Section 8.2.11.2 also describes the California Coastal Commission CEQA review process for the test slant well and Section 8.2.11.3 describes the NEPA review process. In response to this and other similar comments, footnote 2 in the Executive Summary (and other locations where similar text appears in the EIR/EIS) has been revised to clarify these agencies' actions and processes regarding consideration of the test slant well.

CJW-8 The EIR/EIS does, in fact, identify key differences between the MPWSP and the prior Coastal Water Project in Sections 1.4.1 and 1.4.2. However, differences between the MPWSP and the prior project, or between the EIR/EIS and the prior Coastal Water Project EIR are not pertinent to the current CEQA/NEPA analysis, which analyzes the impacts of the proposed MPWSP described in Chapter 3, against the existing environmental setting, or baseline conditions.

CJW-9 See response to comment PWN2-38 in Section 8.6.17 and Master Response 10, Environmental Baseline under CEQA and NEPA. The HWG prepared a separate baseline report for the test slant well, as described in Master Response 11, CalAm Test Slant Well, Section 8.2.11.4. It is referenced in EIR/EIS Section 4.4 as Geoscience, 2015b; the April 20, 2015 report titled *Baseline Water and Total Dissolved Solids Levels Test Slant Well Area* was prepared by the HWG in response to Special Condition 11 of the CDP, and continues to be publicly available at: https://docs.wixstatic.com/ugd/28b094_bd1db648e7b44f32a9676dfc7bf71989.pdf

CJW-10 See Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

CJW-11 See Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, and response to comment Marina-11 in Section 8.5.1. In addition to the slant wells discussed in Master Response 11, Santa Cruz rejected subsurface intakes because of the lack of sand cover over bedrock (Kennedy/Jenks Consultants, 2011).

Monitoring of the slant test well at CEMEX demonstrates that the salinity impacts are very localized. The EIR/EIS provides modeling results of the proposed production slant wells that indicate they would also increase salinity locally at the CEMEX site, but would retard further inland encroachment of seawater. See Draft EIR/EIS Section 4.4.5.2 at page 4.4-77 and Appendix E2 Section 5.4 at page 40 and Master Response 8, Project Source Water and Seawater Intrusion. Uncertainty is addressed in EIR/EIS Appendix E2 Section 6.

CJW-12 EIR/EIS Section 4.4.5 presents the direct and indirect effects of the proposed project on groundwater resources, and concludes the impacts on the SVGB would be less than significant and water supplies would not be affected by the proposed project. See Master Response 8, Project Source Water and Seawater Intrusion, as well as responses to comments MCWD-168 and MCWD-170 in Section 8.5.2.

References

Kennedy/Jenks Consultants, 2011. scwd2 Seawater Desalination Intake Technical Feasibility Study. Prepared for scwd2 Desalination Program, September. http://www.scwd2desal.org/documents/Draft_EIR/Appendices/AppendixH.pdf.

8.6.8 Responses to Comments from Coalition of Peninsula Businesses

CPB-1 See the discussion of "Supply Provided by the Desalination Plant" in Section 8.2.13.3 of Master Response 13, Demand (Project Need) and Growth.

CPB-2 See the discussion under "Comments Urge Higher Demand Number" in Section 8.2.13.2 of Master Response 13.

CPB-3 EIR/EIS Table 2-4, CalAm Monterey District Water Supplies with Proposed MPWSP, shows the amount of water supply available for other uses after meeting service area demand. Other uses would include CalAm's return water obligation. While the precise quantity of Salinas Valley Groundwater Basin return water that will be needed initially, until the wells equilibrate, and how much that will change over time is not currently known, groundwater modeling conducted for the EIR/EIS assessed a range of return water scenarios between 0 and 12 percent. See the discussion under "Supply available for other use" in Master Response 13, Section 8.2.13.3 . See also Master Response 4, The Agency Act and Return Water.

CPB-4 The demand numbers shown in Chapter 2 indicate system demand – not consumption by water users – and thus include non-revenue water. As discussed in EIR/EIS Section 2.5.3.3., the SWRCB's 2009 cease and desist order (CDO) requires CalAm to reduce non-revenue water in the Monterey District, and for the last three years for which data were available (2013 through 2015), the reduction in system losses exceeded the target established in the CDO.

CPB-5 The EIR/EIS evaluates the desalination plant as proposed by CalAm in its application for project approvals, and as updated by subsequent testimony and amendments (i.e., a 9.6 mgd plant). Consideration of a larger desalination plant than currently proposed is not within the scope of this EIR/EIS. See also the discussion under "Comments Urge Higher Demand Number" in Section 8.2.13.2 and "Supply Provided by the Desalination Plant" in Section 8.2.13.3 of Master Response 13.

CPB-6 An expansion of the proposed MPWSP would require additional evaluation by the Lead Agencies; however, at this time, no such project change has been proposed.

CPB-7 The peer review by LBNL was conducted on the 2015 version of the North Marina Groundwater Model ($NMGWM^{2015}$), which both LBNL and HydroFocus independently determined to be deficient in the simulation of the Ford Ord area and the Dune Sand aquifer. As part of the HydroFocus review of the $NMGWM^{2015}$ and revision that resulted in the 2016 version ($NMGWM^{2016}$), available geologic reports from the area were reviewed. HydroFocus determined the need to include the A-Aquifer and the Fort Ord-Salinas Valley Aquitard independent of the LBNL review, and the $NMGWM^{2016}$ implements this revision. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

CPB-8 The discussion of water supply and growth for each of the alternatives appears in EIR/EIS Section 5.5.21.2. This section provides details on the source of water and return water for each of the alternatives that include water from the GWR Project (i.e., Alternatives 5a and 5b). See also Master Response 13 for a detailed discussion on water supply and growth related to the proposed project under various scenarios and supply from the GWR Project. But the comment that the now-approved Water Purchase Agreement (WPA) allows for less than expected GWR water production for essentially two or three year periods, is unclear. The WPA approved by the CPUC in September 2016, includes a Water Availability Guarantee at Section 13, that speaks to CalAm's allotment of 3,500 afy from the GWR project, and CalAm's right to draw on reserve water[1] in the event the MPWMD fails to deliver CalAm's allotment in any given year, in order to meet the Water Availabilty Guarantee.

[1] Reserve water is the quantity of water delivered annually to the Seaside Basin in excess of CalAm's annual allotment of 3,500 afy, minus the quantities of reserve water previously drawn upon to satisfy CalAm's annual allotment.

8.6.9 Responses to Comments from DeepWater Desal, LLC

DWD-1 The DeepWater Desalination Project is undergoing a separate environmental review process. See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario. As noted in EIR/EIS Section 5.4.5, "The evaluation of this alternative in this EIR/EIS is based on information available publically, information provided by MBNMS, and the independent judgement of the analysts using the best available information. More detailed analyses of the DeepWater Desal Project will be forthcoming in the separate EIR/EIS and will be based on technical studies that were not available at the time this EIR/EIS was being prepared. The approach to analysis of the impacts of the DeepWater Desal Project in this EIR/EIS is intended to be reasonable so as not to over- or under-state impacts, but also draws conservative conclusions where information is currently unavailable."

Throughout Chapter 5, Alternatives Screening and Analysis, the analysis of Alternative 3 impacts clearly indicates that some conclusions are conservative because not enough information is available to conclude that impacts would be less than significant or that mitigation would be effective in reducing impacts to less than significant. However, the MPWSP EIR/EIS necessarily includes significance determinations in the analysis of the environmental impacts of this potential alternative, as required by CEQA Guidelines Section 15126.6(d) and 40 CFR 1502.16.

DWD-2 The MPWSP EIR/EIS does not analyze a "scaled-down" version of the DeepWater Desal Project (Monterey Bay Regional Water Project or MBRWP), either as Alternative 3 or as a cumulative project in combination with other alternatives. Rather, the EIR/EIS analyzes the DeepWater Desal Project in the form and scope proposed by the DeepWater Desal proponent. As described in EIR/EIS Section 5.4.5, the description of Alternative 3 "includes the construction and operation of a screened open ocean intake system, a seawater desalination facility, a co-located data center, and associated components to provide up to 25,000 afy of potable water and data transmission and storage services." Because project alternatives must meet most of the basic project objectives, the EIR/EIS must evaluate a description of Alternative 3 that would serve the same Monterey District demand that the MPWSP is proposed to serve. However, because product water from Alternative 3 would exceed this demand, the balance is proposed to serve other areas. For example, as was stated on Draft EIR/EIS page 5.4-34, "The DeepWater Desal proposal includes product water pipelines to supply three different areas: the Monterey Peninsula; Castroville and Salinas; and North Monterey and Santa Cruz Counties. It is assumed that up to an additional 25 miles of product water pipelines could be constructed to accommodate the product water that would not serve the Monterey Peninsula." Similarly, when analyzing the DeepWater Desal Project in the cumulative scenario relevant to other alternatives, the analysis assumes the project would be constructed as proposed by DeepWater Desal, LLC.

DWD-3 The EIR/EIS does not consider the DeepWater Desal Project in the context of the MPWSP only as an "either/or" situation. The DeepWater Desal Project is considered as a choice instead of the MPWSP (thus, as an "either/or" choice) in Alternative 3, but the EIR/EIS also addresses the DeepWater Desal Project as a cumulative project that could be built in addition to the MPWSP.

As described in Master Response 15, Section 8.15.2.3, and as explained in more detail below, the DeepWater Desal Project is proposed by DeepWater Desal, LLC as a regional project that would serve customers in CalAm's Monterey District service area as well as customers in Salinas and Santa Cruz County. The DeepWater Desal Project is best understood as an alternative to the MPWSP because it is a desalination plant being separately proposed to meet the same project objectives of the MPWSP. However, the DeepWater Desal Project is also considered in the cumulative impacts analysis because the project proponent has indicated that it intends to proceed even if another desalination plant is selected to serve the Monterey District service area since it would provide water to other areas outside the CalAm service area. Therefore, the EIR/EIS considers two reasonably foreseeable scenarios that include development of the DeepWater Desal Project:

1) Development of the DeepWater Desal Project as an alternative to the MPWSP (serving CalAm's Monterey District service area and customers in Salinas and/or Santa Cruz County). This regional project is Alternative 3, and it is described in EIR/EIS Section 5.4.5 and is analyzed in Section 5.5.

2) Development of the DeepWater Desal Project as a separate project *in addition to* the MPWSP or another alternative that would serve CalAm's Monterey District service area; see Project No. 34 in EIR/EIS Table 4.1-2. In this case, the impacts of the DeepWater Desal Project are considered in the cumulative scenario since the provision of water to Santa Cruz County and the City of Salinas would be a reasonably foreseeable project in addition to the MPWSP. A scenario in which the MPWSP, as well as the DeepWater Desal Project may be constructed, is addressed in the cumulative analyses of the proposed project in EIR/EIS Chapter 4; scenarios in which the DeepWater Desal may be constructed in addition to other alternatives are addressed in the cumulative scenario relevant to all other alternatives in Section 5.5; see EIR/EIS Table 5.5-1.

DWD-4 The Lead Agencies acknowledge that DeepWater Desal, LLC does not propose a scaled-down version of the DeepWater Desal Project. As described below, the statement on Draft EIR/EIS page 5.3-16, "This analysis assumes a version that has been scaled down to meet the needs of the 9.6 mgd project proposed by CalAm," refers specifically to Intake Option 9 and not to the DeepWater Desal alternative (Alternative 3).

See introductory text in EIR/EIS Section 5.3, Alternatives Development, Screening and Evaluation Process, which describes the process of screening alternative components to those proposed by CalAm – including intake, outfall, and desalination plant options. As stated therein, "Components that are considered to be the least environmentally

damaging are then combined into "whole" alternatives in Section 5.4." As described in response to comment DWD-2, the EIR/EIS does not analyze a scaled-down version of the DeepWater Desal Project. Rather, Section 5.3 of the EIR/EIS evaluates component options (options for intake, outfall, and desalination plant locations) for various factors to determine which options are carried forward. Some of the intake and outfall options screened in Section 5.3 are considered because they are similar to options proposed by other projects and proponents, including DeepWater Desal. See EIR/EIS Section 5.3.2 for a description of this component development and screening process.

Section 5.3.3 pertains only to intake options (i.e., that may be combined with a desalination plant, an outfall facility, distribution pipelines, and other project components into a "whole" alternative). As described in Section 5.3.3.9, Intake Option 9 was carried forward into the development of Alternative 2, and is not part of the DeepWater Desal alternative (Alternative 3).

Similarly, Section 5.3.4 pertains only to outfall options (i.e., that may be combined with other components into a "whole" alternative). As stated therein, "only the proposed use of the existing [MRWPCA] outfall was carried forward in the development of the "whole" alternatives."

DWD-5 Table 5.3-1, Intake Option Screening Results, and Section 5.3.3.9, Intake Option 9 – Screened Deep-water Ocean Intake at Moss Landing, have been revised as suggested in this comment for clarity. Note that the description of the intake pipeline diameter of 36-inches is consistent with the description of Alternative 2 in Section 5.4 (see Table 5.4-1) and therefore, does not alter the impact analysis of Alternative 2. Note also that Intake Option 9 is not relevant to the description of Alternative 3 (the DeepWater Desal Project), and is only relevant to the Lead Agencies' process of creating other alternatives by combining components as described in Section 5.3.

DWD-6 Table 5.3-2, Outfall Options Screening Results and Section 5.3.4.7, Outfall Option 7 – New Outfall at Moss Landing, have been revised as suggested in this comment. However, note that Outfall Option 7 was screened out from further evaluation in Section 5.3.6.1 and is not included in any of the alternatives analyzed in detail. Therefore, these revisions do not alter the impact analysis. Note that the referenced sentence on Draft EIR/EIS page 5.3-16, "This analysis assumes a version that has been scaled down to meet the needs of the 9.6 mgd project proposed by CalAm," refers specifically to Intake Option 9 and not to the DeepWater Desal alternative (Alternative 3).

DWD-7 The suggested change has been made in Section 5.4.5.1.

DWD-8 The suggested change has been made in Section 5.4.5.1.

DWD-9 As explained in EIR/EIS Section 3.2.1, Source Water Intake System, the proposed slant wells would extend west beneath the seafloor. The EIR/EIS explains in

Impact 4.2-4 that "In comparison to aboveground structures, underground pipelines, and buried structures are generally less susceptible to liquefaction damage because they are embedded in compacted backfill that can tolerate more seismic wave motion." Pipelines are relatively narrow and flexible structures able to accommodate some movement. In addition, the susceptibility to the potential for damage from liquefaction decreases with the increasing depth of the slant wells further out under the ocean. Finally, as explained in EIR/EIS Section 2.4, Available Supplies, and as listed in Table 2-4, CalAm does have other available water supplies in the event that damage to the slant wells requires a temporary shutdown for repairs. Therefore, a public health emergency due to the shutdown of the slant wells is unlikely.

The commenter provided the results of a recent liquefaction study of the DeepWater Desal Project area that indicates the potential for liquefaction at the location of the Alternative 2 and/or Alternative 3 intake infrastructure is relatively low. However, as explained above, the potential for damage due to liquefaction at the proposed slant well location is similarly relatively low. Therefore, the requested revision – "reduced impact related to liquefaction" – was not made in response to this comment.

DWD-10 EIR/EIS Table 5.3-6 has been revised to indicate that the preliminary environmental impacts comparison of Desalination Plant Site Option 3 for surface water hydrology and water quality would be "Similar" to the proposed project desalination plant site. To clarify, as stated on Draft EIR/EIS page 5.3-54, among the alternative desalination plant sites considered in the screening of alternative components, "only the Charles Benson Road site was carried forward for development of whole alternatives." Thus, Desalination Plant Site Option 3 was not incorporated into alternatives developed specifically for the proposed MPWSP. However, because this site is the location of the proposed DeepWater Desal plant, it is evaluated in detail under Alternative 3 in EIR/EIS Section 5.5.3.6, which evaluates surface water hydrology and water quality impacts of Alternative 3. This analysis acknowledges that "impacts related to flooding and flood risks, including those from tsunami and sea level rise, would result in a slightly reduced level of impact compared to the proposed project due to the inland location of the desalination facility and data center;" therefore, no revisions were made to the analysis of Alternative 3 in response to this comment.

DWD-11 EIR/EIS Table 5.3-4, Intake Options Evaluation – Preliminary Environmental Impact Comparison, in Section 5.3.6.1, Evaluation Results for Intake, Outfall and Desalination Plant Options, has been revised as requested in this comment. Note that this revision is consistent with detailed analysis of Alternative 2 (which incorporated Intake Option 9) in Section 5.5.16.5, which explains that operation and siting of the intake system would have no impact on agricultural resources.

DWD-12 The second sentence of the quoted text from Table 5.3-4 on Draft EIR/EIS page 5.3-32 is not specific to construction impacts. No change has been made in response to this comment. Detailed analysis of Alternative 2 (which incorporated Intake Option 9) is provided in Section 5.5.

DWD-13 It is not currently known whether feasible mitigation strategies would be available to address the stated impingement and entrainment impacts. Thus, no change is warranted in response to this comment. Detailed analysis of Alternative 2 (which incorporated Intake Option 9) is provided in Section 5.5.

DWD-14 EIR/EIS Section 5.5.1 presents an overview of the approach to the alternative impact analysis. The results of the evaluation of the proposed project on marine biological resources are summarized in Section 5.5.5.2; the operational and facility siting impacts of Alternative 3 (DeepWater Desal) using the same evaluation criteria that were applied to the proposed project are presented in Section 5.5.5.6. An alternatives impact summary is presented in Table 5.6-1 and conclusions on marine biological resources impacts are summarized on Draft EIR/EIS pages 5.6-10 and 5.6-11. While each impact statement often included analysis of several components that would contribute to the impact being analyzed, the impact conclusions in the EIR/EIS were drawn only for each impact statement. For example, Impact 4.5-4[1] for Alternative 3 considered the permanent loss of seafloor, entrainment, ability to effectively mitigate, brine salinity, and other Ocean Plan constituents including polychlorinated biphenyls (PCBs), and temperature. The conclusion for Impact 4.5-4 for Alternative 3 was determined to be significant and unavoidable because of the 16,700 square feet of permanent loss of seafloor habitat, the uncertainty of the efficacy of mitigation for entrainment impacts on marine resources, the potential for salinity to exceed 2 parts per thousand (ppt) beyond the brine mixing zone (BMZ), and an increase in temperature of the discharge. Since an impact conclusion was not drawn for each component within the impact statement, and no independent conclusion was drawn for the severity of the potential entrainment impact, no changes to the significance conclusions for Alternative 3 have been made in response to this comment.

While the Lead Agencies appreciate the presentation of the 2004 CA Coastal Commission's Coastal Act Report, the approach to fisheries management plans and the extensive discussion of proportional mortality, the EIR/EIS does not rely on the cited 2004 quote for the threshold of significance for entrainment impacts. Rather, the analysis, as required by CEQA and NEPA, compares the potential impacts of the proposed project (and alternatives) against baseline conditions and the No Action alternative respectively, to determine if the proposed project would "result in a substantial adverse effect, either directly or through habitat modifications . . . on any species, natural community, or habitat ... ." See CEQA Guidelines Appendix G Environmental Checklist Form, Section IV(a). The analysis in EIR/EIS Section 5.5.5.6 relies on the 2016 Ocean Plan acknowledgment that seawater is habitat and recommends using Area of Production Forgone (APF) to estimate mitigation. During operations, the DeepWater Desal Project would draw 55 mgd of habitat as source water, which represents a reduction in habitat. The impact conclusion in Section 5.5.5.6 relied on the likelihood of Alternative 3 to effectively

[1] Have a substantial adverse effect, either directly or through habitat modification . . .on any marine species, natural community, or habitat . . . during operations.

compensate for the loss of habitat, and as noted in Section 5.5.5.6, ". . . residual impacts may remain due to the uncertainty of the efficacy of the mitigation." See also response to comment DWD-15.

DWD-15 CEQA requires an EIR to include sufficient information about each alternative to allow meaningful evaluation and comparison. NOAA's NEPA implementing policy, "Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities," requires the decision maker to use the "best available scientific information and analysis to present the environmental effects of the proposed action and alternative(s) in comparative form, providing a clear basis for choice among the options." (NOAA 2017) EIR/EIS Section 5.1.1.1 notes that if an alternative would cause one or more significant effects not caused by the proposed project (in this case, entrainment at the screened open water intake), the significant effects must be disclosed but in less detail than the significant effects of the project. EIR/EIS Section 5.1.1.2 notes that NEPA requires agencies to provide substantial and detailed treatment to each alternative in the analysis, and impacts of the alternatives should be presented in comparative form in order to sharply define the issues and provide a clear basis for choice to the public and the decision-makers. What is presented in Section 5.5.5.6 on Draft EIR/EIS page 5.5-122 is an impact that is unique to the alternatives proposing screened open water intakes, and the estimated APF is provided as a general indication of the order of magnitude of each project's potential effect that would not also be caused by the proposed project. The impact conclusion was based on the fact that although mitigation is required, "residual impacts may remain due to the uncertainty of the efficacy of the mitigation" (Draft EIR/EIS page 5.5-122), consistent with 40 CFR 1508.27(b)(5) which requires a NEPA lead agency to consider "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks" in its assessment of impact intensity.

With respect to the use of preliminary information prior to finalization of the Tenera Report to support the EIR/EIS conclusions, MBNMS is currently reviewing the Tenera Intake Assessment and Addendum (Tenera, 2016), in coordination with the California Coastal Commission, in the context of its role as Lead Agency for the separate NEPA analysis of the DeepWater Desal Project application. At this time, it is premature to conclude that this most recent report supports a conclusion that entrainment impacts would not be significant. Moreover, as discussed in EIR/EIS Section 5.5.5.6, the consideration of potential operational impacts from Alternative 3 was not limited to analysis of the potential ETM/APF, but also included consideration of updated brine discharge modeling as well as potential temperature increase to receiving waters from the brine discharge. Although the separate DeepWater Desal Project CEQA and NEPA analysis, when completed, may include more detailed conclusions that differ somewhat from those presented here for Alternative 3, the Lead Agencies for the MPWSP are obligated to make conclusions based on the best available information to support the necessary comparison among alternatives. Therefore, no changes have been made in response to this comment.

DWD-16 Until such time as the Lead Agencies confirm the feasibility analysis and SWRCB provides a determination of consistency with Water Code 13142.5(b) on the intake, "Alternative 3 may be inconsistent with MBNMS Desalination Guidelines with regard to its open water intake and lack of a combined discharge", as concluded in EIR/EIS Section 5.5.5.6. No changes have been made in response to this comment. Also, see added text in EIR/EIS Section 6.4 regarding this alternative's consistency with MBNMS Desalination Guidelines.

DWD-17 The comment does not dispute the facts presented in the EIR/EIS, but points out that the "circumstances required for this situation include the data center using no water for cooling, a Davidson current, and the desalination plant undergoing start-up activities." As noted in the Draft EIR/EIS on page 4.2-49, "such exceedances are based on worst-case model simulations and may not occur under actual operational conditions," in agreement with this assessment. The Lead Agencies note that such potential worst-case exceedances are not the basis for the conclusion in Section 5.5.3.6 that Alternative 3 would have a less-than-significant impact with mitigation. Rather, the significant impact conclusion is based on the absence of a monitoring and reporting plan, which is in conflict with applicable plans and policies.

Further, the comment notes that the DeepWater Desal Project now proposes a modification of the discharge louvers, with more jets that would result in no modeled exceedance outcomes as explained in Jenkins' update to the Brine Dilution Analysis for the DeepWater Desal Project (2017). That update describes a discharge design with 14 discharge jets as compared to the five jets proposed in the project description information that is the basis for the analysis of Alternative 3. No additional information on this revised project design change has been submitted to the MPWSP Lead Agencies, and no other analysis has been undertaken to address this change. Although salinity impacts may be reduced compared to the five-jet design, construction-related impacts and permanent impacts related to this revised design also may change. In the absence of additional information about this revised proposal, and because salinity impacts already are considered less than significant, no changes have been made to the Draft EIR/EIS in response to this comment.

DWD-18 In response to this comment, the last paragraph of "Facility Siting Impacts" in Section 5.5.3.6 has been revised as follows:

> ~~In addition to physical impacts, Alternative 3 may be inconsistent with~~ The MBNMS Desalination Guidelines (NOAA, 2010)~~, with regard to its lack of a combined discharge compared to the proposed project, which would use an existing outfall. One of the guidelines~~ state: "project proponents should investigate the feasibility of diluting brine effluent by blending it with other existing discharges." Although a combined discharge currently is not proposed for Alternative 3, the DeepWater Desal Project proponent is investigating the feasibility of diluting brine effluent by blending it with Moss Landing Power Plant cooling water through a combined discharge. If proposed by DeepWater

Desal, the separate EIR/EIS for the DeepWater Desal Project will evaluate this option in detail, but it is not included as part of Alternative 3.

DWD-19 In response to this comment, the Lead Agencies reviewed the conclusion that Alternative 3 would have a significant and unavoidable contribution to significant cumulative impacts related to salinity and other Ocean Plan constituents and found that this conclusion statement was in error. Text in the last paragraph of Section 5.5.3.6 has been revised as follows:

> The most recent amendment to the Ocean Plan (SWRCB, 2016b) reflects the SWRCB's process of adapting to the need to regulate discharges from desalination projects. Ocean Plan water quality objectives are incorporated into NPDES permits in the form of specific water quality requirements. As discussed above, under some circumstances, Alternative 3 discharges occasionally c~~w~~ould exceed the 2 ppt salinity significance threshold by 0.15 ppt, and could exceed Ocean Plan water quality objectives for PCBs. Because proponents of the DeepWater Desalination Project have not proposed a monitoring and reporting plan that demonstrate~~d~~s methods of compliance with the Ocean Plan objectives that are protective of beneficial uses, and feasible mitigation strategies have not yet been identified, Alternative 3 in combination with other cumulative projects c~~w~~ould result in significant ~~and unavoidable~~ cumulative impacts on ocean water quality and Alternative 3 would have a cumulatively considerable contribution to such effects ~~(*significant and unavoidable*)~~. However, with the implementation of a monitoring plan consistent with Ocean Plan requirements that defines clear performance standards and feasible corrective actions linked to the defined performance standards substantially similar to **Mitigation Measures 4.3-4 and 4.3-5** (but revised specific to the Alternative 3 project final design and defined operating conditions), the contribution of Alternative 3 could be reduced to a level that is less than significant because it would comply with Ocean Plan requirements (*less than significant with mitigation*).

Additionally, the summaries of impacts in Table ES-1 and Table 5.6-1 have been revised to indicate that this impact (4.3-C) would still be increased compared to the proposed project, but would be less than significant with mitigation, rather than significant and unavoidable. The above revision does not affect the consideration of Alternative 3 compared to the proposed project and other alternatives because the relative impact of Alternative 3 remains increased compared to the other alternatives.

DWD-20 As noted in the description of Alternative 3 in Section 5.4.5.1, "the Castroville Pipeline, the Pipeline to CSIP Pond, and the operational components related to delivering water to CCSD would not be implemented" for this alternative. Alternative 3 would require 6.5 miles of product water pipeline between the desalination plant and the CalAm distribution system; the 25 miles of additional pipeline are assumed to be to the north of the Alternative 3 desalination plant. As noted in Table 5.4-1, Alternative 3 would have a total of 48 miles of pipelines; this

total accounts for the product water pipelines that differ from the proposed project. No changes have been made in response to this comment.

DWD-21 The Draft EIR/EIS on page 5.5-121 discusses additional construction activities associated with Alternative 3 beyond those cited in the comment (e.g., anchor chains on construction barges used during placement of both intake and discharge structures would pose temporary obstructions, temporary disturbance to and possible loss of soft substrate habitat or function), which "could cause altered behavior (altered foraging and swimming patterns) in some special status fish, marine mammals and sea turtles." No changes have been made in response to this comment.

DWD-22 At this point in the planning and review process for the DeepWater Desal Project, the Lead Agencies cannot substantiate that any constraint on local and/or regional power transmissions caused by MBRWP would be mitigated before interconnection. No changes have been made in response to this comment.

DWD-23 See response to comment DWD-3.

DWD-24 See response to comment DWD-2.

DWD-25 Receipt of the four attachments to the DeepWater Desal letter is acknowledged. Where the letter has made specific reference to these attachments in comments DWD-1 through DWD-24, specific responses have been provided.

References

Tenera Environmental, 2016. Monterey Bay Regional Water Project Intake Assessment Addendum to Intake Assessment for 49 mgd Intake Flow and 1 mm Wedgewire Screen. March 31.

Scott A. Jenkins Consulting (Jenkins), 2017. Brine Dilution Analysis for DeepWater Desal, LLC, Monterey Bay Regional Water Project at Moss Landing, CA. March 24.

8.6.10 Responses to Comments from Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation

ERF-1 See responses below for specific discussions of revisions made to the EIR/EIS. Per CEQA Guidelines Section 15088.5, "New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect that the project's proponents have declined to implement." Furthermore, "Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR." Likewise, under NEPA regulations at 40 CFR 1502.9(c), a supplement to an EIS is required if there are significant new circumstances or information relevant to environmental concerns and the impacts of the proposal. The questions raised by the commenter, and any revisions that have been made to the Draft EIR/EIS in response, are not significant in a way that would require recirculation of or supplement to the Draft EIR/EIS because they provide additional clarifications, and do not change any of the impact determinations, previously discussed in the Draft EIR/EIS.

ERF-2 Regarding the CEQA and NEPA baseline generally, see EIR/EIS Section 4.1.3 and Master Response 10, Environmental Baseline under CEQA and NEPA, which explains that since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate. EIR/EIS Table 4.3-5 presents concentrations over varying time periods for the contaminants of concern for impacts on water quality and marine organisms and the associated discussion describes how such concentrations relate to and are considered in the impact analyses for project operations. Regarding the need for additional water quality data to fully describe baseline conditions and to assess impacts, EIR/EIS Section 4.3.1 and Appendix D3 present detailed baseline water quality information specific to Monterey Bay, including site-specific water quality data for the area surrounding the MRWPCA outfall diffuser, sufficient for assessing the potential impacts from implementation of the MPWSP. The list of references used in the preparation of Section 4.3 includes Central Coast Long-term Environmental Assessment Network (CCLEAN) data referenced in the comment from 2011 and 2014, as well as CCLEAN data from 2012, 2013, and 2016.

Regarding environmental monitoring conducted as part of mitigation to comply with the Ocean Plan and how such obtained information relates to the project baseline in regards to assessing impacts from implementation of the project, see response to comment Marina-41 in Section 8.5.1, which explains that surveys conducted as part of Mitigation Measure 4.3-4 do not constitute deferral under CEQA of either a characterization of baseline conditions or the analysis of potential impacts from implementation of the proposed project or alternatives.

ERF-3 The EIR/EIS uses the ABA Consultants 1999 report to help identify and characterize the benthic community occurring at the study site. The report reflects monitoring and sampling taken between 1977 and 1994, and although the sampling methodology may have changed over time and has some limitations described by the commenter, the information is sufficient and is the best available to provide overall observations of the condition of the benthic community. But the EIR/EIS impact analysis did not rely on the conclusions of that report regarding potential effects of the MRWPCA wastewater discharges, which are not the subject of the impact analysis in this EIR/EIS. As described in EIR/EIS Section 4.5.1.4, the EIR/EIS also relies on video of the benthic community surrounding the MRWPCA outfall taken during routine maintenance in 2014, and the conditions documented are similar to those summarized in, and confirm, the ABA Consultants report.

ERF-4 See response to comment ERF-2 and Master Response 10, Environmental Baseline under CEQA and NEPA.

ERF-5 This comment uses several terms including need, objectives, proposed project, and proposed action, in ways that are inconsistent with their definitions and uses in the EIR/EIS, and references Draft EIR/EIS pdf page 3 ("Dear Reviewer" letter), and Section ES.3.3 and ES.3.2 (Executive Summary), while the objectives are provided in Section 1.3, Project Objectives and Purpose and Need. The project purpose (and need for the project) is presented in EIR/EIS Section 1.3 and begins by explaining the MPWSP is **needed** to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources. As a result of the constrained supply situation, nine (9) primary **objectives**, and six (6) secondary **objectives**, of the proposed project are clearly listed in EIR/EIS Section 1.3.1 (and in Section 5.1.2.1), including the demands the **proposed project** intends to meet.

EIR/EIS Section 3.1 explains that the project (and Alternative 5a, the Environmentally Superior/NEPA-Preferred Alternative with GWR, see EIR/EIS Section 5.6) is proposed to produce approximately 10,750 afy to develop a new water supply for the Monterey District service area, and the proposed MPWSP desalination plant would have a rated capacity of 9.6 million gallons per day (mgd). See also Footnote 1 in EIR/EIS Section 3.1.

EIR/EIS Section 2.3 describes the project demand assumptions that were proposed by the Applicant as the basis for the MPWSP's proposed capacity, including demands of existing customers (Objective 4), legal lots of record (Objective 6), and tourism under recovered economic conditions (Objective 7). EIR/EIS Section 6.3 evaluated, determined and disclosed how much of the proposed project capacity would be utilized for existing customers and how much would be available for growth.

EIR/EIS Section 5.4 describes alternatives to the proposed project, and each alternative is evaluated for its ability to meet project objectives; see EIR/EIS Sections 5.4.2.4, 5.4.3.4, 5.4.4.4, 5.4.5.4, 5.4.6.4, 5.4.7.4, and 5.4.8.4.

ERF-6 Impacts on marine species during MPWSP operations, as a result of the potential impingement of organisms or through the accumulation of fine particulate material on the seafloor, are evaluated in detail in EIR/EIS Section 4.5.5.2. The analysis examined the speeds of wave-induced and ambient ocean currents, and the velocity of water being drawn through the seafloor to the slant wells to determine the probability of impingement of organisms and particulate material against the seafloor. The EIR/EIS concludes that swimming speeds of invertebrate plankton substantially exceed the estimated vertical infiltration rate for the MPWSP slant wells (see Table 4.5-8) by several orders of magnitude. Therefore, no impingement from slant well operations is expected to occur.

The impingement of organic matter on the seafloor is also addressed in Section 4.5.5.2 and the EIR/EIS concluded that normal wave generated water velocities at the seafloor locations of the slant wells is predicted to be 8 to 20 times greater than that required for fine-grained material to accumulate on the seafloor over the subsurface slant wells. As a result, there would be no potential for the impingement of fine organic matter on the seafloor or changes to soft substrate habitat.

The screened portion of the slant wells that would be located within MBNMS (below Mean High Water, see EIR/EIS Figure 3-3a) would be within the intertidal and nearshore habitats as described in EIR/EIS Section 4.5.1.2, which are characterized by sandy beaches subject to daily tidal changes. Various invertebrate animals live in the sand and in wracks of decaying seaweed and other detritus, while market squid (*Doryteuthis (Loligo) opalescens*) inhabit the pelagic habitat in Monterey Bay but return to shallower nearshore areas (in water depths between 18 to 55 meters or 59 to 180 feet) to spawn on sand and mud sea floor habitats. Because the depth ranges for squid spawning is much deeper than the intertidal zone where slant wells would be located, potential impacts on market squid from slant well pumping would not be a reasonable conclusion.

ERF-7 The EIR/EIS extensively assesses the potential concentration of the brine discharge within the Brine Mixing Zone (BMZ) (Section 4.3.5.2, Surface Water Hydrology and Water Quality) that was in turn used to assess the potential effects on marine biological resources inhabiting the Project Study Area and the BMZ. The Coanda Attachment and hypoxia are discussed on Draft EIR/EIS page 4.3-83, and the EIR/EIS concludes that it would not occur because the plume would be affected (influenced and further diluted) by ocean currents and waves (which generate horizontal and vertical movement) after contact with the seafloor, and therefore, would not follow and travel along the seafloor "like Saran Wrap."

An extensive analysis of brine discharge impacts on marine biological resources, including special-status species (EIR/EIS Impact 4.5-4), considered increased salinity/brine concentrations as well as potential toxicity from any concentrated contaminants in the brine discharge. The analysis determined that as a result of dispersal and dilution of the brine discharge by the outfall dispersion jets, the reasonable worst-case brine-only discharge would not exceed 1.6 parts per thousand (ppt) over ambient by the time it reaches the seafloor (see Table 4.5-12). Furthermore, as illustrated in Tables 4.5-9, 4.5-10, and 4.5-11, the documented salinity concentrations at which toxic effects have been shown to occur in marine organisms is an order of magnitude greater than the projected 1.6 ppt over ambient salinity at the seafloor or within the BMZ. Laboratory research performed by Dr. Carol Reeb demonstrated that salinity concentrations greater than 50 ppt are needed to affect market squid egg hatching, and the projected salinity concentration from the project brine discharge is estimated to be 35.23 when it reaches the seafloor (see EIR/EIS Impact 4.5-4). See response to comment Reeb-7 in Section 8.7.20, and Marina-67 in Section 8.5.1.

As for whether the infiltration rate of the slant well intakes was or should have been considered in the brine discharge modelling, as shown in EIR/EIS Figure 4.3-7, the BMZ and outfall jets are located about 2 miles downslope from the location of the slant well intakes and would not be affected by the slant well intakes (or vice versa).

ERF-8 The EIR/EIS explains in Impact 4.5-4 under the subheading, Potential Effects of Elevated Salinity, that in all cases, the Ocean Plan salinity limit of 2 ppt would be met at the edge of the ZID, the length of which ranges from approximately 10 to 39 feet for the dense discharge scenarios, which is well within the regulatory limits of the BMZ (100 meters or 328 feet from the diffuser). This subsection of the EIR/EIS assesses the potential salinity concentrations within the ZID and the BMZ and describes the potential effects on both hard and soft substrate taxa and marine organisms inhabiting the water column itself.

The EIR/EIS evaluates the water-column salinity at the point of discharge that would exceed 2 ppt and concludes that for the worst-case brine-only discharge scenario modeled (which only could occur during the dry season months of April through October in any given year), 1,100 cubic feet of water is anticipated to exceed 2 ppt and would be located above the seafloor (see EIR/EIS Figure 4.3-10). Thus, the modelling reflects that nowhere near 27-acres of the BMZ would exceed 2ppt. The small volume of water that would be greater than 2 ppt above ambient salinity would not come into contact with any hard-substrate organisms inhabiting the ballast rock anchoring the outfall or benthic fauna located on the sea floor. Consequently, benthic communities near the outfall would not be affected by the increased salinity brine discharge. Additionally, the water area around each diffuser (estimated at 2 feet by 8 feet) is a small area for any of the marine mammals referenced by the commenter to spend any substantive time occupying in order for any detectable or documentable impact to occur. See also response to comment Marina-67 in Section 8.5.1.

Finally, even if the estimated 27-acre BMZ where to exceed 2 ppt as permitted under the Ocean Plan, which modeling, as explained above, indicates would not likely occur, when compared to the overall project study area, 27-acres represents an infinitesimally small fraction of the MBNMS and California coast.

ERF-9 The Southern California Coastal Water Research Project (SCCWRP) report cited in the comment was prepared prior to the State Water Board Resources Control Board (SWRCB) amending the Ocean Plan and establishing State regulations concerning desalination brine discharges; see the Draft Substitute Environmental Document prepared for the Ocean Plan Amendment (SWRCB, 2015, at Section 8.7.1, Background: Effects of Saline Discharges on the Marine Environment). The Science Advisory Panel (Roberts et al. 2012) recommended, based on the studies of the effects of brine discharges, that the maximum salinity increase at the edge of the zone of initial dilution (also referred to as the mixing zone) should be no more than 5 percent above ambient background. Even though natural background salinity varies throughout California, and by season, salinity is generally close to 34 ppt as a state-wide average (average Monterey Bay salinity is 33.5 ppt). The Science Advisory Panel recommended that salinity vary by no more than five percent at the edge of the ZID. For most California coastal waters, this translates to an increase of 1.7 ppt (rounded up, 2 ppt) above ambient background (Roberts et al. 2012). Additional review of salinity effects on marine life (Foster et al. 2013) found that salinity increases less than 2 to 3 ppt were protective of most marine life.

The Science Advisory Panel further recommended that the salinity objective should be based on the most conservative species. The reports by Phillips et al. (2012) and Roberts et al. (2012) provide the basis to develop a receiving water limitation for California's ocean waters. Studies showed that red abalone was most sensitive to elevated salinity, with a lowest-observed-effect concentration (LOEC) at 35.6 ppt (2.1 ppt above Monterey Bay background salinity of 33,500 mg/L). Since salinity toxicity studies were not done for all organisms in the California marine environment, the 2 ppt limit may be overly conservative for some species, but not conservative enough for others. However, the majority of the studies on elevated salinity showed that effects were not seen below 2 to 3 ppt above natural salinity. (Roberts et al. 2012).

It is understood that a 5 percent increase above pre-project ambient salinity levels would result in a smaller BMZ. However, as the commenter clearly stated, the 2 ppt threshold for the BMZ is what the SWRCB has established as State regulatory limit in the Ocean Plan Amendment. Whether or not the 2 ppt is greater than the 5 percent by 17 percent is not relevant to the analysis however, because while this EIR/EIS did use 2 ppt above ambient as the threshold of significance, none of dense plume scenarios modeled would exceed 1.61 ppt or 4.8 percent (see EIR/EIS Table 4.3-13) above ambient salinity (33,500 mg/L) at the edge of the ZID, which would meet the 5 percent threshold.

ERF-10 As described in detail in EIR/EIS Section 4.3.5.2, the assessment of impacts and regulatory compliance related to the discharge of brine via the existing MRWPCA outfall

diffuser is based on model analyses that incorporate conservative (i.e., worst-case) assumptions regarding effluent and receiving water density, dilution and mixing dynamics (assumed zero ocean currents), and concentrations of water quality constituents. These conservative assumptions were applied to ensure the results of the impact assessments are appropriately cautious. The results of the model analyses were further assessed against both the regulatory requirements (Section 4.3.2) and the significance criteria (Section 4.3.3) related to operational discharges, representing a rigorous standard for analyzing potential impacts. The consideration of all regulatory standards, requirements, and performance thresholds (described in detail in Section 4.3.2), included specific recent (2016) amendments to the California Ocean Plan for avoiding and/or minimizing potential adverse impacts on marine life associated with desalination facility operations. Such amendments to the Ocean Plan were based on the findings of the SCCWRP (see response to comment ERF-9), which evaluated methods of brine disposal and monitoring strategies. The Ocean Plan amendments were further assessed as part of a SWRCB Substitute Environmental Document and staff report (SWRCB, 2015), providing the rationale for how implementing such measures reduce potential environmental impacts from desalination facilities.

The model analyses conducted for this EIR/EIS to determine dilution and mixing, the results of which were subsequently utilized to determine compliance with Ocean Plan water quality objectives for salinity and other constituents, was conducted in a manner consistent with the recommendations in the SWRCB's technical report on discharges from desalination plants (described in detail in EIR/EIS Appendix D1 and discussed in Section 4.3.5.2 under Impacts 4.3-4 and 4.3-5). Also presented in detail in Appendix D1 are the results of a comprehensive literature review and incorporation of peer reviewed methodologies, assumptions, and results into the assessment of operational impacts. The extensive model analyses assessed, in part, the hydraulics of the outfall, which includes horizontally oriented diffuser ports, as well as dilution and mixing of operational discharges with receiving waters under a range of discharge scenarios and ocean conditions. As described under Impact 4.3-4, two separate analytical methodologies were employed to provide redundancy in the analysis and confirmation of the results characterizing dilution; both methods are consistent with the regulatory approach recommended by the SWRCB for analyzing brine discharges. Further, in response to public comments relating to concerns over the model analyses, and at the request of MBNMS, the model analyses underwent peer review (see Impact 4.3-4).

While impacts related to water quality from operational discharges have been determined to be less than significant based on the comprehensive and detailed model analyses, additional monitoring and reporting will further ensure that discharges will comply with the Ocean Plan as well as comply with MBNMS guidelines for operation of desalination facilities that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay. Furthermore, Mitigation Measure 4.3-4 would ensure that water quality and biological monitoring data considers impacts on marine resources and that all collected data is assessed against defined performance standards and that corrective actions are implemented in the case that performance standards are not met. Corrective

actions to be implemented in the case that performance standards are not met are detailed in Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives), which includes retrofitting the existing outfall diffuser to include inclined diffuser jets positioned at the optimum angle to achieve maximum dilution.

Finally, EIR/EIS Section 4.13.5.2 identified the potential for the proposed project to increase corrosion of the MRWPCA outfall and diffuser as a result of brine discharge. Based on studies provided by the MRWPCA (E2 Consulting Engineers, 2015), Impact 4.13-5 determined the proposed project could accelerate corrosion of a nearshore portion of the offshore segment, as well as the land segment, of the outfall. The EIR/EIS concludes the impact could be significant and includes Mitigation Measures 4.13-5a and 4.13-5b, which would apply to the offshore segment and the land segment, respectively. Impact 4.3-5 in EIR/EIS Section 4.3.5 and Mitigation Measure 4.3-5 have been revised to reflect the concern that the existing outfall diffuser end gate may need to be modified in order for operational discharges from the proposed project to comply with Ocean Plan and NPDES permitting requirements. See responses to comments MRWPCA-2 through MRWPCA-6 in Section 8.5.9 for further discussion related to suitability of the outfall diffuser to discharge brine.

ERF-11 See Final EIR/EIR Section 5.3.2, which was revised to clarify that alternative brine disposal options were considered but rejected as infeasible. Also, the article in the July 16, 2015 edition of the Monterey County Weekly authored by Kera Abraham and referred to by the comment letter in Footnote 15, acknowledges there are "major hitches" with extracting salt from the desalination brine; not the least of which is that the salt extraction plant would cost even more to build than the desalination plant itself, and the natural gas needed to power it would cost about $1,200 per acre foot. Furthermore, the proposed project would generate approximately 14 mgd of brine that would need to be shipped in 10,000-gallon tanker trucks, resulting in 1,400 truck trips a day, or approximately 1 truck trip every minute of every day. Alternative 5a, the Environmentally Superior Alternative would result in less brine, but would still generate approximately 9 mgd of brine, resulting in 900 truck trips per day.

See responses to comments MCWD-168 and -170 in Section 8.5.2.

ERF-12 The laboratory results of the water quality testing that is referred to in the comment is presented in Appendix G of Appendix C of EIR/EIS Appendix E3. The low concentrations of volatile organic compounds identified in the groundwater samples from the soils borings at CEMEX represent analytical laboratory surrogates. Surrogates are compounds similar in chemical composition to the analytes of interest and added into environmental samples prior to preparation and analysis as part of the quality control protocols. They are used to evaluate extraction efficiency and matrix interference on a sample-specific basis. While they are included in the laboratory quality control sheets and may appear as a low concentration detection, these compounds were not detected in the water samples and are not present in the groundwater.

EIR/EIS Section 4.4.5.2 includes Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations. Impact 4.4-4 addresses impacts associated with existing groundwater remediation systems, and discusses how the slant well pumping could effect the migration of the contaminated groundwater located to the southeast, in the Former Fort Ord (see EIR/EIS Section 4.7.1.1). The EIR/EIS determined that the radius of influence of pumping in the Dune Sand and 180-FTE Aquifers is expected to extend close to, but not overlap with, the contaminant plumes associated with the ongoing cleanup at the former Fort Ord. However, it is remotely possible that the radius of influence could reach and affect the contaminant plumes. Implementation of Mitigation Measure 4.4-4 would prevent the significant and unreasonable degradation of water quality due to the migration of contaminant plumes that impair water supplies.

ERF-13 As discussed in Section 4.7, Hazards and Hazardous Materials, the CEMEX sand mining facility has no records of hazardous materials releases and does not have any underground storage tanks for fuel or oil.

ERF-14 Although the GeoTracker website still lists the Fort Ord OU1 plumes sites as open, review of the documents indicates that groundwater monitoring is no longer occurring and the sites are awaiting regulatory agency closure upon destruction of wells and treatment systems (GeoTracker, 2017; Central Coast Regional Water Quality Control Board, 2016).

ERF-15 Adverse impacts on the water quality of receiving ocean waters and on marine resources from operational discharges are comprehensively assessed in EIR/EIS Sections 4.3.5 and 4.5.5, respectively. The analysis of impacts from operational discharges presented in Section 4.3.5.2 assesses compliance with numeric water quality objectives prescribed in the California Ocean Plan (described in detail in Section 4.3.2), including chlorine and chlorine residuals that result from the use of sodium hypochlorite (see Table 3-1) as part of standard drinking water supply disinfection. Further, as presented in detail in Appendix D3, for all operational discharges, dechlorination of potable water supplies will occur such that the total chlorine residual will be below detection and thus, below the Ocean Plan water quality objective.

ERF-16 The EIR/EIS fully discloses the potential for special status species, including fully protected State species, to occur in the study area in Sections 4.5.1.3 (Special Status Marine Species) and Section 4.6.1.10 (Sensitive Terrestrial Biological Resources in the Study Area). The Brown pelican is identified in Table F-1 in EIR/EIS Appendix F as a California fully protected species with a low potential to occur in the project area. The Brown Pelican may well roost in MBNMS, but Table F-1 explains that suitable roosting habitat does not exist in the project area; see response to comment Marina-66 in Section 8.5.1. And while the Brown pelican may forage in ocean waters in the vicinity of the MRWPCA ocean outfall and the subsurface slant wells, Brown pelicans do not breed locally.

California Fish and Game Code Section 4700 is addressed in EIR/EIS Section 4.5.2.2, which states, the MPWSP components proposed for the marine environment would be consistent with Fish and Game Code Sections 3503, 3511, 4700, 5050, and 5515 because their construction and operation are not expected to result in the take or possession of any State protected species.

The commenter is correct in stating that the Pacific right whale, the northern elephant seal, and the southern sea otter are fully protected mammals as designated by the state of California. The Pacific right whale, the northern elephant seal and the Southern sea otter are listed in EIR/EIS Table 4.5-2 as special status species with a potential to occur in the study area. The potential project effects on all marine mammals are evaluated in Impact 4.5-4 in EIR/EIS Section 4.5.5, which concludes that the proposed project operations would have a less than significant impact from salinity and other Ocean Plan constituents (via bioaccumulation) on special-status species that frequent the study area. Furthermore, Impact 4.5-4 concludes that impacts due to shear stress caused by the brine discharge would be limited to plankton, because motile organisms would be able to avoid turbulence in the immediate vicinity of the brine discharge; the impact would be less than significant because of the small percentage of plankton abundances potentially affected. Because there is little risk that benthic infauna and macrofauna populations would decline due to impingement, shear stress, and increased salinity, impacts are not anticipated on fish, marine mammals (such as the Southern sea otter and California gray whale), seabirds, and other species. The acknowledgement that the above-listed species are fully protected results in no change to the EIR/EIS analysis or conclusions of impacts on these species, which already were identified as being protected by the Federal Endangered Species Act, and the Marine Mammal Protection Act. See also EIR/EIS Section 7.1.1.

EIR/EIS Section 4.5.1.3 identifies Dungeness crab as a valued commercial species in Monterey Bay that typically resides within hard rock habitat. Proposed project operations would not affect hard rock habitat. In its assessment of potential effects of increased salinity and other Ocean Plan constituents on marine communities, Impact 4.5-4 considered all marine species, including crab species, and concluded that project operations would have a less than significant impact. Salinity would be 1.6 ppt above ambient or less at the edge of the ZID (see EIR/EIS Table 4.3-13) which is well below the tolerance level of the crab species. See also response to comment ERF-9.

Finally, the EIR/EIS thoroughly discusses the potential toxic effects of elevated brine discharge, as well as the potential physical effects of the brine discharge itself (see Draft EIR/EIS pages 4.5-54 through 4.5-66).

ERF-17 The background on the Federal Endangered Species Act (FESA) and western snowy plover are noted, and are consistent with descriptions in the EIR/EIS. Regarding the assertion that the EIR/EIS did not adequately analyze project impacts on snowy plover, see responses to comments ERF-18 through ERF-21, which provide greater specificity. Also note that since MBNMS is a federal Lead Agency under NEPA, FESA

consultation with the USFWS will occur under Section 7, not Section 10 and an HCP would therefore, not be required. See also response to comment ERF-21.

ERF-18 In regard to the comment that sea level rise and erosion linked to climate change will also contribute to reduction of plover habitat, see the response to comment Point Blue-3 in Section 8.6.15; sea level rise and ongoing coastal erosion act in concert to move beach profiles inland, such that average beach width is anticipated to be maintained in this location. See EIR/EIS Figures 4.2-7 and 4.2-8 which show the anticipated beach profiles over time, and see also EIR/EIS Appendix C2. As the bluff erodes, it maintains the beach width, as described in Impact 4.2-10.

Contrary to the commenter's assertion, the EIR/EIS evaluates the impacts of operational and maintenance activities on western snowy plover in Section 4.6, and acknowledges that the repeated disturbance associated with ongoing periodic maintenance of slant wells would result in the permanent loss of up to 6 acres of snowy plover habitat.

Mitigation Measure 4.6-1d does not limit mitigation to "restoration actions beyond the Project site." This measure does not specify that mitigation would occur off-site. In response to this comment, Mitigation Measure 4.6-1d has been revised to clarify that compensation may occur on-site or off-site. In this context, "on-site" may refer to adjacent areas within the CEMEX property that could be restored (see Master Response 14, CEMEX Settlement Agreement); however, on-site restoration of the permanently impacted habitat (such as between maintenance activities) would result in repeated re-occurrence of maintenance-related disturbance of restored habitat and, potentially, individual plovers. Therefore, no on-site (i.e., within the permanently impacted area) restoration is recommended. Impact 4.6-6 describes that implementation of multiple mitigation measures, including Mitigation Measure 4.6-1d, would reduce impacts to less than significant as fully described in Impact 4.6-1. See also EIR/EIS Section 7.1 for a discussion of Lead Agency consultation with USFWS.

ERF-19 The EIR/EIS provides an analysis of noise impacts on snowy plover in Section 4.6. As stated in Impact 4.6-6, the noise generated from the well pumps would be less than the ambient noise of the combination of CEMEX operations, crashing waves, and Highway 1 traffic. The comment incorrectly describes the characterization of ambient noise at the project site as a cumulative impact analysis; rather, this combination of existing noise sources represents the current total ambient noise. As explained in Impact 4.6-6, since ambient noise levels at the CEMEX active mining area include noise generated from heavy machinery and mining vehicles associated with the CEMEX operations (85 dBA at 50 feet), crashing waves at the Pacific Ocean (57 dBA at 300 feet), and vehicle traffic along Highway 1, the 66 dBA attenuated noise level from pump operations would be less than the combination of these existing sources. Since the attenuated noise from the pumps would not exceed ambient noise levels, the pumps would not be expected to impact migratory birds or other special-status wildlife at the site. Therefore, although pump operations may generate some low-level

increased noise, this would not be above ambient noise levels at the project site under existing conditions, and would not significantly impact western snowy plover.

Despite this less-than-significant conclusion, as reiterated in response to comment ERF-18, the EIR/EIS has assumed that the entire 6-acre maintenance area around the well heads would be permanently lost because of disturbance associated with ongoing periodic maintenance at the well heads. Therefore, it is assumed that since no suitable habitat would be available at "significantly closer than 50 feet away from the well pumps," that snowy plover would also not be closer than 50 feet from the wellhead. This habitat impact would be reduced to less than significant through implementation of several mitigation measures, including compensation at a 3:1 ratio for permanent impacts as described in the revised Mitigation Measure 4.6-1d in the Final EIR/EIS.

ERF-20 The EIR/EIS did not fail to analyze the potential impacts on western snowy plover from the vibrations caused by the well pump. EIR/EIS Section 4.12.14 explains that operation of the Project would not involve equipment that would produce ground borne vibration; therefore, no impacts related to excessive ground borne noise levels would occur in connection with Project operations. Since operation of the well pumps would not produce ground borne vibration, there would be no impact on western snowy plover.

In response to this comment, the following text has been added to the Subsurface Slant Wells section in Impact 4.6-6:

> As described in Section 4.12.14, Evaluation Criteria in Section 4.12, Noise and Vibration, operation of the proposed project would not involve equipment that would produce ground borne vibration. Since operation of the well pumps would not produce ground borne vibration, there would be no impact on western snowy plover from such vibration.

ERF-21 Habitat Conservation Plans (HCPs) are developed by permit applicants in support of an incidental take permit application pursuant to section 10(a)(1)(B) of the ESA for projects with no federal nexus. Because there is a federal nexus related to this project, any take authorization sought would be pursuant to ESA Section 7, and therefore, a HCP is not prepared. Rather, the action federal agency (MBNMS) would prepare a biological assessment and the USFWS and NMFS would either respond with a letter of concurrence (where no adverse effects are expected) or with a biological opinion that would support an incidental take statement (which gives take authorization).

A Biological Assessment, which evaluates the project's impacts on federally listed species, has been prepared in support of Federal Endangered Species Act Section 7 consultation between the ONMS and USFWS. See EIR/EIS Section 7.1.

ERF-22 The EIR/EIS in Impact 4.5-C explains that the five-mile coastal geographic area was chosen because beyond this area, other projects would be too distant from the MPWSP

to result in any combined salinity or elevated brine constituent plumes, or to combine in any other way that may cause a cumulative effect on marine biological resources. Unlike other environmental stressors or impacts, such as air emissions, the impacts on marine resources are not wide-scale or mobile, and are instead localized. To interact or accumulate, a five-mile area of analysis is more than adequate for the nature of these particular stressors and impacts. For example, the largest possible size for the BMZ would be 27 acres, or .04 square miles.

ERF-23 The approach to the cumulative analysis is presented in EIR/EIS Section 4.1.7.1, which explains that for each resource or issue considered in this chapter, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then considers existing conditions (which are the combination of the natural condition and the effects of past projects) and describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. This approach is consistent with CEQ regulations which define a cumulative impact as an "impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions" and emphasizes that "cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." As described in Section 4.1.7, cumulative effects may arise from single or multiple actions and may result in additive or interactive effects.

Brine impacts result in small, localized, less than significant impacts on benthic communities in only the worst case scenarios. Therefore, the appropriate scale for assessing cumulative impacts for brine discharges is to examine the potential for other projects within a five-mile coastal area that may also result in benthic impacts, or other projects where brine plumes or their impacts, while individually minor, may have additive or incremental impacts. In the case of the cumulative analysis for Alternatives 5a and 5b, the potential for cumulative effects of GWR combined with the MRWPCA recognizes the interactive cumulative effect, which required detailed modelling to account for changes in buoyancy and dispersal of contaminants when the brine discharge is added to GWR effluent.

As for the commenter's concern about improperly limiting the cumulative impacts analysis of construction impacts geographically, the excerpted statement was part of a longer statement in the Draft EIR/EIS on page 4.5-67: "With the exception of DeepWater Desal and People's Project, all of these projects are either built (No. 47), not reasonably foreseeable in its current configuration (No. 31), or projected to have very localized construction impacts." Since CEQA Guidelines Section 15130 states that "the focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact," the statement is characterizing the level of construction impacts of the other projects and is, therefore, consistent with CEQA and NEPA.

ERF-24 The EIR/EIS did not exclude the Sand City Desalination project. The plant is already constructed and has been in operation since 2010, which means it is a "past project" and as noted in Footnote 2 in EIR/EIS Section 4.1.7.2, while a cumulative analysis includes past, present and reasonably foreseeable future projects, the category of past projects is captured within the existing setting, or baseline, against which impacts are judged throughout the EIR/EIS, including the cumulative analysis. The two new wells that are proposed at the Sand City plant (see EIR/EIS Table 4.1-2) will allow the plant to operate as designed: the brackish source water would result in brine that is discharged into Monterey Bay at lower than or equal to the ambient ocean salinity.

ERF-25 See response to comment ERF-22. The Bay Avenue Outfall Project would be located almost 8 miles south of the MRWPCA outfall and would be outside of the geographic scope of the marine biological resources cumulative impact analysis. The Bay Avenue outfall project would reduce (Phase 1) and ultimately eliminate (Phase 2) discharges of storm water from the City of Seaside to Monterey Bay.

ERF-26 See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario, Section 8.2.15.3, which reiterates the explanation provided in EIR/EIS Section 4.1.7 regarding the consideration of the People's Project in the cumulative context. Master Response 15 also clarifies the status of the People's project and associated CEQA/NEPA review.

ERF-27 See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario.

ERF-28 The cumulative impact discussion for marine biological resources (EIR/EIS Section 4.5.6) explains that the cumulative projects listed in Table 4.1-2 that are located within the geographic scope and whose impacts could overlap with those of the MPWSP include Test Slant Well (No. 47), RUWAP Desalination Element (No. 31), and RUWAP Recycled Water Element (No. 35). In addition, it is expected that either the DeepWater Desal Project (No. 34) or The People's Moss Landing Desal Project (No. 57), but not both, would be constructed and operated in the reasonably foreseeable future. With the exception of DeepWater Desal and People's Project, all of these projects are either built (No. 47), or not reasonably foreseeable in its current configuration (No. 31).

Since the test slant well (No. 47) is a past project, it was considered in the evaluation of the proposed project, as explained in response to comment ERF-24. The RUWAP Desalination Element (No. 31,) see Table 4.1-2) was not considered directly in the cumulative scenario for marine biological resources, but it was considered in the EIR/EIS Section 4.3 discussion on discharges and outfall capacity; see response to comment Marina-117 and -156 in Section 8.5.1. The RUWAP Desalination Element (No. 31) was also considered in the cumulative scenario for effects on groundwater resources; see EIR/EIS Section 4.4.6 and response to comment MCWD-155 in Section 8.5.2.

The RUWAP Recycled Water Element (No. 35) would reduce wastewater flows to the MRWPCA ocean outfall. The impacts that would result from a range of brine with wastewater flows were evaluated for the proposed project under Impact 4.5-4 (see Table 4.5-12) and for Alternative 5a (the Environmentally Superior Alternative) in Section 5.5.3.8 (see Table 5.5-3). Therefore, since the RUWAP Recycled Water Element (No. 35) was considered in combination with the proposed project (and alternatives), and the impacts of the test slant well was considered in the analysis of the proposed project analysis (and alternatives), the cumulative analysis included the impacts of the combination of these reasonably foreseeable identified projects.

ERF-29 The third paragraph in EIR/EIS Section 4.5.6 explains that the RUWAP Recycled Water Element (No. 35) would reduce wastewater flows to the MRWPCA ocean outfall. The impacts that would result from a range of brine with wastewater flows were evaluated for the proposed project under Impact 4.5-4. The paragraph draws a conclusion on level of impact, and does not improperly terminate any consideration; but to clarify, the last sentence of this paragraph has been revised as follows:

> Therefore, t~~T~~he cumulative scenario that would result from the RUWAP Recycled Water Element in combination with the proposed project would be within the range of brine with wastewater flows that were analyzed under Impact 4.5-4; that impact was determined to be less than significant.

The potential effects of impingement, elevated salinity (and hypoxia), other brine contaminants, and shear stress resulting from the range of brine with wastewater flow discharge scenarios (combinations of wastewater and brine discharge), are discussed in EIR/EIS Section 4.5.5.2. For each of the potential impacts, (salinity, other contaminants, and shear stress) all of the various discharge scenarios were considered.

The EIR/EIS explains that if the discharge plume between the diffuser port and the edge of the ZID on both sides of the outfall were to settle on the seafloor (which the model results indicate it would not), approximately 0.0042 to 0.0163 percent of the suitable spawning area south of Monterey Submarine Canyon would be unsuitable for squid spawning. That potential impact was considered to be less than significant. See response to comment Marina-67 in Section 8.5.1.

ERF-30 As stated in Section 4.1.7.1, "Where the analysis finds that the cumulative effects of past, present and future projects would be significant and adverse, the analysis then identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature such that the project's contribution to cumulative effects in that area is deemed significant." Thus, the cumulative analyses in the EIR/EIS do not dismiss cumulative impacts solely because project impacts are less than significant. Each of the cumulative impact discussions in Impact 4.5-C specifically describe why the project would not contribute at all to cumulative impacts (e.g., because the project would result in *no impact* or because the project's impacts *could not* combine with the impacts of other projects due to distance or other factors), or why

the cumulative impact to which the project could contribute would not be significant, or why the project's contribution to a potentially significant cumulative impact would not be considerable (e.g., because the project would comply with standards below which incremental project impacts are not considered significant in a cumulative context).

ERF-31 CEQA Guidelines Section 15130(a)(1) states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR." And, while cumulative effects analysis must consider the additive or incremental effects of individually minor effects, the proposed project must have at least an individually minor effect that is one that could accumulate or interact with other minor effects. The EIR/EIS explains in Section 4.5.6 that the MPWSP does not propose any in-water construction activities that are expected to result in disturbance or effects on marine biological resources. For instance, underwater construction noise would be less than the ambient noise, and there would be no other projects in the vicinity that would generate underwater construction noise. The EIR/EIS does explain the potential for a risk of spills associated with the slant well drilling but it also explains that any discharge of clarified water to the ocean would be in compliance with Ocean Plan Water Quality standards, and that NPDES permit requirements already consider and prohibit cumulative effects on the receiving water.

ERF-32 There are no other reasonably foreseeable projects that would contribute to the salinity impact. See also responses to comments ERF-26 and ERF-28 and Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario.

ERF-33 The 2012 Science Advisory Panel, chaired by Dr. Philip Roberts, is included as a reference to the EIR/EIS (SWRCB, 2012a). The recommendations from that panel were later incorporated into the 2016 amendment to the California Ocean Plan (SWRCB, 2016). It is the Ocean Plan that sets the regulatory limit of the BMZ. As explained in the EIR/EIS and as modeled by Dr. Philip Roberts in EIR/EIS Appendix D1, the edge of the ZID represents the near field mixing zone that is influenced by the dynamics of the discharge, while the area between the edge of the ZID and the BMZ at 100 meters (328 feet), represents the far field where the ocean turbulence effects the plume dilution. As explained in response to comment ERF-8, the ZID for the proposed project would extend approximately 10 to 39 feet from the diffuser for the dense discharge scenarios modeled (see EIR/EIS Table 4.3-13) and salinity at the edge of the BMZ for those same scenarios would range between 1.3 and .01 ppt above ambient, within the range of natural ocean salinity changes. The DeepWater Desal point of discharge would be located almost 5-miles north from the proposed project's BMZ, at a depth of 100 feet in the Monterey Submarine Canyon; therefore, it is highly unlikely the plumes from the two projects would merge.

The plume from the proposed project's dense discharges would not attach to the seafloor (see response to comment ERF-7), and the lack of dissolved oxygen (hypoxia) would not be an issue for the MPWSP, at a project-specific level or in a cumulative

context, because oxygen would be supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution. See also EIR/EIS Section 4.3.5.2.

ERF-34 The EIR/EIS analyzed in detail the project-level and cumulative impacts of greenhouse gas emissions by quantifying construction and operational emissions and comparing them to thresholds that apply to both project-specific significance determinations as well as determinations regarding the significance of contributions to cumulative impacts. As explained in Impact 4.11-C, the evaluation of GHG emissions impacts is inherently a cumulative impact analysis, and as a result, if MPWSP construction and operations emissions exceed numeric thresholds or conflict with AB 32 Scoping Plan Measures, the MPWSP would not be considered consistent with the State's GHG reduction goals and the associated impact would be cumulatively considerable. All of the climate change-related effects discussed in Section 4.11.1.1 stem from global, cumulative greenhouse gas emissions levels.

Furthermore, as discussed in response to comment USEPA-4, Mitigation Measure 4.11-1 has been revised to ensure that the MPWSP would result in net zero indirect operational greenhouse gas emissions from electricity consumption. With implementation of this revised measure, project-level greenhouse gas impacts – and by definition, the project's contribution to cumulative greenhouse gas impacts – would be reduced to below applicable numeric thresholds and would be less than significant. See Final EIR/EIS Section 4.11 for a revised discussion of the significance greenhouse gas emissions following implementation of this mitigation measure.

ERF-35 EIR/EIS Section 6.3, Growth Inducing Impacts, provides much of the information reiterated in this comment, in particular in Section 6.3.1, Introduction, and 6.3.3, Regulatory Framework, which provides the basis for the analysis. See Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.1, regarding demand assumptions and Section 8.2.13.3 regarding the water that the project would provide for growth and the impacts of growth, including the impacts of cumulative water projects.

ERF-36 Project water supply available to serve additional development would be allocated to jurisdictions or reserved by MPWMD. The impacts of growth within the service area jurisdictions have been analyzed in the jurisdictions' general plan CEQA documents; these are the impacts of growth that would be supported, to some degree, by the proposed project, as described in EIR/EIS Section 6.3. More specific analysis of hypothetical specific projects that could be supported by project water supply would be speculative. See also Section 8.2.13.2, Growth Inducement, in Master Response 13.

ERF-37 The EIR/EIS analysis of the proposed project determined that impacts on marine life specific to the MPWSP's proposed intake and brine discharge systems would be less than significant. The MPWSP's consistency with the MBNMS Desalination Guidelines, including those listed in the comment, is discussed in EIR/EIS Section 6.4. The project need is discussed in Section 1.3, project background is discussed in

Section 1.4, water supply is discussed in Chapter 2, and alternatives are analyzed in full in Chapter 5. The Monterey Peninsula Water Conservation and Rationing Plan is addressed in Section 5.4.2.3. As described therein, the No Project Alternative would trigger actions under this plan, and the impacts of these actions would be a result of the No Project Alternative (see Section 5.5.20.3). The Monterey Peninsula Water Conservation and Rationing Plan is addressed in Section 5.4.2.4 and in Appendix K, and is considered in the impacts assessment under the No Action Alternative.

References

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GeoTracker, 2017. Fort Ord OU1 (Off-Site Plume) (DOD100220600) Site Maps/Documents. Available online at https://geotracker.waterboards.ca.gov/profile_report?global_id=DOD100220600. Accessed November 16, 2017.

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State Water Resources Control Board (SWRCB), 2015. Draft Staff Report Including the Draft Substitute Environmental Documentation, Amendment to the Water Quality Control Plan For Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, and the Incorporation of Other Nonsubstantive Changes. Division of Water Quality, State Water Resources Control Board, California Environmental Protection Agency. March 25, 2015.

State Water Resources Control Board (SWRCB), 2016. *Water Quality Control Plan – Ocean Waters of California*. California Ocean Plan, 2015. Effective January 28, 2016.

8.6.11 Responses to Comments from Fort Ord Recreational Users

FORU-1 The purpose of the slant wells, as explained in EIR/EIS Table 3-1 is to draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant. Section 4.4.1.4 explains that the proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer from about 30 feet below msl to 200 feet below mean sea level. See Master Response 2, Source Water Components and Definitions, which clarifies terms, as well as Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2, which discuss the source water capture zone.

FORU-2 See Master Response 3, Water Rights, Section 8.2.3.7, Effect on Marina Coast Water District, as well as Master Response 8, Sections 8.2.8.1 and 8.2.8.2, which discuss the source water capture zone. Marina Coast Water District's (MCWD) need for water supplies for the redevelopment of the Former Fort Ord is discussed in EIR/EIS Section 4.1.7.2. Project 31 (Regional Urban Water Augmentation Project Desalination Element) in Table 4.1-2 describes the three-party water supply planning agreement between MCWD, Fort Ord Reuse Authority, and the Monterey Regional Water Pollution Control Agency. EIR/EIS Section 4.4.6 addresses the cumulative impacts associated with the proposed project and Project 31 on groundwater resources.

FORU-3 See Master Response 8, which clarifies the hydrogeology and water quality characteristics of the source water capture zone, and Impacts 4.4-2 and 4.4-4 in EIR/EIS Section 4.4.5.2. Additionally, Master Response 2, provides clarification on the definitions of terms used to describe source water. As item 3 in this comment notes, the purpose of moving the proposed slant wells inland was related to coastal erosion, and not water source; see coastal erosion impact analysis and related mitigation in Impact 4.2-10 in EIR/EIS Section 4.2, Geology, Soils, and Seismicity.

FORU-4 See Master Response 3, Water Rights, Section 8.2.3.5.

FORU-5 EIR/EIS Chapter 5 provides a comprehensive evaluation of alternatives: Sections 5.1.1 and 5.1.2 describe the guidelines for alternatives analysis under CEQA and NEPA; Section 5.2 presents and discusses other water supply alternatives that were considered, but not carried forward for detailed evaluation; Section 5.3 describes the process employed to develop, screen and evaluate potential alternative components, and develop whole alternatives for analysis; Section 5.4 describes a No Project/No Action Alternative and five action alternatives; Section 5.5 presents the impact analyses of the No Project/No Action Alternative and the five action

alternatives, and; Section 5.6 identifies the environmentally superior/preferred alternative(s) and the NEPA agency preferred alternative.

FORU-6 See response to comment FORU-2.

FORU-7 EIR/EIS Sections 2.6 and 3.2.3.7 explain that the portion of the water drawn from the subsurface slant wells that is determined to be groundwater originating from the Salinas Valley Groundwater Basin (SVGB), would be delivered to Castroville Community Services District (CCSD) as desalinated water in lieu of CCSD pumping an equivalent amount of groundwater. See Master Response 4, The Agency Act and Return Water.

FORU-8 See Master Response 3, Section 8.2.3.5, for a discussion of whether the MPWSP would cause harm to other groundwater users. See EIR/EIS Section 4.4.5.2, Impact 4.4-4, and Master Response 8 for discussion of the MPWSP's impact on seawater intrusion.

FORU-9 There is ample background information regarding the interconnection between the 180-Foot, 400-Foot, and deeper aquifers of the SVGB, which is based on numerous hydrogeologic studies in the SVGB region; see EIR/EIS Section 4.4.1.2. Graphical representation of the underlying hydrostratigraphy is presented in Figure 4.4-3, which is based on numerous soil borings and groundwater monitoring wells. Master Response 8, Section 8.2.8.1 provides supplemental information regarding the slant wells and the capture zone of source water. Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, provides additional information on the deeper aquifers (including the "900-Foot Aquifer" referred to in the comment).

FORU-10 Regarding baseline reporting for groundwater conditions, see Section 8.2.11.4 of Master Response 11, CalAm Test Slant Well. Regarding the groundwater modeling used to assess potential impacts of project pumping, including peer review of the 2015 version of the model prepared by CalAm's consultant, and the 2016 version of the model prepared by a consultant to the Lead Agencies, see Master Response 12, The North Marina Groundwater Model v. 2016. The project's impacts on groundwater quantity and quality are discussed in Section 4.4, Groundwater Resources, Impacts 4.4-3 and 4.4-4.

FORU-11 Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), describes how ERT technology relates to and has been addressed in the Final EIR/EIS.

FORU-12 Regarding the Santa Barbara studies and the Dana Point well, see Master Response 11, Section 8.2.11.8. Santa Cruz rejected subsurface intakes because of the lack of sand cover over bedrock (Kennedy/Jenks Consultants, 2011). See also response to comment Marina-11 in Section 8.5.1. On the issue of outages and

interruptions, see Master Response 11, Section 8.2.11.5 and responses to comments Baer-29 and Baer-30 in Section 8.7.1 and Beech2-13 in Section 8.7.2.

The Draft EIR/EIS at page 3-15 explains that the site-specific field data collected during the pilot test well program are intended to inform the final design of the subsurface slant wells, the overall source water intake system, and the MPWSP Desalination Plant treatment system. The Draft EIR/EIS used the test slant well data in the groundwater modeling (see Master Response 11, Section 8.2.11.6, and Appendix E2, Section 4.2). The use of this EIR/EIS and how other issues that have been established in the record of this proceeding (including but not limited to economic, social, and need) will be used in decision making by the Lead Agencies, is explained in EIR/EIS Section 1.5.4.

FORU-13 See response to comment FORU-2.

FORU-14 EIR/EIS Section 4.8.1.2 explains the proposed desalination plant would be located in unincorporated Monterey County. Section 4.20, Socioeconomics and Environmental Justice, addresses potential construction-related and operational socioeconomic and environmental justice impacts on Marina, which is identified as a minority and low-income population. The Desalination Plant would not result in operational air quality emissions that would exceed any of the thresholds derived from applicable air quality plans. Additionally, as stated on Draft EIR/EIS page 4.14-38, mature trees along Charles Benson Road would screen or block views to the MPWSP Desalination Plant from the south and west. Long-term noise and traffic impacts associated with the Desalination Plant also would be minimal, even when considered in combination with existing and planned sources of noise and traffic; see EIR/EIS Sections 4.9.5 and 4.12.6.

FORU-15 No proposed project facilities would be located within Marina State Beach or within Fort Ord Dunes State Park. See Section 8.4.3 for comments from the California Department of Parks and Recreation. These comments, and responses to these comments, address potential impacts on central dune scrub at Fort Ord Dunes State Park related to construction of the Transmission Main. Coastal retreat is anticipated to occur independent of the MPWSP; it is a baseline condition that will continue regardless of the proposed project, and the EIR/EIS analysis indicates the MPWSP would not impact, accelerate, or exacerbate the rate of coastal erosion, as explained in Section 4.2, Impact 4.2-10 (see Draft EIR/EIS pages 4.2-68 through 4.2-72).

FORU-16 The effect of the proposed project on MCWD is explained in Master Response 3, Water Rights, Section 8.2.3.7. EIR/EIS Section 4.1.5, Project Consistency Analysis, describes the process undertaken in the Draft EIR/EIS to analyze the proposed project's consistency (or potential conflicts) with applicable general plans, specific plans, and regional plans, including Local Coastal Plans.

FORU-17 The Lead Agencies acknowledge the commenter's request for denial of EIR/EIS certification and project approval. This comment will be considered during the agencies' decision making process; see EIR/EIS Section 1.5.4.

References

Kennedy/Jenks Consultants, 2011. scwd2 Seawater Desalination Intake Technical Feasibility Study. Prepared for scwd2 Desalination Program, September. http://www.scwd2desal.org/documents/Draft_EIR/Appendices/AppendixH.pdf.

8.6.12 Responses to Comments from Just Water

JW-1 EIR/EIS Section 2.6 addresses water rights. See also Master Response 3, Water Rights.

JW-2 The commenter states that there is inadequate proof of "no harm" to the basin from seawater intrusion. EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, and concludes that impacts would be less than significant. See also EIR/EIS Section 2.6, as well as Master Response 3, Water Rights, Section 8.2.3.5 which addresses potential harm or injury to users in the basin, and Master Response 7, Deeper Aquifers of the Salinas Valley Groundwater Basin.

JW-3 The proposed project would not take groundwater from the Marina Coast Water District. See EIR/EIS Section 2.6, as well as Master Response 3, Water Rights, Section 8.2.3.7, Effects on Marina Coast Water District, and Master Response 8, Project Source Water and Seawater Intrusion.

JW-4 The comment is unclear about what "regional justice" is and how the proposed project "ignores" it "for a sustainable and protected water source." Environmental justice is addressed in EIR/EIS Section 4.20, Socioeconomics and Environmental Justice. Impacts on the Salinas Valley Groundwater Basin are addressed in Section 4.4.5.2. See also Master Response 3, Water Rights, Section 8.2.3.5 which addresses potential harm or injury to the basin; Master Response 8, Project Source Water and Seawater Intrusion as well as Master Response 6, The Sustainable Groundwater Management Act.

8.6.13 Responses to Comments from Land Watch Monterey County

LWMC-1 Return water percentages are discussed in the EIR/EIS Section 4.4.4.2 and a description and explanation of the return water percentages and the calculation of those percentages are provided in Master Response 4, Agency Act and Return Water, Section 8.2.4.3. By November 2015, just as preparation of the Draft EIR/EIS was beginning, the test slant well at CEMEX was extracting water that was reported by the Hydrogeologic Working Group (HWG) to be in the range of 29,400 mg/L (see Table 3 in Geoscience, 2016), or 12 percent of ocean water salinity (33,500 mg/L), suggesting 12 percent was a reasonable upper limit.

LWMC-2 The MPWSP would **not** be able to meet all of the project objectives under the 12 percent return water scenarios. Table 5.2 in EIR/EIS Appendix E2 indicates 3,242 afy would be required for a 12 percent return water scenario in 2012 and 2073 for the proposed project at CEMEX and for Alternative 1 (Slant Wells at Potrero Road); 2,085 afy of return water would be required for the 6.4 mgd desalination plant (Alternatives 5a and 5b).

EIR/EIS Table 6.3-4 presents water supplies and demands during the Seaside Groundwater Basin replenishment period for the proposed project with 6 percent and 12 percent return water obligation and EIR/EIS Section 6.3.5.1 explains that the available supply would meet existing service area demand and water entitlements, and demand associated with the existing hospitality industry (12,845 afy), with a surplus of 209 or 1,829 afy, depending on the return water obligation. The table also compares available supply with the total 14,275 afy demand that the MPWSP is proposed to meet. Assuming a 6 percent SVGB return water obligation, there would be enough water to meet existing and anticipated demand. But assuming a 12 percent return water obligation, supplies would **not** be able to fully meet anticipated demand.

LWMC-3 CalAm's entire Monterey District includes more than the main distribution system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems. CalAm's Monterey District includes the Monterey main distribution system and five satellite systems located along the Highway 68 corridor, as stated in EIR/EIS Section 2.2.1, Existing Water System. As stated in Section 2.2.1, two of these small systems, the Toro and Ambler systems, would not be served by the project and therefore, were not included in the project supply and demand assumptions. CalAm's Monterey District also includes two satellite systems located farther north and east of the project area (the Ralph Lane system north of Salinas and Chualar system to the east in the community of Chualar) that also are not included in the project. Only the main system and the three satellite systems that would be served by the MPWSP are included in the smaller population figure cited in this comment.

LWMC-4 See Master Response 3, Water Rights, Section 8.2.3.1.

LWMC-5 See response to comment USEPA-4 in Section 8.3.5 for revised text of Mitigation Measure 4.11-1. Implementation of this revised measure, including the preparation and approval of a GHG Emissions Reduction Plan that ensures the approved project's operational electricity use would result in net zero GHG emissions, would reduce impacts related to greenhouse gas emissions to less than significant. Revised Mitigation Measure 4.11-1 includes an option for the purchase of offsets (among several options for reducing or offsetting greenhouse gas emissions).

LWMC-6 Because of the return water obligation, the proposed project would not produce enough surplus to justify a smaller project; see response to comment LWMC-2. See also response to comment LWMC-5; with the revisions to GHG Mitigation Measure 4.11-1, and the related revision to the conclusion of Impact 4.11-1 (incremental contribution to climate change from GHG emissions) to less than significant with mitigation, the EIR/EIS does not identify a significant impact for any resource that would require inclusion of a downsized alternative as mitigation. See also response to comment Surfrider-6 in Section 8.6.19.

LWMC-7 See the discussion of lots of record in Master Response 13, Demand (Project Need) and Growth in Section 8.2.13.2, Demand Assumptions, and response to comment LWMC-6.

LWMC-8 See the discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.4.

LWMC-9 See the discussion of "Other approaches to estimating future water demands" in Master Response 13, Section 8.2.13.2, Demand Assumptions. Regarding the EIR/EIS use of MPWMD's estimate of water demand associated with general plan growth, see the discussion of "Water Available for Growth" in Master Response 13, Section 8.2.13.4. Reliance on the CEQA documents prepared for jurisdictions' general plans to characterize the impacts of growth that would be supported by project water supply is appropriate because general plans and related adopted plans and policies would guide the development decisions of any jurisdictions receiving project water. Project water not otherwise needed or reserved would be allocated to jurisdictions pursuant to MPWMD's allocation process, which is yet to be determined for the MPWSP. More specific information about where or how this water would be used is not currently available. Therefore, more specific analysis of the impacts of future projects that could be supported by project water supply would be speculative.

See also response to comment LWMC-2; assuming a 6 percent SVGB return water obligation, there would be enough water to meet existing and anticipated demand, and there could be a surplus of between 209 and 1,829 afy, not the 2005 stated in the comment. This is consistent with the expectations in the General Plans, and the environmental consequences of this planned growth – whether it would be 836 or 7,316 (or 8,020) new dwelling units – have been largely addressed in the general plan CEQA reviews as well as in other, project-specific documentation. Some of the

identified indirect effects of growth are significant and unavoidable; others are significant but can be mitigated; see EIR/EIS Appendix J2.

LWMC-10 See the discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.4.

LWMC-11 See Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement.

LWMC-12 As stated in EIR/EIS Section 4.4.4.3, the State Water Resource Control Board (SWRCB, 2013, see EIR/EIS Appendix B2) reviewed the proposed MPWSP and provided specific investigation and modeling recommendations to demonstrate the project would not harm or cause injury to other legal water users. One of the three possible categories of injury that could result from the MPWSP was, "a reduction in groundwater elevations that require users to expend additional pumping energy to extract water from the basin." This criterion was not included in the evaluation criteria (significance thresholds) applied to the CEQA/NEPA analysis of groundwater resource impacts because while CEQA/NEPA does not require an EIR/EIS to consider costs, the additional energy required to lift the water an additional foot in the handful of wells that may be affected would be insignificant. The active wells that may be susceptible to drawdown because they would be located within the slant well capture zone, are shown in EIR/EIS Table 4.4-10. The foreseeable injuries identified by the SWRCB, that overlying groundwater users could experience are presented and discussed in the EIR/EIS Sections 2.6.1 and 4.4.4.3 and Master Response 3, Section 8.2.3.5.

LWMC-13 A significant reduction in well yields due to lower groundwater levels is defined as a substantial reduction in the volume of groundwater that a user is able to withdraw from the production well, and would apply equally to the proposed project and to the cumulative scenario. This is directly related to the degree of drawdown that the well would experience from MPWSP pumping. As discussed in the EIR/EIS Section 4.4.5.2, Impact 4.4-3, the neighboring wells that could be impacted by the MPWSP slant wells are projected to experience drawdown between 1 and 5 feet under current sea level conditions and less following several years of project operation as sea level rises (see EIR/EIS Figures 4.4-14 and -15). The projected additional drawdown in neighboring groundwater wells affected by MPWSP pumping is not expected to impact well yield. However, if a substantial reduction in well yield is observed and found to be a consequence of MPWSP slant well pumping, Applicant Proposed Measure 4.4-3 would provide an interim water supply and would require CalAm to begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well.

LWMC-14 As discussed in the EIR/EIS Section 4.4.6, the cumulative analysis considers the cumulative projects **(Table 4.1-2)** that are within the geographic scope and involve

construction, development and use of a large yield production well. The only project of this type was the Granite Ridge Water Supply Project (No. 33), which the analysis determined would not combine with the effects of the MPWSP because these two projects are far enough apart and in different aquifer systems. The analysis also considered those projects that have the potential to pump groundwater and create a cone of depression that could possibly coalesce with the area of pumping influence of the MPWSP. Of those projects, the only pertinent project would be the Regional Urban Water Augmentation Project (RUWAP) Desalination Element (No. 31). The other projects in this category would likely use municipal supplies and not attempt to develop a water supply that depends on private groundwater extraction from either the 180-Foot Aquifer or 400-Foot Aquifer, which are impacted by seawater intrusion where these cumulative projects are located. If other projects did privately extract groundwater for supply, it would be from the deeper aquifers (also sometimes referred to as the 900-Foot Aquifer). The MPWSP would not extract groundwater from the deeper aquifers and the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) projected that there would be no response in the deeper aquifers from MPWSP pumping; see Appendix E2.

As discussed in EIR/EIS Section 4.4.5.2 and further clarified in Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.4, the MPWSP slant wells would draw water at the coast from a capture zone, which would over time be recharged by seawater. The projected influence of the MPWSP wells is discussed in EIR/EIS Section 4.4.5.2 and shown graphically on Figures 4.4-13a through 4.4-16. The capture zone and the relationship to the cone of depression is shown in Master Response 8, Figures 8.2.8-1 and 8.2.8-2. The relationship between the cone of depression and the capture zone is shown on Figure 8.2.8-3. In essence, the capture zone and the associated groundwater response from the MPWSP slant well pumping would be confined to a localized area adjacent to the coast that, other than a minor drawdown response inland from the coast, would not extend to such a degree that it influences groundwater conditions in the inland regions of the SVGB. For that reason, the project would not have a cumulatively considerable contribution to impacts on water supplies or the advancement of seawater intrusion.

Cumulative projects that currently pump groundwater from the SVGB, or those that could in the future, are located outside the MPWSP area of pumping influence but the geographis scope of the cumulative analysis extended further inland, beyond the influence of the MPWSP groundwater pumping to consider other regional groundwater production projects. There were no cumulative projects within the area of MPWSP pumping influence or within the larger area of the geographic scope. As discussed in the EIR/EIS Section 4.4.5.2, Impact 4.4-4, the MPWSP would not exacerbate seawater intrusion, and MPWSP brackish groundwater/seawater extraction from the coast would be expected to retard future inland migration of the seawater intrusion front. The $NMGWM^{2016}$ projected the groundwater response under current sea level and after 63 years accounting for sea level rise. The $NMGWM^{2016}$ projected

that the area of influence from MPWSP pumping would eventually decrease because of higher sea levels at the coast.

LWMC-15 CEQA and NEPA do not make a distinction between cumulative impacts that are adverse or beneficial when determining what projects are necessary to consider in the cumulative analysis. The cumulative analysis presented in the EIR/EIS Section 4.4.6 identifies what projects, when combined with the MPWSP, would have a cumulative effect, either adverse or beneficial, on groundwater resources. In this case, the groundwater projects that were identified are those with region-wide effects that would also improve SVGB conditions. Furthermore, whether or not the beneficial cumulative impacts are mentioned as part of the analysis has no bearing on and does not change the overall impact conclusions. The proposed project would draw brackish groundwater and seawater from the coastal terrace deposits and Monterey Bay, and not from aquifers inland from the coast where other users are extracting groundwater for municipal, agricultural, and industrial uses. The MPWSP impacts on groundwater resources would be localized and would not extend beyond the area of influence of the slant well pumping, which is delimited, for the sake of the analysis, by the -1-foot drawdown contour. However, the EIR/EIS did conclude that the project would not exacerbate and would retard seawater intrusion, which is a regional beneficial effect. See EIR/EIS Section 4.4.5.2, Impact 4.4-4.

LWMC-16 The geographic scope of the groundwater resources cumulative analysis in the Salinas Valley Groundwater Basin was established to adequately encompass the 180/400-Foot Aquifer in the western portion of the Pressure Area and more than fully encompasses the area of influence from the MPWSP pumping. The maximum projected extent of influence from slant well pumping is shown in the EIR/EIS Figures 4.4-13a and 4.4-13b and in Master Response 8, Source Water and Seawater Intrusion, Figures 8.2.8-1 and 8.2.8-2. The geographic scope extends an additional 4 miles inland from the furthest projected inland extent of the MPWSP cone of depression and includes the entire north-south extent of the western Pressure Area and the entire Seaside Basin. This is appropriate due to the nature of the groundwater response from the MPWSP. The maximum projected MPWSP area of pumping influence (cone of depression) would only extend at most 4.5 miles inland and the actual capture zone would be located at the coast in an area containing brackish to saline groundwater, which is recharged directly by seawater in the Dune Sand and 180-Foot Aquifer. From a hydrogeological perspective, the geographic scope of the cumulative groundwater analysis is not arbitrary but is based on established hydrogeologic boundaries and an adequate inland distance to ensure that other regional projects that could combine cumulatively with MPWSP would be considered.

LWMC-17 The conclusion that the MPWSP's contribution would not be cumulatively considerable is based on the hydrogeologic setting and the groundwater response to slant well pumping. As explained in EIR/EIS Section 4.4.5.2 and further clarified in Master Response 8, Section 8.2.8.4, the effects to the underlying aquifers from slant well pumping would be confined to the coast where the groundwater is brackish to

saline and where the slant well capture zone is constantly recharged by seawater infiltrating through coastal terrace deposits. The effects of MPWSP pumping would not extend far enough inland to cumulatively contribute to the depletion of SVGB groundwater supplies or the violation of groundwater quality standards.

LWMC-18 As stated in the final paragraph of Section 4.4.6 (Impact 4.4-C), "Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than significant." This summarizes the above discussion that outlines in greater detail the expected beneficial cumulative impacts resulting from the proposed project and projects in the cumulative scenario.

LWMC-19 The MPWSP would not contribute to the depletion of groundwater supplies or the degradation of groundwater quality in the inland aquifers of the Pressure Area because the source water to the MPWSP would be the brackish to saline groundwater extracted from a coastal capture zone, which would initially be recharged by ambient, heavily brackish to saline groundwater and eventually by seawater. The project would not draw fresh groundwater from inland sources. As discussed in Master Response 4, Agency Act and Return Water, Section 8.2.4.1, CalAm has proposed to satisfy the Agency Act by annually calculating (based on water quality sampling from the slant wells) the percentage of supply water that originated in the SVGB as fresh water (i.e., the fresh water component of the brackish water drawn by the slant wells that originated in the SVGB). CalAm would then "return" to the SVGB that same amount of water by providing desalinated product water to the Castroville Community Service District (CCSD) in lieu of its pumping an equal amount of groundwater. The return water component of the MPWSP would recharge the 400-Foot Aquifer because of the reduced pumping by CCSD. The return water is not considered mitigation for the depletion of groundwater from inland regions of the SVGB. The projected 1- to 5-foot change in groundwater levels due to slant well pumping, as determined by the NMGWM[2016] would be a minor drawdown localized within the area of influence of the slant well pumping. Of the past, present, and foreseeable projects considered for the cumulative analysis, the only potential project near the area of influence that would contribute to the drawdown of groundwater levels is the RUWAP Desalination Element (No. 31). As stated in EIR/EIS Section 4.4.6, the MPWSP and a desalination project at MCWD, would not deplete the basin groundwater supply and could have a combined beneficial effect because the capture zone for inland flowing seawater would expand to the south and would retard the inland advance of the existing seawater intrusion front.

LWMC-20 See responses to comments LWMC-14, LWMC-17, and LWMC-19. The MPWSP would not contribute to the declining groundwater levels in the SVGB and would not contribute to overdraft elsewhere in the SVGB. However, the project could

provide a benefit in that it would reduce groundwater pumping in the CCSD service area, return water to the 400-Foot Aquifer, and contribute to retarding the advance of seawater intrusion.

LWMC-21 In regard to the comment's footnote 7, see response to comment LWMC-12. Responses to comments LWMC-14, LWMC-17, LWMC-19 address the concerns expressed in this comment.

LWMC-22 See Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.1 and 8.2.8.2 for additional clarification regarding the difference between the capture zone and the cone of depression. Water would not be drawn into the wells from the inland edge of the cone of depression. Groundwater currently flows landward from the inland extent of the capture zone to the inland edge of the cone of depression (see Figure 8.2.8-3). Drawdown of less than 1 foot could indeed extend farther than the -1-foot contour used to delimit the zone of MPWSP pumping influence, but a water level decline of less than 1 foot would not be considered a measurable or substantial drawdown, and would likely not be distinguishable from seasonal variations in groundwater levels.

LWMC-23 The MPWSP would not contribute to the depletion of a groundwater supply because under steady state conditions, the proposed slant wells would draw over 95 percent of the required feedwater from Monterey Bay. See responses to comments LWMC-14, LWMC-17, LWMC-19, and LWMC-22. See also Master Response 4, The Agency Act and Return Water, Section 8.2.4.3 as well as EIR/EIS Appendix E3.

References

Geoscience Support Services, Inc. (Geoscience), 2016. *Monterey Peninsula Water Supply Project, Test Slant Well Long Term Pumping Monthly Monitoring Report No. 7, 1-May-16 - 31-May-16*, June 15.

State Water Resources Control Board (SWRCB), 2013. *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*. July 31.

8.6.14 Responses to Comments from Pebble Beach Company

PBC-1 As described in EIR/EIS Section 2.3.3.1, water entitlements totaling 380 afy were granted by the MPWMD to the Pebble Beach Company and the other fiscal sponsors of the wastewater reclamation project; the wastewater project saves substantially more water than the water entitlements represent. Because MPWMD has issued water permits associated with this entitlement, counting the total amount of the entitlements along with existing water demand would double count some water use associated with the entitlements. For the reasons discussed in Section 2.3.1.3, the EIR/EIS analysis assumed that of the 380 afy, entitlements totaling about 325 afy would not be reflected in existing service area demand; this amount was included with existing demand and other demands the MPWSP is proposed to meet. In response to this comment and comments from MPWMD, as well as the SWRCB's recognition of the Pebble Beach water entitlements in the CDO, the discussion of Pebble Beach water entitlements in the EIR/EIS has been revised to show that the remaining Pebble Beach entitlements are considered existing service area demand that CalAm is obligated to serve with or without the project. The Chapter 2 discussion of the Pebble Beach entitlements has therefore been moved from the aforementioned Section 2.3.3.1 to Section 2.3.1.3 of the Final EIR/EIS and other associated text revisions have been made throughout the EIR/EIS.

PBC-2 See response to comment PBC-1.

PBC-3 See response to comment PBC-1. Revisions to Section 6.3 recognize that the entitlements represent an existing obligation by CalAm to serve the associated properties, with or without the proposed MPWSP; that lack of water is not an obstacle to their development; and that water for these entitlements would therefore not be growth-inducing. These revisions do not affect the overall significance conclusions in Section 6.3.

PBC-4 In response to this comment and recognition that neither MPWMD nor Monterey County have the authority to reassign the water entitlements or reallocate the associated water supply, the second paragraph under "Assumptions Regarding Allocation and Use of MPWSP Water Service Capacity" in Section 6.3.5.1 has been deleted. These revisions do not affect the overall significance conclusions in Section 6.3.

8.6.15 Responses to Comments from Point Blue Conservation Science

Point Blue-1 In response to this comment, the following text revisions have been made in the "Subsurface Slant Wells" discussion in Impact 4.6-1 in EIR/EIS Section 4.6.5.1:

> The beach north and south of the site is subject to ~~relatively little~~ some disturbance from humans or dogs~~, and~~; however, birds can ~~readily use~~ access these areas during construction.

and,

> Construction activities may temporarily displace birds that typically winter along the beach near the western portion of the Source Water Pipeline. ~~However, there is abundant, relatively undisturbed h~~ Habitat is available~~, located~~ on the beach and in the dunes north and south of the project area ~~that is available~~ for wintering use during construction.

Point Blue-2 Draft EIR/EIS (page 4.6-136 in Impact 4.6-1) acknowledges that impacts on western snowy plover habitat are anticipated to be significant. Additionally, Draft EIR/EIS text has been revised to clarify that impacts would occur on both nesting and wintering western snowy plover habitat. See also response to comment CURE-Owens-13 in Section 8.6.2.

Point Blue-3 CEQA and NEPA require that potential project impacts be analyzed compared to existing (baseline) conditions (see Master Response 10, Environmental Baseline under CEQA and NEPA, for further discussion). Based on these existing conditions, which include ongoing coastal erosion, the Draft EIR/EIS (page 4.6-136, Impact 4.6-1) acknowledges that impacts on western snowy plover habitat are anticipated to be significant. See EIR/EIS Appendix C2 for an analysis of projected beach profiles under potential future conditions; both sea level rise and ongoing coastal erosion were considered and act in concert to move beach profiles inland, such that average beach width is anticipated to be maintained in this location; see EIR/EIS Figures 4.2-7 and 4.2-8 which show the anticipated beach profiles over time. As the bluff erodes, it maintains the beach width, as described in Impact 4.2-10.

Point Blue-4 Mitigation Measure 4.6-1d in EIR/EIS Section 4.6 requires restoration of temporarily impacted habitat and compensation for permanent loss of habitat. This measure has been revised to include performance standards to ensure that the restoration and compensation areas meet certain standards relative to the condition of the impacted area. The newly added performance standards require that native vegetation cover be at least 70 percent of baseline, and that no net increase in invasives occurs. These are consistent with Point Blue's recommendations. These

compensation requirements would be described in the Habitat Mitigation and Monitoring Plan (HMMP) required in Mitigation Measure 4.6-1n. See Final EIR/EIS Section 4.6 for the revised Mitigation Measure 4.6-1n. The HMMP will describe the restoration and compensation requirements for impacts on all special-status species and sensitive habitats as described in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1o, and 4.6-2b. Each of these measures describes the restoration and compensation requirements, including performance standards for each species. Restoration and compensation requirements will be specific to each species, although some requirements may overlap.

Point Blue-5 Based on consultation with USFWS, Mitigation Measure 4.6-1d in EIR/EIS Section 4.6 has been revised to no longer include an option to contribute funds to an existing restoration program because this would not likely be a feasible option that would approved by local jurisdictions and regulatory agencies; therefore, the recommendation to require that such a restoration program be located in an area where recreational impacts on plovers are adequately managed no longer applies to this measure. Nonetheless, in response to this comment, the measure has been revised to ensure that the Habitat Mitigation and Monitoring Plan (as described in Mitigation Measure 4.6-1n) will include measures to manage recreational activities to benefit western snowy plover.

Point Blue-6 The revised Mitigation Measure 4.6-1d specifies a 3:1 compensation ratio. This ratio has been revised for consistency with permitting application documents, which specify a 3:1 compensation ratio, which is assumed to be the minimum that USFWS will require to compensate for permanent impacts.

8.6.16 Responses to Comments from Public Trust Alliance

PTA-1 The issues raised in this comment are discussed in Master Response 13, Demand (Project Need) and Growth, under the headings "Existing Annual Service Area Demand," "Supply Assumptions," and "Water Available for Growth."

PTA-2 The EIR/EIS does not ignore the analysis prepared by MPWMD with respect to hospitality sector rebound demand. See response to comment MPWMD-59 in Section 8.5.7 for a discussion of MPWMD's range of results, of which 194 afy is the lowest, and the EIR/EIS' consideration of this analysis.

There are two distinct ways in which the EIR/EIS uses estimates of demand to analyze the project. The first is to evaluate the project *as proposed by CalAm* to determine its potential environmental effects, including potential growth-inducing effects. As noted in Section 2.3.2.1, which describes CalAm's estimate as part of the basis for sizing the project as proposed, the MPWMD's direct testimony to the CPUC in February 2013 concluded that CalAm's estimate of demand related to tourism rebound (i.e., 500 afy) was reasonable. However, that section of the EIR/EIS also acknowledges that this estimate may be too high, and refers readers to the analysis of growth inducement in Section 6.3. As discussed in EIR/EIS Section 6.3.5.1, in addition to considering MPWMD's analyses of commercial sector demand, the EIR/EIS preparers conducted an independent analysis that included several comparisons, and concluded that the increased demand associated with economic recovery of the hospitality industry could be closer to 250 afy, and thus assumed that the remaining 250 afy of CalAm's estimate of 500 afy could in fact be available for new development, rather than recovery. Thus, in its analysis of the potential impacts of the project as proposed, the EIR/EIS does not rely solely on CalAm's estimates of demand. The estimates used in the growth inducement analysis are supported by substantial evidence including MPWMD's analysis and the independent analysis undertaken for the EIR/EIS.

The second way the EIR/EIS uses demand estimates is to determine whether feasible alternatives exist that would meet most of the basic objectives of the project, which requires an analysis of the reasonableness of – and assumptions supporting – those objectives. As discussed in Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.5, a sensitivity analysis was conducted to determine if using 250 afy instead of 500 afy, in addition to other adjustments in demand, could support the approval of a smaller desalination plant than proposed. Further, as also discussed in Master Response 13, additional analysis prepared for this Final EIR/EIS suggests that 500 afy is a reasonable estimate of increased demand that could occur under a fully recovered economy at existing commercial businesses, industries, and institutional/public sector uses. Regarding elasticity of demand, as used in the EIR/EIS the term occupancy rates refers to the occupancy levels or use rates (e.g., the relative proportion of occupied to unoccupied lodging rooms or restaurant seats at visitor-serving businesses), not the prices of rooms ("room rates") or restaurant meals.

PTA-3 See the discussion of Table 13 water rights under the heading "Supply Assumptions" in Master Response 13, Demand (Project Need) and Growth. Note also that 12,270 afy was used to represent demand of existing customers, as discussed in Master Response 13 under "Existing Annual Service Area Demand." The EIR/EIS does not assume that demand would be higher in wet years than in normal water years; an extended rainy season in wet years can reduce outdoor irrigation needs, reducing water demand for that purpose. The basis for the assertion that "the DEIR does incorporate increased demand during wet years" is unclear. However, following the end of a drought, some relaxation of voluntary, temporary (behavioral) conservation efforts could lead to somewhat higher demand than during a drought. Operation of the ASR system is predicated on water being available for storage in wetter periods or years for use in dryer periods or dryer years. Although the SWRCB's CDO currently requires CalAm to use any Carmel River water diverted to ASR storage within the same year so that available ASR water is used to reduce unlawful diversions from the Carmel River, when CalAm is no longer unlawfully diverting Carmel River water (e.g., following implementation of a new water supply project such as the MPWSP), CalAm will be allowed to manage carry-over storage for greater flexibility in operating the ASR system. The ASR system could then be used to store water over a period of years for use in dry years

PTA-4 See responses to comments MCWD-168 and MCWD-170 in Section 8.5.2.

PTA-5 EIR/EIS Section 6.4, Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines, states that the guidelines are *non-regulatory guidelines* (italicized for emphasis) developed to help ensure that any future desalination plants in the Sanctuary would be sited, designed, and operated in a manner that results in minimal impacts on the marine environment. The consistency assessments included in Section 6.4 are meant to assist the Superintendent of MBNMS with decision-making concerning the special use permit and permit authorizations and any terms or conditions that may be necessary to ensure that MBNMS resources are protected. Response to comment Marina-151 in Section 8.5.1 addresses maximization of wastewater recycling. Regarding mitigation of greenhouse gas emissions, see responses to comments PTA-11 and PTA-12, and regarding the comment about sea level rise and potential erosion, see response to comment PTA-6, below.

PTA-6 As summarized in Section 4.2.1.3 of the EIR/EIS and described in more detail in Appendix C2, Analysis of Historic and Future Coastal Erosion with Seal Level Rise, the sea level rise projection used to assess the proposed project is based on the 2013 state guidance. NRC (2012) projects an upper range of sea level rise of 66 inches by 2100.

The comment's reference to "the Assessment Report from the IPCC from 2016" is unclear, and no specific citation is provided in the letter. The International Panel on Climate Change (IPCC) 2014 report is the IPCC's Fifth Assessment Report. The IPCC

is currently working on its sixth Assessment Report, which is scheduled for completion in 2022. As per the IPCC's press release of April 28, 2017: "[Assessment Report] 6 will assess scientific findings that have been published since the IPCC's last comprehensive report, the Fifth Assessment Report (AR5), which was completed in 2014" (IPCC, 2017). The Lead Agencies are not aware of and were unable to locate an IPCC Assessment Report from 2016 that has bearing on this comment.

EIR/EIS Figure 4.3-1 shows "Surface Water Resources in the Project Area" and does not reference sea level rise. Rather, Figure 4.3-3, "Areas Subject to Sea Level Rise in the Project Area," shows areas subject to sea level rise in 2100, referencing a 2009 report by The Pacific Institute cited in Section 4.3, Surface Water Hydrology and Water Quality.

The summary of the IPCC Fifth Assessment Report on Draft EIR/EIS page 4.3-15 is revised to clarify that the report actually states that up to 7 meters is potentially possible over a millennium or more (not by 2099) and that realizing this amount of sea level rise would require near-complete collapse of the Greenland ice sheet (which is dependent upon the amount of future warming and not certain to occur). Some of this qualification was included in the Draft EIR/EIS's footnote 16 on page 4.3-15. This statement has been revised in the Final EIR/EIS, as follows:

> The more recent Assessment Report predicts mean sea level could, depending on future emissions, ~~to~~ rise by up to 7 meters (23 feet) over a millennium or more, assuming near-complete loss of the Greenland ice sheet ~~globally by 2009~~ (IPCC, 2014, p. 12).~~16~~

The associated footnote 16 has been deleted to avoid repetition.

One of the citations on Draft EIR/EIS page 4.3-15, the National Research Council (NRC) *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012), was and remains the latest available federal study of the sea level science and projections specific to the west coast. The findings from this report were adopted by California as official state guidance (California Ocean Protection Council, 2013). Therefore, the EIR/EIS's use of the sea level rise projections from the NRC (2012) study was consistent with current state guidance and adopted best available science at the time of its publication (see below regarding recent updates to state guidance).

As indicated by the three references for sea level rise predictions in EIR/EIS Section 4.3.1.4 (i.e., IPCC, 2014; NRC, 2012; and Pacific Institute, 2009), there is a range of sea level rise projections, and these projections continue to be updated in response to new observations and scientific analysis. For all sea level rise projections, the uncertainty increases as more distant future times are considered. Thus, the difference between 2100 sea level rise projections of 55 inches (Pacific Institute, 2009) and 66 inches (NRC, 2012) is probably best viewed as reflecting inherent uncertainty about the future. These two projections are based on different information and

assumptions, and due to uncertainty, it is not possible to say one particular projection of sea level rise, particularly when considered to the nearest inch, is "best." This uncertainty stems from the unknowable future greenhouse gas (GHG) emissions and the climate's response to these scenarios.

Since the preparation of the Draft EIR/EIS, new scientific studies of sea level rise projections have been released. In preparation for the 2018 updates to the state's sea level rise guidance (California Ocean Protection Council, 2017), California agencies reviewed the latest sea level rise projections (Cayan et al., 2016; Griggs et al., 2017). These recent studies confirm that the expected range of sea level rise by 2100 is within a range of 3 to 6 feet, similar to the NRC (2012) projections of 17 to 66 inches cited in the Draft EIR/EIS. In addition to the expected range, the studies acknowledge that an extreme sea level rise scenario, resulting from rapid ice sheet loss, cannot yet be ruled out, and could result in sea level rise of nearly 10 feet by 2100. Although current science cannot resolve the likelihood of this extreme scenario, these recent studies do provide new assessments in the form of probability estimates for projected sea level rise. For the highest GHG concentration scenario, Cayan et al. (2016) estimates that 2100 sea level rise has a 50 percent probability of exceeding 4.5 feet and 0.5 percent probability of exceeding 8.6 feet. Similarly, Griggs et al. (2017) estimates that 2100 sea level rise has a 50 percent probability of exceeding 2.5 feet and 0.5 percent probability of exceeding 5.9 feet. Note that both these cases are for the scenario in which GHG emissions continue to rise through 2100, and therefore represent no or little reduction in present-day emission trends. If GHG emissions are reduced, as proposed in the international Paris Agreement of 2015, GHG concentrations and hence sea level rise will likely be less.

With respect to the specific instance of sea level rise analysis as applied to the MPWSP in Figure 4.3-3, this figure is intended to indicate the regional extent of potential coastal hazards by 2100. To do so, the figure includes the available regional coastal hazard mapping, which is from the Pacific Institute (2009). At the time of the Pacific Institute study, the upper range of sea level rise was projected to result in 55 inches by 2100. Since the hazard zones in this figure are for 2100, and are based on the upper range of sea level rise projections, this figure adequately represents the potential coastal flooding facing the MPWSP project.

For the trajectory that arrives at 66 inches by 2100 (NRC, 2012), the projected sea level rise by 2060 is 28 inches (Table 4, Appendix C1). This 28 inches of sea level rise is used in the coastal erosion analysis in Appendix C2. In the coastal erosion analysis, sea level rise is not only assumed to increase mean water levels, but also to accelerate sand dune erosion faster than historic erosion rates and to bring the potential erosion from the 100-year storm event further inland. In its review of the coastal erosion analyses in Appendix C2, another coastal engineering firm found the approach of Appendix C2 to be reasonable and the resulting erosion predictions to be conservative in their predictions of maximum possible landward erosion extents (Sea Engineering, 2014).

As discussed above, the amount of sea level rise used to assess potential impacts is consistent with the upper end of the projected sea level rise range. Therefore, the EIR/EIS does not underestimate the degree to which structures may be exposed to erosion and flooding.

The slant wells would be buried underground, and therefore not subject to surface flooding. The well head vaults would be located above 30 feet NAVD as shown in Figures 4.2-7 and 4.2-8. The present-day base flood elevation for the 100-year coastal event, including wave run-up, is 18 to 21 feet NAVD (FEMA, 2017). Therefore, the well head vaults would not be exposed to coastal flooding hazard for the upper range of projected sea level rise, which is 28 inches or 2.3 feet by 2060.

The potential coastal erosion, including accelerated erosion due to the upper range of projected sea level rise and 100-year storm events up to 2060, was mapped horizontally and vertically. As shown in Figure 4.2-7, the test well head vault may be exposed to erosion at 2060 in the event of a 100-year storm event. As shown in Figure 4.2-8, the well head vaults for the main set of slant wells are not expected to be exposed to erosion at 2060 even for the upper range of sea level rise and a 100-year storm event. As per Mitigation Measure 4.2-9, Slant Well Abandonment Plan, coastal erosion would be monitored by CalAm annually, and when any of the slant wells may be exposed within 5 years, CalAm would be required to prepare a plan for abandoning the threatened wells. The threatened wells would be abandoned according to well destruction standards and regulatory permitting requirements. Sea walls would not be used to adapt the slant wells to coastal erosion.

As noted by Cayan et al. (2016) and Griggs et al. (2017), the possibility of an extreme sea level rise scenario that exceeds the upper range of expected projections cannot yet be ruled out. Under an extreme scenario, sea level rise could reach 9.3 feet by 2100 (Griggs et al., 2017). In the event that this scenario comes to pass, most of the sea level rise would occur in the second half of the 21st century. Therefore, even for the most extreme (and therefore very unlikely) sea level rise scenario, the main wells are not likely to face erosion during most or all of their functional lifespan, and if exposure does become likely to occur, Mitigation Measure 4.2-9 would address this.

PTA-7 See the discussion under “Impacts of Growth” in Master Response 13.

PTA-8 See the discussion under “Water Available for Growth” in Master Response 13.

PTA-9 CEQA Guidelines Section 15126.2(a) requires analysis of the significant environmental impacts of a project and Section 15126.2(d) requires consideration of a project’s growth-inducing impacts. Chapters 4 and 5 of the EIR/EIS evaluate the environmental impacts of the MPWSP and MPWSP alternatives, respectively, including the direct growth-inducing impacts of project construction and operation, while Section 6.3 evaluates the indirect growth-inducing impact of the water supply provided by the project. Therefore, Section 4.8.5 evaluates the effects of project construction and

operation (e.g., construction and operation of the slant wells, desalination plant, pipelines and related infrastructure) on land use and recreation consistent with the significance criteria provided in Appendix G of the CEQA Guidelines and NEPA guidance, relying on and consistent with conclusions in EIR/EIS Section 4.19 regarding the project's potential direct growth-inducing impact, while as shown in Table 6.3-9, growth indirectly induced by the project water supply would result in significant traffic, land use, and recreational impacts. These separate conclusions regarding direct and indirect impacts are not contradictory, and are addressed in separate sections of the EIR/EIS because the cause of growth inducement (i.e., direct employment vs. water supply) differs substantially and merits separate, in-depth discussion. The significant traffic, land use, recreational, and other impacts described in Section 6.3 that were identified in the General Plan CEQA documents of jurisdictions that would be served by the project are the basis for the EIR/EIS's conclusion that the project's indirect growth inducing impact would be significant and unavoidable.

PTA-10 See the discussion under "Impacts of Growth" in Master Response 13.

PTA-11 Subsequent to the release of the Draft EIR/EIS, Greenhouse Gas (GHG) Emissions Mitigation Measure 4.11-1 has been revised to include a net zero indirect operational GHG emissions requirement for project-related electricity use (see response to comment USEPA-4 in Section 8.3.5 for specific revisions to this measure, and Impact 4.11-1 discussion in Final EIS/EIR Section 4.5.11 for revised discussion based on this measure). The first item identified in the revised measure's emission reduction loading order is for CalAm to obtain renewable energy from on-site solar photovoltaic (PV) panels and/or from the adjacent Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility. Any remaining indirect emissions associated with electricity use would be off-set through procurement of renewable energy from off-site sources, procurement and retirement of Renewable Energy Certificates, and/or procurement and retirement of carbon offsets.

PTA-12 As described in EIR/EIS Section 4.18.5.2, the analysis of project-related operational energy demand considers the change in total system-wide demand with the project compared to baseline system-wide energy consumption. Thus, the analysis does not "assume that none of the existing supplies and operations would be ongoing," rather, it properly analyzes the change compared to baseline (baseline consumption is not attributable to the project and therefore is not a project impact). The comment is unclear regarding which significance criterion is alleged to have been disregarded; all evaluation criteria listed in Chapter 4 have been evaluated as described in individual resource sections. With respect to Mitigation Measure 4.11-1 for GHG impacts, see response to comment PTA-11. Revisions to this measure include enforceable performance standards and a suite of feasible options for achieving such standards, and do not constitute deferral of mitigation.

PTA-13 The comment does not specify the source of "CARB's mandates to employ less energy intensive water infrastructure;" however, EIR/EIS Section 4.11.2.2 describes CARB's action measure W-3: Water System Energy Efficiency, from the Climate Change Scoping Plan. With this measure, CARB has set a 20 percent energy use reduction target from 2006 levels. The GHG Emissions Reductions Plan that would be implemented pursuant to Mitigation Measure 4.11-1 would include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible. This provision of the mitigation measure is consistent with the intent of CARB's Measure W-3; however, as explained in Impact 4.11-3, the CPUC cannot substantiate that the proposed project's electricity use would be reduced by 20 percent. As described in response to comment PTA-11, above, Mitigation Measure 4.11-1 has also been revised to include a net zero indirect operational GHG emissions requirement for project-related electricity use, which is consistent with the comment's recommendation to obtain or produce onsite sufficient renewable power to reduce emissions below the 2,000 metric tons CO_2e per year threshold.

PTA-14 The California Constitution is not a plan or policy against which the project must be judged. Nonetheless, it is not expected that the project would be inconsistent with Article X, Section 2 of the Constitution, which states in pertinent part:

> [T]he general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.

There is no basis to conclude that use of seawater, with an incidental amount of brackish water, is a waste or unreasonable use of water. Indeed, the development of the new water source can be characterized as a reasonable and beneficial use of water. See Master Response 3, Water Rights, for additional discussion.

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8.6.17 Responses to Comments from Public Water Now

8.6.17.1 Responses to Comments from Public Water Now – Letter 1

PWN1-1 The California Energy Commission is not listed in EIR/EIS Table 3-8 (Anticipated Permits and Approval) because they do not have any permit authority over the proposed MPWSP. The discussion of the planned retrofit of the once-through cooling system at Moss Landing Power Plant, and the cumulative effects of the retrofit for each alternative in Chapter 5.4 that include an open water intake at Moss Landing, was not omitted, but is discussed for these alternatives as follows:

- Alternative 2 in Section 5.5.5.5 on Draft EIR/EIS page 5.5-120,
- Alternative 3 in Section 5.5.5.6 on Draft EIR/EIS page 5.5-125, and
- Alternative 4 in Section 5.5.5.7 on Draft EIR/EIS page 5.5-128.

For clarification, the planned retrofit of the once-through cooling system at Moss Landing Power Plant has been added to Table 4.1-2 and Figure 4-1 as cumulative project No. 60, and the text in Section 5.5.5 been revised to acknowledge that the planned retrofit by the power plant would not offset the significant adverse cumulative impact attributable to entrainment and impingement at the Moss Landing alternatives that propose to use screened open water intakes. However, because the MPWSP would result in no impingement or entrainment of fish or invertebrate species (as discussed on Draft EIR/EIS pages 4.5-52, 4.5-53, and 4.5-68), the planned retrofit of the once-through cooling system at Moss Landing Power Plant is not included in the cumulative impact analysis for the MPWSP.

This clarification results in no changes to the conclusions regarding the cumulative effects of the MPWSP or alternatives.

PWN1-2 The Sustainable Groundwater Management Act (SGMA) is discussed in the Draft EIR/EIS Section 4.4.2.2 on page 4.4-37. See also Master Response 6, The Sustainable Groundwater Management Act.

PWN1-3 The comment is not clear regarding what authority the CPUC may claim as superior to local governments, or what other materials may have been omitted that could support other options. See response to comment PWN1-2 and Master Response 6 regarding the relationship of the SGMA to the project.

8.6.17.2 Responses to Comments from Public Water Now – Letter 2

PWN2-1 The water supply challenges facing the Monterey Peninsula have been documented in the Draft EIR/EIS in several places. Section 1.3 (Project Objectives and Purpose and Need), describes the overdrafting of the Carmel River and the Seaside Basin, SWRCB Order 95-10, and the Monterey County Superior Court Adjudication; the order and the adjudication are further discussed in Section 2.2.3 and Section 2.2.4, respectively. The MPWSP objectives, and purpose and need, are discussed again in

the alternative analysis at Section 5.1.2.1. CalAm's history of proposing water supply projects in response to these challenges, including the New Los Padres Dam and Reservoir, the Carmel River Dam and Reservoir, and the Coastal Water Project (and the North Marina Project and the Regional Project) are discussed in Section 5.2.

PWN2-2 The conflict of interest issue is discussed in the Draft EIR/EIS in Section 1.4.3, which notes that the CPUC made the groundwater data files available for public review, and the CPUC employed the Lawrence Berkeley National Laboratory to conduct an independent evaluation of that data. The results of that evaluation were provided in Appendix E1. See also Master Response 5, The Role of Hydrogeologic Working Group (HWG) and its Relationship to the EIR/EIS, which addresses this issue among other issues related to this group.

PWN2-3 See Master Response 2 regarding source water components and definitions. The proposed slant wells are described in Draft EIR/EIS Section 3.2.1.1 and are shown on Figures 3-3a and 3-3b, including a table with lengths of proposed well casing above and below mean high water. See also Table 3-2, which shows the lengths of permanent slant wells seaward of mean high water.

PWN2-4 See Master Response 11 regarding the test slant well. Specifically, Section 8.2.11.2 describes the City of Marina's review process and that the city declined to adopt its *Draft Initial Study and Mitigated Negative Declaration for the California American Water Slant Test Well Project.* Section 8.2.11.3 describes the California Coastal Commission CEQA review process for the test slant well. In response to this and other similar comments, footnote 2 in the Executive Summary (and other locations where similar text appears in the EIR/EIS) has been revised to clarify these agencies' actions and processes regarding consideration of the test slant well.

PWN2-5 The impacts from the MPWSP on the groundwater resources of the Salinas Valley Groundwater Basin (SVGB) are not ignored. Potential impacts on groundwater resources in the SVGB, as well as water rights related to other users of the basin, are clearly identified as an area of controversy in the Executive Summary. The impacts of the proposed project on the groundwater elevations in the SVGB, and the area that is the MCWD Service Area, are presented as drawdown contour maps in the Draft EIR/EIS and are discussed in Section 4.4, Groundwater Resources. See also Master Response 14, CEMEX Settlement Agreement, regarding impacts on future water supply.

PWN2-6 The Draft EIR/EIS concludes in Section 4.4.5 (Direct and Indirect Effects of the Proposed Project) that impacts on the groundwater basin would be less than significant and the water resources of the MCWD and the City of Marina would not be jeopardized. The Applicant Proposed Measure described at the end of Impact 4.4-3 recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB. So, as part of the project, CalAm proposes to work

with the Monterey County Water Resources Agency to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by 1 foot or more plus 1 mile, and to make whole any pumper who is affected by project pumping, including MCWD. This Applicant Proposed Measure is detailed in the Draft EIR/EIS at page 4.4-74.

PWN2-7 See response to comment PWN2-3.

PWN2-8 The Draft EIR/EIS explains in Section 5.3.1.1, SWRCB and the California Ocean Plan, that the SWRCB prefers subsurface intakes, but allows surface water intakes where subsurface intakes are not feasible or economically viable. A citation to the Ocean Plan, which defines terms, was provided in that section (Draft EIR/EIS page 5.3-2). However, for clarification, the definition of "feasible" from the Ocean Plan is provided as a revision in Final EIR/EIS Section 5.3.1.1, as follows:

> Section 13142.5 of the California Water Code requires new or expanded coastal industrial facilities, including desalination plants, to use the "best available site, design, technology, and mitigation measures feasible" to minimize the intake and mortality of marine life. The SWRCB prefers subsurface intakes, but allows surface water intakes where subsurface intakes are not feasible or economically viable. For the purposes of Water Code Section 13142.5(b) and implementation of the Ocean Plan, "feasible" means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" as defined in Appendix I of the Ocean Plan. (SWRCB, 2016)

Because this definition of "feasible" is the same as that used under CEQA, this revision causes no change in the consideration of which alternatives are feasible in the EIR/EIS. The Draft EIR/EIS presents the CEQA requirements for alternatives analyses and provides a citation to CEQA Guidelines Section 15126.6 and the corresponding definition of "feasible" in Section 5.1.1.1 (Draft EIR/EIS pages 5.1-2 and 5.1-3).

In Section 5.2, Alternatives Not Evaluated in Detail, ". . . projects were determined to be politically, legally, economically, or technically infeasible." In Section 5.3, Alternatives Development, Screening and Evaluation Process, the Draft EIR/EIS explains in Footnote 6 that, "NEPA requires alternatives to be reasonable, or feasible, which could include consideration of whether the alternative is capable of complying with regulations governing desalination plants in order to receive the required regulatory approval."

PWN2-9 See Master Response 5, which addresses two separate conflict of interest issues related to Geoscience and Dennis Williams, and clarifies the role of the HWG in relation to this EIR/EIS. See also response to comment PWN2-2.

PWN2-10 EIR/EIS Section 1.3.1.1 describes the three federal actions that may be taken by MBNMS on the proposed project, including authorization of a Coastal Development Permit to be issued by the City of Marina for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface source water intake system. It does not address the approval process that was appealed to the CCC following the City of Marina's denial of the Coastal Development Permit (CDP) for the test slant well. See response to comment PWN2-4.

PWN2-11 Footnote 4 in the Draft EIR/EIS qualified the word "pipeline" in one of the federal proposed actions that MBNMS will take on the proposed MPWSP: "issuance of a special use permit to CalAm for the continued presence of a pipeline conveying seawater to a desalination facility." If the pipeline(s) did not extend seaward of the mean high water line, MBNMS would not require this permit. Regarding the location of slant well screens and the nature of source water for the MPWSP, see Master Response 2. As to the issue of water rights, please see Draft EIR/EIS Section 2.6, as well as Master Response 3, Water Rights.

PWN2-12 Footnote 5 on Draft EIR/EIS page 1-8 compares the North Marina Project, not the MPWSP, to the Coastal Water Project. For clarity, the footnote has been revised as follows:

> "The key differences between ~~this~~ the North Marina Project alternative . . ."

PWN2-13 The project setting and background discussion in Draft EIR/EIS Section 1.4 provides context about a project that is no longer under consideration. For clarity, the sentence has been revised as follows: "It included vertical ~~seawater~~ intake wells on coastal dunes located south of the Salinas River and north of Reservation Road." Regarding definitions and composition of source water for the MPWSP, see Master Response 2.

PWN2-14 In addition to being available at the CPUC in San Francisco, the Draft EIR/EIS was available for review at these locations in the project area:

- MBNMS, 99 Pacific Avenue, Building 455a, Monterey
- Castroville Public Library, 11160 Speegle Street
- Marina Public Library, 188 Seaside Avenue
- CSU Monterey Bay Library, 100 Campus Center, Seaside
- Seaside Public Library, 550 Harcourt Avenue
- Carmel Valley Public Library, 65 W. Carmel Valley Road
- City of Marina Community Development Department, 209 Cypress Avenue
- City of Seaside Community Development Division, 440 Harcourt Avenue
- MCWRA, 890 Blanco Circle, Salinas
- MPWMD, 5 Harris Court, Monterey
- MRWPCA, 5 Harris Court, Monterey

The Draft EIR/EIS also was made available online at http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html and at www.regulations.gov/#!docketDetail;D=NOAA-NOS-2016-0156. Information about the availability of the document to review in person or online was provided in public notices for the availability of the Draft EIR/EIS. All supporting documents referenced in the Draft EIR/EIS were made available online at https://drive.google.com/drive/u/2/folders/0B63ty1hxcSNhV2JvMU15UW9VcHc, also accessible via https://tinyurl.com/MPWSPRefs. This link was provided on the CPUC website for the project.

The Coastal Water Project (CWP) is no longer under consideration and the Final EIR for that project is relevant to the MPWSP only in the context of background on projects that preceded the current application. Therefore, print copies of the CWP Draft and Final EIR (2009) are available for public review at the CPUC in San Francisco, with prior arrangements. Additionally, the commenter requested a copy of the CWP Final EIR on September 20, 2016, and a CD was immediately provided to the commenter by US Mail.

PWN2-15 Draft EIR/EIS, Section 1.4.1 introduces the Coastal Water Project, while Section 1.4.2 introduces the MPWSP and explains how it is different from the Coastal Water Project. The commenter does not provide evidence to support the opinions and judgements expressed in the comment. Water rights are addressed in Master Response 3, and a significant and unavoidable impact with respect to inconsistency with the City of Marina's Local Coastal Land Use Plan was identified in Draft EIR/EIS Section 4.6, Terrestrial Biological Resources.

PWN2-16 See response to comment PWN2-4 and Master Response 11.

PWN2-17 Regarding the use of per capita demand to estimate overall service area demand, see the discussion "Other approaches to estimating future water demands" in Section 8.2.13.1 of Master Response 13, Demand (Project Need and Growth). The comment cited Draft EIR/EIS Section 2.3.3.2, Hospitality Industry Rebound, which addresses changes in demand at hospitality-related businesses that could occur under an improved economy, not residential or dwelling unit water use. An increase in demand at such businesses would result from increased occupancy rates at area businesses absent any physical expansion. Therefore, the approach taken in the Draft EIR/EIS to assess the effects of the recession – by reviewing changes in commercial sector water consumption before and since the recession started – was an appropriate and reasonable approach to gage the effect of the recession and thereby the degree to which water consumption could increase under an improved economy. For clarification, the discussion of the comparisons of commercial sector water consumption presented in the Draft EIR/EIS has been expanded in this Final EIR/EIS (see Section 6.3.5.1 of Final EIR/EIS). In response to a comment by MPWMD, the analysis of commercial sector water consumption before and since the recession started was expanded to include the industrial and public authority

sectors. See the discussion in Section 8.2.13.1 of Master Response 13, associated with economic recovery, for more information.

PWN2-18 See response to comment LWMC-4 in section 8.6.13, which explains that CalAm's Monterey District includes more than the main distribution system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems, resulting in the different descriptions of service population.

PWN2-19 Draft EIR/EIS Section 2.3.4 presents information from CalAm's Monterey District Urban Water Management Plan for informational purposes, as stated on Draft EIR/EIS page 2-15. The Management Plan, not the Draft EIR/EIS, assumed a rate of 115 gallons per capita per day for purposes of estimating future water demand while the Draft EIR/EIS used historical water use for the estimates of peak demand. The Management Plan estimate of per capita demand was provided as insight into CalAm's expectations regarding population growth and water demand in the Monterey District. Note also that Appendix K describes the residential per capita water usage in the area reported to the state during the drought emergency, not gross per capita usage presented in the Management Plan. Regarding the suggestion to use residential per capita water use to estimate the project's growth inducing impact, refer to the discussion of "Other approaches to estimating future water demands" in Section 8.2.13.1 of Master Response 13.

PWN2-20 The comment is unclear as to the source of the "theory that MPWSP wells will draw more groundwater toward the pumping locations." As described in the cited reference and explained in Draft EIR/EIS Section 2.5.1, the MPWSP wells would draw less groundwater over time, not more, as evidenced by the increase in salinity measured in the test slant well and reported in the publicly available Test Slant Well Monthly Monitoring Reports.

PWN2-21 CalAm would not be allowed to return water to a customer of the MCWD service area because MCWD has exclusive rights to water service within this area. Although CalAm could deliver return water directly to MCWD, as described in the Draft EIR/EIS in Section 2.5.1, the decision to provide the return water to the CCSD was a result of a June 2016 Settlement Agreement by several parties to the proceeding. CEQA Guideline Section 15126.6(f)(3) states that an "EIR need not consider an alternative . . . whose implementation is remote and speculative."

PWN2-22 Water districts and facilities that provide drinking water to residents and businesses in the project area are presented in Draft EIR/EIS Section 4.13.1.4 and include MCWD, CalAm, Seaside Municipal Water System, and the CCSD. While the slant wells and some pipelines would be located in the City of Marina, Draft EIR/EIS Section 3.1 explains the project area extends from Castroville in the north to the City of Carmel in the south, the desalination plant would be located in unincorporated Monterey County, and pipelines would be located in Marina, Seaside, Sand City, Monterey, and Carmel. The SWRCB and the water rights discussion in the Draft

EIR/EIS Section 2.6 focuses on what "harm" may be caused by proposed project pumping regardless of jurisdiction. To that end, known active supply wells within the vicinity of the proposed MPWSP slant wells are identified in Table 4.4-10 (including the MCWD wells), their impacts on groundwater are discussed in Section 4.4.5.2, and their location relative to project-induced drawdown is shown on Figure 4.4-15, Figure 4.4-15, and Figure 4.4-16.

Regarding water rights and related questions of project feasibility, see Master Response 3. The issue of ratepayer liability is outside the scope of CEQA and NEPA requirements; however, as described in Draft EIR/EIS Section 1.5.4.1, the CPUC decision to grant or deny a Certificate of Public Convenience and Necessity for the project (i.e., project approval) would follow a process after certification of the EIR during which the Commission will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. Therefore, comments regarding ratepayer liability are relevant to and will be considered as part of that proceeding.

PWN2-23 The Draft EIR/EIS evaluated returning water to CCSD as well as returning water to the CSIP. Consistent with CEQA Guidelines Section 15126.6(a), an EIR "need not consider every conceivable alternative", as explained in Draft EIR/EIS Section 5.1.1. See also response to comment PWN2-21 and Master Response 4 regarding the Agency Act and return water.

PWN2-24 As explained in the Draft EIR/EIS Appendix A (Notice of Preparation and Notice of Intent Scoping Report) introduction, the CPUC formally began the process of determining the scope of issues and alternatives to be evaluated in the Draft EIR (a process called "scoping") when it issued a Notice of Preparation (NOP) of an EIR for the proposed project on October 10, 2012. In accordance with Section 102(2)(C) of NEPA, the NOAA Office of National Marine Sanctuaries published a Notice of Intent (NOI) to prepare an EIS for the proposed project on August 26, 2015 (80 Fed. Reg. 51787). MCWD submitted comments on the NOP/NOI on October 10, 2015, as detailed in Appendix A at page A-28. The Lead Agencies subsequently contacted MCWD during the preparation of the Draft EIR/EIS in December 2015 and again in March 2016, seeking information about MCWD's proposed plans for desalination or another water supply project, as well as groundwater data from their monitoring wells near Reservation Road. Information from that response is included in EIR/EIS Table 4.1-2 at Project No. 31, Regional Urban Water Augmentation Project (RUWAP) Desalination Element, and is referenced in the table as MCWD, 2016. The MCWD did not have a representative on the HWG because they were not a signatory to the Settlement Agreement that established it.

PWN2-25 See Master Response 11 regarding the test slant well and further modeling; specifically, see Section 8.2.11.5 regarding results of the long-term pump test and Section 8.2.11.6 regarding the use of test results in further modeling. See Master

Response 5 regarding the HWG. The Lead Agencies do not have jurisdiction over this group or the duration of its work.

PWN2-26 The quoted text refers to evidence evolving "throughout" the proceeding; the decision completes the proceeding. See Master Response 11 regarding the use of test slant well data and Master Response 3 regarding water rights. Regarding ratepayer liability, see response to comment PWN2-22.

PWN2-27 The cited text refers to Draft EIR/EIS Section 4.4. As described on Draft EIR/EIS page 4.4-50, the exact quantity of water to be returned annually would vary and would be determined each year using a mathematical formula. For groundwater modeling and impact analysis purposes in the EIR/EIS, it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin. However, the model cannot predict the return water percentage of a given future year, because the model uses historic hydrology, and predicts what would happen if history repeated itself. See also Master Response 4 regarding the Agency Act and return water.

The discussion of causing "no harm" to SVGB water users was provided in Draft EIR/EIS Section 2.6.2, and clarification is provided in Master Response 3, regarding water rights.

PWN2-28 See Master Response 5, Sections 8.2.5.2 and 8.2.5.3, as well as response to comment PWN2-27.

PWN2-29 See Master Response 3 regarding water rights, which explains that the feasibility studies related to establishing water rights are separate from the CEQA/NEPA evaluation process.

PWN2-30 See response to comment PWN2-21 and Master Response 4 regarding the Agency Act and return water.

PWN2-31 See response to comment PWN2-3 regarding Draft EIR/EIS information on well locations and Master Response 2 regarding source water components and definitions, including discussion of the placement of well screens relative to the seafloor and groundwater aquifers. See also Master Response 3 regarding water rights.

PWN2-32 The Draft EIR/EIS Section 3.2.1.1 explains that, "Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin." Table 3-2 provides the length of permanent slant wells seaward of the 2020 Mean High Water line, and that is illustratively shown in Figure 3-3b. The portion of each well that is not seaward of MHW is therefore, landward of the sea. Nothing in this response triggers a need for recirculation per CEQA Guidelines Section 15088.5. See also Master Response 2.

PWN2-33 See response to comment PWN2-32.

PWN2-34 Draft EIR/EIS Figure 3-3a shows both the City of Marina boundary and the Mean High Water (MWH) line at 2020. They are, in fact, different lines. All of the wells would be located within the City of Marina, and their authority over the MPWSP is described in Draft EIR/EIS Section 1.5.4.3. Because some portion of the wells would extend beyond MHW, MBNMS also has authority over the MPWSP, which is described in Draft EIR/EIS Section 1.3.2.

PWN2-35 See response to comment PWN2-4.

PWN2-36 Table 3-2 presents the uncertainty of the effects of coastal retreat relative to the proposed slant wells in 2020, depending on what factors may (or may not) occur. Figure 3-3b is an illustrative cross sectional view of the subsurface slant wells, and also includes a table of well lengths, but only presents the Table 3-2 offshore lengths labeled as 2020 MHW. The comment does not explain what does not line up between the table and figure, and why they do not represent the facts. See also the analysis of historic and future coastal erosion with sea level rise in Appendix C2 of the Draft EIR/EIS.

PWN2-37 See Master Response 11 regarding the test slant well; specifically, see Section 8.2.11.8, New Technology, which discusses the use of slant wells, and Section 8.2.11.9, Slant Well Angle, which discusses the proposed change in drilling angle. Regarding ratepayer liability, see response to comment PWN2-22.

PWN2-38 This response addresses two separate issues mentioned in the comment: CEQA and NEPA baseline, and baseline conditions related to the test slant well and its results. There was no specific report on the CEQA and NEPA baseline; it is integrated into the EIR/EIS. See Master Response 10, Environmental Baseline under CEQA and NEPA.

The HWG prepared a separate baseline report for the test slant well, as described in Master Response 11. It was referenced in the Draft EIR/EIS Section 4.4 as Geoscience, 2015b and continues to be publicly available at: https://docs.wixstatic.com/ugd/28b094_bd1db648e7b44f32a9676dfc7bf71989.pdf

PWN2-39 See Section 8.2.11.9 of Master Response 11.

PWN2-40 Section 4.4.6 includes consideration of the RUWAP Desalination Element (No. 31) in the analysis of cumulative groundwater impacts (see Draft EIR/EIS page 4.4-89).

PWN2-41 See Master Response 11 regarding the test slant well. Specifically, Section 8.2.11.5 describes the long-term pump test. The text cited in the comment does not, nor is it intended to suggest that pumping of the test slant well has been continuous since April 2015.

PWN2-42 The cited statement is true and is provided in the context of Coastal Act policies related to public works facilities (in the Draft EIR/EIS section titled "Public Services and Utilities"). The California Coastal Act Section 30260 encourages coastal-dependent industrial uses to locate within existing sites, as the proposed slant wells would be located within the existing CEMEX site and the Alternative 1 slant wells would be located within an existing parking lot. The Draft EIR/EIS explains consistency with the Marina Local Coastal Land Use Plan (LCLUP) in Section 4.6.2. Specifically, in Table 4.6-4 on page 4.6-105, this issue is summarized as follows: "Installation of the subsurface slant wells, Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main, and maintenance of the subsurface slant wells would occur within special status species habitats (including wetlands and including those defined as primary and secondary habitat in the City of Marina LCLUP). This issue is addressed further in Impacts 4.6-1, 4.6-2, 4.6-3 4.6-4, 4.6-6, 4.6-7, and 4.6-8. Mitigation measures are provided to reduce or avoid impacts on special-status species habitats. However, as described in Impact 4.6-4 at page 4.6-223 and -224, construction of these facilities, and maintenance of the subsurface slant wells, would be inconsistent with the City of Marina LCLUP, a significant and unavoidable impact."

PWN2-43 Draft EIR/EIS Section 4.13 evaluates the potential impacts on public services and utilities resulting from implementation of the MPWSP. The Marina LCLUP does not contain policies specific to the topic of public services and utilities. Consistency with the City of Marina LCLUP is discussed in Section 4.6, Terrestrial Biological Resources, and in other sections as relevant to specific policies in the LCLUP. See also response to comment PWN2-42.

PWN2-44 See response to comment PWN2-8.

PWN2-45 The MBNMS Desalination Guidelines indeed recommend that "desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project. This should include an evaluation of other potential desalination locations and alternatives, as well as other forms of water supply." (NOAA, 2010, Section D.1) The Desalination Guidelines explain that the regional desalination approach "would include consideration of alternative water supply strategies, adjacent jurisdictions, potential for co-locating desalination discharges with discharges from other facilities to minimize impacts, as well as a comprehensive analysis of both site-specific impacts of each proposed plant, and the cumulative impacts associated with having multiple facilities in a region. These impacts would include both potential direct environmental impacts, as well as indirect impacts, such as increased population growth that would be facilitated by providing additional water supplies to a region."

This EIS/EIS describes how the process leading to the proposed MPWSP has been consistent with the spirit of this guideline. As explained in EIR/EIS Section 5.2.1,

CalAm proposed the MPWSP as the result of a multi-year planning effort, during which various entities have proposed several options intended to meet the water supply needs of the Monterey Peninsula. Since the SWRCB issued Order 95-10, CalAm and the MPWMD collaborated to develop ASR Phases 1 and 2; CalAm is working with the City of Sand City in the operation of the Sand City Desalination Plant; and CalAm, the Monterey Peninsula Regional Water Authority (MPRWA, which includes the cities within the Monterey District), and MRWPCA and MPWMD (the partners in the Pure Water Monterey GWR Project), have been working together to promote and support the GWR Project.

CalAm and MCWD were partners on the Regional Project, a CPUC-approved alternative to the Coastal Water Project, described in EIR/EIS Section 1.4.1. EIR/EIS Section 5.2, Alternatives not Evaluated in Detail, describes attempts to develop alternative water supply projects based on greater collaboration with other water suppliers and agencies that have not been successful; Section 5.2.4 explains how the CalAm-MCWD public-private partnership resulted in continuing and ongoing litigation, and how CalAm ultimately withdrew its support for the Regional Project and reapplied to the CPUC for a CPCN for the MPWSP. EIR/EIS Section 5.3 screened and evaluated 13 intake options, seven outfall options, and three desalination plant options for the MPWSP. Sections 5.4. describes two desalination plant alternatives (Alternative 3, the DeepWater Desal Project, and Alternative 4, the People's Project) that would rely on different owners/operators, as well as Alternatives 5a and 5b, that would rely on collaboration between CalAm, and MRWPCA, and MPWMD in order to collectively meet the project objectives. See also response to comment MCWD-188 in Section 8.5.2.

Throughout the current proceeding at the CPUC (Proceeding A.12-04-019), CalAm and several dozen other parties to the proceeding have collaborated over the years on issues such as project sizing, project financing, and alternatives, including the relationship between desalination and the use of recycled water (see EIR/EIS Sections 1.1, 2.1, 2.4, and Project No. 59 in EIR/EIS Table 4.1-2 and EIR/EIS Section 2.5.3.1). CalAm has entered into at least three draft settlement agreements over the years with various parties to the proceeding, including MPWMD, MRWPCA, MCWRA, MPRWA, and CCSD, that address among other things: effects of the proposed project on groundwater resources (see Master Response 5), Salinas Valley Return Water (see EIR/EIS Sections 2.5.1 and 4.20.2.3), and brine discharge monitoring (see EIR/EIS Section 4.3.5.2).

MBNMS continues to recommend that CalAm pursue collaborations with other water suppliers, agencies, and communities regarding regional water supply solutions and will consider past and ongoing collaboration in its decision-making for this project.

PWN2-46 Per capita water use is one, but not the only, or necessarily the optimal, method of estimating future water demands in an area. See response to comment PWN2-19 and the discussion of "Other approaches to estimating future water demands" in Master

Response 13, Section 8.2.13.1. The comment is unclear regarding what data support the claim that one acre-foot per year would support five families; however, the assumptions used in EIR/EIS Section 6.3 are supported by substantial evidence, as cited and explained therein.

PWN2-47 See Master Response 11 regarding the test slant well. Specifically, Section 8.2.11.5 describes the long-term pump test and provides a definition of "long-term" for the purposes of this test.

PWN2-48 See Master Response 11 regarding the test slant well. Specifically, Section 8.2.11.4 describes how the HWG established baseline water and Total Dissolved Solids (TDS) levels in the monitoring wells per Special Condition 11 of the CDP prior to commencement of the long-term pump test.

PWN2-49 See response to comment PWN2-2 and Master Response 5 (Section 8.2.5.5).

PWN2-50 See response to comment PWN2-2 and Master Response 5 (Section 8.2.5.5).

PWN2-51 The conflict of interest issues are addressed in response to comment PWN2-2 and in Master Response 5, Section 8.2.5.5. The HWG members are presented in Master Response 5, Section 8.2.5.2.

PWN2-52 The document cited in the comment, Draft EIR/EIS Appendix C3 at page 50, reports the average salinity for the central California coastal region was calculated at 33.6 psu based on historical salinity measurements. The difference in near-shore salinity was compared for the period 1950-1976 and 1977-1999 and very little variation was found, demonstrating that the estimated salinity is representative of baseline.

As explained in Draft EIR/EIS Section 4.3.1.3, near-shore surface salinities vary from 33.2 psu to 34.0 psu. Streams and rivers can locally affect salinity, but even during flood conditions, when freshwater inputs to Monterey Bay peak (e.g., from the Salinas River), the salinity of Monterey Bay surface waters does not fall below 31 psu.

As reported in Draft EIR/EIS Appendix D1, monthly measurement of conductivity-temperature-depth were made over the MRWPCA outfall, as well as north, south, and west of the outfall, over a two-year period and are displayed in Table 1 of Appendix D1. The denominator, like ocean salinity, changes with the seasons and could range from 33.34 psu to 33.89 psu.

PWN2-53 This comment addresses Special Condition 11 of the test slant well CDP, which in and of itself is not the subject of the MPWSP Draft EIR/EIS. The baseline report is cited in Draft EIR/EIS Section 4.4 as Geosciences, 2015b. See also response to comment PWN2-38 and Master Response 11.

PWN2-54 See response to comment PWN2-21.

PWN2-55 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), which describes ERT and its application to this EIR/EIS.

PWN2-56 See Master Response 9, which describes the relationship of available ERT data to modeling.

PWN2-57 See Master Response 9.

PWN2-58 The comment is based on language from Appendix I2, Component Screening Results – Component Options Not Carried Forward, specifically from Intake Option #12 – Subsurface Slant Wells at Reservation Road on p. I2-11. This intake option was eliminated, and is therefore not part of the proposed project. Regarding potential impacts related to MCWD's provision of water service and the location of the proposed project's slant wells, see response to comment PWN2-5.

PWN2-59 Appendix J1 presents an analysis of the consistency of the MPWMD's 2006 estimate of future water needs within CalAm's service area, with growth projections anticipated in the general plans of the jurisdictions within CalAm's service area. MCWD is not in CalAm's service area and therefore, not included in either the future water forecast, or the analysis of growth policies. The comment provides no evidence that the MPWSP may interfere with MCWD plans; see response to comment PWN2-6. The MCWD plans are not considered irrelevant to the EIR/EIS; the RUWAP Desalination Element (No. 31) is listed as a potential cumulative project in Draft EIR/EIS Table 4.1-2, and potential cumulative impacts on groundwater resources are described in Draft EIR/EIS Section 4.4.6 at page 4.4-89.

PWN2-60 Draft EIR/EIS Appendix G2 is an analysis of CO2 off-gassing from the subsurface intakes and not a discussion of a targeted percentage of seawater in the slant well. The discussion represents the position that water from the test slant well would be a worst case bookend to the analysis, as described on page 5 of Appendix G2; conversely, all seawater would be the "best case" in the context of CO2 off-gassing. The support for the 96 percent used in the analysis is cited on page 5 as GeoScience, 2014b. However, ocean water percentage was not relevant to the analysis. Appendix G2 relied on the average of five water quality sampling events from the test slant well during September 2016, as shown on Table 1 on page 6 of Appendix G2.

PWN2-61 To estimate the concentration of carbon dioxide in the reverse osmosis (RO) concentrate, Appendix G2 modeled the RO process using sampled water quality of the two source waters: the "worst-case" test slant well water, and the "best-case" seawater (see response to comment PWN2-60). It did not use ocean water percentages. ERT data would not be relevant to this analysis since it would not provide any evidence of what is being extracted at the wells. See Master Response 9.

8.6.17.3 Responses to Comments from Public Water Now – Letter 3

PWN3-1 Regarding the feasibility of slant well technology see Master Response 11. As explained in Draft EIR/EIS Section 1.5.4, if the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity (CPCN) for the MPWSP, as proposed or modified. In addition to environmental impacts addressed during the CEQA process, the CPCN process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project.

PWN3-2 The baseline report prepared by the HWG is addressed in the response to Comment PWN2-38. The conflict of interest is addressed in response to comment PWN2-2 and Master Response 5.

PWN3-3 This comment is addressed in Master Response 5 and in Master Response 11,

PWN3-4 This comment is addressed in Master Response 5.

PWN3-5 CalAm's March 14, 2016, amended application to the CPUC and MBNMS (Exhibit H to the amended application, cited in the Draft EIR/EIS Section 5.4 as CalAm, 2016), describes the permanent slant wells as being screened for "approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot Equivalent Aquifer of the Salinas Valley Groundwater Basin." See also response to PWN2-32. As described in Draft EIR/EIS Section 4.4.1.2 on page 4.4-6, the Dune Sands Aquifer is not a fresh water aquifer; it is directly influenced and controlled by seawater and most of the water has been intruded by seawater and is considered saline to brackish. Increased seawater intrusion or loss of source water would cause harm, but the Draft EIR/EIS found neither condition would occur as a result of the proposed project. See response to comment PWN2-6 and Master Response 3 regarding water rights.

PWN3-6 See response to comment PWN3-5.

PWN3-7 The conflict of interest is addressed in response to comment PWN2-2 and Master Response 5.

PWN3-8 For a discussion of the definition of feasible, see response to comment PWN2-8. For a discussion of the feasibility of slant well technology, see Master Response 11, CalAm Test Slant Well.

Installation and long-term maintenance cost estimates for the proposed slant wells are based on both the test slant well at CEMEX and the well at Dana Point. Regarding ratepayer liability, see response to comment PWN2-22. Regarding the Sustainable Groundwater Management Act (SGMA), see Master Response 6.

The SWRCB drives the CDO deadlines with input from the community. That process is not under the control of the Lead Agencies.

The history of water supply projects in response to SWRCB Order 95-10 and the Seaside Groundwater Basin adjudication are described in EIR/EIS Section 1.4 as well as Section 5.2.

EIR/EIS Chapter 5 includes an extensive alternatives analysis that considered Ranney wells (see EIR/EIS Sections 5.3.3.5, 5.3.3.11, and 5.3.3.13). Section 5.3.6.1 concludes on page 5.3-30 that Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary. The DeepWater Desal project and the People's Project were both evaluated as alternatives to the MPWSP in EIR/EIS Section 5.5. See also Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenarios.

Regarding the operation of the test slant well, MCWD has no permit authority over the slant well tests; regardless, the environmental review of the operation of the test slant well pursuant to its existing permits is outside the scope of this EIR/EIS; see Master Response 11, Sections 8.2.11.2 and 8.2.11.3.

The lead agencies' purpose in a CEQA and/or NEPA analysis is to assess the environmental impacts of a proposed project and to consider alternatives to the project. An EIR/EIS does not assess the "leadership" of the project proponent. Further, the cited statement from the Settlement Agreement about CalAm's position on the feasibility of the proposed project is not relevant to the analysis in the EIR/EIS, in which the Lead Agencies address both the feasibility of and the full range of environmental impacts of the project as proposed using independent judgment. As noted in EIR/EIS Section 1.5.4.1, in addition to the environmental impacts addressed during the CEQA/NEPA process, the CPUC will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project.

8.6.18 Responses to Comments from Salinas Valley Water Coalition and Monterey County Farm Bureau

SVWC/MCFB-1 The comments regarding the Return Water Settlement Agreement are acknowledged. The Draft EIR/EIS analyzes impacts of the proposed project based in part on the implementation of this settlement agreement.

SVWC/MCFB-2 This comment describes the presence of seawater intrusion and various efforts to date to address this issue, but does not comment on the Draft EIR/EIS. The information presented in the EIR/EIS is consistent with this comment.

SVWC/MCFB-3 See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights. With respect to localized water quality changes, see Master Response 8, Project Source Water and Seawater Intrusion.

SVWC/MCFB-4 As explained in EIR/EIS Section 2.6, Water Rights, and Master Response 3 Water Rights, the EIR/EIS employs the criteria set forth in the SWRCB Report to reach the determination of whether it appears feasible that CalAm would possess water rights for the project. The commenter opines that the return water component of the project is required in order for CalAm to have such water rights. As noted in Master Response 3, the return water element of the project is proposed by CalAm; thus, consideration as to whether CalAm would have water rights without that project component is unnecessary.

SVWC/MCFB-5 The comment in support of the approval of the Return Water Settlement Agreement is acknowledged.

SVWC/MCFB-6 The EIR/EIS correctly concludes in Impact 4.4-4 that the seawater intrusion front would migrate back toward the ocean, a less-than-significant impact. The increase in salinity would only occur in the capture zone near the coast at the CEMEX site; areas outside the capture zone would not be affected. See Master Response 8, Section 8.2.8.2, which discussed this issue further. In addition, implementation of the Return Water Settlement Agreement is part of the proposed project, not a mitigation measure. See Section 2.5.1 of the EIR/EIS for further discussion of the Return Water Settlement Agreement.

SVWC/MCFB-7 This comment does not relate to the EIR/EIS, but will be considered by the Lead Agencies during their decision-making processes for this project.

8.6.19 Responses to Comments from Surfrider Foundation

Surfrider-1 Responses to specific comments regarding compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), and the adequacy of the Draft EIR/EIS, are provided below, where the commenter provides enough specificity to allow a substantive response. With respect to compliance with MBNMS policies and regulations, the Draft EIR/EIS described compliance with MBNMS policies and regulations where applicable in resource-specific discussions and in the discussion of compliance with MBNMS Desalination Guidelines in Section 6.4. Footnote 2 of the comment states that the EIR/EIS contains an incomplete discussion of the requirements necessary for a national marine sanctuary to authorize prohibited activities, such as the discharge of brine concentrate. The EIR/EIS explains the process for making decisions on prohibited activities in detail in Section 1.3.2, and MBNMS is ensuring that National Marine Sanctuaries Act requirements are being closely followed. Regarding the comment on 15 CFR 922.49(a)(1) which requires the project applicant to notify the Director of the Office of Ocean and Coastal Resource Management, or a designee, within 15 days of the date of filing of the application for an authorization, the Applicant filed a permit application with MBNMS in 2015 and has continued to keep both agencies apprised on application processing. The authorizations relevant to the MPWSP are described in EIR/EIS Section 1.3.2 and include authorizations of a Coastal Development Permit and a National Pollutant Discharge Elimination System (NPDES) permit or other discharge authorization. This section of 15 CFR 922.49 does not pertain to CalAm's application to the CPUC.

Surfrider-2 See response to comment USEPA-4, in Section 8.3.5, which describes the revised mitigation measure for greenhouse gas emissions, and see Final EIR/EIS Section 4.11.5 for the revised significance conclusions of less than significant with mitigation with respect to the proposed project's GHG emissions impacts. Revised Mitigation Measure 4.11-1 meets the CEQA criteria for mitigation as outlined in the comment. Subpart b specifies a performance standard that governs implementation of this measure: that CalAm must achieve net zero operational GHG emissions. With respect to practical considerations that preclude the development of specific measures at the time of project approval, Subpart a requires that CalAm retain a qualified professional to prepare and submit a GHG Emissions Reduction Plan to the Lead Agencies that quantifies GHG emissions and identifies feasible energy recovery and conservation technologies. Although the EIR/EIS has quantitatively estimated GHG emissions from the proposed project, further project design would refine these estimates, necessitating this quantification step prior to construction. Additionally, Subpart b requires that CalAm achieve the net zero operational GHG performance standard by implementing offsetting procedures in a specified loading order. The exact use of these procedures cannot be known at this time due to the uncertainty of the total availability of the various

sources specified in the measure, such as energy from the adjacent landfill-gas-to-energy (LFGTE) project. Finally, substantial evidence supports the conclusion in the Final EIR/EIS that the mitigation, as carried out based on the performance standards and loading order specified, will be feasible and will be effective in achieving the net zero operational GHG emissions standard, which will ensure that total project GHG emissions are below identified thresholds of significance. Based on the Final EIR/EIS GHG emissions estimate, the project would need to reduce or offset approximately 6,885 metric tons of CO_2-equivalent GHGs per year, and this would be feasible based on a combination of on-site or adjacent renewable energy sources, renewable energy sources that are procured from PG&E or another provider, Renewable Energy Certificates, and Carbon Offsets. As stated in Table 4.1-2 (see Project No. 58), about half of the MPWSP Desalination Plant operational energy requirements could be met with renewable electricity generated at the LFGTE facility, leaving approximately half of the annual operational emissions to be offset by other means. There are many different types and adequate numbers of carbon offsets currently available that can be purchased for the project (CARB, 2017).

Surfrider's suggested list of measures that could reduce the project's GHG emissions includes several measures relating to building and landscape efficiency. Although all of these measures will be considered and several of these measures are likely to be incorporated into project design as required by Subpart a of Mitigation Measure 4.11-1. Building and landscape-related energy consumption accounts for a relatively small portion of the operational energy demands of the proposed project – the operational energy associated with pumping, desalinating, and delivering water and disposing of brine accounts for the majority of operational electricity demands, which in turn account for the majority of operational GHG emissions. The recommendation to require installation of solar photovoltaic (PV) panels on-site has been incorporated into revised Mitigation Measure 4.11-1. The recommendations related to construction vehicle efficiency are addressed in Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan).

Surfrider-3 See response to comment USEPA-4, in Section 8.3.5, and Surfrider-2, which address the issue of requiring CalAm to purchase offsets as one part of a strategy to achieve net zero GHG emissions from operational electricity use. The strategy outlined in revised Mitigation Measure 4.11-1 would reduce or offset emissions regardless of whether operational electricity is sourced from in-state or out-of-state generation. Note that Assembly Bill 398, signed into law on July 25, 2017, extends the California Cap and Trade program to 2030.

Surfrider-4 The commenter is correct that Draft EIR/EIS page 4.2-45 states that an analysis of the effects of the existing environment on the project "is provided for information purposes." However, in both the project-level and cumulative analyses, the EIR/EIS provides a thorough and complete analysis of coastal hazards related to

sea level rise and coastal erosion and the effects of such changes on the project facilities. EIR/EIS Section 4.2.4.5 explains the approach to the coastal retreat analysis, the extensive coastal retreat study conducted, and the fact that CalAm had already responded to that study by moving the proposed location of 9 out of 10 of the proposed slant wells (all but the one that is to be converted from the existing test slant well) to a location further from the coast so as not to become exposed during the project life. Impact 4.2-10 examines the effects of the projected long-term coastal retreat and sea level rise *on the project* and how that effect on the project could exacerbate or accelerate coastal erosion. Thus, the EIR/EIS does in fact comprehensively evaluate the impacts of the existing and projected environmental conditions on the project. (We note, however, that the legal cases cited by the commenter deal with a requirement to address the impacts of coastal erosion on residents and users, not on utility infrastructure). The analysis concludes that the well casings and concrete wellhead vault of the converted test slant well could become exposed during the life of the project, possibly accelerating or exacerbating natural processes. This is classified as a significant impact of the project (and therefore, is not treated as merely informational). Mitigation Measure 4.2-10 is included to ameliorate this impact. Furthermore, though the analysis forecasts that only the converted test slant well could likely be affected by coastal erosion and retreat, the mitigation measure is proposed for all 10 of the project slant wells. Similarly, Impact 4.2-C finds that the project would result in a cumulative impact on increased scour and erosion resulting from projected sea level rise. Mitigation Measure 4.2-10 is proposed to reduce the project's contribution to that cumulative effect to a less than significant level. Also, see response to comment Marina-36, in Section 8.5.1.

As to the project's contribution to sea level rise based upon greenhouse gas emissions, see responses to comments USEPA-4, in Section 8.3.5, and Surfrider-2. With the revisions described therein, the proposed project's contribution to the primary and secondary adverse effects of global climate change would be negligible and likely well within the sea level rise projections employed in the coastal retreat study upon which the impact analysis of the EIR/EIS was based.

Surfrider-5 EIR/EIS Section 4.2.4.5 describes the Coastal Retreat Study (Appendix C2), which examined coastal processes and the likelihood for the slant wells and their wellheads to become exposed on the beach. The study estimated coastal retreat both laterally (using coastal erosion hazard zones) and vertically (using coastal profiles). Because of the anticipated rate of coastal retreat, the originally proposed locations of the slant wells were relocated further inland specifically to avoid being exposed and accelerating or exacerbating erosion (see Draft EIR/EIS page 4.2-69, not page 4.2-60).

EIR/EIS Figures 4.2-7 and 4.2-8 present the erosion profiles and envelopes for the test slant well and the production wells, respectively. The wellhead of the test slant well is shown to be at 30 feet (NAVD) above mean sea level and just behind

(inland of) the "2060, 100-Year Storm Event" line; the other nine wells would be located further inland of the "2060, 100-Year Storm Event" line.

To ensure that the slant wells would not accelerate or exacerbate coastal erosion and dune retreat, Mitigation Measure 4.2-10, Slant Well Abandonment Plan, requires CalAm to monitor the rate of coastal retreat and to remove the sections of well casing and pipelines prior to potential exposure, to a depth of 5 feet below the 2060, 100-year lower profile envelope as determined by the Coastal Retreat Study or as directed by any permit condition. Based on projections of sea level rise and coastal retreat, abandonment procedures are anticipated to begin sometime after 2040 for the converted test slant well and after 2060 for the other nine slant wells, but would occur as needed based on monitoring required under Mitigation Measure 4.2-10. The implementation of this mitigation measure would eliminate, not merely reduce any erosion impact, by ensuring the slant well(s) would be removed prior to exposure. Mitigation Measure 4.2-10 has been revised to include how a timeframe for well abandonment should be established.

EIR/EIS Section 4.2.4.5 explains that the most important variables in the coastal erosion model are the historic erosion trend, backshore toe elevation, and the total water level. In this region, where beaches have historically been controlled in part by sand mining, the study assumed there would be no changes to existing sand mining practices. Consistent with the Federal Emergency Management Agency (FEMA) Pacific Coast Flood Guidelines, the potential for shoreline retreat caused by sea level rise and the impact from a large storm event was estimated using a geometric model of dune erosion and applied with different slopes to make the model more applicable to sea level rise. Instead of predicting storm-specific characteristics and response, the method assumes that the coast would erode or retreat to a maximum storm wave event with unlimited duration and is a conservative approach to estimating the impact of a 100-year storm event.

As shown on Appendix C2 Figure 1 and Figure 3(d), the location of profile 4a (test slant well) and 4b (other wells) are just north and south of the CEMEX access road, respectively. Note 3 in EIR/EIS Figures 4.2-7 and 4.2-8 explains the "profile is located immediately south of the CEMEX Pacifica Lapis sand mining *plant*," (emphasis added) and not south of the sand mining *area* as claimed in the comment. That same Note 3 acknowledges that data is not available to quantify the uncertainty in beach and dune erosion related to sand mining activities, and that "[t]he potential for fluctuations in beach width associated with sand mining were not considered in this analysis." That is because the analysis included the historic sand mining practices in the historic rates of erosion and assumed there would be no changes to existing sand mining practices. As a result of using this and other conservative assumptions in the analysis,[1] the potential magnitude of erosion at

[1] As noted by Sea Engineering in its peer review of the Coastal Retreat Study, "Based on our professional judgment, the ESA study (2014) represents a worst-case scenario developed by a very conservative approach" (Sea Engineering, 2014).

CEMEX was very likely over-estimated, not under-estimated as asserted by the comment, especially considering the anticipated closure of the sand mining operations in 2020, resulting from the July 2017 Settlement Agreement between CEMEX and the California Coastal Commission (see Master Response 14, CEMEX Settlement Agreement). Regardless, the commenter expressed concerns about extreme climate and storm events (discussed above), and provided suggested modifications to Mitigation Measure 4.2-10; the suggested text about 100-year storm events has been incorporated into Mitigation Measure 4.2-10.

The well abandonment required under Mitigation Measure 4.2-10, Well Abandonment Plan, would use standard procedures provided in Bulletin 74, California Well Standards, as required by the City of Marina Municipal Code Section 13.12.100. The secondary environmental impacts resulting from abandoning the well(s) have been added to the discussion of Mitigation Measure 4.2-10 and would be less than significant with implementation of the same mitigation measures relevant to the proposed project and discussed in the EIR/EIS. The time required for permitting of well abandonment is anticipated to be on the order of a few months at most, well within the proposed 5-year timeframe provided for in the mitigation measure, especially since the installation of replacement wells would not be part of that process. As discussed in response to comment Marina-37, replacement wells, if pursued, would be a new project that would be developed decades in the future and would be subject to a subsequent CEQA analysis.

Surfrider-6 As explained in CEQA Guidelines Section 15126.6, an EIR shall include alternatives that would avoid or substantially lessen any of the significant effects of the proposed project. With the revision to GHG Mitigation Measure 4.11-1 (see response to comment Surfrider-4), and the related revision to the conclusion of Impact 4.11-1 (incremental contribution to climate change from GHG emissions) to less than significant with mitigation, the EIR/EIS has not identified a significant unavoidable impact for any resource that would require a downsized alternative as mitigation. Specifically, Impact 4.3-4 (degrade ocean water quality from increased salinity), Impact 4.3-5 (degrade ocean water quality from brine discharges), and Impact 4.4-4 (degrade groundwater quality) were all determined to be less than significant with mitigation while Impact 4.4-3 (deplete groundwater supplies or interfere substantially with groundwater recharge) was determined to be less than significant.

Chapter 5, Alternatives Screening and Analysis, provides detailed descriptions of two reduced-sized alternatives (Alternatives 5a and 5b, see Sections 5.4.7 and 5.4.8, respectively) and Section 5.5 presents an analysis of the environmental impacts of Alternatives 5a and 5b. Under CEQA and NEPA, an alternative need not be analyzed unless it would meet most of the basic objectives of or the purpose and need for the project. See CEQA Guidelines Section 15126.6(a) and 40 CFR 1502.13 and 1508.9(b). The primary objective of the proposed project is to supply in a timely manner a certain quantity of water for CalAm customers, such that a

smaller desalination plant than those considered in the EIR/EIS (including Alternatives 5a and 5b, which pair a smaller desalination plant with a water purchase agreement from the approved GWR Project) would not meet the basic project objectives. However, see Master Response 13, Demand (Project Need) and Growth, concerning demand and supply assumptions and the possible consideration of alternate scenarios in which lessened demand would allow for a smaller desalination plant. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the basic objectives of the project.

Surfrider-7 See Master Response 13, Demand (Project Need) and Growth, in particular, the discussion of demand assumptions in Section 8.2.13.1 and the discussion of Water Available for Growth in Section 8.2.13.3. Also see response to comment Surfrider-6.

Surfrider-8 The EIR/EIS did not identify a significant unavoidable impact for any resource that required a downsized alternative as mitigation, and as described in response to comment Surfrider-6, any alternative considered must meet the basic project objective with respect to water supply. The discussion of Revised CDO Stage 3 Conservation Measures and Stage 4 Rationing under the No Project Alternative in Section 5.4.2.1 represents a worst-case scenario of severe water rationing, and not a reasonable alternative to the proposed project. The EIR/EIS does consider the potential for the Pacific Grove Local Water Project to provide up to 125 afy of non-potable supply that would offset the need for project supply in Section 2.5.3.1. As stated therein, "In 2013, CalAm and several other parties asked the CPUC to approve a settlement agreement on plant sizing and operations. The Settling Parties agreed that the Pacific Grove project would be a valuable part of a comprehensive solution to water issues in CalAm's Monterey District when integrated with the MPWSP, the GWR Project, and ASR." The EIR/EIS does also consider the potential for the Pebble Beach Recycled Water Project Phase II to offset the need for project supply in Section 2.5.3.2. See also Master Response 13, Demand (Project Need) and Growth, and response to comment MCWD-168, in Section 8.5.2.

Surfrider-9 As noted in the comment, impacts related to water quality from operational discharges have been determined to be less than significant based on the comprehensive and detailed model analyses performed and presented in EIR/EIS Section 4.3, Surface Water Hydrology and Water Quality, and Appendix D. Mitigation Measure 4.3-4 includes a provision requiring CalAm to monitor impacts on marine biological resources even if the discharge meets established salinity and effluent standards.

Surfrider-10 Mitigation Measure 4.3-4 would ensure that monitoring would be conducted for salinity levels, benthic community health, aquatic life toxicity, and hypoxia, and that the monitoring program would be consistent with the requirements detailed in

Appendix III of the Ocean Plan. The performance standards required by Mitigation Measure 4.3-4 for benthic community health incorporate by reference those defined in the Ocean Plan, and represent, in part, a narrative-based standard. The standards are defined in Chapter III of the Ocean Plan (Part 4 (a)) and in Appendix III (Part 8), with definitions of terms provided in Appendix II. In this context, a statistically significant change also is defined in the Ocean Plan. Degradation occurs if there are significant differences (defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level) in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected. See EIR/EIS Section 4.3.2.2 for a discussion of the Ocean Plan Monitoring Requirements.

Surfrider-11 See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario.

Surfrider-12 New information that has been added to the Draft EIR/EIS in response to comment Surfrider-5, as well as comments by others, has been added to amplify or clarify the data within the Draft EIR/EIS. The new information does not change the environmental impacts than were shown in the Draft EIR/EIS, nor indicate that there are feasible alternatives or mitigation measures available that the project proponent declines to implement that would minimize significant effects.

References

California Air Resources Board (CARB), 2017. Compliance Offset Program webpage (https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm), accessed October 20, 2017.

CCLEAN, 2017. Central Coast Long-term Environmental Assessment Network Regional Monitoring Program Annual Report 2015–2016. January 31. http://www.cclean.org/wp-content/uploads/2014/07/CCLEAN-Final-2015-2016-report.pdf

Sea Engineering, 2014. Review of Coastal Erosion Analysis by ESA PWA (2014) for the California American Water Temporary Slant Test Well Environmental Impact Evaluation. Appendix E2 of City of Marina Draft Initial Study and Mitigated Negative Declaration, May 2014.

8.6.20 Responses to Comments from Water Ratepayers Association of the Monterey Peninsula

8.6.20.1 Responses to Comments from Water Ratepayers Association of the Monterey Peninsula – Letter 1

WRAMP1-1 See Master Response 3, Water Rights.

WRAMP1-2 See Master Response 8, Source Water and Seawater Intrusion, Sections 8.2.8.1, 8.2.8.2, and 8.2.8.3 for clarification of the source water for the proposed MPWSP slant wells and Master Response 11, CalAm Test Slant Well, for additional information on water quality in the test slant well.

WRAMP1-3 See Master Response 4, Agency Act and Return Water, and Master Response 3, Water Rights.

WRAMP1-4 See Master Response 4, Agency Act and Return Water, and Master Response 8, Source Water and Seawater Intrusion.

WRAMP1-5 The elevated sodium chloride concentrations in the groundwater extracted from the test slant well over the period of pumping are undeniably a result of seawater intrusion from the Monterey Bay. See Master Response 11, Test Slant Well for additional information on test slant well water quality, and Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.2, for water quality data within the MPWSP slant well capture zone.

WRAMP1-6 See response to comments MCWD-HGC-3 and -5 in Section 8.5.2.2 for a response regarding water quality conditions, specifically related to TDS and sodium chloride concentrations, in the MPWSP area and the purported "freshwater" flows that are interpreted as protection against seawater intrusion. Master Response 4, Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2, provide additional explanation on return water.

WRAMP1-7 See Master Response 4, Agency Act and Return Water, which provides a detailed description of the Agency Act, return water, and the ocean water percentage calculation. No field data are reported in Appendix E2 of the 2017 MPWSP Draft EIR/EIS relevant to the percentage of groundwater extracted from the Dune Sand Aquifer (represented by part of Model Layer 2) and the 180-Foot Aquifer (represented by part of Model Layer 4). Page 28 of Appendix E2 describes three different assumed percentages of the groundwater extracted from Model Layer 2 and Model Layer 4. The assumed percentages are based on (1) well construction and model geometry; (2) well construction, model geometry, and modeled hydraulic conductivity; and (3) Geoscience calibration of a different model to test slant well pumping data.

WRAMP1-8 Master Response 4, Agency Act and Return Water, provides a detailed description of the Agency Act, return water, and the ocean water percentage calculation.

WRAMP1-9 Receipt of the attached petition for writ of mandate is acknowledged. The respondents to the petition objected to the petition and, in March 2017, the Superior Court of Monterey County dismissed the action without leave to amend. The Superior Court's order was not appealed.

WRAMP1-10 See Master Response 4, Agency Act and Return Water.

WRAMP1-11 The purchase of water from the DeepWater Desal Project or the People's Project is analyzed as Alternatives 3 and 4, respectively, in Chapter 5 of the EIR/EIS.

8.6.20.2 Responses to Comments from Water Ratepayers Association of the Monterey Peninsula – Letter 2

WRAMP2-1 Three independent runs using different MODFLOW executables produced the same output (model-calculated water levels) and confirm that the model-calculated water levels were not modified. Neither HydroFocus nor LBNL conducted post-processing of model output after running MODFLOW other than plotting the results using Excel software. The model-calculated water levels from three independent MODFLOW runs all agreed. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

8.6.20.3 Responses to Comments from Water Ratepayers Association of the Monterey Peninsula – Letter 3

WRAMP3-1 See response to comment WRAMP2-1.

8.6.20.4 Responses to Comments from Water Ratepayers Association of the Monterey Peninsula – Letter 4

WRAMP4-1 See Master Response 4, Agency Act and Return Water, which provides a detailed description of the return water and the calculations necessary to determine the ocean water percentage.

WRAMP4-2 See Master Response 2, Source Water Components and Definitions, for clarification of the terms used to describe source water (e.g., "groundwater"). See also Master Response 3, Water Rights; Master Response 4, Agency Act and Return Water; and Master Response 8, Source Water and Seawater Intrusion, for a comprehensive explanation of the water rights associated with the MPWSP, return water, and the source water quality in the capture zone of the proposed MPWSP slant wells.

WRAMP4-3 See Master Response 8, Source Water and Seawater Intrusion, and Master Response 12, The North Marina Groundwater Model (v.2016), and response to comment WRAMP1-7.

WRAMP4-4 See responses to comment WRAMP1-6 and Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.1 and 8.2.8.2.

WRAMP4-5 The issue of ratepayer liability is outside the scope of CEQA and NEPA requirements; however, as described in Draft EIR/EIS Section 1.5.4.1, the CPUC decision to grant or deny a Certificate of Public Convenience and Necessity for the project (i.e., project approval) would follow a process after certification of the EIR during which the Commission will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. Therefore, comments regarding ratepayer liability are relevant to and will be considered as part of that proceeding.

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8.7 Individual(s) Comments and Responses

8.7.1 Michael Baer

8.7.2 David Beech

David Beech – Letter 1
David Beech – Letter 2
David Beech – Letter 3
David Beech – Letter 4
David Beech – Letter 5
David Beech – Letter 6

8.7.3 Kathy Biala

Kathy Biala – Letter 1
Kathy Biala – Letter 2
Kathy Biala – Letter 3

8.7.4 William Bourcier

8.7.5 David Brown

8.7.6 Charles Cech

8.7.7 Bob Coble

8.7.8 Margaret-Anne Coppernoll

8.7.9 Herbert Cortez

8.7.10 Bruce Delgado

Bruce Delgado – Letter 1
Bruce Delgado – Letter 2

8.7.11 Myrleen Fisher

8.7.12 David Gorman

8.7.13 Jane Haines

8.7.14 Clifton Herrmann

8.7.15 Juli Hofmann

8.7.16 Thomas Moore

8.7.17 Hebard Olsen

8.7.18 Larry Parrish

8.7.19 Paula Pelot

8.7.20 Carol Reeb

8.7.21 Dick Rotter

8.7.22 Nancy Selfridge

Nancy Selfridge – Letter 1
Nancy Selfridge – Letter 2
Nancy Selfridge – Letter 3

8.7.23 Jan Shriner

8.7.24 Roy Thomas

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8.7.1 Michael Baer

February 24, 2017

Karen Grimmer
MBNMS
99 Pacific Ave
Monterey, CA 93940

Mary Jo Borak
California PUC c/o ESA
550 Kearny St., #800
San Francisco, CA 94108

Esteemed Regulators,

Enclosed are my comments related to the MPWSP DEIR. They are divided into 3 major sections which are delineated by **Bold Centered Titles**. In my opinion, the problems of this project make it infeasible. The EIR needs to be *recirculated* to address the gaps and errors highlighted here, and evolving technologies discussed by others elsewhere. (**1.** ERT to determine "baseline" groundwater conditions in the Coastal Aquifers of the Salinas Valley Groundwater Basin and… **2.** Source water ocean intake screening systems that have evolved in the last 5 years since this project first began.) Baer-1

As the deadline has been extended, I may have more to say by March 29, 2017

Thank you for your time and attention. This is an enormous undertaking for everyone involved.
Regards,
Michael Baer ~Long term resident of Monterey, abutting the jewel known as Monterey Bay

Established Groundwater Rights

The Monterey Peninsula's long and difficult experiences in attempting to develop new and reliable water sources to create a sustainable supply for now and future generations has been complicated and arduous. CalAm Water has been no friend to the residents in this process, leading us down several ill-conceived dead ends which we are still paying for to the tune of tens of millions of dollars, often referred to as stranded costs. Baer-2

The current DEIR is another lengthy document which obfuscates many of the real issues and omits or downplays several key areas despite its cumbersome 4,000 pages. It is easy to get lost, overwhelmed and numbed by the minutiae of all the complex details within it. Much of the technical analysis in the supporting Appendices is only discernable to experts, which neither concerned citizens nor CPUC Commissioners are truly capable of interpreting.

Let's be frank. Cal Am has over-drafted our public resources in their relentless drive for profits. They have been stealing from the Carmel River two to four times the amount that they are legally allocated year after year for decades. They have also taken more than their allocated share from the Seaside Aquifer Basin, and have water debts to repay there too. Baer-3

These water debts, or thefts depending on your orientation, are now proposed to be repaid through the MPWSP and specifically the desalination plant at the Cemex site, where the source Baer-4

water is another theft from another river basin's coastal aquifers. Cal Am has no rights in the Salinas Valley River Basin, yet they propose stealing 25 million gallons per day, which will significantly impact the neighbors who hold the overlaying legal water rights, including AgLand Trust and Marina Coast Water District.

These arguments have been put before you, the CPUC, throughout the process that began in 2012. They have been put before the CCC since 2014. Now they are before the MBNMS as well.

Yet they are ignored. . .

Establishing water rights should be the first order of business in determining the feasibility of capital expenditures in the hundreds of millions of dollars, yet the DEIR freely admits that these issues will be determined after the project is approved.

Baer-4 cont.

Question

How can ignoring the fundamental issue of groundwater rights (or lack thereof) be considered responsible oversight by lead agencies with tens of millions of upfront expenditures required to prepare the DEIR?

Can you appreciate the fundamental error of the cart before the horse approach here? It points directly to feasibility and is surely to end in lengthy litigation, likely causing CalAM to miss the CDO deadlines, exposing the Peninsula to severe penalties in rationing, potential fines, and stranded costs of another failed water project.

Once again, we beseech you, The Regulators: Please consider the whole picture behind this ill-conceived project, and put the horse back before the cart as we strive to develop sustainable water supplies in our region.

Issues with the Hydrogeological Working Group (HWG)

(note: Questions for ESA are in **bold**)

Baer-5

The HWG is a group of hydrogeologists who are the scientists in the field, taking data from the test slant well and surrounding monitoring wells to measure and record the intake efficiency of the slant well and its impacts on the surrounding groundwater. *The DEIR concludes that the impact to the surrounding groundwater is insignificant.* The role that the HWG plays in reaching that conclusion is occluded. The following pages will highlight some of the issues with this group and their role and relevance (or lack thereof) to the DEIR.

Baer-6

1. Inconsistencies relevant to the HWG

DEIR Executive Summary, p.14 ES-14

"The HWG was a result of an August 2013 Settlement Agreement between CalAm and 16 parties whereby CalAm agreed their hydrologist and technical team would work with the Salinas Valley Water Coalition's and Monterey County Farm Bureau's assigned hydrogeologists, and other technical experts designated by CalAm. The HWG developed a work plan in order to reach agreement about the studies, well tests, fieldwork, modeling, monitoring, and other data

analyses that is needed to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SVGB and the water supply available to legal water users thereof."

DEIR Footnote 34, Section 2, p 35
"The HWG is composed of experts representing myriad parties in the CPUC proceeding *with diverse interests related to the Basin, including but not limited to* the Monterey County Farm Bureau, the Salinas Valley Growers Association (sic - it is in fact the SV Water Coalition) and CalAm" (italics mine)

Baer-6 cont.

Comments
The two quotes above from the DEIR document are inconsistent, and this is no small matter. Thorough examination of the reports listed on the HWG website at http://www.watersupplyproject.org/test-well reveals that *only* CalAm, MC Farm Bureau, and SVWC experts comprise the HWG. Three organization representing two interest groups (Salinas Valley farmers and the applicant) can hardly be categorized as "myriad," "diverse", or "including but not limited to." For the record, I made verbal comments on the lack of diversity of the HWG at the September 2014 Marina City Council hearings that suspended the permit request.

Add to that fact, that CalAm's chief hydrogeologist on the HWG is Dennis Williams, President of GeoSciences, and an international slant well patent holder with obvious incentives for a particular and successful result from the testing. Although omitted in the background discussions of this DEIR, Dr. Williams' conflicts of interest remain a primary cause for the recirculation of the original document, along with the decision to combine the CEQA/NEPA work. An excerpt from that July 9, 2105 ALJ ruling (page 3) for the Application 12-04-019…

Baer-7

"The Commission's Energy Division issued the Draft EIR in April 2015. Comments on the Draft EIR were due on July 13, 2015. Energy Division has now determined that it is appropriate to further extend the comment period on the Draft EIR to September 30, 2015. We may take additional actions as described below. We do these things for three important reasons.

First:
We have learned that one of our sub-contractors, an entity called Geosciences, also has a contractual relationship with Cal-Am, the MPWSP's proponent, and that Geosciences's contract with Cal-Am pertains to the MPWSP; and that the President of Geosciences holds one or more patents related to slant well technology that Cal-Am might or could use in the construction of the MPWSP…"

Baer-8

Although the PUC chose to distance their relationship from GeoSciences, Mr. Williams remains on the HWG with his conflicts of interest unresolved, collecting the weekly data and filing the monthly reports for the CDP with the Executive Director of the CCC. This situation makes the entire test well analysis suspect as a result of the work of two special interests, and one private conflict of interest, who do not have the best interests of entire community at heart.

Baer-9

Questions

Can you provide documented evidence that experts of other parties "representing diverse interests related to the Basin" beyond the 3 mentioned above, were involved in the data collection, analysis, or other work of the HWG? Baer-10

Why was Dr. Williams allowed to remain on the HWG, once his personal conflicts of interest were revealed? How is this consistent with objective scientific practices? Baer-11

DEIR 4.4 p 4

"The HWG developed a collaborative plan of investigation to assess the hydrogeologic conditions in the project area. The draft work plan provided a phased approach to progressively investigate the hydrogeology and the potential effects of the project on aquifers from the use of subsurface slant wells for obtaining feedwater supply. The final work plan incorporated comments and recommendations by members of the HWG, and covered the investigative steps needed to evaluate the project impacts (Geoscience, 2013c). The final work plan became the hydrogeology investigation roadmap and resulted in the implementation of the fieldwork and modeling efforts described in the approach to analysis, Section 4.4.3.2." Baer-12

Comment

Section 4.4.3.2 does not exist. Section 4.4.3 ("Evaluation Criteria" 4.4 p41) makes no mention of the HWG. Section 4.4.5.2 "Operations Impacts and Mitigation Measures" exists, but likewise makes no reference to HWG.

Question

Where is the evidence of the actual work of the HWG within the DEIR document? Baer-13

2. Deeper examinations into the work of the HWG

DEIR Section 4.4 p42 "Test Slant Well"

"Special Condition 11 of the Coastal Development Permit, "Protection of Nearby Wells," requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long-term pumping tests (Geoscience 2015b). The long-term pumping test began in mid-April 2015, and results are available at http://www.watersupplyproject.org/#!test-well/c1f1l."

Neither the background material in the executive summary of the DEIR, nor elsewhere in the document, relays the historical storyline of how the CCC CDP #A-3-MRA-14-0050, Dec 8, 2014, and the subsequent amended version CCC CDP #A-3-MRA-14-0050-A1 came to be. The narrative below is intended to further inform the decision makers. Baer-14

The story…

The original application for a CDP was submitted to the City of Marina, as the Cemex site is within their city limits. After nearly 10 hours of deliberation over two consecutive days in September of 2014, the Council and Mayor voted 3-2 to suspend the application, ruling that the

prepared negative declaration was insufficient under CEQA law for the requested permit, and that a full EIR would have to be prepared to reconsider the application. CalAM chose instead to appeal the decision before the California Coastal Commission at their November 2014 meeting in Half Moon Bay, CA.

Baer-14 cont.

A crucial part of the appeal was that the test well was experimental, and temporary, and therefore did not require an EIR. The Marina City Council decision was overturned, and the permit was approved with stipulations including special condition 11 mention above and attached in its entirety at the end of this section. The permit also included a provision that at the end of the test slant well period, the well would be decommissioned, cut off 40 feet below the surface of the beach, filled with cement and capped, as the slant well being defined as experimental and temporary was a contingency of avoiding the EIR process.

Baer-15

Baer-16

Today, the slant well is planned as a production well. The CCC has yet to raise objection to this violation of its permit terms.

The permit was awarded and signed on Dec 8, 2014 and construction was completed by late March 2015. With less than 2 months of baseline testing at the monitoring wells for groundwater and TDS levels (wholly insufficient to determine seasonal or historical trends) the slant well "long term test" began on April 22, 2015. By June 5 the pumping was voluntarily halted as the water table had dropped near the threshold level proscribed in special condition 11. The Executive Director of the CCC was consulted and convinced that the decline in water table was due to seasonal precipitation or agricultural pumping trends and that the slant well had not impacted the basin.

Baer-17

An amended permit was applied for and approved on Oct. 6, 2015, and the pumping resumed on October 27. The amended permit required monthly reports to the ED of the CCC (instead of "periodic" ones in the original permit). New language was added to special condition 11 to reflect the addition of "seasonal and regional trends", rather than fixed values as thresholds at the monitoring well. The amended permit language is referenced at the end of this section.

Within that document, I have highlighted in yellow that the HWG is directed by the CCC to *identify* groundwater and TDS regional trends so they may compare that information to the collected data to calculate the impact.

In order to identify regional trends, one would presume that groundwater withdrawal pumping logs would be necessary to identify how much groundwater was pumped from the basin, or nearby sub-basin, by the farmers in the region. This has not been reported by the HWG.

Baer-18

In order to identify seasonal trends, one would presume that rainfall totals would not only be collected, but analyzed to see how they might impact both groundwater and TDS levels at MW4s and MW4-m. This has not been reported by the HWG.

Baer-19

In order to identify historical seawater intrusion, specifically at the Dunes Sand and 180 ft aquifers (which is where the threshold monitoring wells MW4-S and MW4-M identified in the permit collect their data), one would presume that a baseline of well data in the coastal aquifer region prior to well pumping would be necessary to establish the baseline for the historical seawater intrusion trend. This has not been reported by the HWG. Baer-20

Yet HWG throughout their thousands upon thousands of pages of monthly well data, neither establish nor discuss in detail any method by which they determined or measured regional, seasonal or historical trends. Baer-21

Each monthly report sent by the HWG to the Executive Director per the terms of the permit have a brief paragraph with little or no change from month to month stating that the test slant well (pumping over 90 million gallons per month if run continuously) has zero impact on groundwater level or quality. Here is an example:

HWG Monthly report 15 to Executive Director of the CCC, 5.3.2, page 11
http://www.watersupplyproject.org/test-well

"From April 2015 through January 2017 the TDS concentrations in MW-4M followed a regional slightly increasing trend (see Figure 3-3). However, the slightly increasing trend occurred consistently during both non-pumping and pumping periods, and therefore likely represents seasonal climate changes or regional pumping, and a continuation of historical seawater intrusion."

Baer-22

Questions

Where are the agricultural pumping records to establish regional pumping trends?

How do you justify using seawater intrusion maps that show the margin of intrusion many miles inland (threshold 500mg Cl/L) as a method to explain historical seawater intrusion trends at the coast where no baseline was ever established? Baer-23

How do you define a "regional slightly increasing trend"? Isn't it true that the table 2 of the HWG monthly report #15 (p.44) shows an increase in TDS at MW4-m from 17,500 ppm on 4/2/15 to 22,600 (mean) ppm on 1/11/17 an increase of over 29% in 21 months? How can you characterize that substantial increase as "slightly increasing"? Baer-24

Looking for clarifying answers in 2016

In the late fall of 2015 and winter of 2016, myself and a couple of other citizen colleagues deeply concerned with the lack of transparency and inability to get answers from CalAm or the HWG about the slant well protocols and data began to ask the permitter of the CDP, the California Coastal Commission, to provide such answers. I submit the following excerpted email for the record. Submitted on or about February 15, 2015 from myself to Tom Luster, permit Baer-25

liason at the California Coastal Commission. No reply was ever forthcoming, and after a few attempts I gave up trying …

Questions for the HydroGeologic Working Group of the MPWSP slant well test project permit #A-3-MRA-1410050-A1

1. Who, *specifically*, reports the data to montereywatersupply.org website, the public website required by permit #A-3-MRA-1410050-A1 ?

2. Why was the laboratory water quality sampling tests suspended between July 29 and December 19, 2015?

3. Who takes the weekly hand samples for conductance and water depth at MW4? Why are those results not posted on montereywatersupply.org?

4. How are "regional trends" determined? Is there data to substantiate "regional trends" as real and quantifiable? Who at the CCC reviews the rationale for determining "regional trends"? Why is this information not available on montereywatersupply.org?

5. Why does the language of permit #A-3-MRA-1410050-A1 indicate "minimal effects at the monitoring well" when Table 2 in the monthly reports indicate that the TDS threshold was exceeded in early May, 2015 after less than three weeks of continuous pumping?

6. Why was the well not suspended on May 6, 2015 as required by the original permit in effect for exceeding 2000ppm of rise in TDS?

7. MPWSP Technical Memorandum "Baseline Water and Total Dissolved Solids (TDS) Levels Test Slant Well Area" submitted to HWG and dated 4/20/15 shows a table 2 with a MW4 baseline reading of March 6 as 17,900, and April 2 and 17,500. This document was submitted to establish the baseline at all the wells in the project, right?

8. Doesn't the decline in TDS levels from March to April, 2015 indicate that seawater intrusion was in a state of reversal before the slant well began pumping? Why or why not?

9. How can it be verified that the slant well has been running at 2000gpm "24/7" since pumping resumed on or about October 27, 2015. Who measures the volume of water pumped at the well head? How is it determined. Why are those results not posted on the website?

10. Table 2 indicates an Electrical Conductance reading at MW4-M of 27,250 (EC), for April 22, 2015, yet the conductance graph plots that point at very near, apparently slightly above, 30,000 (EC). This has the effect of increasing the baseline by 1,870ppm TDS, and flattening the visual appearance of the curve. How do you (HWG) explain what appears to be a simple point plotting error?

Baer-25 cont.

Appendix to this section

CCC Amended CDP for Test Slant Well, October 6, 2015 Appendix 2 of HWG monthly reports

Coastal Development Permit amendment A-3-MRA-14-0050-A1 , -Page 3

SPECIAL CONDITIONS

This **Special Condition** modifies **Special Condition 11** as initially imposed by the Commission in Coastal Development Permit A-3-MRA-14-0050. Standard Conditions 1-5 and Special Conditions 1-10 and 12-17 of that permit shall remain in full force and effect**. Special Condition 11** now requires:

"Protection of Nearby Wells, PRIOR TO STARTING PROJECT-RELATED PUMPING TESTS, the Permittee shall install monitoring devices at a minimum of four wells on the CEMX site, within 2000 feet of the test well, and one or more offsite wells to record groundwater and salinity levels with the wells and shall provide to the Executive Director the baseline groundwater and Total Dissolved Solids ("TDS") levels in those wells prior to commencement of pumping from the test well.

The Permittee, in coordination with the Hydrogeological Working Group shall identify groundwater elevation trends and TDS level trends in the groundwater basin resulting from regional influences such as groundwater withdrawals, rainfall events, increases or decreases in streamflow contributions, and other influences. During the project pumping test, the Permittee shall, at least once per day, monitor groundwater and TDS levels with the monitoring wells in person and/or with electronic logging devices. The Permittee shall post data collected from all monitoring wells on a publicly available internet site at least once per week and shall provide all monitoring data to the Executive Director upon request.

The Hydrogeology Working Group shall review data from the monitoring wells and prepare a monthly report that shall be submitted to the Executive Director that documents the groundwater elevation trends and the TDS level trends resulting from regional influences. If during the pumping tests, data collected from Monitoring Well-4S ("MW4-S") or Monitoring Well-4M ("MW4-M") during any weekly monitoring period show either a decrease in groundwater levels that exceeds an identified decrease in regional groundwater level trends by 1.5 feet or more or show an increase in TDS levels that exceeds an identified increase in regional TDS level trends by two thousand parts per million or more, the Permittee shall immediately stop the pumping test and inform the Executive Director. The Hydrogeology Working Group shall examine the data from monitoring Well 4 if the pumping test is stopped due to either of these causes.

If, based on the above review of monitoring data, the Executive Director or the Hydrogeology Working Group determines that the pumping test caused, at MW-4S or MW4-M, either a decrease in groundwater level of 1.5 feet or more or caused an increase n TDS levels of two thousand part per million or more in excess of identified regional trends, then the Permittee

shall not re-start the pumping test until receiving an amendment to this permit, otherwise the Executive Director will allow the pumping test to resume."

Performance and Maintenance of Slant Wells

Performance

As has been repeated by many citizens in many public comment letters and public forums before the CPUC about the MPWSP since 2012, there are no seawater intake production slant wells for desalination plants functionally operating anywhere in the world. That fact raises the question of how reliable this novel system will be in delivering source water to the plant over decades of use. This issue should be a highest priority item; the reliability of source water intake is fundamental to the feasibility of the project. When it comes to a desal plant, if you do not have a reliable intake for source water, you don't have anything. Baer-26

The public record does contain one previous similar slant well effort, also developed by GeoSciences. However, that project fails to provide any confidence in slant well performance, as the slant well production efficiency declined from 95% in 2006 to 52% in 2012, before being shut down.

(for a review of that project's slant well performance, see :http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf) Sections 2.5 to 3.3 are the pertinent sections on well efficiency in that report.)

That project, at Doheny Beach in Dana Point, California, is currently mothballed as too expensive and unreliable. Concurrently, GeoSciences has moved its ongoing experimental technology to MPWSP at Cemex. Baer-27

Here is the confounding thing: A search of the MPWSP DEIR under the terms "slant well performance", "slant well yield" or "slant well efficiency" provides zero hits.

There appears to be no discussion or analysis of the slant wells' long term performance expectations. Baer-28

Question

How can the DEIR be considered valid and thorough without this crucial piece of the puzzle, slant well performance expectations, even receiving a mention in the DEIR?

There is another aspect to performance (or lack thereof) that shows up in the HWG monthly reports for the project's CDP with the CCC. *There have been numerous interruptions* to the so-called continuous pumping test. A table has been compiled and the data from that table is below: Baer-29

Data on Pumping Interruptions of the slant well from HWG monthly report #15, p 3

1/19/2016 11:10 AM 1/20/2016 8:51 AM 22 hours PG&E power interruption
1/22/2016 11:53 PM 1/24/2016 11:01 AM 35 hours PG&E power interruption
1/30/2016 2:50 AM 1/30/2016 11:08 AM 8 hours PG&E power interruption
1/31/2016 3:29 PM 2/1/2016 11:20 AM 20 hours PG&E power interruption
2/12/2016 2:43 AM 2/12/2016 10:51 AM 8 hours PG&E power interruption
3/1/2016 8:30 AM 3/2/2016 1:40 PM 29 hours Discharge line repairs
3/4/2016 10:10 AM 5/2/2016 1:22 PM **1,419 hours** Discharge line repairs
5/17/2016 11:59 PM 5/18/2016 2:35 PM 15 hours PG&E power interruption
5/25/2016 1:28 PM 5/25/2016 5:21 PM 4 hours PG&E power interruption
6/3/2016 7:45 AM 6/3/2016 9:08 AM 1 hour PG&E power interruption
7/8/2016 6:12 AM 7/8/2016 7:17 AM 1 hour PG&E power interruption
7/14/2016 10:21 AM 7/14/2016 11:36 AM 1 hour PG&E power interruption
8/13/2016 11:32 AM 8/16/2016 7:29 PM 80 hours PG&E power interruption
10/3/2016 7:55 PM 10/5/2016 6:23 PM 46 hours PG&E power interruption
12/24/2016 9:18 AM 1/11/2017 9:23 **AM 432 hours** PG&E power interruption & discharge line repair
1/20/2017 7:42 PM 1/25/2017 2:43 PM **115 hours** PG&E power interruption

Baer-29 cont.

The most striking thing about the table is what is not in it. Recall that the continuous long term pumping test began on April 22, 2015, but the table only includes data from 2016. The longest shut down from the table above, 1419, hours, is roughly 60 days in duration. But in 2015, besides the few short-term delays of a couple days or less**,** *there was a lengthy shut down from June 5, 2015 to October 27, 2015 roughly 144 days or about 3456 hours*.

It is but another example of the sloppy science conducted with omissions tending to be clustered around events that are not helpful to a successful outcome of the "experiment."

Questions

Why does the table of interruptions not include the data from April 22, 2015 through the end of that calendar year?

Why was the pumping interruption information omitted from the DEIR? How does the numerous and sometimes lengthy interruptions to slant well pumping interfere with the experimental integrity? Why is there no discussions of the impacts of interruptions to the test well either within the DEIR or the HWG reporting?

What will be done to strengthen and ensure the safety of the power supply? What happens to our water supply with lengthy outages? How long does it take to restart the desalination process after a lengthy power outage? Given the huge power demand for the desal production plant, is it feasible to have fuel based generators as back up? Where is this scenario discussed in the DEIR?

Baer-30

One final note on this topic. Power outages are inevitable. Just this week (February 17-24, 2017) heavy winter storms knocked out power around the Peninsula for several thousands of PG&E customers, some for more than 3 days. The fact that slant well performance receives no mention, discussion or analysis within the DEIR document is *very disconcerting*.

Baer-30 cont.

Maintenance

Since slant wells are functioning nowhere in the world, it raises the question of maintenance. The six-year study at Dana Point does not appear to have resolved the questions of protocols for effectively maintaining slant well efficiency. The link referenced above does examine the issues of physical, chemical and biological clogging of the wellscreens, but the report is theoretical. From the document, it doesn't appear they have actually field-tested how to clean and maintain a slant well.

It is with some relief, that a search of the DEIR for MPWSP does provide hits on slant well maintenance. It is reported that slant well maintenance would occur about every 5 years and take up to 18 weeks to complete on all 10 proposed wells. Further …

Baer-31

DEIR, Chapter 4.3, Page 111 and elsewhere…

"As described in Chapter 3, Description of the Proposed Project, mechanical brushes would be lowered into the slant wells to mechanically clean the well screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. However, the effluent produced during slant well cleaning could carry sediment or other contaminants that, if discharged directly to the beach area, could adversely affect water quality in Monterey Bay."

Questions

Doesn't the sediment in the effluent originate from the Monterey Bay and Salinas Valley Groundwater Basin? Why would that be a contaminate to the beach?

What other contaminants might be introduced in the maintenance process and where would they originate? What are the environmentally inert products? Have they successfully been used to clean slant well screens?

Baer-32

Is there any evidence or documentation of a seawater intake slant well for desalination ever being successfully maintained?

What happens if scrubbing the screens from ***inside* the well and/or applying inert chemical agents fails to clean the "gunk" accumulating on the ***outside*** of the screen intake system?**

Baer-33

These questions must be resolved, and I ask that the DEIR be ***recirculated***.

Respectfully submitted,

Michael Baer
Monterey, California

February 22, 2017

To:

Mary Jo Borak, CEQA Lead California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue Building 455a Monterey, CA 93940

DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT

Public Comment

Thank you for the opportunity to comment on this very large Draft EIR/EIS, which has immense implications for the Monterey Peninsula environment, and for those of us who are Cal-Am ratepayers. I should be grateful to receive your answers to the questions below.

My first submission is on the following topic:

Beech-1: Required Decommissioning of Test Slant Well

The DEIR/DEIS states "The existing test slant well would be converted into a permanent well" (p.3-7 footnote 3, *et al*). However, Cal-Am is not at liberty to do this, since under both the original (#A-3-MRA-14-0050 dated 8-Dec-14) and the revised permits granted by the California Coastal Commission, Cal-Am has signed an undertaking to accept all the conditions, including decommissioning of the test slant well, and posting of a one million dollar bond to ensure that this is carried out. A significant consequence of characterizing the test well as a temporary structure was that it was asserted that it was "adequately mitigated", so no environmental review was required for the test well, and none was carried out. Beech1-1

Q1: Would the conversion to a permanent well be a CEQA and/or NEPA violation, and hence require revision of the project proposal to exclude this conversion? Beech1-2

Q2: Has it not been, and is it not now, erroneous to allow testing to proceed without environmental review, since the impact is not limited to temporary visual and hazardous aspects of the pump, but also includes permanent effects such as: Beech1-3

(CEQA) potential lowering of water level in the aquifers, and salt water intrusion;
(CEQA and FEMA) extraction from the aquifers, and discharge of that water through the pollution treatment outflow pipe into Monterey Bay;

in the course of up to two years of test pumping of millions of gallons per day?

Q3. Would not an environmental review of the Test Slant Well proposal have revealed, or would it not now reveal, the serious environmental harm likely to ensue in pumping from groundwater aquifers, and call instead for testing of true subocean intake of seawater? Beech1-4

To bring some science into this, and quantify the effects:

Q3: How many acre-feet will have been pumped in total out of the 180 foot and Dune Sand aquifers, say through March 1, 2017? Beech1-5

Q4: What have been the true environmental impacts already, say at Monitoring Well 4, on water level relative to an actual baseline, and on salinity as estimated via conductivity and total dissolved solids, with any regional trends based on hard data? Beech1-6

Even if the test slant well is indeed decommissioned, there is disturbing evidence (identified in the letter below) that there was already an intention, when the permit was signed and an EIR was avoided, to later convert the test well into a backup well in the production system. Beech1-7

Q5. In order to uphold the integrity of the CEQA and NEPA processes, and avoid setting a bad precedent, doesn't this reinforce the case for insisting that the undertaking to decommission the test well must be honored, with possibly some reprimand to the applicants for manipulation of the processes, and even for any demonstrated harm to the environment during testing? Beech1-8

To any suggestion that Cal Am would actually be saving ratepayers money by making the conversion to a backup well, there are two major answers – that the amount saved would be trivial compared to the harm done by condoning the gaming of the system; and that if Cal-Am were seriously interested in saving ratepayers money, it would not have withdrawn from the previous Regional Project, and we could by now have already been using cheaper desalinated water, purchased by Cal-Am from a plant owned and operated by Marina Coast Water District, with vast Federal funding. Beech1-9

Some more details are included in the letter below to Mr. Traylor of the local CCC Enforcement Office. For reasons that they have been unwilling to state, the CCC, having assigned the issue Case # V-3-16-0032, has not been prepared to pursue it. My public records request to CCC produced no documents directly bearing this case number, and the issue appears to have been quietly dropped. Please investigate whether there was some conflict of interest due to CCC staff having assisted in the preparation of this faulty CDP permit (and, indeed, also in the preparation of its revised version after the testing was suspended as soon as it appeared to be failing). Beech1-10

However, my questions to you are not about why CCC chooses not to enforce conditions in its permits, but about whether CEQA and NEPA requirements have been satisfied, on which subjects you have the expertise and the vested authority and obligation to answer. Beech1-11

With thanks for your attention,

David Beech
Monterey CA 93940

Cal-Am Residential Ratepayer

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Copy of letter to Mr. Traylor follows.

To: Sharif Traylor, 11 March, 2016
Enforcement Officer
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060

From: David Beech

Permit Violation re Decommissioning of Cal-Am Test Slant Well
Coastal Development Permit #A-3-MRA-14-0050

Dear Mr. Traylor,

This letter is to notify you formally of an apparent permit violation concerning the decommissioning of the Cal-Am Test Slant Well, whose Permit \was approved at the CCC November 2014 meeting, and revised in October, 2015, after a halt in testing. The issue only came to my attention by accident in January when I was researching the facts on the slant well project to present at an informational community outreach meeting in Carmel, and looked at the map for the intended production system.

Executive Summary

1. The Test Slant Well Permit requires that the test well be decommissioned on completion of testing.
2. Consequently, as a temporary structure, the test well escaped CEQA requirements, such as an Environmental Impact Report.
3. The Findings in the original permit recommendation already make a contradictory mention of possibly not decommissioning the test well.
4. Cal-Am has subsequently issued an RFP for construction of the production wells, and accepted a bid, including use of the test well as one of two backup wells.
5. CCC investigation and action are requested regarding this permit violation.

1. Decommissioning Required by Permit

In the documentation of permit A-3-MRA-14-0050, the decommissioning of the test well is mentioned in the one-sentence description of the project (p.1),

Details of the mandatory ("shall") decommissioning are given in Special Condition 6, para. 2 (p.6), and the posting of a $1,000,000 bond "to guarantee the Permittee's compliance" is required in Special Condition 17 (p.12). (When was this bond in fact posted?)

2. **Escaping CEQA Review**

In the FINDINGS AND DECLARATIONS (http://www.coastal.ca.gov/meetings/mtg-mm14-11.html, item 15a) section V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (p.63), the summary (without any supporting detail), refers to the "seventeen special conditions necessary to avoid, minimize, or mitigate these [significant adverse environmental] impacts." Special Conditions 6 and 17, cited above, were thus a factor in the Commission's finding that "the proposed project, as conditioned, has been adequately mitigated and is determined to be consistent with CEQA." If SC 6 is not honored, this finding would need to be revisited.

3. **Contradictory Findings**

Unaccountably, there is discussion in FINDINGS AND DECLARATIONS IV.A. (p.16) regarding the "long-term use of the well, including converting the well to use as a water source for the separately proposed MPWSP." This directly contradicts the commitment to decommissioning of the test well, which was a factor in the CEQA mitigation. As a discussion of what "these Findings …do not authorize", it does not have any force in this document to override the "shall" commitment and the Bond requirement for the decommissioning described above. The full paragraph in FINDINGS is as follows:

"The proposed project evaluated herein is for construction and operation of a test slant well only. These Findings, and any coastal development permit issued pursuant to these Findings, apply only to the proposed test slant well and its associated monitoring wells and do not authorize development that may be associated with long-term use of the well, including converting the well to use as a water source for the separately proposed MPWSP. Any such proposal will require additional review and analysis for conformity to relevant Local Coastal Programs and the Coastal Act and will be conducted independent of any decision arising from these Findings. Further, the Commission's decision regarding these Findings exerts no influence over, and causes no prejudice to, the outcome of those separate future decisions."

It is disturbing that someone, at least, was already, at the time of the original permit commitment to decommission the test well, thinking in terms of the Permittee later walking away from the commitment. Can any Commission Staff Member shed light on this? Who introduced this material? Are there working documents in the Commission's files that can help resolve this issue of good faith in the adoption of the original permit?

4. Map Showing Converted Test Well

Cal-Am has subsequently issued an RFP for construction of the production wells (ahead of approval of the test results), where the test well was explicitly allowed to be "converted into a production well." A bid from Boart Longyear was accepted, including use of the test well as a backup well in the production system. The map below is taken from the official documentation of the project at http://www.watersupply.org under

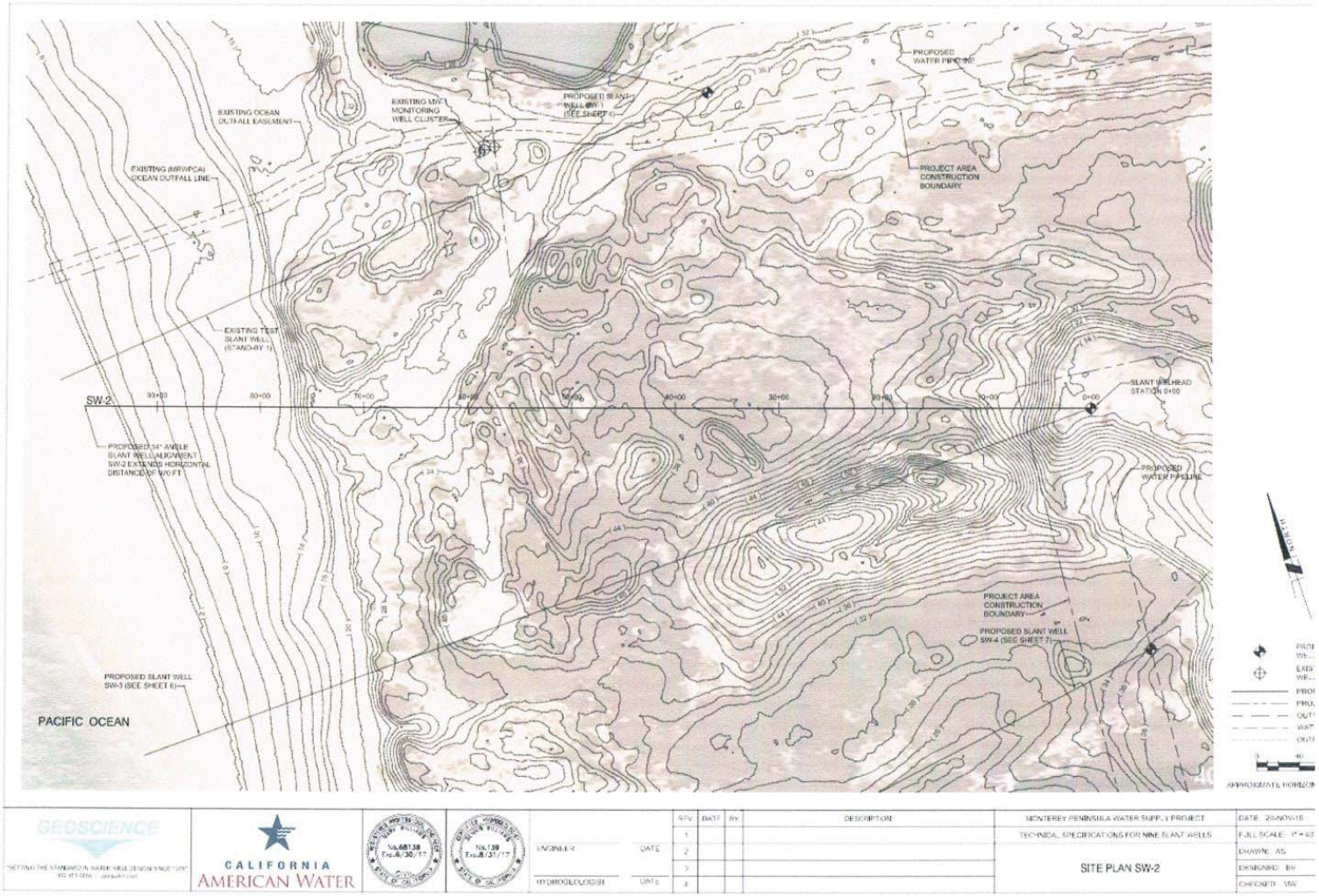
PROCUREMENT, 1. Source Water Slant Wells RFP, Contract Drawings. The converted test well is seen slanting down from top center, labelled EXISTING TEST SLANT WELL (STAND-BY 1).

5. CCC Investigation and Action Requested

Investigation and appropriate CCC action are requested in light of the above permit violations. In order to penalize the apparent intent to mislead, and to effect the required decommissioning of the test well, since the existing SC 6 and 17 have failed to "guarantee" this, some stronger action appears to be required, possibly with the Commission's Enforcement Unit recommending to the Executive Director rescission of the permit, in addition to tracking that the decommissioning is actually carried out before the specified deadline date of February 28, 2018.

Respectfully submitted,

David Beech,
Monterey


PROPOSED WATER PIPELINE
EXISTING OCEAN OUTFALL EASEMENT
EXISTING MNT MONITORING WELL CLUSTER
PROPOSED SLANT WELL SW-1 (SEE SHEET 4)
EXISTING (MRWPCA) OCEAN OUTFALL LINE
PROJECT AREA CONSTRUCTION BOUNDARY
EXISTING TEST SLANT WELL (STANDBY 1)
SW-2
SLANT WELLHEAD STATION 0+00
PROPOSED 34° ANGLE SLANT WELL ALIGNMENT SW-2 EXTENDS HORIZONTAL DISTANCE OF 900 FT
PROPOSED WATER PIPELINE
PROJECT AREA CONSTRUCTION BOUNDARY
PROPOSED SLANT WELL SW-4 (SEE SHEET 7)
PROPOSED SLANT WELL SW-3 (SEE SHEET 6)
PACIFIC OCEAN
CALIFORNIA AMERICAN WATER
MONTEREY PENINSULA WATER SUPPLY PROJECT
TECHNICAL SPECIFICATIONS FOR NINE SLANT WELLS
SITE PLAN SW-2

David Beech
Letter 2

February 20, 2017

To:

Mary Jo Borak, CEQA Lead California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue Building 455a Monterey, CA 93940

DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT

PUBLIC COMMENT BEECH-2

Thank you for the opportunity to make a few more concise comments on this very large Draft EIR/EIS, which has enormous implications for the Monterey Peninsula environment, and for those of us who are Cal-Am ratepayers. I should be grateful to receive your answers to my questions on the topics below.

Slanted Description of Slant Wells

Right from the start of the project, there has been considerable ambivalence as to:

(a) whether, or to what extent, the slant well intake was ocean water; and
(b) under what surface exactly the slanted screened intakes were "subsurface".

This Draft EIR/EIS perpetuates misleading terminology, possibly to make the project appear more closely aligned with true subocean intake than in fact it is.

Q1: Under what definition of "Seawater" do you assert that the project has a "seawater intake system" (heading of section 3.1 and content of 3.1.1, page 3-7)?

Although the precise content of Total Dissolved Solids (TDS) in seawater has to take account of factors such as location, depth, and temperature (see National Oceanic and Atmospheric Administration documents online), a first approximation to a scientifically acceptable definition close to the Cemex site would be in some specified TDS range close to 35,000 mg/L.

Beech2-1

Q2: Is it not true that the recorded intake TDS during the slant well testing has always been significantly below the acceptable range for seawater?

Q3: Can you show any evidence that the intake TDS of the production slant wells will fall within the range defined for seawater? Beech2-1 cont.

Also in 3.1.1, it is stated:

"The seawater intake system would include 10 subsurface slant wells at the coast (eight active and two on standby at any given time) that would draw seawater from beneath the ocean floor for use as source water for the MPWSP Desalination Plant."

Q4. What evidence can you present that the intake water is drawn from "beneath the ocean floor?" Beech2-2

Q5. Given that the pumping is through screens that are potentially partly or largely under dunes inland of the mean high water mark (where the project description does not exclude the possibility that some screening in the Dune Sand Aquifer may even be above sea level), are you claiming that all of the intake water originated under the ocean floor? Beech2-3

Other aspects of the placement of the slant wells will be discussed shortly.

Again in 3.1.1, it is stated:

"When compared to vertical wells, slant wells allow for a substantially increased screen length in the target water source, resulting in higher production rates."

Given that an experimental slant well of appropriate dimensions would cost approximately $11 million, versus a tried-and-trusted vertical well to the same depth that would cost approximately $1 million (as planned in the Regional Project from which Cal Am withdrew), this immediately raises a major question:

Q6. Why was a vertical well not also constructed nearby for direct comparison of performance and reliability? Beech2-4

Since the use of hitherto unsuccessful slant well technology is perhaps the second weakest part of the proposal being evaluated (after the absence of water rights), please also answer these questions:

Q7. What evidence is there that increased screen length would in practice reliably result in higher production rates when compared to vertical wells?

The output of a well is largely determined by the power of its pump, and nearby (and worldwide) vertical wells have reliably sustained high production rates for many years. Beech2-5

Moreover:

Q8. Since the planned operation of the production slant wells is at "approximately 2,100 gallons per minute (gpm) per well" (p. 3-15), is it not true that this output, or more, is commonplace, with proven reliability and economy, for vertical wells, and thus any theoretical (but contested) higher production rate for slant wells is not even needed? Beech2-6

To examine the production slant wells more closely, we move ahead to Table 3-2 (p. 3-16), and pursue the theme of slanted presentation.

Q7. Since you have replaced the Mean Sea Level used in the test well permit description by Mean High Water, could you please also add a column computed using Mean Low Water?

The zone between MHW and MLW would not normally be described as "offshore", but rather as being, as in Doc Ricketts' enduring title, "Between Pacific Tides". The term "offshore" tends to be defined by dictionaries as "some distance out to sea", and to use it as beginning at the Mean High Water mark is surely misleading.

Beech2-7

Then again, the length of the production wells is to be "approximately 900 to 1,000 feet", but the calculations assume the maximum length, despite the fact that the test slant well had a permit up to 1000 feet, but was actually built only to 724 feet, so 1000 feet for the production wells is by no means guaranteed.

Beech2-8

Q8. Could you please clarify the assumptions made in the tables and in the text, including explanation of the limited accuracy and relevance of the +env and storm numbers?

Beech2-9

In fact, the figure on p.3-13 probably gives a better impression of the true state of affairs, maybe when the tide is fairly well out.

Q9. Is it intentional that all of the wells on the p.3-13 map stop short of the Marina City Boundary, which thus limits the extent to which the wells would be subocean, or perhaps of concern to the National Marine Sanctuary?

Beech2-10

Also there is considerable freedom in the placement of the screens on the well casing of the production wells, where the actual intake occurs. On p 3-15, it is stated that "Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin.

Q10. Could you please confirm that a correct understanding of this is that all intake water would be drawn from the Dune Sand Aquifer and/or the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin?

Beech2-11

Discrepancies between Test Slant Well and Production Slant Wells

There must be serious concern, in such previously uncharted territory, that the production slant wells differ substantially from the test slant well, to be drilled at an angle of 14 degrees to the horizontal instead of 19 degrees, and being approximately 900 to 1,000 feet in length instead of 724 feet. The concern is heightened by the fact that there appeared to be reliability problems with the test well, with frequently interrupted testing.

Beech2-12

Q11. For how many days out of how many actual calendar days has the test well produced water, and at what rate? Beech2-12 cont.

Q12. What lessons have been learned from the test that can give confidence that improved design of the production wells will overcome problems experienced with the test well? Beech2-13

Q13: Why was the slant angle changed to 14 degrees? Beech2-14

Q14: If this project is approved, would subsequent design changes be allowed without further review, as problems were discovered during construction, i.e. would this unprecedented project be a continuation of an experiment, only on a scale ten times as large, with ratepayer money irretrievably committed? Beech2-15

Q15: How have you estimated the cumulative effects of 8 closely-situated active production wells as compared to 1 test well, for example on the sustainability of the intake volume from the aquifers, lowering of aquifer levels, seawater intrusion, and relationship of the cones of depression? Beech2-16

Rationale for Carmel Valley Pump Station

The Carmel Valley Pump Station is described in Section 3.2.3.6, as follows:

"The Valley Greens pressure zone, in Carmel Valley south of the Segunda Reservoir, does not have sufficient hydraulic head to fill the existing Segunda Reservoir, which is located at the southern end of the existing Segunda Pipeline. The proposed Carmel Valley Pump Station, with a pumping capacity of 3 mgd (2,100 gpm), would provide the additional pressure needed to fill Segunda Reservoir."

Q16: Why is filling the Segunda Reservoir in Carmel Valley, at the end of a pipeline conveying water over the hill to Seaside, a necessary part of distributing desalinated water that passes through Seaside already? Beech2-17

The Monterey Peninsula Water Management District has an agenda item for their 2/22/17 meeting to approve a modified Addendum to the PWN/GWR EIR, related to the Monterey Pipeline which is also a crucial part of the distribution of desalinated water as covered in this DEIR/EIS. Since the supporting documentation (Exhibit 2-A) http://www.mpwmd.net/wp-content/uploads/Feb-22-2017-Board-Mtg-Agenda-and-Packet.pdf describes (bottom p.15) the intent to significantly increase the pumping of Carmel Valley water for ASR purposes, and to distribute it by a different route, the following CEQA question arises: Beech2-18

Q17. Doesn't the above significant change require a Supplemental EIR?

Harmful Postponement of Resolution of Water Rights Issues

Section 2.6 on Water Rights begins: Beech2-19

"The topic of water rights is not one typically addressed in an EIR/EIS. It is a legal matter that is rarely relevant to the question of whether a proposed project being evaluated under CEQA or NEPA will generate impacts on the environment. Here, however, the issue of water rights is addressed as one of project feasibility."

Not being an attorney, I will here, without prejudice, opt out of any legal discussion of the merits of the substance of this section. But I do wish to exhaust my administrative remedies by making a meta-level request, related to the possibility that it is eventually determined that this project is infeasible due to Cal Am's lack of water rights.

To expend so much time and energy on designing and evaluating a complex system, before determining that an essential precondition could be satisfied, appears to have been to put the cart before the horse. It was a very poor business decision that would not, in my opinion, have been made by a company putting its own money at risk.

If the project is found infeasible, then, together with many other people, I will have been harmed by having to bear the inflated stranded costs of a failed project, and by having spent countless hours (in my case, from late 2014 to the present) in trying to avert this wastage. I have also driven hundreds of miles to Coastal Commission meetings in Half Moon Bay. Morro Bay, and Santa Rosa, in order to alert CCC to these issues, being limited to a few minutes of Public Comment since CCC had ignored requests to make the issues an agenda item for discussion and potential action.

Beech2-19

Those stranded costs would be unnecessarily high due to the decision by Cal-Am, supported by others including but not limited to CPUC, MBNMS, ESA and CCC, to not resolve water rights issues before proceeding with detailed design, testing, and EIR preparation and processing.

Q17, Could you please respond with a recommendation that the parties above adopt an appropriate undertaking to indemnify all those harmed as described, in the event that the project is found infeasible due to lack of water rights?

The plight of the suffering ratepayer in dealing with the priesthood of water agencies is well captured in the New Yorker cartoon overleaf.

Respectfully submitted,

David Beech

Cal-Am Residential Ratepayer
Monterey, CA 93940

"Except for the actual sacrifice, all this is largely symbolic."

When the CCC board members were shown this, they laughed politely, and allowed the sacrifice to continue.

David Beech
Letter 3

February 20, 2017

To:

Mary Jo Borak, CEQA Lead California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue Building 455a Monterey, CA 93940

DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT

PUBLIC COMMENT BEECH-3

Thank you for the opportunity to make a few more concise comments on this very large Draft EIR/EIS, which has enormous implications for the Monterey Peninsula environment, and for all those of us who are Cal-Am ratepayers. I should be grateful to receive your answers to my questions on the topics below.

Selection of Alternatives

A search of the DEIR/EIS reveals no mention of the substantial 2011 report on alternatives prepared for Cal-Am by RBF Consulting.
https://www.scribd.com/document/68554233/Technical-Memorandum-RBF-Consulting
This appeared to be an outstanding piece of work in the technical analysis. Even though some of the pros and cons, and cost comparisons, would need to be revisited after the passage of more than 5 years, it appears to be a more diligent study than presented in this DEIR/EIS.

Q1. Was the above 2011 report studied as part of the selection process? If not, why not?

In particular, alternative 9, to divert winter runoff of surface water from the Salinas River from above the rubber dam via the treatment plant into the Seaside Aquifer, deserves renewed attention, and I shall return to this under Superior Alternative below.

Beech3-1

Evaluation of Alternatives

The dismissal of some alternatives appears to be on rather slender grounds, but I will not linger over details here, as I am hurrying towards a constructive alternative proposal.

Beech3-2

I will only ask about diligence in obtaining sufficient information to make evaluations of serious potential alternatives to the proposed project at comparable depth, as required by CEQA and NEPA. For example:

Q2. How much contact was there, in order to improve understanding and seek additional information, between the DEIR/EIS team and the lead agencies and/or proponents of the following:

(a) The People's Project;
(b) DeepWater Desal;
(c) Cal-Am Desal Project?

Beech3-2 cont.

Superior Alternative

The *prima facie* case for including consideration of Salinas River winter surplus diversion as a component of a superior solution is very clear.

It is generally accepted that an average of as much as 250,000 acre-feet of fresh surface water (not groundwater) is lost from the mouth of the Salinas River into Monterey Bay in the winter rainfall season – where diversion of a mere 10,000 acre-feet would be enough to deal with all near-to-medium term problems addressed by this DEIR/EIS.

Beech3-3

Diversion of substantial quantities of this water (including for municipal use) is already allowed by State Permit 11043 approved in 1952, and modified some years later to slightly reduce the permitted maxima as punishment to Monterey County for making no use of the permit. However, the quantity allowed is still ample, although some refinements of the permit would likely be necessary. The prognosis for those refinements should be very good, given that their approval is decided by the State Water Board (under their surface water powers) – the very body that has been pressing this area since 1995 to come up with an environmentally friendly solution to the water supply deficiency.

Beech3-4

There seems to be a local political opinion that the Salinas Valley farmers would never agree to this diversion, but if their position is that no one else can touch Salinas River surface water; even where they have no use for it themselves and it is running out into the ocean, this is a desperately weak position which could hardly survive in front of the various regulatory bodies that oversee the best interests of the whole community.

Beech3-5

This should rather be a time for the whole of Monterey County to work together to solve the County's water problems. An example would be to share the costs of the Interlake Tunnel, if there can be shared benefit. Already the farmers are due to benefit hugely from Pure Water Monterey, since much of their toxic waste water will be cleaned for them, and much of the resulting clean water will be returned to them at a knockdown price. So the least to be expected in return is that they do not obstruct residential use of water at a season and a location where the farmers have no use for it.

Beech3-6

Beech3-7

Returning therefore to the technical and economic feasibility of what we might call Aquifer Storage and Recovery (Salinas River) – ASR(SR) – the next step would be to set engineers to work to develop a detailed proposal. I would just note two other things:

(1) Although the Advanced Treatment Plant for Pure Water Monterey is nearby, and has been designed to facilitate a modular extension to double its capacity, it may be much cheaper to use simplified treatment instead, if the surface water from the river is dramatically cleaner than the mix of source water currently planned for Pure Water Monterey. But the delivery pipe from the treatment plants to the Seaside Aquifer should in any case be sharable. Beech3-8

(2) If it turns out (as I, using only common sense, expect) that some of the water sources for Pure Water Monterey prove too toxic to be cleaned in any cost-effective way, or even at all, then some ASR(SR) water could replace that lost input. Beech3-9

If the engineering design is successful, the close relationship of ASR(SR) to PWM suggests that an efficient approval process would be to propose ASR(SR) in a Supplemental EIR for PWM. Beech3-10

The Cal-Am Desal Project appears to be facing possibly insuperable obstacles,

Q3. Do you agree that it is at least prudent at this point to begin to think outside the box, and minimize delays in the event of failure of the present proposal? Beech3-11

Q4: Do you see merit in the initial sketch of ASR(SR) above? Beech3-12

Plan C

Since I believe Plan B has already come and gone, this section will propose ASR(SR) in the context of a comprehensive Plan C.

The portfolio approach would be continued, this Superior Alternative Project being comprised of:

(i) One or more desalination plants as needed
(ii) Existing Aquifer Storage and Recovery (Carmel River)
(iii) Pure Water Monterey
(iv) Aquifer Storage and Recovery (Salinas River) Beech3-13

Items (i) and (iv) are the only ones that need work, and development of (iv) does not appear problematic, especially if processed as a Supplemental EIR for PWM. (There is a recent precedent for overlapping EIRs, with the Monterey Pipeline being moved from the Desal EIR to the earlier PWM EIR as a shared component.)

Q5: Does Plan C satisfy your criteria for serious consideration as a Superior Alternative?

Resolution of the Desal Alternatives

Only the quandary of the imperfectly synchronized EIRs for the Cal-Am, People's, and DeepWater desal projects would then remain to be resolved. It appears ridiculous to proceed with independent unsynchronized reviews that could produce contradictory evaluations and recommendations. Beech3-14

Q6: Do you agree that some thinking outside the box is required here, or do CEQA and NEPA indicate how such a situation should be handled?

For example, given some reasonable deadline for issuance of the other DEIR/EISs, should all desal proposals have a common end date for receipt of public comments, so that at least the public can make a properly informed appraisal of the related (possibly competing) projects? Then some combined analysis of these comments and development of responses and recommendations seems to be called for. Beech3-15

Although the present DEIR/EIS is the first of the three to appear; it is quite likely to attract by far the most comments, so that the other two projects could catch up after the shared final date for public comment, with the Final EIR/EIS dates converging. Beech3-16

Q7: How do you propose to resolve the above issues for the desal proposals?

Recirculation of this DEIR/EIS, possibly including Plan C

Q8: Do you agree that in light of the severity of the many well-informed objections you have received – and in light of the low probability of successful minor amendments to answer all these objections – it is necessary to make major amendments and recirculate the DEIR/EIS? Beech3-17

Q9: Will you kindly give full consideration to recommending Plan C above? Beech3-18

Q10: Will you also, after consulting Cal-Am, give full consideration to recommending termination of their current Desal Project (with its spiraling potentially stranded costs), in favor of the desal component (i) of Plan C being satisfied by reasonably well-synchronized reviews of the DEIRs for the People's Project and DeepWater Desal? Beech3-19

Indeed, Cal-Am's agreement to termination of their staggering project sooner rather than later would accelerate the ultimate solution, win them friends, and improve their long-term prospects for remaining the water purveyor to the Monterey Peninsula.

Respectfully submitted,

David Beech

Cal-Am Residential Ratepayer
Monterey, CA 93940

David Beech
Letter 4

February 25, 2017

To:

Mary Jo Borak, CEQA Lead California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue Building 455a Monterey, CA 93940

DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT

PUBLIC COMMENT BEECH-4

Thank you for the opportunity to make more comments on this very large Draft EIR/EIS, which has immense implications for the Monterey Peninsula environment, and for all those of us who are Cal-Am ratepayers. I should be grateful to receive your answers to my questions on the topics below.

I apologize for the length and level of detail of this submission. Unfortunately this is necessary in order to adequately address certain major issues raised in the 3700 pages of the DEIR/EIS, which themselves contain much essential detail!

Purpose of Test Slant Well

The following surprising statement of the purpose of the test slant well is found on p. 3-2:

To inform the final design of the subsurface slant wells and the MPWSP Desalination Plant treatment system, and to collect geologic and hydrogeologic data needed for Federal, state, regional, and local permits for the full-scale project, CalAm built a test slant well at the same location as the seawater intake system for the proposed Project. CalAm currently is operating the test slant well as a pilot program to collect data. Construction of the test slant well and operation of the pilot program was covered under separate environmental review.[2]

Yet the original Project Description for the test slant well was as follows:

Project Purpose
The project would allow Cal-Am to gather technical data related to the potential hydrogeologic and water quality effects that would result from using similar wells at or near this site to provide water for the proposed Monterey Peninsula Water Supply Project. If the data collected from this proposed test well demonstrates that this well design and location would provide the necessary amount of water and not cause unacceptable adverse effects, Cal-Am may choose to apply for additional coastal development permits to convert the test well to a production well and/or construct additional similar wells, subject to certification of an Environmental Impact Report ("EIR") by the California Public Utilities Commission, which is preparing the document for the above-referenced water supply project.

This was the basis on which the California Coastal Commission granted the test well permit. https://documents.coastal.ca.gov/reports/2014/11/W14a-s-11-2014.pdf

Beech4-1

Separating out the conversion of the test well, which was addressed in my earlier comments Beech-1, we focus here on the intended production wells, i.e.

If the data collected from this proposed test well demonstrates that this well design and location would provide the necessary amount of water and not cause unacceptable adverse effects, Cal-Am may choose to apply for additional coastal development permits to … construct additional similar wells …

Q1: If you do not have adequate grounds for limiting the purpose as being "to inform the design" and "to collect data", omitting any mention of evaluation of the "well design and location", will you please amend the DEIR/EIS to be consistent with the permitted project description?

Beech4-1

Q2: Do the planned production wells, at slant angle of 14 degrees instead of 19 degrees, and of length between 900 and 1000 feet instead of 724 feet, qualify as sufficiently "similar" for test results to be confidently extrapolated to justify a project slated to cost hundreds of millions of dollars and to be an indispensable part of the water supply for decades?

As a footnote to a footnote, we return to footnote 2 referenced above at the end of the extract from DEIR/EIS p. 3-2, which reads as follows:

[2] In October 2014, Monterey Bay National Marine Sanctuary finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, the City of Marina and the California Coastal Commission completed their CEQA review.

After considering my comments in Beech-1 on the avoidance of an EIR due to the undertaking to decommission the test slant well, you may agree that some less misleading footnote is required. I have not checked the NEPA and City of Marina materials, but you will know whether they had similar dependencies on the temporary nature of the test well.

Beech4-2

Q3: Will you please clarify in footnote 2 the nature of the NEPA and CEQA reviews, and the reason why no EIR/EIS was deemed to be required for the test well, despite the environmental impact of pumping of millions of gallons out of the aquifers and into Monterey Bay during testing?

Beech4-3

HWG and Conflict of Interest

The Hydrogeologic Working Group (HWG) was set up by CPUC to play a pivotal role in the data collection, reporting, and evaluation of the slant well test. Yet it appears to be dominated by Dr Dennis Williams (holder of slant well patents) and his company (GeoSciences) on whose letterhead most of the reports have been published.

Dr Williams was previously removed from his position as representing CPUC in the HWG, after it was pointed out that there was a conflict of interest in his evaluating the technology that he was designing and promoting. However, he has still remained as an

Beech4-4

active member of HWG, whereas there is little evidence of the other members participating beyond (usually) signing their names on the periodic reports.

Q4: Is this not still a conflict of interest that fatally undermines the credibility and value of the HWG reports?

Beech4-4 cont.

To illustrate the unnerving fragility of evidence derived from the slant well testing, we move to a small sample of the reported data. It is important to understand that this is not a new investigation, but that several concerned residential rate-payers have been raising these issues with Coastal Commission staff, and thus (as requested) indirectly, or occasionally directly, with HWG members, ever since the testing began. Our cries have fallen on deaf ears.

Unscientific Test Well Reporting and Evaluation

Testing under Original Permit

Probably as good a first example as any arose early in the testing, when Cal Am voluntarily suspended pumping as the water level was dropping fast. Fingers were pointed at farmers for having been responsible, yet no data were produced, and no log data from nearby farm wells were even sought – unscientific!

Then examination of the reported levels at Monitoring Well 4 suggested that the level had previously already fallen by more than one inch below the baseline, which should have automatically triggered a condition in the permit to cease pumping, pending CPUC review. This led to claims that the baseline was not actually a number, but was a discussion in a technical report, and hence no numerical calculation was needed or carried out. In my frustration, I sent 12 simple questions to CCC staff, appended below as Exhibit 4-A.

Having received no direct reply at the time, and since these questions are fundamental to an evaluation of the scientific integrity of the testing, I ask the following:

Beech4-5

Q5: Could you please obtain answers to these questions from the HWG, and publish them in your response?

I emphasize that an answer from CCC staff would not suffice, since it is their previous treatment of technical questions that is being challenged. In this whole section, I am counting on the professional reputation of the DEIR/EIS team to guarantee answers that live up to the scientific standards required by CEQA and NEPA.

In an email dated 2/16/2016 to CCC staff, I raised the following question:

==========

Question about Permit Compliance

1. Under what provision of the permit was the permittee allowed to voluntarily suspend pumping?

   This is not a trivial question, since in a stress test, the patient is not usually allowed to step off the treadmill when things don't seem to be going too well, take a rest during the most severe part (summer dry season, continued drought), and wait for easier conditions (heavy rainstorms) and an easier setting of the treadmill on resumption (regional trends in Special Condition 11), and finally delay the resumption voluntarily by claiming repairs were needed to the treadmill (well pump).

   The purpose of the test is to determine the most accurate prognosis for the patient, not to find a way to "pass".

Beech4-5 cont.

==========

The (correct) reply was that the permit did not preclude voluntary interruption of testing, and, as far as I know, this reply is also correct under the revised permit.

Q6: Has it not been a serious scientific (and engineering) flaw in the test well permits that they have not insisted on almost continuous operation of the test well, in order to provide evidence of reliability (and maintainability, which seems to have been almost totally neglected)?

This sketchy testing would not matter so much in a small project, but we are looking here at a project with a base sticker price of $320M, which could easily creep up to around the $1 Billion mark as a total cost to ratepayers after finance charges, corporate taxes and annual 9.9% profits are added in. That would be an average of about $25,000 for each of the approximately 40,000 Cal Am ratepayer connections in the Monterey Peninsula area.

Beech4-6

Then problems with the unproven technology during construction (hardly unforeseen) could lead to endless cost overruns, when the project had proceeded so far that there was no turning back, and the contractor could call the tune.

Beech4-7

Consider what happened to the repairs to the Bay Bridge after the Loma Prieta earthquake, where the original estimate of $250 Million was said to have grown to $6.5 Billion, i.e. by a factor of 26.
http://www.citylab.com/politics/2015/10/from-250-million-to-65-billion-the-bay-bridge-cost-overrun/410254/
If that happened to the Cal Am Desal Project, ratepayers would be on the hook for an average of about $650,000 each over 20 or 30 years.

Q7: Who could afford that?

To the reply "That could never happen here", a realistic response would be "Well, maybe not quite as badly, but what incentive does Cal Am have to keep the cost down? In fact, there is even an incentive to increase the cost of the newly acquired assets, on which their annual 9.9% profit, guaranteed by CPUC, is calculated."

Beech4-8

Q8: Is it time to terminate the apparently failing Cal Am Desal Project due to inadequate testing, rather than continuing to harm the environment and throw good money after bad? Beech4-8 cont.

Q9: In case you might consider responding to Q8 that it is not within your remit to answer it, I ask: Do CEQA and NEPA require that an EIR/EIS always makes a positive recommendation in support of the project under review, or is it possible to recommend denial of approval on grounds of insufficiently mitigated impact on the environment, and/or (particularly relevant to apparently unscientific testing) insufficient evidence that the production system would have insignificant environmental impact? Beech4-9

In support of my suggestion in Q8, I append below as Exhibit 4-B a letter I wrote on 17 January, 2016 to respected former Executive Director of CCC, Dr Charles Lester, making a similar request after he told me that he was supporting the Cal Am project because they had told him the intake was "in the surf zone". Since I walk on the beach at Spanish Bay and observe surfers and the surf zone almost every week, I can assure you that this description by Cal Am was very far from the truth. Beech4-10

I did not receive any reply from Dr Lester, nor was the issue placed on any CCC agenda.

Weaker Revised Permit

After the voluntary suspension of testing mentioned above, CCC issued a revised permit with testing conditions weakened in at least two ways:

(1) Observed water levels and TDS levels were to be adjusted by taking account of "regional trends";
(2) Each report set a new baseline for comparison of water levels and TDS levels.

Regarding the regional trends, I have been unable to find any use of hard data as to what they are. It seems to have been sufficient to dismiss unfavorable readings as "due to regional trends", without any numerical computation. Beech4-11

Q10: Has the way that regional trends have been used in the periodic reports failed to satisfy the scientific standards required by CEQA and NEPA?

The shifting baseline was quite difficult to notice in the way it was introduced in the revised permit. The complete explanation is appended as Exhibit 4-C, but the essence of it is that it provides a loophole so large that "it would be possible to have a 1.4 feet drop in level each week for a year, i.e. a drop of over 70 feet, without raising a threshold event (stop pumping and notify Executive Director). Similarly, the TDS levels could rise 1,900 ppm each week for only 10 weeks from around 22,000 ppm to 41,000 ppm, which is beyond the high end of seawater concentrations, and into brine territory, without raising a threshold event."

In the email of Exhibit 4-C, I suggested to Mr Luster that it must be an editorial mistake, but he (and, I believe, HWG) continued to use the loophole interpretation, thus making the thresholds (designed to protect neighboring land from harm due to the testing) almost certain never to be reached.

Q11: Is not the loophole interpretation of the shifting baseline scientifically absurd?

Q12: Given the conflicted nature of HWG, have you accepted their reports without question, or have you checked on their scientific credibility?

Q13: What interpretation of the revised baseline definition have you used?

Beech4-11 cont.

Disconnect between Data and Findings

The hundreds of pages of indigestible instrument data in the weekly and monthly test well reports have presumably been used in some way, but I have not found any explanation of how this is done. For example in reducing the data recorded at 5-minute or 15-minute intervals to single points on a summary graph, one might use the mean for the day, the median, an arbitrarily selected value, or none of the above.

Q14: How is the instrument data used to plot the graphs?

Beech4-12

Q15: How is the vital salinity graph (apparently hand drawn, and without visible means of data support), computed?

Beech4-13

Respectfully submitted,

David Beech

Cal-Am Residential Ratepayer
Monterey, CA 93940

EXHIBIT 4-A

Questions for the HydroGeologic Working Group of the MPWSP.

1.Who, specifically, reports the data to montereywatersupply.org website, the public website required by permit #A-3-MRA-1410050-A1 ?
2. Why was the laboratory water quality sampling tests suspended between July 29 and December 19, 2015?
3. Why was the laboratory water quality sampling test taken on or about December 20, 2015 as indicated on conductance graph MW4 not reported in monthly monitoring report #2, released January 13, 2016?
4. Who takes the weekly hand samples for conductance and water depth at MW4? Why are those results not posted on montereywatersupply.org?
5. How are “regional trends” determined? Is there data to substantiate “regional trends” as real and quantifiable? Who at the CCC reviews the rationale for determining “regional trends”? Why is this information not available on montereywatersupply.org?
6. Why does the language of permit #A-3-MRA-1410050-A1 indicate “minimal effects at the monitoring well” when Table 2 in the monthly reports indicate that the threshold was exceeded in early May after only two weeks of continuous pumping?
7. Why was the well not suspended on May 6 as required by the permit for exceeding 2000ppm of rise in tds?
8. MPWSP Technical Memorandum “Baseline Water and Total Dissolved Solids Levels Test Slant Well Area” submitted to HWG and dated 4/20/15 shows a table 2 with a MW4 baseline reading of March 6 as 17,900, and April 2 and 17,500. This document was submitted to establish the baseline at all the wells in the project, right?
9. Doesn’t the drop in tds from March to April indicate that seawater intrusion was in a state of reversal before the slant well began pumping? Why or why not?
10. Will Monthly monitoring report # 3, due this week, contain table 2, the data table with the Laboratory results for TDS at MW4M and MW4S, that currently appear in Monthly reports #1 and #2. Will it be updated to reflect the results of the laboratory water quality sampling events on or about Dec 20, 2015 and January 26, 2016?
11. What is the most current TDS reading at MW4M?
12. How can it be verified that the slant well has been running at 2000gpm “24/7” since pumping resumed on or about October 27, 2015. Who determines the volume at the well head? How is it determined? Why are those results not posted on montereywatersupply.org?

Exhibit 4-B

To: Dr. C. Lester 17 January, 2016
Executive Director,
California Coastal Commission
Via Tom Luster
From: David Beech
dbeech@comcast.net

Termination of Cal Am Slant Well Test

Dear Dr Lester,

1 Introduction

I write to notify you of a severe problem with the Cal Am Slant Well Test at the Cemex site in Marina, CA, for which CCC granted a permit at their November 2014 meeting (renewed in October 2015 after a halt in testing).

In fact, I aim to demonstrate that the newly-discovered problem is so severe that CCC should rescind that permit. After various serious problems already reported by others, I submit that a "killer" has now surfaced, as shown in boldface below.

Please confirm that submission of this letter is sufficient notice to become part of the public record, and for the issue to be investigated and acted upon by CCC.

Otherwise, please indicate what other formalities are required to achieve this.

2 Executive Summary

- The slant well concept was introduced to CCC as an ecologically-friendly way to draw ocean water from Monterey Bay for desalination

- The design was altered in a bait-and-switch manner until just before permit approval, such that **the test well no longer has subocean intake, but now draws entirely the brackish water of the already overdrafted 180 foot aquifer beneath the beach and dunes of Marina**

- **The eight intended production wells are similarly located**

- **With the abandonment of subocean intake, there is absolutely no good reason to employ the exceedingly risky and expensive slant well technology to draw water from beneath the beach and dunes**

- CCC should rescind the testing permit before any more ratepayer money is spent on this wasteful and deceptive project

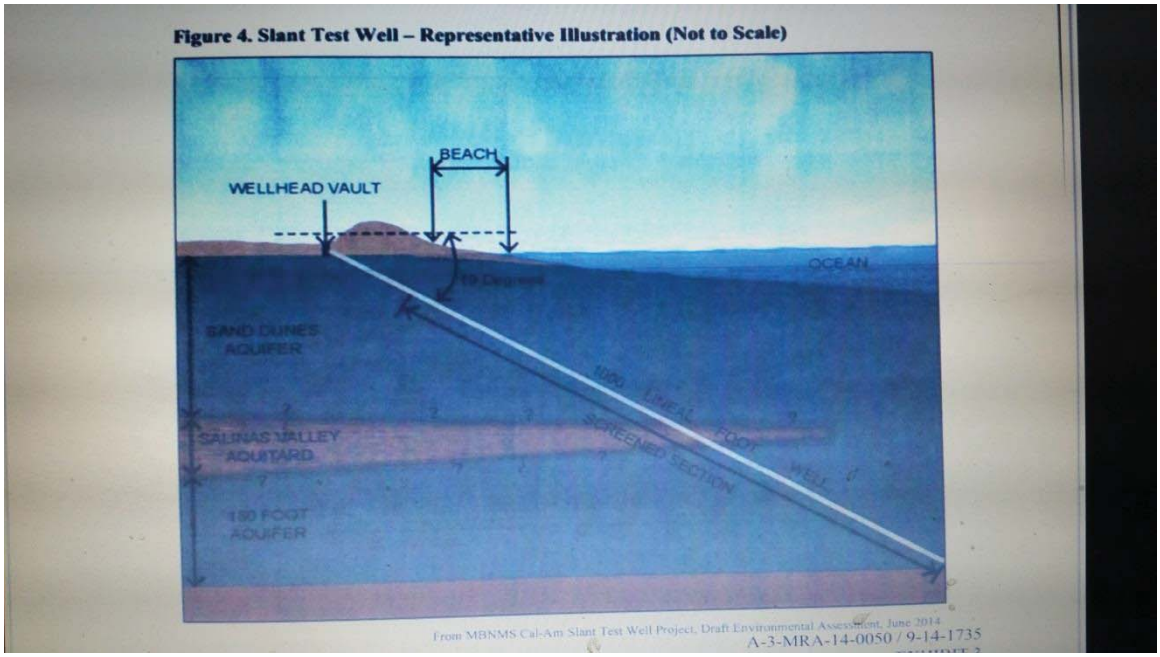
- CCC should encourage the competing People's Project and DeepWater Desal, both using a genuine seawater intake at Moss Landing, to submit their DEIRs as soon as possible, and request any CCC permits necessary

2. Precise Location of Test Slant Well

At the December 2015 CCC meeting in Monterey, I spoke briefly in initial Public Comment to alert the Commission to the fact that the Cal Am test slant well did not have subocean intake, but was now "subsurface" at the shoreline. In your Director's Report, Dr. Lester, you were kind enough to refer to this, and said that you had been assured that although the well had been shortened, the intake was "in the surf zone".

This led me to search the official documentation accessible on line, to discover the more precise facts that I am reporting in this submission.

The first illustration I encountered was Exhibit 3 of the package that Commissioners would have seen in deciding the Appeal and granting the test well permit in November 2014.



This gives an immediate impression that the well extends way under the OCEAN as it says (barely legibly, even in the original – see http://documents.coastal.ca.gov/reports/2014/11/W14a-s-11-2014.pdf). This illustration, besides being "Not to Scale", was not kept up to date with the text of the permit, so it says along the well bore "1000 LINEAL FEET", and, given the position of the original WELLHEAD VAULT at 450 feet inland from mean sea level, the well length is exaggerated to look as though it is over 2000 feet. This would not matter so much were it not for the fact that most of the Coastal

Commissioners, with their almost impossible reading load, would have formed their main impression from this picture. Probably most CalAm customers still think this is roughly the slant well that is being tested – it was only a few months ago that I personally began to discover that it was not.

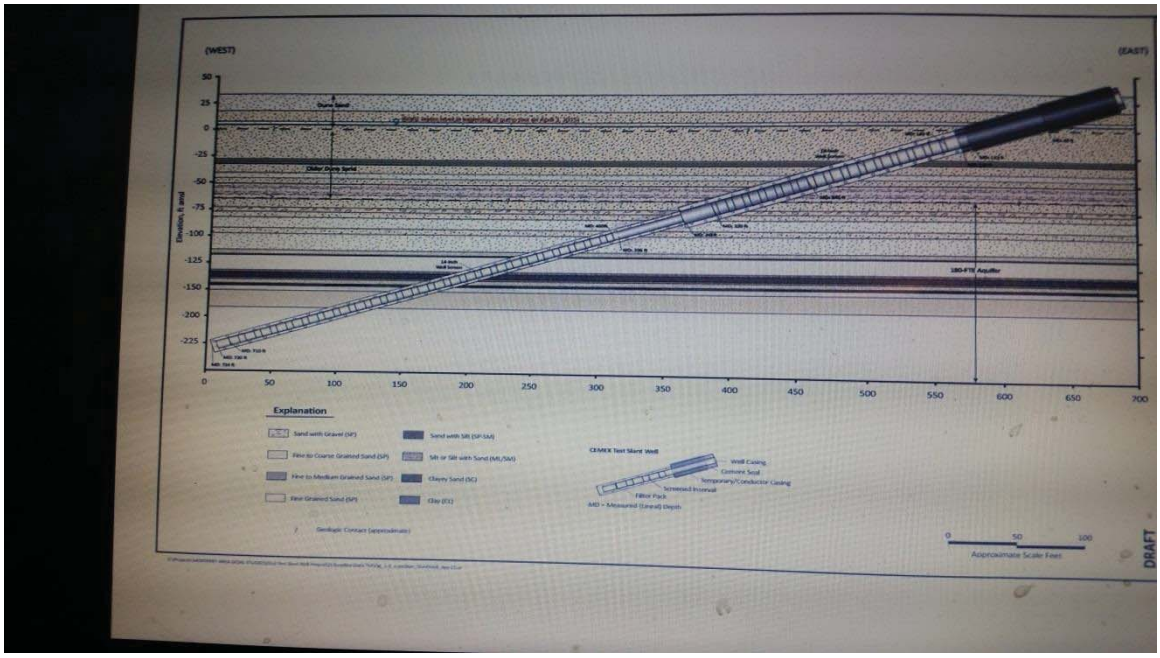
In addition to the textual changes of the well length, which resulted in a test well of 724 lineal feet as built, the following change was introduced at the last moment in the Addendum to the staff report
http://documents.coastal.ca.gov/reports/2014/11/W14a-s-11-2014.pdf

Page 2, Project Description: "The test wellhead would be located approximately ~~450~~650 feet inland of mean sea level at an elevation of about 25 feet."

This apparently trivial change brought the whole well 200 feet further inland.

Seen in cross-section, the actual test well is shown below:

http://documents.coastal.ca.gov/reports/2015/10/Tu15a-10-2015.pdf
EXHIBIT 2



Note that the horizontal length of the well is shown as less than 700 feet, consistent with the following calculation:

Test well bore length = 724 feet (reduced from 1000 feet)
Horizontal distance = 724 x cosine 19 degrees = 724 x 0.9455 = 685 feet
Horizontal distance from wellhead to mean sea level = 650 feet (increased from 450 feet)

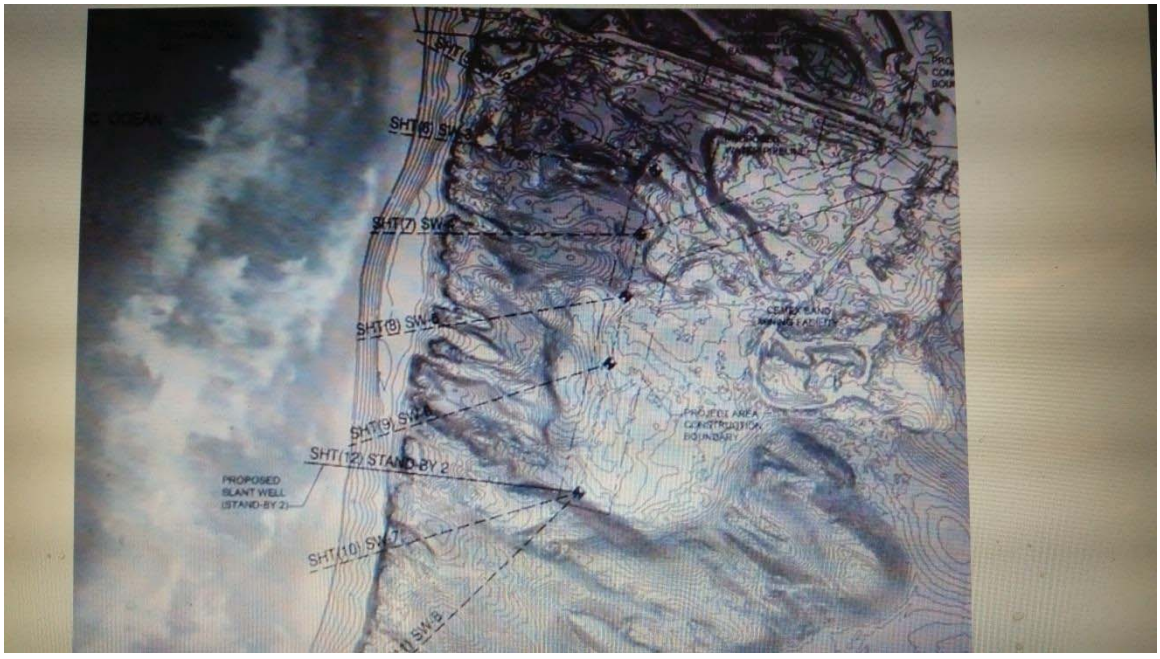
Therefore, end of well = 685 – 650 = **35 feet beyond mean sea level**

THIS IS NOT UNDER ANY SURF ZONE

From the above cross-sectional schematic, it is clear that **the screened intake extends (in this approximate diagram) from top to bottom of the 180 foot aquifer, beneath the beach and dunes, rather than being subocean.**

I was surprised to discover on www.watersupplyproject.org , under PROCUREMENT, that Cal Am has already completed the RFP process and signed contracts for slant well drilling, desalination, and transport pipelines, long before slant well testing is complete, let alone project approval. But you must be already aware of this, and of the alteration of the slant angles from 19 degrees to 14 degrees, without any apparent testing of the latter,

The following illustration of the 8 production wells confirms that the wells are intended to stop far short of the surf zone.



3. Disappearance of Any Need for Slant Wells

In making these progressive changes to the location of the test slant well, **CalAm appears to have shot itself in the foot**, since the only justification for experimenting with that technology was the hope that it would provide ocean water with less potential impact on marine life than open-ocean intake, Now that the source water is from a simple aquifer under land, there is no reason to enter the realm of the high risk and high cost of slant well experiments, and every

reason to terminate the testing before it becomes even more costly to ratepayers (including the new prospect of the evaluation being double-checked by the use of supercomputers at the Lawrence Berkeley Lab. – at whose expense?)

That is not to say that Cal Am should plan instead to drill vertical wells at the Cemex site, since there is no need for anyone to be making extensive demands on the already-overdrafted 180 foot aquifer, which is apparently protected by a 1975 California Supreme Court decision. Moreover, Cal Am should not be rewarded for yet another failed and potentially ruinous project, by being allowed to start over, and again prioritize profit over successful production of water.

Fortunately, there are better solutions awaiting the encouragement of the California Coastal Commission.

4 Additional Reasons for Termination of Testing

If other reasons for termination are needed, you are probably aware that several submissions have been made to the CCC and/or CPUC on other serious problems with the slant well testing, including conflict of interest, data tampering, scientific incompetence, and delay in producing source data as ordered by ALJ Weatherford. I support all of those complaints, for the reasons that have been given by others, and I \need not repeat them.

5 Recommended Way Forward for CCC

The two projects at Moss Landing, the People's Project and DeepWater Desal, are making good progress towards their DEIRs, and both plan seawater intake. One or both of them could become suppliers of desalinated water to Cal Am, with the potential for being publicly owned and more cheaply financed. Both have goals more consistent with those of CCC for the Central Coast than does Cal Am. For example, the People's Project would be cleaning up much of a disused industrial site, and reusing existing infrastructure with existing rights.

After 20 years of failing to meet the CDO, it is time for Cal Am to step aside from attempted production and allow someone else to succeed. It would be timely for the CCC to encourage rapid progress in this direction, and emerge from an unfortunate interlude of seemingly being misled by Cal Am.

Respectfully submitted,

David Beech

Monterey residential ratepayer
dbeech@comcast.net

EXHIBIT 4-C

On 2/16/2016 8:43 AM, David Beech wrote:
Hello Tom,

I saw your reply to Michael Baer that you saw no permit violation on 1/29/16 because it was your reading of the October 2015 revision of Special Condition 11 that it meant the Monitoring Well 4 decreases of water level, or increases of Total Dissolved Solids, were to be compared to the previous week, and not (as previously) to the baseline at the start of testing.

I know you sincerely believe this, but it must be a mistaken reading, for two reasons.

1. It conflicts with the overview of changes given in the October permit, which states:

"Cal-Am's proposed amendment would modify Special Condition 11. The primary modification would keep the same numerical groundwater and salinity thresholds as previously approved, but would provide that they be compared to regional trends rather than be based on a static value at a single location. This modification is in recognition of monitoring data collected from early 2015 until the present that show the pumping test resulted in minimal effects at the monitoring well that were not evident at more distant monitoring sites, and that those minimal effects could readily be distinguished from other regional influences, such as municipal and seasonal agricultural groundwater pumping, that were causing much greater changes. The proposed modification specifically acknowledges these regional influences and direct the HWG and the Executive Director to consider them in their analyses. Other proposed changes to Special Condition 11 would provide additional clarity to the condition language (e.g., referring to "groundwater" rather than "water")."

Note that the "comparison to regional trends" is the only "primary modification" cited, and yet comparisons week-over-week could make a much bigger substantive difference to when a threshold is reached. And the last sentence speaks only of "increase in clarity" and not anything substantive.

So it appears that the SC11 wording is just an editorial mistake - the two major inserts should both end "compared to pre-pump test conditions". The logical alternative, that this major substantive change was slipped in without mention as a primary modification, is unthinkable, raising serious ethical issues.

2. The loophole that your reading of SC11 introduces is so large that it almost completely vitiates the threshold tests, providing virtually no protection to neighboring wells.
For example, it would be possible to have a 1.4 feet drop in level each week for a year, i.e. a drop of over 70 feet, without raising a threshold event (stop pumping and notify

Executive Director). Similarly, the TDS levels could rise 1,900 ppm each week for only 10 weeks from around 22,000 ppm to 41,000 ppm, which is beyond the high end of seawater concentrations, and into brine territory, without raising a threshold event. (The Table 2 in the report for Week 40 that I referred to yesterday to get an approximation for the baseline has vanished overnight - what is going on?)

Do you agree that this was an editorial mistake, to be corrected as I suggest?

In view of the urgency due to possible ongoing rapid seawater intrusion, could you please send me TODAY (a) the official baseline figures for MW4 water level and TDS level, and (b) the HWG calculations of water level and TDS, adjusted for regional trends on 1/29/16?

Many thanks,

David

David Beech
Letter 5

March 2, 2017

To:

Mary Jo Borak, CEQA Lead California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue Building 455a Monterey, CA 93940

DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT

PUBLIC COMMENT BEECH-5

Thank you for the opportunity to continue to comment on this very large Draft EIR/EIS, which has immense implications for the Monterey Peninsula environment, and for all those of us who are Cal-Am ratepayers. I should be grateful to receive your answers to my questions below.

I should like to take advantage of the newly extended comment period by submitting my fifth set of comments, which will be mercifully short although requesting decisive action.

Expedited Termination of Cal Am Desal Project

The extension of the comment period will give the Lead Agencies and the DEIR/EIS team a chance to review comments already received. What will likely become clear to many of you is that this is a project that has been on life support for too long already, and that it is time to pull the plug.

Also, to switch to a marine metaphor, when a project has been torpedoed, it can go down very quickly to its subsurface grave. I have seen an even larger project in the computer industry dead in the water within a week, once the fatal flaws of its experimental technology were demonstrated to top management. Any company with its own money at stake knows there are times when it has to cut its losses. Since Cal-Am does not have this pressure, it falls to the Lead Agencies for the EIR and the EIS to make timely decisions to cut the community's losses, in order to avoid being negligent of their duties.

Beech5-1

Q1: Will the CPUC and/or the MBNMS expedite whatever action is necessary to terminate the Cal Am Desal Project?

Not only would an early decision put a cap on stranded costs, it would accelerate a solution by necessitating immediate work on a superior alternative.

Q2: Will the CPUC and/or the MBNMS immediately encourage development of a superior alternative, such as an expanded portfolio that includes the new component Aquifer Storage and Recovery (Salinas River)?

(Please see summary of "Plan C" in earlier Beech-3 comments, and the start on an engineering specification for alternative 9 in the RBF 2011 Technical Memorandum "Cost Analysis of Water Supply Alternatives" https://www.scribd.com/document/68554233/Technical-Memorandum-RBF-Consulting pp.14-16.)

Beech5-2

With positive answers to Q1 and Q2 above, the talents of valued consultants such as ESA would be much more profitably applied to constructive groundwork for a superior alternative than in attempting to defend an indefensible status quo. Indeed, if those positive answers were available by the revised comment deadline, the task of honest and scientific response to comments would be immensely simplified and abbreviated. This may seem a tight schedule, but 4 weeks is four times as long as it took the company I mentioned earlier to finally kill a project and reassign, I believe, about 2,000 people.

Q3: Can positive answers be secured to Q1 and Q2 by March 29, 2017, or shortly thereafter?

Beech5-3

The simplest way to secure positive answers to all the above questions would be if Cal-Am itself made the call, via whatever are the correct and most time-efficient processes. If the present project is seen as doomed to failure sooner or later, the timing of its replacement becomes a calculation of the public relations benefit and the long-term role of the company in the Monterey Peninsula (and potentially Marina and Fort Ord) areas. In the light of DEIR/EIS comments received, "sooner" could now be seen by Cal-Am as the best choice.

"Sooner" termination of the current Cal Am Desal Project could also result in "very much sooner" delivery of water from replacement projects, which would use conventional technology and be less exposed to the glacial delays likely from well-founded litigation against the Cal Am project (if approved).

Q4: Is it correct that under CEQA law (and NEPA law), termination of a project, whether voluntarily by the applicant or due to denial or disapproval by the lead agency, removes any need to continue work on the EIR (and EIS)?

Beech5-4

If the answer to Q4 is positive (confirmed e.g. by *Las Lomas Land Co. v City of Los Angeles 2009*), an early termination could result in even greater savings in the costs of the EIR and EIS themselves. Although this would result in some loss of future revenue to the consultants processing this document, they have already received much more income than expected, thanks to the lengthy revision and recirculation as a Draft EIR/EIS!

From the point of view of the lead agencies, CPUC especially, they may feel that they have been very tolerant of Cal-Am since the end of the Regional Project, paying out more

and more rope as they wait for a project that is legitimate, environmentally acceptable, and technologically proven ready for 24x7 operation, besides – a distant fourth – being as economically beneficial to the ratepayers as it is to Cal-Am. What the lead agencies must be seeing at this moment, if they are honest, is that Cal-Am has let them down, offering a project that fails on all four counts. Instead of paying out more rope, now is the time for the lead agencies to haul Cal-Am out of this foray into the water supply business, and look, first. to the People's Project and DeepWater Desal for desalinated water, and, second, to Monterey County agencies like the Monterey Regional Water Pollution Control Agency (already well advanced with design and permitting as the lead agency for Pure Water Monterey) for diverted surface water and more recycled water.

The above discussion should establish that I am seeking an accelerated viable solution, and not further delay, which would be intolerable for a community thirsting for a solution after a series of failed Cal-Am projects (and after the company's withdrawal from a viable solution, the Regional Project, which could have actually been delivering desalinated water by now).

There is a feeling in the community that the lead agencies wish to approve the Cal Am project because they consider it the only game in town likely to succeed, despite Cal Am's none-for-plenty record, and evidence presented to you in Public Comments, that suggest the contrary -- that it might be the least likely to succeed.

Q5: Do you regard the Cal Am Desal Project as the only game in town that is likely to succeed? Beech5-5

Q6: Having studied Public Comments received to this Draft EIR/EIS, do you now see evidence therein that causes you to lower your ranking of the Cal Am Desal Project, and to rate more highly the People's Project and DeepWater Desal, and to give encouraging consideration to an additional ASR(Salinas River) Project? Beech5-6

Finale: Long-term Needs

Finally, it may not have been obvious why I limited the benefit of ASR(Salinas River) in Beech-3 to the "short-to-medium term", when the runoff from the Salinas River could easily satisfy long-term needs. The reason is that expansion of the facility would eventually be gated by the estimated 53,000 acre-foot storage capacity of the Seaside Aquifer. Long-term needs beyond this could be satisfied by increased use of desalinated water, and/or a new reservoir, depending on community wishes and economic factors, to be decided many years in the future.

Respectfully submitted,

David Beech (Cal-Am Residential Ratepayer, Monterey)

David Beech
Letter 6

Dear DEIR/EIS Team,

Please insert the following after the Q6 paragraph in my earlier submission Beech-5:

Thought of the Moment (seen on the internet today)

No matter how far you have gone on the wrong road, turn back. -Turkish proverb

Q7: Do you agree, having reviewed many critical public comments, that this wisdom may be applicable to the Cal-Am Desal Project?

Beech6-1

Respectfully submitted,

David Beech (Cal-Am Residential Ratepayer, Monterey)

8.7.3 Kathy Biala
Letter 1

MPWSP DEIR Public Commentary

Commentary on Monterey Peninsula Water Supply Project (MPWSP) DEIR by Kathy Biala, resident of Marina, Citizens for Just Water ("Just Water") - 02.23.17

Respectfully Submitted to:

California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue, Building 455a Monterey, CA 93940

Pg/Section	Cited text	Comments/Questions	
2.6.2 Project Water Rights pg. 2-35	***#1. Topic: Water rights as justification of "No Harm".*** Pg. 2-35 As noted above, CalAm extraction of seawater does not require water rights. The question presented is thus whether Basin water rights holders would be **injured or harmed** by virtue of withdrawal from the Basin of any amount of water that is not purely seawater. The extensive groundwater modeling conducted for this EIR/EIS and discussed in detail in the Groundwater Resources section and in **Appendix E2** is different from that conducted for the 2015 Draft EIR on the MPWSP. **As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP.** ***This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells*****.**	As the first sentence below the section title of "2.6.2 Project Water Rights", Cal-Am asserts that seawater extraction does not require water rights; this is then followed by the second sentence which speaks of **"injury or harm" as if legal rights to a water source somehow is contingent upon doing no harm**. If this were the case, Cal-Am would have had no rights to the Carmel River and Seaside Groundwater Basin! Does not doing "harm" give an agency water rights? Further, there is the convenient omission that extracting "groundwater" (versus "seawater") ***does*** require water rights! And Cal-Am does plan to extract the groundwater from the Salinas Valley Groundwater Basis. **Does Cal-Am have the legal rights to take water from the Salinas Valley Groundwater Basin? Has this been adjudicated? If not, why has the project been allowed to go forward without the basic issue of water rights not clearly established? Is there any CPUC written process that would allow such a practice of advancing a huge water project for approvals without first producing evidence that water rights exist? Is this legally defensible or does CPUC, in addition to Cal-Am, bear liability should the MPWSP project result in damage to the Salinas Valley Groundwater Basin without definitive water rights in place? At what point in the CPUC administrative process, must water rights be defined and by what agencies? If CPUC concludes that there are no established, definitive water rights of Cal-Am to the Salinas Valley Groundwater, will that end the entire approval of MPWSP? Would a moratorium of all DEIR approvals be in order until CPUC water rights processes are completed?** Further, the whole notion of harm (as distinct from legal water rights) must be evaluated not just at a contained location of the slant well site	Biala1-1 Biala1-2 Biala1-3

Pg/Section	Cited text	Comments/Questions	
		but from the standpoint of impact to a *regional* source of water since the slant wells pull water from the 180' aquifer. We do not doubt Cal-Am's admission that their "***modeling cannot project the amount of Basin water that is expected to be drawn into the supply wells*****".** **But the salient point is that this is precisely the information needed to assess the degree of harm that might occur by collective overdrafting of all aquifers. If the current modeling cannot produce this data of the danger points for overdrafting the Basin, then is it not a compelling reason for some other more comprehensive model to be created that will do so? Is there any legal basis upon which project approvals must be delayed until such basic water rights have been established? If so, will CPUC institute this delay in the DEIR process?**	Biala1-3 cont.
2.6 Water Rights pg. 2-30	***#2. Topic: Degree of likelihood that Cal-Am has water rights.*** The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR/EIS should be construed as the CPUC's opinion regarding such rights, **except to the extent that the CPUC must determine whether there is a *sufficient degree of likelihood* that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be *feasible*.**"	**Please clarify on what specific basis will the project be deemed "feasible" based on "sufficient likelihood of possessing water rights"? What specific agencies or legal experts has CPUC sought out to determine if there is "sufficient likelihood" of water rights? If some of these agencies are government agencies, would it not be a conflict of interest for a premature determination to be informally given by CPUC without due process including public hearing and/or independent legal inquiry?** Cal-Am has already spent millions on this project and thereby presents more pressures for approval so that this money will not appear to be "wasted". CPUC must exercise great caution to not allow this factor to influence their decisions regarding this project. The failed Dana Point Doheny slant well resulted in an almost $3M loss among four out of five agencies who opted out but this was deemed preferable to going forward on the project (Minutes of the Joint Board of Directors and Commission Meeting of the Laguna Beach county Water District, March 11, 2014). Money expended is not a background reason to justify DEIR approvals.	Biala1-4
2.6.2 Project Water Rights pg. 2-35	***#3. Topic: Misleading distinctions made between "brackish" water versus "fresh, potable water".*** **Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water, which is a combination of ocean water and water that originated from the inland aquifers of**	**Cal-Am asserts: "Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water".** According to Hydrogeologist Curtis Hopkins, "**CalAm's 2014/15 modeling inaccurately assumes that the entirety of the geographical area of the Salinas Valley Groundwater Basin**	Biala1-5

Pg/Section	Cited text	Comments/Questions
	the Basin. CalAm proposes as part of the MPWSP to return to the Basin (in the manner further described below) the fresh water portion of the brackish source water. **In other words, although the groundwater modeling indicates that the Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water, the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water.**	**contains brackish or high salinity ocean water rather than fresh water**. Recent monitoring data developed for the Test Slant Well (TSW) project demonstrates all of these assumptions are false." (MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016). The presence of a perched layer of fresh water has been identified. Cal-Am states: **"In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water."** How is it that Cal-Am can openly state the quantity of fresh water components of supply water is ***"not currently known"*** when this information is crucial to the determination of harm? What other methods not currently being utilized can provide more data on this fundamental issue, such that Cal-Am does not have to report a "guess" of return water of "0-12 %"? This is scientifically unacceptable. Cal-Am further concludes that: "…the Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water…" is a purposely misleading distinction that minimizes the fact that brackish water contains fresh water and is part of a regional subsurface aquifer network. Does CPUC accept such misleading statements? Using brackish water is part of long term strategies of the Marina Coast Water District for developing alternative sources of water as it contains fresh water. It is NOT "un-useable, unwanted water" as Cal-Am suggests. This representation of the value of brackish water needs to be corrected in the DEIR. Further, returning a portion of fresh water to an alternate site in the Basin does not preclude the possibility of extensive, irreversible damage to an already fragile aquifer system. The two are unrelated. Without knowing first what kind of overall impact the MPWSP is likely to have over ***regional*** water sources, offering return water is but a ploy to justify a lack of responsible inquiry. **Is there any scientific evidence that water extracted from Marina and returned to Castroville will "benefit" the water source of MCWD, as Cal-Am claims? Will Cal-Am be expected to do a complete and accurate baseline study of the *regional* aquifer impacts of their project? If not, why not?**

Biala1-5 cont.

Biala1-6

Biala1-7

Biala1-8

Pg/Section	Cited text	Comments/Questions
2.6.2 Project Water Rights pg. 2-37	***#4. Topic: Question whether the slant wells access aquifers versus merely "brackish" water.*** **Pg. 2-37 The entirety of the geographical area of the Basin that would be affected by the project <u>contains brackish water rather than fresh water</u>.** Based on the groundwater modeling and as discussed in the Groundwater Resources section, while **<u>the project may actually improve the Basin's seawater intrusion issue</u> by** slowing the seawater interface line from advancing more inland, **<u>the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project</u>.** If indeed no fresh water is withdrawn by the project, then no physical solution in the form of return to the Basin of fresh water (or other off-setting mechanism to alleviate the harm) would be required in order for CalAm to secure and maintain water rights for the project feedwater**.**	Firstly, the statement that "**the geographical area of the Basin that would be affected by the project <u>contains brackish water rather than fresh water</u>" is not true.** According to Hydrologist Curtis Hopkins, "the salinity of seawater up to 8 miles inland is not as assumed by Cal-Am in its modeling and evaluation of return water requirements. **The presence of a perched layer of fresh water was not included in Cal-Am's 2014 modeling."** (MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016). **Will the modeling be revised to include this perched layer of fresh water and will the modeling be reviewed again by objective, independent experts? If the presence of this important perched layer was not known by Cal-Am, what other significant subsurface structures are also not known? Does this significant lapse in Cal-Am baseline data suggest that there could be other significant missing information such that the model is currently invalid?** Secondly, the notion being purported that all "brackish" water has no origins in or links to fresh water aquifers is false. Cal-Am is making the distinction between "brackish/ unuseable" water (pumped from their slant wells) vs potable, fresh water". In the section 2.6.2 (Pg. 127), Cal-Am accurately states **brackish water is "a combination of ocean water and water that originated from the inland aquifers of the Basin".** As a note, an aquifer whether "inland" (Cal-Am's words) or entering the ocean is still the same aquifer. However, Cal-Am continues to focus exclusively on the "unuseable" aspect of brackish water and not on the association of brackish water with fresh water aquifers. This distinction between brackish water as completely different from fresh water is intentionally promoted to support the false claim that "fresh water is not withdrawn by the project" (because it is brackish) and therefore no harm has been done and therefore there is no need to secure water rights. **Is there acceptance by CPUC of such leaps in formulations for dismissal of Cal-Am's need to have water rights? What proof of each part of this formulation has been validated by Cal-Am?** Further, Hydrogeologist Curtis Hopkins, notes that "**monitoring Well-7 is no longer contaminated by high concentrations of seawater** and is likely explained by the changing hydrogeological conditions resulting **from the efforts of MCWD and others to reduce pumping**

Biala1-9

Biala1-10

Biala1-11

Pg/Section	Cited text	Comments/Questions	
		in the area". Responsible curtailing of pumping results in decreases of seawater contamination. Decreases of seawater contamination does NOT occur through massive pumping as would occur in the MPWSP project and which Cal-Am asserts benefits the basin. (MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016).	Biala1-11 cont.
	Pg. 2-37 If the water in the Basin were to become fresher in the future such that the MPWSP supply wells were drawing fresh water from the Basin, then a physical solution (such as the proposed return component of the project, discussed below) would be needed in order for CalAm to maintain rights to the Basin water for the project.	The possibility that drawing fresh water **in the future** somehow ***determines*** MPWSP water rights in the Basin seems preposterous and needs to be challenged. Where is this idea substantiated in any legal precedents?	Biala1-12
		The theory that pumping a large volume of groundwater i.e. 24.1 million gallons per day in the MPWSP project, will slow the advance of seawater intrusion must be proven in peer-reviewed scientific research. Where is the scientific evidence to support such a theory?	Biala1-13
		It should be noted that the MPWSP project intends to pump 27,000-32,000 acre feet of water per year at full capacity whereas the total current pumping of Marina Coast Water District (MCWD) is approximately 2,700-3,800 acre feet per year (one seventh the amount in the proposed MPWSP). Even with MCWD's current pumping, maintaining sustainable water supplies is a regional and ongoing challenge.	Biala1-14
Pg. 1-9 1.4.2 The Monterey Peninsula Water Supply Project	***#5. Topic: False premise of slant wells not accessing fresh water; evidence that slant wells are in 180' aquifer.*** The MPWSP includes the following proposed facilities, all of which are described in detail, and locations shown on figures, in Chapter 3: **A seawater intake system, which would consist of 10 subsurface slant wells (eight active and two on standby) extending offshore into the submerged lands of Monterey Bay at the CEMEX sand mining facility in the City of Marina, and a Source Water Pipeline;**	A "seawater intake system" means that **seawater** is pumped, NOT **fresh water** or **brackish water (that has mixed fresh and seawater);** brackish signifies connection to the freshwater aquifers somewhere along the extent of the aquifer. By pumping brackish water, the MPWSP slant test well is also pumping from fresh water resources. This is a complete misrepresentation of this project as it directly taps into the aquifers currently being used to provide needed water to another region that has water rights to this water, be it fresh or brackish.	Biala1-15
2.6 Water Rights pg. 2-30 Geosciences MPWSP Hydrogeologic Investigation,	The proposed project (MPSWP) and Alternative 5a are designed to take supply water from the ocean via	**The slant wells are, in fact, in the 180' aquifer. This is clearly shown in Appendix E-2. The Cal-Am MPWSP references to brackish water as "unuseable" water attempts to obfuscate the fact that the slant wells are accessing the 180' aquifer, a current**	Biala1-16

Pg/Section	Cited text	Comments/Questions	
Technical Memorandum (TM-1), Summary of Results-Exploratory Borehole **Appendix E-2**	underground slant wells that draw water from the earth underneath the ocean. **Appendix E-2 Geosciences diagrams show slant well in the 180' aquifer of the Salinas Groundwater Basin.**	**source of regional water! Does CPUC agree that the slant wells are clearly drawing water from the 180' aquifer? Why is a percentage of <u>any</u> fresh water to be drawn in MPWSP deemed acceptable? On what basis is this made?**	Biala1-16 cont.
2.6.2 Project Water Rights pg. 2-35 Executive Summary ES-13-14	***#6. Topic: Harm/ injury/water rights.*** **Pg. 2-35** Here, though, the Groundwater Resources section of this EIR/EIS strives to and does in fact effectively and meaningfully analyze two of the three precise concepts of "harm" or "injury" set forth in the Report. **These two criteria *are reduction in the availability of fresh water* and <u>reduction of water quality</u>** . pg. 40 The SWRCB has indicated that for CalAm to appropriate CalAm Monterey Peninsula Water Project groundwater from the SVGB, **<u>the MPWSP EIR/EIS must demonstrate that the proposed project will not harm or cause injury to other basin users</u>** (SWRCB, 2013) and made certain recommendations for further study.	The three precise concepts of **"harm" or "injury" under section Project Water Rights 2.6 are identified as follows:** 1) reduction in the availability of fresh water 2) reduction of water quality 3) reduction in groundwater levels that requires users to spend additional funds to extract water. These issues of harm and injury criteria as listed above **must be applied to the ***<u>regional</u>* **Salinas Valley Groundwater Basin,** as the aquifers are extended across the region, and flow to the ocean, as well as having random, and at this point unknown, connections between the layers through fissures. The pumping of 180 foot aquifer water and the increased impact of regional saltwater intrusion are the key harms for the SVGB stakeholders. Harm and injury cannot be isolated to one part of one aquifer in one limited area. **Have the impacts to the Salinas Valley Groundwater Basin been carefully analyzed with regard to these three "harms"? Will the current modeling provide accurate predictive information of these three harms? Would a comprehensive Electrical Resistivity Tomography regional mapping be beneficial to identification of potential harms to the Salinas Valley Groundwater Basin?**	Biala1-17
2.6.2 Project Water Rights pg. 2-36	***#7. Topic: Water rights and No Harm*.** Pg. 2-36 Applying the thresholds stated above, the analysis **concludes that the MPWSP would not result in a significant impact to groundwater resources.** It would not reduce, or affect at all, the availability of fresh water (only brackish water from the Basin is projected to be drawn into the MPWSP supply); ***would not lower***	There are numerous re-statements claiming general "no harm" without giving specific, scientific data that would support such global claims of "no harm" or "injury". Per Cal-Am's own statements: **"Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. *This modeling, however, cannot project***	Biala1-18

Pg/Section	Cited text	Comments/Questions	
	groundwater levels in the Basin so as to affect the water supply of any groundwater users or substantially deplete aquifer volume; **and would not alter or reduce groundwater quality.**	***the amount of Basin water that is expected to be drawn into the supply wells*****."** (2.6.2 Project Water Rights pg.127) **Without such information, how can Cal-Am claim that the MPWSP "would not lower groundwater levels in the Basin" or would not substantially deplete aquifer volume? This projective information about the amount of Basin water to be drawn into the supply wells is crucial; how can this vital information be obtained? Would having this information, change the modeling?**	Biala1-18 cont.
2.6.2 Project Water Rights pg. 2-36	***#8. Topic: Test Slant Well decrease in water level drawdown.*** **Pg. 2-36 Due to the long-degraded condition of water in the Basin within the radius of influence (the area within which the project could affect groundwater levels), there are few active wells that could potentially be affected by the project. As discussed in detail in the Section 4.4, Groundwater Resources, there are only three active supply wells with well screens across the Dune Sand Aquifer or 180-Foot Equivalent Aquifer within the area where the project may cause groundwater levels to decrease by more than 1 foot but no more than 5 feet.[35]** These three wells are located at the Monterey Peninsula Landfill and are used for dust control. Given that the well pumps and the screens are set at least tens of feet below the existing groundwater level**, a decrease in the levels of less than 5 feet would not cause injury to this overlying user.** There are four active wells with well screens in the 400-Foot Aquifer. …**Due to the brackish to saline quality of the groundwater within the 400-Foot Aquifer, these wells would not be expected to supply drinking water. The Groundwater Resources section concludes as to all active wells that a water level decline between 1 and 5 feet would not expose well screens, cause damage, or reduce yield in the groundwater supply wells that could be influenced by the MPWSP.** All in all, the project was determined not to result in a significant impact in terms of groundwater supplies either quantitatively or qualitatively. **Thus, it appears reasonable to conclude that the MPWSP would not**	**What is the scientific basis upon which they can assert " a decrease in the (groundwater) levels of <u>less than 5 feet</u> would not cause injury to this overlying user." Where is the scientific proof of this? Over what period of time and under what pumping conditions are they predicting "levels of less than 5 feet"?** An unsubstantiated statement is not sufficient to quell real concerns about the MPWSP causing "no harm". Proving "no harm", in fact, requires the highest standard of scientific review and modeling. The CCC defined excessive decline in water level more than one foot; this was, in fact, exceeded and the test well was stopped. **What levels are currently occurring? What were Cal-Am's reason for the increase in groundwater levels? Was this answer given scrutiny by third party experts? What model or scientific data justified the CCC original parameter of one foot decline in water level? Are those standards still the ones in place and if not, what was the process to modify them such that Cal-Am is now allowed to decrease water levels greater than one foot? How long was the pumping interrupted? Does interrupting the pumping in itself cause an invalidation of the test?** A five foot decrease in levels could be a large difference when applying to a manmade intervention impacting subsurface groundwater tables. Stating that **"it <u>appears</u> *reasonable* to conclude that the MPWSP would not result in harm** …" is not acceptable. Scientific research to answer unknowns is driven by defining "levels of uncertainty" applying scientific parameters. It is unacceptable to make guesses when it "appears" to be favorable; one does not keep moving the target to fit the data, especially when the issue of harm is being addressed. This is another example of sloppy science being employed by Cal-Am. The Electrical Resistivity Tomography would be a more accurate and detailed record of changes in the aquifers that could substantiate or not substantiate Cal-Am's claims. **If CPUC demands proof of Cal-Am's**	Biala1-19 Biala1-20 Biala1-21

Pg/Section	Cited text	Comments/Questions	
	result in harm or injury to the water rights of legal users of water in the Basin in terms of fresh water supply or water quality, two of the Report's three injury criteria relative to the development of legal water rights.	**"no harm" claim, can Cal-Am be compelled to pay for a regional ERT study rather than CPUC merely "taking their word" on such a critical issue?** Further, the assertion that "Thus, **it appears reasonable** to conclude that **injury to the water rights of legal users** of water in the Basin in terms of fresh water supply or water quality…" makes no sense. Water rights are not "injured" or "harmed"; they are violated or not; one has the right or not. The simple question that must be answered is "Does Cal-Am have water rights to the Salinas Valley Groundwater Basin or not?" And this must be determined in a court of law and BEFORE final approvals of this project.	Biala1-21 cont. Biala1-22
Executive Summary ES-5 4.4.4.2 Groundwater Modeling ESA 4.4-43 Pg. 4.4-47 Groundwater Resources, Superposition	**#9*. Topic: Failure to apply accepted standards of scientific research methodologies.*** Executive Summary ES-5 pg. 32 The test slant well is permitted to operate until February 2018 and it is not part of the proposed project being evaluated in this EIR/EIS. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well will be removed. **4.4.4.2 Groundwater Modeling ESA-43 pg. 499** Pg. 4.4-43 The applicability or usefulness of the model depends on how closely the mathematical equations approximate the physical system being modeled. For example, models that cover an entire groundwater basin of many square miles may have cells that represent one square mile area each while models designed to evaluate smaller areas have cells representing only 200 square feet. Pg 4.4-47 Groundwater Resources, Superposition	It is entirely with disbelief that Cal-Am seeks DEIR approvals for an untested, experimental slant well technology for which no precedent is in existence and without the full results of a test! **What legal authority is CPUC operating from to potentially approve such a project without knowing the conclusions of a completed test?** The first step in any scientific methodology is observation and description of a phenomenon or group of phenomena. There is so much at risk with the MPWSP i.e. harm to the Salinas Valley Groundwater Basin that is the water source for an entire region. **Given that the accuracy and predictive ability of a model is based upon the understanding of the physical subsurface, how much more accurate is a baseline from 9 monitoring vertical wells of the MPWSP project as compared to the tens of thousands of data points of an Electrical Resistivity Tomography (ERT)?** Further, ERT subsurface imaging can extend further inland as well as reaching depths of 1200 feet versus the limitations of vertical wells presently used in the MPWSP modeling. **What future legal liabilities will there be for intentional disregard of establishing relevant and complete baseline data as the foundation for a model when such information is currently available but not sought?** The second step in any scientific methodology is formulation of a hypothesis to explain the phenomena. What were the hypotheses to be tested by the model? It is not clearly evident in the DEIR. **What were**	Biala1-23 Biala1-24 Biala1-25

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Groundwater Modeling	Groundwater Modeling For this project, the NMGWM is converted to a superposition model and only solves for the groundwater changes due solely to the proposed project. These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in **Appendix E2**, Section 5.2.	**the predictions and levels of uncertainty attached to each of these predictions?** It is not clear whether the test well was merely a way to study the effects of pumping or whether it is to apply a model to verify its predictive power of established hypotheses. If the latter, and their hypothesis was to "solve the groundwater changes solely to the proposed project", "independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends", **why did the model not take into account these factors so that any results obtained would have factored out these impacts and were predicted before the testing?** Note: the water table drawdown exceeded a threshold. Pumping was stopped and then was later attributed to agricultural pumping**. It would be necessary for the model to have studied and precisely calibrated the seasonal agricultural impacts on the Basin. Was this done? Can this be considered a reliable model if such basic transgressions of the scientific modeling principles are present?** Further, a target for saltwater intake from the test slant well was to be 96% but the slant well has yet to reach this (currently at 92-93%) meaning that more fresh water than expected (by the model?) is being pumped by the test slant well. **Again, the hypotheses are not being confirmed and what does this say about the model's validity? Where in the DEIR are the salinity targets in the threshold monitoring well identified and where is the data showing that the targets were not reached? What were the explanations for the target failure and will there be further research by independent scientists to study such variances? As this is a critical data related to the "harm" to the Basin, this data should be highly visible and documented and explained in the body of the DEIR.**
Hydrologic Working Group Monthly Report #14, on April 22, 2016.	Hydrologic Working Group Monthly Report #14, on April 22, 2016. Montoring Well-4 was identified as the "threshold" test well by which salinity was to be measured. Based on the MW-4 showed 17,000 parts (of chlorine) per million but on Dec. 31, 2016 it was reported at 22,000 parts per million, meaning the water pumped was showing more salinity. This represented a 30% increase over the baseline. There are no explanations of this phenomenon yet Cal-Am claims there is no impact to saltwater intrusion. Further irregularities in the HWG reports are: On April 29, 2015 a drop to 19.800 parts per million was recorded (change from the previous report of 20,300 parts per million) and this is recorded on the chart as "Used different analytical method"! A decrease in salinity favors Cal-Am. On Oct. 1, 2016 another decrease in the degree of salinity was reported in the 180 foot aquifer after a	The third step in any scientific methodology is to predict the existence of other phenomena, or to predict quantitatively the results of new observations. Thus far, two instances of predictive ability of this current model has been unanticipated: 1) amount of seawater draw and 2) the greater than 1.5 foot drop in water level at the pumping site. What were the initial targets for salinity increase in the test slant well *as predicted by the model?* As with the greater than 1.5 foot water level drawdown, this model has not verified any reliable predictability as to seasonal or agricultural impacts…a gross weakness of this model. **This model failed to quantify the most obvious and significant impacts in their data before testing began i.e. degree of water level drawdown and**

Biala1-25 cont.

Biala1-26

Biala1-27

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Executive Summary Es-14	"transducer was replaced". This type of lack of scientific rigor is highly suspect. **Executive Summary pg. ES-14** The Hydrogeologic Working Group (HWG) developed a work plan in order to reach agreement about the studies, well tests, field work, modeling, monitoring, and other data analyses that is needed to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SVGB and the water supply available to legal water users thereof. Data from the DEIR reference to Hydrogeologic Working Group (HWG) website, Monthly Report #14; There have a large number of stops and starts of data collection of both short and long durations. A sampling of such interruptions as documented by the HWG records is as follows (Monthly Report #14): **Short durations:** On January 19, 2016 22 hour stoppage but was again turned off 22 hours after restarting. Jan. 22, 2016 stoppage for 35 hours. Jan. 30, 2016 stoppage for 8 hours Jan. 31, 2016 stoppage for 20 hours. Feb. 12, 2016 stoppage for 8 hours. March 1, 2016 stoppage for 29 hours for discharge line repairs. March 4, 2016 stoppage (Figures2-1, 2-2, 2-11 and 3-9); resumed on May 2, 2016 May 17, 2016 stoppage for 15 hours May 25, 2016 stoppage for 4 hours June 3, 2016, July 8, 2016, July 14, 2016 for one hour each. August 13, 2016 stoppage for 80 hours for power interruptions October 3, 2016 stoppage 46 hours Dec. 24, 2016 through Dec. 31, 2016 for storm event.	**the salinity of the water pumped. How is this a valid model?** The modeling has been limited to a small area of the Salinas Valley Groundwater Basin and this represents a significant weakness, as the water source is expansive and can be negatively affected by localized impacts. The predictive power of a model evaluating the MPWSP must be able to predict the impacts of an entire water basin as this is the priority concern for regional stakeholders. **To not include the Basin as a whole is to ignore the true harms of a project such as MPWSP**. The last step in any scientific methodology is that there is ***replication of the predictive performance*** of experimental tests ***by several independent experimenters*** and ***properly performed experiments***. As previously stated, the modeling must be expanded to cover the actual areas to be potentially harmed, i.e. the Salinas Valley Groundwater Basin, not a small portion of this. Although the HGW is composed of a small group of reputable hydrogeologists "familiar with the local region", but does this not speak to a potential bias and possible political influences of these individuals? The interests of Marina Coast Water District which has the greatest to lose if MPWSP causes harm is starkly omitted from HGW membership. **Will CPUC allow members chosen by MCWD on the HGW? Will CPUC mandate the expansion of applicability of test results to the broader Salinas Valley Groundwater Basin area?** The total estimated interruptions as of Dec. 31, 2016 over the previous 20 months demonstrated pumping was interrupted intermittently in excess of 30 weeks (75 interruptions in 1.5 years of test well operation). **How do such interruptions affect the accuracy of the rate of salinity rise? Is this data collection valid? Should the model have included such impacts or anticipated variances in order to be considered a valid model? Does a reset of the slant well test be required from each major interruption of pumping stoppage for whatever reasons?**	Biala1-27 cont. Biala1-28 Biala1-29

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	Long durations: June 5, 2015 - Oct. 27, 2015 pumping stoppage related to water level decline exceeding thresholds. March 4, 2016 - May 2, 2016 pumping stoppage due to Cal-Am outfall pipe on shoreline exposed due to erosion, and had to be disconnected and moved.	
2.5.4 Assumptions about the Allocation of MPWSP Water Pg. 2-29	***#10. Topic: Future demand needs of not just Cal-Am's customers but of the Salinas Valley, Marina and Ord communities.*** 2.5.4 Assumptions about the Allocation of MPWSP Water Pg. 2-29 As discussed in Section 2.3, CalAm proposes to size the MPWSP Desalination Plant to provide, along with other sources, sufficient supply to meet **service area demand of 14,275 afy. This amount is 2,005 afy more than the 12,270 afy existing service area demand** (shown in Table 2-3), and without Seaside Basin replenishment, it would be 2,705 afy more than existing demand. In addition to meeting existing service area demand, CalAm proposes sizing the plant to meet demand associated with existing Pebble Beach water entitlements, estimated demand associated with the development of vacant legal lots of record and, **if the economy improves, demand from increased water use at existing hospitality businesses.** While such increases in water demand can reasonably be expected, estimating future water demand necessarily entails the use of assumptions about demand factors that cannot be predicted with absolute certainty. (As discussed in Section 2.3.3, MPWMD's review of the factors included in CalAm's estimate produced somewhat different results. For example**, MPWMD's review indicated that supply needed for future development of vacant lots of record may be underestimated and the supply needed for economic recovery of the hospitality industry may be overestimated.)** Moreover, under past and current allocation programs, once a given supply has been allocated to a jurisdiction, whether or not the jurisdiction reserves its allocation for specific uses and at specific levels that CalAm assumed for project sizing	The needs of Cal-Am are thoroughly documented for current and future anticipated needs for the Peninsula; **the demand needs of the Marina and Ord communities must be equally considered as there are also severe concerns that the current water supplies are inadequate for the existing population plus anticipated growth of the Marina and Ord communities*, even without the MPWSP project*.** To devote extensive survey of Cal-Am's customer needs without also documenting MCWD's demand needs of a community with much higher levels of undeveloped properties becomes a mere compounding of critical water supply issues. Solving one entity's water issues by compromising another's has no logic and is unjust. Cal-Am created their present water shortages and MCWD has responsibly managed theirs. The injustice of this may be a future lack of potable water for MCWD which CPUC has willingly enabled, in support of an irresponsible water purveyor over a responsible one. Further, there is an <u>environmental injustice</u> that Cal-Am has progressed this far in the approval processes and blatantly ignores the rights and welfare of Marina, a city of 21,000 with a low income and highly diverse population. Cal-Am assumes that compromising the Salinas Valley Groundwater Basin water supply is inconsequential over the needs of a wealthier, more politically influential jurisdiction. Is a DEIR format structured in such a way that it assumes a request for a project review would be for the same area in which the applicant has jurisdictional rights? There is something extremely amiss when a DEIR structurally ONLY requires evaluation of the applicant's demand needs and potential harm in their "sphere of influence" when the applicant is planning on operating in a completely different jurisdiction**. Will there be a supplement to this DEIR that considers water demand needs, adequacy of water and regional harm to the Salinas Valley Groundwater Basin stakeholders?** All criteria considered and documented for Peninsula stakeholders must be replicated for each city within the Salinas Valley Groundwater Basin.

Biala1-30

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1.3.1 CalAm's Project Objectives Pg. 1-5	would be up to the jurisdiction**. It is the jurisdiction's responsibility to determine, subject to applicable plans, policies, laws, and regulations, whether or not to approve a new or intensified water use within its boundaries.** In addition, with other supply sources the MPWSP would provide total supply of 16,294 during the Seaside Basin replenishment and 16,994 after the replenishment period, as shown in Table 2-4. 1.3.1 Pg. 1-5 Provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point **in the future to meet build out demand in accordance with adopted General Plans;** 1. Develop water supplies for the CalAm Monterey District service area **to replace existing Carmel River diversions in excess of CalAm's legal entitlement** of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2009-0060; 2. **Develop water supplies to enable CalAm to reduce pumping from the Seaside Groundwater Basin** from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality; 3. **Provide water supplies to allow CalAm to meet its obligation to pay back the Seaside Groundwater Basin** by approximately 700 afy over 25 years as established by the Seaside Groundwater Basin Watermaster; 4. Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers; **Pg. 1-5 Provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build**	Absent from these project objectives is any consideration that Cal-Am would exacerbate the same demand needs of the Salinas Valley Groundwater Basin by extracting 27,000-30,000 thousand acre feet of water per year; it is unconscionable that only the needs of Cal-Am are being considered. **The same criteria of meeting "General Plan future buildouts" should be applied to the jurisdictions from which Cal-Am plans to illegitimately take the water from; such a review will confirm that there is also not enough water in the Salinas Valley Groundwater Basin to supply its own future demand buildout needs without carefully planned water supply strategies.** A complete and fact based study must be made of the adequacy of water supplies and the legal rights of Salinas Valley Groundwater Basin stakeholders to meet their own current and future demand needs, including future buildout, *without the impact of the Cal-Am pumping*. This will establish a needed baseline to know whether the Cal-Am project will exacerbate an already critical situation and could jeopardize MCWD's legal commitment to serve its own customers. **Will CPUC create a supplemental addendum to the DEIR for a complete assessment of both current and future needs of Marina and Ord communities and the surrounding agricultural region in the Salinas Valley Groundwater Basin?**

Biala1-30 cont.

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	out demand in accordance with adopted General Plans.	
APPENDIX: J1 pg. 1570	***#11. Topic: Salinas Valley, Marina and Ord communities' water demand needs.*** **APPENDIX: J1 pg. 1570** Coastal Water Project EIR Analysis: MPWMD 2006 Estimate of Long-Term Water Needs Compared with Growth Anticipated in Jurisdictions General Plans\ **City of Monterey Pg. 1581** General Plan and Housing Element dates and planning periods Monterey's General Plan was adopted in January 2005 and has a long-range planning period of 10 to 20 years.[6] The Housing Element is included as part of the General Plan (adopted January 2005) and, based on the implementation schedule of its goals and programs, its planning period extends through 2007. Buildout information submitted by City (City of Monterey, 2005a) -Potential new single-family dwellings: 163 units -Potential new multi-family dwellings: 500 units in areas designated for multi-family dwellings and 1,302 units in areas designated for mixed use -Potential new military quarters at the Defense Language Institute and Naval Postgraduate School: 170 -Non-Residential square footage: 398,574 sf, combined total for the Downtown/East -Downtown, North Fremont, Lighthouse/Wave, and Cannery Row districts; assumes 60 percent in each district would be low water use (MPWMD Group I category of non-residential use) 40 percent would be high water use (MPWMD Group II category of non- residential use) -Remodels: None indicated -Other: None indicated Monterey suggested a 20 percent contingency factor,	Cal-Am's project has carefully analyzed their own customer future demand projections but has no regard for the Salinas Valley stakeholders needs from which from they intend to illegitimately take water from. The Marina and Ord communities have some of the largest undeveloped and coveted parcels on the Bay, and therefore have significant "future demand needs for buildouts" which the current water supplies from the 180', 400' and 900' aquifers are in question of their adequacy to meet demand. MCWD's service demands include an area with 33,000 people with doubling water demands in 10 years, anticipated future CSUMB Master Plan enrollment of 12,000 students, and a not-as-yet opened Veterans Administration flag ship clinic (to open 2017). **The demands needs of the Salinas Valley Groundwater Basin is of equal importance to Cal-Am's water demands. Will there be a supplemental addendum to the DEIR on the future demand projections of the Marina, Ord communities and the regional agricultural interests?** **These kind of detailed buildout needs assessments of the City of Monterey are illustrative of the overt lack of any consideration of whether Marina and Ord Communities have adequate water for their future buildout. There are no considerations, whatsoever, of the Housing Element, new single-family dwellings, new multi-family dwellings, or non-residential square footage of Marina and Ord communities. Can CPUC mandate such an accounting? If not, what possible justifications would merit omitting such a review?** **The Marina Coast Water District has been responsibly concerned with and dealing with the threats to its groundwater. Their website posts:** Securing Our Water Supply: "MCWD is dedicated to providing clean drinking water to the 33,000 residents in our service area now and well into the future. **Currently, our sole source of water comes from the Salinas Valley Groundwater Basin which supplies many other communities**

Biala1-30 cont.

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	which was ultimately adopted for all jurisdictions. Buildout information submitted by Department of the Army for the Presidio of Monterey (U.S. Department of the Army, 2005)	**beyond our service area. In order to meet future demands, MCWD is already working to maximize how we use our existing supplies, researching potential new sources, encouraging conservation and investing in infrastructure to deliver advanced recycled water. As we work to balance future needs with supply, conservation and new sources, we must be ever vigilant to guard against environmental impacts such as saltwater intrusion into fragile groundwater basins.** Cal-Am cannot be allowed to express their needs **without equal, if not more, consideration of the Salinas Valley Groundwater Basin stakeholders that have been proactive in preserving their fragile water source. How has this basic consideration of the water demand needs of Marina and the Ord communities not been considered by CPUC in supporting the MPWSP project?**	Biala1-30 cont.
1.4.3 Environmental Review: Context for this Draft EIR/EIS Pg. 1-8 Appendix E-1 Lawrence Berkeley Nat'l Lab Report	***#12. Topic: ERT Reference but scope of research not adequate.*** **To address questions about the accuracy and credibility of the groundwater modeling work that was the subject of the potential conflict of interest comments, the CPUC made the groundwater data files available for public review, and the CPUC employed the Lawrence Berkeley National Laboratory to conduct an independent evaluation of that data and the results of that evaluation are provided in** **Appendix E1. The Project was determined to require full environmental analysis in accord with the California Environmental Quality Act. An analysis was prepared under the auspices of the California Public Utilities Commission (CPUC) and issued as a Draft Environmental Impact Report (DEIR) in April 2015. Among the potential environmental impacts considered, reduction of groundwater supplies, declines in groundwater levels resulting from extraction of saline groundwater from beneath the sea floor *near the shoreline*, and degradation of**	**Did the scope of work for the Lawrence Berkeley Livermore National Lab only request study of the groundwater *near the shoreline*?** When the disruption to a regional aquifer network is in question by massive extraction of water at certain locations on the shore, why was the entire Salinas Groundwater Basin not included in any modeling and not commissioned for examination by Lawrence Livermore Labs? **A model with such limited scope of verification, only correlates with a very minor impact of the immediate site on which the project is located and fails to consider the most important impact to the regional water resources consequences.** **This omission demonstrates a lack of understanding of what localized slant wells can impose upon the entirety of the region, or demonstrates an intentional obfuscation of regional effects of the Cal-Am project by limiting the extent of scientific inquiry.** CPUC should re-contract with the Lawrence Berkeley Lab for a broader modeling verification using the Electrical Resistivity Tomography to map the broader Salinas Groundwater Basin. A moratorium should be called on further EIR approvals until such vital information is available and analyzed**. Are these moratoriums/delay considerations being entertained by CPUC? If not, why not?**	Biala1-31

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	groundwater quality were assessed.	
Ground-water Sources 4.4. Pg. 4.4-43 Pg. 4.4-44	***#13. Topic: ERT regional imaging is currently available but not mandated.*** ***Groundwater Models*** What is a Groundwater Model? **The applicability or usefulness of the model depends on how closely the mathematical equations approximate the physical system being modeled.** Limitations of Groundwater Models Groundwater models simulate aquifer conditions based on a specific set of data that describes parameters such the subsurface characteristics, groundwater flow, and land use. The more robust the data set, the more capable the model will be to accurately simulate subsurface conditions. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.	What is quite missing is that the impacts of 27,000 acf a year, will have immediate and long term effects on a fragile regional water basin, and the models applied to the project are not concerned with the regional impacts. **Further, the modeling must achieve higher levels of certainty (not "tolerable uncertainty") through the application of Electrical Resistivity Tomography (ERT) technology.** There is no excuse not to apply state-of-the-art, available and affordable methods when the dramatic and possibly permanent negative impact to a region's water supplies is at stake. It is clear that any model's accuracy depends on how much real data it is based upon. (See DEIR quote of "What is a Groundwater Model?". The current model relies on a limited number of vertical wells (sentinel or monitoring wells). Dr. Rosemary Knight's Electrical Resistivity Tomography (ERT) technology generates tens of thousands of data points compared to the hand full of vertical wells. Additionally, the ERT can show subsurfaces of saltwater and fresh water reserves to 1200 feet below the earth's surface compared to the two MCWD wells that reach the 900 foot aquifer. Which should be trusted...a model based upon a comprehensive ERT or a model based on a small number of vertical wells? Which model will give more accurate estimates of uncertainty given the stakes are so high with risking an entire regional water source. **Why is CPUC not mandating an ERT study of the Salinas Valley Groundwater Basin before environmental review approvals?** Why has ERT not been required in establishing the baseline data of saltwater intrusion, the integrity of aquitards and the health of the three levels of aquifers in the Salinas Valley Groundwater Basin? **Can a supplemental section to the DEIR be added that explains the relationship of ERT data to modeling and to establishing levels of uncertainty and creating predictive ability of assessing "harm"?**
Pg. 4.4-28 4.4 Ground-water Resources Seawater Intrusion	***#14. Topic: ERT Reference.*** ***Seawater Intrusion*** Pg. 4.4-28 The current, standard practice for monitoring the inland advance of seawater intrusion involves **TDS analysis of groundwater from a select group of monitoring wells**	**Cal-Am states "The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells."** Why does Cal-Am acknowledge Electrical Resistivity Tomography (ERT) as a tool yet states nothing of its potential value in modeling and its ability to answer the many unknowns about the groundwater in the area they plan to pump from? This is like explaining some of the moving parts of

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	that intersect the seawater- intruded aquifers. The TDS concentration data are used to identify the areas of the aquifer intruded by seawater and to plot the leading edge of the inland seawater intrusion front**. The more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented.** Regular annual monitoring data can be used to estimate the rate at which seawater is migrating inland. The MCWRA has been conducting seawater intrusion monitoring for many years using several groundwater wells in the western end of the Salinas Valley. **Geophysics are giving researchers the opportunity to study seawater intrusion using high- resolution, regional scale imaging. The technique, sometimes referred to as Electrical Resistivity Tomography (ERT), can be used to differentiate salty water from fresh water hundreds of feet beneath the ground. Electrical resistivity imaging uses a series of sensors placed along a transect line on the ground surface. An electrical current is applied and the sensors measure the electrical resistance the current encounters as it travels at depth between the sensors. Salty water has a lower resistance than freshwater, due to the higher TDS. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that indicate areas of fresh water, brackish water and seawater.** Pg. 487 Over the past few years, Stanford environmental geophysics researcher **Rosemary Knight** has conducted a study to determine the viability of using electrical resistivity techniques to study seawater intrusion along the coast of the Monterey Bay. Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. **The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells.**	an airplane but omitting the fact that it can fly and transport passengers! (Project Water Rights 2.6.2 Pg. 127) As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. *This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells*. <u>Pg. 114</u> *MPWSP source water would include some brackish groundwater from the SVGB.* The origins of this "brackish groundwater" must be known i.e. where this mixing of fresh and ocean water is occurring and clearly documented. ERT will provide critical information not currently known. **Again, will CPUC mandate such information be clearly identified in the DEIR?** There will be a new peer reviewed professional journal article released very soon by Dr. Knight that describes the capabilities of a more expansive, regional ERT imaging. A finished ERT study of the Salinas Valley Groundwater Basin, using such techniques, must be included in the approval process with adequate time allowed for proper evaluation

Biala1-32 cont.

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		by experts. **Can CPUC require that DEIR approvals not be made until ERT studies have been completed for the SVGB and applied to the current model?**	Biala1-32 cont.
Baseline Conditions 4.1.3 Pg. 4.1-8	***#15. Topic: Groundwater modeling based upon 2012 data is not current and has omissions.*** Pg. 4.1-8 Although the Notice of Intent for the NEPA review contained within this document was issued in 2015**, use of the 2012 baseline is appropriate and reasonable because (i) 2012 is a very recent point in time;** (ii) the CPUC invested considerable resources amassing 2012 background/baseline data for the April 2015 Draft EIR; and (iii**) environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions.**	Cal-Am asserts the adequacy of data from 2012. It is clear from the Lawrence Berkeley Livermore Laboratory report that potentially crucial "shortcomings" are present. Additionally, according to Hydrogeologist, Curtis Hopkins, **Cal-Am's 2014/15 modeling did not use wells located south of the Salinas River for calibration to compare simulated results with observed groundwater level elevations. Consequently, there cannot be a high level of confidence in their accuracy in the project area because accuracy has not been demonstrated through a comparison of actual data** ((MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016).	Biala1-33
Appendix E-1 Pg. 1045	Lawrence Berkeley Livermore Laboratory Report Pg. 1045 As for our review of the foundation of the groundwater modeling, we find that there are shortcomings in the hydrostratigraphic model and simulation inputs that could potentially change the impact assessments. Chief among these was the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-foot equivalent (180- FTE) aquifers from greater than about 2 km east of the proposed extraction site. *Appendix E1 Lawrence Berkeley National Laboratories peer review Conclusions*	Further, **Cal-Am's 2014/15 modeling assumed the 180-FTE Aquifer was unconfined within the project area. As Cal-Am has acknowledged elsewhere, the Test Slant Well project** data demonstrates this assumption was incorrect. ((MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016).	Biala1-34
		Additionally, Hydrogeologist Curtis Hopkins, notes that monitoring Well-7 is no longer contaminated by high concentrations of seawater and is likely explained by the changing hydrogeological conditions resulting from the efforts of MCWD and others to reduce pumping in the area. Cal-Am's current water proposals do not consider or address any potential harm to protective conditions. (MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016).	Biala1-35
		Will there be any further scrutiny of Cal-Am's data and modeling based upon all the aforementioned discrepancies and omissions, both from the Lawrence Berkeley Livermore Lab and the report by Hopkins Groundwater Consultants?	Biala1-36
Appendix E-1	***#16. Topic: Lawrence Berkeley Livermore National Laboratory report: need for more data on modeling.***	Have all the Lawrence Berkeley Livermore Laboratory recommendations been adequately addressed by Cal-Am? If so, where	Biala1-37

Pg/Section	Cited text	Comments/Questions
Pg. 1043-1056	**2. Conclusions** pg. 1054 Based on this review, LBNL found its simulation results match those in Appendix E2 of the DEIR. Some of the groundwater modeling outputs are reproduced exactly, while others show small differences that can be attributed to computer round-off and cancellation errors. **As for our review of the foundation of the groundwater modeling, we find that there are shortcomings in the hydrostratigraphic model and simulation inputs that could potentially change the impact assessments. Chief among these was the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-foot equivalent (180- FTE) aquifers from greater than about 2 km east of the proposed extraction site.** **Pg. 1054 If there are insufficient data to constrain the position of water levels and the position of the FO-SVA, multiple simulations should be conducted to provide a suite of results that in sum bracket the likely changes resulting from the proposed extraction. This suite of results can be used to determine the maximum capture area, drawdowns, and extraction from beneath onshore, or to provide a probability distribution for those values if probability distributions for the inputs can be established.** **Pg. 1054-1055 The new simulation should be initialized with hydraulic conductivities measured from field data collected in the nearby former Fort Ord. In general these hydraulic conductivities are lower than those previously used to initialize the model and resulting from calibration by the model. The model should also be initialized with larger storativities in the Dune Sand aquifer based upon analysis of field data from the nearby former Fort Ord.**	is this documented? Further, the modeling must be expanded to incorporate as much of the Salinas Groundwater Basin as possible through Electrical Resistivity Tomography; it would seem necessary to then contract with Lawrence Berkeley Livermore National Lab to validate the new model based upon new ERT information. Are there plans to do so? If not, why not?
2.6.2 Project Water Rights	***#17. Topic: Water Rights, Harm and individual compensation***	How is injury to individual well owners because of increased difficulty in pumping due to drawdowns by Cal-Am, to be compared with the injury to the region of pumping significant volumes of water without

Biala1-37 cont.

Biala1-38

Biala1-39

Pg/Section	Cited text	Comments/Questions
Pg. 2-37	Pg. 2-37 Turning to the third of the three injury criteria set forth in the Report – increased pumping costs – as noted above, the water levels in seven potentially active wells could drop by somewhere between 1 and 5 feet, **thus requiring marginally more energy to extract the water from those wells.** As a physical solution to ensure that those well owners continue to enjoy the same measure of water rights as they do prior to MPWSP implementation and thus are not injured, **CalAm could compensate the well owners for any increased pumping costs causally tied to the MPWSP**. Assuming that CalAm were to compensate the owner of these wells for any increased pumping costs sustained due to the MPWSP, the slant wells' operation would not cause injury under the Report's third injury criteria.	knowing, studying and reliably predicting the impacts to the **region's** aquifers? This interpretation of "harm" and "injury" on such a small scale is egregious and serves only to cloud the real issues at hand. **What monetary compensation to MCWD, the City of Marina and Ord communities is Cal-Am prepared to compensate for damages to the Salinas Valley Groundwater Basin stakeholders?** Such mitigation measure must be in writing with details of compensation to all injured parties not merely to "compensate the well owners for any increased pumping costs causally tied to the MPWSP". Such written stipulations for compensation should also include designated amounts for set aside funds. **Can Cal-Am be compelled to commit to such compensation strategies for Marina, the Ord communities and MCWD as they have addressed for other contingencies in this DEIR?**
2.6.2 Project Water Rights Pg. 2-37	***#18. Topic: Water rights, Harm and Cal-Am future "good will" financial support, individual compensation.*** Pg. 2-37 Furthermore, CalAm has proposed a mitigation measure (set forth in Section 4.4, Groundwater Resources as Mitigation Measure 4.4-3) to further ensure that Basin groundwater users are not injured. Working with the Monterey County Water Resources Agency, **CalAm would fund the installation of monitoring wells to expand the County's network of groundwater monitoring wells so as to be better able to monitor on an on-going basis the effect of the project slant wells on groundwater within the radius of influence.** If the monitoring efforts were to demonstrate that the project were affecting any existing neighboring active wells, CalAm would coordinate with the affected well owner and take both interim and long-term steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs). In light of the foregoing, it seems reasonable to conclude that the MPWSP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce	If the current modeling that presumably demonstrates "no harm" has been confirmed by Cal-Am, why are ***additional*** groundwater monitoring wells even necessary? The additional monitoring wells to be paid for Cal-Am, under the stated intent of being "better able to monitor on an ongoing basis the effect of the project slant wells on groundwater" suggests that there are some inadequacies of data in their project proposal. **To have *now*, in the present, a comprehensive and accurate assessment of groundwater subsurfaces, would obviate additional *future* installation of monitoring wells. The Electrical Resistivity Tomography will provide a much more accurate and complete baseline today as well as providing comparison for changes from this baseline in the future. If we accept Cal-Am's financial support for "future monitoring wells" that will inherently never be very accurate, why does CPUC not insist on ERT funding now for a baseline and in the future as an ongoing accurate monitoring tool?** It appears that Cal-Am is willing to offer funding for more monitoring wells in the future but they have not offered to fund the Electrical Resistivity Tomography (ERT) that is a more comprehensive, accurate groundwater imaging to understand salt water intrusion as an aspect of "harm". **Monitoring wells are much less accurate in mapping saltwater intrusion than ERT. Why has Cal-Am not been required to pay expenses for current monitoring and the establishment of a baseline via ERT?**

Biala1-39 cont.

Biala1-40

Pg/Section	Cited text	Comments/Questions	
	"developed water" for beneficial use and under the physical solution doctrine.	Further, Cal-Am's offer to "monitor on an ongoing basis the effect of the project slant wells on groundwater within the radius of influence" but this "radius of influence" is defined as a constricted area around the well. **The entire Salinas Valley Groundwater Basin should be defined as "their radius of influence"** but current modeling and limited scope of research suggests otherwise. Why is Cal-Am's envisioned "radius of influence" not defined as the entire Salinas Valley Groundwater Basin since "harm" will be global and devastating to the region?	Biala1-40 cont.
2.6.2 Project Water Rights Pg. 2-39	***#19. Topic: Slant wells will improve groundwater conditions? Claims of MPWSP benefiting each of the aquifers and creating a "no net loss".*** Pg. 2-39 Water is expected to be returned between May and November of the same calendar year as it is withdrawn (see Chapter 3, operating table) such that the senior overlying and prescriptive users would not suffer harm from loss of water**.** As examined by the groundwater modeling and explained in the Groundwater Resources section, **this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD and adjacent areas because water levels would increase as a result of in-lieu groundwater recharge, and would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas.** Since this return option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, it appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.	The statements that "this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer" must have clear scientific proof that this is so. The current modeling cannot demonstrate this and if such statements are made repeatedly, scientific evidence must be produced. **Is there any scientific evidence that pumping water from the Marina site but returning a portion of this to Castroville will actually improve groundwater conditions in the area from which the water was pumped? If any claims that water returned in Castroville will benefit the 400' aquifer in the Marina and Ord communities, where is this scientific evidence that this is so? What would prevent the Castroville area from using up any returned water such that it would never reach Marina? Are there any subsurface physical barriers that prevent returned water in Castroville from reaching and replenishing Marina aquifers?** **According to Curtis Hopkins, Hyrdogeologist, "unless a return water method ensures the protective (substrate) conditions (of reduced pumping) in the MCWD area are not harmed, the MPWSP will induce seawater intrusion into the Dune Sand Aquifer (and will exacerbate seawater intrusion in the 180-Foot Aquifer through vertical leakage) in the Northern Marina Subarea and likely result in cumulative impacts to aquifers and wells much further inland."** (MEMORANDUM to Mr. Keith Van Der Maaten, General Manager, Marina Coast Water District dated January 22, 2016). **Will such information be evaluated in the MPWSP project and how does this change the modeling?** Further, Curtus Hopkins states: "…if a greater percentage of	Biala1-41 Biala1-42 Biala1-43

Pg/Section	Cited text	Comments/Questions	
2.6.3 Water Demand, Supplies and Water Rights Pg. 2-39	Pg. 2-39 As examined by the groundwater modeling and explained in the Groundwater Resources section, this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD and adjacent areas because water levels would increase as a result of in-lieu groundwater recharge, **and would benefit each of the aquifers** by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas. **Since this return option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, it appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.**	groundwater is pumped than estimated by the model, or if groundwater salinity is increased in the project area, the annual amount of return water required would increase accordingly. **These higher return water volumes are not included in the project's return water estimates**". (MEMORANDUM to Mr. Keith Van Der Maaten[11], General Manager, Marina Coast Water District dated January 22, 2016). Does the current model speak to these possibilities? Are these possibilities addressed in the current model regarding amount of return water? If not, why not? The basis upon the assumed water rights is made upon unscientifically verified claims that the project now "benefits" the groundwater condition. Pumping out massive volumes of water from a groundwater basin and putting back limited fresh water in another location, does not validate the Cal-Am conceived "no net loss" position. This is such a simplistic, almost incredulous explanation and is devoid of any scientific justification. Cal-Am further links this "benefit" to the assumption of water rights in the area.	Biala1-43 cont. Biala1-44
APPENDIX I1 Open-Water and Subsurface Intakes Pg. 1556	***#20. Topic: Subsurface ocean intake Slant Well Technology not successful in U.S. or the world; lack of any study of previous failure at Dana Point.*** Slant Wells Pg. 1556 Slant wells are installed at an angle below the sea floor using vertical well drilling technology. The yield from a slant well depends on the underlying geology. When compared to vertical wells and Ranney wells, slant wells can be screened at greater distances offshore and can result in fewer impacts on coastal groundwater aquifers. Slant wells can be drilled from behind sand dunes or from the active beach area (i.e., between the toe of the dunes and the open ocean). The wellheads can be buried beneath the sand or installed flush with the ground surface. Multiple slants wells can be grouped into clusters to extend from a single "pod." Consistent with the slant wells	This description of slant wells is covered in the appendix regarding intake methods of Open-Water Intakes and Subsurface Intakes, including vertical wells, infiltration galleries, horizontal wells, Ranney wells, and lastly slant wells. **This section on intake methods assumes a casual parity of slant wells with other intake methods when no subsurface ocean intake slant well project has ever been successful in the U.S. or the world.** In fact, a lengthy description of Ranney wells includes examples: Pg. 1555 Examples of Ranney wells in marine environments include three Ranney wells at the Salina Cruz Power Plant in Mexico that draw between 9 and 14 mgd of seawater, and one at the Steinhart Aquarium at the California Academy of Sciences in San Francisco (Hunt, 2008; Feeney, 2013). This is yet another example of truth hiding. **No examples of successful subsurface ocean intake slant well projects can be named but more importantly, the one attempted example has had**	Biala1-45

Pg/Section	Cited text	Comments/Questions
	proposed as part of the MPWSP, it is assumed that construction of each slant well pod (consisting of up to 4 wells) would result in 1 acre of temporary disturbance. Slant wells would require maintenance every 5 years. During maintenance, the wellheads are excavated and exposed, and mechanical brushes are lowered into the wells to mechanically clean the screens. Ground disturbance associated with periodic maintenance is assumed to be similar in extent to construction disturbance (i.e., approximately 1 acre of disturbance for each well pod). Slant well construction and maintenance requirements are described in greater detail in Chapter 3, Project Description. Any intake options that include slant well technology are assumed to be consistent with the slant wells proposed as part of the MPWSP, although the location and number of wells could vary. Ranney Wells Pg. 1555 A Ranney well is a radial well comprised of a vertical caisson (a large diameter shaft where the water is collected from each well and then pumped) extending below the water table from which horizontally placed perforated screens are extended (SGD, 1992). The use of multiple horizontal laterals means that production of each radial well is greater than a single vertical well (Feeney, 2002). A single Ranney well can yield between 0.1 to 25 mgd, which is five to ten times the yield of a vertical well (Hunt, 2008**). Examples of Ranney wells in marine environments include three Ranney wells at the Salina Cruz Power Plant in Mexico that draw between 9 and 14 mgd of seawater, and one at the Steinhart Aquarium at the California Academy of Sciences in San Francisco (Hunt, 2008; Feeney, 2013).**	**no acknowledgement or review by Cal-Am or CPUC.** If an experimental design is being proposed, would not all Dana Point slant well project details be of great interest to CPUC to avoid potential repeat of failure or infeasibility? Would not CPUC wish to include the data from the Dana Point slant well project to compare to the data of the MPWSP test well that ran for 21 months? Should we not be at least curious, let alone scientifically aggressive, in pursuing more information when there is only one documented attempt of such a slant well in the U.S.? The blinders that have been put on to expedite Cal-Am's project is quite astounding and would not be tolerated in any other scientific pursuit. **Any scientific research article begins with an extensive review of literature to give current knowledge of the topic under review. This fundamental practice has been omitted for this untested, experimental technology that has already come with a formidable price tag for the Peninsula ratepayers. Will CPUC require a DEIR addendum with more objective and complete coverage of the true state of subsurface ocean intake slant wells that includes an honest history of the Dana Point Doheny Ocean Desalination Project?** Why has there been no scientific or feasibility studies to compare and contrast the Dana Point slant well project with the MPWSP project? **What are the legal implications for CPUC ignoring previously available information from the abandoned Dana Point slant well project that may have been relevant to issues in the current MPWSP project? Ultimately, four of the five cooperating sponsoring agencies found other preferable ways to procure needed water.**
APPENDIX I1 Open-Water and Subsurface Intakes Pg. 1555		
2.1 Introduction Pg. 2-2	***#21. Topic: Cal-Am as a non-self-regulating, environmentally destructive utility company.***	The history in the project introduction reflects a pattern of repeated violation by Cal-Am of the terms of water extraction until the point of legal mandates being issued, rather than responsible, proactive management of available water sources. Both the Carmel River and the

Biala1-45 cont.

Biala1-46

Pg/Section	Cited text	Comments/Questions	
Pg. 2-5 2.2.4 Seaside Groundwater Basin Adjudication Pg. 2-8	2.1 Introduction Pg. 2-2 CalAm is proposing **this project to replace part of its existing water supplies, which have been constrained by legal decisions affecting CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. State Water Resources Control Board (State Water Board) Order 95-10, State Water Board Order 2009-0060 (also referred to as the Cease and Desist Order, or CDO), and the Monterey County Superior Court's adjudication of the Seaside Groundwater Basin in 2006 substantially reduced CalAm's rights to use these two primary sources of supply.** Pg. 2-5 As a result of the adjudication of the Seaside Groundwater Basin (see Section 2.2.4), these satellite systems will lose all of their allocated Seaside Groundwater Basin supplies by 2018. Pg. 2-8 The Decision established a physical solution to basin management that **was intended to reduce aquifer drawdown to the level of the natural safe yield; to maximize potential beneficial uses of the basin**; and to provide a means of augmenting water supply for the Monterey Peninsula. In addition to allocating groundwater rights to the various users, the Decision established an initial "operating safe yield," to be decreased incrementally over time until withdrawals are equal to the identified natural safe yield.[13] Pg. 2-8 By adjudicating the water rights for all users of the basin**, the court intended to protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping. The Decision identified the "natural safe yield"[12]**	Seaside Groundwater Basin required legal actions (Cease & Desist, reduction in water rights). Cal-Am is being seriously curtailed due to transgressions of their water rights in the Seaside Groundwater Basin and yet they are being allowed to proceed with DEIR approvals in a **non**-Cal-Am water district to which they have no water rights. In all other cases, must projects have confirmation of water rights and permits before proceeding under CPUC? No matter what the perceived needs of an irresponsible purveyor of water may be asserted, this should not allow complete disregard for procedural protocols. **On what legal basis has Cal-Am been allowed to circumvent standard processes of determining water rights in Salinas Groundwater Basin?** **Why has the proven history of Cal-Am's abuse of public resources in areas where Cal-Am has defined water rights, not been considered in allowing them to enter an area in which they have NO water rights?** Even with the privilege of water rights, Cal-Am ignored legal and environmental responsibilities. Trusting that Cal-Am will act in a responsible, ethical and legal manner in a jurisdiction in which they have no legal rights, is simply not reasonable in any manner of thinking. The court intentions to "protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping" related to the **Seaside Groundwater Basin is the exact same concerns of the Salinas Valley Groundwater Basin**. This is precisely the position of the Salinas Valley Groundwater Basin today ***without*** the impacts of Cal-Am drawing an astronomical volume of 27,000-30,000 acf per year. As a stark comparison, Marina Coast Water District currently pumps only 3,800-4,200 acf per year. There is clear evidence that the Salinas Valley Groundwater Basin is experiencing saltwater intrusion and options to desalinate its own water for its own future may be necessitated. In the meantime, MCWD has engaged in responsible initiatives on conservation, recycling and aquifer replenishment projects that Cal-Am's project will directly mine. like Cal-Am, it plans on internally managing its own water and enact proactive strategies for "natural safe yield". What are the circumstances that necessitated restrictions on Cal-Am to	Biala1-46 cont. Biala1-47

Pg/Section	Cited text	Comments/Questions
E.S.3 CEQA Project Objectives Pg. ES-3		"reduce pumping from the Seaside Groundwater Basin"? Are those not the same, if not more compelling reasons, that the Salinas Valley Groundwater Basin would be subject to? Why is there concern of overpumping in Seaside Basin but not for overpumping in the Salinas Valley Basin when there are already severe concerns with saltwater intrusion? Why does Cal-Am's obligations to their customers take precedence over MCWD's obligations to serve theirs, when Cal-Am is intruding on another district's dwindling water source without water rights to this source? This is completely unjust and unethical.
Pg. 487 Ground-water Sources 4.4 Pg. 4.4-31	***#22. Topic: Comparing the salt water intrusion between Salinas Valley and Seaside Groundwater Basins*** **Salinas Valley Groundwater Basin** Pg. 4.4-31 The SVGB is hydrologically connected to Monterey Bay by ocean outcrops of the 180-Foot and 400-Foot Aquifers a few miles offshore (Eittreim, et. al., 2000; Greene, 1970). The ocean outcrops provide a constant source both of pressure and of direct recharge of seawater, and facilitate the recharge of seawater into those aquifers along the coast when groundwater extraction exceeds natural recharge. As a result, a landward groundwater gradient has developed along the coast and induced groundwater recharge from the ocean since the mid-20th century. Seawater intrusion in the SVGB was first documented in 1946 (DWR, 1946). **The overdraft condition has degraded groundwater quality along the coast within the SVGB**. Before wells extracted water from the Salinas Valley, there was a balance between the seawater in the ocean and the groundwater in the inland aquifers. Surface water within the watershed would infiltrate down into the aquifer, but it would be at a higher elevation than the surface of the ocean. Gravity requires that the difference in elevation forces the freshwater in the inland areas to migrate down and press back against the seawater. **With the development of the Salinas Valley, water supply wells were installed and groundwater was extracted from the aquifer.** This action reduced the weight of water on	It is without a doubt that both Salinas and Seaside Groundwater Basins have similar situations of increasing saltwater intrusion; severe compromises to both water sources are either in the making or are already present. However, Cal-Am bears a direct responsibility to the Seaside Basin stakeholders for assuming an immediate role of pumping from this basin. Cal-Am should not be allowed to repeat their irresponsible practices and claim to be "ameliorating" the Salinas Groundwater Basin when they should be applying positive strategies to the area in which they do have legal water rights. There is no justice in supporting the further spread of saltwater intrusion by Cal-Am in the Salinas Valley Groundwater Basin.

Biala1-47 cont.

Biala1-48

Pg/Section	Cited text	Comments/Questions
	the inland side of the seawater/freshwater interface, creating a pressure imbalance, and resulted in the landward migration of the interface to its current location. **The 2013 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, as inferred from chloride concentrations greater than 500 mg/L**. The seawater intrusion degraded groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001). **Increased degradation of coastal groundwater aquifers led to restrictions on drilling groundwater wells and extracting groundwater from areas affected by seawater intrusion, as discussed in Section 4.4.2, Regulatory Framework. Such restrictions are intended to reduce further inland migration of seawater and reduce the landward advance of the seawater/freshwater interface**. **Seaside Groundwater Basin** **Pg. 487-488 Groundwater pumping from aquifers in the SGB has exceeded recharge and freshwater inflows that caused pumping depressions near the coast, as shown on the groundwater flow maps for both the shallow aquifer zone (see Figure 4.4-7) and the deep aquifer zone** (see **Figure 4.4-8**) (HydroMetrics, 2015). **In addition, seawater intrusion has occurred just north of the SGB in the adjacent 180/400 Foot Aquifer Subbasin of the SVGB,** as discussed above. The boundary between these two basins is a groundwater divide that migrates in response to variations in natural recharge and pumping on either side of the divide. HydroMetrics noted increased chloride concentrations in two wells along the coast, although the concentrations have not yet exceeded drinking water standards. **These conditions all suggest that the SGB could be vulnerable to seawater intrusion.**	**Has Cal-Am engaged in or have plans for any prevention of saltwater intrusion in the Seaside Groundwater Basin? If not, why not?** If Cal-Am's claims of pumping water that benefits the Salinas Valley Groundwater Basin are feasible, why have they not engaged in such "benefits" in the basins in which they currently have water rights?

Biala1-48 cont.

Pg/Section	Cited text	Comments/Questions
4.4.2.2 State Water Resources Control Board Pg. 4.4-33	***#23. Topic: Applying the same standards to maintain high quality water in both Seaside and Salinas Groundwater Basin.*** 4.4.2.2 State *State Water Resources Control Board (SWRCB) Resolution 68-16 Anti- Degradation Policy* Pg. 4.4-33 In 1968, the State Water Resources Control Board adopted an anti-degradation policy aimed at maintaining the high quality of waters in California through the issuance of Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality Waters in California"). **The policy prohibits actions that tend to degrade the quality of surface and groundwater.** The Regional Water Quality Control Boards oversee this policy (SWRCB, 1968). The anti-degradation policy states that: **5.** Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, **such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies.**	*State Water Resources Control Board (SWRCB) policies:* ***** prohibit actions that tend to degrade the quality of surface and groundwater. * mandate that existing high quality water will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water. If the State Water Resources Control Board "prohibits actions that tend to degrade the quality of surface and groundwater, **why have alternative projects to MPWSP not been evaluated on their *impacts to groundwater* resources in the DEIR? Open ocean desalination projects, as opposed to slant wells, do not draw any fresh water/brackish water from any groundwater aquifers.** If both Seaside and Salinas Valley Groundwater Basins will become increasingly salt water intruded, upgrading the quality of **Seaside**'s brackish water (where Cal-Am has water rights) would appear to be in order. Pumping brackish water from another's jurisdiction in which they have no rights, by claiming brackish water is "unusable", and then claiming they are actually improving the groundwater condition, is without merit. Within the *Seaside* Basin where Cal-Am has water rights, there is brackish water that should be restored to a "higher quality" in that same basin just as Cal-Am now proposes to do in the *Salinas* Valley Groundwater Basin.
Table J2-1 pg. 1616	***#24. Topic: Applying the same review and considerations of General Plan growth to both Cal-Am and MCWD customer base.*** **TABLE J2-1 SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS AND MITIGATED NEGATIVE DECLARATIONS IN THE PROJECT AREA** **City of Del Rey Oaks**	The TABLE J2-1 SIGNIFICANT MITIGABLE (S) AND SIGNIFICANT UNAVOIDABLE (U) IMPACTS OF GROWTH IDENTIFIED BY GENERAL PLAN ENVIRONMENTAL IMPACT REPORTS AND MITIGATED NEGATIVE DECLARATIONS IN THE PROJECT AREA) documents give no considerations to the City of Marina which have greatest potential to be negatively affected by the MPWSP project. **Given that the MPWSP proposes to be built in the City of Marina's jurisdiction, should such critical evaluations be applied to Marina and the DEIR be revised to include such reports?** No project approvals should be entertained until such egregious oversights have been corrected with accurate and complete

Biala1-49

Biala1-50

Pg/Section	Cited text	Comments/Questions
	City of Monterey **City of Sand City** **City of Seaside** **Monterey County** **U.S. Department of the Army**	information. The DEIR review presupposes the negative impacts to be for the service area served by Cal-Am and hence does not require a more important evaluation of the negative impacts to another region from which Cal-Am proposes to be pumping.
Table J2-1 pg. 1616-1619	***#25. Hydrology and Water Quality Impacts pg.1616-1619*** Impacts on hydrology and water quality, including groundwater quality. Impacts to hydrology and surface water resources. Increased stormwater pollution during construction and/or following project completion. Agricultural and resource development would increase sediment and nutrients in downstream waterways and violate water quality standards. *** Increased demand for water supplies and/or water storage, treatment, and conveyance facilities that could have significant secondary impacts on the environment.** *** Substantial depletion of groundwater supplies.** *** Exceed capacity of existing water supplies and necessitate acquisition of new supplies to meet expected demands.** ***Increased demand on groundwater supplies in areas experiencing or susceptible to saltwater intrusion.** Increase flood hazard from changes in drainage patterns or insufficient storm drainage infrastructure. Alterations of existing drainage patterns would increase	This exhaustive list of "impacts on hydrology and water quality, including groundwater quality" are evaluated for the Peninsula cities only (see starred * Cited Text). These very questions need to be primarily focused upon the region of Salinas Valley stakeholders, Marina and Ord communities. What is fundamentally at stake is **this** region's water source. **Why has these impacts not been considered for the City of Marina, Ord communities and customers of MCWD? Will CPUC require a full supplemental report of impacts on hydrology and water for Marina and the Ord communities to be added to the DEIR?**

Biala1-50 cont.

Biala1-51

Pg/Section	Cited text	Comments/Questions
	erosion in overland flow paths and in drainage swales and creeks. Placement of housing or other development within a 100-year floodplain. The placement of land uses and structures within Special Flood Hazard Areas would impede or redirect flood flows, resulting in secondary downstream damage, including bank failure. Potential failure of levees or dams would expose people and structures to inundation and result in the loss of property, increased risk, injury, or death. *** Cumulative impacts on groundwater quality.** *** Cumulative indirect Impacts of water supply projects.** **Land Use – Pg. 1620** **Inconsistency with Zoning Code.** **Impacts to open space areas.** **Conflicts between incompatible land uses.**	
1.4.4 Revisions Made in This EIR/EIS Pg. 1-12	***#26. Topic: Alternatives that do not impact another's jurisdictional rights to water and do not impact precious groundwater sources.*** In addition to the project description changes, this EIR/EIS includes several other substantive revisions to the 2015 Draft EIR. These include some re-organization of the document, revised technical studies, and revisions to the analyses as a result of the revised technical studies, including: 4.**The Variant (Reduced Project) is now referred to as Alternative 5** and is evaluated in Chapter 5, Alternatives Screening and Analysis, rather than in a stand-alone	The preferred alternative 5a is a dangerous one as it has inherent in it all the fundamental weaknesses of the full project but may appear to "reduce the impact" as a more palatable solution for ambivalent decision makers. This project in a reduced form cannot be allowed to bypass any of concerns of the deficiencies in the full project. Does the reduced project in any way reduce the scientific weaknesses of the test well modeling or the incomplete data upon which it is developed? Does a reduced project now establish water rights? Does reducing the intended MPWSP by two slant wells obviate rigorous scientific study by a corresponding degree? Less risk of harm cannot be "assumed" by merely reducing slant wells to seven operating wells from nine. **Where is the scientific proof that the risk to the Salinas Valley Groundwater Basin will be reduced if Cal-Am reduces the number of slant wells by two? Is there any scientific proof that two less**

Biala1-52

Pg/Section	Cited text	Comments/Questions	
	chapter. The DeepWater Desalination Project and the People's Project are also addressed in Chapter 5, Alternatives Screening and Analysis	**slant wells reduces any harm to the Salinas Valley Groundwater Basin? If no such evidence exists, why is this reduced alternative the "preferred" alternative? On what basis is Alternative 5a superior to the original MPWSP project when considering harm to the Salinas Valley Groundwater Basin?** If so much attention and urgency was claimed in the full project, how can a reduced project now be acceptable? Does this mean that the urgency was fabricated, or that there are overinflated demand needs or that in the face of valid objections to the project that Cal-Am hopes that reducing the number of slant wells will diminish scrutiny? **What specific reasons does Cal-Am now have for their willingness to support a reduced project?** **Why have all of the options, including MPWSP not been compared as to their impacts to the regional groundwater AND the existence of current water rights? These are the two most fundamental weaknesses of the MPWSP. Will this comparative criteria be added in the DEIR alternative descriptions?**	Biala1-52 cont. Biala1-53 Biala1-54
1.4.4 Revisions Made in This EIR/EIS Pg. 1-11 11//16/16 posting on the	***#27. Topic: Decommissioning the project.*** In October 2014, MBNMS finished its NEPA review of the construction of the test slant well and the operation of the pilot program. In November 2014, the City of Marina and the California Coastal Commission completed their CEQA review. **The test slant well is permitted to operate until February 2018 and it is not part of the proposed project being evaluated in this EIR/EIS.** If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, **the test well will be removed as analyzed** and approved pursuant to the CEQA and NEPA reviews of the test slant well project. However, if the proposed subsurface slant wells at CEMEX are ultimately approved as part of the proposed project, CalAm would convert the test slant well into a permanent well and operate it as part of the proposed seawater intake system. The conversion and long-term operation of the well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project. Municipal Water District of Orange County is accepting bids for the decommissioning of the desalination slant	The Dana Point Slant Well project was abandoned sometime in 2014. But only as of 11/16/16, has a notice for bids to deconstruct their test slant well been posted by the Municipal Water District of Orange County (MCWDO). The MPWSP provisions must specify the time in which such deconstruction take place and this defined timeline should be short. If Cal-Am had to construct 9 more wells, they would work expeditiously, while a removal of one test well could take years. This would be unacceptable. What are the timeframes for deconstruction should this be necessary?	Biala1-55

Pg/Section	Cited text	Comments/Questions
Municipal Water District of Orange County website	well in Dana Point. 11//16/16 posting on the website.	
1.3.2 MBNMS Purpose and Need for Proposed Actions Pg. 1-6 **1.5.4.3 Other Agencies' Consideration of the EIR/EIS and Proposed Project** Pg. 1-17	***#28. Topic: City of Marina involvement in issuing permits for MPWSP*** 1.3.2 MBNMS Purpose and Need for Proposed Actions Pg. 1-6 Four federal proposed actions are addressed in this document and consist of the following: **1) authorization of a <u>Coastal Development Permit to be issued by the City of Marina</u> for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface seawater intake system;** 2) authorization of a Central Coast Regional Water Quality Control Board (RWQCB) issued National Pollutant Discharge Elimination System (NPDES) permit or other discharge authorization to allow for the discharge of brine into the Pacific Ocean and MBNMS via an existing ocean outfall pipe; 3) issuance of a special use permit to CalAm for the continued presence of a pipeline[4] conveying seawater to a desalination facility; and 4) issuance of a special use permit to CalAm for the use of Sanctuary sediments to filter seawater for desalination. **1.5.4.3 Other Agencies' Consideration of the EIR/EIS and Proposed Project** Pg. 1-17 Several other agencies will rely on information in this EIR/EIS to inform their decisions over the issuance of specific permits related to project construction or operation. In addition to the CPUC, state agencies such as the SWRCB, the Regional Water Quality Control Boards (Regional Water Boards), California State Lands Commission, California Coastal Commission, Department of Parks and Recreation, Department of Transportation,	Under what conditions, if any, can Cal-Am bypass the City of Marina for such Coastal Development Permits?

Biala1-56

Pg/Section	Cited text	Comments/Questions
	California Department of Fish and Wildlife, and State Historic Preservation Office would be involved in reviewing or approving the proposed project. **On the local level, <u>the City of Marina would be reviewing and approving an application for a Coastal Development Permit</u> for the slant wells consistent with their certified Local Coastal Plan.** On the federal level, agencies with potential reviewing or permitting authority include NOAA Fisheries, the U.S. Army, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service (USFWS). A complete list of agencies and required permits or other approvals is included in Chapter 3, Description of the Proposed Project, Table 3-8.	

End of Report.

Kathy Biala
Letter 2

Commentary on Monterey Peninsula Water Supply Project (MPWSP) DEIR by Kathy Biala, resident of Marina
SUBJECT: Western Snowy Plover, a federally listed threatened species that winters and nests at the proposed MPWSP site.

Respectfully Submitted to:

California Public Utilities Commission c/o Environmental Science Associates 550 Kearny Street, Suite 800 San Francisco, CA 94108	Karen Grimmer, NEPA Lead Monterey Bay National Marine Sanctuary 99 Pacific Avenue, Building 455a Monterey, CA 93940

Pg/Section	Cited text	Comments/Questions	
Section: 4.6-123, Pg. 756	Construction of the nine new permanent slant wells and conversion of the test slant well into a permanent well would disturb approximately 9 acres in the CEMEX active mining area. Construction activities can also result in indirect impacts on special-status wildlife related to disturbance or harassment of individuals. For example, construction noise, vibration, and nighttime lighting can cause special-status birds, bats, and other animals to abandon nests, roosts, or other breeding areas. Artificial lighting during nighttime construction.	It is clear that the population of Western Snowy Plovers (WSP) will be adversely affected by the MPWSP project. If this disturbance will continue for up to 2 years, what is the likelihood that this population impact will be irreversible? What does the science of bird behavior say about return nesting behavior after significant disruption? If not irreversible, over what period of time could the population be restored? ***Will MPWSP utilize the current baseline numbers of WSPs on the Marina coastline that is compiled every year by Point Blue? Based on this baseline, what % decrease of the WSP population will the MPWSP be held to or is it acceptable for the numbers to drop to zero?***	Biala2-1 Biala2-2
Section 4.6-123, pg. 755	T**The beach and foredunes provide important breeding/nesting and wintering habitat for the western snowy plover. Surveys conducted during the 2015 nesting season identified multiple nests along the stretch of beach in the vicinity of the CEMEX active mining area (Page et al., 2015**). Some nests have been found in the vicinity of the CEMEX settling ponds and adjacent to the CEMEX access road (Zander, 2013) and at the location of the northernmost well site. **Nesting has also been documented in the backdunes of the CEMEX active mining area where the subsurface slant wells are proposed (Neuman, 2015).**	In January of this year, the City of Marina passed a resolution designating the Western Snowy Plover as the official City Shorebird, as well as endorsing a C4SM (Citizens for Sustainable Marina) program known as SPARE (Snowy Plover Active Recovery Efforts). Marina takes pride in its natural environment that is home to this federally listed threatened species. To not support the continued WSP population within its jurisdiction is to diminish an aspect of civic pride and the ongoing protection of Marina's unique coastal habitat. In the DEIR Section 2.6.2, Cal-Am has offered to monetarily compensate any well owner who has been impacted by the MPWSP.	Biala2-3
Section 4.6-129	Although birds may be initially disturbed and temporarily displaced during construction, the majority of the site (8 acres) would be returned to pre-construction conditions and birds would be able to utilize the site following construction. Temporary and permanent impacts to plover habitat were described in the previous paragraph.		
2.6.2 Project Water Rights ,Pg. 2-37	**CalAm could compensate the well owners for any increased pumping costs causally tied to the MPWSP**. Assuming that CalAm were to compensate the owner of these wells for any increased pumping	Does Cal-Am have an obligation to offer any type of compensation to the City of Marina or other harmed entities affected by a decline or eradication of a threatened	

Pg/Section	Cited text	Comments/Questions	
	costs sustained due to the MPWSP, the slant wells' operation would not cause injury under the Report's third injury criteria.	bird species on this shoreline? Marina has a rare beach habitat, indeed, where a threatened species is yet observable on its beaches! This was a platform upon which to market and one way to create special identity for the city of Marina.	Biala2-3 cont.
Section 4.6-123, pg. 755 DEIR 4.6-129 to 131 Pg. 761 Section 4.6-130	**Slant well construction would take approximately 15 months to complete, and could take place any time throughout the overall 24-month construction duration for the proposed project.** **However, individual western snowy plovers may also use the entire subsurface slant well construction area for wintering.** **Construction of the slant wells in the CEMEX active mining area could occur year-round.** The nine-acre construction footprint for the subsurface slant wells is located within potential nesting habitat and construction of the nine subsurface slant wells and conversion of the test well to a permanent production well during the breeding season would result in the temporary loss of 8.0 acres (for temporary construction disturbance to areas that would be restored) and permanent loss of 1.0 acre (for new permanent above-ground facilities) of potential wintering habitat. **Construction during the snowy plover wintering season (October 1 through February 28) could directly or indirectly impact individual birds if present within or adjacent to the construction area. Human presence and construction noise and activities can cause roosting plovers to fly and disturb resting or foraging activities. This would be a significant impact.**	In the previous DEIR, it was publically stated that should a nest be discovered during construction, the construction would be stopped (E. Zigas). There is no mention of this intervention except to report that a Lead Biologist will be maintained and perform monitoring duties. What are the specific authorities of this Lead Biologist if a nest is discovered? Will such authorities be documented and if such authority is not heeded, what is the process for appeal? This appeal must be immediate as delaying responsible action would inevitably result in the destruction of the nest with ongoing construction. What are the qualifications of this Lead Biologist and who does this person report to? Is there an unbiased, environmentally oriented board/entity to which the Lead Biologist will report? Without this objective support, this mitigation action is mere "window dressing" to assuage real concerns. Will there be any halting of construction during the WSP nesting period? If not, why not? This temporary cessation of construction was considered for the test slant well and the same considerations are still relevant to the project as a whole. The reasons for unabashed destruction of the environment to build a questionable project that does not have any legal water rights in the region and its current failure to prove "no harm" to the region's sole source of water i.e. the Salinas Valley Groundwater Basin, creates just another devastation to the region for whom no benefits result for Marina and Ord communities.	Biala2-4 Biala2-5 Biala2-6
Section 4.6-131	A full list of special-status species that could be significantly impacted by subsurface slant well construction is provided in Table 4.6-6. Overall, the impact on special-status species during slant well construction would be significant. However, with implementation of Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective	The DEIR lists mitigation efforts as "…**installing a visual construction barrier** for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers, **conducting pre-construction surveys** to determine if plovers are present and	Biala2-7

Pg/Section	Cited text	Comments/Questions	
	Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures), 4.6-1d (Protective Measures for Western Snowy Plover), …4.6-1i (Avoidance and Minimization Measures for Nesting Birds), 4.6-1n (Habitat Mitigation and Monitoring Plan), 4.6-1p (Control Measures for Spread of Invasive Plants), 4.12-1b (General Noise Controls for Construction Equipment), and 4.14-2 (Site-Specific Nighttime Lighting Measures), the impacts would be reduced to a less-than-significant level. These measures would reduce impacts on special-status species by designating a lead biologist to oversee and ensure implementation of special-status species protective measures; requiring worker training regarding special-status species potentially present to ensure that workers are aware of special-status species that occur in the project area and the measures to be implemented to avoid, minimize, and/or mitigate impacts**; requiring general measures such as installation of an exclusion fencing to ensure special-status species do not occur within the construction area**, a trash abatement program to ensure special-status species predators are not attracted to the site, and other measures to avoid and minimize impacts on special-status species; requiring specific measures to avoid, minimize, and compensate for impacts on the western snowy plover such as avoiding the breeding season**, installing a visual construction barrier for work conducted adjacent to breeding habitat during the breeding season to reduce human disturbance to plovers**, **conducting pre-construction surveys to determine if plovers are present** and implementing minimization measures to minimize construction impacts on plovers, if present, and compensating for habitat loss to mitigate for temporary and permanent loss of habitat;…	implementing minimization measures to minimize construction impacts on plovers". Will these "pre-construction surveys" be done each day before the start of construction? Or will this be done every week, every month, quarterly and if this type of schedule is followed, is this sufficient monitoring, per the recommendations of disinterested, objective experts in the field? Who will do this and once spotting a nest, what immediate actions will take place? It is ironic that one of the mitigation measures during breeding season is to reduce human disturbance to plovers by "installing a visual construction barrier for work conducted adjacent to breed habitat to reduce human disturbance to plovers". The construction site with plowing of massive sand, trucks, noise, bulldozers, drilling equipment **IS** the major disturbance. This type of mitigation only serves to keep out beach goers from entering the construction area and does little to protect snowy plovers against the assault of heavy equipment moving immediately along the habitat border! This mitigation measure serves only to distract us from the major impacts. "These measures would reduce impacts on special-status species **by designating a lead biologist to oversee and ensure implementation** of special-status species protective measures." If true protective intent hinges solely upon the Lead Biologist, the Lead Biologist's more frequent monitoring with the absolute, unquestioned authority to stop construction or initiate any major mitigation measures must be clearly documented. What are the written authorities of the Lead Biologist to do so? On what legal grounds does this authority stand upon? Can the Biologist determine a more frequent, more random ability to survey the site? Will this report be distributed to state, regional and federal agencies as soon as the Lead Biologist submits them to his/her supervisor to ensure public awareness and transparency of potential threats?	Biala2-7 cont. Biala2-8 Biala2-9 Biala2-10 Biala2-11

Pg/Section	Cited text	Comments/Questions	
Section 4.6-2	Several comments on the Draft EIR concerned use of western snowy plover occurrence data in the vicinity of the proposed subsurface slant wells, status of western snowy plover in the vicinity of this facility, and potential impacts of this facility on plovers. ESA requested western snowy plover occurrence data from Point Blue Conservation Science, but Point Blue Conservation Science was unable to provide this data prior to publication of this EIR/EIS. This EIR/EIS includes additional information and analysis in regards to western snowy plover in Sections 4.6.5.1 (Construction Impacts) and 4.6.5.2 (Operational and Facility Siting Impacts).	There appears to be some limited references to Point Blue publications in this DEIR. Was Point Blue also consulted on the formation of specific mitigation measures? Will they be consulted as to the job description and reporting criteria of the Lead Biologist? Has or will Point Blue be consulted in defining specific, effective ways to mitigate harm to the WSP population in this specific location? Point Blue is the foremost authority of the WSP populations *on the Monterey Bay*; they must be intimately involved in the MPWSP project.	Biala2-12
Section 4.6-2	Some comments expressed **concern about the authority of the Lead Biologist** designated in the mitigation measures presented in the Draft EIR, and the role of that individual relative to the project proponent. This is further described in Section 4.6.5.2 under Mitigation Measure 4-6.1a.	There is very little further detail in this reference so to suggest that there is additional information about the Lead Biologist role is misleading. See above comments for questioning the qualifications, reporting relationships, authority to execute necessary protections, and transparency of the Lead Biologist reporting.	Biala2-13
Mitigation Measure 4.6-6, pg 899	Monitoring of **the Brine Storage Basin** shall include the following: 1. *Monthly Monitoring*: A qualified biologist and/or qualified biological monitor shall regularly survey the Brine Storage Basin at least once per month starting with the first month of operation of the Brine Storage Basin. The purpose of the surveys shall be to determine if the bird deterrents are effective in excluding birds and to assess whether the deterrents serve as a hazard to birds or wildlife. The monthly surveys shall be conducted in one day for a minimum of two hours following sunrise (i.e., dawn), a minimum of one hour mid-day (i.e., 1100 to 1300), and a minimum of two hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Operations staff at the MPWSP Desalination Plant shall also report finding any dead birds or other wildlife at the Brine Storage Basin to the Lead Biologist within one day of the detection of the carcass. The Lead Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to CalAm, CDFW, and USFWS. 2. *Quarterly Monitoring*: If after 12 consecutive monthly site visits (described above) no bird or wildlife deaths are detected at the Brine Storage Basin by or reported to the Lead Biologist,	This type of elaborate monitoring program is NOT specified for the WSP main habitats! Where is the "Brine Storage Basin" and what amount of area does this represent compared to the whole of WSP wintering and especially nesting habit area? Should this level of survey not be applied to the areas of the beach and foredunes, identified by Paget: *"The beach and foredunes provide important breeding/nesting and wintering habitat for the western snowy plover. Surveys conducted during the 2015 nesting season identified multiple nests along the stretch of beach in the vicinity of the CEMEX active mining area* (Page et al., 2015). Will monitoring schedules, with even more frequent monitoring visits, be applied to the known significant WSP habitats i.e. on the affected beach and foredunes? It is curious that in this Brine Storage Area, the DEIR states that the Lead Biologist "*may also suggest* adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed." This does not sound like a duty nor an authority to ensure measures are actually taken. This would apply to the Lead Biologist's role in the main habitat	Biala2-14 Biala2-15

Pg/Section	Cited text	Comments/Questions	
	monitoring can be reduced to quarterly visits. 3. *Biannual Monitoring*: If after 12 consecutive quarterly site visits (described above) no bird or wildlife deaths are detected by or reported to the Lead Biologist, future surveys may be reduced to two surveys per year, during the spring nesting season and during fall migration. *4. Modification of Monitoring Program*: As appropriate, the Lead Biologist shall modify the monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. CalAm Monterey Peninsula Water Supply Project 4.6-243 ESA / 205335.01 Draft EIR/EIS January 2017	monitoring areas. Will such language be modified to specify this as duties with authorities assigned in the job description of the Lead Biologist? Is a month's time for monitoring sufficient or in a month's time, can a nest be made, eggs laid and the nest be destroyed by construction before the next monthly visit? It is imperative that monitoring not be on an anticipated, regular schedule in order to observe impacts without tampering. This project, if approved, is invested with big money and powerful political influences that could undermine the ability of the Lead Biologist to act ethically and swiftly. This circumstance, no matter how repugnant to some parties this may seem, has had a repeated state and national history that cannot be denied. Will the DEIR mandate that monitoring be on a random basis (in addition to a more frequent, defined schedule) with safeguards for verification of findings?	Biala2-15 cont. Biala2-16 Biala2-17
Mitigation Measure 4.6-6, pg. 899	4. Environmental Setting (Affected Environment), Impacts, and Mitigation Measures 4.6 Terrestrial Biological Resources under Impact 4.6-2, the site is in the Coastal Zone and central dune scrub in this area may be considered primary and secondary habitat under the City of Marina LCLUP. Impacts to central dune scrub would be potentially significant. Additionally, as described under Impact 4.6-2, western snowy plover critical habitat is located approximately 240 feet west of well Site 1. Slant well maintenance at well Site 1 could indirectly impact this critical habitat <u>if worker foot traffic extends beyond the designated construction work area</u>, if trash and debris is left behind following construction, and/or if invasive plant species are introduced or spread at the site. Indirect impacts on critical habitat would be significant.	The area around Cemex dredging pond was, at one time, fenced by the State Park District to indicate sensitive habitat and it was apparent to beach walkers that this did not protect the habitat when immediately behind this fence were truck imprints, moving of sand, and other construction activities! The MPWSP cannot rely on the annually installed symbolic fencing by the State Park District. This fencing marks the nesting habitat for protection against accessing from the beach side. Cal-Am, if concerned about "worker foot traffic" must install another separate fence to demarcate nesting habitat from the landward side. Experts on the WSP must be utilized to identify the specific sensitive habitat zone from both the beach and inland locations.	Biala2-18

Kathy Biala
Letter 3

To: Mary Jo Borak and Karen Grimmer

Dear Ms. Borak and Ms. Grimmer:

The following is my additional public comment regarding the MPWSP DEIR; I have previously submitted two other public comments.

Dr. Ed Thorton has reported that, along the Monterey Bay, the current loss of land mass due to erosion directly attibutable to the CEMEX sandmining operations is approximately 4 feet of shoreline annually. At such a rate due to sandmining activities plus any anticipated sea level rise due to global warming, what is the expected time in which the proposed slant wells will be impacted in terms of becoming situated further out in the ocean? Would this impact the cost of desalination due to the increased salinity of the water being pumped or create the need for the slant wells to be moved further inland to approximate the current equivalent status of the proposed project? It may be that with slant wells further out to the ocean, access to the 180' aquifer may be ameliorated, but if plans to move the slant wells further inland were desired, what approval processes would be required for this additional construction? Does the current DEIR address such possibilities with accurate scientific calculations? If not, why not? Would not another DEIR be necessitated and if such a condition exists, should not this process be clearly expressed in this DEIR so that it is not an assumed extension of any current DEIR approvals? Biala3-1

Please confirm receipt of this email at kbiala@milestonemma.net. Thank you.

Cordially,
Kathy Biala

8.7.4 William Bourcier

Dear Sir,

I have attached a document that addresses the issue of potential greenhouse gas release from subsurface intakes for desalination plants. It specifically addresses information contained in Appendix G2 (Trussel Technologies Technical Memorandum) and compares the GHG releases rates obtained by Trussel with those I previously submitted to an earlier call for public comments on the CalAm DEIR.

To briefly summarize:

(1) The GHG release rates estimated by Trussel are smaller than my estimates because they used a fluid with very low CO2 content relative to the other slant-well fluids

(2) The Trussel estimates do not include release from the RO permeate - which I argue is a bad assumption and detail my argument in my reply. This also lowers their GHG release rate estimates relative to mine.

(3) The method for calculation of GHG release carried out by Trussel and by myself (Bourcier) provides essentially the same rates when using the same starting fluid composition. This verifies the calculational method and confirms that GHG release is an issue that needs to be addressed in regulations controlling desalination feeds.

Sincerely,
William Bourcier

COMMENTS TO TRUSSEL REPORT
William Bourcier
February 23, 2017.

I have reviewed the assessment of carbon dioxide releases from subsurface desalination feeds provided by Trussel Technologies (Appendix G2 – Trussel Technologies Inc. Technical Memorandum, Response to CalAm MPWSP DEIR) and compared their results with the estimates that I provided as comments to the DEIR and California Ocean Plan. Bourcier-1

Our results differ in that I predict larger carbon dioxide releases than estimated by Trussel. In my opinion the values I quoted are more accurate estimates than those reported by Trussel. I believe the following observations and comparisons explain the differences.

1. *The Trussel report ignores all carbon dioxide released from the reverse osmosis permeate*

The Trussel report correctly assumes that the location at which the carbon dioxide release will take place will be affected by the reverse osmosis process. Once the feed fluid is brought to the surface from the well and contacts the atmosphere, it will begin to equilibrate with the atmosphere and release carbon dioxide. Depending on the type of pre-treatment and feed storage methods, much of the degassing may not happen until after the fluid has been subjected to the reverse osmosis (RO) process. In typical sea water RO processing, much of the contained dissolved carbon dioxide will end up in the permeate (vs. the concentrate) as can be seen in Appendix A of the Trussel report. The carbon dioxide in the permeate stream will be released to the atmosphere upon exiting from the RO system. Bourcier-2

However, in the Trussel report it is asserted that this carbon dioxide will **not** be released because prior to distribution of the RO permeate, the permeate will be chemically treated to avoid release of carbon dioxide. Although no more detail is given in the Trussel report, this could be done by adding caustic (NaOH) to the permeate to increase the pH and convert the dissolved carbon dioxide gas into bicarbonate ion. Adding caustic lowers the effective partial pressure of carbon dioxide in the fluid and if added in the right amount (added molal amount of caustic = molal amount of carbon dioxide that would have been released) no carbon dioxide release to the atmosphere will take place. In normal seawater desalination systems a small amount of caustic is commonly added to the permeate in order to avoid corrosion of the distribution system. The caustic is usually added after carbon dioxide degassing in order to reduce the mass of caustic needed. I assert here that caustic addition is the chemical treatment referred to but not specifically identified in the Trussel report. Bourcier-3

The error in this analysis is that no account is taken of the carbon dioxide release ("carbon footprint") which takes place during the production of caustic used to treat the permeate. Caustic is commonly produced using the chloralkali process. The carbon footprint (the amount of carbon dioxide generated and released as a result of production of the caustic) is substantially larger than one mole of carbon dioxide per mole of caustic. In other words, to make enough caustic to neutralize some mass of carbon dioxide in the permeate requires that a much larger amount of Bourcier-4

carbon dioxide be generated during the production of the caustic. This ratio is about 2 for most production facilities (i.e. two moles of carbon dioxide are produced per mole of NaOH) but numbers as low as 1.7 are reported for the most modern chloralkai plants [1].

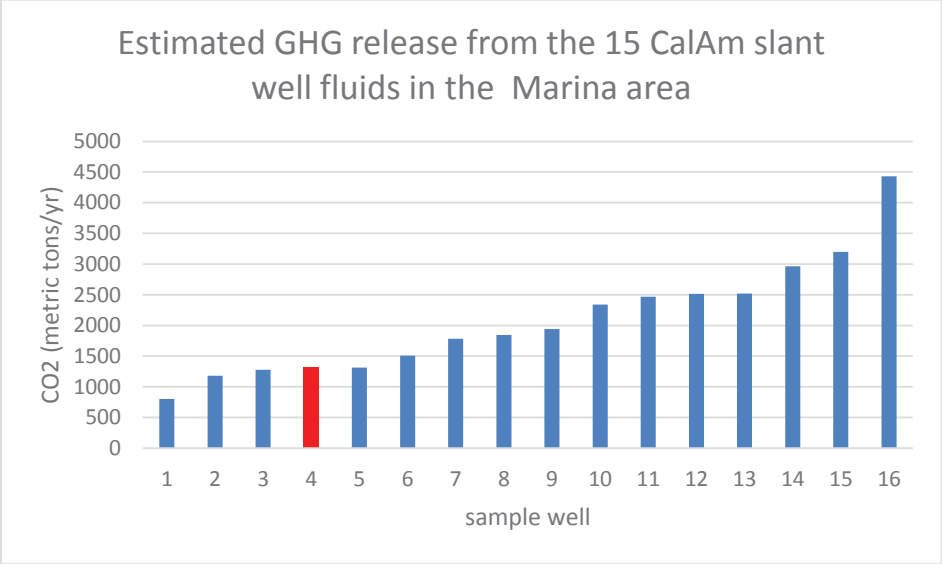
So it is clearly not valid to ignore the carbon dioxide released from the reverse osmosis permeate. Chemical treatment to suppress carbon dioxide release makes the total release of carbon dioxide associated with desalination even greater. In order to minimize total release of carbon dioxide the best approach is to simply allow the carbon dioxide to degas. Other options imply larger CHC releases.

The carbon dioxide that would be released from the permeate and is ignored in the Trussel report needs to be added back to the estimated carbon dioxide release in order to report an accurate and complete carbon dioxide release rate.

Bourcier-4 cont.

2. *In the Trussel report the well fluid composition used to compute the "worst-case" carbon dioxide release is not representative of fluids sampled to date and in fact is nearly the "best-case" scenario*

The well fluid composition used in the Trussel report to compute carbon dioxide release is not representative of the carbon dioxide gas contents of the 15 wells sampled to date in the Marina area as part of the CalAm project. Figure 1 below shows my estimated carbon dioxide release rates along with the fluid studied in the Trussel report (in red). As can be seen, the well fluid



Bourcier-5

Figure 1. Estimated carbon dioxide release rates (metric tons per year) for the 15 well fluid samples reported in the Draft EIR (Appendix G2) and, in red, the fluid composition used in the Trussel study. Estimates are based on 9.6 MGD plant operating at 41% recovery. Average release for all wells is about twice the release of the fluid used in the Trussel analysis.

[1] http://www.eurochlor.org/media/9385/3-2-the_european_chlor-alkali_industry_-_an_electricity_intensive_sector_exposed_to_carbon_leakage.pdf

chosen for their study has among the lowest carbon dioxide contents of the 15 wells sampled. In fact it is the fourth lowest in gas content. The Trussel report having referred to this fluid as being a "worst-case scenario" is simply not true. It is closer to being a best-case scenario. Their estimated release rate of 735 tons/year when corrected for loss from the permeate increases to about 1311 tons/year. This is about one half of the average release rate for all wells sampled to date by CalAm in the Marina area and less than 30% of the largest value.

Bourcier-5 cont.

3. Comparison of methods for estimating carbon dioxide releases

It should be noted that the method I use to estimate carbon dioxide release and the method described in the Trussel report provide very similar carbon dioxide release rate estimates when compared directly. I estimate about 770 tons/yr for the RO concentrate carbon dioxide release vs. 735 tons/yr of release reported in the Trussel report. The small difference between these two numbers can probably be attributed to slightly different thermodynamic data used in the two methods. Note that I used the same correction methods for salinity, temperature, and other factors described in detail in the Trussel report. This suggests that going forward we have an accurate and verified method for estimating GHG releases. What is needed now is validation of the method from an actual feed source.

Bourcier-6

Summary and Recommendations

The Technical Memorandum provided by Trussel Technologies provides verification that carbon dioxide release from subsurface intakes is likely to take place in significant tonnages. For any given fluid composition, the calculated release tonnages calculated by Trussel are very similar to those Bourcier provided in comments to the DEIR and in a later report on the topic. The agreement verifies the method of calculation that both parties (Trussel and Bourcier) used to estimate carbon dioxide release rates.

Bourcier-7

The fact that the carbon dioxide release tonnage estimates provided by Trussel are smaller than those reported by Bourcier is due to two issues: (1) the Trussel estimates ignore any release from the reverse osmosis permeate – which I have argued above to be an unjustifiable assumption; and (2) the Trussel report uses a fluid input composition that has among the lowest carbon dioxide contents of any of the wells sampled to date by CalAm in the Marina area. These two factors are responsible for the difference in estimated carbon dioxide release rates.

Bourcier-8

Bourcier-9

To better clarify the Trussal analysis, I recommend that the report be revised to include a discussion of the method of treatment for the permeate (such that it will not release any greenhouse gases) and specify the chemical additives and their carbon footprint. I would ask that they also include revised calculations that include the carbon footprint of the chemical additives. I also think it would be beneficial to include an analysis of a well composition that is truly a worst case scenario instead of the lower than average carbon dioxide fluid composition that was used in the Trussel report.

Bourcier-10

Bourcier-11

Bourcier-12

In addition, and potentially of far more importance is methane release from the feed solutions. Methane is often found in co-equal amounts with carbon dioxide in pore waters such as those that host the proposed desalination feed sites along the California coast. Because of the much greater greenhouse potency of methane vs. carbon dioxide, methane is of far more concern. Future work to address the issue of GHG release from subsurface feed intakes should include actual measurements of both carbon dioxide and methane in potential desalination feeds. I strongly recommend that measurements of methane from fluids obtained from the currently operating CalAm well be obtained to provide key information needed to better inform policy decisions relating to desalination feed regulations.

Bourcier-13

8.7.5 David Brown

From: David W. Brown, 436 Diana Place, Marina, CA 93933, Tel: 831-883-1958

To: Mary Jo Borak, CEQA Lead, California Public Utilities Commission, c/o Environmental Science Associates, 550 Kearny Street, Suite 800, San Francisco, CA 94108, mpwsp-eir@esassoc.com (via email and mail)

Karen Grimmer, NEPA Lead, Monterey Bay National Marine Sanctuary, 99 Pacific Avenue, Building 455a, Monterey, California 93940 (via mail)

Subject: MEMORANDUM FOR: CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) AND MONTEREY BAY NATIONAL MARINE SANCTUARY (MBNMS); PUBLIC COMMENT FOR DEIR/DEIS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT – A 12-04-019

Date: February 19, 2017

Please accept my comments and questions concerning the CalAm DEIR/DEIS MPWSP – A 12-04-019, as follows:

Re: DEIR, Page 484, 4.4 Groundwater Resources, Seawater Intrusion

The problem with the DEIR stating that there will be no harm to Marina's aquifers, based on a groundwater modeling application, is that such data application utilizes insufficient data, namely, for what is obviously a three-dimensional aquifer, the utilization of point data on salinity, as derived from vertical wells. It mentions but fails to state why electrical resistivity tomography (ERT) was not used to map the aquifer for salinity. This is irresponsible science, in the face of the existing and available ERT methodologies, which can be used to produce two-- and even three-dimensional slices of an aquifer's salinity as a function of linear location and depth to a distance of several hundred meters and over large expanses of the Salinas Valley Groundwater Basin. Brown-1

ERT has in recent years been used in two-dimensional applications, so as to show groundwater salinity as a function of depth over a particular area. Stanford University professor of geophysics Dr. Rosemary Knight has recently obtained data which show relative salinity as a function of depth in southern Monterey Bay between the CEMEX plant in northern Marina, to and beyond Marina's boundary with Seaside. This shows that even at the coastline, in the Marina area, there are substantial lenses of relatively fresh water, in both the 180-foot and 400-foot aquifers. This methodology utilizes dozens of metal electrodes implanted in the beach at specified distances from one another, and the measuring of multiple electrical resistances between such electrodes.

Though unstated in the DEIR, there is even a more sophisticated use of ERT that will produce a 3-dimensional grid of data points, showing relative salinity over not just a line, but a rectangular area (the "x" and "y" directions) and depth (th "z" direction), for which the Marina Coast Water District (MCWD) has contracted with Stanford University's Department of Earth Sciences. This method utilizes a helicopter-borne antenna array to accomplish the same things during the helicopter's overflight of multiple parallel paths, Brown-2

with the data from this approach to be used to obtain multiple two-dimensional imaging, with interpolation between such images giving an overall 3-dimensional aquifer picture that shows relative salinity as a function of very-specific and precise latitude, longitude, and depth. Dr. Knight, an expert in this field, is involved in this project as well. The multiple two-dimensional images will be compared with one another, and reasonably-small interpolations made between adjacent two-dimensional images, so as to result in a precise three-dimensional imaging, to several hundred meters in depth, over large parts of the Salinas groundwater basin, whose 180-foot and 400-foot aquifers contain water bearing capacities in quality from extremely brackish, all the way down to potable water containing no more than 500 mg of chloride per liter.

The many thousands of data points which will be obtained, as opposed to the few point data from sentinel wells, will be far superior for adequate groundwater modeling of the portion of the Salinas groundwater basin which potentially will be harmed by the pumping of seawater, in a finished plant, of millions of gallons per day. It is this type of data which, one obtained within the next few months, will result in a far superior groundwater model, ultimately to determine whether it really is true that the desalination plant will supposedly not cause or exacerbate already-existing sea water intrusion into any of Marina's three aquifers, the 180, 400, and 900-foot aquifers.
In summary, ERT 2-dimensional data, far superior to point data used in the current DEIR as limited point-data from sentinel wells, is not considered in the DEIR. The DEIR mentions ERT as a tool but speaks of it as though it is a new, experimental technique. It is not. Its use, at least in terms of electrical-resistance measurement along a linear path, to map groundwater salinity, is at least a decade old. See, e.g., Goldman, M., and U. Kafri, 2006, *Hydrogeological Applications in Coastal waters, in Applied Hydrogeophysics Proceedings of the NATO Advanced Research Workshop on Soils and Groundwater Contamination: Improved Risk Assessment*, ed. H. Vereecken, A. Binley, G. Cassiani, A. Revil, and K. Titov, pp. 233-254, Dordrecht, The Netherlands; Springer, 2006. Current published ERT data and conclusions should be incorporated into any groundwater modeling that purports to predict no harm to the aquifers near where the desalination-plant intake wells would be drawing millions of gallons per day.

Brown-2 cont.

The DEIR mentions ERT in the 2-dimensional context spoken of (though doesn't utilize such data, for reasons unstated), but utterly fails to mention the existence of the more recent helicopter-borne-antenna ERT methodology, to obtain 3-dimensional aquifer data, despite it having been used successfully, as shown in a paper published last year, in California's Central Valley. See Knight, R., Smith, R., Asch, T., Abraham, J., Canninia, J., Viezzoli, A., *Subsurface Mapping with Airborne Electromagnetics in the Central Valley of California*, Extended Abstract, Soc. of Exploration Geophysicists International Exposition and 86th Annual Meeting, Dallas, Texas, October 2016. The DEIR should utilize information from this methodology when it comes in, hopefully within several months.

Finally, the DEIR only states that the ERT along the Monterey Bay coastline is consistent with Cal-Am sentinel-well point data, and just 2-dimensional studies at that. And, on this point, there is no mention as to whether either the raw or analyzed ERT data could improve the prediction model, either as to the well-established 2-dimensional electrodal methodology, or the more recent 3-dimensional methodology mentioned above.

In essence, the DEIR's prediction of no increased salinity to the aquifers mentioned above, is based on limited sentinel-well point data, without consideration of even data obtained in two dimensions at the coastline, mush less 3-dimensional data that will likely be obtained soon.

Brown-3

Yours Truly,

/s/ *David W. Brown*

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8.7.6 Charles Cech

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San Francisco, CA 94108
DEIR/DEIS, MONTEREY PENINSULA WATER SUPPLY PROJECT, PUBLIC COMMENT

ES.5.1 Description of the Proposed Project Page ES-5
The project area extends approximately 18 miles, from the town of Castroville in the north to the City of Carmel in the south (see Figure ES-1). The MPWSP would include a seawater intake system, which would consist of 10 subsurface slant wells1 (eight active and two on standby) extending offshore into the submerged lands of MBNMS, and a Source Water Pipeline. The slant wells would be constructed at the CEMEX sand mining site in the northern coastal area of the City of Marina and would extract 24.1 million gallons per day (mgd) of source water through the seafloor in MBNMS.

Public Comments

The test slant well was designated exclusively as a test device and as such CEQA requirements where circumvented. Now a footnote to ES.5.1 indicates that the test well will be converted to a production well without passing CEQA. Slant wells have never been used to draw ocean water for desalination anywhere in the world! Why should this slant well be allowed to operate in California without passing CEQA? Cech-1 Cech-2 Cech-3

Additionally the existing test well intake has two screens neither of which are located under the seafloor as state above. The screens are located in two aquifers that are well above the seafloor. These aquifers have been contaminated with seawater and extend under the farmland bordering the Monterey Bay. Some of the test slant well tracking data indicates a substantial increase in seawater intrusion of the 180-foot aquifer since the test slant well has been operational. Why is this happening? Cech-4 Cech-5

The water being pumped by the test slant well is not pure seawater it is contaminated ground water. Therefore the existing test slant well is not in compliance with the criteria called out by this DEIR. This fact should eliminate the test slant well as a potential production well. Why does this DEIR not address this issue? Cech-6

If the nine new slant wells being proposed will have intake filter packs and screens under the seabed they will not perform in the same way as the existing test slant well. This will render all of the data collected by the existing slant well useless and should require that the new sub-seabed slant well be installed and pass CEQA requirements. **How** can this DEIR propose that the test slant well be included as a production well when it does not meet the sub-seabed requirement? Cech-7

With the additional slant well intakes being placed under the seabed, the seawater being drawn will include additional minerals that will leach out of the seabed above Cech-8

the slant well intake. This would require much more elaborate filtering of the seawater prior to being desalinated. It may also require a different size and type of slant well intake filter pack and much larger pumps to achieve the 24.1 million gallons per day required. All of these issues will have a negative impact on the environment that has not been addressed in this DEIR. Does the DEIR plan on addressing this concern?

Cech-8 cont.

Groundwater Modeling, Impacts and Water Rights Page ES-13 Paragraph 1

CalAm's proposed use of subsurface slant wells to withdraw source water for the MPWSP Desalination Plant is the subject of two controversies: (1) whether CalAm has the legal right to extract groundwater from the Salinas Valley Groundwater Basin (SVGB); and (2) whether implementation of the MPWSP and operation of the subsurface slant wells would exacerbate seawater intrusion in the SVGB. The proposed subsurface slant wells at CEMEX would extend offshore and be screened in aquifer units of the SVGB that have long been intruded by seawater. Although the subsurface slant wells would draw seawater (i.e., source water for the MPWSP Desalination Plant) from beneath the ocean floor, a fraction of the source water would be drawn from inland portions of the SVGB.

Public Comments Paragraph 1 above

The statement regarding seawater intrusion is accurate, however it does not disclose the fact that there are projects in place that have dramatically slowed and is projected to halt seawater intrusion. These projects are designated the Castroville Seawater Intrusion Project (CSIP) which started delivering recycled water in 1998 and the Salinas Valley Reclamation Project (SVRP) a inflatable rubber dam that captures Salinas River water during rainy season for future use for agriculture. Why has the DEIR ES section overlooked the positive environmental impact these project have had on the Salinas River Basin. Why has this DEIR overlooked the negatively impact the test slant well has on these projects?

Cech-9

Cech-10

Groundwater Modeling, Impacts and Water Rights Page ES-13 Paragraph 2

In 2012, the CPUC asked the SWRCB to provide an opinion regarding whether CalAm has the legal right to extract source water for the MPWSP Desalination Plant from offshore aquifers of the SVGB. The SWRCB has indicated that for CalAm to appropriate groundwater from the SVGB, the MPWSP EIR/EIS must demonstrate that the proposed project will not harm or cause injury to other basin users (SWRCB, 2013) and made certain recommendations for further study.

Public Comments Paragraph 2 above

Monitoring well adjacent to the test slant well have experienced significant lowing of aquifer water levels when the teat slant well was operating. The HWG declared that the lower water level was due to irrigation, but offered no proof or data to support that assertion. Monitoring well 4M has experienced approximately 31% increase in

Cech-11

TDS when compares with the baseline of April 2, 2015. The HWG stated that this increase was due to stratification but provided no proof of this assumption. No one from Cal Am or the HWG has ever contacted adjacent property owners to check on the changes in their well water TDS or saline data. I suggest that if they take the time to determine the condition of the well water in the vicinity of the test slant well they will find that contamination has increase at a rate considerably higher than in the years prior to test slant well operation. Why is this overlook by this DEIR?

Cech-11 cont.

Groundwater Modeling, Impacts and Water Rights Page ES-13 Paragraph 3

The recommendations of the SWRCB have been implemented by a Hydrogeological Working Group (HWG) comprised of licensed hydrogeologists with pertinent experience in the Monterey Bay region. The HWG was a result of an August 2013 Settlement Agreement between CalAm and 16 parties whereby CalAm agreed their hydrologist and technical team would work with the Salinas Valley Water Coalition's and Monterey County Farm Bureau's assigned hydrogeologists, and other technical experts designated by CalAm. The HWG developed a work plan in order to reach agreement about the studies, well tests, field work, modeling, monitoring, and other data analyses that is needed to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SVGB and the water supply available to legal water users thereof. The resulting Hydrogeological study informed the analysis presented in Section 4.4, Groundwater Resources, as well as the corresponding analysis in Chapter 5, Alternatives. Refer to Section 2.6 in Chapter 2, Water Demand, Supplies, and Water Rights, for a discussion of water rights.

Public Comments Paragraph 3 above

An overriding factor to all of the data taken by the test slant well is that Dr. Dennis Williams was the Executive Director of the HWG and is also the holder of the slant well (when used for desalination) patent and his company Geoscience is the primary source of all of the data taken on the test slant well operation. Since he and his company will benefit financially from the successful operation of slant wells, why is this not considered another **major conflict of interest**?

Cech-12

Groundwater Modeling, Impacts and Water Rights Page ES-13 Paragraph 4

Furthermore, the groundwater model and results presented in the 2015 Draft EIR have been revised, to address questions about the accuracy and credibility of the groundwater modeling work that was the subject of potential conflict of interest comments. The CPUC made the groundwater data files available for public review, and the CPUC employed the Lawrence Berkeley National Laboratory to conduct an independent evaluation of that data; the results of that evaluation are provided in Appendix E1. The groundwater analysis from the 2015 Draft EIR has been updated by a new groundwater modeling consultant.

Public Comments Paragraph 4 above
Since Lawrence Berkeley National Laboratories, was required to essentially duplicate the original data analysis using the same software, there is a problem with this methodology. The problem is that if there is a fault with the modeling software, it will generate the same erroneous result. The National Lab was not required to evaluate the software or the reasonableness of the output. This was a major oversight in this evaluation. Why was an alternative modeling program not used to determine if the same results would be produced with different software?

Cech-13

Page 1-5
The secondary objectives of the MPWSP are to:
3. Improve the ability to convey water to the Monterey Peninsula cities by eliminating the **hydraulic lowpoint** in front of the Naval Postgraduate School, by improving the existing interconnections at satellite water systems and by providing additional pressure to move water over the Segunda Grade.

Public Coment:
There have been inquiries made to two major plumbing repair companies regarding the "hydraulic lowpoint" (sometimes named the hydraulic gradient and the hydraulic barrier). Both have indicated that they have worked on many homes and businesses in the vicinity of the Naval Post Graduate School and have never experienced this hydraulic phenomenon. Request of Cal Am to provide information regarding measurement techniques and data obtained to support the existence of this lowpoint have never been provided by Cal Am. Is there proof available that proves the existence of the hydraulic lowpoint?

Cech-14

4.1.3 Baseline Conditions Page 4.1-8 Paragraph 2
Since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate. This document notes those updates in its discussions of the Setting/Affected Environment for the various resource areas and applies them in the pertinent analyses.

Public Comment
The following information was copied from a **Geoscience Technical Memorandum** dated April 20, 2015 and is provided as proof that the Monterey slant well was run for five continuous days prior to establishing the monitoring wells water levels and TDS baselines. It was reported in the Monterey Herald news paper that the slant well was pumping at the rate of 2200 GPM. This says that the test slant well pumped 15,840,000 gallons of water prior to establishing base lines..The result is that there is no way to compare subsequent data taken to a quiescent (no slant well ever run) baseline normally required as scientific evidence. Additionally, I believe that the Executive Director referred to in paragraphs 4, 5, and 6 below is Dr. Dennis

Cech-15
Cech-16
Cech-17

Williams, the president of Geosciences and the holder of the Slant well for Desalination patent. This would imply a conflict of interest. Cech-17 cont.

2.1 Special Condition No. 11 of CDP #A-3-MRA-14-0050

Special Condition 11 of the above referenced CDP entitled *Protection of Nearby Wells* and requires the following:

1. Prior to starting project-related pump tests, the permittee shall install monitoring devices in a minimum of four wells on the CEMEX site within 2,000 feet of the test well, and one or more offsite wells to record water and salinity levels within the wells.

Public Comment
Since these monitoring devices are installed to monitor the test slant well operation, why is the very large amount of data taken not usewd in this DEIR? Cech-18

2. Prior to commencement of long term pumping tests, the HWG shall establish baseline water and Total Dissolved Solids (TDS) levels in those monitoring wells and recommend these levels to the Executive Director of the California Coastal Commission.

Public Comment
Why is the baseline data taken prior to the five day pump rate test not used in this DEIR? Cech-19

3. During the project pumping tests, the Permittee (Cal-Am) shall, at least once per day, monitor water and TDS levels within those wells in person and/or with electronic logging devices.

Public Comment
Thousands of pages of date has been accumulated per this requirement, why has this data not been used to verify Dr. Williams modeling projections? Cech-20

4. The Permittee shall post data collected from all monitoring wells on a publicly-available internet site at least once per week and shall provide all monitoring data to the Executive Director upon request.

Public Comment
The permittee being did post this data on a weekly basis, however the data was all collected and published by Geosciences, who has a financial interest in the success of the test slant well. Why was a disinterested third party not used to collect and publish this vital data? Cech-21

5. If water levels drop more than one-and-one-half foot, or if TDS levels increase more than two thousand parts per million from pre-pump test conditions, the Permittee shall immediately stop the pumping test and inform the Executive Director. The Hydrogeology Working Group shall examine the data from Monitoring Well 4 if the test well is shut down due to either of these causes. The Hydrogeology Working Group shall determine whether the drop in water level or increase in TDS is from a cause or causes other than the test well, and will submit its determination to the Executive Director.

Public Comments

This in fact did happen but after analysis the criteria for shut down was altered by the CCC to allow the test well to continue operating. What was the justification for altering the shut down criteria? Cech-22

6. If the Executive Director agrees with the Hydrogeology Working Group that the cause of the drop in water level or increase in TDS was a source or sources other than the test well, then the Executive Director may allow testing to resume. If, however, the Executive Director determines that the drop in water level was caused at least in part by the test well, then the Permittee shall not re-start the pump test until receiving an amendment to this permit.

Public Comment

Since the Executive Director is Dr. Williams, the Slant Well patent holder, do you really think he will shut down his patented test slant well? Again, this must be considered, a conflict of interest. Cech-23

3.0 CEMEX TEST SLANT WELL AND MONITORING WELL CONSTRUCTION

3.1 Test Slant Well

The first Phase of Test Slant Well Investigation commenced with construction of a 724 ft Test Slant Well (TSW) at an angle of 19 degrees below horizontal at the CEMEX site. Construction began on December 27th, 2014 and was completed through the five-day pumping test on April 8, 2015. **The second phase of the Test Slant Well Investigation will include a long-term pumping test once baseline water and TDS levels have been established.**

Public Comment

How can the teat slant well data be accepted when quiescent baseline is not being used to compare ongoing operational data? Cech-24

Table 4.4-4 on page 4.4-22 Public Input

This table displays a very limited amount of data, and all of the data comes from Geoscience, the company that will benefit financially from positive analysis of the slant well. Cech-25

The test data contains no environmentally sensitive data regarding mercury, lead, or radiation measurements documented for the slant well water. Additionally the Central Cech-26 Cech-27

Coast Seawater Average TDS does not seem to agree with federal TDS measurements in the Monterey Bay Sanctuary. Why is this critical environmental information missing in this DEIR. Cech-27 cont.

3.2.3.6 Carmel Valley Pump Station

The Valley Greens pressure zone, in Carmel Valley south of the Segunda Reservoir, does not have sufficient hydraulic head to fill the existing Segunda Reservoir, which is located at the southern end of the existing Segunda Pipeline. The proposed Carmel Valley Pump Station, with a pumping capacity of 3 mgd (2,100 gpm), would provide the additional pressure needed to fill Segunda Reservoir. The pump station would be enclosed in a 500-square-foot, single-story building on a site located approximately 240 feet south of Carmel Valley Road near the intersection of Rancho San Carlos Road (see **Figure 3-10c**). A 50 kW (68 hp) portable diesel-fuel powered generator would be stored onsite for use in the event of a power outage. A separate 100-square-foot electrical control building would be constructed outside of the pump station building.

Public Comments

Since these facilities do not exist at present. Where are the environmental impact reports on these new buildings? Cech-28

What is the noise and air pollution impact of the 50 KW diesel generator? Cech-29

What is the traffic impact for accessing these facilities? Cech-30

How will these faculties impact the neighboring residents?

It has been disclosed by Mr. Svindland a Manager with Cal Am that Cal Am has been using the Segundo Pipeline to deliver Carmel River water to the city of Seaside on a daily basis. Has this use of the ASR pipeline passed CEQA? If not, why not? Cech-31

Charles Cech
Monterey, CA

COMMENT FORM

California American Water Company (CalAm)
Monterey Peninsula Water Supply Project
Draft Environmental Impact Report / Environmental Impact Statement

Date: 2-15-17

Name: Bob Coble

Affiliation: My family

Address: 10 Primrose Circle
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Email address:

☐ Check here if you do NOT want to be added to the CEQA mailing list.

Privacy Notice: All information provided on this form will become part of the public record. Unless indicated by you otherwise, you will automatically be added to the CEQA mailing list.

Your input on the proposed project is greatly appreciated. If you have comments on the accuracy and adequacy of the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Monterey Peninsula Water Supply Project (MPWSP) you can submit your comments by turning in this completed comment form tonight in the comment box located at the sign-in table; faxing your comments to (415) 896-0332; emailing your comments to MPWSP-EIR@esassoc.com; or mailing them to the following address:

Attn: Mary Jo Borak
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
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Attn: Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
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Comments should pertain to the accuracy and adequacy of the Draft EIR/EIS prepared for the MPWSP. All comments must be received by the CPUC no later than February 27, 2017. PLEASE PRINT LEGIBLY.

Comment:

Reports from "Just Water", "Water Plus" & other groups show that the slant well project in Marina is "stealing" Marina water, causing a seawater intrusion cone, and that technique hasn't worked anywhere in the US!

Response from Cal Am?

Coble-1

Coble-2

Coble-3

8.7.8 Margaret-Anne Coppernoll

March 21, 2017

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MEMORANDUM FOR: CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) AND MONTEREY BAY NATIONAL MARINE SANCTUARY (MBNMS)

SUBJECT: PUBLIC COMMENT FOR DEIR/DEIS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT – A 12-04-019

Please accept my comments and questions concerning the CalAm DEIR/DEIS MPWSP – A 12-04-019. Thank you for your work on the DEIR/DEIS as it was a major undertaking, and for taking your time to respond to my inputs. Please consider the NEPA as being included in references and questions to the CPUC. My public comment is meant in a constructive way, and should be construed as a search for truth and justice, and not in any way a criticism of those who prepared this extensive tome. The DEIR/DEIS chapters and sections cited are indicated for reference. My comments and questions are as follows:

Chapter 2: Water Demand, Supplies, and Water Rights:

1. The DEIR states (2.6 Water Rights, p. 2-31): "...if CalAm did not possess legal rights to use feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factors in as a key project feasibility issue."

   If the MPWSP were to draw water solely from the ocean, then water rights concerns would not apply since ocean water usage does not require water rights (2,6,1, p. 32). In the case of the MPWSP, the current test slant well is drawing brackish and freshwater from its well, as will the other proposed slant wells. CalAm cannot measure with any certainty the quantity of seawater vs. freshwater that it is drawing from the well, and it has misled the public by confusing the definition of brackish water, which is a

Coppernoll-1

1

combination of seawater and freshwater, as a result of seawater intrusion. CalAm will be drawing 2100 gallons of SVGB water per minute from its proposed slant wells, and then depositing it back in the Monterey Bay, if it continues to do what it is currently doing. This water, that CalAm refers to as brackish, contains freshwater as well as ocean water, but with a seriously reduced percentage of salinity and different TDS than found in ocean water. The Salinas Valley Groundwater Basin (SVGB), classified as a high priority groundwater basin by the State of California and subject to groundwater sustainability designations and regulations (SB1168, AB1739, AB1319, State of California State Water Resources Control Board), is the Marina Coast Water District's (MCWD) sole water source; it has groundwater rights and it has been an established public water utility since 1961, and has enjoyed a many decades long golden track record of providing fresh, potable water at affordable prices to its customers, in its lawful jurisdiction and service area.

Coppernoll-1 cont.

MCWD has established water rights overlying the SVGB. These groundwater rights are superior rights accorded jurisdictions overlying groundwater basins, rights that supersede appropriative, prescriptive, or developed water rights. Additionally, MCWD can claim riparian water rights because it has relied on the Salinas Valley Groundwater Basin as its sole source of freshwater since its establishment in 1961, before the founding of the City of Marina in 1975. MCWD owns the water infrastructure network that services the Ord Communities. Even though CalAm owns/leases 46 acres in the CEMEX property area and vicinity, it does not supersede the MCWD's legal groundwater rights to the SVGB, which extends approximately 100 miles in area. The slant wells will draw from the entire SVGB because the aquifers extend in linear and vertical fashion across the entire regional basin network, with water flowing in the subsurface aquifers (180, 400 and 900 foot aquifers) from inland to sea, or vertically due to gravitational pull. The proposed project assumes, incorrectly, that sucking water from one well location does not affect the entire groundwater network system. CalAm's massive pumping, in comparison to MCWD's conservative, conservation oriented draws, is exacerbating seawater intrusion, a scientifically proven result of overpumping:

"Saltwater intrusion can occur in coastal groundwater basins, where overpumping of groundwater aquifers can cause seawater to be drawn into aquifers and contaminate the water supply.", p. 8., ("The Hidden Costs of Groundwater Overdraft", by Tara Moran, Janny Choy, and Carolina Sanchez, Chapter 4, "Understanding California's Groundwater", Stanford Woods Institute for the Environment and the Bill Lane Center for the American West. Also, see "The Steep Price of Overpumping for Many Ecosystems", same reference.

Coppernoll-2

In a related article, "Sustainable Groundwater Management Act (AB1739, SB1168, and SB1319)", in aquilogic, Inc., October 2014, 'The Problem with California Groundwater Management': "...excessive groundwater withdrawal can cause subsidence of the ground surface, which in turn decreases the soil permeability, aquifer storage capacity, and reduces the infiltration rates to recharge the aquifers. Additional problems related

2

to excessive groundwater withdrawal are failed wells, deteriorating water quality, and environmental damage. Therefore, GSP's are necessary to prevent the loss of productive aquifers and to ensure that reliable sources will be available in the future for drinking and irrigation purposes.", p,1.

Coppernoll-2 cont.

Can the CPUC support this ongoing harmful overpumping activity that causes environmental damage? This overpumping causes large cones of depression or subsidence, which, over time can lead to beach erosion that affects the entire Monterey Bay coastline, not just the CEMEX property area. This overpumping will permanently destroy the Salinas Valley Groundwater Basin as more and more seawater intrudes the aquifers, degrading water quality. This same irresponsible conduct will continue, even more so, with the other nine slant wells the CalAm proposed project plans to construct and install, which, as the DEIR asserts, will continue to pump from the Dune Sand Aquifer and180-Foot Aquifer.

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The MPWSP cannot be considered Feasible for the following reasons:

1. CalAm, the DEIR states, "would need an appropriative groundwater right to retrieve and export water from the basin" (2.6.1, p.32). The DEIR then continues on to assert that in order for CalAm to have the requisite appropriative rights to support the project, it will need the right to extraction of otherwise unusable Basin groundwater that will not harm lawful water users, and be able to guarantee that any fresh water extracted can be returned to the Basin without injury to existing legal water users. Only then would CalAm have rights to the portion of feedwater that comes from the Basin because the MPWSP product water that contains such Basin water would be "developed water." "Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source." (2.6.1, p. 32)

   Coppernoll-4

   How can the water that CalAm is currently drawing, and plans to draw, from the future proposed slant wells, be considered appropriative or developed? The SVGB is the sole water source for MCWD, thus for Marina and Ord Communities. This water, particularly the Perched Dune Sand Aquifer, through proper sustainable groundwater management plans and programs, has had freshwater restored through MCWD's good water conservation efforts, reversing seawater intrusion. There is a natural hydrogeological balance between ocean water and freshwater, through an equalized push pull system whereby freshwater aquifers, such as the Perched Dune Sand Aquifer, provide a wall against seawater intrusion into the aquifers, thus equalizing the balance between land and sea, a natural phenomenon. Overpumping causes downward pressures and subsidence that lower this natural barrier, allowing seawater intrusion. Sodium Chloride is the chemical character of ocean water, whereas the Dune Sand Aquifer Groundwater and the 180-Foot Aquifer Groundwater respectively reveal that the chemical character of groundwater in the related new wells is mainly calcium chloride and calcium

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bicarbonate ("Technical Memorandum re North Marina Area Groundwater Data and Conditions", Curtis Hopkins, Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc., to Keith Van Der Maaten, General Manager, Marina Coast Water District, May 26, 2015, Page 7).

Coppernoll-6 cont.

(Please see Exhibit A: Perched Dune Sand Aquifer (EKI Study) at Armstrong Ranch Project).

Return water is not legitimate water for CalAm to provide because the origination of the water used comes from the Basin, water that CalAm has no right to in the first place. All water within the Basin is usable to MCWD. The "brackish" water, whose definition CalAm misstates, consists of ocean and fresh water, but contains a much smaller fraction of salinity than ocean water and different TDS. CalAm fails to give the whole truth. CalAm has rights to purely ocean water, but CalAm has no rights to brackish or fresh water drawn from the SVGB. CalAm cannot create "return" water because CalAm has no water rights to legitimately extract groundwater at all, let alone later "return" it. On what basis does the CPUC legitimize this argument in the DEIR?

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If CalAm has no groundwater rights to extract the "brackish" water in the first place, how does it have a right to claim it as a right to create return water, or to developed water whose origination is groundwater? Does the CPUC comprehend the natural balancing of aquifer layers and subsurface structures that allow aquifers to be recharged and seawater intrusion to be reversed, resulting in freshwater restoration? Or that Brackish water, which is still groundwater, plays a significant role in this process? Does the CPUC recognize the fact that the CalAm MPWSP has no water rights within the SVGB, that MCWD does own SVGB water rights, or that the MPWSP is infeasible from the beginning? **Why did the DEIR omit any analysis of harm to the MCWD or even include it as if it were nonexistent in the equation?**

Seawater intruded water is still extracted from the groundwater basin and is still a more saline mixture than freshwater, but MCWD works with this challenge to restore the balance nature intended, and the affected aquifers have been, and continue to be restored to their natural equilibrium by the constant and consistent efforts on the part of MCWD, and water conservation efforts on the part of MCWD's customers. As stated, brackish water contains only a fraction of the salinity found in ocean water. Brackish water is usable and treatable groundwater. MCWD has treatment facilities in its sustainable groundwater management plans. Therefore, CalAm has no right to this water either. As attested to by Curtis Hopkins in his Technical Memorandum cited above, page 5, "Years of reduced pumping has resulted in beneficial groundwater conditions that are apparently slowing the movement of seawater and providing a freshwater source that is replenishing the aquifers. Notably, the fact that the Dune Sand Aquifer and 180-Foot Aquifer at Monitoring Well MW-7 are no longer contaminated by high concentrations of seawater can likely be explained by the changing hydrogeological conditions

Coppernoll-8

resulting from the efforts of MCWD (e.g., Annexation Agreement, etc.) and others to reduce pumping in the coastal area. As a result, recharge from rainfall into the Dune Sand Aquifer creates a mound of freshwater that flows toward the Salinas River and the ocean." Presently, CalAm is furiously pumping 2100 gallons per minute from the Dune Sand Aquifer, thus undoing all the good work the MCWD and others have done to restore freshwater to this aquifer. This overpumping is clearly causing harm to MCWD and its customers, and is destroying this critical aquifer in an already over drafted basin. How can CalAm claim the groundwater it extracts is unusable to legal users? If CalAm can use the water, then the legal owners can certainly use it. Where in the DEIR is there scientific proof that the CalAm extracted water is unusable to legal users? In fact, CalAm is intentionally and unlawfully wasting this water, making it unusable to anyone, especially its legal users.

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Does the CPUC acknowledge CalAm's unjustifiable illegal actions? Will the CPUC take action to protect the SVGB and its legal users? What is the fiduciary responsibility of the CPUC?

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Will the CPUC require more stringent baseline controls and scientific data be obtained before any approvals? Has the CPUC researched the Dana Point, California slant well experiment to find out why that slant well was not deemed viable, what its inherent technical, or other problems encountered were that halted its use? Has the CPUC established any scientific data to explain the level of efficiency dropping from 98% to 54% in the only other known slant well (Dana Point), as a point of comparison for the viability of the MPWSP, or why the CalAm test slant well is experiencing problems with clogged filters or how it will manage the toxic chemicals needed to clean the filters and wells? Will these chemicals enter the groundwater aquifers, causing further contamination? What scientific data or baseline controls have been established to justify these slant wells? So far, there are only assumptions based on faulty modeling and estimates, but no rock-solid science employed. Do the taxpayers and CalAm customers deserve a sounder basis on which to gamble this $300 million project, or does the CPUC determine it is just fine to move forward with an untested, unproven, and scientifically uncertain project? Where is the level of uncertainty for viability and feasibility been established or presented in the DEIR? All credible scientific analysis requires a determination of the level of uncertainty and peer reviewed, published, scientific scrutiny.

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2. Has the CPUC visited the slant well sites to verify that the slant wells will be extracting ocean water from the subsurface of the ocean? Monitoring reveals the test slant well is extracting fresh water and salt water intruded water from the Dune Sand Aquifer and the 180-Foot aquifer, and not the ocean, which the DEIR confirms to be fact. In other words, there is a discrepancy between what the project design portrays and the actual slant well activity. The DEIR confirms that "The proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer", but the subsurface information CalAm asserts it has retrieved is not adequate because one test slant well cannot provide data for any other areas within the

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subsurface, and the data retrieved cannot provide data for the condition of the whole aquifer, or its aquitards, or any existing fissures. Only an Electrical Resistivity Tomography (ERT) field study can provide this appropriate scientific data. CalAm and the CEMEX property area had an opportunity to benefit from such a study that was conducted by Stanford professor, Dr. Rosemary Knight, at no cost to CalAm. CalAm chose to ignore this great opportunity to collect scientifically verifiable data on the entire subsurface area underlying its proposed slant wells to determine the true condition of aquifers and aquitards, the existence of fissures, and the extent of seawater intrusion. The ERT field research study revealed that there are fissures and seawater intrusion in the subsurface aquitards.

Coppernoll-16 cont.

There is a fault just south of the CalAm test slant well location. Has the CPUC DEIR evaluated the potential environmental damage seismic activity in the area of the test slant well and its proposed nine additional slant wells could sustain? Existing fissures indicate that future seismic activity is highly probable, and that more fissures could occur to further degrade aquitards and water quality. The attached ERT slides show there are fresh water layers and salt water intruded areas in the aquifers along the coast. It is unfortunate that CalAm neglected to take advantage of this unique ERT opportunity. As the Review and Comments on Draft EIR of the Monterey Peninsula Water Supply Project prepared by SWCA Environmental Consultants states, "The DEIR's evaluation of water rights relies heavily on the July 31, 2013, report prepared by the SWRCB (refer to Section 2.7 and Appendix B-2 of the DEIR). The report ultimately concluded that the determination of whether a legal means exists for Cal Am to extract water from the Salinas Valley Groundwater Basin (Basin) will depend on developing key hydrogeologic information to support a determination that the project would not cause injury to other users in the Basin." To date CalAm has failed to conduct such a study, even when one was available at no cost to CalAm. **Furthermore, CalAm will never have the water rights to export water from the SVGB to its Monterey Peninsula service area because state law precludes exporting groundwater from one jurisdiction and transporting it to another jurisdiction. (Please see Exhibit B: ERT of Monterey Bay)**

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Do you consider CalAm negligent for not obtaining this valuable data for this DEIR and the previous one? Is CalAm remiss for avoiding this scientific data retrieval process for its test slant well, and by extension, its other proposed wells? This important information would have had a serious impact not only on the test slant well, which CalAm plans to make permanent, as well as the other nine slant wells.

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3. The DEIR states that "The key principle of developed water is: if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized." **This DEIR seems to be totally one-sided, not taking into consideration the needs and water supply demands of the MCWD jurisdiction. MCWD, a long established and community recognized lawful user, will be injured, and is being injured, by the actions of the MPWSP.** It is accepted

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knowledge that the water in the SVGB is precious and scarce. All SVGB groundwater is deemed "usable" and productive for maintaining the natural hydrogeological balance.

How can the CPUC approve the MPWSP that purposely plans to export Marina's source water to another area, namely to CalAm's district service area, with total disregard for the harm the MPWSP is doing (exacerbating seawater intrusion through overpumping), and plans to repeat its past history of depleting precious water supplies? CalAm disregarded the law in the past, and plans to do so again. Its project plan specifically states its objective is to export the SVGB water outside the Basin to the CalAm service area, which is unlawful. (2.2) Further, CalAm announces in the DEIR its intention, via its slant wells, to calculatedly contaminate a potable groundwater supply in violation of multiple state regulations and water quality laws. Dumping illegally extracted groundwater into the Monterey Bay is wasting water. Through extensive overpumping of the SVGB's groundwater, CalAm is converting potable freshwater into contaminated brackish water, and eventually will convert the groundwater to mostly saltwater, or to use CalAm's terminology, brackish water. This is the strategy being used to justify its unlawful extraction of groundwater and its desalination plant. CalAm is not pumping ocean water as its feedwater. It is pumping SVGB groundwater and will deplete and destroy this invaluable asset. Why is the CPUC allowing this to occur? Why is the CPUC not collaborating with other agencies to ensure this unlawful activity is stopped? Or, how does the CPUC justify condoning this unlawful activity and ignoring in the DEIR the violation of the CEQA and state law requirement that CalAm must prove its actions will do NO HARM?

Coppernoll-22 cont.

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4. Monterey County Water Resources Agency Act stipulates that "no groundwater from the basin may be exported for any use outside the basin, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted (MCWRA) may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that export of groundwater." (2.6.3) (Since Fort Ord no longer exists, the latter portion of this Agency Act then, one can surmise, only applies directly to the SVGB and its lawful users). Continuing, the DEIR states that: "The proposed project will develop supplemental water supplies to serve CalAm's Monterey District area" (2.2.1) and CalAm must develop a replacement water supply to meet existing demand in the Monterey District service area. In addition, CalAm proposes to provide sufficient supply to meet demand associated with the development of existing legal lots of record, Pebble Beach water entitlements in the Del Monte Forest area, and tourism demand under improved economic conditions within its service area." (2.3)

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Where does the DEIR take into account the MCWD water supply demands and needs, and how the MPWSP will harm the MCWD's ability to protect and preserve its own water supply resources? Currently, the CalAm slant well is pumping massive amounts of water far in excess of what even the MCWD is pumping, dumping the freshwater back

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into the Monterey Bay, which violates state law that states that "all water use in California must be for beneficial purposes and by reasonable method of use." (AB3030) Wasting Marina's SVGB water is harmful to the 33,000 current Marina Coast Water District's customers. There is a limited supply of freshwater. CalAm has already demonstrated that it disregards the law (Carmel River, Seaside Groundwater Basin cases), and plans to continue doing so. How can the CPUC not recognize that CalAm has no legal groundwater rights, or any other rights, to the SVGB, especially since its objective, as stated, is to export the SVGB groundwater to its own service area, which is also illegal, as discussed above, and will deplete MCWD's water supply source? Can this MPWSP planned action to permanently degrade and delete the last freshwater frontier, the SVGB, in the immediate area of Marina be justified or approved?

Coppernoll-25 cont.

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How can the CPUC justify saddling the MCWD customers and Marina citizens with unsustainably high water rate increases to subsidize CalAm stockholders and incur the cost of this estimated $300 million MPWSP, or its stated unsustainable over use of the City of Marina's transportation network system since no agreements are in place to mitigate the ruining of roads that are already in a state of disrepair and marred with potholes, or avert costs to Marina taxpayers without compensation agreements in place? The DEIR does not quantify the cost, and dismisses the severe impact, of the thousands of round trips that will be made by the MPWSP trucks and vehicles over an extended period of time. Will the DEIR correct these omissions?

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5. CalAm's MPWSP will harm the SVGB and injure the MCWD and its water customers because the project will pump massive amounts of brackish and fresh water from the SVGB aquifers, causing more and more seawater intrusion. It already has caused harm because it is undermining and undoing the water conservation and freshwater restoration accomplishments MCWD has thus far achieved. There is hardly enough groundwater supply to meet the needs and demands of the MCWD, or its future water demands for anticipated development, but with the continued freshwater restoration and conservation efforts MCWD is engaged in through its sustainable groundwater management plans and programs, there will be sufficient potable water for the MCWD jurisdiction and service areas. The SVGB water has been designated for use in Marina and the Ord Communities, Salinas and the agricultural industry's irrigation demands, but may not lawfully be exported to the CalAm service area, which is the express purpose of CalAm's project. How is the CPUC justifying this egregious injustice and harm to MCWD and Marina and Ord Communities, and the farmers?

   How can the CPUC not understand that this project will inflict irreparable harm on the MCWD by depleting its only source for fresh, potable water? MCWD has a vital need for its groundwater. The Perched Dune Sand aquifer is a critical source of freshwater supply. CalAm does not have any category of water rights to this groundwater asset that belongs to the MCWD. To allow another water district (CalAm) to invade the MCWD in order to procure its (MCWD) water only to

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transport that water outside the Basin to its own (CalAm) district's service area is an environmental, financial, and social injustice that cannot and should not be tolerated. **(Please see Exhibit A: Freshwater Perched Dune Sand Aquifer, Armstrong Ranch Project, EKI Study)**

Coppernoll-29 cont.

6. State water policy supports enhancement of beneficial uses of water and the prevention of wasting water. CalAm is violating this policy by pumping massive amounts of water (126,000 gallons of freshwater per hour), far in excess of the water being pumped by MCWD. CalAm is spouting that water back into the Bay, squandering MCWD's water supply source, as previously noted. (Article X, section 2, California Constitution and codified state policy). The unlawful, and environmentally unsound practices being employed by the MPWSP cannot be over stressed because they are directly related to the harm being done, and the cumulative irreparable damage that is taking place, thus connecting these legal, ethical, and environmental issues requires continued underscoring and exposure.

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Will the CPUC recognize that CalAm will repeat its past unlawful behavior to the detriment of MCWD and the other SVGB legal users? Can the CPUC legitimately make any other determination than "infeasible" for the MPWSP?

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7. For these reasons so far stated, and many more, **the MPWSP is not feasible.** MPWSP solutions for mitigation to avoid harm are pie-in-the sky proposals, are deceptive, and have no practical application in real time situations. The planned 21-mile water pipeline, that will disrupt life in Marina and elsewhere, is the pipeline CalAm intends to use to export MCWD's water to Cal'Am's service area, contrary to law, and to great harm to MCWD that depends on the Basin water for its service area. While it is a shame that CalAm mismanaged its own water supply sources, it is not the responsibility of MCWD or the City of Marina to jeopardize or destroy its own water supply source and harm its own customers and citizens in order to salvage the damage CalAm has chosen to inflict on its own service area customers. The law protects MCWD from such injury. The CPUC must do the same. The CPUC must do the morally and legally right thing, and in this case, the environmentally right thing, by declaring the MPWSP **infeasible.**

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The DEIR 2-40 claim that "...the project would appear consistent with the Agency Act and the Ordinance given that the project would return to the Basin any quantity of fresh water withdrawn from the Basin" is an absurd conclusion in that the "quantity of fresh water withdrawn from the Basin" could not legally be extracted from the Basin in the first place, or exported anywhere outside the Basin. MCWD has legal groundwater rights. CalAm is literally invading another water district's water source in order to illegally extract and export that water for its own water district's use without regard to the legal user's rights.

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Where does the DEIR provide validated scientific data proving the quantity of fresh water it is extracting? How can the proposed project determine the amount to return to the basin since it has no scientific exactitude to measure that quantity? The DEIR, 2.6.2, states that "In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water." Does this level of uncertainty cry out for scientific data to measure how much freshwater is being withdrawn? Is this not an affirmation that freshwater is, and will be, extracted from the basin and not subsurface ocean water? Please explain why the DEIR contradicts itself when the Appendix E-2 Geoscience diagrams show the slant wells to be in the 180-foot aquifer of the Salinas Valley Groundwater Basin on the one hand, then in 2.6.2, the DEIR asserts that "the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project", on the other hand. Is this not an obfuscation of the truth that the slant wells are extracting freshwater and are not in the ocean subsurface area as claimed? Confusing brackish water and freshwater demonstrates a lack of scientific knowledge pertaining to the subsurface area of the basin and how it functions vis-à-vis freshwater and freshwater that has been contaminated by seawater intrusion. The percentage of salinity in ocean water is far higher than salinity in brackish water, and the TDS is dissimilar. There is a big difference between the two, to include the cost of ocean water desalination and brackish water treatment. To extract purely ocean water requires no water rights. To extract brackish water does require water rights because brackish water is still groundwater whose quality has been degraded, usually through over drafting.

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As pointed out, doesn't the CPUC know that any return water is already, a priori, water that is unlawfully drawn from the groundwater basin, and is, therefore, an unacceptable solution?

8. Can the CPUC justify this regional environmental injustice? CalAm has already acted in such a manner as to lose the public trust. Can the CPUC expect City of Marina, or any other city, residents to trust CalAm or its proposed project? History tells us that the MPWSP and CalAm cannot be trusted to respect the law. DEIR 2-7 states that CalAm had "no valid basis of right" and was unlawfully diverting water (surface and subsurface flow) from Carmel River. The DEIR 2-7 continues to state that CalAm was in violation of Order 95-10 and Water Code Section 1052. CalAm was directed to "terminate all unlawful diversions from the river no later than December 31, 2016."

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In DEIR 2.2.4, the text, referring to the Seaside Groundwater Basin Adjudication, states that "By adjudicating the water rights for all users of the basin, the court intended to protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping." On 2.2.4, p.2-8, the DEIR text continues to explain the Decision identified the "natural safe yield" throughout the basin in each of its subareas. The

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Decision also found (and noted all parties agreed) that continued production in excess of the natural safe yield would result in seawater intrusion and deleterious effects on the basin." Additionally, the same DEIR text, p. 2-9, indicates that "...by the time the Laguna Secca Subarea will be allocated to other producers with overlying groundwater rights that are superior to CalAm's appropriative rights (Svindland, 2013a), CalAm has to replenish the Seaside Groundwater Basin over a 25-year 'repayment period'".

Coppernoll-37 cont.

Has the CPUC given adequate consideration to CalAm's history of violating the law, of requesting permission for more and more water rate hikes on its customers, or its history of disregarding the rights of other lawful water rights users? Not only should the MPWSP be deemed infeasible, but the CPUC should protect the CalAm rate payers from usurious water rate charges, charges that are intended to reward its shareholders, stockholders who for the most part do not even live on the Monterey Peninsula or pay taxes there. All in all, CalAm has damaged its reputation in the community, has lost the trust of its customers and many others, and should not be given another chance to repeat history. It has gotten away with unlawful behavior, in a sense, and manifestly intends to repeat history.

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Will the CPUC take into consideration, when deciding on the CalAm application to recover present and future costs for the proposed project, the Public Utilities Codes 451 and 454 that require that water service providers charge their customers "just and reasonable rates"?

Will the CPUC do the morally right thing for the Monterey Peninsula by denying CalAm its requested Certificate of Public Convenience and Necessity (CPCN) to build, own, and operate all elements of the MPWSP, and permission to recover present and future costs for the proposed project? Proposed Project approvals should not take place **BEFORE** any of the affected areas have given their permission or agreement, or had a chance to thoroughly assess the harm the proposed project will do. It is hoped the CPUC will deny DEIR and project approval, and refuse to issue the CPCN. That is the responsible action to take.

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9. The DEIR asserts, 2-30, that "Indeed, no government agency will formally grant water rights to CalAm for the proposed project." This DEIR seems to support the **infeasibility of the MPWSP**. It is important to note on 2-29 that the DEIR specifies that" It is the jurisdiction's responsibility to determine, subject to applicable plans, policies, laws, and regulations, whether or not to approve a new or intensified water use within its boundaries." If logic prevails, would this not mean that, as the responsible agency in the Marina area, with CalAm operating in the MCWD's jurisdiction, the MCWD would have a voice in this proposed project decision? If so, then can the CPUC explain how the DEIR statement on 2-30 can imply a unilateral decision in favor of CalAm: "This EIR/EIS assumes that water provided by the proposed project will be allocated to meet existing demand and that any water left over would be allocated in general proportion to

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projected growth in the CalAm service area jurisdictions." Could the CPUC please explain or clarify this apparent contradiction?

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Chapter 4: Groundwater Extraction and Quality

Reasons the Proposed Project DEIR is Inadequate:

1. This DEIR is inadequate because it does not sufficiently consider the environmental impacts of the water pipelines extending to the CalAm service area, and the harm exporting SVGB groundwater to another service district will do to the MCWD service area, the quality of water based on scientific data, not inept science, and especially the severe adverse impact the proposed project will have on the integrity of the Perched Dune Sand Aquifer. **It is unconscionable that the CEQA and state law requirement to do NO Harm is currently being disregarded.**

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2. **DEIR Chapter 4 clearly states that "The proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer from about 30 feet below msl to 200 feet below mean sea level (GeoScience, 2016b) ...the Dune Sand Aquifer overlies the 180-FTE Aquifer with no aquitard between the units. The test slant well is screened across both units and has been sampled on a weekly basis when operational."** The CalAm pumping has increased seawater intrusion, much to the detriment of the Perched Dune Sand Aquifer that had its freshwater restored through MCWD's prudent water conservations and restorations plans and programs. This is a freshwater perched aquifer that CalAm had previously ignored in the last EIR, according to Curtis Hopkins, hydrogeologist, in a Technical Memorandum to MCWD, dated May 26, 2016.

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How can the slant well test be considered valid since only approximately half the total time required for the test will be considered operational time? There will be insufficient data to make any conclusive determinations concerning scientifically valid test results for safety and water quality. The well operations were halted due to construction defects and other related issues. Will the existence of the construction defects foreshadow additional more serious environmental impacts as a result of faulty or defective well and pipeline construction? Will the CPUC bank on untested, unproven technology that has no other successful slant well in the United States or the world, other than the failed Dana Point, California slant well, to use as a comparative analysis tool? Can the CPUC in good conscious take this risk? CalAm transmits the cost of its failures and unlawful conduct to its customers because it does not assume financial responsibility for its own poorly designed projects. In the Curtis Hopkins technical analysis (cited above), the faulty modeling used for the MPWSP is highlighted as providing erroneous data, and therefore should not be the source for decision making for the proposed project. Will the CPUC revisit this modeling, asking an independent third party to provide a more objective analysis?

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Does the CPUC accept as valid the modeling proffered by the same individual who holds the patent to the slant well, or the same company, GeoScience, that reviews and evaluates the proposed project? Is a second round of conflict of interest at play?

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The Perched Dune Sand Aquifer is vital to the MCWD fresh water supply, which CalAm is damaging with its pumping, just as it harmed the Seaside Groundwater Basin and the Carmel River. **Based on CalAm statements and actions, it appears that CalAm's objective is to permanently reduce the quality of the SVGB aquifers and aquitards to render them completely seawater intruded, as a way to justify its proposed desalination project.** CalAm's Director of Engineering, Ian Crooks. is claiming publicly that the 180-FTE and 400-FTE aquifers are already permanently damaged due to seawater intrusion, and that "the (180-foot aquifer) was damaged and done a long time ago." (Monterey County Weekly, article "War of the Wells", 2-2-2017). Is this statement to be understood as the rationale for overpumping the Perched Dune Sand Aquifer? This is a misleading statement because, as Electrical Resistivity Tomography field tests have scientifically demonstrated, there are freshwater and seawater intruded layers in the subsurface structures, and an EKI study of the Perched Dune Sand Aquifer shows the salt water and fresh water areas in the subsurface of the aquifer. The Perched Dune Sand Aquifer is far from "damaged and done a long time ago", but if CalAm is allowed to continue pumping 2100 gallons per minute from this aquifer, as it plans to do for all future slant wells, then this Ian Crooks statement will become a reality, and the Marina Coast Water District's freshwater supply source will indeed be destroyed, which will be a disaster for Marina and the Ord Communities. **(See Exhibit B for examples of ERT field research study results, and Exhibit A for the EKI study of the Perched Dune Sand Aquifer, showing the saltwater intrusion and fresh water subsurface areas, and the balancing of water flow to create a natural barrier to seawater intrusion).**

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There is scientific proof that pumping causes sea water intrusion, as supported in scientific journals cited above. There is scientific data to prove MCWD has restored freshwater to SVGB aquifers through its restoration plans and water conservation programs. Information obtained from one well, it has been also scientifically proven, cannot provide adequate or accurate data for the Basin's extensive subsurface area, both linear and vertical. Only through ERT testing can accurate scientific data confirm the condition of the subsurface areas. Even if Ian Crooks' statement were true, this assumed aquifer condition would not give groundwater rights to CalAm, which it is desperately seeking at the expense of MCWD. CalAm in DEIR 4.4 also claims it has gathered sufficient information to make conclusions about the aquifer. This cannot be true because sentinel wells or test slant wells only provide, through monitoring mechanisms, information on the area directly below the well, but cannot possibly provide information pertaining to the entire groundwater basin. However, Electrical Resistivity Tomography (ERT) would have provided precise data on the extent of freshwater vs seawater intrusion, as well as data on the strata, fissures,

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and aquitards, but CalAm refused the ERT's request to include the CEMEX property in its field research study, which would have been free, accurate scientific data for CalAm. ERT is the only solid authentic method for obtaining sound scientific data on the aquifers and aquitards and their degree of health and structural condition.

Coppernoll-48 cont.

Why is the CPUC ignoring the Perched Dune Sand Aquifer being used by CalAm instead of ocean subsurface intake, as it has claimed it will do in its project design description? CalAm is not drawing in ocean subsurface water. It is depleting the SVGB freshwater Perched Dune Sand Aquifer, to great peril to the Basin and rightful groundwater users. Will the CPUC do anything to rectify this situation? It surely will be repeated in the other 9 slant wells once installed, if installed, because CalAm asserts in the DEIR that it will do exactly that.

Coppernoll-49

Will the CPUC heed all the inputs from the MCWD customers who are concerned about the degradation of its sole source of freshwater supply, the SVGB? Will it deny DEIR and project approval based on the project being infeasible? There is a moral imperative to do so. Can the CPUC accept the consequences of jeopardizing the critical water supply of one district to satisfy the needs of another water district whose stated purpose is to take the SVGB water and transport it to an outside the Basin district, risking grave, even irrevocable harm, to the injured party, MCWD and its customers, present and future?

Coppernoll-50

3. **In addition, this DEIR is inadequate because it fails to address several issues, and should not be certified or approved until those concerns have been addressed.**

Coppernoll-51

First, on a scientific level, the DEIR does not address the potential of seismic activity and how that activity would impact both the slant wells and the pipes and pipelines. A past Electric Resistivity Tomography (ERT) field research test demonstrated that there are fissures in the existing aquitards, but CalAm neglected to employ this important, and well known, scientific method for determining the condition of the subsurface structures in the SVGB aquifers and the aquitards, even though it recognized, in the DEIR, that ERT could be used as a tool to retrieve important data. The CalAm test slant well is located in an area that has a known existing fault just south of the slant well location. ERT could have revealed results of past seismic activity in that particular location or existing seismic damage to the aquifer and aquitard. Ignorance is not bliss, and finding out too late, after gambling a $300 million price tag for the proposed project, would be indeed tragic for all. Will this specific environmental impact risk be evaluated in this DEIR?

Coppernoll-52

Second, on another level, the DEIR is biased and inequitable in favor of CalAm, with a complete disregard for the impact on the Marina and Ord Communities' sole water supply source, a water source that CalAm is already harming, a water source that is vital to, and cherished by, the City of Marina and the Ord Communities that depend

Coppernoll-53

on this water source. That harm will be irreparable if the proposed project is allowed to proceed, and if the City of Marina, that has lead responsibility, is ignored or exploited by outside entities. To be adequate, the DEIR needs to address this side of the equation.

Coppernoll-53 cont.

Third, the City of Marina has responsibility for its certified Local Coastal Plan. The DEIR (1.5.4.3) states that the City of Marina would be receiving and approving an application for a Coastal Development Permit for the slant wells. However, approval is highly unlikely given the lack of mitigation for the significant irreparable harm to marine vegetation and ecosystems in the area of the proposed project.

Coppernoll-54

Should the City of Marina deny such permit, would CalAm be allowed to bypass the City of Marina and obtain a permit from the California Coastal Commission, which the DEIR states it will do? The City of Marina, as discussed above, has lead responsibility and should be the final step for approving or denying such permit. Under what circumstances would CalAm be able to circumvent the City of Marina and seek the Coastal Development Permit from the California Coastal Commission?

Coppernoll-55

4. The DEIR omits discussion on compensation for Marina residents and Ord Communities, and other affected areas, for the disruption its construction of the 21-mile pipeline and desalination plant heavy vehicle traffic on local roads and reduced recreational trail usage for the duration of the project construction will cause, plus the inconvenience incurred as a result of parking space displacement and commercial parking lot reduction to accommodate project vehicles and road blockages, and, most importantly, future high water rate increases that will be imposed on the MCWD customers too, if they are subsumed by CalAm, to pay for present and future costs of the MPWSP. Marina is basically a working-class city whose residents would most likely be at risk for losing their homes if water rates were to increase at the same pace and level as current CalAm customers' rates are.

Coppernoll-56

Coppernoll-57

Table 4.9-4 provides details on the number of heavy truck vehicles and passenger vehicles (workers) and the number of trips per day that will be used in the proposed project construction process, which is projected to occur over a 24 month period, with individual sections of the project taking varying lengths of time, with the construction running 24/7 per the 4.9 Traffic and Transportation requirements, impacts, and proposed mitigations which are based on the Traffic Control and Safety Assurance Plan, or Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan). It seems that this plan has not yet been presented. Will the CPUC require this plan to be developed for review before approving this DEIR/DEIS? Where in the DEIR is an implementation plan detailed for a Traffic Control and Safety Assurance Plan? The DEIR states that "However, with implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan) the impact would be reduced to a less-than-significant level. The mitigation measure includes provisions for reducing construction-related traffic and traffic congestion impacts on local streets." Yet in

Coppernoll-58

the same paragraph, the DEIR states that "**these traffic increases along lower-volume local and neighborhood (residential) streets in the Marina/Seaside area are considered to potentially result in substantial adverse effects." (DEIR 4.9-21).** Where is the mitigation measure found that will reduce these "adverse effects" to a less-than-significant level? And how will they be implemented? DEIR 4.9-18-21 discusses traffic details in terms of number of workers, trucks and trips, both round trip and one way trips. Where does the DEIR provide the details on the origination of the workers and trucks that are or will be commuting to and from the proposed project construction sites? Will adverse impacts on those roads be mitigated? It can be conjectured that many workers and trucks will originate in Salinas, a city that is also affected by any activity affecting the Salinas Valley Groundwater Basin. Blanco Road is a major connecting road between Salinas and Marina. Blanco Road is already riddled with pot holes, is a two-lane road that is already congested much of the time, and runs adjacent to agricultural fields. Will workers be commuting from Watsonville, or Castroville, or other locations? Will the CPUC address this insufficiency in the DEIR traffic and transportation impact analysis section? The Traffic Control and Safety Assurance Plan, not yet developed, will assume encroachment permit approvals from the City of Marina. Is this a reasonable assumption on the part of the CPUC, given that Marina's water supply concerns have been overlooked in this DEIR? And given that the significant overload on Marina's roadways has been diminished or dismissed as less-than-significant, despite no evidence or proof that this reduction of risk or harm is actual or that the harm can or will be mitigated? Reality says otherwise.

Coppernoll-58 cont.

Coppernoll-59

Coppernoll-60

On page 4.9-3 the DEIR states that Highway 1 and Del Monte Boulevard will have the greatest number of daily construction related truck trips. Will the CPUC delineate the precise impact this truck traffic will have on Del Monte Boulevard, a major thoroughfare through Marina's business and residential areas? Table 4.9-4, numbers are provided for workers, trucks, and trips. To give general numbers, based on this table, for which the construction spans a 24-month period, with individual sections of the proposed project lasting varying periods of time, we can estimate there will be 30,840 trips by workers, and 10, 320 trips by trucks per month. Will the CPUC require the DEIR to include a more detailed and accurate analysis of the actual impact on Marina's transportation network and what mitigation measures will be taken? Will a mitigation plan be provided that contains details instead of general statements without substance?

The DEIR is inadequate because it does not provide actual impact on Marina's streets and roads, or Highway 1 in terms of wear and tear and the cost to repair these traffic areas. Reservation Road is included in the use of Marina streets and roads, yet the adverse impact to this Marina roadway (reservation road), that is already in disrepair with a significant number of pot holes, is not adequately addressed. This substantial increase in heavy vehicle traffic will without doubt increase significantly the need for road repairs. Will the DEIR be required to provide precise details pertaining to the

adverse effects such heavy vehicle traffic will have on Marina's roadways? Already there is significant large size transport trucks coming daily through Marina, stressing its roads considerably, hence the increasing number of potholes that cause damage to local residents' cars and vans. To state, as the DEIR does, that a not yet published plan to mitigate damage is proof that the adverse impacts will be reduced to less-than-significant status is not acceptable or adequate. Can the CPUC please explain this gap in evidence that NO HARM will be done to Marina's residents? By stating that Charles Benson Road is the most heavily travelled does not prove that the other roads are not also heavily travelled since workers and trucks have to get to Charles Benson Road by some avenue of approach. Will the CPUC require the DEIR to provide proof that NO HARM will be done to Marina's transportation network system? DEIR Table 4.9-3, Summary of Impacts – Traffic and Transportation, p.4-9-18, **Impact 4.9-C, Cumulative Impacts related to traffic and transportation are rated SU, significant and unavoidable**. No indication of any attempt at mitigation is proposed. Will the CPUC require a pre-proposed project agreement process whereby Marina will be compensated for these significant cumulative impacts that cannot be mitigated? **Will the CPUC decide the proposed project is infeasible because its DEIR states it will DO HARM to Marina's transportation network system without mitigation or compensation**? An increase of 30,840 daily worker trips, coupled with 10,320 truck trips per month over an extended period of time could totally impair local residents' ability to get to work on time, or go anywhere, day or night, with the projected significant increase in traffic on the major roads, and some less major roads, in Marina. What will the CPUC undertake to address this challenge?

Coppernoll-60 cont.

It seems callous that the DEIR states in 4.9 that the proposed project will coordinate with Monterey Salinas Transit (MST) so the "transit provider can temporarily relocate bus routes or bus stops in work zones as deemed necessary". What selfish disregard for local residents whose only transportation to work is the MST! Will the CPUC require these Marina residents to take a taxi to the relocated bus route? What about seniors who take the MST to shopping or other destinations? No compensation can make up for this gross inconvenience. What will the CPUC do to rectify this injustice? This is another item overlooked in the DEIR assessment of adverse impacts, compounding the fact that the **proposed project is infeasible**.

Why were these important items not included in the DEIR?

Isn't CalAm requesting permission to recover present and future costs for the proposed project in its current project application? Just as its current customers are experiencing exceptionally high water rate increases to cover CalAm's past "expenses", won't MCWD customers and the City of Marina residents incur large water rate increases and transportation costs to restore roads, recreational trails, railroads, etc. to original condition?

Coppernoll-61

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There have been no pre-project agreements to address these issues prior to project request for approval. Isn't the CPUC putting the proverbial cart before the horse? Coppernoll-61 cont.

5. A major insufficiency is the inherent conflict of interest that continues to exist because the slant well patent holder, Dennis Williams, is also an evaluator of the project, or is connected to both CPUC and CalAm, which precludes objective DEIR analysis and review. This should be deemed an irreconcilable impasse and render the project infeasible. Another conflict of interest, on top of the first one, associated with the failed regional desalination project, should raise ethical, as well as project credibility and viability, issues. Impartial, third party objective analysis is the hallmark of good scientific inquiry. Will the DEIR and CPUC demand this level of project review? Will the CPUC be transparent in disclosing such conflicts of interest? Doesn't the CPUC have a moral imperative to do so in the public interest and for the public good? Doesn't Marina have an inherent right to be considered in all aspects of the proposed project, and the impacts properly assessed, rather than being ignored as if Marina does not exist? Can the CPUC explain this injustice? Has the DEIR addressed potential environmental impacts that will affect Salinas, a major water rights user of the Salinas Valley Groundwater Basin? The entire basin subsurface area is affected by actions undertaken by overlying users, just as the whole human body is connected and affected by what happens to one part of the body.

Coppernoll-62

Coppernoll-63

Conclusion:

In concluding, and expressing appreciation for the CPUC and NEPA for having granted this opportunity to express our concerns, comments, and questions, please accept my sincere effort to encourage the CPUC and NEPA to seriously consider the regional water justice implications of the CalAm proposed project, and the **importance of providing a better solution that will be beneficial to everyone, not just one party.** This aspect, regional water justice, does have a very profound environmental impact. The SVGB is a regional water supply source. Regional water justice requires water projects that do NO HARM to any party.

To recap, this memorandum explains the reasons I oppose the MPWSP, request denial of certification, and denial of approval of the DEIR.

Please do not let greed, politics, or pressure influence this decision. **We all must do all we can to ensure fresh, potable water is affordable, accessible to ALL our citizens, not just a few.** Unfortunately, CalAm has a proven track record of unlawful behavior. It is well known that CalAm exhausted its other water sources through *unlawful water diversions and a disregard for governing law. There is no guarantee,* based on past history, that CalAm will respect all the parameters involved in this DEIR or the proposed project. Trust is a major component of any business relationship, so every effort should be made to restore trust and ensure justice is assured for all concerned.

Coppernoll-64

CalAm is again disregarding the law. By pumping water (2100 gallons per minute) from the fresh water Perched Dune Sand Aquifer and spurting it back into the Bay, CalAm is committing an unlawful act, over and over again, squandering Marina's only freshwater supply source, as mentioned earlier. CalAm is not pumping water from the subsurface of the ocean, as pointed out in the DEIR, or as claimed in the CalAm test slant well design depictions and statements. This is a major deception to cover up the actual source of its water not only for the test slant well, but for the other nine slant wells to be constructed. This is a falsehood that needs to be exposed in the interest of the public good. Coppernoll-65

One may surmise that this falsehood is promulgated to validate the unlawful taking of Marina's groundwater and to insinuate that CalAm does have water rights due to ocean water not requiring water rights, all the while its actions, by inducing more and more contaminated groundwater, it can later claim the aquifers are "damaged and done for"; therefore, it is justifiable to keep on stealing the water for use in its desalination plant. But, if the CPUC or the SWRCB condones such activity, will Marina, and others affected, be forced into costly litigation to protect their lawful, constitutional rights? Can the SWRCB continue to disregard the very constitution it is sworn to uphold? Coppernoll-66

CalAm's stated intention in the DEIR and proposed project is to transport the Perched Dune Sand Aquifer and 180-Foot Aquifer groundwater via a 21-mile pipeline over to CalAm's water district to meet the needs of its customers. Coppernoll-67

First, this is illegal. Law forbids transporting groundwater from one jurisdiction to another jurisdiction.

Second, this law intends to prevent the illegal extraction of SVGB groundwater from the Perched Dune Sand Aquifer and the 180-Foot Aquifer, via the proposed project's slant wells, and the exportation and discharge of this same groundwater into the Monterey Bay or Pacific Ocean. That compounded action constitutes an illegal exportation of groundwater, coupled with an illegal squandering of groundwater. The DEIR clearly asserts that the MPWSP's objective is to do exactly that. It is in fact currently doing that, and manifesting its intentions to do that, as its Monterey pipeline attests to. This is another crime to be committed if certification and/or DEIR approval is/are not denied. It cannot be over emphasized that CalAm's dumping of groundwater back into the Monterey Bay constitutes a prohibited waste of water, and is in direct violation of Article X, sec. 2 of the Constitution of California and the "Doctrine of Reasonable Use" (Peabody v. Vallejo (1935) 2Cal.2d 351-371. Coppernoll-68

Third, the astronomical cost will become another onerous burden on the CalAm rate payers, and eventually, on the City of Marina and the Ord Communities. CalAm must satisfy its stockholders' desire for higher and higher dividends. The injustice screams out at us. Water is a basic human right. Water must be affordable, accessible, and safe for drinking, cooking, and sanitary purposes. This is the declared position and Coppernoll-69

policy of the United Nations and the State of California. Water is not a for-profit commodity for investors. Unlike other consumer products, water is critical to survival. No one should take advantage of this.

Coppernoll-69 cont.

There is a higher purpose at play. That higher purpose is regional water justice. My most ardent plea is that the CPUC and the NEPA will have the courage and the moral integrity to do the right thing, not only to comply with the law, which includes environmental law, but to do what is fair and just for everyone. There are viable alternatives and available options, such as creating more water storage capacity, cleaning the Carmel River of debris and sediment from the Soberanes Fire, and capturing the now wasted farm runoff water that can be treated and used. That action would add approximately 6,500 afy to the water supply. These options, coupled with the significant reduction in water demand due to successful water conservation accomplishments would provide ample water supply. Implementing such options would not burden the CalAm ratepayers, or Marina and Ord Communities residents, with an additional $300 million price tag, as the proposed project would.

Coppernoll-70

We are trusting that the CPUC and the NEPA will do some deep soul searching and reflection, coupled with in-depth analysis of all the ramifications involved in this momentous decision. Our communities will not stand down because our survival is at stake. Marina and the Ord Communities view this proposed project as an existential threat to their collective well-being and their future. Our Marina Coast Water District is an ideal role model. As stated herein, it has a decades long, since 1961, golden track record of providing fresh, potable water at affordable rates to its customers, Marina and the Ord Communities. Instead of raising water rates as CalAm is doing, and punishing its customers for conserving water, Marina Coast Water District rewards water conservation efforts with incentives and provides customers with tools to prevent leakage and reduce water consumption. This public water purveyor has not performed any unlawful actions or done anything to harm or exhaust our water supply source. Quite the contrary. Marina Coast Water District has diligently worked to protect and preserve our water supply source. Through its sustainable groundwater management plans and programs, it has restored fresh water in our aquifers and reduced seawater intrusion. Yet, this DEIR is silent on the MCWD. There is no mention of the harm that is being done to Marina's sole water supply source, or the threat to MCWD's existence.

Coppernoll-71

Do not allow CalAm to split hairs over seawater or brackish water definitions. Our groundwater belongs to Marina and the Marina Coast Water District's service area. Brackish water is still our groundwater; brackish water treatment facilities are the purview of Marina Coast Water District. Those proclaiming support for the proposed project are myopic in vision, only considering their own perceived needs, but neglecting to consider other **viable options that will benefit all, and harm none.** The environmentally superior project would be a combination of options that are available and fully vetted, and to allow sage expert water management agencies and

Coppernoll-72

other stakeholders to explore those options, ones that have been evaluated to be the best solution by experts on the peninsula, ones that have a vested interest in supporting the best creative and just solution because they live and work there. The CalAm stockholders for the most part do not live here or pay taxes here, so they do not have a vested interest in doing what is best for the peninsula water consumers. Otherwise, at least give serious consideration to the other alternate desalination projects located in areas that do not harm Marina's sole water supply source. These projects may need modification to avoid harm to marine life and the hazard of brine discharge that suffocates ocean bottom marine life, but fortunately technologies are evolving quickly to address such challenges. For example, the People's desalination project, one of the alternative options that is of high value but not properly given full or fair review in the DEIR, would make an excellent choice because it already has required pipeline infrastructure with concomitant sustainable energy via a planned solar plant. It is far less costly and far more practical and environmentally sound. Ocean intake technology has become the gold standard worldwide for desalination plants. Why take a chance on slant well technology that has zero proven success over technology that is globally accepted as successful?

Coppernoll-72 cont.

We know upfront that the proposed project will bring irreparable harm to the Salinas Valley Groundwater Basin and to Marina and the Ord Communities. This MPWSP option should be eliminated from consideration, particularly since more valid and viable options are already planned in more geologically and environmentally acceptable locations, such as Moss Landing, which was cited by the California Coastal Commission as the best location for a desalination plant for the Monterey Bay area.

Coppernoll-73

Coppernoll-74

The MPWSP is truly infeasible, unlawful, unjust, and environmentally unsound. It has no credible science supporting its suppositions, estimates, and assumptions. The MPWSP cannot obtain legal groundwater rights because Marina Coast Water District, which has been operating as a highly credible and respected public water utility since 1961, does have established water rights and is operating within its lawful jurisdiction. CalAm cannot claim any category of groundwater rights to the SVGB, neither riparian, nor appropriative, nor developed, nor prescriptive. The project is, as hopefully demonstrated, infeasible, and should not be allowed to go forward.

Thank you so much for your consideration, for your efforts to include the public and for hosting public open houses and public hearings, for the tremendous work involved in this four volume DEIR/DEIS, and for your review of our inputs. The statements and assessments made herein are not to be construed in any way other than as constructive review of this DEIR as it currently exists. Observations are based on data, history, and a desire for transparency and justice. Repetition was necessary due to the need to correlate issues and emphasize underlying ideas or actions.

It is understandable that the proposed project is being propelled by a sense of emergency and urgency, but one must proceed with a creative vision for solutions

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that do not do more harm than good. Everyone should work together in harmony for the benefit of all citizens, in the public interest, and for the protection of the environment. We can find a way for everyone involved to survive and thrive. That solution will be the best one.

We now await a wise decision.

Very Respectfully Submitted,

Margaret-Anne Coppernoll

Margaret-Anne Coppernoll, Ph.D.
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mcopperma@aol.com

P.S. The time allotted to read and evaluate the four volume DEIR is insufficient for the public to adequately digest the thousands of pages involved. The sheer volume of material justifies recirculation of the DEIR, in all fairness to the public. It may make sense to delay the final comment period so the public can compare and evaluate all proposed desalination projects at the same time. This decision is of such paramount importance to the community that **recirculation** is the only way to ensure the public has adequate time to read and study the considerable amount of information, and to have access to technical data.

Coppernoll-75

Encls: Exhibit A: Electrical Resistivity Tomagraphy, Monterey Bay, California
Exhibit B: Freshwater Perched Dune Sand Aquifer, Marina, California

8.7.9 Herbert Cortez

#15

HERBERT Cortez

221 Mortimer Lane

Marina CA 93933

1. I am submitting to the record a violation of CPUC resolution ALJ-252 due to having access to sign up to speak at today's meeting, 2/16/17. Cortez-1

Rules for Public Comments at Commission Meetings

(Adopted June 24, 2010, Resolution ALJ-252)

You can sign up to speak at a Commission Meeting online.

The CPUC adopted Rules for Public Comment at Commission Meetings on June 24, 2010. The CPUC will follow these rules at all Commission Voting Meetings. The rules are as follows.

Rule 1. The deadline for individuals to sign up to speak is 10:00 a.m. (or the start of the meeting if not at 10:00) on the day of the meeting.

Rule 2. Individuals with a shared position are encouraged to select a spokesperson for their group.

Rule 3. Individuals who sign up by the deadline will have a maximum of three minutes to speak. The three minute speaking time may be changed by the Commission President, depending on the number of speakers. A speaker may not cede time to another speaker.

Rule 4. The order of speakers will generally be based on the order in which speakers sign up, but public officials may be taken out of order.

Rule 5. At the end of the Public Comment Session, the Commission President will ask if there are any additional individuals who wish to speak. Individuals who wish to speak but did not sign up by the deadline will be granted a maximum of one minute to make their comment.

Rule 6. The Commission President will declare when the Public Comment Session is closed. No speakers will be accommodated after the Public Comment Session is closed.

California Public Utilities Commission

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC serves the public interest by protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at just and reasonable rates with a commitment to environmental enhancement and a healthy California economy. We regulate utility services, stimulate innovation, and promote competitive markets, where possible. On this website you'll find information about the many initiatives underway at the CPUC.

CPUC Provides Valuable Support Programs

California LifeLine

Provides discounted home phone and cell phone services to eligible households

CARE / FERA

Lower your Energy Bills!

CASF

California Advanced Services Fund (CASF) promotes deployment of high-quality advanced communications services

DDTP

Provides assistive telecommunications equipment, speech generating devices and relay services

CTF

Provides discounted communications services to schools, community colleges, libraries, etc.

Overview of Support Programs

CPUC Regulates and Registers these Services to Protect the Public

Energy

The CPUC regulates investor-owned electric and natural gas utilities operating in California

Communications

The CPUC develops and implements policies for the telecommunications industry

Rail

The CPUC is the state agency that oversees rail safety; this includes freight, inter-city and commuter railroads, rail transit and rail crossings

Passenger & Moving

The CPUC also administers safety oversight and enforcement of moving companies and passenger carriers (limousines, shuttles, etc.)

Water

The CPUC investigates water and sewer system service quality issues, analyzes, and processes utility rate change requests

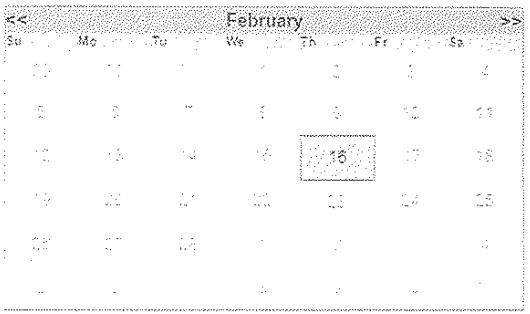
Learn More

Looking for Consumer Information?

The CPUC regulates **privately owned** electric, natural gas, telephone, water, and sewer utilities. Unfortunately, we cannot help you resolve issues with publicly owned or municipal utilities, such as SMUD or the Los Angeles Department of Water and Power.

Visit the Consumer Information Website

Events



Event(s) scheduled on this date (2)

» Public Workshop Notice: Workshop for Review and Development of Proposed Regulations Related to the Development and Adoption of the Fire-Threat Maps Ordered in R.15-05-006 and D.17-01-009
2/16/2017 8:00:00 AM: *AT&T Offices 2600 Camino Ramon, San Ramon, CA 94583-5000 Trinity Room*

» Public Meeting Notice: California High Cost Fund A – Administrative Committee Meeting (Multiple Location)
2/16/2017 10:00:00 AM: *California Public Utilities Commission 505 Van Ness Avenue, Room 3204 (Corner of Van Ness Avenue and McAllister Street) San Francisco, CA 94102*

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CSEA Hart... Outl... Curr... Wel... IMG... Fun... TAC... War... CSU... CSE... CSE... 2-1-... SCC ... Spot... SP16...

.a.gov/requesttocomment/

California Public Utilities Commission — Public Comment Sign-Up

th a public comment period. The Commission welcomes and encourages public participation. Meetings usually begin at 9:30 am. Individuals who want to make a public comment must follow the Rules on Public Comments at Commi

blic Advisor's Office (PAO) table, outside of the Commission Auditorium, before the start of the meeting (usually at 9:30 am) on the day of the Commission meeting. Or they can use this webpage to sign-up by noon the day before the table before the start of the meeting on the day of the meeting to ask our staff to mark their presence.

mmenting on: *

ms from the agenda the day before the meeting. Agenda changes are posted after 5:00 pm the day before the meeting on our Voting Meetings web page.

8.7.127

ince notice, we can provide an interpreter (including for American Sign Language) free of charge at the meeting.

e here:

n not a party in any of the proceedings underlying the item which I wish to address, nor have I previously provided comment on this item.

Submit

Public Participation

The Monterey Peninsula Water Supply Project aims to foster and maintain a partnership with local government agencies and elected officials and to provide regular oversight and input during the development of the project. The project sharing engineering, construction, permitting and public responsibilities throughout the Monterey Peninsula, planning decisions related to the project.

Governance Committee

Monterey Peninsula Water Supply Project Governance Committee is comprised of representatives of California American Water, the Monterey Peninsula Regional Water Authority, the Monterey Peninsula Water Management District and the County of Monterey, to ensure efficient and effective public input in the development and operation of the Monterey Peninsula Water Supply Project.

For the latest information on the Monterey Peninsula Water Supply Governance Committee, visit the Events section of the Monterey Peninsula Regional Water Authority page of the Governance Committee.

Governance Committee Downloads

- Governance Committee Agreement - 10.pdf KB
- Governance Committee Meetings Minutes Agendas
- Governance Committee Meetings Schedule

Monterey Regional Water Authority:

The MPRWA is a joint Powers authority that is represented by the majority of the cities - Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City and Seaside. They oversee and study plan and help develop a sustainable water supply on the Peninsula that complies with the SWRCB cease and desist order and ensure public input and representation throughout the project's development.

Monterey Peninsula Water Management District

MPWMD is a public agency that was set up to protect and conserve the long-term sustainable water supply and to manage and protect local water resources. MPWMD is governed by a board of elected directors consisting of local members representing various interests within the community.

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8.7.10 Bruce Delgado
Letter 1

To: MPWSP-EIS@esassoc.com
Mary Jo Borak, CPUC
c/o Environmental Science Associates
550Kearny St, Ste 800
San Francisco, CA 94108

From: Bruce Delgado
3037 Vaughan Ave.
Marina, CA 93933
831-277-7690
Bdelgado62@gmail.com

Dear Mz. Borak,

Thank you for considering these few comments.

1)Figure 4.4-9. Why isn't the active CEMEX well monitored? Without knowing why, I am concerned because it would seem to provide a worthwhile opportunity for monitoring water quality/quantity and without such monitoring it seems that the best available data is less comprehensive/useful for analyzing/addressing the proposed project's impacts to groundwater. Delgado1-1

2) In Section 4.20 (pg. 4.20-2) it is stated that "The proposed project's impacts considered together with **existing or foreseeable environmental burdens** experienced by nearby communities are analyzed throughout Chapter 4 in the Cumulative Effects subsection of each resource section."

However, Section 4.20 appears to exclude any mention of air emissions within or proximal to the City of Marina from the Cemex sand plant, the Monterey Regional Water Pollution Control Agency's facilities (including its wastewater treatment plant), the proposed advanced treatment plant for Pure Water Monterey, the Monterey Peninsula Regional Waste Management District's facilities (including its regional landfill and authorized composting operations), methane or other greenhouse gases from livestock ranching adjacent to Marina residential areas, or emissions from drift of pesticides, fertilizers, and other soil amendments from agricultural operations adjacent to or proximal to City of Marina residential areas. These cumulative impacts are important to the residents and visitors to the City of Marina for health and environmental justice reasons. There are currently frequent complaints from this City's residents of offensive odors apparently coming from north of the City and this is but one example of existing conditions from existing or planned future facilities affecting the City of Marina's air quality.

Action: Please a) describe current conditions of potentially nuisance or unhealthy odors and emissions proximate to the City of Marina, b) disclose the total emission of existing and planned facilities (such as those listed above), and c) include their individual totals, their cumulative total, and relevant numeric emission standards/metrics/thresholds in an additional table such as a new Table 4.20-7. Delgado1-2

3) No relevant numeric emission standards/metrics/thresholds are listed in section 4.20 including Table 4.20-6. Delgado1-3

Action: Please include an column or columns in Table 4.20-6 for relevant numeric standards/metrics/thresholds.

Delgado1-3 cont.

Thank you,

Bruce Delgado

Bruce Delgado
Letter 2

Dear Mz. Borak,

Please consider this additional comment/concern I have regarding the MPWSP DEIR.

I have heard the HWG includes 2 representatives paid by Cal Am (basically to represent Cal Am interests) and two representatives paid by the agricultural industry (basically to represent this industry's interests). My concern, if this is true, is that no one on the HWG could be expected to focus on the City of Marina's interests or that of MCWD. Given that Cal Am has a vested interest in the outcomes of the DEIR it seems a conflict of interest to have paid consultants of Cal Am providing advice/hydrogeological expertise, etc. to the CPUC regarding the DEIR issues.

In addition, I understand one of the Cal Am reps on the HWG holds one or more patents to slant well technology that may be employed in the MPWSP so of course there could be a conflict of interest on his part to both be advising the project and benefitting financially and otherwise were the outcome of the project proposal to be in his favor.

Could you please explain in the FEIR or revised DEIR who is on the HWG, who is paying the HWG members, and a detailed summary of the input they have had in the 2017 DEIR especially as that input may relate to GW monitoring, modeling, model calibration modifications, interpretation of test slant well project, and any other advice or input the HWG has provided to CPUC staff or others related to the MPWSP?

Also could you please explain how a conflict of interest has been avoided if it is the CPUC's opinion there is no conflict of interest?

Delgado2-1

thank you,
Bruce Delgado

--
Mayor Bruce Delgado
cell: (831) 277-7690
email: bdelgado62@gmail.com

8.7.11 Myrleen Fisher

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108
mpwsp-eir@esassoc.com

SUBJECT: DRAFT EIR/EIS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT/Review

Dear Staff:

Thank you for the opportunity to share with you some concerns and questions I have about the proposed project, and the quality and completeness of this DEIR relative to its claim of environmental preference, and its experimental nature.

1. 3.2.11, Pg 147, states, *"The seawater intake system would include 10 subsurface slant wells at the coast (8 active and 2 on standby…) that would draw seawater from beneath the ocean floor for use as source water for the MPWSP Desalination Plant."*

Please address the feasibility of the use of subsurface slant wells for this project, given the fact that they have not been used successfully anywhere in the world for desalination purposes.

A Google search of "slant well desalination" yields the following response:
"CA desalination slant wells prove promising…Near the Monterey Peninsula, where CAW's water supply project is …"—nothing has been proved to be workable or feasible, only claims. There are no responses showing the successful use of slant wells for desalination purposes anywhere in the world.

The test slant well that should have provided proof of concept for this project does not conform to the description of the project slant wells. It does not extend under the ocean floor and is not drawing pure seawater.

If the 10 project slant wells are planned to extend beyond the shore to collect seawater, why isn't there a test slant well that provides data showing this seawater collection system to be feasible and practical? If the slant wells will not extend beyond the shoreline to collect water, does CalAm have rights to the groundwater they will be drawing?

Please confirm that either actual seawater will be collected as stated above or that groundwater is being taken legally in order to avoid further destruction of the shoreline, and further expense, all for a non-feasible purpose.

Fisher-1

2. 4.5-52, Page 604, states: "*The vertical infiltration rate at the sea floor for the proposed MPWSP was estimated by assuming the entire 24.1 mgd (3,222,000 cubic feet/day) of seawater required to operate the MPWSP plant would be drawn through the sea floor located directly above the screened segment of the slant wells. The length of shoreline spanned by intake slant wells would be approximately 2,000 feet. If the sea floor area of water intake extended 500 feet offshore, the area of sea floor through which seawater would be taken into the wells would be approximately 1,000,000 square feet. Through this area of sea floor, a maximum of 3,222,000 cubic feet (24.1 million gallons x 0.1337 cubic feet per gallon) of water would be pumped each day. The vertical infiltration rate through the sea floor would have to be 3.222 feet/day or 0.0000373 ft/sec (approximately 0.011*

Fisher-2

mm/sec). This calculation is very similar to the 0.000051 ft/sec (approximately 0.016 mm/sec) peak vertical infiltration rates estimated by Williams (2010) for the South Orange Coastal Desalination Project. In comparison, an open ocean intake equipped with a wedgewire screen would draw water in at a rate of 0.5 ft/sec (152.4 mm/sec). For the purposes of this assessment, it is assumed that the infiltration flow rate of seawater through sea floor sediments and into the slant wells would be approximately 0.011 to 0.016 mm/sec."

As stated above, the capability of the proposed slant wells to take in a sufficient quantity of seawater for the proposed desal project is based on a series of assumptions and estimates derived from another proposed project in southern California, also designed by Williams of Geoscience Corp., the holder of the patent for the slant well design. The predicted rate of seawater collection is based completely on the assumptions that conditions here in Monterey Bay will be nearly the same as they are at Doheny Beach in Orange County. Where are the data from the already functioning Marina Beach test slant well, constructed at great cost to the local ratepayers, that prove the assumptions are correct? Where is the proper science to guide this experimental project?
No data are provided for this DEIR from the test slant well that has been operating only intermittently at the MPWSP since mid-April 2015, as stated in this DEIR.

Even the goals and objectives in the design for Williams' Doheny project call for the collection and analysis of test slant well data, collected over an extended period of time, to determine the performance of the well and the aquifer. Please see "The Final Summary Report—Doheny Ocean Desalination Project, Phase 3 Investigation, January 2014, p.46.

Fisher-2 cont.

Data from a different location on the California coast cannot be relied upon to provide accurate information for the Monterey Bay conditions. Please refer to: WaterReuse Assoc., 'Overviews of Desalination Plant Intake Alternatives', White Paper, June 2011, pp. 7-10, wherein it is stated "Subsurface geology typically limits capacity and performance (as compared to open ocean intakes…). It goes on to assert that ocean conditions and subsurface geology are not comparable in different areas of the coast, that location-specific data are required.

In a separate publication they go on to say, "In addition, the potential application of a subsurface intake is very site specific and highly dependent on the project size; the coastal aquifer geology (aquifer soils, depth, transmissivity, water quality, capacity, etc.); the intensity of the natural beach erosion in the vicinity of the intake site; and on many other environmental and socio-economic factors." WateReuse Association 'Desalination Plant Intakes", White Paper, Subsurface Intakes, p.10.

The Water Foundation further states: "Ongoing long-term studies of innovative subsurface intakes in Long Beach and Dana Point, California, are expected to provide comprehensive data that would allow completing a scientifically-based analysis of the viability and performance benefits of subsurface intakes for larger-size applications. The tested subsurface intake technologies are currently under evaluation and do not yet have established performance, reliability and environmental track records."

Given the highly experimental nature of using slant well technology for seawater intake, more relevant data are needed. Reliance on estimations and assumptions that are based on data from an area not at all comparable to the Monterey Bay is simply not good science.

Please provide test slant well data from the intended location of subsurface slant wells to ensure the feasibility of this experimental technology for obtaining adequate seawater.

Please identify the criteria the CPUC will use to determine if slant well intake is feasible in the current location given the lack of relevant data currently available.

Fisher-2 cont.

3. 5.4-43, Page 1507, states: "*Desalination Facility (Moss Landing Green Commercial Park)*
The desalination plant for Alternative 4 would be located at the Moss Landing Green Commercial Park, located on the southeast corner of Dolan Road and Highway 1. The approximately 200-acre site is zoned under the Monterey County General Plan for Heavy Industrial Coastal Dependent use. Of the total site, a 16.5-acre parcel is being proposed for developing the Alternative 4 desalination plant and would be fenced off from the rest of the property.
The desalination plant would include: (1) an equalization basin to receive and store the incoming source water; (2) an inlet pump station to convey source water from the equalization basin to a pretreatment system; (3) a pretreatment system; (4) a reverse osmosis system; (5) a post treatment system; (6) a return flow pipeline that would convey brine and wash water back to the disengaging basin; (7) chemical feed and storage facilities; and (8) facilities for residuals management. The desalination plant site would also contain a 5 million gallon treated water storage tank, as well as non-process administrative facilities."

This description does not include the planned 3.7 MW solar energy source to power the desalination plant, which is further described in the letter submitted by N. Selfridge, entitled, Section 4.1.8 Energy Conservation to which I refer the reader.

Please address this potential mitigation of energy usage and carbon emissions provided by Alternate 4 in the final EIR.

Fisher-3

This description of Alt.4 site omits the significance of an existing pipeline from the People's Project property that crosses under CA Hwy 1, under Moss Landing Harbor and the jetty opposite, that is already owned and available for both intake and outflow after certain improvements and alterations are made with minimal environmental consequences. The existence of this 36" pipeline eliminates the environmental damage that would result from digging or tunneling under a major California highway and harbor area in order to access seawater; it also obviates the need for certain permits, inasmuch as the pipeline has been transporting seawater for many years for the former Kaiser Refractory plant. Moss Landing was considered the ideal location on Monterey Bay for a desalination operation by the California Coastal Commission.* Given the time required for permitting, both speed and feasibility of this project should be greater than any other project in this area. The pipeline provides major environmental, feasibility and cost advantages over the proposed DeepWater Desal project, which currently has no seawater access, or any other proposal to draw seawater through a pipeline in that area.
* News article: "Moss Landing Desalination Plant favored, State Issues Recommendation for Peninsula's Water Source", D. Moran, Monterey Herald, P.1, Aug. 10, 2002

Fisher-4

Please address this omission that fails to demonstrate the significant mitigation of environmental impact or to demonstrate the greater feasibility of the People's Project.

Fisher-4 cont.

4, ES-11, Page 37, "*Alternative 2 (Open-Water Intake at Moss Landing), Alternative 3 (DeepWater Desal Project), and Alternative 4 (People's Project) would use screened, open water intakes, which would reduce or avoid several potential proposed project impacts on groundwater because of the absence of slant well pumping for source water, but would result in new significant impacts on marine resources. Significant and unavoidable impacts on marine habitat and biological resources would result from the in-water construction of new open water intakes. Operation of screened open-water intakes would result in impingement and entrainment of marine organisms, resulting in significant long-term direct and indirect effects on marine biological resources within MBNMS in Monterey Bay"*

Why is screened open-water intake considered to have "significant long-term direct and indirect effects on marine biological resources within MBNMS in Monterey Bay". As long ago as 2010 in a White Paper document by the WateReuse Association Desalination Committee a study of seawater intake at 19 power generation plants found that the daily fish impingement impact in a one year period amounted to no more than the amount caught by a pelican in a single day.* *

** https://watere use.org/wp-content/uploads/2015/10/IE_White_Paper.pdf

Since that publication, even greater improvements to open ocean intake screening have been developed, as stated in Item 5, below.

Fisher-5

Please address the designation of screened open water intake as "significant and unavoidable", given the improved mitigation methods currently available, further described below.

5. *App*. I1-1, Page1551, *"Consistent with the findings of an expert review panel convened by the SWRCB, Desalination Plant Entrainment Impacts and Mitigation (finalized October 9, 2013), and SWRCB's 2014 proposed Desalination Amendment to the California Ocean Plan (SWRCB, 2014b), this EIR assumes that all open-water intake options would be equipped with a passive, cylindrical wedgewire screen at the western terminus of the intake pipeline with slot openings sized to meet regulatory and/or permitting requirements[3] and would have a design velocity of 0.5 feet per second unless otherwise cited."*

Seawater intake screening is being improved. The data cited in this DEIR/EIS from 2013 are out of date for open ocean intake screening. Rotating and traveling screens with intake velocity of less than .3 ft/sec. to mitigate impingement and entrapment, are now available, eg. Invisihead by Elmosa Seawater Intake and Outfall Systems; "Water particles start to move toward the Intake Head from all directions with a velocity of about 0.0027 m/s (0.009 fps) max. 5 meters (15 ft) away from the Head entrance. It rises to 0.03 m/s (0.1 fps) max. one meter (3 ft) away. The final entrance velocity is 0.09 m/s **(0.3 fps)** max."

Please justify the designation of screened open water intake as "significant and unavoidable", given the improved mitigation methods currently available.

6. NOI Scoping recommendations for the proposed project:

"*A-16, Page 23, Alternatives*

•*The EIR should consider locational alternatives that would place all facilities outside of Western Snowy Plover habitat. [F_USFWS-06]*

•*The EIR should evaluate a full range of project alternatives. [L_Monterey-01]*

•*The descriptions of project alternatives in the EIR should be based on the most current information available. [L_MPWMD-03]*

•*The EIR should evaluate a locational alternative that would site the desalination plant at the former National Refractories site in Moss Landing. [G_AgLandTrust-17]*

•*The alternatives analysis should evaluate the commercial project alternatives (i.e., People's Moss Landing Desal, DeepWater Desal) but without mention of the commercial ventures. In addition, the EIR should evaluate a variety of design alternatives (i.e., facility locations, brine discharge facilities, pipeline alignments) that could be mixed and matched to address environmental impacts, project costs, and schedule considerations. [G_CalAm-03] "*

Fisher-6

Despite the above directives of the NOI Scoping review to include alternative projects that fulfill the above criteria, the People's Project, which clearly does do so, has been determined in this DEIR as not worthy of being carried forward as an alternative with the following statement on page 1466 of the DEIR:

"This desalination proposal has not been carried forward as an alternative to the MPWSP because the CPUC has no jurisdiction, the applicant has not yet engaged in any formal environmental review processes, project effects cannot be reasonably ascertained and the timing of its implementation remains uncertain."

The only accurate statement above concerns CPUC not having jurisdiction. People's Project has a completed EIR application in the preliminary review process. Information has been available, but apparently not requested. Inasmuch as the location of that project does not threaten the nesting Snowy Plover and already has much key infrastructure in place, as previously mentioned, and will be run on solar energy, its "environmental impacts and project costs" are therefore likely less than that of the proposed project. Additionally, the "timing of its implementation" is probably equal to or sooner than the proposed project. Nevertheless, it was not included as a reasonable alternative. The omission of this viable alternative project seems to be a self-serving maneuver.

Fisher-7

Furthermore, on Page 101 of the DEIR it is stated that "the only significant and unavoidable operational (long term) impact of the proposed project is to GHG", completely omitting the People's Project's planned use of solar power generation from the DEIR. Additionally, 5.5-333 of the DEIR, Alternative Impact Analysis—Energy Conservations states as follows:
For the same reasons described for Alternative 1, Alternative 4 would not have a considerable contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during

Fisher-8

Fisher-9

operation and maintenance. Overall, Alternative 4 would result in an increased impact conclusion compared to the proposed project, significant and unavoidable. Such a conclusion is totally incongruous with the facts. I refer the reader to the letter from Nancy Selfridge of February 8, 2017, which addresses Energy Conservation issues, wherein the description of the People's Project solar farm plan from Solar Vista is provided in her attachments.

Fisher-9 cont.

Can the above inaccuracies, omissions and inconsistencies pleased be reviewed and addressed? Given the preponderance of evidence, the People's Project should be included as a reasonable alternative to the proposed project. Then the DEIR should be amended with the missing information and re-circulated for further review.

Fisher-10

As a ratepayer on a fixed income, I thank you for your consideration.

_____

Myrleen Fisher

Residential Ratepayer of CAW

55 Wawona Road

Carmel Valley, CA 93924

PUBLIC SUBMISSION

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Docket: NOAA-NOS-2016-0156
Notice of Availability of a Draft Environmental Impact Report/Environmental Impact Statement; Proposed Monterey Peninsula Water Supply Project

Comment On: NOAA-NOS-2016-0156-0001
CalAm NOA_82FR4302

Document: NOAA-NOS-2016-0156-DRAFT-0046
Comment from David Gorman

Submitter Information

Name: David Gorman
Address:
303 Whitney Place
Marina, 93933
Email: dgormancr@gmail.com
Phone: 5102929610
Fax: 5102929610

General Comment

Dear NOAA:

I strongly oppose Cal Am's attempt to create a desalination plant at the Cemex Site. I am not a water expert, but I have seen countless companies like Cal Am who use the system to con community members out of our most precious resource-- water. I'm not opposed to desalination, but the proposed site will have some serious consequences on Marina's existing pre-historic aquifers, especially the 180 foot aquifer. Cal Am has not been forthcoming in their test well data by withholding important information about salt water intrusion. Professor Rosemary Knight of Stanford claims that Cal Am has not given important information about salt water intrusion for the stretch of land where they set up their test well. Gorman-1

As a citizen of Maria I know the water beneath us belongs to us. It's illegal for Cal Am to take away our water and their current desal plans are a serious threat to our vital water supply. We can not go back once our aquifers are polluted with salt water. Gorman-2

I urge you to demand full disclosure from Cal Am, and at a minimum, move very slowly until all environmental implications are known. Your purpose is to protect the small guy from corporations who long ago would have polluted our whole California Coast if given a chance. Don't let Cal Am, with its big sweeping arms, be the latest abuser of our precious coast. Like courageous administrators in California's past, please work with those of us in Marina to save what rightfully belongs to us. Gorman-3

Sincerely,

David Gorman

8.7.13 Jane Haines

California Public Utilities Commission

Date: February 16, 2017

c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Challenge to Purported Feasibility of the Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I challenge the purported 'feasibility' of the Monterey Peninsula Water Supply Project (MPWSP) assumed by the draft Environmental Impact Report (DEIR). There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. Thus, there is a very high standard for assuming slant well technology for the MPWSP is 'feasible.' Before assuming the MPWSP is feasible, the draft Environmental Impact Report (DEIR) must address the following:

1. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made before determining the MPWSP is 'feasible.' There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. Saltwater intrusion in the Salinas Valley is perhaps the most significant environmental issue in Monterey County. The DEIR must be put on hold until ERT imaging shows the potential impact of the MPWSP on Salinas Valley sea water intrusion; ERT technology is expected to become available this summer. Haines-1
2. Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. Feasibility is dependent on having requisite water rights. Legal determination of such rights is required before the MPWSP progresses further. Haines-2

Additionally, the DEIR must address the project's potentially significant traffic impacts. The linked 2014 article from the Orange County Register describes prohibitively high cost of water acquired through the still-experimental Dana Point slant well http://www.ocregister.com/articles/water-601981-district-project.html. The Monterey Peninsula has a sizeable low-income work-force that would be priced out of local housing should the cost of our water further increase; these workers would need to find housing outside this area. Thus, environmental impacts from increasing traffic into and out of the Peninsula caused by the increased cost of water resulting from slant well technology must be evaluated in the DEIR as a potentially significant environmental impact of the MPWSP. Haines-3

Sincerely,
Jane Haines

Jane Haines
601 Ocean View Boulevard, Apt. 1
Pacific Grove, CA 93950

PUBLIC SUBMISSION

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Received: February 13, 2017
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Docket: NOAA-NOS-2016-0156
Notice of Availability of a Draft Environmental Impact Report/Environmental Impact Statement; Proposed Monterey Peninsula Water Supply Project

Comment On: NOAA-NOS-2016-0156-0001
CalAm NOA_82FR4302

Document: NOAA-NOS-2016-0156-0003
Comment from Clifton Herrmann

Submitter Information

Name: Clifton Herrmann

General Comment

As an active community member and local applied marine science graduate student, I'd like to submit input on the proposed CalAm plan to place a subsurface intake pipe in the Monterey Bay National Marine Sanctuary, in addition to the proposed request to use existing pipelines/outfalls for desalination infrastructure.

California has seen a nearly decade-long drought, and has no reason to expect this to be an anomaly as we move into the future. As an objective scientist, I recognize the need for effective management of our natural resources, and am open to the possibility that more drastic solutions eventually become a necessity in the face of growing environmental instability resulting from climate change.

That said, in 4 years of living in this community I have not seen CalAm make a legitimate effort to reduce local water consumption. I firmly believe they have no economic incentive to reduce water use of their customers - as their market share is not at risk in the face of unhappy water customers. Rather, they are financially incentivized to convince the community that water conservation is not a viable option - that we need this new "quick fix," despite the fact that they've had over 20 years to find an alternate solution to the problem. This is a charge that CalAm has FAILED to fulfill, simply because they serve to benefit financially from the alternative outcome. We as a community are therefore rewarding this complacency by allowing CalAm to move forward with this project despite the fact that they would have failed in a truly competitive market.

Herrmann-1

I'm primarily concerned with the false way in which the desalination option has been painted, and believe many of the external impacts have not been part of the impact assessment. The financial and environmental burden of these impacts will invariably rest on the shoulders of Monterey community members and taxpayers. An example of this would be the costly process of removing the San Clemente Dam - originally implemented as a solution to increased water needs for the local private tourism industry and as a fire safety measure - and while its installation was initially paid for by private industry, the nearly

Herrmann-2

$100 million cost of removal was paid by taxpayers. This doesn't even touch on the environmental impacts in the form of 95 years of salmon obstruction and hydrologic alteration - financial burdens we are yet to truly even experience.

Herrmann-2 cont.

CalAm has nothing to lose in this deal, and more than they deserve to gain. These major considerations have been overlooked.

1. Energy requirements: Energy demand to support a large desalination plant means the Monterey peninsula will need to expand its energy infrastructure. It is unfair for taxpayers to bear the weight of this expense. CalAm should include the impact of any increased energy infrastructure in their EIA/EIR, as this new infrastructure will be necessary to run the system and is therefore part of the same project.

Herrmann-3

2. Carbon emissions: Community members are unaware of the carbon footprint of a desalination solution. I believe it has been in CalAm's best interest to keep these external impacts as hidden as possible. Increased carbon emissions from energy consumption should be included in the EIA/EIR, as they are again part of the same project.

Herrmann-4

3. Quality of the water: Researchers that spend long tours at sea return with complaints of the vessel-board RO water. Many claim this super-filtered water leaches nutrients from your body. This may have adverse affects on the community - osteoporosis, for example, may become a long-term impact of exclusive RO water consumption over a lifetime, which would be an expensive and dangerous public health issue.

Herrmann-5

4. Brine is denser than seawater: many are concerned with brine's ability to affect benthic species. This is a concern, as multi-million-gallons of brine/day would run down the Monterey submarine canyon in the form of a stream, encountering a great area of habitat. This stream is also, however, likely to increase erosion within the canyon - which is a relatively unstudied process. This means that many of the associated risks are highly uncertain. This erosion may impact the proposed intake pipe or other subsurface infrastructure. These engineering considerations should be practically assessed for longevity, as repeated construction efforts in and around the Sanctuary resulting from premature failure will increase the impact above projected levels.

Herrmann-6

Herrmann-7

Overall, this project may be a local necessity. Broadly speaking, I would like to see CalAm being held to MUCH more rigorous standards than they have been. They have a lot to gain from this project, and therefore must be more accountable for their proposed actions. This is not an issue of "should they or shouldn't they," but instead an issue of "how hard should we make this for them." CalAm needs to take this project seriously with thorough pragmatism. So far, their effort has not been sufficient in this regard.

Herrmann-8

February 22, 2017

Mary Jo Borak, CEQA Lead
California Public Utilities Commission
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mpwsp-eir@esassoc.com

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue
Building 455a
Monterey, California 93940

MEMORANDUM FOR:
CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) AND
MONTEREY BAY NATIONAL MARINE SANCTUARY (MBNMS)

SUBJECT:
PUBLIC COMMENT FOR DEIR/DEIS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT – A 12-04-019

These are my public comments and question upon review as follows:

Chapter 2: Water Demand, Supplies, and Water Rights:

The DEIR states (2.6 Water Rights, p. 2-31): *"…if CalAm did not possess legal rights to use feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factors in as a key project feasibility issue."*

- Although the CPUC will not decide the water rights matter, it may approve the DEIR in a cart before the horse manner. If the DEIR is given approval to proceed by the CPUC, this will undoubtedly result in litigation and failure to develop a new water source as proposed by CalAm. If water rights are key to project feasibility, why has this DEIR has progressed so far without them?

Hofmann-1

The MPWSP cannot be considered *feasible* for the following reasons:

CalAm, the DEIR states, "*would need an appropriative groundwater right to retrieve and export water from the basin*" (2.6.1, p.32). CalAm would gain appropriative rights by creating "developed water." "*Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source."* (2.6.1, p. 32)

"*The key principle of developed water is: if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized."*

Hofmann-2

1

- The goundwater that CalAm describes as “degraded” or "waste water" is very important to the city of Marina and its residents. It is currently available to its legal users. CalAm's preferred slant well location at the CEMEX plant would usurp the ability of the Marina Coast Water District to develop brackish groundwater treatment facilities as other small coastal communities with sea water intrusion have done. Brackish water becomes an important resource in a district's reliable water portfolio, and, a way to manage and control saltwater intrusion. Hofmann-2 cont.

- The use of purposely misleading words (such as “degraded” and “waste”) is part of a calculated water grab campaign by Cal Am to take possession of groundwater by appropriative rights and should not be supported by the CPUC. Such action would compromise Marina's future growth potential and is unjust. Hofmann-3

- CalAm must show that there will be no injury to the lawful water user. This DEIR has not proven “no harm” . Hofmann-4

ES.5.2 Summary of Potential Impacts and Mitigation Measures for Proposed Project (pg ES-6)

Alternative 2 (Open-Water Intake at Moss Landing), Alternative 3 (DeepWater Desal Project), and Alternative 4 (People’s Project) would use screened, open water intakes, which would reduce or avoid several potential proposed project impacts on groundwater because of the absence of slant well pumping for source water, but would result in new significant impacts on marine resources. Hofmann-5

- EIR establishes that there will be several impacts on groundwater using slant well technology – what are they? This point is avoided completely later in the DEIR.

ES.7.1 Key Impact Differences Between Alternatives (pg ES-12)

“For (Alternative 1 and 5b), operation of the slant wells at Potrero Road, Alternative 5b would lower groundwater levels in the Dune Sands/Perched-A aquifers in the Moss Landing area; operation of Alternative 1 would additionally lower groundwater levels in the 180- and 400-foot aquifers, thereby capturing groundwater that would have otherwise flowed into Elkhorn Slough. The direct and indirect permanent effects on marine and terrestrial biological resources at Elkhorn Slough from the lowering of groundwater levels would result in significant and unavoidable impacts.” Hofmann-6

- The Potrero Road alternative says there will be lowering groundwater levels to the 180 and 400-foot aquifers. The DEIR does not spell out adverse affects to groundwater at the proposed Cemex site in the 180 and 400-foot aquifers.

- What is that level of lowering predicted at the Cemex location? What are the *significant and unavoidable impacts?* Why are the effects different in the 2 proposed locations? Hofmann-7

ES.8 Areas of Controversy and Issues to be Resolved (pg ES-13)

CalAm’s proposed use of subsurface slant wells to withdraw source water for the MPWSP Desalination Plant is the subject of two controversies: (1) whether CalAm has the legal right to extract groundwater from the Salinas Valley Groundwater Basin (SVGB); and (2) whether implementation of the MPWSP and operation of the subsurface slant wells would exacerbate

seawater intrusion in the SVGB. The proposed subsurface slant wells at CEMEX would extend offshore and be screened in aquifer units of the SVGB that have long been intruded by seawater. Although the subsurface slant wells would draw seawater (i.e., source water for the MPWSP Desalination Plant) from beneath the ocean floor, a fraction of the source water would be drawn from inland portions of the SVGB.

- If the Slant Well proposal envisions pumping 24.1 million gallons per day (mgd) of source water – what is the fraction (amount in mgd) of fresh/brackish (not seawater) water that will be extracted from the Salinas Valley Water Basin at the CEMEX location? Hofmann-8

- If the desalination plant will be sized at delivering either 9.6 mgd or 6.4 mgd – how much is this amount captured groundwater? This could cause significant impact to fragile groundwater that the modeling does not adequately address. Hofmann-9

Required Decommissioning of Test Slant Well (pg 3-7) footnote 3

The DEIR/DEIS states "*The existing test slant well would be converted into a permanent well*".

- When the original test slant well was approved it was with the understanding that it was a temporary slant well that would be decommissioned. This was a concession of the original and the revised permitting and there was a one million dollar bond posted to ensure that this was carried out. Because of this agreement, the test well sidestepped CEQA requirements, such as an Environmental Impact Report.

- Why would this temporary test well be allowed to operate past its original agreed upon timeline? Is this a permit violation?

- Will there be an environmental review of the "conversion" required for this slant well?

- Is this a violation of the CEQA and NEPA processes?

Hofmann-10

4.1.3 Baseline Conditions (pg 4.1-8)

Although the Notice of Intent for the NEPA review contained within this document was issued in 2015, use of the 2012 baseline is appropriate and reasonable because (i) 2012 is a very recent point in time; (ii) the CPUC invested considerable resources amassing 2012 background/baseline data for the April 2015 Draft EIR; and (iii) environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions.

- Livermore Berkeley analysis notes that data does not include data of the Salinas Valley Aquitard at the Cemex site. How is there a baseline for determining regional impact if this data is missing? Hofmann-11

- We have been in a drought for 4 years – new data might have been very revealing Hofmann-12

- Why is data from 2012, that is noted as incomplete (below), acceptable for basing long term impact in the region? This does not inspire confidence nor due diligence on the part of CalAm.

"As for our review of the foundation of the groundwater modeling, we find that there are shortcomings in the hydrostratigraphic model and simulation inputs that could potentially change the impact assessments. Chief among these was the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-foot equivalent (180- FTE) aquifers from greater than about 2 km east of the proposed extraction site." Appendix E1 Lawrence Berkeley National Laboratories peer review Conclusions Pg 2

- On Pg 4.4-3 the Geoscience 2016 graphic is peppered with question marks showing a lack of data regarding the actual extent and locations of the aquifer(s). How accurate is the modeling if based on incomplete data? Why is this acceptable for modeling probability of risk to our groundwater?

Hofmann-13

Sea Level Rise and Coastal Erosion (pg 4.2-22)

For example, a winter storm surge in early March 2016 exposed the buried MRWPCA ocean outfall pipe. Up to 15 feet of scour was observed around the exposed section of the outfall. The last time the outfall pipe was exposed was in 1997. The storm surge also broke the discharge pipe from the Test Slant Well to the outfall.

- What is the determined risk for storm events in the future? How would this affect the reliable operation of the slant wells?

Hofmann-14

- The outfall pipe/concrete pad is currently exposed and constitutes an eyesore.

Desalination plants should be designed to minimize visual impacts on coastal resources. pg 6-53 NOAA Desal Guidelines table

Hofmann-15

Corrosive or Expansive Soils (pg 4.2-23)

Additionally, sand mining in the region has increased sediment and sand loss and has contributed to disequilibrium, thus increasing the rate of coastal retreat in the southern Monterey Bay south of the Salinas River (Thornton et. al., 2006)

- What is the plan for continued erosion from the sand plant?

Hofmann-16

Seismic Groundshaking (pg 4.2-25)

As discussed above (Section 4.2.1.2), the WGCEP estimated that a major earthquake has a 72 percent chance of affecting the project vicinity in the next 30 years and would produce strong groundshaking throughout the region (WGCEP, 2015a, b).

- There is a high liquification area indicated on the chart 4.2-27 for the CEMEX site. What are the risks for this project in the event of a 7.0 earthquake event? No actual earthquake values are assigned to the charts.

Hofmann-17

Evaluation Criteria (pg 4.3-55)

Implementation of the proposed project (MPWSP), which would include 10 slant wells at CEMEX, would have a significant impact related to surface water hydrology and water quality if it would:

- *Violate any water quality standards or waste discharge requirements*
- *Otherwise substantially degrade water quality*

Here it relates to surface water in the DEIR, but the Anti-degradation policy reference on pg 4.3-35 includes ground waters.

"One significant difference between the State and Federal programs is that California's Basin Plan established standards for groundwater in addition to surface water." Pg 4.4-34 DEIR

- Why is "groundwater" not referenced here in regards to violation of water quality standards and degraded water quality?
- This Anti-degradation policy speaks to groundwater impacts as well as surface water

Hofmann-18

Dune Sand Deposits and the Dune Sand Aquifer (pg 4.4-8)

Based on the investigative work to correlate the hydrogeologic units of the Pressure Area, these Terrace Deposits along the coast appear to be at the same depth, and have similar geologic characteristics, as the inland Quaternary Alluvium of the 180-Foot Aquifer in the Salinas Valley (see Figure 4.4-3). Even though the Terrace Deposits are older than and lithologically different from the inland deposits of the 180-Foot Aquifer, the units are at the same depth interval, and groundwater likely flows from one unit to the next.

- Is this an assumption that the Cemex pump area is connected to the SVA aquitard? If they are connected, shouldn't there be more data to confirm affects of pumping to SVA water basin? Is this the Fort Ord-Salinas Valley Aquitard (FO-SVA*)* area Lawrence Berkeley National Laboratories peer review states lacked data?

Hofmann-19

Pg 4.4-11

Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits.

***180/400-Foot Aquitard** As shown on Figures 4.4-2 and 4.4-3, the 180- and 400-Foot Aquifers are separated by the 180/400-Foot Aquitard (Kennedy/Jenks, 2004). The unit is mostly 50 to 100 feet thick, is rarely as much as 200 to 250 feet thick, and may be absent in some areas. This aquitard is present beneath the CEMEX site at about 220 feet below the ground surface or about 200 feet below*

Hofmann-20

mean sea level,) and is 10 to 70 feet thick. The slant wells at the CEMEX site would not penetrate the 180/400-Foot Aquitard.

- Which is it – the slant wells will pull water from these deposits or will bypass? Are they different deposits? These are contradicting statements and the graphs show otherwise (fig 4.4-3).

Hofmann-20 cont.

Seawater Intrusion (pg 4.4-28)

… Over the past few years, Stanford environmental geophysics researcher Rosemary Knight has conducted a study to determine the viability of using electrical resistivity techniques to study seawater intrusion along the coast of the Monterey Bay. Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells.

- Missing here is the fact that Dr. Knight was unable to obtain permission to map the CEMEX property in her study.
- There is no ERT data for the CEMEX property and the groundwater below it.
- Why is Cal Am citing ERT data as if it relates to the CEMEX property!
- CalAm should employ its own ERT scan to study seawater intrusion instead of piggybacking this instance as if it is relevant to their project.
- Which four area ground water wells is this text referring to? Somewhere in Seaside? This is an unsupported supposition that data from area A is equal to Area B.

Hofmann-21

Regional and Local (pg 4.4-37)

The proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an irrigation supply. Rather, when considering seawater intrusion and water surface elevations in the 400-Foot Aquifer, the proposed project may have a positive contribution to the sustainable management of groundwater. Regarding the former, groundwater modeling shows that the proposed project would retard the advance and limit the ultimate inland extent of seawater intrusion. With respect to the latter, by returning in-lieu desalinated water to the CCSD, the proposed project would provide recharge benefits to groundwater levels in the 400-Foot Aquifer. For these reasons, the proposed project would not conflict with the SGMA.

- Where is the data modeling that shows retardation of advancing seawater in to the Salinas Valley Basin? Appendix E2

Hofmann-22

- How will moving desalinated water taken from the Marina coast into the Castroville service district retard seawater intrusion at the Marina Coast location? Where is evidence?

Hofmann-23

- Conflict with SGMA if poor evidence is presented to support this claim that the project provides benefits to groundwater by retarding seawater intrusion. Again, how accurate is the modeling using ONE slant well with incomplete data? Hofmann-24

- Does the data show that the CEQA requirement (chapter 9.2) to do "No Harm" has been met adequately met? Hofmann-25

- What is the probability of certainty that the modeling informs predicted results? What is the probability of risk that the modeling shows an inaccurate assessment? Hofmann-26

MCWRA Act (1995) (Agency Act) pg 4.4-37

In accordance with the Agency Act, MCWRA is charged with preventing the waste or diminution of the water supply in its territory by, among other things, controlling groundwater extractions and prohibiting groundwater exportation from the SVGB (MCWRA, 1995). Specifically, section 9(v) of the Agency Act provides that MCWRA has the power:

To prevent the export of groundwater from the SVGB, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. Nothing in this act shall be deemed to prevent the development and use of the Seaside Groundwater Basin for use on any lands within or without that basin. If any person or entity attempts to export groundwater from the SVGB, the MCWRA may seek an injunction from the Monterey Superior Court to prohibit such export. The Agency Act further authorizes the MCWRA to commission groundwater studies to determine whether any portion underlying its territory is threatened with the loss of useable groundwater supply and to adopt an ordinance prohibiting further extraction of groundwater from an area and depth defined by the MCWRA.

As discussed more fully in Section 2.7, Water Rights, given the locations of the slant well screens beyond the jurisdictional boundaries of the County, it is not clear whether the Agency Act applies to the proposed project. However, as further discussed in that section, were the Agency Act to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This is because the proposed project would return to the SVGB any incidentally extracted useable groundwater. The water available for export would be new supply, or developed water, not extracted from the SVGB.

- How does moving extracted water from Marina to Castroville conform to the intent of the MCWRA– this seems outside of the intent to keep groundwater at its local source.

- Where is the MCWRA on this subject? Has this agency issued any position on this project?

- The slant well screens may be beyond the jurisdictional boundaries, but the aquifer that is being drawn from is not. See Appendix E2 for draw down models. Do these cones of depression extend into the city limits? Does the draw down influence beyond the site boundary?

Hofmann-27

- Again, incidentally extracted groundwater from Marina and moving to Castroville – this seems outside of the intent to keep ground water at its source. Who decides that the incidental extracted groundwater uptake is new, or developed water? CalAm? MCWRA?

- If this is "useable ground water" by CalAm's admission, how can they have rights to it? Here again is the appropriative rights campaign to usurp water rights by calling it a "new supply".

Hofmann-27 cont.

MCWRA Ordinance (pg 4.4-38)

MCWRA Ordinance 3709 prohibits drilling into and pumping groundwater from the 180-Foot Aquifer within specific onshore areas, designated as Territories A and B (MCWRA, 1993). The proposed seawater intake system would be located at the westernmost edge of Territory B. Although the wells would be drilled within Territory B, the source water for the proposed project would be extracted from beneath the ocean floor, an area not located within the restrictive territories identified by Ordinance 3709.

- How much incidentally extracted ground water would be sucked up from the intake system? This could be considerable even if it is a fraction of the proposed 24.1 million gallons per day (mgd) of source water through the seafloor in MBNMS estimate.

- Why are there no numbers for the actual groundwater uptake from the slant wells?

Hofmann-28

Appendix E2 (pg 43)

… Rather, the flow path directions indicate that existing intrusion at these interface locations will slow proportionally to the relative lengths of the flow paths. Hence, slant well pumping retards the continued inland movement of the seawater interface in the southern portion of Model Layer 4.

"At the CEMEX site (24.1 MGD), the maximum distance from the well field to the 1-foot drawdown contour was about 15,000 feet under 2012 sea level, and about 20,000 feet in Model Layer 4." pg 43

- Does this move the project influence within city limits?

Hofmann-29

- How does slant well pumping retard seawater intrusion?

- Is this retard claim based on data modeling of only the one test well in Marina?

Hofmann-30

- Is any of the data to support this claim provided from actual operating desal slant wells?

Hofmann-31

- Data used in the modeling has already been tagged as incomplete by peer review yet this modeling is all we have to make a decision to put in 8-10 slant wells and extrapolate long term ground water impact.

Hofmann-32

THERE IS NO DATA FROM ANY OTHER OPERATING DESAL SLANT WELL CITED TO SUPPORT THIS CLAIM THA SLANT WELLS RETARD SEA WATER INTRUSION!

Hofmann-33

Significant and Unavoidable Environmental Effects (pg 6.3)

Several proposed facilities would occur in areas that may qualify as Primary and Secondary Habitat according to the City of Marina Local Coastal Land Use Plan (LCLUP). These facilities, which include the subsurface slant wells, and portions of the Source Water Pipeline, new Desalinated Water Pipeline, new Transmission Main, and the staging area at Beach Road, would be inconsistent with the City of Marina's LCLUP Policy 25 that prohibits development in Primary Habitat that is not protective of and dependent upon that habitat. The LCLUP states, "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas (City of Marina, 1982)." Implementation of mitigation measures would reduce impacts on special-status species habitat. However, given that project facilities proposed for such habitats are not resource-dependent, and because the LCLUP policy provides no exception to the requirements that development within such habitats be resource-dependent, potential conflicts with this policy would remain unresolved. The effect would be significant and unavoidable. Section 4.6, Terrestrial Biological Resources, for additional information.

- This plan is in conflict with the City Policy
- There are no exceptions in the City Policy for development.
- Why does this not spell out the "significant" impacts?
- If there are no exceptions and damages do occur – where are the mitigations?

Hofmann-34

Approach to Analysis (pg 6-12)

While Castroville is not in CalAm's service area, the analysis also considers the growth inducement potential of delivering Salinas Valley Groundwater Basin return water as desalinated supply, to the Castroville Community Services District (see Section 6.3.5.4).

- Why is Marina not included in this analysis? Clearly there will be an effect to growth if Marina has impacts from the slant wells causing harm to the water supply or CalAm's usurpment of rights to brackish water that Marina Coast might have developed as a brackish groundwater treatment water supply (desalter project) to serve the needs of Marina and Ord development.

Hofmann-35

Service Area Growth Trends 1990-2010 (pg 6-22)

Table 6.3-6 shows population and housing data from the U.S. census for the years 1990, 2000, and 2010. Except for Sand City, population in all of the cities in the service area declined between 1990 and 2000; population in the service area cities as a whole decreased by about 9 percent.

- So, all this projected water use demand is really going to Pebble Beach, Peninsula tourism, and undeveloped lots on record? Certainly not serving the declining residential population cited.

Hofmann-36

9

TABLE 6.3-9 SIGNIFICANT IMPACTS ASSOCIATED WITH PLANNED GROWTH IN THE PROJECT AREA (pg 6-40)

Significant and Unavoidable Impacts…

- *Degradation of visual character or quality of the area and surroundings*
- *Substantial new sources of light and glare*
- *Cumulative impacts on aesthetics, light and glare*
- *Effects on special status species*
- *Effects on riparian habitat and other sensitive natural communities…*
- *Increased demand for water supply and/ or water storage, treatment, and conveyance facilities and associated secondary effects*
- *Substantial depletion of groundwater supply*
- *Increased demand on groundwater in areas experiencing or susceptible to saltwater intrusion*
- *Cumulative impacts on groundwater quality*
- *Cumulative indirect impacts of water supply projects*
- *Demand for water resources that exceed available water supply*
- *Cumulative impacts on water supply…*

- Where are the details of the possible impacts? This is horribly uninformative and provides no foundation for informing regional decisions
- These are not spelled out in relation to the measurable impacts to Marina or the proposed Potrero Road location.

Hofmann-37

NOAA Desal Guidelines table (pg 6-48)

Where feasible and beneficial, subsurface intakes should be used. It must be ensured however, that they will not cause saltwater intrusion to aquifers, negatively impact coastal wetlands that may be connected to the same aquifer being used by the intake, and they must address the likelihood of increased coastal erosion in the future.

- Why is subsurface intake promoted as the preferred method when it has yet to be used reliably in any successful desal subsurface intake project to date?

Hofmann-38

- There is no long term data (over 10 years) for the effect of subsurface intake on coastal erosion.

Hofmann-39

10

- There is no long term data (over 10 years) for unique cost and repair issues for subsurface slant wells operating in coastal areas. Hofmann-40

- There are no desal slant wells providing water to customers. Why is this MPWP regional water solution adopting an untried, experimental and expensive technology to find a reliable water supply? Why has straight intake desal not been considered in more depth and dismissed so quickly? It is a proven, known technology and provides fresh water worldwide. Hofmann-41

- The DEIR must prove no harm on these issues and it does not give accurate assessment or long term risks. Hofmann-42

Conclusion: Deny approval of the DEIR

Juli Hofmann
resident of Marina, Citizens for Just Water
3201 Martin Circle
Marina, California 93933

8.7.16 Thomas Moore

Thomas P. Moore, Ph.D.
P.O. Box 8704
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March 28, 2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Monterey Bay National Marine Sanctuary
c/o Project Lead for Cal Am Desalination Project
99 Pacific Avenue, Bldg. 455a
Monterey, CA 93940

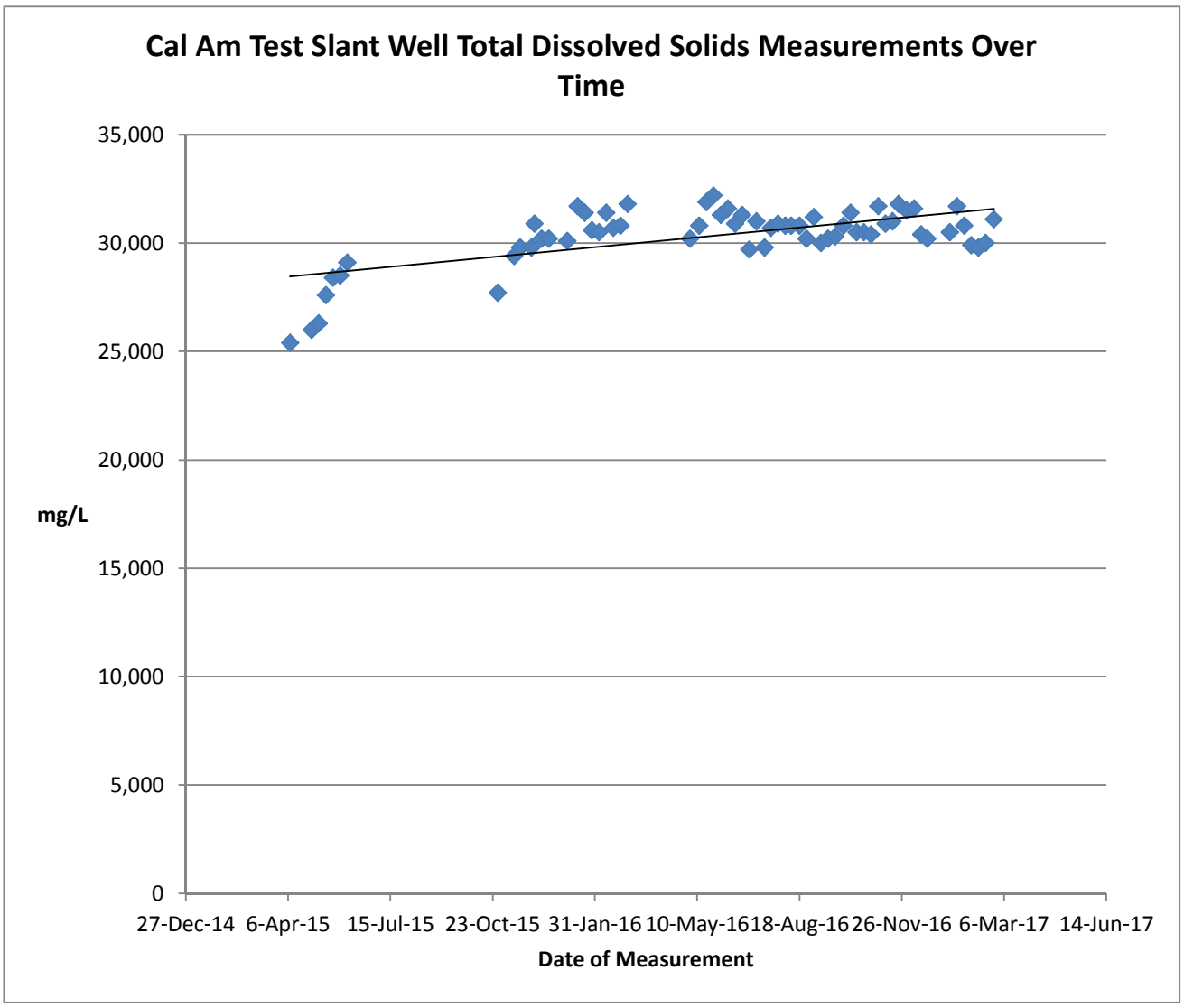
SUBJECT: Comments on the joint Draft Environmental Impact Report/Environmental Impact Statement (DEIR/DEIS) for the Monterey Peninsula Water Supply Project (MPWSP)

To Whom It May Concern:

1. The CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT Draft Environmental Impact Report/Environmental Impact Statement (DEIR/DEIS) has stated that the test slant well on the CEMEX site is screened in substantial part in the 180/400 Sub-basin (as defined in Bulletin 118 of the State Department of Water Resources). (See page 3-15 of the DEIR/DEIS.)
2. The State Department of Water Resources has designated the 180/400 Sub-basin as a groundwater basin subject to critical conditions of overdraft. (See page 12 of the Interim Update 2016 to Bulletin 118.)
3. The DEIR/DEIS has proven that the operation of the test slant well on the CEMEX site has increased seawater intrusion in the 180/400 Sub-basin (as defined in Bulletin 118 of the State Department of Water Resources). The graph below shows the increases over time in the amount of total dissolved solids (TDS) in the water pumped from the test slant well. The TDS of water in the Monterey Bay varies from time to time but is generally in the vicinity of 34,000 mg/L.

Moore-1

1



This chart is generated from the data found in the Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping Test Monitoring Report No. 97 which is found on the website http://www.watersupplyproject.org/#!test-well/c1f1l, which, in turn, is briefly mentioned on page 4.4-42 of the CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT Draft Environmental Impact Report/Environmental Impact Statement.

Moore-1 cont.

4. Further evidence that the test slant well has caused seawater intrusion into the 180/400 Sub-basin is provided by Figure 3 below, extracted from the GeoScience 2014b report in the appendices to the DEIR/DEIS.

Moore-2

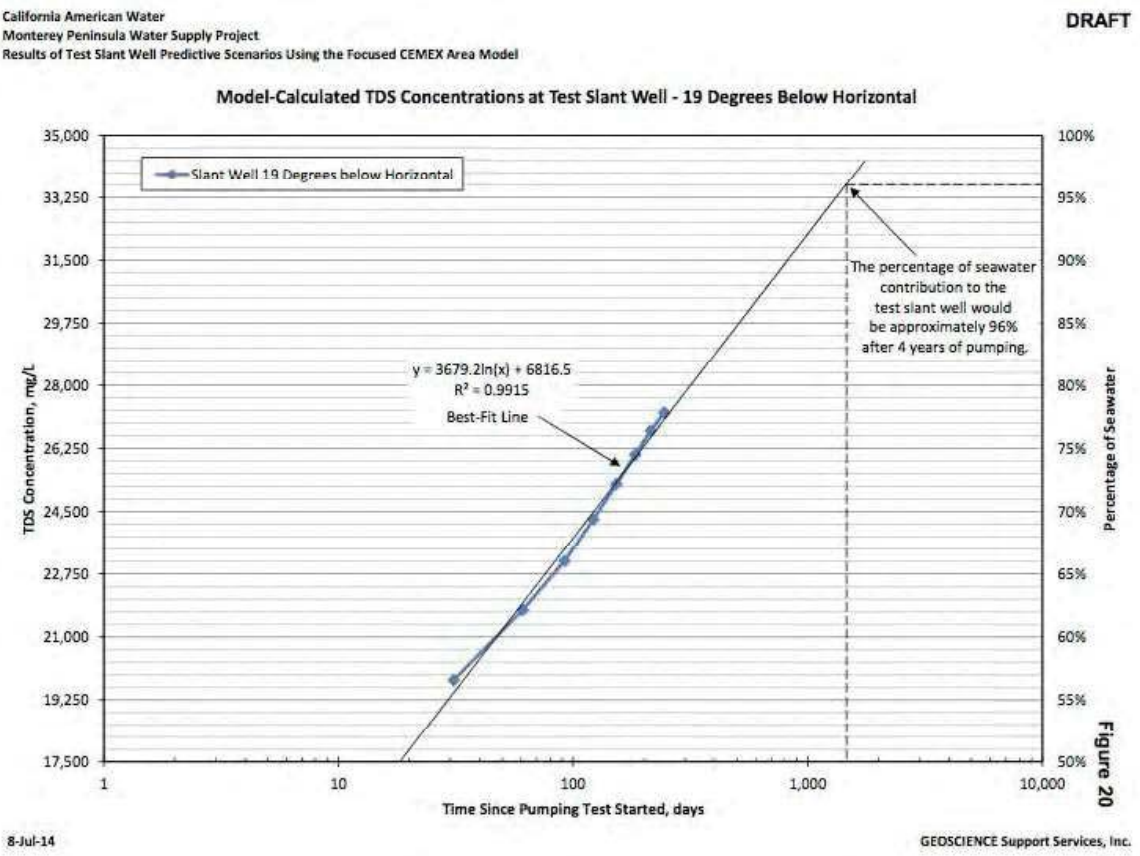


Figure 3 Time for Slant Well to Pull 96% Seawater (GeoScience 2014b).

5. The DEIR/DEIS has therefore proven that the operation of the test slant well has harmed the 180/400 Sub-basin by inducing more seawater intrusion into this sub-basin.
6. The DEIR/DEIR should have made this highly significant environmental impact (the increase in seawater intrusion caused by the pumping of the test slant well) far clearer, more prominent and in the main body of the DEIR/DEIS document rather than burying this information in the Appendices and a buried reference to a website.
7. The DEIR/DEIS states that, "Developed waters are available for use by the party who develops them, subject to the "no injury" standard discussed previously." Increasing seawater intrusion into a critically overdrafted sub-basin is a form of environmental injury.

Moore-2 cont.

Moore-3

Thank you for the opportunity to comment on the DEIR/DEIS. I look forward to reading your responses to the concerns I have raised.

Sincerely,

Thomas P. Moore

Thomas P. Moore

8.7.17 Hebard Olsen

Please discard previous E-mail and accept this revised one .I request Deis/EIR//EIS should be rejected because injury caused to Marina lawful users. Data for model too little. Un scrambling water from two sources IS unscientific!

Quoted from the DEIS/eis/EIR etc,"The Report concludes that the withdrawal for creating developed water is appropriate so long as no injury is incurred by existing legal water users of the Basin. Setting up the test to discern whether Cal Am possesses water rights for the proposed project, the Report states: [I]n developing a new water source Cal-Am must establish no other legal user of water is injured in the process. Even if Cal-Am pumps water unsuitable to support beneficial uses, the water could not be considered developed water unless users who pump from areas that could be affected by Cal-Am's MPWSP are protected from harm. "

Olsen-1

Marina is using water from the 900 ft aquifer which the Army Core of engineers considers a temporary source. That water will run out. The water which Cal Am is proposed to use could be desalinated more cheaply than sea water and they would be permanently harmed if Cal Am uses it up. That water needs to be available to percolate down to the 900 ft aquifer.The water is usable even though not currently used. The intake needs to be far enough away so as to not take any water from under the land or the legitimate owners will be harmed! Cal Am plans to give water back to users they choose not the people they harmed which is not acceptable! When one test well was operating wells at some distance showed substantial depression. 9 wells would make the depression much greater. When I turn on the tap from Cal Am the water which comes out would include water stolen from Marina.

Olsen-2

Olsen-3

The people harmed must be a part of the DEIS/EIR/EIS and needs to be discussed even if that harm is in the future!

Reject all of the alternatives intakes which are located in Marina !

I request a determination as to how much data is enough to make an accurate model to be able to draw accurate conclusions from!

Olsen-4

Drawing water from both the land and from the sea is and trying to unscramble data is an unscientific way to go about this which should be grounds for rejecting the DEIS/EIS/EIR. Cal Am's process is like my 10 year old son putting every house hold chemical in a bottle of water then asking me to explain the reactions going on in the bottle! Keep it simple to be scientific!

Olsen-5

Hebard R Olsen MA natural Science Chemistry Physics Earth Science Biology

8.7.18 Larry Parrish

Mary Jo Borak (CPUC), Karen Grimmer (MBNMS), and ESA
Feb. 23, 2017

Dear Ms. Borak & Ms. Grimmer and ESA:

Thank you for the opportunity to comment and submit some questions regarding the Monterey Peninsula Water Supply Project EIR/EIS. The draft EIR/EIS mentions erosion due to sea level rise and other factors, but it does not address coastal erosion due to excessive pumping and land subsidence. Here follows my comments and questions in that regard.

BEACH AND DUNE COASTAL EROSION FROM LAND SUBSIDENCE:

A. The test slant well:

Given that the test slant well (TSW) is not drawing it's intake water from below the sea floor, and; given that the TSW is drawing brackish water from the beach/dunes aquifers, (as much as 66%) and the remainder from the upper and lower portions of the 180' aquifer, and;
given that these aquifers are perched one on top of the other, and;
given that these aquifers are solely recharged from intermittent rainfall, and;
given that the cone of depression (COD) created from extensive and continual pumping from these aquifers is by and large beneath the land masses located inland of the mean high tide line, and;
given that the cone of depression is massively large,
therefore, I must conclude that there is definite potential for erosion of the land masses (i.e. the beaches and dunes) due to land subsidence caused by either aquifer-system compaction, hydrocompaction, or decomposition of organic soils located in and/or around the cone of depression zone. Since the pumping of the TSW (and ensuing production wells) will be continuous, there exists the potential for the aforementioned aquifers that lie above and/or around the well head pump(s) to actually be pumped into a state in which available source water could be drastically diminished or disappear altogether, particularly during dry (no rainfall) months and/or droughts. And once the source water is depleted sufficiently, subsidence will occur because "when long-term pumping lowers groundwater levels and raises stresses on the aquitards beyond the preconsolidation-stress thresholds, the aquitards compact and the land surface subsides permanently." (USGS) And once the land masses subside, the shoreline land masses become more vulnerable to increased wave action and erosion occurs (including wind erosion) and beaches disappear and/or the mean high tide line recedes inland.

Parrish-1

So, my questions are:

1. Have you taken comprehensive soil samples from throughout the entire cone of depression zone, including the aquitards within the zone? If not, why not? If so, where is the data?

Parrish-2

2. Are you now, or have you been monitoring and/or measuring land surface elevations in, above, or around the COD zone? If not , why not? Do you have baseline data with regard to these elevations? If not, why not? Please present the appropriate data.

Parrish-3

3. Have you conducted any data-based studies with regard to beach or dune erosion in or around the COD zone? If not, why not?

Parrish-4

4. Have you conducted any modeling (computer or otherwise) with regard to erosion or potential erosion in or around the COD? If not, why not? Please present the data.

Parrish-5

5. Have you considered that if/when beach or dune erosion occurs within the parameters of the COD zone that seawater intrusion into the nearby aquifers would likewise increase as a result? Have you presented any mitigations should seawater intrusion occur within these aquifers? If not, why not?

Parrish-6

B. Cumulative impacts:

Given that the intent is to deploy 8 -10 production wells along the Cemex property and perhaps elsewhere, I will ask the same questions asked previously above with regard to those additional cones of depression zones created by the production wells. In other words, what are the cumulative impacts from the entire group of production wells with regard to coastal erosion, which includes the beaches and dunes? You must also take into account the possible overlapping of some of the CODs which will exacerbate the negative effects of pumping from these aquifers and in the overlapping areas.

Also, since the Monterey Bay beach and dune areas on the Cemex property are all part of a much larger geological ecosystem and what happens in one area with respect to beach or dune erosion usually has adverse effects elsewhere along the Bay shoreline, I will ask you this question - What mitigations have you presented or offered in the event of beach loss or dune erosion due to the implementation of the MPWSP (desalination project) which includes the TSW and the proposed production wells?

Parrish-7

In conclusion, I must stress that my concerns are legitimate concerns and my questions are appropriate and should be answered and this issue of coastal erosion caused by land subsidence needs to be fully addressed. The EIR/EIS is therefore deficient and constitutes serious and unmitigated adverse environmental impacts and is not in compliance with CEQA requirements. Quite simply, the EIR/EIS needs to be revised and recirculated with these issues adequately addressed and attended to, otherwise the EIR/EIS will be subject to costly court challenges.

Parrish-8

Thank you for your consideration,

Respectfully yours,
Larry Parrish

PUBLIC SUBMISSION

As of: 5/22/17 3:34 PM
Received: February 22, 2017
Status: Posted
Posted: February 22, 2017
Tracking No. 1k1-8uvw-6ta2
Comments Due: March 29, 2017
Submission Type: Web

Docket: NOAA-NOS-2016-0156
Notice of Availability of a Draft Environmental Impact Report/Environmental Impact Statement; Proposed Monterey Peninsula Water Supply Project

Comment On: NOAA-NOS-2016-0156-0001
CalAm NOA_82FR4302

Document: NOAA-NOS-2016-0156-0005
Comment from Paula Pelot

Submitter Information

Name: Paula Pelot

General Comment

Although the DEIR provides detail on nearby faults in its' "Geology, Soils, and Seismicity" Section 4.2, it inadequately addresses the potential impacts of seismic activity of the Reliz (Blanco Section) and other nearby faults and does not present mitigation for any potential impacts. The Reliz (Blanco Section) underlies much of the project area and could cause rupture and/or displacement of the subsurface slant wells, source water pipeline, desalinated water pipeline, proposed brine discharge pipeline, transmission main and transfer pipelines. In the instance of rupture of the proposed brine discharge pipeline, large amounts of brine discharge would be released into a concentrated area and could be devastating to the biology of the immediate and adjacent areas of the Monterey Bay. Additionally, compromised pipelines could also have negative impacts to local agricultural lands. Pelot-1 Pelot-2

The DEIR does not adequately address the potential of subsidence due to all ten (10) wells pumping. Although the well design at this proposed site has been amended from that of Dana Point with the anticipated, but not yet known, outcome being there would be less subsidence at the top of the wells, subsidence will inevitably occur, albeit at what is assumed to be slower pace. Pelot-3

The DEIR does not present evidence that the impacts of subsidence, in conjunction with the seismic activity for the Reliz (Blanco Section) Fault Zone and other nearby fault systems that underlies much of the project area, have been modeled to evaluate the cumulative/combined impacts of seismic activity with that of subsidence. Pelot-4

PUBLIC SUBMISSION

As of: 3/1/17 6:30 PM
Received: February 28, 2017
Status: Posted
Posted: February 28, 2017
Tracking No. 1k1-8uzj-c2vd
Comments Due: March 29, 2017
Submission Type: Web

Docket: NOAA-NOS-2016-0156
Notice of Availability of a Draft Environmental Impact Report/Environmental Impact Statement; Proposed Monterey Peninsula Water Supply Project

Comment On: NOAA-NOS-2016-0156-0001
CalAm NOA_82FR4302

Document: NOAA-NOS-2016-0156-0027
Comment from Carol Reeb

Submitter Information

Name: Carol Reeb
Address:
Hopkins Marine Station
120 Oceanview Blvd.
Pacific Grove, CA, 93950
Email: creeb@stanford.edu

General Comment

I am writing in regards to the Draft EIR for CalAm's proposed seawater desalination facility to be built on the shore of Monterey Bay. My comments are specific to analysis of brine for CalAm's desalination facility with a short comment on subsurface intakes.

Use of Wastewater for Brine Dilution:
I was happy to read a more thorough reanalysis (with a time component) in the sections involved with brine plume modeling compared to the earlier version of a similar DEIR from 2009. While the new analyses supports conclusions that brine from MRWPCA's offshore pipe will most likely comply with salinity requirements, Section 4.3 raises concerns that compliance may fail when pipe flow is low. Augmenting pipe flow with wastewater would solve that problem. However nowadays, most experts consider wastewater to be a valuable resource. Using it to dilute brine cannot be called a "beneficial use" under California water law

Reeb-1

Reeb-2

According to the DEIR, retrofitting MRCPCA's offshore pipe with high velocity jet diffusers (at a 60 angle) ensures salinity levels would comply with Ocean Plan regulations within the ZID. Unfortunately, Table ES-2 (Summary of Impacts and Mitigation Measures) does not list pipe retrofit as a mitigation measure. Monitoring is the action taken instead. Retrofitting the pipe now will save CalAm ratepayers money when flow augmentation with wastewater is not an option. Reeb-3

I believe third party environmental consultants best serve the public for monitoring environmental affects in and around the ZID, not private consultants paid by an industry operator. Seawater desalination in California is in its infancy. Marine scientists need publically available data to improve future brine outfall designs. Given the many marine institutes and research programs around the Bay, monitoring should involve researchers and students, which helps train our next generation of scientists too. Reeb-4

I am aware that approximately 6000 AFY of tertiary treated wastewater was currently discharged offshore last winter from MRWPCA. This volume is enough to replace much, if not all of CalAm's proposed plant capacity. Expanding GWR is a way to save ratepayers' money while turning an unwanted water source into a beneficial supply. Therefore, I question the need for seawater desalination at this time. It seems we do not have a water shortage after all. We have a break down of collaboration among communities that really must be overcome. Reeb-5 Reeb-6

California Market Squid and Brine Monitoring
The DEIR focuses on lethal salinity thresholds lethal to marine species and notes that Dorytheuthis opalescens can be reared in salinities up to 38 ppt in captivity (i.e. adequate food and no predators). Because salinity in the Bay never reaches 38 ppt, referencing Vidal and Boletzky's study on lab cultured market squid as proof eggs and paralarvae will be fine in the wild is misleading. Brine monitoring studies could include questions that address the unknown sublethal salinity impacts on survivorship. Reeb-7

Subsurface Intakes in Marina's Coastal Aquifer
Recently, Dr. Knight's lab (Stanford University) published a paper (Goebel et al. in press) showing clear evidence of freshwater flows interspersed among regions of elevated salinity in the Marina coastal region. Using electrical resistivity, 3D images of aquifers revealed complex patterns of seawater intrusion. These new images and findings are significant, given the way groundwater laws and water ownership is currently treated. It would be prudent to use this technology in the area of CalAm's proposed slant wells to ensure subsurface intakes do not harm the aquifer's productivity. Reeb-8

Having said that, I strongly believe subsurface intakes are essential for facilities located in Monterey Bay, where Red Tides" are commonplace. Algal blooms can clog/shut down seawater desalination facilities for days, weeks, or months making them unreliable (Caron et al. 2010; Richlen et al. 2010). Subsurface wells prevent this. Because there is no way to run "real-time" assays to test product water for soluble algal toxins leaking through old/poorly maintained filters, algal blooms become a critical issue for water providers should toxins enter the municipal supply. Reeb-9

Sincerely,

Carol Reeb

References:
Caron, D.A., M. Garneau, E. Seubert, M.D.A. Howard, L. Darjany, et al. 2010. Harmful algae and their potential impacts on desalination operations off southern California. Water Research 44:385-416.

Goebel, M. A. Pidlisecky, R. Knight (in press). Resistivity Imaging Reveals Complex Pattern of Saltwater Intrusion Along Monterey Coast. Journal of Hydrology DOI: http://dx.doi.org/10.1016/j.jhydrol.2017.02.037

Richlen, M. S.L. Morton, E.A. Jamali, A. Rajan, D.M. Anderson. 2010. The catastrophic 2008-2009 red tide in the Arabian Gulf region with observations on the identification and phylogeny of the fish-killing dinoflagellate Cochlodinium polykrikoides. Harmful Algae 9:163-172.

8.7.21 Dick Rotter

From: Richard Rotter [mailto:dickrotter@gmail.com]
Sent: Wednesday, February 22, 2017 10:31 AM
To: MPWSP-EIR
Subject: Cal Am EIR/EIS comments

2-22-17

The Highway 68 pipeline crossing from Fairgrounds Road on the East over the overpass above Highway 68 to the West connecting onto Mark Thomas Drive, does not appear in this EIR/EIS or in the Pure Water Monterey EIS. Why? The cost estimates are also not included. Why? Highway 68 is designated as a Scenic Highway. How does Cal Am plan on getting a right of way to cross over this highway? There are also two "active" earthquake faults that run into the project: the Sylvan and the Navy. These faults are in a report issued by AMBAG. What do Cal Am's plans for these faults include?

Rotter-1
Rotter-2
Rotter-3
Rotter-4

A Department of Transportation letter to Cal Am dated October 23, 2015, stated that Cal Am had not completed any of the required items for its Encroachment Permit Applications 0514-6US-0229 Site No. 8-State Route 1, which was denied without prejudice. After the 45 day response time expired, the file was closed without prejudice. Why no response from Cal Am?

Rotter-5

Dick Rotter
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Corral de Tierra, CA 93908

dickrotter@gmail.com

8.7.22 Nancy Selfridge
Letter 1

February 14, 2017

California Public Utilities Commission
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San Francisco, California 94108
mpwsp-eir@esassoc.com

SUBJECT: DRAFT EIR\EIS COMMENTS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT

Dear Staff:

Thank you for the opportunity to comment on a project which has far reaching implications to our community, and the residents of the City of Monterey. I have commented on three sections; Energy Conservation (Section 4.18), Determination of Environmentally Superior and Preferred Alternatives (Section 5.6.2) and Comparative Analysis of the Project Alternatives (Sections ES.6 to ES.8). I will submit each as a separate letter.

SECTION 4.18 ENERGY CONSERVATION

CEQA Sec. 21 100(b) "requires evaluation of the potential energy impacts of a proposed project. And consideration of mitigation measures that would avoid or reduce the wasteful, inefficient, and unnecessary consumption of energy associated with the project". Appendix F of the CEQA Guidelines provides three goals for energy conservation:

1. Decrease overall per capita energy consumption;
2. Decrease reliance on natural gas and oil; and
3. Increase reliance on renewable energy sources.

With regard to NEPA, the Council on Environmental Quality (CEQ) regulations 40 CFR 1502.16(e) requires "analysis of energy requirements and conservation potential of various alternatives and mitigation measures".

In the EIR documentation you state the requirements of the *Energy Policy Act of 2005*, State Regulations (4.18.2.2), including the *California Coastal Act*, the *State of California Integrated Energy Policy*, *Title 24 Building Energy Efficiency Standards (California Energy Code)* and the *California Green Building Standards Code (Cal Green).*

On pages 5.5-325, 5.5-32, 5.5-332 and 5.5-333 (see attached) the EIR\EIS document does a comparative analysis of the Energy Conservation and Usage criteria of each alternative. My comments are on the preferred project and Alternative 4, People's Moss Landing Water

Desalination Project. The conclusion drawn by the author of the EIR\EIS regarding Energy Conservation for Alternative 4 is as follows: "Overall, Alternative 4 would result in an *increased impact conclusion* compared to the proposed project, significant and unavoidable".

In the Executive Summary, and again, in the body of the text of the EIR\EIS the author describes the rigorous analysis employed in the preparation of the document and the use of the best data available to reach its conclusions.

ALTERNATIVE 4 ENERGY CONSERVATION MEASURES:

In July of 2016, the Peoples Project entered into detailed discussion with a solar contractor, (see attached) for the construction of a 3.7 MgW to 5.0 MgW solar energy farm designed to reduce the reliance of the project on fossil fuels. To date, the project design is approaching completion, the PG&E interface study has been performed and multiple milestones have been achieved. The solar project has been discussed in public meetings and is in the minutes of several public agencies. In addition, a state of the art brine containment system is also being designed for the Project, thereby significantly reducing the return water impacts to the environment.

The solar project will need a dedicated 18-20 acres of an approximate 200 acre business park and the owner has designated 2 separate parcels to achieve the goal. Permits from the County of Monterey have been applied for and the process is proceeding.

QUESTIONS FOR THE EIR\EIS CONSULTANT:

1. In preparation for this comment to the EIR\EIS some research was done into who, if anyone, associated with the Peoples Project had been contacted by ESA, Cal Am, the PUC or anyone associated with the project regarding the Energy Conservation section. The Moss Landing Harbor District was not contacted, counsel for said Agency, which is the lead agency for the Project was not contacted, counsel for the Peoples Project was not contacted, the solar contractor was not contacted, no consultant or employee of the Peoples Project was contacted and the owner of the property was not contacted. No one was contacted!!!

Selfridge1-1

QUESTION: How is it possible, in the context of a thorough review of project alternatives, that the only Project attempting to comply with the multiple State and Federal laws discussed above was not consulted regarding components of their Project?

QUESTION: The EIR\EIS for the Peoples Project has been presented to the lead Agency for review and Aspen Consulting is performing this work. The joint document will be available for review shortly, so I understand the consultant for the proposed project does not have access to it. How did the consultant arrive at the conclusion that Alternative 4 would result in an *increased impact conclusion* compared to the proposed project? Selfridge1-2

QUESTION: Referencing Table 5.6-1, Alternatives Impact Study, Page 5.6-18, there are 3 impacts analyzed. In each case, alternative 4 is given the same rating as the proposed project, and yet in each case, the rating is adjusted to being more significant for Alternative 4. Please explain the rationale? Selfridge1-3

QUESTION: Impact 4.18-2, "**Use large amounts of fuel and energy in an unnecessary, wasteful or inefficient manner during operations".** Might this lower rating for Alternative 4 been modified if the consultant was aware of the construction of a solar array to service the Moss Landing Green Business Park? Should the consultant have performed a necessary level of due diligence to even be aware of said solar energy park? Selfridge1-4

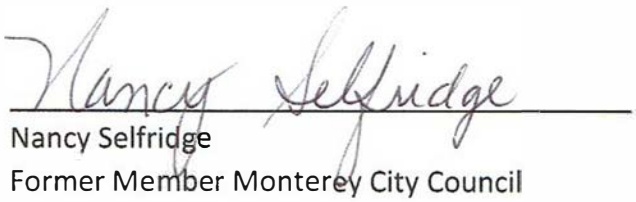
QUESTION: Impact 4.18-3, "**Constrain local or regional energy supplies, require additional capacity, or effect peak and base periods of electrical demand during operations." T**he Moss Landing Green Business Park will be self-sufficient, or possibly, an actual contributor of energy to the grid. Please explain how the existence of the solar array farm on the property might affect the answer to this rating question? Selfridge1-5

Each and every one of my questions, criticisms and observations incorporated herein constitute significant unmitigated adverse impacts as defined by CEQA and NEPA, and these significant deficiencies in the draft EIR\EIS cause the EIR\EIS to be defective and not in compliance with the mandates of CEQA or NEPA. Further, the significant adverse impacts and deficiencies, which have largely been intentionally ignored by the preparers of the EIR\EIS, cause the document to need to be significantly revised and recirculated so as to avoid damaging both the environmental and natural resources of Monterey County and the individual rights of innocent land owners who have not received the statutorily (CEQA) mandated mailed notices inasmuch as their groundwater resources are now being proposed to be stolen by Cal Am. Selfridge1-6

Failure to make these necessary and legally required revisions, and to identify and mitigate these significant adverse impacts will cause this EIR\EIS to be defective and subject to successful challenge in Court.

Please see attached data for your reference.

Sincerely,



Nancy Selfridge
Former Member Monterey City Council
Board Member Water Ratepayers of the Monterey Peninsula (WRAMP)

CC Full Copy:
Maryjo.Borak@cpuc.ca.gov
Karen.Grimmer@noaa.gov

Nancy Selfridge
Letter 2

February 20, 2017

California Public Utilities Commission
C\O Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, California 94108
mpwsp-eir@esassoc.com

SUBJECT: DRAFT EIR\EIS COMMENTS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT

Dear Staff:

Thank you for the opportunity to comment on a project which has far reaching implications to our community, and the residents of the City of Monterey. I have commented on three sections; Energy Conservation (Section 4.18), Determination of Environmentally Superior and Preferred Alternatives (Section 5.6.2) and Comparative Analysis of the Project Alternatives (Sections ES.6 to ES.8). I will submit each as a separate letter.

SECTION 5.6.2 DETERMINATION OF THE ENVIRONMENTALLY SUPERIOR AND PREFERRED ALTERNATIVE:

CEQA and NEPA both require extensive comparison of a variety of factors in comparing the proposed project and identifiable alternatives. In fact, in referencing Table ES-1, Alternative Impact Summary there are 115 comparative analytics. These are assigned grades (ie: LS, Less than Significant, SU, Significant and unavoidable, etc). These weighted grades are then used as a component in the consultant selecting the environmentally superior and preferred alternative. I will compare the preferred alternative to Alternative 4, the Peoples Project.

On page 5.6-5 the consultant specifically notes (see attached) the following impacts are unique to Alternative 4 (Peoples Project):

1. Construction of the desalination plant could impact (currently unsurveyed) historical resources, resulting in a significant and unavoidable impact;
2. Operation and siting of the intake pumping facilities on top of the existing caisson at the existing shoreline could result in the long-term direct effects on coastal erosion and scour processes that could expose adjacent properties to coastal flooding and a change in sediment transport, resulting in potentially significant impacts;
3. Operation and siting of the desalination plant facilities within a 100 year flood one could cause long-term direct effects related to redirection of flood flows, resulting in a significant and unavoidable impact.

Following are questions regarding the Alternatives Impact Summary:

QUESTION: Impact 4.2.1 *Substantial soil erosion or loss of topsoil during construction*. Where is the analysis of the topsoil that may exist at the Moss Landing Business Park in the appendix or body of the report? Selfridge2-1

QUESTION: Impact 4.2.10 *Accelerate and\or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment*. The Peoples Project is being built on an existing location that has been in business operation for over 80 years and has the necessary infrastructure in place to intake seawater (it currently does so now) and has existing outfall. The preferred project will contemplate 10 wells being drilling on the coastline, Alternative 4 uses preexisting infrastructure. Where in the EIR\EIS is the support data to study the comparative impacts of the two projects on coastal erosion? Selfridge2-2

QUESTION: Impact 4.2.11 *Degrades the physical structure of any geologic resource or alters any oceanographic process, such as sediment transport, that is measurably different from pre-existing conditions.* The preferred alternative receives a grade of NI, No Impact, whereas Alternative 4 receives a SU, Significant and Unavoidable. The preferred alternative drills 10 wells, pumps, delivery systems, etc on pristine beach in a Marine Sanctuary and Alternative 4 uses existing infrastructure already buried in the ground. Where in the EIR\EIS is the supporting study and science to support this logic? Selfridge2-3

QUESTION: Impact 4.3.1 *Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.* The preferred alternative receives a grade of LS, Less than Significant and Alternative 4 a grade of SU, Significant but Unavoidable. The preferred alternative is being constructed in various locations, all within the Coastal Zone on virgin ground, some of it contiguous to the coastline. Alternative 4 is being built in an existing business park which is almost all concrete in the 16.5 acre building site. Where is the study in the EIR\EIS that supports the conclusions drawn in the Summary? Selfridge2-4

QUESTION: Impact 4.3-9 Impedance *or redirection of flood flows due to the siting of project facilities in a 100 year flood hazard area.* The preferred alternative receives a grade of LS, Less than Significant and Alternative 4 receives a grade of SU, Significant and Unavoidable. According to the Monterey County Water Resource Agency web site the ENTIRE coastal region of the Monterey Peninsula, Moss Landing and Santa Cruz are in a 100 year flood hazard area. Alternative 4 is protected by rock jetty's, large sand bars and a harbor. The Moss Landing Business Park is built at least 20 feet above sea level. Selfridge2-5

Conversely, the preferred alternative is contemplating building 10 well sites at approximate sea level, per the EIR\EIS, all within the 100 year flood hazard zone. The transmission lines will all be built with in the 100 year flood hazard zone, both of these tasks in sand. Please provide the scientific study that shows the preferred alternative well sites and transmission pipelines at less than a significant risk. Please provide the scientific analysis that supports the conclusion that the risk to Alternative 4 is many magnitudes greater than to the preferred alternative. How is it possible that Alternative 4 is subject to grave risk, in a 100 year flood one, at an elevation of 20+ feet, with a concrete berm, when the preferred project components are built in sand at sea level and are deemed to have little, if any, risk?

Selfridge2-5 cont.

QUESTION: Impact 4.3-10 *Exposure of people or structures to a significant risk or loss, injury or death from flooding due to a tsunami.* The preferred project receives a grade of LS, less than significant, whereas Alternative 4 is deemed Significant and Unavoidable. I raise the same objection as the previous section. The consultant is comparing projects that both lie in the same National Marine Sanctuary, on the same coastline within the same Bay. Is the EIR\EIS suggesting the tsunami would be targeted only at Moss Landing? Please provide the scientific study that shows the evidence that Moss Landing is at a significantly higher risk for such an event than any other area of the Bay. Please provide context to the issue by providing the historical data to show the impacts and location of a tsunami in the Monterey Bay. Has there ever been a measurable tsunami in the last 100 years of records in the Monterey Bay?

Selfridge2-6

QUESTION: Impact 4.3-11 *Impact of people or structures to a significant loss, injury, or death from flooding due to sea level rise.* The preferred project receives a grade of LS, less than significant while Alternative 4 receives a grade of SU, significant and unavoidable. Being redundant, the preferred project is at sea level and Alternative 4 is not. What scientific data was used by the consultant to arrive at this conclusion? How is it possible to draw this conclusion when the EIR\EIS discusses possible sea level rises in its modeling work and does not list a major concern for any significant issue over the next 20 years?

Selfridge2-7

QUESTION: Impact 4.15-1 *Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.* The preferred project received a grade, undoubtedly appropriately of NI, No impact. The Alternative 4 received a grade of SU, significant and unavoidable.

I asked the owner and consultants of the project, as well as the Moss Landing Harbor District if they has ever been consulted by the EIR\EIS consultant for this document, regarding this issue. No one was ever contacted. The owner has already paid for a historical resource study on the property, as required by the aforementioned laws. The conclusion in the study; no significant historical issues, with the exception of one strip of the property which is in no way jeopardized by the project during operation or construction. How is it possible that during a complete and exhaustive analysis of competing projects as required by CEQA and NEPA this

Selfridge2-8

report was not known to the consultant? Why was this information never requested by the consultant in the preparation of the EIR\EIS document?

Selfridge2-8 cont.

QUESTION: Impact 4.15-2 *Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.* The preferred project received a LSM grade, less than significant, mitigations available, Alternative 4 received the same grade but more severe mitigation measures required. Refer to the prior question, same facts apply. If the consultant had simply asked any members of the Alternative 4 team, from the lead agency to employees, they would have discovered the historical and archaeological studies had been done with no significant impacts.

Selfridge2-9

SUMMARY: The consultant (ESA) uses the grid analysis for Alternatives Impact Study to grade 115 separate impacts and determine the best possible outcome. The consultant could have accomplished a far more fair and valuable comparison, as required by CEQA and NEPA if he had simply consulted with the members of Alternative 4, and perhaps a very different conclusion may have been reached. These analyses need to be redone and recirculated.

Selfridge2-10

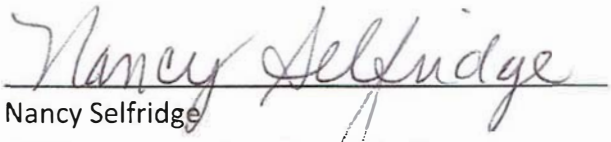
Each and every one of my questions, criticisms and observations incorporated herein constitute significant unmitigated adverse impacts as defined by CEQA and NEPA, and these significant deficiencies in the draft EIR\EIS cause the EIR\EIS to be defective and not in compliance with the mandates of CEQA or NEPA. Further, the significant adverse impacts and deficiencies, which have largely been intentionally ignored by the preparers of the EIR\EIS, cause the EIR\EIS to need to be significantly revised and recirculated so as to avoid damaging both the environmental and natural resources of Monterey County and the individual property rights of innocent land owners who have not received the statutorily (CEQA) mandated mailed notice inasmuch as their groundwater resources are now being proposed to be stolen by Cal Am.

Selfridge2-11

Failure to make these necessary and legally required revisions, and to identify and mitigate these significant adverse impacts will cause this EIR\EIS to be defective and subject to successful challenge in Court.

Please see attached data for your reference.

Sincerely,



Nancy Selfridge
Former Member Monterey City Council
Board Member Water Ratepayers of the Monterey Peninsula (WRAMP)

Full copy CC:
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Nancy Selfridge
Letter 3

February 20, 2017

California Public Utilities Commission
C\O Environmental Science Associates
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mpwsp-eir@esassoc.com

SUBJECT: DRAFT EIR\EIS COMMENTS FOR THE MONTEREY PENINSULA WATER SUPPLY PROJECT

Dear Staff:

Thank you for the opportunity to comment on a project which has far reaching implications to our community, and the residents of the City of Monterey. I have commented on three sections; Energy Conservation (Section 4.18), Determination of Environmentally Superior and Preferred Alternatives (Section 5.6.2) and Comparative Analysis of the Project Alternatives (Sections ES.6 to ES.8). I will submit each as a separate letter.

SECTION ES.6 to ES.8 COMPARATIVE ANALYSIS OF THE PROJECT ALTERNATIVES:

Pursuant to Section 15123(b) (1) of the California State CEQA Guidelines and NEPA regulations (40 CFR 1502.12), and EIR\EIS shall identify areas of controversy known to the lead agency including issues raised by agencies and the public and the issues to be resolved (including the choice among alternatives and whether or how to mitigate significant effects).

Section ES-8 Groundwater Modeling, Impacts and Water Rights: (See page ES-13) *Cal Am's proposed use of subsurface slant wells to withdraw source water for the MPWSP Desalination Plant is the subject of two controversies; (1) whether Cal Am has the legal right to extract groundwater from the Salinas Valley Groundwater Basin (SVGB); and (2) whether implementation of the MPWSP and operation of the subsurface slant wells would exacerbate seawater intrusion in the SVGB.*

FACT: Per Section 2.6, Water Rights, page 2-30 (*Indeed, no government agency will formally grant water rights to Cal Am for the proposed project*), page 2-31 (*Cal Am has no prescriptive groundwater rights in the Basin*) and (*Naturally, however, if Cal Am does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove unfeasible*). The consultant admits that Cal Am has no water rights and this is obviously a contentious issue.

Selfridge3-1

QUESTION: Would it have not been prudent for Cal Am and the PUC to resolve the water rights issue prior to spending millions of dollars of ratepayer money on test wells? What cost contingency has been built into the process if, as expected, the issue is determined by Courts and Cal Am has been deemed to have seriously damaged a State protected basin and stolen other people's water?

Selfridge3-1 cont.

FACT: Page ES-13 of the EIR\EIS states: "the proposed subsurface slant wells at CEMEX would extend offshore and be screened in aquifer units of the SVGB that have long been intruded by seawater. Although the subsurface slant wells would draw seawater (i.e., source water for the MPWSP Desalination Plant) from beneath the ocean floor, a fraction of the source water would be drawn from inland portions of the SVGB)".

QUESTION: The test slant well, per the consultants own data, does not extend under the sea floor, but rather, under the beach high mean tide line. How does the empirical data derived from the test well correspond to subsurface wells hundreds of feet deeper in the SVGB aquifer? Please explain and provide the hydrologic data and basis for this conclusion, discussed in the EIR\EIS.

Selfridge3-2

FACT: For the last 25 years, the ratepayers in Zone 2B (12,000 acres of irrigation land commonly referred to as the Castroville Seawater Intrusion Project (CSIP)) and all Salinas Valley Groundwater Basin members (Zone 2C) have paid assessments to the County of Monterey through the Resource Agency to protect the 12,000 acres from basin degradation and sea water intrusion advancement. Farmers in the area have willingly given up their pumping rights in the aquifer to protect against further seawater intrusion. Further, the Coastal Commission, the County of Monterey and the State of California are legislatively mandated to preserve and protect the SVGB, specifically the North County area.

QUESTION: How does voluntarily complying with a County Ordinance equate to abandoning the water in the aquifer making it "found water"? Further, how do the protective bodies of government not only allow this type of devastation to occur in a protected zone, but actually condone and actively participate by ignoring its own ordinance and legislative mandate?

Selfridge3-3

FACT: Per the Monterey County Water Resource Agency website the 25 years of drastically reduced pumping in the 12,000 acres has seen a steady rise in water tables, a slight increase in fresh water component and an almost complete cessation of seawater intrusion into this area. Taxpayers have paid millions of dollars to the County to protect them and carry out the provisions of the CSIP.

QUESTION: Please provide the baseline statistics for the contiguous area around the CEMEX site from 1992 to 2015, (prior to the test slant well) and compare to the condition of the same area today? Please explain how pumping approximately 2,000 gallons per minute, in an area

Selfridge3-4

previously left primarily un-pumped through County Ordinance, has not been impacted by such high pumping rates.

Selfridge3-4 cont.

FACT: Section 2.6.1 State Water Resources Control Board Report page 2-32 (see attached). *"Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source."* As previously stated, the water in the perched 1800 and upper dunes sand aquifers was not abandoned or unavailable to the overlying land owners, it was voluntarily not pumped, as the landowners had, and are, continuing to pay to protect the Zone 2B basin.

QUESTION: How does the consultant justify classifying the water in the aquifers under CEMEX as "not previously available to other water users" when the landowners legally agreed to use CSIP water that they were paying for? How do the legislatively mandated bodies ignore the legal mandate created by the passage of laws designed to protect an impaired water basin? How does the consultant and the PUC ignore these laws that have been on the books for many years? Please present the study documents used by the consultant for this section of the EIR\EIS for public review?

Selfridge3-5

FACT: Section 2.6.1 State Water Resources Control Board Report page 2-33 "State water policy favors enhancement of beneficial uses of water. Specifically, Article X, section 2 of the California Constitution requires "**that the water resources of the State be put to beneficial use to the fullest extent to which they are capable, and that waste or unreasonable use or unreasonable method of use of water be prevented**".

QUESTION: The test slant well, when operational, has been pumping approximately 2,000 gallons per minute, or, 2,880,000 gallons per 24 hour day. This equates to over 8 acre feet per day. Much of this water was fresh water, agreed by various government bodies to not be available. The test slant well, by design draws the water into its test pump and immediately diverts it back out into the ocean. This is known within the industry as "pump and dump". How does the consultant and the PUC justify an obvious violation of State law by not adhering to the beneficial use concepts of State law? Please provide the analysis and study documents prepared in conjunction with this EIR\EIS to justify said process.

Selfridge3-6

FACT: Much of the water being "pumped and dumped" is coming from contiguous land owners, all of whom possess prescriptive water rights to said water. One of those land owners is the Agland Trust, who purchased the land for agricultural perpetuity 30+ years ago. The land was purchased with a grant from the United States government, specifically the Department of Agriculture. One of the tenets of the purchase was that the land stay permanently agriculture and that all assets of the property, **including its water**, be used only for the said purpose. The potential penalty, per the documents, if violating any of the provisions was reversion of the

property back to the Federal Government. (Please see the attached purchase documents with the reversion language therein)

QUESTION: Much of the water "pumped and dumped", by the Cal Am test slant well belongs to the Agland Trust. Did the consultant communicate with the owners of the Agland Trust property prior to the start of pumping to determine the existence of any such restrictions? Did the consultant communicate with the United States Department of Agriculture prior to the start of the test slant well to determine if use of their potential asset was agreeable to them? Has the consultant considered the potential negative conversion impacts to the Agland Trust in the event the Federal government exercises its rights under the initial contract? Please provide the documentation that must surely exist, that shows the inappropriate theft of Federal property by Cal Am was preapproved by the United State government.

Selfridge3-6 cont.

Each and every one of my questions, criticisms and observations incorporated herein constitute significant unmitigated adverse impacts as defined by CEQA, and these deficiencies in the draft EIR\EIS cause the EIR\EIS to be defective and not in compliance with the mandates of CEQA and NEPA. Further, the significant adverse impacts and deficiencies, which have largely been ignored by the preparers of the EIR\EIS, cause the document to need to be significantly revised and recirculated so as to avoid damaging both the environmental and natural resources of Monterey County and the individual property rights of innocent land owners who have not received the statutory (CEQA) mandated mailed notice inasmuch as their groundwater resources are now being proposed to be stolen by Cal Am.

Selfridge3-7

Failure to make these necessary and legally required revisions, and to identify and mitigate these significant adverse impacts will cause this EIR\EIS to be defective and subject to successful challenge in Court.

Please see attached data for your reference.

Sincerely,

Nancy Selfridge

Nancy Selfridge
Former Member Monterey City Council
Board Member Water Ratepayers of the Monterey Peninsula (WRAMP)

Full copy CC: Maryjo.Borak@cpuc.ca.gov
Karen.Grimmer@noaa.gov

8.7.23 Jan Shriner

These comments are sent to the CPUC by me as a resident of Marina. I am also a Director of the Board of Marina Coast Water District and these comments are not authorized by the Board but submitted as an individual resident of Marina.

March 28, 2017

The first of the slant wells was called a "test" well and proposal received scant environmental written review as if it would be removed when test was complete. The definition of the completion was vague but a target date of February 2018 is specified on page 155 in project description section 3.2. Shriner-1

Annual erosion rate of 2014 in the coastline of Cemex nearly doubled from 220,000 to 380,000 cubic yards in 2016 according to analysis by Ed Thornton and reported in the Monterey Herald. State Parks uses a 7 feet per year estimate in planning. On page 374 of Appendix C-2 of the Draft EIR it states the erosion data was
provided by California American Water Company (Cal Am). Shriner-2

The projected loss due to erosion for Potrero Road is 120 feet and the Cemex location of 300 feet for 2060. Based on this projection, the calculated erosion rates of 2.5 feet per year at Potrero and 6.4 feet per year at Cemex between 2014 and 2060. In the public workshop in Seaside on February 15, 2017, no one would tell me what erosion rate was used in the study for the draft EIR. Shriner-3

The "test" well is now proposed to be left in its location but the other proposed 9 slant wells to be located 800’ inland of shoreline at an angle of 14 degrees off horizontal rather than 19 degrees as is the "test." The test is to remain about 400' seaward of the new wells. The panorama photo, attached, shows the test well (blue pipe in right side of photo, next to vertical yellow posts) to be within 300’ inland of the intertidal at an elevation of about 15 feet. The current situation is flatter and closer than the DEIR states, suggesting that the test slant well needs to be removed before 2018 during a season when Snowy Plover nests will not be impacted by the removal activity. Shriner-4

The Figures 4.2 7 and 8 are compressed to exaggerate the angles and mislead the public. The well head is within 30 feet in elevation from the intertidal zone. The vertical and horizontal axes in the figures are shown to be in feet but the scale being an order of magnitude different is misleading. Shriner-5

Page 4.2-70 at the top of the page explains "The coastal retreat study determined that under a conservative predicted erosion rate and considering the additional scour caused by a 100-year storm event in that time horizon, the proposed slant wells would remain buried in the dunes and would not become exposed on the beach until sometime after 2060."

"According to the evaluation criteria for coastal erosion (see Section 4.2.4, Evaluation Criteria above), the proposed project would cause a significant impact if it accelerated and/or exacerbated natural rates of coastal erosion, scour, or dune retreat resulting in substantial adverse change in the coastal environment. The proposed slant wells would not be exposed during the operational life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to Shriner-6

further coastal erosion or changes in the beach environment. Therefore, the proposed location of the proposed slant wells would not represent a potential erosion hazard and would not contribute to a significant impact of the proposed project."

"Given the test slant well's forward location on the beach at the estimated 2060 future 100-year storm coastal erosion profile and lower profile envelope, it is possible that the well casings and concrete well head vault might become exposed on the beach sometime during the operational life of the project. If exposed, the subsurface slant well could contribute to accelerated and/or exacerbated natural rates of coastal erosion, scour, and dune retreat that could alter the natural coastal environment."

The following two statements are alarming due to the impact on a local business. CEMEX sand mining is a questionable business practice but so is the questionable or illegal business of over-pumping the Carmel River. It appears that the Cal Am would like CEMEX to eliminate sand mining in favor of two alternatives for a project area. Due to cumulative impacts by sand mine and test slant well, the alternates off Cemex properties more feasible. Page 147 states: "the subsurface slant wells would be located in the City of Marina, about 2 miles south of the Salinas River, in the retired mining area of the CEMEX sand mining facility (see Figure 3-3a)." Page 374 states ..."interventions may change shore recession." There are no real cumulative impact evaluations because Cal Am is trying to eliminate the existing business or pretend it will no longer exist instead of revealing the cumulative impacts.

Shriner-6 cont.

I have looked at Figure 5.1 for the modeling of the sea level rise for 2073. The problem is that the difference in scale makes this figure difficult to compare with the schematics of Figure 3-13 but it appears the sea level rise is expected to impact the Cemex site more severely than the Potrero Road site. The Figure 5.1 of Appendix E-2, page 377 needs to be revised to the same scale as Figure 3-13 for the final EIR to clarify the projected coastal contour at the site. Add a section modeling sediment transport and projected impacts to function of screens and pumps with anticipated seafloor modification, to determine if intakes be exposed or develop greater depth in sand than initial engineering.

When the possibility exists of losing 300 feet of coastline that is reportedly 30 feet above the Mean High Water (MHW) then at the same time create a model of the new corresponding bottom contour and depth in the sand of the intake pipes. If the test well is to remain in place, modeling is needed for the eventual exposure of the test slant well cumulative impacts to coastal erosion in the project site in comparison to the alternatives without a test well. Expand on cumulative impacts terrestrial section for best and worst case scenarios. Expand on terrestrial impacts section for mitigation of 300 feet for half mile of loss to dunes habitat.

Cumulative impacts to the location should describe the additional impacts with the sediment ponds and MRWPCA outfall as well as the proposed MCWD desalination project. Cumulative impacts need to include projected reconstruction of multiple sets of slant wells over the anticipated operational life of the desalination project. The projections require far more construction and reconstruction impacts than currently described and mitigated by this analysis.

Cumulative impacts of the components of the project should not include The Monterey Downs as MPWSP is designed only as replacement water for The Carmel River and MCWD would have been the water purveyor for Monterey Downs. The inclusion of Monterey Downs is now moot as it is currently retired due to inadequate support. Shriner-7

The Draft EIR has not made the modeling assumptions and graphic representations clear. On February 15, members of the public were invited to ask questions of the "experts." The implication for the public was that reasonable and detailed answers would be made in response to the questions. I found the experts to be quite defensive and the most valuable answers were about which section numbers and appendices numbers would narrow my search. Hovering at the tables was the Project Manager of the proponent who was actually quite condescending in regards to the question "what is the erosion rate used in the modeling?" His behavior was unnecessarily hostile for the public process and made me concerned that the CPUC experts were being monitored and intimidated by the employees of Cal Am. Shriner-8

I suppose the pumping history of Fort Ord and reduction of rate is not relevant if the appearance of a localized pressure head of the freshwater is fantasy as CPUC scientists told me at the Oldemeyer workshop of February 15. Otherwise, I believe the history is relevant to the groundwater management of the Dune Sands and 180 Equivalent aquifers. I have not been offered any reasons yet for why the CPUC scientists can't verify the evidence of the recovery efforts and reduced total dissolved solids in the preliminary well pumping data. Shriner-9

Please extend the public comment time for a more thorough investigation into the assumptions, cumulative impacts, and modeling. Shriner-10

The alternatives have not yet been given adequate review. Shriner-11

The scientists of the San Francisco office of the CPUC have not been adequately open to the peer reviewed science of other experts. Shriner-12

Jan Shriner
Marina Resident

8.7.24 Roy Thomas

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Mary Jo Borak
Energy Division CEQA Unit 505 Van Ness Ave

The public was informed the desalination (desal) project would save the Carmel River. The California American Water (CalAm) Water Supply Project draft environmental impact report and environmental impact statement say nothing about how this project will impact the Carmel River and ESA listed fish and frogs. There will be two new ASR wells ASR 5 and ASR 6. Will these be used to store more water from the Carmel River? What are the effects on the Carmel River? Cal Am diversion wells are deep wells and it takes time for surface water to percolate to the deep zones. How long is surface flow reduced until the deep deficit is restored? Thomas-1 Thomas-2 Thomas-3

There is a plan for a new Carmel Valley Pumping Station. How much water and when will it be pumped from the river. Thomas-4

I have heard that Cal Am will take its water from desal and ASR in the summer and take Carmel River in the winter. Is this the case? Thomas-5

How will the new project improve the spring, summer, and fall flow on the Carmel River? Thomas-6

There are two 3 million gallon tanks 33 ft. diameter x 130 ft. tall as described in the EIR. What is the water source for these tanks? It appears to be related to the Carmel Valley pumping station. Thomas-7

There is no explanation of how and when project water will be used. Thomas-8

There is no discussion on how the project will affect the Carmel River environment Section 7.1.1, mentions the ESA but does not discuss the “take” of steelhead and their environment. It also mentions in 7.1.2 the Mag-Stevens Fish Conservation Essential Habitat but does not explain what, if anything, the project will do; help or destroy essential habitat. Thomas-9

Cal Am: Monterey Peninsula water supply Project (Cont)

There is a mention of 700 AFY to be added and left in the Seaside groundwater basin. This "Payback" would amount to 17.500 AF over 25 years. Is any or all of this water coming from the Carmel River what are the environmental effects of this? What is the lag time for percolation into the deep extraction well on the Carmel River? The Carmel River has been flowing now for over 4 months. The flow at Robles Del Rio gage is

Thomas-10

1000 cubic ft. per second (CFS), the lower Carmel River gage) is 722 CFS. There are 3 major tributaries between these two gages. The lower gage should read much higher flow than the upper gage. The 3-400 CFS is water still percolating into the ground from the overdraft. It takes time for the surface flow to make up for pumping deep wells. If Cal Am pumps "excess flow" during the winter it may well reduce essential surface flow in spring and summer. ASR water should only be extracted from the surface flow, not deep wells.

Thomas-11

The public has been told that desal ASR and recycled water will reduce the use of Carmel river water in the summer. The EIR does not say how much and when. In the spring maximum surface flow is very important. This is when the fish and the frogs hatch and spread out on the river. Edge habitat is extremely important for the young of the year.

Thomas-12

Why is there an interconnect for Ryan Ranch – Bishop? Are they allowed Carmel water, are they paying for this project?

What about Main System – Hidden Hills interconnect improvements. Are they paying project expenses, are they allowed to use Carmel river water?

Thomas-13

An EIR is about environmental impacts on a project. The environmental impacts on the Carmel River and its ESA listed Fish and Frogs are not addressed.

Thomas-14

8.7.1 Responses to Comments from Michael Baer

Baer-1 A lead agency is required to recirculate an EIR when significant new information is added after the release of the draft, but prior to certification. CEQA Guidelines Section 15088.5 provides guidance on what might constitute significant new information and notes that recirculation is not required where the new information merely clarifies or amplifies, or makes insignificant modifications in an adequate EIR. Nothing in this comment letter or the associated responses triggers a need for recirculation per CEQA Guidelines Section 15088.5. Master Response 9, Electrical Resistivity Tomography (ERT), provides supplemental information and further clarification on ERT and its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, provides a discussion of the evolving slant well technology. Not only has source water intake technology evolved over the past several years, but so have the regulations governing intake systems. EIR/EIS Section 5.3.1 presents regulatory considerations that govern desalination plant intake systems and Section 5.3.1.1 specifically states that, "The [State Water Resources Control Board] SWRCB prefers subsurface intakes, but allows surface water intakes where subsurface intakes are not feasible or economically viable (SWRCB, 2016)." Section 5.4 describes and Section 5.5 evaluates several alternatives (Alternatives 2, 3, and 4) with open water intake systems. Please see responses to comments that follow.

Baer-2 Consistent with CEQA Guidelines Section 15147, the information contained in the EIR/EIS included summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR was avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR/EIS. Additional clarifying language has been added throughout the EIR/EIS, and via responses to comments, to help break down some of the more difficult concepts. While these clarifying descriptions are intended to further assist the public in understanding technical concepts, they do not change the conclusions of the EIR/EIS.

Baer-3 The Draft EIR/EIS explains in Section 1.3 that the MPWSP is needed to reduce and eventually terminate surface water diversions from the Carmel River in excess of CalAm's legal right, and to comply with the Seaside Groundwater Basin adjudication which substantially reduced the amount of groundwater available to CalAm. Details of SWRCB Order 95-10 and the associated Cease and Desist Order on the Carmel River are presented in Draft EIR/EIS Section 2.2.3. Details about the Seaside Groundwater Basin Adjudication are presented in Draft EIR/EIS Section 2.2.4.

Baer-4 See Master Response 3, Water Rights, Section 8.2.3.2.

Baer-5 The data from the test slant well is collected by staff from Geoscience (CalAm's contractor), and not by the Hydrogeologic Working Group (HWG). Data from the test

slant well is presented to the HWG members for their peer review, interpretation and reporting. The EIR/EIS did not evaluate the impacts of the test slant well and made no conclusions about the impact of the test slant well on the surrounding groundwater. The EIR/EIS evaluated potential impacts associated with the proposed conversion of the test slant well to a production well, including analysis of the potential impacts on groundwater supplies and/or recharge from operation of all project wells (converted and new production wells), in Impact 4.4-3. Such impacts were determined to be less than significant.

Baer-6 Regarding the parties to the August 2013 Settlement Agreement that established the HWG, see Section 8.2.5.1 of Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS. As noted in the comment, CalAm, along with the other parties, "agreed their hydrologist and technical team would work with the Salinas Valley Water Coalition's and Monterey County Farm Bureau's assigned hydrogeologists." Thus, this group of hydrogeologists is considered to represent the diverse interests of the 16 parties to the Settlement Agreement, who agreed to this representation. Neither CPUC nor MBNMS convened the HWG or determined its membership.

Baer-7 Regarding the role of Dr. Dennis Williams and potential conflicts of interest, see Master Response 5, Section 8.2.5.6.

Baer-8 The conflict of interest was discussed in the Draft EIR/EIS Executive Summary Section ES.8 on page ES-14, and again in Section 1.4.3. More detail is provided in Master Response 5, Section 8.2.5.6.

Baer-9 As noted in the Draft EIR/EIS Section 1.4.3, in July 2015, the CPUC terminated its relationship with Geoscience and "the CPUC Energy Division extended the public comment period on the [April 2015 MPWSP] Draft EIR … to address a possible conflict of interest associated with one of the CPUC's environmental subconsultants, Geoscience." See responses to comments PWN2-2 in Section 8.6.17, Baer-5, Baer-6, and Master Response 5, Section 8.2.5.6.

Baer-10 See response to comment Baer-6 and Master Response 5, Section 8.2.5.3.

Baer-11 See Master Response 5, Section 8.2.5.6. Note that the Lead Agencies have no authority over the HWG membership.

Baer-12 The reference to Section 4.4.3.2 has been revised to read 4.4.4. Section 4.4.4, titled "Approach to Analysis" as was noted in the footnote on Draft EIR/EIS page 4.4-4, does discuss the HWG.

Baer-13 The HWG did not contribute directly to the preparation of the Draft EIR/EIS. They were a resource to the Lead Agencies as explained in Master Response 5, Sections 8.2.5.4 and 8.2.5.5.

Baer-14 See Section 8.2.11.2 of Master Response 11, CalAm Test Slant Well.

Baer-15 The comment is not correct. The appeal was filed because pursuant to the California Coastal Act Section 30603(a)(5), the CCC may hear an appeal of a local agency denial of a permit for a major public works project. See Master Response 11, Section 8.2.11.2.

Baer-16 The comment incorrectly states that the decommissioning of the test slant well "was a contingency of avoiding the EIR process." See Master Response 11, Section 8.2.11.7.

Baer-17 See Master Response 11, Section 8.2.11.4, regarding baseline levels and compliance with Special Condition 11. The Executive Director of the CCC (Charles F. Lester) informed CalAm that the water level decrease appeared to be caused in part by the pump test and acknowledged that based on the data, several influences other than pumping of the test slant well were responsible for the decrease. See also Master Response 11, Section 8.2.11.5, regarding the influence of regional pumping.

Baer-18 Inflows to and outflows from the Salinas Valley Groundwater Basin are discussed in Draft EIR Section 4.4 on page 4.4-19, and in Table 4.4-3. One of the sources listed for the table is MCWRA, 2015, which is the 2014 Groundwater Extraction Report for Monterey County. The HWG established seasonal and regional trends in a July 23, 2015 letter to Charles Lester (HWG, 2015).

Baer-19 The publicly available HWG-prepared Monthly Test Slant Well Monitoring Reports (https://www.watersupplyproject.org/test-well) include rainfall events as blue bars on each of the groundwater elevation and salinity plots. As explained in Master Response 5, Section 8.2.5.4, the HWG prepared the Hydrogeologic Investigation Workplan and the Hydrogeologic Investigation Technical Report; the latter is included in the Final EIR/EIS as Appendix E3. Section 2.1.7.4 of Appendix E3 presents test slant well electrical conductivity results and explains the relationship between precipitation events and how they impact groundwater and TDS levels in the test slant well and monitoring wells.

Baer-20 See Master Response 11 Section 8.2.11.4, which discusses the April 15, 2015 report titled *Baseline Water and Total Dissolved Solids Levels* prepared by the HWG.

Baer-21 See responses to comments Baer-18 through Baer-20.

Baer-22 This comment misrepresents the text from page 11 in Section 5.3.2 of HWG Monthly Report 15. The text in HWG Monthly Report 15 states, "Figure 3-3 shows conductivity in MW-4M is slightly increasing continuously with time, for the monitoring period from April 22, 2015 to January 31, 2017. The consistent slight rise in TDS shows no change with TSW [test slant well] pumping and is strongly indicative of a regional trend in TDS concentration. ...The regional very slight increase in conductivity may be indicative of continued slow progress of seawater intrusion due to the continued landward groundwater gradient in the aquifer penetrated by MW-4M." See responses to comments Baer-18 through Baer-20 and also Baer-24.

Baer-23 The historic seawater intrusion maps of the 180-Foot and 400-Foot Aquifers cited in the comment (Draft EIR/EIS Figures 4.4-10 and 4.4-11) are prepared annually by MCWRA (see EIR/EIS Sections 2.6.3 and 4.4.2.3). MCWRA defines the leading edge of inland seawater intrusion as groundwater containing TDS at 500mg/L or more. Regarding baseline conditions, see responses to comments Baer-18 through Baer-20.

Baer-24 The Lead Agencies do not prepare the HWG Monthly Reports, and are not responsible for how terms are defined. However, the phrase "regional slightly increasing trend" is not used anywhere in HWG Monthly Report 15, Section 5.3.2; see response to comment Baer- 22. The HWG Monthly Report 15 does state that ". . . conductivity in MW-4M is slightly increasing **continuously with time** [emphasis added], for the monitoring period from April 22, 2015 to January 31, 2017." While Table 2 does in fact show an increase of 29 percent over 21 months, that represents a slight increase (continuously with time) of about 1.4 percent per month.

Baer-25 The Lead Agencies acknowledge receipt of comments submitted to the CCC on or about February 2015. The Lead Agencies do not direct the HWG, nor can they compel the CCC to respond to the commenter's questions directed to Tom Luster. Further, the Lead Agencies do not possess the information to respond to these questions directly, nor would such responses be within the scope of this EIR/EIS.

Baer-26 Source water ocean intake technology has evolved over the past several years, as noted in response to comment Baer-1. See Master Response 11, Section 8.2.11.8 for a discussion of slant well technology. As described therein, the loss of well efficiency at the Doheny Test Slant Well (aka Dana Point) was expected due to the inability to fully develop the well during construction. The report cited by the comment is referenced in the EIR/EIS Section 4.4 as Geoscience, 2012.

Baer-27 This comment is not correct; see Master Response 11, Section 8.2.11.8 and response to comment Baer-26.

Baer-28 See Master Response 11 regarding the long-term pump test results and use of test slant well data in the Draft EIR/EIS. The comment references "slant well performance expectations." The Draft EIR/EIS did rely on observed, reported data from the test slant well monthly reports as described in Master Response 11 Section 8.2.11.6. "Expectations" or projections of future test slant well results not yet reported as of publication of the Draft EIR/EIS would have been speculative; however, because the reported results informed the revised groundwater model, the Draft EIR/EIS did incorporate modeled projections of MPWSP pumping results that were based in part on test well data. See, e.g., Draft EIR/EIS pages 2-34 ("Test slant well pumping and monitoring data was used to refine the aquifer properties represented in the revised version of the groundwater model…") and 4.4-42 ("The results have been used to refine the groundwater models and inform the analysis of the proposed project.")

Baer-29 Reporting of the test slant well performance was a condition of the CDP and those publicly available reports were filed with the CCC in compliance with Special Condition 11. The table does not include the interruptions from 2015 because those events are described in the text that precedes the table. See also Master Response 11, Section 8.2.11.5. Test slant well performance has been a topic in the CPUC proceeding and will be taken into consideration during the decision-making process (see EIR/EIS Section 1.5.4.1). In addition, test slant well data is discussed further in Master Response 11, which is part of the Final EIR/EIS. See also response to comment Baer-19 and Final EIR/EIS Appendix E3, Section 3.4, wherein the HWG summarizes the results of the 2.5-year slant well pumping test.

Baer-30 Power interruptions accounted for 19 days of test slant well outages over the two-year (730-day) period between April 2015 and April 2017. EIR/EIS Section 3.2.5 describes the proposed project electrical power facilities and states that "new underground and aboveground power lines would be installed at the CEMEX active mining area" as well as new electrical control cabinets for more reliable electric service to avoid these types of power outages (see Draft EIR/EIS page 3-44). As described in Section 3.2.2.2, "CalAm would install a 750-kilowatt (kW) (1,000 hp) emergency diesel fuel-powered generator and a 2,000-gallon, double-walled, aboveground diesel storage tank next to the [RO] process building. The generator would provide backup power for critical desalination plant facilities (e.g., lights, electrical controls, and high-service pumps to empty the clearwells) during power outages." (see Draft EIR/EIS page 3-26). In the event of an extended outage, CalAm would rely on its other supply sources including the Carmel River, Seaside Basin groundwater, the Sand City Desalination Plant, and Carmel River and desalinated water that have been stored in ASR. See also Section 3.4.1, Table 3-7, which discusses recovery operations of the desalination plant following a shut-down.

Baer-31 As stated in EIR/EIS Section 4.3.5.4, Impact 4.3-6, because slant well maintenance activities would be considered a "land disturbance activity" the Construction General Permit would apply and require the contractor to prepare a SWPPP that includes specific measures to manage pollutants generated during maintenance activities. Pollutants could include those generated from equipment fueling and storage, inadvertent releases of toxic chemicals (i.e., solvents or oxidizers), if used, and discharges of cleaning effluent. Sediment is also a concern as it could contain well cleaning chemicals, but, it also could be released to the waters of the Monterey Bay, locally increasing the sediment load and degrading the visual quality of the water. The Construction General Permit does not permit sediment to be released into surface water bodies.

Baer-32 See response to comment Baer-31. Environmentally inert refers to substances that are not reactive with soil, water, and air. Properly used, environmentally inert cleaning agents have been successful in cleaning well screens. The test slant well has been cleaned using standard well cleaning procedures with no issues.

Baer-33 As the slant well design for groundwater wells is adapted from the technology that has been employed in the oil industry for many years, products and procedures to maintain these large extraction wells have long been established and successful. The well cleaning procedures are described in Master Response 11, Section 8.2.11.9.

References

Hydrogeologic Working Group (HWG), 2015. Letter to Charles Lester, California Coastal Commission, July 23.

8.7.2 Responses to Comments from David Beech – Letters 1 through 6

8.7.2.1 Responses to Comments from David Beech – Letter 1

Beech1-1 See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2 and 8.2.11.3. Regarding Special Conditions 6 and 17 of the CDP, which address decommissioning of the test slant well and posting a bond to ensure that it is carried out, see response to comment MCWD-80 in Section 8.5.2.

Beech1-2 See Master Response 11, Section 8.2.11.7.

Beech1-3 See Master Response 11, Section 8.2.11.2.

Beech1-4 See Master Response 11, Section 8.2.11.2.

Beech1-5 The operation of the test slant well pursuant to its existing permits is outside the scope of this EIR/EIS; therefore, this comment does not address the Draft EIR/EIS. The Lead Agencies do not manage the test slant well and thus do not have data in response to the commenter's question.

Beech1-6 See response to comment Cech-11 in Section 8.7.6, and Master Response 11, Section 8.2.11.5.

Beech1-7 See Master Response 11, Section 8.2.11.7.

Beech1-8 As explained in the EIR/EIS in Section 3.1, the test slant well is now permitted to operate until February 2019 and it is not part of the Proposed Project being evaluated in this EIR/EIS. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be removed. The CPUC, as the CEQA Lead Agency for the MPWSP EIR/EIS, does not have jurisdiction over the test slant well, nor the terms and conditions of the CDP issued by the CCC. See Master Response 11.

Beech1-9 This comment does not address the adequacy or accuracy of the Draft EIR/EIS.

Beech1-10 The Lead Agencies acknowledge receipt of the commenter's letter to Mr. Traylor at the CCC Enforcement Office. The Lead Agencies do not have jurisdiction over the CCC or the terms and conditions of the CDP issued by the CCC. See also Master Response 11.

Beech1-11 See Master Response 11, Sections 8.2.11.2, 8.2.11.3 and 8.2.11.7.

8.7.2.2 Responses to Comments from David Beech – Letter 2

Beech2-1 As noted in EIR/EIR Appendix I1, "Subsurface intakes . . . collect source water through the ocean bottom and coastal aquifer sediments." Footnote 4 in Draft EIR/EIS Section 1.3.2.1 states, ". . . The proposed slant wells would draw ocean water through the seafloor sediments, which would pre-filter the seawater for use at the desalination plant." See Master Response 2, Source Water Components and Definitions, Master Response 11, Section 8.2.11.5, as well as response to comments PWN2-52 in Section 8.6.17, and Coppernoll-36 in Section 8.7.8.

Beech2-2 See Master Response 8, Project Source Water and Seawater Intrusion. Also see response to comment Cech-4 in Section 8.7.6, regarding the position of the slant well screens.

Beech2-3 The EIR/EIS indicates that proposed slant wells would extract primarily seawater and a smaller volume of brackish inland groundwater, and evaluates the impacts of this proposed source water intake. See Master Response 8.

Beech2-4 The performance and reliability of vertical wells are well known. They would penetrate the same aquifer units as the proposed slant wells and would be located the same distance inland from Mean High Water because of the effects of coastal erosion. As explained in EIR/EIS Appendix I1, at least 24 vertical wells would be needed over a linear distance of at least one mile to provide the 24.1 mgd of source water required for the MPWSP; alternative subsurface intakes would result in a smaller construction and operational footprint than vertical wells. Therefore, vertical wells were considered infeasible for the MPWSP, both from a construction and operation perspective and in terms of economic, legal (permitting), and environmental factors.

Beech2-5 See Master Response 11, Section 8.2.11.8, which addresses comments about the evolving slant well technology.

As explained in EIR/EIS Appendix I1, to be screened in the Dune Sands and 180-FTE Aquifers, a vertical well at the CEMEX location would have to be drilled to about 200 feet deep to avoid penetrating the Salinas Valley Aquitard; the well screens could not be any longer than the 200 feet, minus any allowance for the non-screened portions of the well casing. Vertical wells have a yield of between 0.1 and 1.5 mgd. The proposed slant wells, on the other hand, would be screened for approximately 400 to 800 feet and like the test slant well, would pump approximately 2,000 gpm, or about 3 mgd. Therefore, vertical wells do not have the same output as slant wells.

Beech2-6 See response to comment Beech2-5.

Beech2-7 EIR/EIS Table 3-2 presents the lengths of permanent slant wells seaward of mean high water (MHW) line. Mean High Water was mapped because it delineates

MBNMS jurisdiction; Mean Low Water has not been mapped. The term "offshore" is used in the table to identify lengths within MBNMS.

Beech2-8 See Master Response 11, Section 8.2.11.9.

Beech2-9 Assumptions are explained in the footnotes to EIR/EIS Table 3-2, and are further explained in EIR/EIS Appendix C2, Analysis of Historic and Future Coastal Erosion with Sea Level Rise.

Beech2-10 Draft EIR/EIS Figure 3-3a on page 3-13 is true-to-scale and shows the wells within the City of Marina, as well as extending beyond MWH 2020, which puts them within MBNMS jurisdiction.

Beech2-11 The well screens will be at depths corresponding to the Dune Sand and the 180-FTE Aquifers. Ocean water and a small percentage of seawater-intruded groundwater that originated in the Salinas Valley Groundwater Basin would be drawn through these aquifer units as source water. See also Master Response 8.

Beech2-12 See Master Response 11, Sections 8.2.11.9 and 8.2.11.5.

Beech2-13 The proposed project includes a permanent connection to the outfall, which will eliminate outages from storm events, and new electrical control boxes for more reliable electric service to avoid these types of power outages. See also Master Response 11.

Beech2-14 See Master Response 11, Section 8.2.11.9.

Beech2-15 Only minor design changes would be allowed without a further discretionary approval process and any such process could trigger additional NEPA or CEQA review. CEQA Guidelines Sections 15162 through 15164 describe the circumstances under which further CEQA review is required after an EIR has been certified, and the extent of such review. Similarly, NEPA at 40 CFR 1502.9(c) describes the responsibility of agencies to prepare supplements to environmental impact statements if substantial changes in the proposed action are made that are relevant to environmental concerns. In the event that CalAm proposes changes to the project after completion of the CEQA and NEPA evaluation processes, the Lead Agencies will fulfill their responsibilities pursuant to these requirements.

Beech2-16 The EIR/EIS analyzes the effects of the totality of the proposed project's production wells (as described in EIR/EIS Section 3.2.1.1) throughout the EIR/EIS, and not as a cumulative scenario. The 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) was used to simulate the impacts of the proposed project pumping. See EIR/EIS Section 4.4.4.2 and Appendix E2 regarding the groundwater model and methodology.

Beech2-17 The existing Begonia Iron Removal Plant (BIRP), with a throttling valve at Valley Greens, currently provides the pressure for the water to reach the Segunda Reservoir. If the MPWSP were operating and the lower Carmel River wells were not, there would only be a minimal maintenance flow going through the BIRP. At this low flow, the Carmel Valley Pump Station would be necessary to boost water up to Segunda Reservoir.

Beech2-18 The MPWMD, as the Lead Agency for the Monterey Pipeline CEQA review, determined that an Addendum was the appropriate CEQA document to prepare. The Lead Agencies for the MPWSP EIR/EIS do not have jurisdiction over the MPWMD. This comment does not address the adequacy or accuracy of the MPWSP Draft EIR/EIS.

Beech2-19 Master Response 2 addresses the topic of water rights. This comment does not address the adequacy or accuracy of the Draft EIR/EIS. The Lead Agencies do not take a position in this EIR/EIS regarding cost recovery.

8.7.2.3 Responses to Comments from David Beech – Letter 3

Beech3-1 The 2011 RBF report was prepared for CalAm, it was a preliminary review of potential alternatives to the Coastal Water Project (and the Regional Project) at that time, and it was not used in the EIR/EIS. The 2011 RBF report concludes that "the next step is to complete an assessment of the permitting and schedule impact for each alternative. This will be presented in a subsequent technical memorandum at which point a final recommendation as to the most attractive alternate or alternates can be determined." The Lead Agencies have not seen the final recommendation but it appears as though CalAm considered the RBF recommendation in its preparation of the project description included in its application for the MPWSP that was submitted to the CPUC on April 23, 2012.

The evaluation of alternatives in Chapter 5 of the EIR/EIS includes a reasonable range of alternatives to the proposed MPWSP that meets the requirements of both CEQA and NEPA. One of the documents considered in the alternatives analysis was the January 9, 2013 memo prepared by RBF titled *Memorandum: Contingency Planning for the MPWSP (Update of November, 1, 2012 TM)* and cited in the Draft EIR/EIS as RBF, 2013 (see Draft EIR/EIS page 5.3-5).

The RBF-conceived Alternative 9 was based on the assumption that water rights could be obtained to divert significant amounts of water from either the Carmel River or the Salinas River in the winter months, for storage in the Seaside Groundwater Basin for extraction in the summer months. The alternative was described by RBF as including (but not being limited to) a separate intake and pumping station located at the existing Salinas River Diversion Facility Inflatable Dam, 4,000 feet of new 48-inch diameter pipeline to convey raw water to a new surface water treatment plant, and 16 new ASR wells in the Seaside Basin to inject and extract a long term average

of approximately 6,850 afy in the Seaside Groundwater Basin. EIR/EIS Section 5.2.3 discusses that it was previously determined the purchase of water rights from the Salinas River was fatally flawed and infeasible (see EIR/EIS Table 5.2-1 and also response to comment Beech3-3).

Beech3-2 Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenarios, describes the status of the DeepWater Desal Project and People's Project, as well as the communication among the Lead Agencies and proponents of these projects.

Beech3-3 The availability of winter runoff would not meet the peak month demands of CalAm's customers without significant storage. See response to comment Beech3-1. In 2010, the State Water Resources Control Board (SWRCB) issued a Notice of Proposed Revocation of Water Right Permit #11043,[1] asserting that the Monterey County Water Resources Agency (MCWRA) had "failed to commence, prosecute with due diligence and complete the work necessary to appropriate water under Permit #11043" (SWRCB, 2010). In 2013, the SWRCB approved a Settlement Agreement[2] that amended Water Right Permit #11043, reducing the face amount of the permit and setting forth required Salinas River bypass flows. In addition, the Settlement Agreement outlined a series of 12 milestones that MCWRA is required to meet in order to demonstrate progress towards implementing Phase II of the Salinas Valley Water Project (SVWP): a timely petition for extension of time was submitted to the SWRCB and a Notice of Preparation for the Salinas Valley Water Project Phase II Draft EIR was issued by July 1, 2014. However, a Draft EIR was not released by July 1, 2015; a draft financing plan was not issued by July 1, 2016; and a Final EIR was not certified by July 1, 2017. Therefore, several milestones within the Settlement Agreement have not been met and the future availability of water under Permit #11043 is extremely uncertain.

Beech3-4 The water provided under Permit #11043 would be for irrigation and municipal purposes within portions of Zone 2 of the MCWRA and would be an important part of the SVWP Phase II solution to seawater intrusion. However, since the SWQCB issued a Notice of Proposed Revocation of Water Right Permit #11043 in 2010, and since several annual milestones within the Settlement Agreement that amended Water Right #11043 have not been met, the future availability of water under Permit #11043 in Zone 2 is extremely uncertain (see response to comment Beech3-3). Therefore, since the SWRCB has proposed to revoke the permit, and MCWRA has failed to meet all but the first of 12 milestone cited in the Notice of Proposed Revocation of Water Right Permit #11043, the prognosis for refinements by the SWRCB to allow the water to be used outside of MCWRA's Zone 2 in the CalAm service area is extremely uncertain and not reasonably foreseeable or attainable.

1 Available online at http://www.co.monterey.ca.us/home/showdocument?id=19020
2 Available online at http://www.co.monterey.ca.us/home/showdocument?id=24248

Beech3-5 See responses to comments Beech3-3 and Beech3-4.

Beech3-6 The Interlake Tunnel project was considered and discussed in EIR/EIS Section 5.2.5.

Beech3-7 Source waters for Pure Water Monterey GWR will include stormwater, wastewater, food industry process water as well as impaired surface waters of the State. The SWRCB, not the Salinas Valley farmers, will determine the place of use of water from Permit #11043.

Beech3-8 If Salinas River surface water could be made available to CalAm (see responses to comments Beech3-3 and Beech 3-4), it would be less expensive to treat than seawater. The RBF 2011 report presumed, however, that Salinas River water would: 1) be of suitable quality that it would be possible to meet drinking water standards with membrane filtration treatment, and; 2) that regulatory or public concerns over water quality issues do not prevent Salinas River water from being stored in the Seaside Groundwater Basin. Both of these issues are currently uncertain (RBF, 2011). The delivery pipeline might be sharable, and the CA Department of Public Health, Division of Drinking Water, would need to make that determination.

Beech3-9 The Pure Water Monterey GWR Final EIR evaluated source water quantities in excess of the needs of that project in the event one or more sources may not be available. The availability of water under Permit #11043 for an expansion of GWR is extremely uncertain. See responses to comments Beech3-3 and Beech3-4.

Beech3-10 See responses to comments Beech3-3, Beech3-4, Beech3-8 and Beech3-9.

Beech3-11 The comment does not address the adequacy or accuracy of the Draft EIR/EIS.

Beech3-12 See responses to comments Beech3-1, Beech3-3, Beech3-4, Beech3-7, Beech3-8 and Beech3-9.

Beech3-13 "Plan C" as described in the comment is not much different than Alternative 5a or 5b (reduced-size desalination plant plus ASR and GWR), but for the unlikely addition of Salinas River ASR. See responses to comments Beech3-1, Beech3-3, Beech3-4, and Beech3-9.

Beech3-14 Both the DeepWater Desal Project and the People's Project are considered as alternatives to the proposed project, as defined in Chapter 5 of the EIR/EIS. This allows decision-makers to judge the options against each other, and to consider which option best meets the project objectives and minimizes environmental impacts. Master Response 15 describes the status of these projects, as well as the communication among the Lead Agencies and proponents of these projects. There is no specific requirement under either CEQA or NEPA to coordinate reviews of projects that share one or more project objectives. These projects are at different stages of development and have different lead agencies. For example, the CPUC is the CEQA Lead Agency

for the proposed project, but the Moss Landing Harbor District is the CEQA Lead Agency for the People's Project, and the State Lands Commission is the CEQA Lead Agency for the DeepWater Desal Project. CEQA and NEPA do contain requirements on timely preparation of CEQA and NEPA documents for a proposed project such that a lead agency could not readily delay analysis of a project because a competing project lagged behind in review. Furthermore, a basic objective of the MPWSP is to comply with state orders directing CalAm to secure a replacement water supply for certain water being taken from the Carmel River. The need to comply with such state legal requirements dictates against delaying a decision on the best option to select for CalAm to meet its customers' water needs.

Beech3-15 As described in EIR/EIS Section 1.5.2, the comment period for the MPWSP Draft EIR/EIS commenced on January 13, 2017, the date of publication. Draft EIR comment periods under CEQA are governed by CEQA Guidelines Section 15105. Draft EIS comment periods under NEPA are governed by NEPA implementing procedures at 40 CFR 1506.10(c). Proposals for other projects by other proponents do not affect the comment periods relevant to the MPWSP. See also response to Beech3-14, and Coppernoll-75 in Section 8.7.8.

Beech3-16 See responses to comments Beech3-14 and Beech3-15 and Master Response 15 regarding the status of environmental review of the DeepWater Desal Project and People's Project.

Beech3-17 No comments received on the Draft EIR/EIS have raised issues that would require recirculation of the Draft EIR/EIS.The Final EIR/EIS does not alter the significance conclusions reached in the Draft EIR/EIS or identify new and feasible alternatives or mitigation mesures to address significant effects, which alternatives or mitigation measures will not be incorporated into the project.

Beech3-18 See responses to comments Beech3-7 through Beech3-10.

Beech3-19 The Lead Agencies will take all comments into consideration in the decision-making process. See also EIR/EIS Section 1.5.4 and Master Response 15.

8.7.2.4 Responses to Comments from David Beech – Letter 4

Beech4-1 The representation of the test well in the EIR/EIS is not inconsistent with the CCC staff report that is provided as a link in the comment. The project purpose in the staff report is presented correctly by the commenter ("If the data collected from this proposed test well demonstrates that **this** well design and location would provide the necessary amount of water . . ."), and as a result of operating the test slant well, CalAm indeed revised this well configuration (design) at this location, as described in EIR/EIS Section 1.4.4. Furthermore, revising the representation of the test slant well's stated project purpose in the EIR/EIS would not change or alter any of the analysis or

conclusions of potential impacts associated with the conversion of the existing test slant well to a permanent production well. No change has been made to the text.

Beech4-2 The slant wells described in the EIR/EIS, Section 3.2.1.1 were used in the groundwater modeling scenarios presented in EIR/EIS Section 4.4 and in Appendix E2. See also Master Response 11, Section 8.2.11.9.

See Master Response 11, Sections 8.2.11.2 and 8.2.11.3, for a discussion of the CEQA/NEPA review of the test slant well. Footnote 2 has been revised accordingly in the Final EIR/EIS.

Beech4-3 As noted in response to comment Beech4-2, the footnote has been revised in the Final EIR/EIS. See Master Response 11, Section 8.2.11.2.

Beech4-4 The HWG was not established by the CPUC. See Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Sections 8.2.5.2, 8.2.5.3, and 8.2.5.6.

Beech4-5 The pump test was suspended in June 2015, in compliance with the CDP Special Condition 11. See Master Response 11, Section 8.2.11.5 for a discussion of the long-term pump test and the provisions of Special Condition 11 that required suspension of the test in response to specific monitoried conditions. The HWG provided the CCC with two analyses of groundwater elevations and TDS trends in the compliance monitoring wells, and demonstrated the influence of regional pumping. Also note that the water level in the monitoring wells continued to drop even when the test slant well was not operating. The CPUC does not have authority to review the monitoring well data, nor does it have authority over the HWG. The CPUC therefore, cannot compel that group to respond to the questions posed by the commenter to the CCC.

Beech4-6 This comment addresses the test slant well permits and is not a comment on the adequacy or accuracy of the MPWSP Draft EIR/EIS. As stated in the CCC staff report referenced by Beech4-1, “Cal-Am would use the test slant well to conduct a pumping and testing program over an approximately 24-month period . . .” The commenter is correct -- the CDP for the test slant well did not preclude voluntary interruption of testing.

The issue of ratepayer liability is outside the scope of the CEQA and NEPA; see response to comment PWN2-22 in Section 8.6.17.

Beech4-7 Regarding the feasibility of slant well technology, see Master Response 11, Section 8.2.11.8. Regarding ratepayer liability, see response to comment Beech4-6.

Beech4-8 See response to comment Beech4-6.

Beech4-9 An EIR/EIS does not recommend approval or disapproval of a proposed project. The basic purposes of CEQA, described in the CEQA Guidelines at Section 15000, are to:

(1) Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities.

(2) Identify the ways that environmental damage can be avoided or significantly reduced.

(3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.

(4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The purposes of NEPA are very similar. An EIR/EIS objectively evaluates the environmental effects of the proposed project and feasible alternatives to the project so that the decision-makers can take that information into account.

Beech4-10 The receipt of the January 17, 2016 letter to Dr. Charles Lester is acknowledged.

Beech4-11 The commenter is correct; the test slant well CDP Special Condition 11 was modified by the CCC to include taking regional trends into account when considering the test slant well's contribution to changes in water levels. Because, for example, water levels in some of the monitoring wells continued to drop while the test well was not pumping. But the commenter is not correct that each [monthly] report sets a new baseline; the CEQA/NEPA use of the baseline is not violated. See Master Response 11, Section 8.2.11.5, specifically Figure 8.2.11-1.

Beech4-12 This comment does not address the EIR/EIS. The Lead Agencies are not responsible for publishing the test slant well data. See EIR/EIS Appendix E2, Section 4.2, for how the test well data was used to calibrate the groundwater model.

Beech4-13 See response to comment Beech4-12.

8.7.2.5 Responses to Comments from David Beech – Letter 5

Beech5-1 The use of the EIR/EIS in decision making, specifically the CPUC and MBNMS processes, is explained in EIR/EIS Section 1.5.4. CPUC and MBNMS must complete the CEQA and NEPA processes, respectively, before taking action to consider approving the proposed project or an alternative.

Beech5-2 See responses to comments Beech3-1, Beech3-3, Beech3-4, Beech3-7, Beech3-8, Beech3-9, Beech3-10, and Beech5-1. The Lead Agencies will require publication of the Final EIR/EIS before any decisions are proposed by either Lead Agency.

Beech5-3 The Lead Agencies will require publication of the Final EIR/EIS before any decisions are proposed by either Lead Agency.

Beech5-4 Termination of a project would obviate the requirement to continue CEQA or NEPA work to evaluate the project. Here, the Lead Agencies will require publication of the Final EIR/EIS before any decisions are proposed by either Lead Agency.

Beech5-5 EIR/EIS Chapter 5 includes a suite of alternatives, and the decision-makers could select any one of them, or some combination of alternatives. See also response to comment Beech5-1 and Master Response 15.

Beech5-6 Nothing in the comments received on the EIR/EIS changes the conclusion of the environmentally superior alternative identified in EIR/EIS Section 5.6. See response to comment Beech5-2.

8.7.2.6 Responses to Comments from David Beech – Letter 6

Beech6-1 The comment does not address the adequacy or content of the environmental analysis in the Draft EIR/EIS.

References

RBF, 2011. Cost Analysis of Water Supply Alternatives. Prepared for California American Water, October 5.

State Water Resources Control Board (SWRCB), 2010. Notice of Proposed Revocation of Water Right Permit #11043t. Available online at http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/mcwra/010610mcwraproprevo.pdf

8.7.3 Responses to Comments from Kathy Biala

8.7.3.1 Responses to Comments from Kathy Biala – Letter 1

Biala1-1 Regarding the issue of seawater versus groundwater extraction, water rights, and harm, see Master Response 3, Water Rights, Section 8.2.3.5. Regarding all comments in this letter that quote the EIR/EIS as "CalAm's statement," please note that this EIR/EIS was prepared by the CPUC as the CEQA Lead Agency, and MBNMS as the NEPA Lead Agency and by independent consultants on behalf of these agencies, and not by CalAm, the project applicant. See Master Response 1, EIR/EIS Authorship.

Biala1-2 See Master Response 3, Water Rights, Section 8.2.3.2.

Biala1-3 The concept of "harm" as used in EIR/EIS Section 2.6 is specific to water rights; see Master Response 3, Water Rights, Section 8.2.3.5. Impacts on groundwater levels and groundwater quality are addressed as required by CEQA and NEPA in EIR/EIS Section 4.4. Groundwater drawdown in the Salinas Valley Groundwater Basin (SVGB), as calculated by the North Marina Groundwater Model v. 2016 ($NMGWM^{2016}$), is not dependent on relative volumes of freshwater originating in the Basin (the "Basin water" referred to in the quoted text) and seawater that are expected to be drawn into the supply wells. Accordingly, Master Response 12, The North Marina Groundwater Model (v. 2016), explains that $NMGWM^{2016}$ was employed to calculate the water level decline (drawdown) in response to proposed project pumping. Regarding the method of estimating the ocean water percentage (OWP) in project source water, see Master Response 4, Agency Act and Return Water, Section 8.2.4.3 and EIR/EIS Appendix E3.

Biala1-4 See Master Response 3, Water Rights, Section 8.2.3.3, as well as Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, regarding the Dana Point slant well at Doheny State Beach.

Biala1-5 The Lead Agencies' assertion (not CalAm's, see Master Response 1, EIR/EIS Authorship), that the water that would be extracted by the slant wells would be brackish, is because the sampled water drawn from the monitoring wells within the capture zone indicate the water is brackish. See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.2, and responses to comments MCWD-Hopkins Groundwater Consultant (HGC) in EIR/EIS Section 8.5.2.2. Note also that the HGC January 2016 memo cited in the comment refers to the modeling effort associated with the April 2015 Draft EIR, known as $NMGWM^{2015}$; that version of the model was updated for the January 2017 Draft EIR/EIS; see Master Response 12, The North Marina Groundwater Model (v. 2016).

Biala1-6 See Master Response 4, Agency Act and Return Water, Section 8.2.4.3, and EIR/EIS Appendix E3 for information regarding the calculation of the OWP; and Master Response 8, Project Source Water and Seawater Intrusion, for further information on

the groundwater quality of the slant well capture zone. When the Draft EIR/EIS was prepared, the estimate of the OWP in the source water was not finalized, but based on monitoring work at the test slant well, it appeared that the actual OWP necessary to gauge return water amounts would range between 0 and 12 percent. For example, the test slant well at CEMEX was extracting water that was reported to be in the range of 29,400 mg/L (see Table 3 in Geoscience, 2016a), or 12 percent of ocean water salinity (33,500 mg/L), suggesting 12 percent was a reasonable upper limit. EIR/EIS Section 2.6.2 has been revised to acknowledge, as discussed in Section 4.4, Groundwater Resources, that as a result of the data generated from the test slant well long-term pump test, the HWG estimates that the long term amount of fresh water within the source water (stabilizing over the first several years of project operation) would be between 1 and 4 percent. The water in the capture zone of the slant wells is currently brackish to saline, so it was reasonable to expect the feedwater would contain about 88 to 100 percent seawater. As discussed in EIR/EIS Impact 4.4-3, the groundwater modelers used these return water percentages to capture minimum, maximum, and mid-range estimates of return water volumes for purposes of projecting groundwater response.

Biala1-7 See Master Response 2, Source Water Components and Definitions, and Master Response 3Water Rights.

Biala1-8 See Master Response 4, The Agency Act and Return Water, and Master Response 3, Water Rights. The EIR/EIS does not assert that return water would benefit MCWD. Impacts on groundwater resources, both local and "regional" (to the extent that project impacts would extend beyond the slant well capture zone) are fully analyzed in EIR/EIS Section 4.4 and determined to be less than significant.

Biala1-9 See responses to comments MCWD-HGC in Section 8.5.2.2.

Biala1-10 See Master Response 2, Source Water Components and Definitions, and Master Response 3, Water Rights.

Biala1-11 CalAm monitoring well MW-7S, -7M and 7D all show signs of groundwater quality impacts by seawater intrusion. These wells range in Total Dissolved Solids (TDS) from 1,200 milligrams per liter (mg/L) in the shallow well to 26,700 mg/L in the deep well. Curtis Hopkins, in his January 2017 memo to MCWD, states that groundwater in monitoring wells MW-7S and MW-7M has a calcium chloride signature indicative of recharge from an overlying layer and not seawater. However, as explained in the responses to comments MCWD-HGC in Section 8.5.2.2, this is a mischaracterization of the data since a calcium chloride character suggests a cation exchange between sodium and calcium and is an indicator of incipient seawater intrusion.

The water quality data does not verify that the well is no longer "contaminated by seawater" and there is no historical record of data confirming the assertion that any or

all of the MW-7 wells are "no longer contaminated by high concentrations of seawater." While it has been demonstrated that "responsible curtailing of pumping results in decreases in seawater contamination," current efforts in the Marina Area to reduce pumping in the 180-Foot Aquifer and 400-Foot Aquifer would likely have a diminutive positive effect on decreasing seawater intrusion since the inland hydraulic gradient has been established for years and seawater continues to intrude inland. As discussed in Master Response 8, Project Source Water and Seawater Intrusion, the proposed pumping under the MPWSP would occur in a coastal-adjacent capture zone that receives recharge from the ocean, thereby capturing seawater that would otherwise migrate inland. As discussed in Impact 4.4-4, groundwater modeling and particle tracking shows that the MPWSP would not exacerbate seawater intrusion and would be expected to retard future inland migration of the seawater intrusion front.

Biala1-12 The EIR/EIS does not state that drawing fresh water in the future in any way determines CalAm's water rights; it does state that if the water in the underlying groundwater basin were to become fresher in the future, steps may need to be taken to ensure that no harm ensues to existing legal users of groundwater. See also Master Response 3, Water Rights.

Biala1-13 The hydrogeologic understanding that pumping 24.1 million gallons per day (mgd) of groundwater from a capture zone along the coast would retard future inland migration of seawater intrusion is not a theory but an expected outcome based on an understanding of the regional hydrogeology and the output of a groundwater model. The scientific evidence is contained in the results of an independent, validated physically-based groundwater flow model that has been calibrated using data from numerous soil borings and wells. The EIR/EIS Impact 4.4-4 and Appendix E2 explain how the groundwater model was used to project how groundwater would respond to the proposed pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), Sections 8.2.12.2 and 8.2.12.3, for more information on model construction and calibration. Also, see Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.4, which provide additional information on the capture zone and cone of depression that form in response to the proposed MPWSP pumping.

Biala1-14 The comment is noted and will be considered by decision-makers. But the comment is incorrect in that a 9.6 mgd and a 6.4 mgd desalination plant would extract 27,000 afy (24.1 mgd) and 17,360 afy (15.5 mgd) respectively, as source water. If CalAm's return water obligation was 6 percent (the mid-point evaluated in the EIR/EIS), CalAm would be required to return 1,620 afy or 1,042 afy, depending on the size of the desalination facility. See also Master Response 3, Water Rights, Section 8.2.3.6 and Master Response 4, Agency Act and Return Water, Section 8.2.4.3.

Biala1-15 See Master Response 2, Source Water Components and Definitions, and Master Response 3, Water Rights.

Biala1-16 The EIR/EIS clearly and repeatedly describes that the slant wells would draw water from the Dune Sand and 180-Foot Aquifers; see for example, EIR/EIS Table 3-1, "The slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant." See Section 4.4, Groundwater Resources, for an analysis of project impacts on groundwater resources. Also see Master Response 3, Water Rights.

Biala1-17 Impacts on groundwater resources, both local and "regional" (to the extent that project impacts would extend beyond the slant well capture zone) are fully analyzed in Section 4.4. See also Master Response 3, Water Rights, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Biala1-18 See response to comment Biala1-3. The text cited in the comment is from EIR/EIS Section 2.6, Water Rights, and the scientific data to support those claims are presented in EIR/EIS Section 4.4, Groundwater Resources, which is supported by Appendices B2, C1, C2, C3, E2 and E3.

Biala1-19 As stated in the EIR/EIS text quoted in the comment, "Given that the well pumps and the screens are set *at least tens of feet* below the existing groundwater level," (emphasis added), a drawdown of less than 5 feet would not affect these wells. See EIR/EIS Section 4.4, Groundwater Resources, concerning the expected project effects on local groundwater levels and wells. See Master Response 11, CalAm Test Slant Well, for information on the history and status of test well activities and results. The condition imposed on test slant well operations by the California Coastal Commission with respect to a water decline resulting from the test well (which is discussed in detail in Master Response 11) was not necessarily correlated to the water rights question of whether existing legal water users would be harmed by the project, nor was that condition of approval informed by the analysis (including groundwater modeling of project effects) contained in the EIR/EIS. Also, see Master Response 3, Water Rights.

Biala1-20 Conclusions in the EIR/EIS are supported by scientific study and evidence cited in the EIR/EIS and included in the administrative record; see responses to comments Biala1-13 and Biala1-18. See also Master Response 3, Water Rights.

Biala1-21 ERT/AEM provides a static image representing a point in time and does not, as the comment states, "provide a detailed record of changes in the aquifers." See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.3.

Biala1-22 See Master Response 3, Water Rights. In particular, see Section 8.2.3.2.

Biala1-23 See Master Response 11, CalAm Slant Test Well, concerning the status of data available from the test slant well. Test well data received to date have been used by the Lead Agencies to assess project feasibility and impacts on groundwater resources, and the Lead Agencies will consider this data during the decision-making process. See also EIR/EIS Section 1.5 and Appendix E3.

Biala1-24 See Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.1, which indicates that the $NMGWM^{2016}$ is a *more accurate representation* of the hydrostratigraphic framework of the Fort Ord area than the $NMGWM^{2015}$ and Salinas Valley Integrated Ground and Surface Water Model (SVIGSM). The nine recently installed monitoring wells were used to aid with this improved layer delineation and re-calibration; however, they were not the only points used in the model development and calibration. Model layering was defined using: available cross section data points from many sources; conductivity values were initially estimated from the SVIGSM and then modified based on pumping test results and calibration to water levels, and; measured water levels from multiple wells used in the SVIGSM as well as the nearby monitoring wells were used to access the model calibration. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2.

Biala1-25 The model was employed to answer questions about the effects of slant well pumping on groundwater levels; see EIR/EIS Appendix E2, Section 1. The purpose for the model was not to test a hypothesis; an explicit hypothesis was not stated prior to model development. Its purpose was to "solve the groundwater changes due solely to the proposed project," which is not a hypothesis statement. It is however, a reasonable attempt at a statement of the method used for answering questions about the effects of slant well pumping. EIR/EIS Section 4.4.4.2, Groundwater Modeling, states "Modeling scenarios were developed to project the drawdown from groundwater pumping at the CEMEX site and the alternative location at Potrero Road, and to assess the uncertainty in drawdown to model assumptions and input" (see Draft EIR/EIS page 4.4-50). Factors mentioned "such as seasonal climate and agricultural pumping trends" were considered and reviewed. However, the objective was to isolate the effects of slant-well pumping. Thus, the superposition model was developed. As indicated in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3, superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the slant wells. It is not necessary to study the impacts of agricultural pumping on the Basin because they do not inform the effects of slant well pumping using superposition. Therefore, it was not necessary to calibrate the revised model to the seasonal agricultural impacts on the basin. The uncertainty of the parameter values used in the model are discussed in EIR/EIS Section 4.4.4.2 and Appendix E2, Section 6.

Biala1-26 The percentage of seawater contribution to the test slant well was projected to be approximately 96 percent *after four years of pumping* (emphasis added); see Figure 3

from Geoscience 2014b, as cited in EIR/EIS Appendix G2, and in response to comment Moore-2 in EIR/EIS Section 8.7.16.

As described in Master Response 4, The Agency Act and Return Water, Section 8.2.4.3, the return water volume (i.e., 100 percent minus the Ocean Water Percentage or OWP) was expected to be more than 0 percent but less than 12 percent, based on preliminary groundwater model runs and calculations. Therefore, to account for the variable return water volumes, the NMGWM^{2016} was run with pumping scenarios that included representative return water volumes of 0, 3, 6, and 12 percent of the total source water volume. As further explained in Master Response 4 and EIR/EIS Appendix E3, the models used to estimate return water percentage confirmed that this range of assumptions was reasonable. Note that the analytical equation and numerical modeling methodology used to estimate the OWP from slant well pumping is different from the use of the NMGWM^{2016} to estimate changes in groundwater levels. See the discussion titled "Return Water Considerations" in EIR/EIS Section 4.4.4 for discussion.

Biala1-27 This comment is addressing a product of the HWG (Monthly Report #14), and not the EIR/EIS. The NMGWM^{2016} was not intended to be used to predict the results of test slant well pumping and was not used to assess the salinity of the test well water pumped. See EIR/EIS Appendix E2, Section 4.2, Test Slant Well Pumping, for an example where real-world monitoring data is utilized to compare measured drawdown with the drawdown calculated with the superposition model. See also Master Response 12, The North Marina Groundwater Model (v. 2016). The NMGWM^{2016} is a valid model because: 1) it synthesizes the current hydrologic conditions in the area; 2) it is based on a solution of accepted mathematical equations that describe flow in porous media; and 3) the rigorous evaluation of uncertainty and its performance described in the EIR/EIS Appendix E2, Section 6, ensures that model errors are only a small part of the overall model response and the model meets the requirements for a well calibrated model. Also, as discussed in Appendix E2 Section 4.1, the NMGWM^{2016} simulates the measured historical water level elevations from nearby wells within acceptable modeling criteria.

Biala1-28 The modeling has not been limited to a small area of the Salinas Valley Groundwater Basin. The NMGWM^{2016} is based on the telescopic mesh refinement approach, where a relatively coarse model grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second smaller model having a relatively fine grid is utilized to represent a subregion of the aquifer. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information regarding the approach to groundwater modeling. The CPUC does not manage the HWG or its membership; see Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS.

Biala1-29 The text cited in the comment is from the Test Slant Well Long Term Pumping Monthly Monitoring Reports that are prepared by the Hydrogeologic Working Group

for the California Coastal Commission in compliance with CalAm's Coastal Development Permit Special Condition 11, and is not from the Draft EIR/EIS. The NMGWM^{2016} was not employed to project the rate of salinity rise due to future test slant well pumping, nor was it calibrated using test slant well pump data. Data obtained during the pump test was used to validate the model. Therefore, any interruptions are part of the historical data set considered as part of that validation. See also EIR/EIS Appendix E3.

Biala1-30 See EIR/EIS Section 2.3, CalAm Service Area Demand, Section 4.4, Groundwater Resources, and Section 4.20, Socioeconomics and Environmental Justice. Consistent with NEPA and CEQA, the EIR/EIS analyzes the project as it was proposed by CalAm, the applicant. Likewise, the project objectives within the EIR/EIS (see Section 1.3) reflect the purposes for which CalAm proposed the project; to develop water supplies for the CalAm Monterey District service area. As discussed in EIR/EIS Section 2.3, CalAm Service Area Demand, CalAm must develop a replacement water supply to meet existing demand in its Monterey District service area, based on State Water Board Orders 95-10 and 2016-0016, and the Seaside Groundwater Basin adjudication. See also response to comment Hofmann-35. The Lead Agencies are not required to analyze the water supply and demand needs of jurisdictions outside the service area of the proposed project's applicant; however, EIR/EIS Section 4.4, Groundwater Resources, analyzes the physical impacts of the proposed project on the quality and quantity of water in the regional aquifers that could be affected by the project, thus providing data as to whether and how the water needs of other water users could be affected. See Master Response 3, Water Rights, specifically Section 8.2.3.7. EIR/EIS Section 4.20 analyzes the distributional patterns of minority and low-income populations in the region and characterizes the impacts of the proposed project on these communities, consistent with NEPA and CEQA. Water demand and the potential effects of the project on regional and local groundwater resources are fully evaluated in the EIR/EIS; no supplement is needed regarding these issues.

Biala1-31 The Lawrence Berkeley National Laboratory (LBNL) was scoped, as described in the comment, to address questions about the accuracy and credibility of the groundwater modeling work that was the subject of the potential conflict of interest comments, and the CPUC employed the LBNL to conduct an independent evaluation of that data. The text in EIR/EIS Appendix E1 – *near the shoreline* – is qualifying the phrase, "extraction of saline groundwater from beneath the sea floor *near the shoreline*." The wells are indeed, *near the shoreline*.

EIR/EIS Appendix E2 explains that the Salinas Valley Groundwater and Surface Water Model (SVIGSM) represents the entire Salinas Valley Groundwater Basin; whereas, the NMGWM represents a 149 square mile subset of the over 650 square mile SVIGSM area; see response to comment Biala1-28. Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.1, explains that the NMGWM^{2016} is based on the telescopic mesh refinement approach, where a relatively coarse model

grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second smaller model having a relatively fine grid is utilized to represent a sub-region of the aquifer. Continuity between the two models is maintained by extrapolating and specifying the simulated water levels from SVIGSM, at the NMGWM^{2016} boundaries. See Master Response 12, Section 8.2.12.2 for information regarding the scope of the LBNL peer review of the NMGWM, as well as EIR/EIS Appendix E1. Also, see Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2 and 8.2.9.3 for information on the use and application of ERT/AEM data for the EIR/EIS groundwater analysis. Refer to Impacts 4.4-3 and 4.4-4 for a discussion of the impacts of the project on regional groundwater resources. See also Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.4 for additional clarity regarding the effects of slant well pumping on the SVGB.

The CPUC decision-making process is explained in EIR/EIS Section 1.5.4. Pursuant to CEQA Guidelines Section 15090, as CEQA Lead Agency, the CPUC must certify that the Final EIR/EIS complies with CEQA and reflects the CPUC's independent judgment and analysis prior to approving the MPWSP or an alternative. If the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity (CPCN) for the MPWSP, as proposed or modified. In addition to environmental impacts addressed during the CEQA process, the CPCN process will consider any other issues that have been established in the record of the proceeding.

Biala1-32 See Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.2. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2 and 8.2.9.3 for information on the use and application of ERT for the EIR/EIS groundwater analysis.

The NMGWM^{2016} has been demonstrated to produce reliable results in light of the quantified uncertainty. Substantial effort has been expended to quantify model uncertainty and incorporate the uncertainty into estimated drawdown due to slant well pumping. ERT data (Pidlisecky et.al., 2016) and Dr. Knight's preliminary AEM report (Gottstchalk and Knight, 2017) were carefully reviewed by the EIR/EIS preparers. It was determined that ERT data will not necessarily produce greater certainty for a three-dimensional model because of the uncertainty in the ERT methodology. As discussed in Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), ERT requires correlation and ground truthing with known data that describe the geologic, groundwater, and water chemistry. Additional limitations include the spacing of arrays required and avoiding potential sources of "noise" (or interference), such as pipelines or buried utility cables. Additionally, it is important to note that information regarding subsurface geology, groundwater flow and occurrence, and groundwater chemistry used in the EIR/EIS were obtained from known scientific sources and included some of the same sources that Dr. Knight's team used to verify the ERT survey findings. Given the uncertainty inherent in ERT, it would not be

appropriate to add a supplemental section comparing ERT data to modeling, but Master Response 9 provides supplemental information on ERT technology and data. See also EIR/EIS Appendix E3, Section 3.1.8.

Biala1-33 The shortcomings noted in the comment (i.e., exclusion of the Fort Ord Aquitard) were addressed as part of the updates to the $NMGWM^{2015}$ – i.e., the $NMGWM^{2016}$. HydroFocus included 14 wells located south of the Salinas River from various depths in the $NMGWM^{2016}$ to assess the calibration; see Appendix E2 Section 3.1 and Figure 3.1. For both the A-Aquifer and FO-SVA in this area, reported hydraulic conductivity measurements from Fort Ord documents were used, and the model was then calibrated to the new wells added south of the Salinas River. As stated in Master Response 12, The North Marina Groundwater Model (v. 2016), the inclusion of these geologic features are consistent with, but were implemented independently of the Lawrence Berkeley National Laboratory (LBNL) recommendations. The LBNL recommendations are based on their review of the previous model version ($NMGWM^{2015}$), and not the $NMGWM^{2016}$. The LBNL review and recommendations are provided in EIR/EIS Appendix E1; updates to the $NGMWM^{2015}$ are documented in Appendix E2.

Model-calculated water levels from the historical model run (1979-2011) were compared to measured water levels throughout the basin. Additionally, although outside the model time period, 2015 water level data measured from monitoring wells were also compared against model-calculated water levels.

Biala1-34 As part of the FO-SVA addition in the $NMGWM^{2016}$, a transition clay layer was also added based on available cross section data and presence of clay in monitoring well boring logs (see EIR/EIS Appendix E2, Section 3.3). Similarly, hydraulic conductivity of this transition zone was adjusted based on water level data collected from nearby monitoring wells. This clay layer was not found directly beneath the CEMEX site, and therefore, the 180-Foot Aquifer is considered unconfined at that location. Moving eastward into to model domain, the 180-Foot Aquifer becomes confined. See EIR/EIS Figure 4.4-3.

Biala1-35 See responses to comments MCWD-HGC in Section 8.5.2.2.

Biala1-36 See response to comment Biala1-1; the Lead Agencies, and not CalAm, are the authors of this EIR/EIS. The above responses describe the Lead Agencies' consideration of available information, and the analyses contained herein reflect the independent judgment of the Lead Agencies. See also responses to comments MCWD-HGC in EIR/EIS Section 8.5.2.2.

Biala1-37 The EIR/EIS relies on groundwater modeling completed in 2017 by HydroFocus using the $NMGWM^{2016}$ which is documented in EIR/EIS Appendix E2. See response to comment Biala1-33.

Biala1-38 See response to comment Biala1-32. See also Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.2 for information regarding the scope of the LBNL peer review of NMGWM[2016], and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Sections 8.2.9.2 and 8.2.9.3 for information on the use and application of ERT/AEM data for the EIR/EIS groundwater analysis. The NMGWM[2016] adequately incorporates the area necessary to assess the impacts of the proposed project on groundwater resource and a new model is not needed to incorporate ERT/AEM data, since the ERT/AEM data has a higher degree of uncertainty than the NMGWM[2016].

Biala1-39 See Master Response 3, Water Rights.

Biala1-40 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2 and 8.2.9.3 for additional clarity on the usefulness and applicability of ERT/AEM. Also, see responses to comments Biala1-32 and Biala1-38. Groundwater monitoring wells are necessary to ground-truth and correlate ERT/AEM data, and without a monitoring well network that can collect ongoing data, the uncertainty of ERT/AEM data would increase and not be representative of actual conditions. ERT/AEM is a not a substitute for traditional data acquisition through groundwater monitoring wells.

CalAm's commitment to implementing Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage, does not signify that, as the comment states, "there are some inadequacies of data in their proposal." As explained in EIR/EIS Section 4.4.5.2, CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB. CalAm proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot or more in the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. Expanding a monitoring network is a prudent common practice for verifying groundwater response projected by a groundwater model in large groundwater pumping programs.

The NMGWM[2016] is based on the telescopic mesh refinement approach, where a relatively coarse model grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second smaller model having a relatively fine grid is utilized to represent a subregion of the aquifer. The regional aquifer network is therefore, considered as part of modeling slant well pumping. The modeling was employed to calculate the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to 1 foot.

Biala1-41 Source water for the MPWSP would be extracted at the coast from a capture zone in the Dune Sand and 180-Foot Aquifers. This zone is recharged by seawater that infiltrates through the Terrace Deposits at the coast, and not from areas further

inland. See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1 for the extent of the capture zone.

The project would return desalinated water to the CCSD as in-lieu pumping. The results from the NMGWM^{2016} provide the evidence supporting the conclusion that the MPWSP would increase groundwater levels through in-lieu groundwater pumping. The NMGWM^{2016} was the key analytical tool used to project aquifer response and assess groundwater level impacts associated with the proposed project. See Master Response 4, The Agency Act and Return Water, Section 8.2.4.1 regarding returning water to an area different from where it was pumped. Providing desalinated surface water (new water) would replace the groundwater that is presently used, thereby lowering demands for groundwater and reducing overdraft, which ultimately would improve groundwater levels. As discussed in EIR/EIS Section 4.4.5.2 (Impact 4.4-3) and shown on Figures 4.4-15 and 4.4-16, the water returned to the basin would increase groundwater levels in the 400-Foot Aquifer beneath the CCSD, but not in the 400-Foot Aquifer to the south in the Marina area. However, note also that the slant wells would not draw groundwater from the 400-Foot Aquifer beneath the City of Marina.

Biala1-42 See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1. The MPWSP slant wells would extract a mixture of brackish groundwater and seawater from an area close to the coast and the effects of the capture zone would not extend inland. The particle tracking analysis completed under the NMGWM^{2016} shows that slant well pumping would intercept seawater that is currently moving inland and contributing to seawater intrusion. By capturing the seawater source of recharge, slant well pumping would provide a degree of protection against seawater intrusion.

Biala1-43 See Master Response 4, The Agency Act and Return Water, Sections 8.2.4.2 and 8.2.4.3. Given the location of the capture zone, the quantities of return water would likely not increase because as the ocean recharges the capture zone, the salinity within the capture zone would likely stabilize; see EIR/EIS Appendix E3. The NMGWM^{2016} addresses changes in the return water volumes by calculating the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to one-foot under a range of return water volume scenarios ranging from 0 to 12 percent return water, under the 24.1 mgd and 15.5 mgd pumping rates. These percentages equate to return water volumes ranging from 0 acre feet per year (afy) to 3,242 afy.

Biala1-44 See EIR/EIS Appendix E3, Master Responses 3, Water Rights, and Master Response 4, Agency Act and Return Water. See also Master Response 1 regarding authorship of this EIR/EIS.

Biala1-45 The Lead Agencies have considered available information on slant wells, including the information referenced in the comment. EIR/EIS Section 4.4 references Geoscience, 2012, which is the aquifer pumping test analysis and evaluation of the

test slant well at Doheny State Beach, in Dana Point, California. See also Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, which discusses the Dana Point Test Slant Well, the Huntington Beach Subsurface Intake Feasibility Report and the Santa Barbara Subsurface Desalination Intake Feasibility Study; see also the References in Section 8.2.11.10.

Biala1-46 See Master Response 3, Water Rights.

CalAm is a public utility under the CPUC's jurisdiction, and has applied to the CPUC for a Certificate of Public Convenience and Necessity (see EIR/EIS Section 1.2.1). CalAm also requested from MBNMS, authorization and permits to construct, operate, maintain, and decommission subsurface intake facilities under the Sanctuary and to allow brine discharges through an existing ocean outfall facility within the Sanctuary (see EIR/EIS Section 1.3.2). This EIR/EIS evaluates the project that was applied for by the applicant, as well as alternatives to the proposed project, and assumes the applicant will comport with applicable laws and regulations. The Lead Agencies are responsible for enforcing the implementation of the measures adopted in the MMRP. See also response to comment MCWD-115; the CPUC Energy Division will contract with an independent third-party construction monitoring provider to ensure that a neutral third party will oversee the Applicant's implementation of all mitigation measures. Further, any monitoring reports that are submitted to the CPUC and/or MBNMS will be public records and will be accessible to the public upon request. Questions regarding CalAm's history are outside the scope of CEQA/NEPA.

Biala1-47 EIR/EIS Section 2.2 presents background on CalAm's existing supplies, and Section 2.2.4 speaks specifically to the adjudication of the Seaside Groundwater Basin. The court intended to "protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping" by adjudicating the water rights for all users of the basin. As described in EIR/EIS Section 2.2.4, the adjudication was initiated because CalAm sued a number of parties who held or potentially held water rights in the Seaside Basin, and asked the court to adjudicate those rights.

As described in EIR/EIS Section 4.4.1.3, the Salinas Valley Groundwater Basin (SVGB) is in overdraft because outflow, including pumping, exceeds inflows. To avoid court intervention, several projects have been implemented in the SVGB to promote recharge and halt seawater intrusion; specifically, the Castroville Seawater Intrusion Project and the Salinas Valley Water Project. The EIR/EIS makes no determinations on what obligations take precedence over others. The EIR/EIS evaluated the potential impacts of the CalAm proposed project, and considered how the proposed project would interact with other proposed projects, in the evaluation of cumulative effects. See EIR/EIS Section 4.1.7.

Biala1-48 EIR/EIS Section 4.4.1 presents the setting/affected environment for groundwater resources. Seawater intrusion in the SVGB and the SGB are described in this section

and the situations are different; the SVGB is experiencing seawater intrusion and the SGB is at risk of seawater intrusion. The word "ameliorate" or "ameliorating" is not used anywhere in the EIR/EIS.

As stated in EIR/EIS Section 2.2.4, CalAm's eventual allocation from the Coastal subarea of the SGB would be 1,474 afy (compared to their 2016 operating yield of 2,254 afy, see EIR/EIS Table 2-1). As a result of the adjudication, the court also required that production from the SGB in excess of natural safe yield be replenished. CalAm and the SGB Watermaster agreed to a replenishment schedule of 25 years at a replenishment rate of 700 afy by either in-lieu or artificial replenishment. CalAm has committed to only extracting 774 afy of their 1,474 afy allocation from the SGB for 25 years.

Biala1-49 EIR/EIS Section 5.5 fully examines the effects of numerous project alternatives on groundwater resources. EIR/EIS Section 5.5.4 evaluates alternatives to the MPWSP that include open water intakes and that do not include subsurface intakes; the EIR/EIS concludes that the operation of these alternatives would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project. See EIR/EIS Sections 5.5.4.5 for that conclusion about Alternative 2 (Open Water Intake at Potrero Road), Section 5.5.4.6 for Alternative 3 (DeepWater Desal) and Section 5.5.4.7 for Alternative 4 (People's Project). See also response to comment Marina-144 (EIR/EIS Section 8.5.1). Note however, that Section 4.4, Groundwater Resources, finds that the proposed project would not degrade the quality of surface water or groundwater. The policies cited in the comment speak to ensuring that high quality water is maintained, but do not mandate that existing brackish water be improved to a higher quality. See also Master Response 3, Water Rights.

Biala1-50 Appendix J2 is appended to the EIR/EIS in support of the analysis in EIR/EIS Section 6.3, Growth Inducing Impacts, which addresses the potential indirect growth inducing impact of the water supply that would be provided by the proposed project. Growth induced by the project water supply would occur in areas that would receive it – the CalAm's service area – which would not include the City of Marina. The impacts of project construction and operation, such as impacts on air quality, groundwater and traffic, are evaluated in Chapter 4 of the EIR/EIS and the impacts of project alternatives are evaluated in Chapter 5, Section 5.5.

Biala1-51 The localized and regional impacts of the MPWSP on hydrology and groundwater are evaluated in EIR/EIS Sections 4.3 and 4.4, respectively. Appendix J2 summarizes the impacts of growth in the area that would be served by project water supply since the provision of water supplies to this area could result in growth-inducing effects. Other areas such as the City of Marina are not included in the growth-inducement evaluation because the project would not serve these areas and therefore would not contribute to growth in these areas, as noted in response to comment Biala1-50, and response to comment Hoffman-35.

Biala1-52 This comment is addressing the EIR/EIS Section 1.4.4, Introduction. EIR/EIS Section 5.5.4 presents the potential impacts of the proposed project, the No Action and all "action" alternatives, on groundwater resources with the same rigor. The scientific data are presented in EIR/EIS Section 5.5, which is supported by Appendices B2, C1, C2, C3, E2 and E3. Master Response 3, addresses water rights; Master Responses 4, 5, and 12 address The Agency Act and Return Water, The Hydrogeologic Working Group, and The North Marina Groundwater Model (v. 2016), respectively. The same version of the NMGWM^{2016} was used to evaluate all alternatives (see EIR/EIS Appendix E2) and modeling of the reduced-size project (Alternative 5a) does not change the conclusions reached in the modeling analysis. The modeling analysis shows a lesser extent of drawdown under the reduced slant well scenario. A summary and comparison of impacts of alternatives is presented in EIR/EIS Section 5.6.1; see Table 5.6-1.

Biala1-53 As noted in EIR/EIS Section 1.1, CalAm's application also includes an option that would meet all of the project objectives by combining a reduced capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of product water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) Project. As stated in EIR/EIS Section 1.1, this capacity option is reflected in Alternative 5a. While both of these options were proposed by CalAm (in an "either/or" fashion) and thus represent the project proposed by the applicant, the larger desalination plant was selected to be analyzed as the "Proposed Project" in Chapter 4 of the EIR/EIS since it is larger and thus was expected to have greater impacts than the smaller capacity option, which is fully examined as an alternative in Chapter 5. The reduced size alternatives evaluated by the Lead Agencies in the EIR/EIS (Alternatives 5a and 5b) would meet the same need for water as the proposed project, not a reduced need for water, since 3,500 afy of GWR supplies would be included in the overall supply for Alternatives 5a and 5b; see EIR/EIS Section 5.5.6. See also Master Response 13, Demand (Project Need) and Growth, and EIR/EIS Appendix L for more information on water demand and growth under various supply scenarios.

Biala1-54 See Chapter 5, Alternatives Screening and Analysis for detailed descriptions (Section 5.4) and analysis of impacts (Section 5.5) of all alternatives. See Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures for the analysis of the proposed project. See Master Response 3, for more information on water rights.

Biala1-55 See Master Response 11, CalAm Test Slant Well. The process and timeline for decommissioning of the test slant well are governed by the permits for that well, and are not pertinent to the EIR/EIS analysis of the environmental effects of the proposed MPWSP.

Biala1-56 CalAm cannot bypass the City of Marina's CDP process. However, an applicant or any person who participates in the local permitting process for a project, or who

otherwise communicates their concerns to the local government, may file an appeal to the California Coastal Commission. In addition, any two Coastal Commissioners may also appeal projects to the Commission. (CCC, 2007)

8.7.3.2 Responses to Comments from Kathy Biala – Letter 2

Biala2-1 As described in EIR/EIS Section 3.3.2.1, Subsurface Slant Wells, slant well construction would take approximately 15 months to complete, not 2 years. The 9-acre construction area would have a temporary impact on western snowy plover habitat because the site would be returned to pre-construction conditions. With implementation of the mitigation measures described in Impact 4.6-1, these impacts would be reduced to a level that is less than significant. As described in Impact 4.6-6, maintenance activities would be conducted every 5 years and this is considered a permanent loss of habitat. Permanent impacts would be reduced to less than significant with implementation of Mitigation Measure 4.6-1d (as revised; see Final EIR/EIS Section 4.6). Existing snowy plover use of areas within and at the proposed northernmost slant well cluster in the CEMEX mining area (described in EIR/EIS Section 4.6.1.8), which has been subject to disturbance associated with mining activities, suggests that temporary construction disturbance would not result in irreversible impacts on snowy plover use of this area following restoration.

Biala2-2 See responses to comments CURE-Owens-9 and CURE-Owens-10 regarding the use of western snowy plover data for the impact analysis. The approach to analysis of impacts on all special-status species, including western snowy plover, was described in EIR/EIS Section 4.6.4.

Biala2-3 See response to comment Biala2-2. The western snowy plover is protected under the Federal Endangered Species Act (federally listed as threatened) and is considered a California species of special concern by CDFW. Impacts on this species are analyzed pursuant to the Federal Endangered Species Act and in accordance with its special status under both federal and state laws, and mitigated accordingly. Additionally, MBNMS is undertaking the required consultation with USFWS under the Federal Endangered Species Act; see EIR/EIS Section 7.1. The City of Marina resolution referenced by the commenter does not obligate the Lead Agencies to require that CalAm provide compensation to the City of Marina for potential impacts on western snowy plover.

Biala2-4 Mitigation Measure 4.6-1d describes the required protocols for identifying and avoiding nests for any work that cannot be completed during the non-nesting season, and requires that any additional avoidance and minimization measures required by USFWS as a result of consultation under the Federal Endangered Species Act be incorporated and implemented as part of this measure. The duties of the Lead Biologist and the related monitoring and reporting requirements are described in Mitigation Measure 4.6-1a. CalAm would be required to comply with these measures as would be documented in an adopted Mitigation Monitoring and Reporting

Program (MMRP). The full text of these measures, as revised, is provided in Final EIR/EIS Section 4.6.

Biala2-5 The required qualifications of the Lead Biologist are described in detail in Mitigation Measure 4.6-1a. The Lead Biologist would be responsible for implementing the Lead Agencies' adopted biological resource-related mitigation measures to the extent described in adopted measures, including 4.6-1a, and would report to the Lead Agencies as described in Mitigation Measure 4.6-1a.

Biala2-6 See Mitigation Measure 4.6-1d which restricts construction time periods to the western snowy plover non-breeding season, unless otherwise approved by USFWS and with the incorporation of specific avoidance and minimization measures. Master Response 3 addresses concerns related to water rights.

Biala2-7 Per Mitigation Measure 4.6-1d, pre-construction nesting surveys shall be conducted by a "qualified western snowy plover biologist" "within 24 hours of initiation of construction activities." See subpart 3 of revised Mitigation Measure 4.6-1d for the required actions to be implemented if a nest is located in the project area. This measure was developed based on knowledge of western snowy plover biology, a review of similar measures that have been required by USFWS and other CEQA and NEPA lead agencies, and experience developing and implementing similar measures.

Biala2-8 Consistent with CEQA, the EIR/EIS analyzes impacts from the proposed project compared to the baseline conditions, which include existing sand mining operations. The purpose of subpart 4 of Mitigation Measure 4.6-1d is to minimize visual impacts from construction activities on nesting western snowy plover. See Impact 4.8-2 in EIR/EIS Section 4.8, Land Use and Recreation, which explains that there is no existing public access to the slant well construction site.

Biala2-9 See responses to comments Biala2-4 and Biala2-5.

Biala2-10 See response to comment Biala2-7 above and Subparts 3b and 3c of Mitigation Measure 4.6-1d. Further, as described in Mitigation Measure 4.6-1a, "The Lead Biologist shall be onsite, or shall appoint qualified biologists and/or qualified biological monitors to be onsite, during all fencing and ground disturbance activities." This is the most frequent monitoring that can be conducted. Additionally, Mitigation Measure 4.6-1d specifies that a biologist will also conduct periodic monitoring during construction to determine if there are any new western snowy plover nest starts.

Biala2-11 Reporting requirements are described in Mitigation Measure 4.6-1a. As is the case for CPUC-approved projects, the public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CPUC on request. The CPUC and CalAm will develop a filing and tracking system. Public access to records will be addressed in the MMRP.

Biala2-12 Point Blue raised several concerns on the 2015 Draft EIR in their June 2015 comment letter and those concerns were addressed in the Draft EIR/EIS. Indeed, Point Blue acknowledges that these issues were addressed in their comment letter on the Draft EIR/EIS. See responses to comments Point Blue-1 through Point Blue-6 for response to Point Blue's comments on the Draft EIR/EIS. See also response to comment CURE-Owens-9 and revised Mitigation Measure 4.6-1d in Final EIR/EIS Section 4.6, Terrestrial Biological Resources.

Biala2-13 See the responses to Biala2-4, Biala2-5, and Biala2-10.

Biala2-14 As described on Draft EIR/EIS page 4.6-237, the brine storage basin is a component of the proposed MPWSP Desalination Plant that would be located on Charles Benson Road. Construction and operation of this facility would not occur in or around western snowy plover habitat. Mitigation Measure 4.6-6 would reduce potential operational impacts from the brine storage basin on migratory waterfowl to less than significant. The proposed project would not result in similar potential operational impacts on western snowy plover, so a similar measure is not described for western snowy plover.

Potential impacts on western snowy plover, and mitigation measures to reduce impacts to less than significant, are described in the subsurface slant well section in Impact 4.6-1 and Impact 4.6-6 and in the Source Water Pipeline section in Impact 4.6-1. As described in Mitigation Measure 4.6-1a, full-time biological monitoring will be required during all fencing and ground disturbance activities.

Biala2-15 In response to this comment, Mitigation Measure 4.6-6 has been revised to clarify that it is the Lead Biologist's responsibility to determine what adaptive management measures, if any, are needed to remedy problems detected during monitoring.

Biala2-16 Mitigation Measure 4.6-6 would be implemented to reduce impacts on migratory waterfowl from operation of the brine storage basin, and is unrelated to construction impacts. Construction impacts on nesting western snowy plover and special-status birds are described in Impact 4.6-1.

Biala2-17 As explained in CEQA Guidelines section 15040, CEQA is intended to be used in conjunction with discretionary powers granted to public agencies by other laws. The CPUC and other jurisdictional agencies are responsible for enforcing the procedures adopted for monitoring based on the enforcement authorities provided by laws governing those agencies. CalAm would be responsible for successfully implementing all of the measures in the MMRP, including compliance with the provisions of Mitigation Measure 4.6-6, if adopted. The MMRP will outline a dispute resolution process in the event that a dispute concerning the implementation of adopted measures arises. However, at this time, the Lead Agencies are not aware of, nor does the commenter provide evidence, that CalAm has violated the terms of mitigation measures or other such requirements in the past. Therefore, there is no reasonable basis

to assume that CalAm may attempt to "undermine the ability of the Lead Biologist to act ethically and swiftly" or tamper with potential evidence of bird impacts related to operation of the brine storage basin. Further, as explained in Impact 4.6-6, it is unlikely that many birds would become sick or die at the brine storage basin; Mitigation Measure 4.6-6 is recommended to ensure that this expectation is borne out or that adaptive management techniques are implemented if needed. No revision to Mitigation Measure 4.6-6 has been made in response to this comment.

Biala2-18 Per subpart 1 of Mitigation Measure 4.6-1c, the project work area shall be delineated with stakes and flagging prior to construction and construction-related disturbance outside of these boundaries shall be prohibited without approval of the Lead Biologist. This measure does not rely on fencing installed by other agencies.

8.7.3.3 Responses to Comments from Kathy Biala – Letter 3

Biala3-1 Table 1 in EIR/EIS Appendix C2 presents the erosion rate data sources that were included when the consultants to the Lead Agencies established historic shoreline change trends that were used in the development of dune erosion profiles; Dr. Thornton's work is the first entry in that table. The methodology for projecting future vertical and horizontal erosion profiles is described in EIR/EIS Section 4.2.4.5 and in Section 3 of Appendix C2; the analysis considered localized erosion (rip currents), long term erosion (including Dr. Thornton's data), and sea level rise (see EIR/EIS Appendix C1) to develop the erosion profiles. EIR/EIS Figures 4.2-7 and 4.2-8 present the erosion profiles and envelopes for the test slant well and the production wells, respectively. As shown in Figure 4.2-7, coastal erosion could expose the test slant well in a 100-year storm event by the year 2060, and Mitigation Measure 4.2-10 requires implementation of a Slant Well Abandonment Plan that would address this potential exposure. With implementation of Mitigation Measure 4.2-10, the impacts of the anticipated future presence of the test slant well on the beach would be reduced to a less than significant level. All of the other proposed wells would be located further inland of the 2060, 100-year flood event envelope as shown on Figure 4.2-8. Impacts on the 180-FTE Aquifer from project operation are described in Section 4.4.5.2 and were determined to be less than significant; therefore, the EIR/EIS identified no significant impact that would necessitate moving these proposed wells closer to the shoreline.

As explained in EIR/EIS Appendix E3, while placement of production well screens closer to or under the ocean may achieve the maximum Ocean Water Percentage (OWP) in the first few months and a very slight increase in the medium-term OWP, a difference of a few hundred feet in screen placement relative to the ocean boundary would have minimal overall effect on OWP because of the volume of seawater at the recharge boundary. If CalAm needs to replace a slant well, they will be required to apply for a Coastal Development Permit to do so, and they may also be required to apply for an MBNMS authorization or permit. Under NEPA, replacement of a slant well would not necessitate a supplement to the EIS unless the lead agency makes

substantial changes in the proposed action that are relevant to environmental concerns, or if there are substantial new circumstances or information relevant to environmental concerns and bearing on the proposed project or its impacts (40 CFR 1502.9). Likewise, under CEQA, a supplemental EIR would only be necessary if substantial changes are proposed in the project or substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report; or if new information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available. (CEQA Guidelines Section 21166). Since the slant wells would draw mostly seawater through the aquifers (see Master Response 8, Project Source Water and Seawater Intrusion), dune recession would not affect project operations. See also responses to comments MCWD-78 and MCWD-79.

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8.7.4 Responses to Comments from William Bourcier

Bourcier-1 Responses to the commenter's specific comments on the Trussell Technologies' Memorandum (Draft EIR/EIS Appendix G2) are provided in responses to comments Bourcier-2 through Bourcier-13 and demonstrate why the Trussell estimates are lower and more representative of the actual off gassing process expected from the operation of the MPWSP slant wells at CEMEX.

Bourcier-2 The commenter's agreement with the assumption in the Trussell analysis that the CO_2 in the permeate (product water) stream would be released to the atmosphere upon exiting from the reverse osmosis (RO) process is acknowledged. However, as explained in response to comment Bourcier-3, the permeate is treated after the RO process and prior to distribution; therefore, off gassing of CO_2 is prevented. It should also be noted that off-gassing is a slow process, and any water that is exposed to the atmosphere will take time to equilibrate and release CO_2. However, since the release of brine will be a dynamic, ongoing process, so will be the release of CO_2 following the initial equilibration.

Bourcier-3 The first part of the comment regarding treatment is correct; the Trussell report (Draft EIR/EIS Appendix G2) at page 3 states, "The water in the finished water tanks would travel through each treatment process prior to equilibration with the atmosphere. During post-treatment, the pH of the desalinated water would be adjusted to ensure that carbon dioxide would not be released from the desalinated water as it contacts the atmosphere."

Typical seawater RO permeate, or product water, regardless of whether the source water was obtained with screened open water intakes or subsurface intakes, is treated for corrosion control prior to distribution due to the aggressiveness of the RO permeate. The same chemicals in approximately the same amounts would be used to treat RO permeate regardless of the intake method. Corrosion control involves the addition of chemicals to adjust pH, alkalinity, and calcium hardness. To control corrosion from the RO permeate, the MPWSP plant would use CO_2 to adjust alkalinity, lime to adjust calcium hardness, and sodium hydroxide to adjust pH as described in Draft EIR/EIS Section 3.2.2.3, Post-treatment System. For information on the estimated amounts of specific chemicals that would be used to adjust pH at the proposed MPWSP plant, refer to Draft EIR/EIS Table 3-3, Desalination Chemicals and Annual Usage. The comment suggests that caustic would be used in the treatment process, but as shown in Table 3-3 and described further in response to comment Bourcier-4, caustic would not be used for this project and its use was not assumed in the Trussell analysis.

Bourcier-4 As shown in Draft EIR/EIS Table 3-3, lime is the chemical that would be most widely used to treat permeate during the proposed desalination process, not caustic. And the CO_2 carbon footprint that would be released during the production of lime used to treat the RO permeate is not included in the Trussell analysis. The

production of lime involves a series of steps including the quarrying, crushing, sizing, and transportation of raw materials. However, quantifying GHG emissions from producing lime requires specific information that is unavailable at this time and attempting to quantify such emissions would be overly speculative.

GHG life cycle emissions are also emitted from the fuel combustion process used to heat the kiln for the calcination process, calcining the raw materials to produce lime, and (if required) hydrating the lime to calcium hydroxide. Calcination is the process by which limestone, which is mostly calcium carbonate ($CaCO_3$) is heated in a kiln to produce quick lime (CaO). CO_2 is a byproduct of this reaction and is usually emitted to the atmosphere. The GHG Protocol Initiative has developed a model based on methods and default values contained in Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (The GHG Protocol Initiative, 2007). This model could be used to make a general estimate of life cycle GHG emissions that would be associated with the production of lime that would be used for operations of the proposed project. However, because manufacturing plant-specific information and values, such as the process type, proportion of hydrated lime, water content of hydrated lime, CaO content of lime, fraction of calcination achieved from carbonate, type of fuel(s) to heat the kiln for the calcination process, etc., are not known or available at this time, the estimation would have to rely completely on default values, which would make quantification overly speculative.

In addition, CEQA guidance does not require production-related life cycle analyses of GHG emissions for materials since the term "life cycle" is not well defined and is too speculative, which is why the California Office of Planning and Research (OPR) removed the term from the CEQA guidelines within its 2010 amendments.

Therefore, the EIR/EIS does not address the lifecycle emissions associated with the lime or any other chemical or fuel, or construction materials such as concrete and steel. Therefore, neither the CO_2 that would be released from the permeate (if post-treatment as proposed were not to occur), nor the lifecycle emissions from the production of lime is included in the Trussell conclusions or the GHG emissions of the project as a whole.

Bourcier-5 The comment indicates that the water quality of the "15 wells sampled to date in the Marina area" would result in a higher CO_2 release than the test slant well water quality used in the Trussell analysis, and the Lead Agencies agree. However, the Trussell analysis treats the water from the currently-operating test slant well as "worst-case" because it would result in higher CO_2 levels than seawater from Monterey Bay, which would eventually displace the intruded seawater once the full scale project is operational.

The commenter provided estimates of CO_2 releases from 15 wells and the one where fluid composition data was used for the Trussell analysis. The 15 wells

discussed by the commenter are exploratory boreholes that are not indicative of source water quality to the desalination plant, as explained below.

The water quality data collected from these 15 boreholes was used by the hydrogeologists to:

- characterize the aquifer units for the conceptual groundwater model;
- characterize the water contained in the aquifer units (to determine if it is seawater, groundwater, or seawater intruded groundwater); and
- determine if the Salinas Valley Aquitard (a blue clay layer) exists between the aquifer units at this location.

The water quality from these exploratory boreholes is not representative of the source water quality for the desalination plant. The desalination plant would employ slant wells that are expected to pull approximately 93 percent seawater from the Monterey Bay and 7 percent groundwater that originated from the surrounding area. The exploratory borehole water quality samples used in the commenter's analysis are static, and not from an active, operating slant well, and therefore, have a different water quality composition than the test slant well water quality composition used in the Trussell analysis. Because the test slant well is a full-scale well that has been producing water intermittently since April 2015 for the purpose of collecting water quality data for the MPWSP, it is more appropriate to use the test slant well water quality data than to use the static water quality data from the 4-inch vertical exploratory boreholes designed to characterize the composition of the aquifer.

The test slant well is being operated to gain a better understanding of the water quality that would be fed to the full-scale desalination plant. When the test slant well began operation in April 2015, there was old, intruded seawater present in the aquifer. Water quality sampling at the test slant well suggests that even after two years of intermittent production, the well is drawing a great deal of old intruded seawater; and this water, which has been in the aquifer for many years, has a lower pH and higher silica concentration than Monterey Bay seawater. Once the proposed full-scale production slant wells begin to operate at a steady rate, they are expected to displace the old, intruded seawater in the aquifer. The slant wells would draw mostly Monterey Bay seawater with a small fraction of water that originated from inland. Thus, the quality of the water currently being produced by the slant well and the quality of fresh Monterey Bay seawater set bounds on the future quality of the water to be withdrawn by the full-scale slant wells once they are in operation. Calculations show that if the desalination plant operated on the water being withdrawn by the test slant well after two years of intermittent production (with higher amounts of old, intruded seawater), it would release more CO_2 than would be released when the desalination plant begins to operate on fresher Monterey Bay seawater. As a result, the Trussell analysis treats the water from the test slant well as "worst-case" and the Monterey Bay seawater as the "best case."

Bourcier-6 See response to comment Bourcier-13 regarding validating the method for estimating GHG releases from an actual feed source. The similarities of the commenter's methods to estimate CO_2 off gassing with the methods identified in the Trussell analysis and the commenter's suggestion that the two methods are accurate and verified are noted.

Bourcier-7 The Trussell analysis did not conclude that carbon dioxide releases from subsurface intakes is likely to take place in significant tonnages. The Trussell analysis concludes the current test slant well water quality represents the "worst-case" scenario for off gassing, since it has a lower pH and higher alkalinity than seawater, and that fresh Monterey Bay seawater would be the "best case" scenario because ultimately, there should be minimal change in pH and alkalinity as the water travels through the ground, to the slant well, and into the desalination plant. This analysis shows that the projected range of released carbon dioxide would be 95 to 735 metric tons per year. The commenter indicates that the Trussell analysis and the Bourcier analysis identified similar levels of CO_2 off gassing, which verifies the method of calculation for both parties. This is correct, although the commenter estimated that 822 to 14,577 metric tons of carbon dioxide would be released if the exploratory boreholes cited in the DEIR were the source water for the MPWSP. As noted in response to comment Bourcier-5, the exploratory borehole data are not indicative of the source water quality for the proposed project.

Bourcier-8 See response to comment Bourcier-3.

Bourcier-9 See response to comment Bourcier-5.

Bourcier-10 See responses to comments Bourcier-3 and Bourcier-4. The purpose of the Trussell analysis was to evaluate the GHG releases anticipated from the source water used for the MPWSP. There is no need to revise the Trussell analysis as requested.

Bourcier-11 See responses to comments Bourcier-3 and Bourcier-4.

Bourcier-12 See response to comment Bourcier-5.

Bourcier-13 The Lead Agencies asked CalAm to collect water samples from its existing test slant well to measure the CH_4 content.

Three water samples were collected from the test slant well on March 2, 2017, and were analyzed for methane on March 6 and 7, 2017. The results ranged from 0.54 to 0.58 micrograms per liter (MBAS, 2017a and 2017b). Two additional water samples were collected from the test slant well along with travel blanks on March 9, 2017 and March 15, 2017. These samples were analyzed on March 16, 2017 and March 24, 2017, respectively. In the two additional water samples from the test slant wells, methane concentrations were 0.55 and 0.68 micrograms per liter, respectively (MBAS, 2017c and 2017d); however, on the second occasion,

travel blanks were also taken and analyzed and these contained methane concentrations of 1.9 and 2.5 micrograms per liter, respectively.

A travel blank is purified water from the analytical lab which is transported in a sealed bottle to the site where it is used to fill an empty sample bottle in the field at the same location and in the same manner as the target sample. Travel blanks are used as a quality control measure to assure that methane is not introduced into the sample while it is being handled at the field site. In this case, the travel blanks have concentrations of methane that do not appear to be significantly different from the target samples taken from the test slant well itself, indicating that methane was likely introduced during the sampling. From this analysis, there is no evidence that the water from the test slant well contains methane.

While the travel blanks suggest there is no evidence of methane in the test slant well water, for the purposes of this discussion, the amount of methane that would be released by the project was estimated using the results of the sampling events. It is assumed that methane in the full source water flow would be released to the atmosphere. Using the full source water flow of the desalination plant (i.e., 24.1 million gallons per day (mgd)), a maximum CH_4 concentration of 0.68 as discussed above, and a global warming potential for CH_4 that is 25 times that of CO_2 (CARB, 2016), it is estimated that up to 0.70 metric tons CO_2 equivalent (CO_2e) CH_4 per year would be released. This is substantially less than the 735 metric tons CO_2 estimated to be released from the discharged brine and does not change the significance of the conclusion.

8.7.5 Responses to Comments from David Brown

Brown-1 The conclusion that the MPWSP would not harm the aquifers underlying Marina (discussed further in Master Response 3, Water Rights) is based on an analysis that incorporated data obtained from a validated, physically based groundwater flow model, groundwater quality data obtained from the installation and testing of several clustered groundwater wells, and data obtained from the test slant well. See Section 4.4.4 for a description of the key elements that contributed to the analysis on groundwater. For additional information on the 2016 version of the North Marina Groundwater Model, see Master Response 12, Section 8.2.12.3, and Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.4.

Brown-2 See Master Response 9, Electrical Resistivity Tomography (ERT) Airborne Electromagnetics (AEM).

Brown-3 The Draft EIR/EIS did not predict salinity would not increase in the aquifers. Impact 4.4-4 in EIR/EIS Section 4.4.5.2, acknowledges that project pumping would result in changes in the local groundwater quality around the slant wells and within the capture zone, measured as an increase in total dissolved solids (TDS), a measure of salinity; however, this localized increase in salinity within the capture zone would not interrupt or eliminate the available potable groundwater for other users in the basin (Draft EIR/EIS page 4.4-76). See also: Master Response 3, Water Rights, Section 8.2.3.7; Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.2 and Section 8.2.8.4, and; Master Response 9, Section 8.2.9.3.

8.7.6 Responses to Comments from Charles Cech

Cech-1 See Master Response 11, CalAm Test Slant Well, Section 8.2.11.2.

Cech-2 The conversion of the test slant well to a permanent well is part of the proposed project and is evaluated in the EIR/EIS. See Master Response 11, Section 8.2.11.7.

Cech-3 See Master Response 11, Section 8.2.11.8.

Cech-4 The screens of the test slant well are not located above the seafloor. EIR/EIS Figure 4.2-3 is a cross section of the geology that includes the location of the test slant well. This cross section indicates that the seafloor is composed of a thin layer of Deltaic Deposits overlying Older Dune Sand and Terrace Deposits (this unit is also known as the 180-Foot Equivalent Aquifer). The screens of the test slant well are indeed located in the Dune Sand and 180-FTE Aquifer units. See also Figure 7b in EIR/EIS Appendix C3.

Cech-5 As noted in Master Response 11, Section 8.2.11.5, the Dune Sands Aquifer and the 180-FTE Aquifer have been intruded by seawater for decades, and the monitoring wells show distinct seasonal trends in salinity, reflecting the effects of increased regional pumping in the summer months during irrigation season, and reduced regional pumping in the winter months, especially following rain events. The test slant well tracking data indicate an increase in salinity at and near the test slant well and not an increase in seawater intrusion in the 180-Foot Aquifer. See also Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2.

Cech-6 The water being pumped by the test slant well is not pure seawater; this fact is acknowledged in the Draft EIR/EIS, for example on page 4.4-60, which explains that the project "would extract primarily seawater and a smaller volume of brackish inland groundwater from a localized area with only minor localized groundwater drawdown." Further, as stated in the EIR/EIS in Impact 4.4-3, "The groundwater in the 180-Foot Aquifer that is underlying the area influenced by the MPWSP pumping, up to about 4 miles inland, has been intruded with seawater for decades, and far exceeds the State Drinking Water Standard of 500 mg/L of total dissolved solids (TDS)." The comment does not provide enough specificity regarding which criteria the test slant well is out of compliance with to allow the Lead Agencies to provide further substantive response.

Cech-7 As noted in Master Response 11, Section 8.2.11.8, a 5-inch artificial filter pack was installed around the screens of the test slant well. No evidence is available to indicate or suggest that the nine new wells will not perform in the same way as the test slant well. The proposed nine new wells (and the test slant well) are described in EIR/EIS Section 3.2.1.1. See response to comment Cech-4 regarding the location of the test slant well screens in relation to the seafloor.

Cech-8 See response to comment Cech-4 regarding the location of the test slant well screens in relation to the seafloor. The EIR/EIS describes the pre-treatment, reverse osmosis

treatment, and post-treatment components of the proposed project in Chapter 3, Sections 3.2.2.1 through 3.2.2.3, respectively. As described therein, these systems would provide treatment of intake water to address, at minimum, iron, manganese, pathogens, suspended solids, salts and other minerals, alkalinity, calcium hardness, and pH.

Cech-9 The Draft EIR/EIS describes these "Groundwater Enhancement Programs in the SVGB" in Section 4.4.1.3 at page 4.4-19.

Cech-10 See Master Response 11, Sections 8.2.11.2 and 8.2.11.3 regarding the impacts of the test slant well. The EIR/EIS evaluates the potential impacts the whole of the proposed MPWSP would have on groundwater quality, including conversion of the test slant well to a permanent well (see Master Response 11, Section 8.2.11.7). EIR/EIS Section 4.4.6 evaluates the cumulative impacts of the MPWSP in relationship to the groundwater enhancement programs mentioned in comment Cech-9.

Cech-11 Monitoring wells have experienced both a lowering and rising of groundwater levels whether the test slant well was operating or not. See Master Response 11, Section 8.2.11.5 for a summary of the HWG's conclusions regarding groundwater levels and TDS concentrations in MW-4S and MW-4M, which indicate that there have been no impacts resulting from test slant well pumping. As noted in EIR/EIS Table 4.4-10, the only wells that are screened in the Dune Sands and 180-FTE Aquifers are owned by the Monterey Peninsula Landfill; three are used for dust control and the fourth is inactive. The monitoring wells installed by CalAm in the Dune Sand and 180-FTE Aquifers offer the most comprehensive data set of water quality in the area of influence.

Cech-12 Dr. Dennis Williams is not the Executive Director of the HWG. As explained in Master Response 5, The Role of Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5.2, the HWG does not have an executive director or any other leader; Dennis Williams represents CalAm as a member of the HWG. As explained in Master Response 5, Section 8.2.5.5, CalAm entered into an agreement with Dr. Williams granting a royalty-free license for the technology, resolving a potential financial conflict of interest.

Cech-13 As explained in Master Response 5, Section 8.2.5.5, several parties, including Lawrence Berkeley National Laboratories (LBNL), received the groundwater data files from the April 2015 Draft EIR. However, LBNL was not provided with the groundwater modeling software. In order to run the data files, LBNL (and HydroFocus and any other user of the data files) needed to independently download or otherwise obtain the application software MODFLOW, a three-dimensional finite-difference groundwater flow model, which is published by the U.S. Geological Survey. MODFLOW is an industry standard model that simulates steady and non-steady flow in an irregularly shaped flow system in which aquifer layers can be confined, unconfined, or a combination of confined and unconfined.

Cech-14 The hydraulic lowpoint is an issue that was resolved with the CPUC's September 2016 Phase 2 GWR decision that included approval of the Monterey Pipeline. The EIR/EIS does not evaluate the Monterey Pipeline as part of the proposed project (rather, it is considered a project relevant to the cumulative impact analysis). Accordingly, comments regarding the hydraulic lowpoint are no longer pertinent to the proposed project.

Cech-15 See Master Response 11, Section 8.2.11.4. As confirmed in the *Baseline Water and Total Dissolved Solids Levels* report, prior to initiating this five-day test, groundwater level measurements and groundwater quality samples were collected from the test slant well and all monitoring wells.

Cech-16 See Master Response 11, Section 8.2.11.4, regarding establishing baseline conditions prior to pumping, as well as response to comment Cech-15.

Cech-17 The passages quoted in the comment letter and referenced in this comment are from the test slant well CDP, and all references to the "Executive Director" in these quoted passages refer to the Executive Director of the CCC. Dennis Williams is not currently, and has never been, the Executive Director of the CCC. See also response to comment Cech-12.

Cech-18 As explained in Master Response 11, Section 8.2.11.6, the available data were indeed used to assess the reliability of the North Marina Groundwater Model used in the EIR/EIS (referred to as $NMGWM^{2016}$).

Cech-19 The baseline water levels and salinity collected prior to the 5-day pump test indicate trends, not a static condition. The *Baseline Water and Total Dissolved Solids Levels* report (see response to comment Cech-15 and Master Response 11, Section 8.2.11.4) as well as the monitoring data collected while the test slant well was not pumping (during the 144-day shutdown), were used by the HWG to establish regional trends. The data were used in the EIR/EIS to help calibrate the $NMGWM^{2016}$, as described in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3. See also response to comment Cech-18.

Cech-20 See Master Response 11, Section 8.2.11.6 and Master Response 5, Section 8.2.5.5. Dr. Williams did not perform modeling for the Draft EIR/EIS. HydroFocus performed the groundwater modeling used in the EIR/EIS and they used the test slant well data to update the calibration of the $NMGWM^{2016}$ as described in Master Response 12, Section 8.2.12.3.

Cech-21 The CCC set the terms of Special Condition 11 in the CDP, requiring the permittee (i.e., CalAm) to collect and post the data. See response to comment Cech-12 and Master Response 5, Section 8.2.5.5 regarding potential conflicts of interest.

Cech-22 See Master Response 11, Section 8.2.11.5. The shut down criteria were altered to better incorporate local and regional trends.

Cech-23 See response to comment Cech-12 and Cech-17.

Cech-24 See response to comment Cech-15 and Master Response 11, Section 8.2.11.4.

Cech-25 The Draft EIR/EIS text states (on page 4.4-22) that the data shown in Table 4.4-4 summarizes water quality results from a single sampling event. See also Master Response 11, Section 8.2.11.6 for a discussion of the test slant well data, and Master Response 5, Section 8.2.5.5 for a discussion of the conflict of interest.

Cech-26 Ocean water quality data are shown in Draft EIR/EIS Table 4.3-5 (page 4.3-32), water quality of the brine discharge based on test slant well water quality data is shown in EIR/EIS Appendix D3 Table 4, and a summary of test slant well laboratory water quality results are provided by CalAm in every Test Slant Well Monthly Monitoring Report (see Master Response 11, Section 8.2.11.5 for detailed references to these reports).

Cech-27 Ocean water quality in Monterey Bay (e.g., temperature and salinity) varies by season, as explained in EIR/EIS Section 4.3.1.3 as well as in EIR/EIS Appendix D1 Table 1. The comment does not provide enough specificity regarding federal TDS measurements in MBNMS and potential differences between such measurements and the Central Coast Seawater Average TDS measurement (reported in Table 4.4-4 on Draft EIR/EIS page 4.4-22) to provide a substantive response. See also response to comment PWN2-52.

Cech-28 As a component of the MPWSP, the Carmel Valley Pump Station (including the electrical control building) is described in EIR/EIS Section 3.2.3.6. The potential construction and operational impacts of the Carmel Valley Pump Station are addressed in all topical sections of Chapter 4 and these are summarized in EIR/EIS Table ES-2.

Cech-29 The direct and indirect noise impacts of the Carmel Valley Pump Station are addressed in EIR/EIS Section 4.12.6; the direct and indirect air quality impacts are addressed in Section 4.10.5; and the direct and indirect traffic impacts are addressed in Section 4.9.5.

Cech-30 See response to comment Cech-28.

Cech-31 The operation of existing pipelines or other facilities not related to the proposed project is outside the scope of the analysis of the proposed project in this EIR/EIS. Therefore, this is not a substantive comment on the Draft EIR/EIS.

8.7.7 Responses to Comments from Bob Coble

Coble-1 See Master Response 3, Water Rights.

Coble-2 See Master Response 11, CalAm Test Slant Well, Section 8.2.11.5, for a discussion of the results of the test slant well long-term pump test. See also Master Response 8, Project Source Water and Seawater Intrusion, for a discussion of the modeled cone of depression projected to be caused by project pumping, and its relationship to ongoing seawater intrusion.

Coble-3 See Master Response 11, Section 8.2.11.7, for a discussion of the evolving slant well technology.

8.7.8 Responses to Comments from Margaret-Anne Coppernoll

Coppernoll-1 The comments regarding water rights are addressed by Master Response 3, Water Rights. The comments regarding basins are addressed in Master Response 6, Sustainable Groundwater Management Act. The comments regarding the method for calculating return water are addressed in Master Response 4, The Agency Act and Return Water.

Coppernoll-2 Draft EIR/EIS Section 4.4.4.1 describes an extensive subsurface investigation that included drilling exploratory boreholes to identify and correlate the subsurface geologic units, to collect groundwater quality data, and to build clusters of monitoring wells. The details of the subsurface exploration are presented in Appendix C3 and were used to develop a conceptual hydrogeologic model of the project area that ultimately became the North Marina Groundwater Model (NMGWM). In addition, see Appendix E2 where vertical and horizontal parameter zones are described in Section 3.3 and are presented in Figures 3.3a and 3.3b. The NMGWM was used to predict, not assume, the effects on groundwater from proposed project pumping. Clarification on the NMGWM is provided in Master Response 12, The North Marina Groundwater Model (v. 2016). Additionally, Master Response 11, CalAm Test Slant Well, provides a discussion on how the test slant well is not exacerbating seawater intrusion.

As noted in Draft EIR/EIS Section 4.4.1.3 on page 4.4-19, the estimated 555,000 afy of groundwater pumping and evapotranspiration in the Salinas Valley exceeds the 504,000 afy of inflow, resulting in basin overdraft. Draft EIR/EIS Section 4.2.5 at page 4.2-66 explains that as a result of this overdraft, saltwater has replaced the freshwater in those areas, thereby preventing subsidence (Monterey County, 2010). Section 8.2.6.3 of Master Response 6, Sustainable Groundwater Management Act, describes why project pumping would not cause subsidence.

Coppernoll-3 The impact on seawater intrusion is discussed in the Draft EIR/EIS on page 4.4-77, and concludes that "the proposed project would facilitate the reduction of seawater intrusion in the long term, and the impacts of the proposed project are considered less than significant." In addition, Master Response 4, The Agency Act and Return Water discusses how fresh groundwater (the fresh water component of brackish groundwater) pumped by the slant wells, if any, would be returned to the Salinas Valley Groundwater Basin resulting in a net zero impact relative to groundwater pumped from the basin.

Coppernoll-4 See Master Response 3, Water Rights, Master Response 6, Sustainable Groundwater Management Act, and Master Response 4, The Agency Act and Return Water.

Coppernoll-5 The groundwater referred to in this comment originates in a perched groundwater-bearing zone located inland of the proposed slant wells. Groundwater flows to the edge of this zone and "waterfalls" into the underlying Dune Sand or 180-Foot Aquifer formations. The edge of the perched layer occurs 1.5 miles inland from the capture zone of the proposed slant wells. There is no evidence that the groundwater in the perched zone is reversing seawater intrusion or providing "protection" against seawater intrusion. This is evident in the fact that there is documented seawater intrusion further inland, which has been occurring for decades. The projected capture zone for the proposed slant wells is located at the coast and the effects of that capture zone would not encroach on the inland perched groundwater bearing zones. Refer also to Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.4.

Coppernoll-6 See Master Response 2, Source Water Components and Definitions, for clarification of the chemical character of source water components. As listed in Table 4.4-4, while sodium and chloride are major components of ocean water, the chemical character is actually composed of numerous cations (positively charged ions) and anions (negatively charged ions), only some of which are listed in the table. While the chemical character of groundwater located further inland may be mainly calcium chloride and calcium bicarbonate, groundwater in the area around the slant wells has been intruded by seawater for decades and shows a predominant seawater chemistry, as discussed on Draft EIR/EIS pages 4.4-28 through 4.4-31, and shown on Figure 4.4-10. The Total Dissolved Solids (TDS) concentrations, a measure of all of the dissolved ions, including sodium and chloride, are shown on Figure 4.4-3. As shown on Figure 4.4-3, many of the groundwater samples collected from the Dune Sand Aquifer, 180-Foot Equivalent Aquifer, and 400-Foot Aquifer have elevated TDS concentrations clearly strongly influenced by seawater intrusion and the sodium and chloride ions that dominate seawater chemistry.

Coppernoll-7 See Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water. In addition, Impacts 4.4-3 and 4.4-4 discuss how the impact on water supply and well users within the affected area would be less than significant. Applicant Proposed Measure 4.4-3 would be implemented by CalAm, but is not necessary to reduce a significant impact to a less-than-significant level.

Coppernoll-8 This comment is mostly about water rights, which are addressed in Master Response 3, Water Rights and Master Response 4, The Agency Act and Return Water. The commenter notes that various actions throughout the Salinas Valley Groundwater Basin have slowed seawater intrusion and that brackish water can be treated and put to beneficial use, both of which are true. See response to comment Coppernoll-5 regarding claims about MCWD's water quality restoration efforts. The example provided in the comment of the observed conditions in CalAm's monitoring well MW-7 is a mischaracterization of the water quality data. Water quality data in monitoring well MW-7 clearly displays chemistry consistent with

seawater intrusion. The deep well in the MW-7 cluster shows total dissolved concentration at 26,700 mg/L, which is indicative of seawater intrusion. The mid-range well in the MW-7 cluster shows a concentration of 3,832 mg/L, which is an elevated TDS concentration indicative of incipient seawater intrusion. See also Master Response 2: Source Water Components and Definitions, and response to comment Biala1-11 in Section 8.7.3.

Coppernoll-9 See Section 8.2.11.5 of Master Response 11, CalAm Test Slant Well for discussion of how the test slant well has not been observed to cause harm to the seawater-intruded Dune Sands Aquifer.

Coppernoll-10 See Master Response 3, Water Rights, specifically Sections 8.2.3.5 and 8.2.3.6. See also Master Response 4, The Agency Act and Return Water, Section 8.2.4.1.

Coppernoll-11 EIR/EIS Section 1.2 explains that the CPUC is the CEQA Lead Agency, and is a constitutionally established state agency charged with regulating investor-owned utilities in the transportation, energy, communications, and water industries. CalAm is a public utility under the CPUC's jurisdiction, and has applied to the CPUC for a Certificate of Public Convenience and Necessity under Public Utilities Code Section 1001 to build, own, and operate all elements of the MPWSP, and also for permission to recover present and future costs for the proposed project by short-term rate increases. As the federal lead agency, MBNMS has joined in the preparation of this EIR/EIS for purposes of NEPA compliance and consideration of authorizations for CalAm's proposed project. The authority for MBNMS actions is outlined in EIR/EIS Section 1.3.2.

In addition, see Master Response 3, Water Rights, Sections 8.2.3.5 and 8.2.3.6, and Master Response 4, The Agency Act and Return Water, Section 8.2.4.1.

Coppernoll-12 As discussed in Impact 4.4-3 and Master Response 4, The Agency Act and Return Water, CalAm would work with MCWRA to expand the existing program to monitor the response of the aquifers in nearby wells to the operation of the slant wells, and to measure the actual percentage of seawater in the source water.

Coppernoll-13 The operation of the Dana Point test well is discussed in Section 8.2.11.7 of Master Response 11, CalAm Test Slant Well.

Coppernoll-14 There is no evidence that the test slant well is experiencing problems with clogged filters. Maintenance procedures for the proposed wells are described in EIR/EIS Section 3.4.1, which notes that if chemical cleaning products are needed for well maintenance, only environmentally inert products would be used. In addition, the test slant well has undergone successful and uneventful routine maintenance cleaning events. See also Master Response 11, CalAm Test Slant Well.

Coppernoll-15 See Master Response 12, The North Marina Groundwater Model (v. 2016), regarding the NMGWM. The test well has been operating since April 2015, and the data collected from the test well has been made publically available. See also Master Response 11, CalAm Test Slant Well.

Coppernoll-16 Lead agency staff has visited the test slant well. Sampling of the test slant well water reveals the salinity of the pumped water has varied over time, ranging from 25,400 mg/L of TDS at start-up in April 2015 (76 percent ocean water salinity) to 31,800 mg/L in November 2016 (95 percent ocean water salinity). This comment is further addressed in Master Response 11, CalAm Test Slant Well.

The Dune Sand Aquifer and the 180-Foot Equivalent Aquifer are both predominantly recharged by the ocean during pumping, and this phenomenon is explained in EIR/EIS Section 4.4.5.2. Stratigraphic data from the boreholes that CalAm drilled were used to develop the conceptual groundwater model, and the data from the monitoring well have been used to calibrate the $NMGWM^{2016}$; the modeling was used to predict the effects of the full scale project as described in EIR/EIS Section 4.4.4.2. See Master Response 12, The North Marina Groundwater Model (v. 2016), Master Response 8, Project Source Water and Seawater Intrusion, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Coppernoll-17 EIR/EIS Section 4.2.1.2 describes the seismicity and faults in the project area. The Reliz-Rinconada Fault Zone is the nearest known potentially active fault (no known Holocene movement) and is located a little over 1 mile to the south of the slant wells. Impacts from seismicity and faults are analyzed in Impacts 4.2-2, 4.2-3, and 4.2-4.

Coppernoll-18 See Master Response 9 regarding ERT, specifically Section 8.2.9.3.

Coppernoll-19 See Master Response 3, Water Rights, Section 8.2.3.6, and Master Response 4, The Agency Act and Return Water, Section 8.2.4.1.

Coppernoll-20 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), specifically Section 8.2.9.3.

Coppernoll-21 See Master Response 3, Water Rights, Sections 8.2.3.5 and 8.2.3.7 and Master Response 4, The Agency Act and Return Water.

Coppernoll-22 Much of this comment is addressed in Master Response 3, Water Rights and Master Response 4, The Agency Act and Return Water. In addition, Impacts 4.4-3 and 4.4-4 explain how the MPWSP would not worsen seawater intrusion and actually would, in fact, incrementally reduce seawater intrusion.

Coppernoll-23 Comments about the concept of “harm” as defined in the State Water Resources Control Board report are addressed in Master Response 3, Water Rights. There is

no requirement under CEQA that the project do "no harm;" rather, that concept is related to the water rights discussion. Nonetheless, the Draft EIR/EIS addressed this concept in Chapter 2 and Section 4.4, Groundwater Resources; see, for example, Impact 4.4-3 and Applicant-Proposed Measure 4.4-3.

Coppernoll-24 Much of this comment is addressed in Master Response 3, Water Rights and Master Response 4, The Agency Act and Return Water. In addition, Impacts 4.4-3 and 4.4-4 explain how the MPWSP would not adversely impact the water supply within the current jurisdiction of the MCWD.

Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures, evaluates the impacts of project construction and operation, including impacts on surface water hydrology and water quality (Section 4.3), groundwater resources (Section 4.4), and public services and utilities (Section 4.13).

Coppernoll-25 The test slant well was pumping 2,100 gallons per minute (about 3 mgd, or annualized to 3,300 afy) in April 2015. In comparison, MCWD pumped 4,200 afy in 2015 (MCWD, 2016). Furthermore, the test slant well has not been pumping fresh water; but rather brackish to saline (water with the TDS of seawater) water ranging from 25,400 mg/L[1] of TDS at start-up (76 percent ocean water salinity) to 31,800 mg/L in November 2016 (95 percent ocean water salinity). Regardless, the CPUC does not manage the operation of the test slant well and is not responsible for determining water rights related to the test slant well, nor application of the reasonable use doctrine to its operation. See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.1 and 8.2.11.4. See also Master Response 3, Water Rights, Section 8.2.3.7.

Coppernoll-26 See Master Response 3, Water Rights and Master Response 4, The Agency Act and Return Water.

Coppernoll-27 The issue of ratepayer liability is outside the scope of CEQA and NEPA requirements; however, as described in Draft EIR/EIS Section 1.5.4.1, the CPUC decision to grant or deny a Certificate of Public Convenience and Necessity for the project (i.e., project approval) would follow a process after certification of the EIR during which the Commission will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. Therefore, comments regarding ratepayer liability are relevant to and will be considered as part of that proceeding.

The CPUC has no regulatory authority over MCWD because MCWD is a municipal utility and not investor-owned. Therefore, the MCWD Board of Directors, not the CPUC, establishes what MCWD customers pay for water.

[1] Seawater generally has a TDS of 33,500 mg/L

Coppernoll-28 The Draft EIR/EIS (Impact 4.9-6, page 4.9-31) identifies increased wear-and-tear on designated haul routes used by project construction vehicles as a potentially significant impact. Mitigation Measure 4.9-6 (page 4.9-32) stipulates that prior to commencing project construction, CalAm and the affected jurisdiction(s) shall enter into an agreement to repair roads damaged by project-related construction vehicles. The measure also requires that those roads shall be repaired to a structural condition equal to that which existed prior to construction activities. The EIR/EIS did not quantify the cost of implementing this mitigation measure because such cost analyses are outside the scope of the CEQA and NEPA analysis, and not necessary to identify the significance of the impact or identify appropriate mitigation measures. However, to clarify CalAm's financial responsibility for implementation of Mitigation Measure 4.9-6, the text of this measure is modified to include the following as the last sentence:

> <u>CalAm shall be responsible for paying for all repairs needed to fix the damage caused by project-related construction vehicles.</u>

Coppernoll-29 The response to comment Coppernoll-3 addresses the issue of seawater intrusion. The cumulative impact analysis in the EIR/EIS considers MCWD's reasonably foreseeable projects (see EIR/EIS Section 4.1.7). Regarding water rights, see Master Response 3. See also Master Response 4, The Agency Act and Return Water and response to comment MCWD-Hopkins and MCWD-EKI.

EIR/EIS Table 4.4-10 describes the City of Marina's municipal wells: "Wells 10, 11, and 12 are over 2 miles to the southeast, and are screened in the 900-Foot Aquifer (MCWD, 2005). The Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers." See also Master Response 3 regarding water rights and Master Response 4 regarding the Agency Act and return water.

Coppernoll-30 See response to comment Coppernoll-25.

Coppernoll-31 EIR/EIS Section 1.5.4 describes the lead agencies' decision-making processes.

Coppernoll-32 Regarding project feasibility, water rights, and harm, see Master Response 3, Water Rights. As discussed in Section 2.6, the proposed project does not intend to export water from the SVGB. Although the comment does not specify which mitigation measures "to avoid harm" are considered inadequate, the Lead Agencies note that as explained in EIR/EIS Section 2.6 and Master Response 3, in the context of water rights in which this EIR/EIS uses the term "harm," no mitigation for significant impacts under CEQA and NEPA is required, because no significant impacts would occur. Rather, CalAm has proposed Applicant-Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage, to ensure that if the project causes groundwater levels to damage local active wells, those active wells would be repaired or replaced. This measure would be implemented in coordination with the Monterey County Water

Resources Agency (MCWRA), and would be incorporated into the Mitigation Monitoring and Reporting Program (MMRP) that will be adopted by CPUC if the project is approved, providing a monitoring and reporting mechanism to ensure that the measure is implemented as proposed.

Additionally, the proposed project does not include a "21-mile pipeline," but as summarized in Table 3-1 in EIR/EIS Chapter 3, Description of the Proposed Project, includes approximately 21 total miles of pipelines. The potential impacts of these pipelines are analyzed throughout EIR/EIS Chapter 4, and mitigation proposed as appropriate to reduce significant impacts.

Coppernoll-33 See Master Response 3, Water Rights and Master Response 4, The Agency Act and Return Water.

Coppernoll-34 See Master Response 3, Water Rights, Section 8.2.3.6. See also Master Response 4, The Agency Act and Return Water, Sections 8.2.4.2 and 8.2.4.3.

Coppernoll-35 Figure 4.2-3 is a cross-section of the local geology and shows the test slant well penetrating the Dune Sands Aquifer and the 180-Foot Equivalent Aquifer. (Appendix E2 was prepared by HydroFocus and does not include a Geoscience diagram showing the slant wells in the 180-Foot Equivalent Aquifer.)

Section 2.6 explains that the entirety of the geographical area of the Basin that would be affected by the project contains brackish water. Therefore, the slant wells would be extracting brackish water, not fresh water. As the pumping continues, the predominant source of water replacing the extracted water is expected to be from the ocean. Master Response 2, Source Water Components and Definitions, provides further discussion of source water components. See also Master Response 4 regarding return water.

Coppernoll-36 See responses to comments Coppernoll-16 and Coppernoll-25. The water being extracted by the test slant well is not fresh water; it is much closer to ocean water salinity (33,500 mg/l) than to fresh water; see Master Response 11, CalAm Test Slant Well. The definition of the term "brackish water" is defined in Master Response 2. Water rights are discussed in Master Response 3.

Coppernoll-37 The lead agencies acknowledge that CalAm's water supplies have been constrained by legal decisions affecting the Carmel River (see Section 2.2.3) and the Seaside Groundwater Basin (see Section 2.2.4).

Coppernoll-38 See response to comment Coppernoll-27.

Coppernoll-39 See response to comment Coppernoll-27, as well as Sections 1.5.4.2 and 1.5.4.3 for a discussion of other agencies' consideration of the EIR/EIS and proposed project. In addition, Table 3-8 discusses the anticipated permits and approvals that may be required by federal, state, and local agencies.

Coppernoll-40 Section 2.6 discusses water rights, and the sentence on Draft EIR/EIS page 2-30 following the sentence cited in the comment explains that in California, "groundwater . . . is regulated through common law (court cases) rather than through the issuance of permits by government bodies." Section 2.6 concluded on Draft EIR/EIS page 2-39 with the statement that CalAm would likely possess water rights for the project; this conclusion has not been revised in the Final EIR/EIS. See Master Response 3 regarding water rights for additional details.

Section 2.5.4, including Draft EIR/EIS page 2-29 as cited in the comment, describes the assumptions about the allocation of MPWSP water supplies to jurisdictions within the boundaries of the MPWMD; the MPWMD is the jurisdiction to which the quoted sentence refers. MCWD provides water to Central Marina and the Ord Community and does not provide service within the boundaries of the MPWMD. MCWD is a party to the CPUC proceeding but does not have any authority to carry out or approve the MPWSP and therefore, does not meet the CEQA Guidelines Section 21069 definition of a Responsible Agency. The City of Marina is a Responsible Agency as described in Section 1.5.4.3 and their permit authority is described in Table 3-8 (see Draft EIR/EIS page 3-65).

Coppernoll-41 The discussion at the bottom of Draft EIR/EIS page 2-29 explains that one of the key functions of the MPWMD is to allocate water supplies within its boundaries, and Draft EIR/EIS page 2-30 concludes with the assumption that water provided by the proposed project would be allocated by the MPWMD (not by the CPUC). Because the MPWMD has not yet determined the allocation of supply that would be provided by the project, the discussion in Section 2.5.4 simply discloses the assumptions, for the purpose of the EIR/EIS analysis, of how the water would generally be distributed. The discussion in Section 2.5.4 does not contradict the discussion of water rights presented in Section 2.6, Water Rights. As stated there (on Draft EIR/EIS page 2-30), the issue of water rights is addressed in the EIR/EIS as one of project feasibility. Assuming the project is feasible and approved, it would provide water supply to the CalAm service area. See also response to comments MPWMD-21 and Coppernoll-40.

Coppernoll-42 The impacts of the proposed pipelines are discussed in every topical section of Chapter 4. The impacts on the SVGB are described in Section 4.4.5.

Coppernoll-43 See response to comment Coppernoll-5. The "Perched Dune Sand Aquifer" referred to in this comment has not been affected by CalAm pumping at the test slant well.

Coppernoll-44 See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.5 and 8.2.11.8.

Coppernoll-45 See Appendix E-1, which reports on the peer review of the North Marina Groundwater Model ($NMGWM^{2016}$) by Lawrence Berkeley National Laboratory

(LBNL) and Master Response 12, which responds to comments on the construction, assumptions and operation of the NMGWM[2016]. See also response to comment Coppernoll-43.

Coppernoll-46 The groundwater modeling used in the Draft EIR/EIS was conducted by HydroFocus, not by Geoscience; see Master Response 12 regarding the NMGWM[2016]. Also see Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5.5 for a discussion of the alleged conflict of interest.

Coppernoll-47 See response to comments Coppernoll-29 and Coppernoll-43. Project objectives are presented in EIR/EIS Section 1.3.1. The local and regional hydrogeology is presented in Section 4.4.1.2; the Dunes Sands Aquifer is described on page 4.4-6 and the 180-Foot Aquifer is described on page 4.4-8. The 180-Foot and 400-Foot aquifers referred to in the comment are not equivalent to the Dune Sands Aquifer; regardless, the EIR/EIS did not rely on the quoted statement or other statements from CalAm to determine potential groundwater impacts. See Master Response 9 for a discussion of the relevance of ERT data.

Coppernoll-48 See Master Response 9, which discusses how the ERT survey results are consistent with the characterization of the Basin in Section 4.4. As the property owner, CEMEX refused to grant access for the ERT study; neither CalAm nor the CPUC had authority to grant access.

Coppernoll-49 See response to comment Coppernoll-47 and Section 8.2.8.1 of Master Response 8, Project Source Water and Seawater Intrusion.

Coppernoll-50 The CPUC decision-making process is described in EIR/EIS Section 1.5.4.1. All input will be considered by the lead agencies.

Coppernoll-51 Seismic activity is addressed in Section 4.2.5; specifically, in Impacts 4.2-2, 4.2-3, and 4.2-4. See also response to comment Coppernoll-17.

Coppernoll-52 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), which discusses how the ERT survey results are consistent with the characterization of the SVGB in Section 4.4.

Coppernoll-53 See response to comment Coppernoll-29.

Coppernoll-54 See response to comment Coppernoll-40. The comment does not specify what "significant irreparable harm to marine vegetation and ecosystems" lacks mitigation; see Sections 4.5.5 and 4.6.5 for a discussion of direct and indirect impacts on marine biological resources and terrestrial biological resources, respectively.

Coppernoll-55 Appeals may be filed with the California Coastal Commission (CCC), pursuant to Coastal Act Section 30603(a)(5), for any development that constitutes a major public works facility.

Coppernoll-56 See response to comment Coppernoll-28 regarding the discussion of increased wear-and-tear and subsequent repair of the designated haul routes used by project-related construction vehicles. The project's temporary effects on recreational trail usage (during periods of pipeline installation within or adjacent to the Monterey Peninsula Recreational Trail, not for the duration of the project construction) are discussed under Impact 4.9-5 in Section 4.9. Of note, as part of the Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1), CalAm and its contractors would be required to schedule construction activities to minimize impacts during heavy recreational use periods (e.g., weekends and holidays). The project's effects caused by temporary displacement of parking spaces are discussed under Impact 4.9-7. As described, roadways that could be affected by project construction have less-than-substantial demand for the available on-street parking spaces, and/or alternative parking spaces are present nearby, and the impacts associated with temporary displacement of on-street parking would be less than significant. Of note, Mitigation Measure 4.9-7, which applies to staging areas in publicly-used parking lots, would require that the construction contractors coordinate with the affected entities to design the staging areas to avoid or minimize parking impacts in those lots.

Coppernoll-57 See response to comment Coppernoll-27.

Coppernoll-58 As stated on page 4.9-24 of the Draft EIR/EIS, the Traffic Control and Safety Assurance Plan (Plan) shall be developed on the basis of detailed design plans for the approved project. Such detailed plans are not yet available, and consideration of approval of the Draft EIR/EIS is not dependent on a detailed Plan. The Draft EIR/EIS presents the required major elements of and performance standards to be included in the Plan, but clearly states that the Plan shall not necessarily be limited to the elements listed on page 4.9-24 to 4.9-26. This is standard practice for EIRs/EISs.

The comment quotes two statements from the Draft EIR/EIS, but presents them in reverse order from how they appear within the cited paragraph on Draft EIR/EIS page 4.9-21. The reference to potentially substantial adverse effects on local and residential streets is followed by, not preceded by (as implied by the comment), the statement that implementation of Mitigation measure 4.9-1 would reduce that same impact to a less-than-significant level.

Coppernoll-59 The trip distribution (origins and destinations) of project-generated construction traffic is addressed as part of the discussion of "Combined Construction-Related Traffic Increases" in different areas within the project area (i.e., North Marina Area [Draft EIR/EIS page 4.9-19], Marina/Seaside Area [Draft EIR/EIS

page 4.9-21], and Monterey Area [Draft EIR/EIS page 4.9-22]). As stated at the start of each area's discussion, the estimated number of project trips on the area's access roads was based on assumptions developed by a professional traffic engineer regarding the origins and destinations of those trips. By way of example, project construction-related trips to and from the North Marina Area are reasonably expected to be split as follows: about 50 percent on Highway 1 north of Reservation Road (trip origins/destinations in the Highway 1 and Highway 101 corridors; about 25 percent on Highway 1 south of Reservation Road (trip origins/destinations in the Highway 1 corridor; and 25 percent on Reservation Road (trip origins/destinations in the Highway 1 corridor southeast of the project area).

Coppernoll-60 See response to comment Coppernoll-59 regarding project trip distribution. Project trips would disperse among an increasingly wide network of roads as one gets farther away from the project area, decreasing the number and effects of added traffic on roads removed from the corridors near-in to the project construction sites. For example, trips from Salinas to the various construction sites could travel on (could be dispersed among) Highway 183, Blanco Road, Nashua Road, Davis Road, or Highway 68.

See response to comment Coppernoll-58 regarding the timing of development of the required Traffic Control and Safety Assurance Plan.

The Draft EIR/EIS analysis of impacts from project construction trips (trucks and workers) on area roadways was conducted using an approach and methodology consistent with standard practice for such analyses. The basis for the commenter's estimate of truck and worker trips per month is unknown, but trips per month is not a measure germane to traffic analyses. Traffic operating conditions are judged on a daily and hourly basis, with conditions during the peak morning and evening commute hours having the greatest potential for significant impacts. It is this latter point that typically leads (and in this case, does lead) to the need for a mitigation measure (see the 4th bullet of Mitigation Measure 4.9-1, page 4.9-24 of the Draft EIR/EIS) to "schedule truck trips outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (i.e., if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications)."

See response to comment Coppernoll-28 regarding increased wear-and-tear on and subsequent repair of the designated haul routes used by project-related construction vehicles.

The statement about the project's use of Charles Benson Road cited by the commenter pertains to vehicle trips associated with operations of the MPWSP Desalination Plant. The Plant-generated vehicle trips on any other roads would be lower than that on Charles Benson Road (i.e., immediately reduced by a split

between Del Monte Boulevard either north or south of Charles Benson Road, and then further reduced as trips disperse onto different roads farther removed).

Regarding cumulative impacts during project construction (Draft EIR/EIS pages 4.9-36 to 4.9-38), the cumulative analysis discusses Mitigation Measures 4.9-1, 4.9-6, and 4.9-7, each of which would lessen the project contribution to cumulative construction-related traffic and transportation impacts. On top of that, the EIR/EIS identifies Mitigation Measure 4.9-C (Construction Traffic Coordination Plan), which is designed to further reduce the project's incremental contribution to the potential cumulative impact. The significant and unavoidable cumulative impact determination is based on the fact that there is no guarantee that local agencies would participate in the coordination efforts.

Regarding impacts on public transportation during project construction, there are no full road closures anticipated, so while individual bus stops could need to be temporarily relocated, relocation of bus routes would not be needed. The last bullet of Mitigation Measure 4.9-1 (page 4.9-26) is revised as follows:

- Coordinate with Monterey-Salinas Transit so the transit provider can temporarily relocate ~~bus routes or~~ bus stops in work zones as deemed necessary.

Coppernoll-61 See responses to comment Coppernoll-27 and -28.

Coppernoll-62 Dennis Williams is not under contract to the CEQA/NEPA Team and did not participate in the preparation of the Draft EIR/EIS; see Section 8.2.5.5 of Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, for a detailed discussion of the alleged conflict of interest. Potential impacts on water supply are analyzed in Section 4.4, Groundwater Resources. See also Section 8.5.1 for comments from and responses to the City of Marina.

Coppernoll-63 The operational impacts of the proposed project on groundwater resources are addressed in Section 4.4.5.2 and do not extend to Salinas. See Figure 4.4.13.

Coppernoll-64 Potential impacts on the SVGB are addressed in Section 4.4.5, and environmental justice is addressed in Section 4.20. Legal constraints on CalAm's water supplies are acknowledged in Sections 2.2.3 and 2.2.4.

Coppernoll-65 See response to comment Coppernoll-25. Regarding the source water components and location, see Master Response 2. See also Master Response 8, Project Source Water and Seawater Intrusion.

Coppernoll-66 See Master Response 3 regarding water rights and Master Response 8 regarding source water and seawater intrusion. The Lead Agencies have no jurisdiction over SWRCB actions.

Coppernoll-67 See Master Response 1, EIR/EIS Authorship, regarding EIR/EIS authorship. The project objectives are presented in Section 1.3.1. The water produced by the MPWSP and delivered to CalAm customers would be "developed water" (see Draft EIR/EIS page 2-32).

Coppernoll-68 See Master Response 3, Water Rights, master Response 8, Project Source Water and Seawater Intrusion, and Master Response 11, CalAm Test Slant Well.

Coppernoll-69 See response to comment Coppernoll-27.

Coppernoll-70 The ASR component of the proposed project would create more storage capacity; therefore, this suggestion already is proposed. It is not clear from the comment how removing debris from the Carmel River would provide additional supply, nor would such an action respond to the SWRCB orders to reduce diversions from the Carmel River. The farm runoff that is available for capture and reuse is one of the sources of water for advanced treatment by Pure Water Monterey GWR, a project considered in the cumulative scenario that is part of the basis for considering a reduced-size desalination plant under Alternatives 5a and 5b; thus, this potential source of water already is accounted for in alternatives to the proposed project. However, the GWR project would provide 3,500 afy as described in EIR/EIS Table 5.4-1 and in Section 5.4.7.1, not 6,500 afy.

Coppernoll-71 Impacts on MCWD wells are discussed in response to comment Coppernoll-29.

Coppernoll-72 See Master Response 1, EIR/EIS Authorship, regarding EIR/EIS authorship, Master Response 2 regarding source water definitions, and Master Response 3 regarding water rights. The other desalination projects being proposed in the Moss Landing area are described in Sections 5.4.3 (DeepWater Desal) and 5.4.4 (People's Project) and they are evaluated as alternatives to the MPWSP in Section 5.5. See also Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario, for a discussion on the status of the Moss Landing desalination proposals.

Coppernoll-73 Regarding harm to existing water users, see Section 8.2.3.5 of Master Response 3.

Coppernoll-74 See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario, for a discussion of the status of the Moss Landing desalination proposals. As noted in response to comment Coppernoll-72, several Moss Landing alternatives were analyzed in the EIR/EIS in Chapter 5. No reference is provided for the CCC statement described in the comment.

Coppernoll-75 As described in Section 1.4.3, the MPWSP Draft EIR was issued in April 2015 for a 60-day review period that was extended until September 30, 2015. Following that 5-month review period, the CPUC announced that the April 2015 Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination

with MBNMS. CEQA Guidelines Section 15105 states, "the public review period for a draft EIR shall not be less than 30 days nor should it be longer than 60 days except under unusual circumstances." The Draft EIR/EIS was released on January 13, 2017, for a 45-day review period that was then extended by 30 days, for a total review period of 75 days. CEQA Guidelines Section 15088.5, which provides guidance on circumstances requiring recirculation of a Draft EIR, does not include the length of the public review period as a potential reason for recirculation.

References

Marina Coast Water District (MCWD), 2016. Draft 2015 Urban Water Management Plan, May. [http://www.mcwd.org/docs/agenda_minutes/2016-06-06_board/Item%2011-A%20-%20MCWD%20Draft%202015%20UWMP%20v20160520.pdf]

8.7.9 Responses to Comments from Herbert Cortez

Cortez-1 The comment on CPUC Resolution ALJ-252, Rules for Public Comments at Commission Meetings, was submitted at the MPWSP Public Hearing on Thursday, February 16, 2017, in Carmel, CA. The public hearing was announced in the January 13, 2017 Notice of Availability of the MPWSP Draft EIR/EIS as a chance to interact with technical staff and preparers of the Draft EIR/EIS, and as an opportunity for the public to provide oral and/or written comments. The Public Hearing on the Draft EIR/EIS was not a CPUC Commission Meeting; therefore, rules described in CPUC Resolution ALJ-252 did not apply to the Public Hearing.

8.7.10 Responses to Comments from Bruce Delgado

8.7.10.1 Responses to Comments from Bruce Delgado – Letter 1

Delgado1-1 As explained in EIR/EIS Table 4.4-10, the CEMEX South Well is located about 1,600 feet southeast of the insertion point of the proposed slant wells. The well screen is set between 400 and 506 feet below ground surface and is separated from the intake portion of the slant wells by the 180/400-Foot Aquitard. The CEMEX North Well collapsed and is unusable. The monitoring well clusters installed by CalAm have known depths and provide more accurate data.

Delgado1-2 See response to comment Marina-135 in Section 8.5.1, which addresses comments regarding the cumulative analysis and analysis of environmental justice effects of air quality impacts in Section 4.20, Socioeconomics and Environmental Justice. Further, as described in Impacts 4.10-3 and 4.10-5, project construction and operation would not create objectionable odors that would affect a substantial number of people, and cumulative impacts related to odors are addressed in Impact 4.10-C. Because no odor-related impacts affecting people are anticipated, they are not discussed further in the environmental justice analysis in Section 4.20.

Delgado1-3 The last row in EIR/EIS Table 4.20-6 displays the Monterey Bay Unified Air Pollution Control District (MBUAPCD) Significance Thresholds for ROG, NO_x, CO, PM_{10} and $PM_{2.5}$. See also Section 4.10.5.1, which discusses construction-related air quality impacts; specifically, see Table 4.10-5 and Table 4.10-6. See also Section 4.10.5.2 (Operational and Facility Siting Impacts); specifically see Table 4.10-7.

8.7.10.2 Responses to Comments from Bruce Delgado – Letter 2

Delgado2-1 Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, addresses this comment. Sections 8.2.5.1 through 8.2.5.3 describe the establishment of the Hydrogeologic Working Group (HWG) and its membership as defined by a 2013 settlement agreement. Section 8.2.5.5 describes the relationship of the HWG to this EIR/EIS. Section 8.2.5.6 describes the potential conflicts of interest raised in comments. Regarding authorship of this EIR/EIS, see also Master Response 1.

8.7.11 Responses to Comments from Myrleen Fisher

Fisher-1 See Master Response 11, CalAm Test Slant Well, regarding the test slant well and the feasibility of slant well technology, and Master Response 3 regarding water rights. See also Master Response 2, Source Water Components and Definitions, for a discussion of the location and composition of the source water.

Fisher-2 The calculation of the infiltration rate at the seafloor in the EIR/EIS was performed by the EIR/EIS consultants for this project, at this location, and was compared to conditions at Doheny State Beach. EIR/EIS Section 4.5.5.2 presents the independent calculation of the infiltration rate at the seafloor at CEMEX that was then compared to, but not derived from, the work by Dr. Williams at Dana Point. See Master Response 11 regarding the test slant well, which has provided the site-specific data requested in the comment. The issue of slant well feasibility is addressed in response to comment PWN2-8 in Section 8.6.17.

Fisher-3 See Master Response 15, Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenarios, Section 8.2.15.2, regarding the status of and information about the People's Project (Alternative 4) with respect to solar energy. Responses to comments from Nancy Selfridge are provided in Final EIR/EIS Section 8.7.22.

Fisher-4 The information provided by the People's Project applicant showed the alignments of the intake and discharge pipelines that were presented in Chapter 5, Alternatives Screening and Analysis. The description of Alternative 4 (People's Project) in EIR/EIS Section 5.4.6.1 specifically identifies the existing caisson for the proposed open water intake system, and the existing 51-inch-diamter concrete pipe that originates at the Moss Landing Green Commercial Park and crosses under the marina and marina parking lot island, under the commercial harbor and under the island, that extends 800 feet from shore. As described in Section 5.4.6.1, both the intake and discharge pipelines would need to be extended offshore. Section 5.5.5 provides detailed descriptions and analysis of impacts of all alternatives; Section 5.5.5.6 addresses the DeepWater Desal Project and Section 5.5.5.7 addresses the People's Project. As explained in EIR/EIS Section 5.5.5.7, the new offshore intake and discharge pipelines proposed as part of the People's Project would be laid on the seafloor with concrete collars and protected with approximately 100,000 cubic yards of riprap armoring, and this construction effort would still result in the need for permits. EIR/EIS Table 5.6-1 presents the impact conclusion against baseline/existing conditions for each impact statement, for every topical area evaluated, for the proposed project and for all alternatives, and further provides a relative impact severity for each alternative (increased, decreased or same) compared to the proposed project. Regarding the suggestion of the "greater feasibility of the People's Project," analysis of alternatives under CEQA and NEPA compares the environmental impacts of *feasible alternatives*. The EIR/EIS does not attempt to characterize the relative

feasibility of alternatives because the proposed project and all alternatives (1 through 5a/5b) are considered feasible as described in Chapter 5.

Fisher-5 The executive summary text on Draft EIR/EIS Page ES-11 that discusses impacts resulting from open water Alternatives 2, 3 and 4, is a summary of the detailed analysis that is presented in EIR/EIS Sections 5.5.5.5, 5.5.5.6, and 5.5.5.7, respectively. The conclusion of a significant and unavoidable impact on marine organisms resulting from the screened open water intakes considered under Alternatives 2, 3, and 4 is not based on the impingement of adult fish. As indicated for Alternative 2 in Section 5.5.5.5 (see Draft EIR/EIS page 5.5-117), "Direct impingement of larger fish and invertebrate organisms is not expected due to the wedgewire screens and the low flow rate." For Alternative 2, the significant and unavoidable impact conclusion for marine biological resources is based on the uncertainty of the efficacy of proposed mitigation to reduce entrainment of plankton, larval invertebrates, and larval fish. As shown in Table 4.5-8, the swimming speeds of plankton, invertebrates, and larval fish evaluated range from 0.2 millimeters per second (mm/sec) to 600 mm/sec. An open ocean intake that would draw water in at a rate of 0.5 ft/sec (152.4 mm/sec) or even the 0.3 ft/sec (91.4 mm/sec) suggested in the comment would have the potential to entrain most of the plankton and invertebrates listed in Table 4.5-8. Such an entrainment effect is the basis for the calculation of Area of Production Foregone in Section 5.5.5.5. Note that in Mitigation Measure ALT-2-Marine-2, item 1 requires that *in addition to* the required operational standard of limiting through-screen velocity at the intake to not exceed 0.5 ft/sec, CalAm would be required to implement the best available technology feasible to minimize intake and mortality of all forms of marine life in the context of design and operation of an open ocean intake. Thus, if Alternative 2 were implemented and CalAm could feasibly install intakes with through-screen velocity of 0.3 ft/sec, the mitigation measure would require them to do so; however, the significance conclusion would not change.

Similarly, the analyses for Alternatives 3 and 4 (Sections 5.5.5.6 and 5.5.5.7, respectively) conclude that impacts may remain significant and unavoidable for the same reasons specified for Alternative 2, and would result in greater Areas of Production Foregone than Alternative 2 as a result of their greater proposed intake volumes. However, the impact conclusion was not determined based on the order of magnitude of the impact; it was based on the fact that "residual impacts may remain due to the uncertainty of the efficacy of the mitigation."

Fisher-6 The comment appears to refer to the April 2015 Draft EIR, in which the quoted statement appears on page 7-13 (page 1466 of the CD version of the Draft EIR). The quoted statement does not appear in the January 2017 Draft EIR/EIS. The People's Project was described and analyzed in detail as Alternative 4 in Chapter 5, Alternatives Screening and Analysis.

Fisher-7 See response to comment Fisher-6 and Master Response 15 regarding the status of the People's Project and MPWSP Lead Agency efforts to obtain information about that project from the applicant.

Fisher-8 The comment appears to refer to the April 2015 Draft EIR, in which the quoted statement appears on page ES-79 (page 101 of the CD version of the Draft EIR). The quoted statement does not appear in the January 2017 Draft EIR/EIS. Any proposal made by the People's Project applicant to use solar power would not affect the significance conclusions relevant to the proposed MPWSP. See Master Response 15, Section 8.2.15.2, regarding the potential for the People's Project to use solar power. Further, see response to comment USEPA-4, in Section 8.3.5, for revised Mitigation Measure 4.11-1, regarding the proposed project's greenhouse gas emissions; based on revisions to this measure, the proposed project's greenhouse gas impacts have been reduced to less than significant with mitigation in Final EIR/EIS Section 4.11.

Fisher-9 See response to comment Selfridge1-2, in Section 8.7.22, which describes the EIR/EIS text revision made at the specified location in the alternatives analysis.

Fisher-10 See responses to comments Fisher-5, Fisher-6, Fisher-7, Fisher-8, and Fisher-9. The People's Project was described and analyzed in detail as Alternative 4 in EIR/EIS Chapter 5, Alternatives Screening and Analysis. The Final EIR/EIS has not been altered in such a way as to identify new or substantially more severe significant environmental impacts compared to the Draft EIR/EIS, nor has the Final EIR/EIS identified new, feasible mitigation measures or project alternatives to reduce significant impacts that the project proponent refuses to incorporate into the project. The comments on the Draft EIR/EIS have not raised issues or presented data so as to cause the Lead Agencies to conclude that the Draft EIR/EIS was fundamentally flawed. For these reasons, the EIR/EIS need not be recirculated for further public review.

8.7.12 Responses to Comments from David Gorman

Gorman-1 Lead agencies consider all comments on the Draft EIR/EIS when making decisions about the proposed project. See Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.1, which explains that the MPWSP would extract seawater and brackish water from a coastal capture zone, the effects of which would not negatively impact the water quality (including salinity) of the inland portions of the 180-Foot Aquifer. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), for a discussion of the use of ERT in the analysis of groundwater quality and seawater intrusion impacts in the EIR/EIS.

Gorman-2 See Master Response 3, Water Rights.

Gorman-3 Refer to Section 1.1, Introduction, which explains that, as required by CEQA and NEPA, the EIR/EIS analyzes and discloses potentially significant environmental consequences of the proposed project, pursuant to CEQA and NEPA. With regards to water rights, see Master Response 3.

8.7.13 Responses to Comments from Jane Haines

Haines-1 Master Response 11, CalAm Test Slant Well, explains that the test slant well was installed and operated in order to test the feasibility of slant well technology at the CEMEX site, and describes the results of that testing. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Haines-2 See Master Response 3, Water Rights.

Haines-3 See Master Response 11, Section 8.2.11.8 regarding the Dana Point test slant well. The information in the OC Register article cited in the comment is not relevant to this project or EIR/EIS. See EIR/EIS Section 4.20, Socioeconomics and Environmental Justice, which addresses the potential impacts of rate increases on low-income ratepayers and low-income ratepayer assistance programs (Draft EIR/EIS pages 4.20-17 and 4.20-18).

8.7.14 Responses to Comments from Clifton Herrmann

Herrmann-1 As described in Section 2.2, Background, State Water Resources Control Board (SWRCB) Order 95-10 directed CalAm to implement conservation measures to offset 20 percent of demand while it pursued an alternative water supply, and Order 2009-0060 directed CalAm to reduce diversions from the Carmel River by an additional 5 percent, starting in October 2009, with additional annual reductions starting in October 2011. Table K-1 in Appendix K summarizes key CalAm and Monterey Peninsula Water Management District (MPWMD) conservation programs and estimated water savings for those that are quantifiable, for years 2010 through 2015. As stated on page K-4, these programs have contributed to the Monterey Peninsula having among the lowest residential per capita water use rates in the state. The potential reductions in demand from continued implementation of these programs is described in EIR/EIS Section 5.4.2.3. The only identified additional feasible conservation measures are those included in the MPWMD's 2016 Monterey Peninsula Water Conservation and Rationing Plan, which as explained in Section 5.4.2.3 would be triggered by severely supply-constrained conditions that could occur as a result of the No Project Alternative, and are not considered to be reasonable or feasible elective conservation measures.

Herrmann-2 San Clemente Dam, from its construction in 1921 to its deconstruction in 2015, is described in EIR/EIS Section 2.2.2.1. The issue of ratepayer liability is outside the scope of CEQA and NEPA requirements; however, as described in EIR/EIS Section 1.5.4.1, the CPUC decision to grant or deny a Certificate of Public Convenience and Necessity for the project (i.e., project approval) would follow a process after certification of the EIR during which the Commission will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. Therefore, comments regarding ratepayer liability are relevant to and will be considered as part of that proceeding.

Herrmann-3 Power demands of the proposed project are described in EIR/EIS Section 3.4.5 and impacts of the proposed project related to energy use and conservation are presented in Section 4.18. The electrical power facilities required for the proposed project are described in EIR/EIS Section 3.2.5 and evaluated by resource area in Chapter 4. As described on Draft EIR/EIS page 4.18-17, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project; therefore, no expansion of energy infrastructure would be necessary, other than that described in Section 3.2.5 for the proposed project.

Herrmann-4 EIR/EIS Section 4.11 specifically addresses issues related to greenhouse gas (GHG) emissions (including carbon dioxide) resulting from implementation of the proposed project. The section presents an overview of climate change, describes the various GHGs that have been identified as a source of climate change, and

analyzes the potential GHG impacts associated with implementation of the proposed project.

Herrmann-5 The SWRCB Division of Drinking Water regulates public water systems and requires permits for water treatment facilities to ensure public health and safety. CalAm must secure a Permit to Operate a Public Water System, consistent with California Public Health and Safety Code Section 116525, before operating the project (see Draft EIR/EIS Table 3-8). The California Public Health and Safety Code regulates contaminants in drinking water, and does not require the presence of minerals or other materials in drinking water (such as those that reverse osmosis treatment may remove). Furthermore, as shown in Table 2-4 in Section 2.4, desalinated water from the MPWSP would make up only 44 to 66 percent of total supply in CalAm's Monterey District.

Herrmann-6 In preparing the Draft EIR/EIS, the brine plume was modeled under various flow scenarios which are described in Draft EIR/EIS Section 4.3.5.2 (Table 4.3-10) for the proposed project, and in Section 5.5.3 for the alternatives; see also Appendix D1. As explained therein, dilution model results indicate the brine discharge would meet the Ocean Plan objective of less than 2 parts per thousand above ambient salinity at the point of regulation. How the plume would move across the seafloor is described on Draft EIR/EIS page 4.3-82. The plume would not run down the canyon as a dense stream.

Herrmann-7 EIR/EIS Section 4.2 addresses potential impacts of the proposed project on geology, soils, and seismicity and considers whether or not the brine discharge would cause erosion on the seafloor. Table 4.2-8 on Draft EIR/EIS page 4.2-71 compares ambient ocean currents at depth with the estimated current velocities of the jet plume, and concludes the impact would be less than significant.

Herrmann-8 The comment has been noted and the Lead Agencies will consider all comments in their decisions on the project. The need for the project is presented in Draft EIR/EIS Section 1.3.

8.7.15 Responses to Comments from Juli Hofmann

Hofmann-1 See Master Response 3, Water Rights, Section 8.2.3.2.

Hofmann-2 See Master Response 3, Water Rights, Sections 8.2.3.5 and 8.2.3.7.

Hofmann-3 The discussion in the EIR/EIS on water rights (Section 2.6) relies upon the July 2013 SWRCB Final Report (EIR/EIS Appendix B2) concerning the facts that could establish CalAm's water rights for the project and that Report uses the words noted in the comment. See also Master Response 3, Water Rights, Sections 8.2.3.3 and 8.2.3.5.

Hofmann-4 See Master Response 3, Water Rights, Sections 8.2.3.5 through 8.2.3.7.

Hofmann-5 The text cited in the comment is from the EIR/EIS Executive Summary, Section ES.7.1, Key Differences Between Alternatives. EIR/EIS Executive Summary Section ES.5.2 presents a summary of potential impacts and mitigation measures for the proposed project and explains that, "significant impacts may occur relative to: geology and soils; surface water hydrology and water quality; groundwater resources . . . [a]ll impacts would be reduced to less than-significant levels. . .". See also EIR/EIS Table ES-1.

EIR/EIS Section 4.4.5 addresses the direct and indirect effects of the proposed project on groundwater resources; see Table 4.4-9. Section 4.4.5.1 presents the construction-related impacts and Section 4.4.5.2 presents the operational-related impacts. Alternatives 2, 3, and 4 would use screened open water intakes and the impacts of these alternatives on groundwater resources and marine biological resources, and a comparison to the proposed project's impacts on the same resources, are addressed in EIR/EIS Section 5.5.

Hofmann-6 EIR/EIS Section 4.4, Groundwater Resources, presents a complete description of the background, current baseline conditions, groundwater modeling, and the analysis of proposed project impacts on groundwater levels and quality, including impacts on the Dune Sand, 180-Foot, 400-Foot and Deep aquifers; see EIR/EIS Figures 4.4-14, 4.4-15 and 4.4-16, and response to comment Hofmann-5. As stated therein, the proposed project would have less-than-significant impacts on groundwater levels and quality. See also Appendix E2 for the groundwater modeling analysis.

Hofmann-7 See response to comment Hofmann-6. The significant and unavoidable impacts on terrestrial or marine biological resources that the comment refers to would occur only under Alternatives 1 and 5b, which would locate the slant wells at Potrero Road. There would be no such significant and unavoidable impact on terrestrial or marine biological resources resulting from lowering of groundwater levels under the proposed project (or Alternative 5a), which would locate the slant wells at the

CEMEX site and would not affect Elkhorn Slough (but would affect flows in the Salinas River and Tembladero Slough, that would have a less than significant impact on steelhead; see EIR/EIS Section 4.6.5.2, Impact 4.6-6). There would be no significant and unavoidable impacts of the proposed project (or Alternative 5a) related to a changes in groundwater levels, but there would be a significant and unavoidable impact at CEMEX related to compliance with the City of Marina's Local Coastal Land Use Plan; see EIR/EIS Table 4.6-5, Impact 4.6-4.

EIR/EIS Section 5.5.4 presents a description of the groundwater basin conditions for each alternative and the analyses of alternatives' impacts on groundwater resources. The effects are different in the two proposed locations because the stratigraphy is different. As explained in EIR/EIS Section 5.5.4.1, and as shown in Figure 4.4-2, the Dune Sands Aquifer transitions into a similar shallow aquifer underlying the Moss Landing Area to the north, referred to as the Perched-A Aquifer. The Perched-A Aquifer differs from the Dune Sand Aquifer in that it is underlain by a defined layer of less permeable, fine-grained sediments (clay) known as the Salinas Valley Aquitard. The Salinas Valley Aquitard is not present at the CEMEX site.

Hofmann-8 See Master Response 4, Agency Act and Return Water, Sections 8.2.4.2 and 8.2.4.3.

Hofmann-9 See Master Response 4, Agency Act and Return Water, Sections 8.2.4.2 and 8.2.4.3 for information on ocean water percentage of feedwater and Master Response 12, The North Marina Groundwater Model (v. 2016) for information regarding the reliability and use of the $NMGWM^{2016}$. A range of return water scenarios from 0 to 12 percent was tested in the groundwater modeling as explained in EIR/EIS Section 4.4.4.2.

Hofmann-10 See Master Response 11, CalAm's Test Slant Well, Section 8.2.11.2 for a discussion of the CEQA and NEPA reviews completed for the test slant well. Master Response 11, Section 8.2.11.7 discusses the conversion of the test slant well to a permanent well. In order for the test slant well to operate past its original agreed upon timeline, CalAm would need to apply to the Coastal Commission for an extension of the Coastal Development Permit. There is no violation of CEQA or NEPA since the review of the proposed conversion is addressed throughout this EIR/EIS; see EIR/EIS Section 3.2.1.1.

Hofmann-11 The data are not missing; the Salinas Valley Aquitard (SVA) is not present at the CEMEX site. As explained in EIR/EIS Section 4.4.1.2, the SVA is a blue or yellow sandy clay formation up to 100 to 150 feet thick that lies mostly north of and generally parallel to the northwest-flowing Salinas River. The SVA thins and becomes discontinuous away from the centerline and at the Pacific Ocean, and was not observed in the exploratory borings at the CEMEX site.

Lawrence Berkeley National Laboratories (LBNL) performed a peer review of the version of the North Marina Groundwater Model (NMGWM) that was utilized for the April 2015 Draft EIR; that model is referred to as $NMGWM^{2015}$. LBNL noted in EIR/EIS Appendix E1, "the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-foot equivalent (180-FTE) aquifers from greater than about 2 km east of the proposed extraction site." As explained in EIR/EIS Appendix E2, Section 3, Table 3.1, HydroFocus added the FO-SVA and transition zone to the NMGWM, and adjusted the horizontal and vertical conductivity values based on reported aquifer tests and modeling studies to improve comparisons between measured and model-calculated water levels. The modeling conducted for this EIR/EIS included all the revisions recommended by LBNL and that model is referred to as $NMGWM^{2016}$. See EIR/EIS Appendix E2, and Master Response 12, The North Marina Groundwater Model (v. 2016).

Hofmann-12 The discussion of baseline conditions in EIR/EIS Section 4.1.3 acknowledges that since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so the baseline data have been updated as appropriate. This document notes those updates in its discussions of the Setting/Affected Environment for the various resource areas and applies them in the pertinent analyses. For instance, in Section 4.6, Terrestrial Biological Resources, updates to survey information for biological resources are described in Section 4.6.1.2, Information Sources and Survey Methodology. As another example, the conceptual model of the Salinas Valley Groundwater Basin was improved with the borehole data obtained when the monitoring wells were drilled in 2015 and 2016, and the groundwater model was revised using data from those monitoring wells that were generated during the test slant well pump test.

However, a drought would not have an effect on the groundwater modeling and would not affect the results. As explained in EIR/EIS Section 4.4.4.2, Groundwater Modeling, using the method of superposition solves only for the groundwater changes that would be due solely to the proposed project pumping. These changes would be independent of the effects from the other stresses on the basin such as drought, seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional information on superposition.

Hofmann-13 The LBNL text quoted from EIR/EIS Appendix E1 does not indicate that data from 2012 were "incomplete." See response to comment Hofmann-11; the modeling conducted for this EIR/EIS included all the revisions recommended by LBNL. See also Master Response 1, EIR/EIS Authorship; CalAm did not prepare the model.

The question marks placed on EIR/EIS Figure 4.4-13, Project Area Hydrogeologic Cross Section, indicate where the geologic contact must be considered approximate between well borings. This is standard convention for developing cross sections in geology when the stratigraphic data is available from only a select number of well borings over a given distance. The depth and location of geologic contacts that extend a considerable distance between well borings and localized, discontinuous features (e.g., lenses of clay) that can end or pinch out between wells are typically indicated by question marks and dashed lines. This does not necessarily mean lithologic data necessary to represent a geologic unit is non-existent; rather, it means that the available lithologic data (from well borings) must be interpreted and in some cases, extrapolated at locations where actual soil samples or down-hole geophysical data are not available.

The NMGWM^{2016} was constructed using hydrogeologic data from several sources (i.e., monitoring well logs, existing production well logs, geophysical data) that, when combined, yield a reasonably accurate portrayal of the depth and location of aquifers and aquitards in the project area. The approximations of geologic contacts represented on Figure 4.4-3 do not affect the overall accuracy of the groundwater model and its capability to project the regional groundwater response from the MPWSP slant well pumping.

Hofmann-14 As explained in EIR/EIS Section 4.2.4.5, the rate of coastal retreat was modeled through the year 2100 to identify the anticipated time by which coastal retreat would reach, and potentially expose the slant wells. This analysis included consideration of storm events and their effect on coastal erosion. Impact 4.2-10 describes the anticipated effect of coastal erosion with respect to exposing slant well infrastructure. Mitigation Measure 4.2-10 requires monitoring of the actual rate of coastal retreat and implementation of well abandonment procedures prior to well exposure. In addition, as shown on EIR/EIS Figure 3-5a, the brine discharge pipeline from the desalination plant would connect to the outfall pipeline at the Monterey Regional Water Pollution Control Agency (MRWPCA) Regional Wastewater Treatment Plant, located about 2 miles inland and well outside of the extent of coastal retreat anticipated to occur over the project lifetime.

Hofmann-15 The outfall pipeline and concrete pad beneath the beach structure are existing facilities that are owned and operated by the MRWPCA; the MPWSP would not change these structures. See response to comment MRWPCA-4 in Section 8.5.9 regarding the separate and independent project to address the previously exposed beach structures.

Hofmann-16 The operations of the CEMEX sand mining facility are not related to the MPWSP and are therefore, not the subject of this EIR/EIS. See Master Response 14,

CEMEX Settlement Agreement, which addresses the relationship between the settlement agreement and the MPWSP.

Hofmann-17 EIR/EIS Figure 4.2-5 indicates that the areas where the well heads of the slant wells would be constructed on the CEMEX site would be in an area of moderate liquefaction potential. The potential impacts from seismically induced liquefaction are analyzed in Impact 4.2-4. The risks from liquefaction are high in sandy areas with shallow groundwater. The well heads are set back from the beach behind the sand dunes, where the depth to groundwater would be deeper (approximately 30 feet below ground surface), thus reducing the risk. In addition, as discussed in EIR/EIS Section 4.2.3, Approach to Analysis, the proposed project components would undergo a final geotechnical investigation and CalAm would implement all geotechnical recommendations in design and construction of the project to resist damage from seismic shaking.

Hofmann-18 EIR/EIS Section 4.3 addresses surface water hydrology and water quality, while Section 4.4 addresses groundwater quality; Impacts 4.4-2 and 4.4-4 address the project's potential to degrade groundwater quality. California's anti-degradation policy (Resolution 68-18), as it applies to groundwater quality, is described in EIR/EIS Section 4.4.2.2.

Hofmann-19 The Terrace Deposits at the CEMEX site are not connected to the Salinas Valley Aquitard (SVA). As explained in response to comment Hofmann-11, the SVA does not extend beneath the CEMEX site. The EIR/EIS text cited in the comment is in reference to the similarities between the sediments of the inland 180-Foot Aquifer and the near-coast Terrace Deposits. The EIR/EIS text goes on to state that because of the similar physical characteristics between the coastal Terrace Deposits and 180-Foot Aquifer, the Terrace Deposits underlying the CEMEX site are referred to as the 180-Foot Equivalent Aquifer or in shorthand, 180-FTE Aquifer. See EIR/EIS Section 4.4.1.2 for the complete explanation of the 180-FTE Aquifer. The SVA and the Fort Ord Aquitard (FO-SVA) are two distinct units.

The peer review by LBNL was conducted on the NMGWM[2015], which both LBNL and HydroFocus determined to be deficient in the simulation of the Fort Ord area and the Dune Sand aquifer. As part of the HydroFocus NMGWM[2016] review and revision, available geologic reports from the area were reviewed. HydroFocus determined the need to include the A-Aquifer and the FO-SVA independent of the LBNL review. See Master Response 12 for more information.

Hofmann-20 See EIR/EIS Section 4.4.1.1, Terminology and Concepts. As shown in EIR/EIS Figure 4.4-3 and described in Section 4.4.1.2, the slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer. The slant wells would not extend vertically, beyond the bottom of the 180-FTE Aquifer, and would not therefore, extend into the 180/400 Foot Aquitard. It should be noted that Draft

EIR/EIS Figure 4.4-3 incorrectly labels the "180/400-Foot Aquitard" as the "180/400-Foot Aquifer." This has been corrected in Final EIR/EIS Figure 4.4-3.

Hofmann-21 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Hofmann-22 A discussion of the impact analysis and modeling data regarding MPWSP effects on seawater intrusion is provided in Impact 4.4-4. See also response to comment MCWD-187, and Master Response 8, Source Water and Seawater Intrusion, Section 8.2.8.4.

Hofmann-23 The EIR/EIS does not conclude that the return water would retard seawater intrusion. Impact 4.4-3 concludes that return water would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas as water levels increase. See Impact 4.4-4, and Section 5.4 of Appendix E2 which discuss the project's effect on seawater intrusion.

Hofmann-24 There are several required steps and many sources of key input data necessary to construct, calibrate, and run the NMGWM^{2016} so that an accurate projection of project effects can be obtained. The modeling did not use a single well and it is not clear from the comment what is meant by the data being incomplete. EIR/EIS Appendix E2 provides a description of the efforts made to develop a reliable modeling tool and Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3 further clarifies the use of the NMGWM^{2016}.

Hofmann-25 See Master Response 3, Water Rights, Section 8.2.3.5.

Hofmann-26 See Master Response 12, The North Marina Groundwater Model (v. 2016), Sections 8.2.12.2 and 8.2.12.4.

Hofmann-27 See Master Response 4, The Agency Act and Return Water. See also Master Response 3 regarding water rights.

Hofmann-28 See Master Response 4, Section 8.2.4.3, for a description of the how the ocean water percentage (OWP) of the feedwater was calculated and applied. See also Master Response 2, Source Water Components Defined.

Hofmann-29 Under most scenarios, the projected cone of depression from the MPWSP pumping extends into the city limits of Marina, as shown in EIR/EIS Figures 4.4-14, 4.4-15, and 4.4-16. See Master Response 8, Source Water and Seawater Intrusion, for a description of the difference between the cone of depression and the capture zone.

Hofmann-30 Slant well pumping would retard seawater intrusion because the slant wells would intercept seawater that would otherwise migrate inland; see Impact 4.4-4, Figure 4.4-17, and response to comment MCWD-187. See also EIR/EIS

Appendix E2, Section 5.4 and Figure 5.7, and Master Response 8, Project Source Water and Seawater Intrusion.

The modeling did not use a single well; see response to comment Hofmann-24.

Hofmann-31 As described in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.4, monitoring well data collected during test slant well pumping at CEMEX was available and utilized to adjust aquifer parameter zones and parameter values in the $NMGWM^{2016}$ model layers (see also EIR/EIS Appendix E-2, Section 3.2, Aquifer Parameter Zones). As described in EIR/EIS Section 4.4.4.2 and Appendix E-2, as well as Master Response 8, Section 8.2.1.1, the $NMGWM^{2016}$ used forward particle tracking to simulate the movement of the seawater intrusion front as a result of proposed project slant well pumping.

Hofmann-32 See response to comment Hofmann-19.

Hofmann-33 See response to comment Hofmann-31.

Hofmann-34 The EIR/EIS presents the proposed project's inconsistency with the City of Marina's LCLUP in Impact 4.6-4 and concludes this would be a significant and unavoidable impact. Mitigation recommended for significant impacts on terrestrial biological resources in Impacts 4.6-1 through 4.6-3 would apply to this impact as well; see Impact 4.6-4 discussion for applicable mitigation measures. See also response to comment MCWD-150 in Section 8.5.2.

Hofmann-35 EIR/EIS Section 6.3.5.4 considers the potential growth-inducing impact (i.e., the potential to remove an obstacle to growth) of delivering Salinas Valley Groundwater Basin (SVGB) return water to Castroville. Section 6.3 as a whole evaluates the growth-inducing impact of water supply provided by the project. The area that would receive project water primarily consists of CalAm's service area; however, the potential for SVGB return water and associated infrastructure to induce growth in the Castroville area was also considered. Because the City of Marina is outside the CalAm service area and would not receive water supply or SVGB return water, project water supply would not remove an obstacle to growth in Marina. The impacts of project construction and operation, including impacts on groundwater supplies, are evaluated in Chapter 4 of the EIR/EIS. See also Master Response 3, Water Rights, Section 8.2.3.7, Effect on Marina Coast Water District.

Hofmann-36 See Master Response 13, Demand (Project Need) and Growth.

Hofmann-37 As explained in EIR/EIS Section 6.3.6.1, the impacts of growth within the service area jurisdictions have been analyzed in the jurisdictions' general plan CEQA documents; these are the impacts of growth that would be supported, to some degree, by the proposed project, as described in EIR/EIS Section 6.3.

As stated in the response to comment Hofmann-35, the growth-inducing impacts of project water supply would occur in the area served by project water. Both Marina and the Potrero Road area are outside CalAm's service area.

Hofmann-38 Subsurface intakes are preferred, not promoted. EIR/EIS Section 5.3.1 presents regulatory considerations in the development and screening of alternatives; Section 5.3.1.2 presents the MBNMS Guidelines for Desalination Plants. These non-regulatory guidelines are meant to ensure that future desalination plants in the sanctuary are properly sited and designed, and are operated in a manner that results in minimal impacts on the marine environment. To that end, the Guidelines emphasize that the feasibility of using subsurface intakes as an alternative to open water intakes should be investigated. Where feasible and beneficial, subsurface intakes should be used. Where subsurface intakes are not feasible, open-ocean intakes should be sited with existing pipelines of acceptable structural integrity. If new pipelines are necessary, sub-seafloor placement should be evaluated to minimize disturbances to biological resources and to recreational and commercial activities. Questions about the contents of NOAA's Desalination Guidelines, which were prepared by MBNMS staff in collaboration with staff from the California Coastal Commission, the Central Coast Regional Water Quality Control Board, and NOAA's National Marine Fisheries Service in 2010, are outside the scope of this EIR/EIS.

Hofmann-39 The comment is correct; but pipes (like the existing MRWPCA outfall) have been in the ground along the coast for decades, and until they are exposed, they do not cause, contribute to, or exacerbate coastal erosion. The analysis of potential impacts of the proposed project from, and on coastal erosion is addressed in Impact 4.2-10, and is supported by substantial evidence (including facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts) that is presented in EIR/EIS Section 4.2 and in the Coastal Retreat Study cited in Section 4.2.4.5. See also response to comment Hofmann-14.

Hofmann-40 See response to comment Hofman-39. It is unclear what is meant by "repair issues," however, Impact 4.2-10 addresses the potential need to abandon slant wells before coastal retreat migrates the beach inland, and exposes the subsurface slant wells. Issues related to project operational costs are outside of the scope of this EIR/EIS.

Hofmann-41 See Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, regarding the use of subsurface slant wells as a "new technology." No intake option, nor any other component of the proposed project or an alternative, has yet been adopted. See response to comment MCWD-170 regarding the EIR/EIS approach to alternatives. Alternatives 2, 3, and 4 would each use screened open water intakes (referred to in the comment as "straight intake desal"), and are analyzed in detail in EIR/EIS Section 5.5.

Hofmann-42 The term “harm,” as used in this EIR/EIS, is specific to water rights and is addressed in Master Response 3. Comments regarding the adequacy and accuracy of the EIR/EIS analysis have been addressed above, where the comment provided enough specificity to allow a substantive response.

8.7.16 Responses to Comments from Thomas Moore

Moore-1 The information presented in the comment does not substantiate the claim that the Draft EIR/EIS has "proven that the operation of the test slant well on the CEMEX site has increased seawater intrusion" in the aquifers in which it is screened. See Master Response 11, CalAm Test Slant Well, Section 8.2.11.5, which describes the seasonal salinity trends observed during the long-term pump test using the monitoring wells. See also Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2. The proposed MPWSP slant wells would draw feedwater from a capture zone, which is located at the coast in an area heavily intruded with brackish groundwater. It is expected that the concentrations of total dissolved solids (TDS, a measure of salinity) within the capture zone would increase over time with pumping because seawater would recharge the capture zone, replacing the ambient brackish water that was initially in the coastal Terrace Deposits. However, as shown in Master Response 8, Section 8.2.18.1, the capture zone of the slant wells does not extend inland and would not exacerbate existing seawater intrusion in areas of the basin outside of the capture zone.

Moore-2 Figure 3 from Geoscience 2014b, as cited in EIR/EIS Appendix G2, presents modeled results of the anticipated salinity at the test slant well over time and therefore in the capture zone; it does not illustrate observed results of the test slant well, nor does it provide evidence of increased seawater intrusion. The graph shows how many days are expected to elapse, from the start of pumping, before the test slant well would capture 96 percent seawater. It is not accurate to consider this evidence of seawater intrusion in the 180 and 400-Foot Aquifers. In addition, the test well was not operating until 2015, after the release of the referenced Geoscience 2014 report. As stated in response to comment Moore-1, as the highly brackish, ambient groundwater would be extracted by the slant wells, seawater would recharge the capture zone and the percentage of seawater would increase. The slant wells would capture seawater that would otherwise flow inland, thereby reducing the potential for seawater intrusion inland of the capture zone. See Master Response 8, Section 8.2.8.1 for a description of the hydrogeologic characteristics of the feedwater capture zone. No significant impact on groundwater quality has been observed as a result of test slant well operation.

Moore-3 See Master Response 3, Water Rights, Section 8.2.3.5.

8.7.17 Responses to Comments from Hebard Olsen

Olsen-1 The proposed slant wells would extract brackish groundwater and seawater from the Dune Sands Aquifer and the 180-Foot Aquifer in a capture zone at the coast and the proposed slant well pumping would not influence groundwater in the deep aquifers. See Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin and Master Response 8, Project Source Water and Seawater Intrusion.

Olsen-2 See Master Response 4, The Agency Act and Return Water, for information on compliance with the Agency Act and the details concerning return water.

Olsen-3 The data collected during the operation of the test slant well (see Master Response 11, CalAm Test Slant Well), indicated that groundwater levels increased and decreased as a result of regional pumping, regardless of whether the test slant well was pumping or not, particularly at Monitoring Well-4, the compliance point for Special Condition 11 of the Coastal Development Permit. See Impact 4.4-3 and Master Response 8, for an analysis of the groundwater impacts from groundwater pumping proposed under the MPWSP. See Master Response 3, Water Rights, for additional details regarding the potential for the MPWSP to cause harm to other users in the basin.

Olsen-4 The discussion of environmental impacts relied on in an EIR/EIS must reasonably set forth sufficient information to foster informed public participation and to enable the decision makers to consider the environmental factors necessary to make a reasoned decision. The reliability of the groundwater model for simulating drawdown from slant well pumping was assessed using test slant well pumping data; there is generally good agreement between the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$)-calculated and the measured groundwater levels. See EIR/EIS Appendix E2, Section 4.2, and Master Response 12, The North Marina Groundwater Model (v. 2016).

Olsen-5 The science behind the groundwater modeling conducted for the EIR/EIS is described in EIR/EIS Section 4.4.4.2. Groundwater models are computer simulations that represent water flow in the environment using mathematical equations to simplify complex conditions. The “model” is a mathematical model, meaning that groundwater flow is simulated by solving a governing mathematical equation that represents the physical processes that occur in a groundwater system. See Master Response 12, which provides detailed information about the groundwater modeling approach, methods, and software used.

8.7.18 Responses to Comments from Larry Parrish

Parrish-1 The proposed project would extract groundwater from a localized coastal-adjacent capture zone, which has been verified by water quality testing to contain groundwater with an elevated concentration of TDS and chloride from decades of legacy seawater intrusion. EIR/EIS Section 4.4.1.2 explains that water quality of the Dune Sand Aquifer is directly influenced and controlled by seawater, and the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland. Seasonal rainfall recharges the Dune Sand Aquifer but the larger volume of water comes from the ocean due to the immediate proximity and hydraulic connection.

The slant wells would initially extract this ambient brackish water from the ground and, over time, the feed water supplied by (removed from) the capture zone would be replaced by seawater. As stated in Impact 4.4-3 and as discussed in Master Response 8, Project Source Water and Seawater Intrusion, the predominant majority of the water pumped by the slant wells would be from the ocean. While EIR/EIS Section 4.4.5.2 considered the source water could range from 88 percent to 100 percent ocean water, Master Response 4, The Agency Act and Return Water, Section 8.2.4.3 explains that the ocean water percentage would rise to about 90 percent within 90 days and would reach 95 percent within five years since as explained above, the Dune Sand Aquifer and the 180-FTE Aquifer are both recharged by seawater that has historically and is continuing to intrude the aquifers.

EIR/EIS Impact 4.2-8 addresses the potential for the proposed project to expose people or structures to substantial adverse effects related to land subsidence. The analysis of potential subsidence determined that no impact would occur. Subsidence of the land surface would not occur around the slant wells because of the predominantly granular nature of the subsurface materials and because the close proximity to the ocean would provide an essentially limitless source of water to refill the pores between grains. As explained above, since the predominant majority of the source water would be from the ocean, an essentially infinite source, it would continually refill the capture zone and subsidence would not occur anywhere in the cone of depression as a result of the MPWSP. For these reasons, land masses would not subside, and shoreline land masses would not become more vulnerable to increased wave action and erosion as a result of the proposed project.

Parrish-2 As discussed in Section 4.2.4.4, numerous soil samples were collected from soil borings and monitoring wells installed within the area of the cone of depression. The data is available in EIR/EIS Appendix C3.

Parrish-3 As explained in Impact 4.2-8 and in response to comment Parrish-1, subsidence would not occur as a result of the MPWSP. While land surface elevation monitoring has not been conducted specifically for the EIR/EIS, the Coastal Retreat Study (see EIR/EIS Section 4.2.4.5) used high-resolution coastal elevation data sets from the

CA Coastal Mapping Program for the topography at CEMEX. The 2010 data was collected using LiDAR, a state-of-the-art remote sensing technology in conjunction with high resolution aerial photography; see EIR/EIS Appendix C2, Table 3.

Parrish-4 EIR/EIS Section 4.2.4.5 presents the Coastal Retreat Study, with supporting studies presented in Appendices C1 and C2; historic beach erosion was one of the considerations in the analysis. As described in response to comment Parrish-1, no subsidence would occur and therefore, subsidence-induced coastal erosion would also not occur. The potential for the proposed project to accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat is analyzed in Impact 4.2-10, which concludes the impact would be less than significant with mitigation. Mitigation Measure 4.2-9 would require CalAm to monitor the rate of coastal retreat and require CalAm to remove the slant well prior to exposure on the beach to avoid the potential impact from occurring at all.

Parrish-5 See response to comment Parrish-4.

Parrish-6 Since the EIR/EIS concluded that the proposed project would not accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat (see response to comment Parrish-4), no additional beach and dune erosion would result that could cause seawater intrusion into the underlying aquifers. Section 4.4.5.2 and Impacts 4.4-3 and 4.4-4 considered sea level rise in assessing the impacts of the proposed slant well pumping and the potential for the project to contribute to seawater intrusion, and concluded the impact would be less than significant; therefore, no mitigation is required. Master Response 8 provides a supplemental discussion on the hydrogeologic characteristics of the capture zone and cone of depression.

Parrish-7 EIR/EIS Section 4.1.7 explains that cumulative impacts in an EIR/EIS refer to two or more individual affects that, when taken together, are "considerable," or that compound or increase other environmental impacts. In the CEQA and NEPA analyses, cumulative impacts refer to the combined effects of two or more separate projects (that otherwise may not be considered in combination). In the case of the MPWSP, the project-level analysis in the EIR/EIS addressed the collective "whole of the action," which includes the conversion of the test slant well to a production well as well as all the other new production wells. As part of the same project, this group of production wells is analyzed as a whole within the project-level analysis. As explained in EIR/EIS Section 4.4.5.2, the pumping of the production wells would create only one capture zone for the whole of the project; see Figure E-8 and Figure 5.6 in EIR/EIS Appendix E2. See also Master Response 8. Responses to comments Parrish-1 through Parrish-6 address the impacts of the whole of the MPWSP action.

The EIR/EIS concluded that the proposed project would not accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat (see response to comment Parrish-4) and therefore, would not contribute to a cumulative impact. Due to the potential exposure of the test well as a result of ongoing coastal retreat,

Mitigation Measure 4.2-9 would require CalAm to monitor the rate of coastal retreat and require CalAm to remove the slant well prior to exposure on the beach to avoid the potential impact from occurring at all.

Parrish-8 See responses to comments Parrish-1 through Parrish-7. A lead agency is required to recirculate an EIR when significant new information is added after the release of the draft, but prior to certification. Nothing in these comments or the associated responses has raised issues or presented data so as to cause the Lead Agencies to conclude that the Draft EIR/EIS is fundamentally flawed and in need of revision and recirculation, per CEQA Guidelines Section 15088.5.

8.7.19 Responses to Comments from Paula Pelot

Pelot-1 As explained in Table 4.2-3 in Section 4.2, Geology, Soils, and Seismicity, the Reliz-Rinconada fault zone, which includes the Blanco section, is not mapped as active by the State of California because these faults do not display evidence of recent displacement (the last 11,000 years). This fault underlies only the new Transmission Main, as stated in Table 4.2-3; no other project components would be affected. As explained in Impact 4.2-2, while it is possible that an older age Quaternary fault (i.e., displacement between 1.6 million years ago to 11,000 years ago or older) could reactivate and generate an earthquake and rupture at the surface, the potential for such an occurrence to expose people or structures to substantial adverse effects related to fault rupture is low because the fault is concealed beneath sediments and the project component is a pipeline transmitting drinking water. In the unlikely event that the Reliz Fault did generate an earthquake and cause surface rupture, the rupture area would be localized, resulting in a minor offset associated with low-level groundshaking. Damage could include localized pipeline leaks that would be immediately repaired.

Pelot-2 As listed in Table 4.2-3 and shown on Figure 4.2-4, there are no known active faults that pass beneath the Brine Discharge Pipeline; therefore, as concluded in Impact 4.2-2, the Brine Discharge Pipeline would not be vulnerable to fault rupture and no impact from fault rupture would occur.

Pelot-3 As explained in Impact 4.2-8, subsidence would not occur as a result of the MPWSP because the materials at and above the slant wells are predominantly composed of sand and gravel. Geologic units composed of sands and gravels are less prone to subsidence because the granular structure is better able to support the overlying weight of soil. In addition, because the subsurface slant wells would draw water from the Dune Sand and 180-Foot-Equivalent Aquifers, seawater would replace the water pumped from the slant wells, as discussed in Section 4.4, Groundwater Resources, keeping the pore spaces between the grains filled with water, further supporting the granular structure.

Pelot-4 This comment was addressed above in the responses to comments Pelot-1, Pelot-2, and Pelot-3. As discussed on Draft EIR/EIS pages 4.2-16 to 4.2-21 in Section 4.2.1.2, Seismicity and Faults, the Working Group on California Earthquake Probabilities has modeled the faults in the project area for the potential for seismic activity and the results of their modeling was included for the various faults in the area.

8.7.20 Responses to Comments from Carol Reeb

Reeb-1 As described in detail in EIR/EIS Sections 4.3.5 and 5.5.3, salinity levels would not exceed 2 parts per thousand (ppt) above ambient salinity at the edge of the Brine Mixing Zone (BMZ; measured as 100 meters or 328 feet from the diffuser), the regulatory compliance point for salinity discharges from desalination plants that is prescribed in the California Ocean Plan. For all discharge scenarios assessed, including scenarios with no and low wastewater flows, operational discharges are projected to be below the 2 ppt salinity standard at a maximum distance of 54 feet from the diffuser, well within the BMZ. These findings are supported with the assessment of additional discharge flow scenarios that were analyzed subsequent to the publication of the Draft EIR/EIS to provide higher resolution dilution analyses to support NPDES permitting for the Pure Water Monterey Groundwater Replenishment (GWR) Project by the Monterey Regional Water Pollution Control Agency (see response to comment MRWPCA-9 in Section 8.5.9). Consistent with Ocean Plan requirements, and reflected in the detailed and comprehensive dilution modeling performed to assess salinity impacts (see EIR/EIS Appendix D1), the proposed project would include commingling brine with MRWPCA wastewater, when it's available, as well as the use of an existing multiport diffuser for brine disposal.

Reeb-2 As noted in Mitigation Measure 4.3-5, flow augmentation with water that has densities closer to freshwater could be a potential component of mitigation to increase the dilution of the brine, if necessary. Since the availability of wastewater for dilution is limited by season (very limited in the irrigation season, see response to comment Reeb-5) and since the MRWPCA anticipates using some of the wastewater as source water for the Pure Water Monterey GWR Project, the availability of wastewater cannot be relied upon for dilution.

Reeb-3 Retrofitting the diffuser port angle is included as a corrective action in Mitigation Measure 4.3-5 in order to meet water quality objectives established in the NPDES permit for constituents other than salinity; see response to comment Reeb-1. EIR/EIS Table ES-2 (Draft EIR/EIS p. ES-32) summarizes the impact conclusions and associated mitigation measures for the proposed project. Impacts 4.3-4 and 4.3-5 assess water quality impacts related to operational discharges and, based on these analyses, two mitigation measures are required, as summarized in Table ES-2 and discussed in detail in EIR/EIS Section 4.3. Mitigation Measure 4.3-4 involves operational discharge monitoring, analysis, and compliance reporting to ensure operational discharges do not exceed water quality or biological resource regulatory standards, as defined in an NPDES permit. Mitigation Measure 4.3-4 establishes that if the monitoring indicates deleterious effects on receiving water quality or marine biological resources from MPWSP operational discharges do occur, corrective actions detailed in Mitigation Measure 4.3-5 must be implemented. Mitigation Measure 4.3-5 provides for the implementation of additional design features (e.g. treatment with Granular Activated Carbon), engineering solutions (e.g. inclined jets), and/or operational measures (e.g.

flow augmentation) to reduce the concentration of water quality constituents in the operational discharges such that they conform with regulatory standards and NPDES permit requirements. Included in Mitigation Measure 4.3-5 is the protocol for retrofitting the outfall diffuser with inclined jets as a corrective action to increase dilution and mixing (see also response to comment MRWPCA-20 in Section 8.5.9). Retrofitting the outfall diffuser with inclined jets prior to implementation of the project may be premature, since a physical solution, and therefore, the associated temporary impacts to the marine environment, may not be necessary to reduce the concentration of water quality constituents in the operational discharges. The need for such a reduction would be determined based on the monitoring and assessments required under Mitigation Measures 4.3-4 and 4.3-5. See response to comment Reeb-2 for additional discussion of wastewater availability.

Reeb-4 The identification of monitoring roles and responsibilities will be defined in the mitigation monitoring and reporting program (MMRP). An MMRP must be prepared and adopted at the time a lead agency makes findings in preparation for approving a project (CEQA §21081.6; CEQA Guidelines §§15091(d) and 15097; see response to comment Marina-1 in Section 8.5.1 for additional details). Each lead and responsible agency has the discretion to define its own approach for monitoring and/or reporting and the release of any associated monitoring data will be at the discretion of the lead and responsible agencies. Data associated with permit monitoring and compliance, such as NPDES discharges permits, are available publicly (see response to comment USARMY-12 in Section 8.3.2). Decisions related to who shall conduct mitigation monitoring (e.g., agency staff, consultants, researchers, etc.) have not yet been made. However, the lead agencies would typically contract with third-party independent consultants to undertake monitoring of the MMRP.

Reeb-5 The MRWPCA discharges secondary (not tertiary) treated wastewater into Monterey Bay in the winter months. During the irrigation season, almost all of the available wastewater is tertiary treated and delivered to agricultural users within the area served by the Castroville Seawater Intrusion Project and the ocean discharge is negligible. The Pure Water Monterey GWR Project is an indirect potable reuse project that proposes to treat a variety of source waters to produce 3,500 afy of potable water that would be injected or percolated into the Seaside Groundwater Basin for later extraction and use by CalAm. The GWR Project would include improvements that would enable more of the municipal wastewater to be recycled than is possible today; thus, less municipal wastewater would be discharged through the ocean outfall in the future. Furthermore, the MRWPCA has observed that municipal wastewater flows to the Regional Treatment Plant have been decreasing for the past several years due to aggressive water conservation efforts by MRWPCA member agencies, and flows are projected to continue to decrease over the next decade. If winter wastewater that is currently discharged into Monterey Bay were to be treated for potable use, the water would need to be stored and retained in the Seaside Groundwater Basin to ensure a treatment "polishing" in compliance with SWRCB Division of Drinking Water requirements (i.e., response retention time) prior to extraction and use by CalAm. To the point, however, a

portion of the winter wastewater flows that are currently discharged into Monterey Bay is proposed to be made available for treatment, storage, and use by CalAm, in lieu of desalinated water as part of the already-approved GWR project (see Alternatives 5a and 5b in EIR/EIS Sections 5.4.7 and 5.4.8). Therefore, 6,000 afy of winter wastewater flows will not be available in the future to solve the water supply shortage on the Monterey Peninsula because of the declining wastewater flows as a result of conservation and the GWR project. See also response to comment Reeb-6.

Reeb-6 EIR/EIS Section 5.2.6 discusses the Pure Water Monterey GWR Project as an alternative to the MPWSP, and concludes it would not produce enough water to meet the basic project objective of the MPWSP. The MRWPCA certified the GWR Final EIR and approved the GWR Project in October 2015; the GWR Project is described in EIR/EIS Section 4.1, and is one of the projects included in the cumulative scenarios. EIR/EIS Section 5.4 describes Alternative 5a, which would meet all of the MPWSP objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of product water from the Pure Water Monterey GWR Project; Alternative 5a is evaluated in EIR/EIS Section 5.5. Although implementation and/or expansion of the GWR project could possibly result in the need for an even smaller than 6.4 mgd desalination facility (or none at all), there is currently no formal proposal to do so. Until such time as an expanded GWR project is proposed by MRWPCA, and unless environmental documentation is prepared and the CEQA process completed, the alternative is not reasonably foreseeable and is considered speculative at this time. See also Master Response 13, Demand (Project Need) and Growth, concerning demand and supply assumptions. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the basic objectives of the project.

Also note that Alternative 5a was developed by CalAm in cooperation with the MRWPCA. The Monterey Peninsula Regional Water Authority, composed of the mayors representing the Peninsula cities, and no less than 25 other parties continue to actively participate in the ongoing proceeding before the CPUC. In addition, the MBNMS Desalination Guideline that "Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project," is listed on page 6-47 of the Draft EIR/EIS, and has been determined to be addressed by the scope of the overall EIR/EIS analysis.

Reeb-7 Impact 4.5-4 assesses the potential impacts of elevated salinity from operational discharges on marine biological resources. The analysis presents evidence that operational discharges from the MPWSP would not increase salinity levels in a manner that violates Ocean Plan water quality objectives or waste discharge requirements that are protective of marine organisms, or otherwise degrades the quality of receiving waters in Monterey Bay and MBNMS, and concludes that impacts on Sanctuary marine biological resources would be less than significant. The Ocean Plan establishes an

allowable salinity increase of less than 2 ppt above ambient conditions at the BMZ boundary; this is comparable to other international regulatory guidelines (see EIR/EIS Table 4.5-11). This incremental salinity increase limit, however, is a conservative threshold for marine organisms, as none of the studies reviewed as part of the impact assessment (see below) found adverse effects on survival, growth, or behavior at salinities as low as the Ocean Plan objective.

The impact conclusion for market squid is not based on the referenced study by Vidal and Boletzky (2014) that recommends a salinity range of 34 to 38 ppt for successful laboratory culture of the market squid, nor on a salinity threshold of 38 ppt. Impact 4.5-4 presents, in part, the results of a comprehensive literature review related to the salinity tolerances of relevant marine organisms (see EIR/EIS Table 4.5-9). A study of salinity effects based on approved marine organism toxicity test protocols (Phillips et al., 2012) reported median effect concentrations (EC50) ranging from 36.8 ppt to 61.9 ppt on various physiological processes (see EIR/EIS Table 4.5-10). Impact 4.5-4 assessed salinity levels both within the zone of initial dilution (ZID; i.e., 3 to 11.9 meters or 10 to 39 feet from the diffuser) and the BMZ, as well as at the edge of these zones for potential impacts on marine biological resources. In assessing a conservative worst-case scenario, the highest anticipated ambient salinity of 33.89 ppt is expected to occur during the upwelling oceanic season. This peak ambient salinity would also coincide with the proposed project's maximum concentrated brine discharge stream, when the brine would not be combined with treated wastewater effluent from the MRWPCA regional wastewater treatment plant, resulting in the maximum salinity at the edge of the ZID of any discharge scenario analyzed. As discussed in detail in Section 4.5.5, except for the limited area immediately adjacent to the discharge ports above the ocean floor, the predicted salinity increase at the edge of the ZID due to the MPWSP would be less than 2 ppt above ambient. Under this brine-only discharge scenario, the maximum increase in salinity at the edge of the ZID would be 1.6 ppt above ambient (see Scenario 2 in EIR/EIS Table 4.5-12). The assessed maximum anticipated salinity at the edge of the ZID and BMZ due to the brine discharge therefore, would be 35.45 and 35.19 ppt respectively, and would not exceed the lowest mean effective salinity reported by Phillips et al. (i.e., 36.8 ppt). Mitigation Measure 4.3-4 involves operational discharge monitoring, analysis and compliance reporting to ensure operational discharges do not exceed water quality or biological resource regulatory standards and includes provisions for monitoring benthic community health, aquatic life toxicity, and hypoxia, throughout the water column within the ZID. Sublethal salinity impacts will be determined through the monitoring of aquatic life toxicity.

Reeb-8 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Sections 8.2.9.1 and 8.2.9.3.

Reeb-9 The fact that subsurface intakes are not affected by algal blooms is noted in a footnote in EIR/EIS Section 3.4.1.

References

Phillips, B.M., B. S. Anderson, K. Siegler, J.P. Voorhees, S. Katz, L. Jennings, and R.S. Tjeerdema, 2012. Hyper-Salinity Toxicity Thresholds for Nine California Ocean Plan Toxicity Test Protocols. Report Prepared for: California State Water Resources control board.

Vidal, É.A.G and S. von Boletzky, 2014. Loligo vulgaris and Doryteuthis opalescens. In: Cephalopod Culture. Dordrecht: Springer Netherlands; p. 271–313.

8.7.21 Responses to Comments from Dick Rotter

Rotter-1 The pipeline segment referenced in the comment is referred to as the "new Monterey Pipeline." As explained in EIR/EIS Executive Summary Section ES.8, Areas of Controversy and Issues to be Resolved, the new Monterey Pipeline was evaluated as an alternative route in the April 2015 Draft EIR, and in the October 2015 Pure Water Monterey Groundwater Replenishment (GWR) Project Final EIR, which was certified in January 2016, prior to publication of the MPWSP Draft EIR/EIS. Since the CPUC approved the new Monterey Pipeline and ASR Pump Station in September 2016, along with the Water Purchase Agreement for the GWR Project, the new Monterey Pipeline is not a component of the MPWSP. As an approved project with utility independent from the proposed MPWSP, the new Monterey Pipeline and ASR Pump Station are evaluated as cumulative projects in this EIR/EIS since they are no longer a part of the proposed project. See also EIR/EIS Section 1.4.4 (Items 3 and 4), Project 60 on the last page of Table 4.1-2 in Section 4.1.7.2, and Section 5.2.6.

Rotter-2 CEQA and NEPA do not require an EIR or EIS to evaluate costs. CEQA Guidelines Section 21082.2(a) explains that lead agencies shall determine whether a project may have a significant effect on the environment based on substantial evidence. But CEQA Guidelines Section 21082.2(c) further explains that economic impacts which do not contribute to, or are caused by physical impacts on the environment, are not substantial evidence. Furthermore, as noted in response to comment Rotter-1, this pipeline is no longer part of the proposed project.

Rotter-3 See response to comment Rotter-1. No component of the proposed project would cross Highway 68.

Rotter-4 EIR/EIS Section 4.2.1.2 addresses seismicity and faults. Table 4.2-3 lists the Monterey Bay - Tularcitos Fault Zone, which includes the Navy Fault, as a late Quaternary fault zone with evidence of Holocene activity (Potentially Active) that crosses beneath the proposed Main System–Hidden Hills Interconnection Improvements (see Figure 4.2-4). The Sylvan Thrust Fault is a branch off of the Monterey Bay - Tularcitos Fault Zone that does not cross any of the project components, and therefore, is not discussed in the EIR/EIS.

Other mapped faults intersect the proposed new Transmission Main and the Ryan Ranch-Bishop Interconnection Improvements. As discussed in Impact 4.2-2, (see Draft EIR/EIS pages 4.2-56 through 4.2-58), past studies have identified that certain segments of these faults do exhibit Holocene-age displacement leading to the conclusion that certain segments could be considered active. Impact 4.2-2 explains that damage to the new Transmission Main and the Ryan Ranch-Bishop Interconnection Improvements pipelines could include localized pipeline leaks that would be immediately repaired. This impact is considered less than significant for these facilities. For all other components of the proposed project, no impact would result because mapped faults do not occur at or near to the locations of the other components.

Rotter-5 The October 2015 letter from Caltrans to CalAm was relevant to permits associated with the new Monterey Pipeline. See response to commnent Rotter-1.

EIR/EIS Table 3-8, Anticipated Permits and Approvals, lists the California Department of Transportation Encroachment Permit (Cal. Streets and Highway Code §660 et seq.) for encroachments in, under, or over any portion of a State highway right-of-way, including Highway 1, as a permit that would likely be required to build, operate, and maintain the proposed project. While the Lead Agencies anticipate that CalAm would begin the process of securing such permits if the project or an alternative is approved, preparing the permit applications is the responsibility of CalAm and is related to, but separate from this EIR/EIS process.

8.7.22 Responses to Comments from Nancy Selfridge– Letters 1 through 3

8.7.22.1 Responses to Comments from Nancy Selfridge – Letter 1

Selfridge1-1 See Master Response 15, which explains the extent of contact between the People's Project applicant and Lead Agencies during preparation of the Draft EIR/EIS.

Selfridge1-2 See Master Response 15, regarding the status of other proposed desalination projects. Given the status of the People's Project application to MBNMS, it is unclear if or when a joint document may be prepared.

In response to this comment, the EIR/EIS preparers reviewed the conclusion that Alternative 4 would have a significant and unavoidable contribution to significant cumulative impacts related to energy consumption and found that this conclusion statement was inadvertently included, despite the preceding text explaining that Alternative 4 would *not* have a considerable contribution to this cumulative impact. Text in the last paragraph of Section 5.5.18.7 has been revised as follows:

> For the same reasons described for Alternative 1, Alternative 4 would not have a considerable contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation and maintenance. Overall, Alternative 4 would result in ~~an ***increased impact conclusion*** compared to the proposed project, significant and unavoidable~~ the ***same impact conclusion*** as the proposed project, less than significant with mitigation.

The comparison of alternatives in Executive Summary Section ES.7 (Draft EIR/EIS page ES-12), the summary of impacts in Table ES-1 (Draft EIR/EIS page ES-28), and the discussion of the Environmentally Superior Alternative/ Preferred Alternative in Section 5.6 (Draft EIR/EIS page 5.6-5) and Table 5.6-1 (Draft EIR/EIS page 5.6-18) treated this impact as less than significant with mitigation. Therefore, the above revision does not affect the consideration of Alternative 4 compared to the proposed project and other alternatives.

Selfridge1-3 As described in Draft EIR/EIS Section 5.5.18.7 on page 5.5-332 (which also was attached to the comment letter), construction of Alternative 4 would require the use of construction equipment that would cause an increase in gasoline and diesel fuel use compared to the proposed project. Similarly, as described on the same page, long-term operations of the People's Project would produce approximately 25 percent more product water that would require an approximately 25 percent increase in energy demand compared to the proposed project. Therefore, although the significance conclusion is the same as the proposed project for these

impacts (less than significant with mitigation for Impact 4.18-1 during construction, less than significant for Impacts 4.18-2 and 4.18-3 for operation), the magnitude of each impact is increased as a result of the associated increase in energy consumption.

Selfridge1-4 See Master Response 15, Section 5.2.15.2, for a discussion of the use of solar panels for Alternative 4. The two pages attached to the comment letter that appear to pertain to a potential solar project at the People's Project site do not provide sufficient information to justify revising the approach used in the EIR/EIS.

Selfridge1-5 See Master Response 15, Section 8.2.15.2 regarding the consideration of solar panels for Alternative 4 in this EIR/EIS.

Selfridge1-6 The comment letter describes no "significant unmitigated adverse impacts" that are not identified in the Draft EIR/EIS. Regarding alleged deficiencies, Master Response 15, Section 8.2.15.2 explains the assumptions around project components and available studies for the People's Project. Revisions in response to this comment letter are minor and do not require recirculation of the Draft EIR/EIS.

Regarding notification requirements under CEQA, see response to comment ALT1-5 in Section 8.6.1, which explains that the CPUC exceeded CEQA notification requirements, including mailing Notices of Availability of the Draft EIR/EIS.

8.7.22.2 Responses to Comments from Nancy Selfridge– Letter 2

Selfridge2-1 The People's Project Desalination Facility would be located at the former National Refractories Facility at the Moss Landing Commercial Park at Dolan Road and Highway 1. The 16.5-acre parcel would be located within the approximately 200-acre parcel that is currently developed, and as discussed in Section 5.5.2.1, the ground consists of an intermediate mix of fill material and underlying native sandy loam soil. Therefore, no loss of topsoil would result at this site during construction. Section 5.5.2.7 has been revised to reflect this information.

Selfridge2-2 Draft EIR/EIS Section 5.5.2.2 presents a summary of the direct and indirect effects of the proposed project on geology, soils and seismicity that are fully described in Section 4.2.5. Impact 4.2-10 is presented in its entirety for the proposed project on page 4.2-68 and is summarized on page 5.5-9: "The anticipated future presence of this slant well on the beach due to coastal retreat could result in a significant impact. Mitigation Measure 4.2-9 (Slant Well Abandonment Plan) would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissioning if coastal retreat threatens the slant wells."

Section 5.5.2.7 presents the direct and indirect effects of Project Alternative 4, The People's Project, on geology, soils and seismicity. Page 5.5-23 explains how the existing caisson is already being subjected to coastal erosion, and the continued use of the caisson on the beach could result in accelerated erosion, could alter the existing landforms along the coast and could expose adjacent properties to coastal flooding. The application of shoreline protective measures that would be necessary to protect the existing caisson could result in accelerated erosion, could alter the existing landforms along the coast, and could expose adjacent properties to coastal flooding, and that while mitigation may be proposed to reduce such impacts, the details of any proposed mitigation are unknown and therefore, their efficacy cannot be determined at this time.

See also Appendix C1, Coastal Water Elevations and Sea Level Rise Scenarios, and Appendix C2, Analysis of Historic and Future Coastal Erosion with Sea Level Rise.

Selfridge2-3 Impact 4.2-11 responds to a significance criterion that is specific to geologic resources and oceanographic processes. Draft EIR/EIS explains on page 4.2-54, that this evaluation criterion is not relevant to the proposed project because the proposed project would not affect onshore or offshore geologic resources and would not alter oceanographic processes. As noted in EIR/EIS Section 3.2.1.1 on page 3-7, the subsurface slant wells would be located in the retired mining area of the CEMEX sand mining facility and not within a "pristine beach."

Alternative 4 (the People's Project) is described in EIR/EIS Section 5.4.6 and the use of existing infrastructure is acknowledged, including the existing caisson and the existing 51-inch diameter discharge pipeline. But as noted on page 5.4-40 of the Draft EIR/EIS, the previous intake pipeline was removed and does not currently exist. Therefore, the existing caisson structure would be rehabilitated to include a new 40-inch diameter intake pipe that would extend approximately 1,400 feet out from the existing caisson into MBNMS. The near shore portion of the pipe (the first 300 feet) would be drilled under the seafloor and the remaining 1,100 feet would be laid on the seafloor and covered with riprap armoring.

Due to the age and condition of the existing 51-inch diameter outfall pipeline (see Draft EIR/EIS page 5.4-40), a new 36-inch-diameter pipeline would be slip-lined within the existing pipeline and extended approximately 700 feet on the seafloor to a water depth of approximately 120 feet at the edge of the submarine canyon.

As noted in EIR/EIS Section 5.5.2.7, because the open-water intake and brine disposal structures in Monterey Bay would be anchored on the slopes of the Monterey Submarine Canyon in MBNMS, the potential for future slope instability and underwater landslide would be increased compared to the proposed project. Also, placement of an open water intake and brine disposal

system on the seabed of MBNMS could affect seabed substrate and alter oceanographic processes such as sediment transport in the vicinity of Monterey Submarine Canyon.

Selfridge2-4 Draft EIR/EIS Section 5.5.3.2 presents a summary of the direct and indirect effects of the proposed project on surface water hydrology and water quality that are fully described in Section 4.3.5. Impact 4.3-1 is presented in its entirety for the proposed project on page 4.3-58 and is summarized on page 5.5-31 of the Draft EIR/EIS: "Soil disturbing activities could result in soil erosion and the migration of soil and sediment in stormwater runoff to downgradient water bodies and storm drains. Mandatory compliance with NPDES Construction General Permit requirements would involve implementation of erosion and stormwater and water quality control measures, which would prevent substantial adverse effects on water quality during construction."

Section 5.5.3.7 presents the direct and indirect effects of Alternative 4, The People's Project, on surface water hydrology and water quality. Draft EIR/EIS page 5.5-54 explains that components unique to Alternative 4 would have a reduced land-based disturbance area compared to the proposed project and therefore, construction of Alternative 4 would have a reduced potential for soil erosion and risk of inadvertent releases of hazardous chemicals during general construction activities.

However, as identified on the same page in Section 5.5.3.7, Alternative 4 would result in an increased level of impact on offshore water quality from construction activities compared to the proposed project which proposes no construction on the seafloor. Offshore in MBNMS, Alternative 4 would result in approximately 43,200 square feet (approximately 1 acre) of disturbance on the seafloor from installation of the open ocean intake, outfall pipeline and diffuser, and laying of 1,100 feet of intake pipeline and 700 feet of brine discharge pipeline on the seafloor, ballasted with concrete collars and protected with riprap armoring. The conclusion of significant and unavoidable impacts on water quality during construction of Alternative 4 is due to the substantially increased size of the Alternative 4 in-water construction area and the lack of available details regarding construction techniques designed to avoid or minimize the degradation of water quality within MBNMS.

Selfridge2-5 The analysis supporting the conclusion that the proposed project would have a less-than-significant impact on impedance or redirection of flood flows (Impact 4.3-9) was provided on Draft EIR/EIS pages 4.3-116 and 4.3-117 and is summarized in Section 5.5.3.2 on page 5.5-35. The analysis supporting the conclusion that Alternative 4 would have a significant and unavoidable impact on impedance or redirection of flood flows was provided in Draft EIR/EIS Section 5.5.3.7 on page 5.5-57. This impact does not concern the potential impacts of flood flows on the project's or an alternative's facilities. Rather, it concerns whether the facilities

would impede or redirect flood flows. For the proposed project, only the subsurface slant wells and portions of the Source Water Pipeline, Castroville Pipeline, and new Transmission Main would be constructed in a 100-year flood hazard area. These underground facilities would not impede or redirect flood flows after they have been constructed. Based on the limited information available at this time regarding project design and flood hazard mitigation, the placement of the Alternative 4 desalination plant above ground within the 100-year flood hazard area could impede or redirect flood flows at this location.

Selfridge2-6 Draft EIR/EIS Section 5.5.3.2 presents a summary of the direct and indirect effects of the proposed project on surface water hydrology and water quality that are fully described in Section 4.3.5. Impact 4.3-10 is presented in its entirety for the proposed project on page 4.3-117 which explains tsunami damage is typically confined to low-lying coastal areas, and under the proposed project, only the subsurface slant wells and the Castroville Pipeline in unincorporated Monterey County would be located in areas subject to flooding from a tsunami. These facilities and associated mechanical vaults and electrical enclosures would be located underground and/or designed to withstand inundation as a result of a tsunami. The impact of the proposed project is summarized on page 5.5-35 of the Draft EIR/EIS: "The subsurface slant wells at CEMEX, and the Castroville Pipeline would be located in areas subject to flooding from a tsunami. Because the presence of onsite personnel would be minimal, operation of the subsurface slant wells and pipeline operations and maintenance would not expose personnel or structures to significant risks from flooding in the event of a tsunami."

EIR/EIS Section 5.5.3.7 presents the direct and indirect effects of Alternative 4, The People's Project, on surface water hydrology and water quality. Draft EIR/EIS explains page 5.5-57 that the Alternative 4 desalination plant would be located in a flood hazard area that has been designated as Zone A by FEMA, indicating the base flood elevations have not been determined. Based on limited project design and flood hazard mitigation information, the Draft EIR/EIS concluded that the risk of exposure of people or structures to loss, injury, or death from flooding due to a tsunami at the Alternative 4 desalination plant would be significant. See Master Response 15 regarding the Lead Agencies' coordination with the People's Project proponent to obtain project information.

Impact assessment for tsunami damage does not rely on historical data of past tsunami occurrence, but instead relies on projections from government agencies that assess potential community exposure to tsunami hazards. Whether a tsunami has occurred in the past 100 years is irrelevant to the assessment.

Selfridge2-7 Draft EIR/EIS Section 5.5.3.2 presents a summary of the direct and indirect effects of the proposed project on surface water hydrology and water quality that are fully described in Section 4.3.5. Impact 4.3-11 is presented in its entirety for the proposed project on page 4.3-118 and is summarized on page 5.5-35:

"Portions of the Source Water Pipeline, new Transmission Main, and Castroville Pipeline would be constructed in a 100-year flood hazard area. However, these facilities would be placed underground and would not impede or redirect flood flows. The electrical control cabinet at the slant wells would divert flood flows to the sandy areas immediately surrounding the cabinet, still within the CEMEX active mining area, and would not affect other properties or structures."

Section 5.5.3.7 presents the direct and indirect effects of Alternative 4, The People's Project, on surface water hydrology and water quality. Pages 5.5-57 and 5.5-58 of the Draft EIR/EIS explain how a new pump house on the existing caisson, as proposed by this alternative, would require the caisson to remain in place, potentially exposing adjacent properties to flooding from sea level rise. Mitigation would be required to address the flooding, including a coastal retreat strategy or a plan to armor the caisson, and in so doing, the applicant must demonstrate that flooding will not occur. However, while the applicant may propose such measures or provide model analyses to demonstrate compliance with Coastal Act requirements related to armoring, erosion, and sea level rise resilience, there is insufficient project design and flood hazard mitigation information available for Alternative 4 at this time to conclude that the risk of exposure of people or structures to loss, injury, or death from flooding due to sea level rise would not be significant. See Master Response 15 regarding the Lead Agencies' coordination with the People's Project proponent to obtain project information.

Regarding potential impacts of the proposed project with respect to flooding due to sea level rise, see response to comment PTA-6 in Section 8.6.16.

Selfridge2-8 See Master Response 15 regarding the status of alternative desalination projects; in particular, see Section 8.2.15.2 regarding the availability of cultural resources surveys or studies for the People's Project.

Selfridge2-9 See Master Response 15 and response to comment Selfridge2-8. If cultural resource surveys or studies have been or would be performed for Alternative 4, they may satisfy the requirements of Mitigation Measure ALT-CUL-1 (conduct subsurface investigation). However, because no such reports have been made available to the Lead Agencies for review, they cannot conclude at this time that this mitigation measure would not be required to reduce impacts of Alternative 4 to a less-than-significant level.

Selfridge2-10 The Lead Agencies relied not solely on the impact summary in Table 5.6-1, but on the extensive analysis in Chapter 4, Section 5.5, the Draft EIR/EIS appendices, and the referenced materials to make the preliminary determination in Section 5.6 that Alternative 5a is the environmentally superior/preferred alternative. See Master Response 15, Section 8.2.15.2 regarding the Lead

Agencies' coordination with the People's Project proponent to obtain project information.

Selfridge2-11 See response to comment Selfridge1-6.

8.7.22.3 Responses to Comments from Nancy Selfridge– Letter 3

Selfridge3-1 Master Response 3, Water Rights, Section 8.2.3.2 describes the sequence of approvals vis-a-vis water rights: The substance of CalAm's legal claim to water rights is addressed in EIR/EIS Section 2.6, and in Master Response 3, Section 8.2.3.4. Since under the legal construct, an appropriative right to developed water is a right that exists based upon the facts at hand, and need not be formally established in advance, there is no possibility for the Lead Agencies to insist that CalAm obtain or perfect water rights prior to project approval. See also Master Response 8, Project Source Water and Seawater Intrusion.

The issue of ratepayer liability is outside the scope of the CEQA and NEPA; however, as described in EIR/EIS Section 1.5.4.1, the CPUC decision to grant or deny a Certificate of Public Convenience and Necessity for the project (i.e., project approval) would follow a process after certification of the EIR during which the Commission will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, specific routing and alignments, and the need for the project. Therefore, comments regarding ratepayer liability are relevant to and will be considered as part of that proceeding.

Selfridge3-2 See Master Response 11 regarding the test slant well. Draft EIR/EIS Section 3.2.11 explains that the test slant well was drilled at 19 degrees below horizontal, is 724 feet long, and is screened for 450 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. The same EIR/EIS section explains that "The nine new permanent slant wells would be approximately 900 to 1,000 feet long and drilled at approximately 14 degrees below horizontal to extend offshore to a distance of 161 to 356 feet seaward of the MHW line (except #8, which would not extend past the MHW line) and to a depth of 190 to 210 feet beneath the seafloor." The test slant well is screened in the Dune Sands and 180-FTE Aquifers – the same aquifers the proposed slant wells would be screened in. Therefore, the proposed slant wells would not be "hundreds of feet deeper" than the test slant well. See also Master Response 12, The North Marina Groundwater Model (v. 2016), which provides clarification on the groundwater modeling data that is the basis for the EIR/EIS conclusions on groundwater impacts.

Selfridge3-3 See Master Response 3, Water Rights, Section 8.2.3.5.

Selfridge3-4 See Master Response 11, CalAm Test Slant Well, Section 8.2.11.4.

Selfridge3-5 See Master Response 3, Water Rights, Section 8.2.3.5.

Selfridge3-6 This comment addresses the operation of the test slant well pursuant to its existing permits that were issued by the CA Coastal Commission, and is outside the scope of this EIR/EIS. For more details about the permitting and operation of test slant well, see Master Response 11, CalAm Test Slant Well, Sections 8.2.11.1, 8.2.11.2 and 8.2.11.3. Regarding beneficial uses of water, see Master Response 3, Water Rights, Section 8.2.3.5. Master Response 8, Project Source Water and Seawater Intrusion, explains the slant wells at CEMEX would initially extract the water that is held in the surrounding sediments (ambient groundwater) and as pumping continues, the wells would extract increasing proportions of infiltrating recharge from the ocean and the ocean recharge would gradually replace the ambient groundwater within the capture zone. The capture zone is defined as a localized area at the coast. The impacts of the proposed project on the Ag Land Trust wells are described in Draft EIR/EIS Section 4.4.5.2 and in Table 4.4-10.

Selfridge3-7 The Final EIR/EIS has not been altered in such a way as a result of this comment or other comments on the Draft EIR/EIS that identify new or substantially more severe significant environmental impacts that were not previously identified in the Draft EIR/EIS. Nor has the Final EIR/EIS identified new feasible mitigation measures or project alternatives to reduce significant impacts, or new mitigation measures that the project proponent refuses to incorporate into the project. Furthermore, the comments on the Draft EIR/EIS have not raised issues or presented data so as to cause the Lead Agencies to conclude that the Draft EIR/EIS was fundamentally flawed. For these reasons, the EIR/EIS need not be recirculated for further public review.

8.7.23 Responses to Comments from Jan Shriner

Shriner-1 See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2, 8.2.11.3, and 8.2.11.7, and EIR/EIS Section 3.2.1.1.

Shriner-2 Table 1 in the Coastal Retreat Study (EIR/EIS Appendix C2) presents the erosion rate data sources that were included when the consultants to the Lead Agencies established historic shoreline change trends that were used in the development of dune erosion profiles. The erosion profiles were developed by the consultants as described in Appendix C2, and not by CalAm; CalAm provided the locations of proposed project infrastructure where pipes or outfalls would cross the erosion profiles as explained in the text on page 7 of EIR/EIS Appendix C2.

Shriner-3 The average annual erosion rates cited in the comment were not used in the EIR/EIS because the natural system is too complicated to rely on a single number. The annual rates were calculated by the commenter by taking the results of the year 2060 horizontal dune erosion profile presented in Appendix C2 on page 7, and dividing it by 46 years (from 2014 to 2060). The methodology for projecting future vertical and horizontal erosion profiles that is used in the EIR/EIS is described in Section 3 of Appendix C2. The analysis considered localized erosion (rip currents), long-term erosion, and sea level rise to develop the erosion profiles.

Shriner-4 The Coastal Retreat Study (Appendix C2) is described in EIR/EIS Section 4.2.4.5 and Figures 4.2-7 and 4.2-8 present the erosion profiles and envelopes for the test slant well and the production wells, respectively. The wellhead of the test slant well is shown in Figure 4.2-7 to be at 30 feet (NAVD) above mean sea level and behind (inland) of the "2040, 100-Year Storm Event" line. Note 4 on Figure 4.2-7 explains the test slant well location is based on a "geologic cross section" that was ground-truthed and provided in GIS format. The blue pipe in the panorama photo provided by the commenter is the discharge pipe that connects the test slant well to the outfall; the test slant well is aligned perpendicular to the discharge pipe just off to the left. The yellow posts in the foreground of the photo are protecting the monitoring wells (MW-1), which are located about 170 feet inland from the surf zone, and 230 feet closer to the beach than the discharge pipe; the test slant well is therefore, located about 400 feet inland from the surf zone and the other nine wells are proposed to be located approximately 500 feet further inland. Mitigation Measure 4.2-9 is a Slant Well Abandonment Plan in the event coastal erosion threatens to expose the slant well.

The current situation is not flatter and closer than the EIR/EIS states because the location was ground-truthed and provided in GIS format and not assumed from an unscaled photo; therefore, the test slant well is not at eminent risk of exposure from coastal erosion that would require the well to be removed before the snowy plover season. As noted by Special Condition 3(b) of the CDP that was issued by the CCC for the test slant well, project-related construction including site preparation,

equipment staging, and installation or removal of equipment or wells, shall not occur between February 28 and October 1 of any year (to protect nesting snowy plover). If the test slant well cannot be removed by February 28, 2018, and it has not been approved to be converted to a permanent well, CalAm, will need to apply to the CCC for an extension of the CDP.

Shriner-5 The vertical to horizontal scale in Figures 4.2-7 and 4.2-8 is 1:6 as shown on the x and y axes, and is not intended to be misleading. Rather, this is a standard practice that enables the entire section to be printed on one page and, more importantly, it better visually illustrates the subsurface details. For example, the preliminary AEM data that was presented at the August 7, 2017 Regular MCWD Board Meeting and Joint Board/Groundwater Sustainability Agency Meeting utilized a vertical exaggeration of 1:15. If printed at a 1:1 scale, the vertical view section would be compressed and the details of the subsurface would not be visible. The comment is correct regarding the test slant well elevation; the test slant well wellhead is shown in Figure 4.2-7 to be at 30 feet (NAVD) above sea level and behind (inland) of the 2040, 100-Year Storm Event line as of January 7, 2016.

Shriner-6 The paragraphs quoted in the comment are from EIR/EIS Section 4.2, Geology, Soils, and Seismicity, and are addressing Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment. As explained in EIR/EIS Section 3.2.1.1, the slant wells would be located on a retired portion of the CEMEX property and would not affect the existing sand mining operations. CalAm has coordinated with CEMEX on the locations of the proposed slant wells and associated infrastructure so as to not interfere with the existing sand mining operations.

Many people in the community, especially the City of Marina, believe the CEMEX sand mining operation should be shut down, and it will be, effective 2020; see Master Response 14, CEMEX Settlement Agreement. The text cited in the comment from page 147 is in EIR/EIS Section 3.2.1.1 (project description) and “page 374” is on page 7 of EIR/EIS Appendix C2 (Analysis of Historic and Future Coastal Erosion with Sea Level Rise). Page 374 reads as follows: “It is important to note that actual sea level rise and the effects are not known, and that relatively high values were used in this study. Also, interventions may change shore recession.” The intervention may well be the closure of the sand mining operation.

The ongoing erosion at CEMEX is not a cumulative project (see EIR/EIS Section 4.1.7); it is a baseline condition against which the impacts of the proposed project are evaluated, and as noted in EIR/EIS Section 4.2.4.5, the Coastal Retreat Study considered historic erosion and assumed there would be no changes to existing sand mining practices. The proposed project slant wells would not contribute to coastal erosion because they would be removed prior to exposure and therefore, prior to it having an influence on coastal erosion “resulting in damage to adjoining

properties or a substantial change in the natural coastal environment." The conclusion for Impact 4.2-10 is therefore, determined to be less than significant. See also Master Response 14, Section 8.2.14.1, which addresses anticipated changes to existing sand mining practices at CEMEX, and the resulting effect on coastal erosion.

Figure 5.1 is in EIR/EIS Appendix E2 and presents the North Marina Groundwater Model cells that would be "flooded" as a result of sea level rise in 2073, while EIR/EIS Figure 3-3a presents the slant well locations at CEMEX (Figure 3-13, referenced by the comment, is a map of the Castroville Pipeline Optional Alignment and is not relevant to this comment). Appendix E2 Figure 5.1 and EIR/EIS Figure 3-3a serve different purposes, and sea level rise is only one component used in the development of the vertical and horizontal erosion profiles (see response to comment Shriner-3). The erosion hazard zones at the CEMEX site and at the Potrero Road site are presented side by side in Figure 3 in Appendix C2 and the comment is correct – the slant well locations at the CEMEX site would be impacted before and more severely than slant wells at the alternative location at Potrero Road. However, as shown on EIR/EIS Figures 4.2-7 (profile), the test slant well at CEMEX is located behind (inland of) the 2040, 100-Year Storm Event line and would be abandoned if necessary, prior to exposure to coastal erosion, as discussed in the response to comment CEMEX-8. The remaining proposed slant wells at CEMEX would be located behind (inland of) the 2060, 100-year Storm Event line, as shown on Figure 4.2-8. (The erosion profile for the Potrero Road site is shown on Figure 7 in EIR/EIS Appendix C2.)

EIR/EIS Figures 4.2-7 and 4.2-8 present both vertical and horizontal retreat profiles at CEMEX, including new corresponding bottom contours and depths in the sand of the intake pipes. Note 1 explains these envelopes of erosion consider seasonal changes in beach width, localized erosion (rip currents), long-term erosion, and accelerated erosion caused by sea level rise, and each of these factors is important in defining the profile shape and location at a given time; see EIR/EIS Section 4.2.4.5. For this reason, the analysis identified a projected future profile and an extremely eroded profile (lower envelope) for each future time horizon: years 2010, 2040 and 2060. The future profile is the current profile eroded at the historic rate, with added erosion caused by sea level rise. The lower profile envelope represents a highly eroded condition, which could occur from a combination of localized erosion (rip currents), a large winter storm, and seasonal changes. The purpose of these figures is to identify if and when coastal retreat is anticipated to occur independent of the MPWSP, and the analysis indicates the slant wells would not impact, accelerate, or exacerbate the rate of coastal erosion, because they would be removed prior to exposure and therefore, prior to it having an influence on coastal erosion as explained in Section 4.2, Impact 4.2-10 (see Draft EIR/EIS pages 4.2-68 through 4.2-72). No change has been made to the EIR/EIS in response to this comment.

The MPWSP would not contribute to any ongoing impact caused by the CEMEX ponds as explained in Section 4.4, Impact 4.4-3 (Draft EIR/EIS pages 4.4-70 through

4.4-72). The impacts relative to the MRWPCA outfall are discussed in Section 4.3, Impacts 4.3-4 and 4.3-5.

Shriner-7 The Monterey Downs project has been removed from the list of cumulative projects in EIR/EIS Table 4.1-2.

Shriner-8 The Notice of Availability (NOA) of the Draft EIR/EIS was published on January 13, 2017, and included an announcement that "[t]he open house/public meetings will include a brief presentation on the contents and conclusions of the Draft EIR/EIS and interested parties will be provided an opportunity to interact with technical staff and preparers of the Draft EIR/EIS." The Lead Agencies' consultant staff was directed to help reviewers of the Draft EIR/EIS to navigate the document in order to facilitate the review of the lengthy and complicated document. As noted in response to comment Shriner-3, the EIR/EIS did not use a single erosion rate because the natural system is too complicated to rely on a single number. Regardless, the reported behavior of the Applicant's Project Manager towards the commenter at a Lead Agency-hosted public meeting on the Draft EIR/EIS is unfortunate. The Lead Agencies and their consultants work independently from the Applicant, and is not monitored or otherwise influenced by employees of CalAm.

Shriner-9 It is not clear what this comment is referring to, or what was said on February 15, 2017. Master Response 8, Project Source Water and Seawater Intrusion, may respond to the concerns raised in this comment. See also responses to comments MCWD-Hopkins Groundwater Consultants (HGC) in Section 8.5.2.2.

Shriner-10 At the request of several agencies and members of the public, the Lead Agencies extended the comment period by an additional 30 days, and written comments on the Draft EIR/EIS were accepted from January 13 through March 29, 2017, for a total review period of 75 days.

Shriner-11 The comment does not provide any specifics on how or why the EIR/EIS alternatives analysis is inadequate. CEQA Guidelines Section 15126.6(d) and the NEPA Regulations (40 CFR § 1502.14) emphasize the selection of a reasonable range of alternatives that meet the objectives of and/or purpose and need for the project, and the comparative assessment of the impacts of the alternatives to allow for public disclosure and informed decision-making. EIR/EIS Chapter 5 provides a thorough and comprehensive analysis of alternative project components (see Sections 5.1 through 5.3) and project alternatives (see Sections 5.4 and 5.5), including the No Project/No Action alternative, consistent with the provisions of CEQA and NEPA.

Shriner-12 The comment does not provide any specifics on what peer-reviewed science may have been inadequately addressed. The CPUC engaged the Lawrence Berkeley National Laboratories to peer review the 2015 version of the North Marina Groundwater Model ($NMGWM^{2015}$) performed by Geoscience for the April 2015 MPWSP Draft EIR (see EIR/EIS Appendix E1); the Monterey Peninsula Regional Water Authority (aka the Mayors' Authority) engaged GeoSyntec to peer review the

2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) performed by HydroFocus and the brine discharge modeling performed by Dr. Phil Roberts; Trussell Technologies, on behalf of the MRWPCA, engaged in a peer review of the CEQA/NEPA brine discharge modeling. Consultants to the Lead Agencies have collaborated with the Hydrogeologic Working Group (HWG) as explained in Master Response 5, The Role of Hydrogeologic Working Group and its Relationship to the EIR/EIS, and have reviewed and considered the results of the MCWD-sponsored ERT study performed by the Stanford University post-graduate program (see Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetic (AEM)).

8.7.24 Responses to Comments from Roy Thomas

Thomas-1 Potential beneficial impacts on terrestrial biological resources dependent on the Carmel River are discussed in Section 5.5.6.3. The need for the proposed project is predicated on State Water Resources Control Board (SWRCB) Order 95-10, which requires CalAm to reduce and terminate surface water diversions from the Carmel River in excess of its legal entitlement of 3,376 acre-feet per year (afy) (see EIR/EIS Section 1.3). Section 2.2.3 further explains SWRCB Order 95-10 and how it directed CalAm to obtain appropriative rights to the Carmel River water that was being unlawfully diverted, obtain water from other sources and make one-for-one reductions of the unlawful diversions, and/or contract with other agencies that had appropriative rights to divert and use water from the Carmel River. The proposed project represents one possible method of achieving the requirements of SWRCB Order 95-10; the alternatives, including the No Project Alternative, represent other options. Regardless of which alternative ultimately is selected, CalAm's surface water diversions from the Carmel River in excess of its legal entitlement will be reduced and terminated in compliance with SWRCB Order 95-10. The beneficial impacts of implementation of SWRCB Order 95-10 are analyzed in the Order.

However, as explained in EIR/EIS Section 5.5.3.3 and 5.5.6.3, the No Project alternative would result in a more beneficial impact on Carmel River resources as compared to the proposed project or another action alternative, because in the event that the Cease and Desist Order (CDO) milestones are not met, diversions from the Carmel River would be curtailed sooner than if milestones are met through project or another action alternative approval and implementation. This analysis is provided to address the difference in intensity of impacts between the No Project Alternative and an action alternative.

Thomas-2 As discussed in EIR/EIS Section 3.2.4, the ASR-5 and ASR-6 wells would be used to provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies, and to increase system reliability: "These improvements would not affect CalAm's maximum allowable surface water diversions from the Carmel River for injection into the groundwater basin." Consequently, there would be no change in effect on the Carmel River from the implementation of ASR-5 or ASR-6.

Thomas-3 Water flowing in the Carmel River channel is the surface expression of groundwater that flows through the water-bearing river alluvium known as the Carmel River Aquifer. The aquifer is underlain and bordered by non-water bearing bedrock that creates the river bed and bank. The groundwater that occupies and is transmitted through the river alluvium is referred to as underflow, some of which is extracted by CalAm's groundwater production wells. As noted in SWRCB Order 95-10 (SWRCB, 1995) Section 3.3, depth to water in the wells ranges from 3 to 30 feet. Therefore, CalAm's diversion wells on the Carmel River are not deep wells; they extract

underflow which is in direct contact with the surface flows and recharge time is minimal. Water Rights Permits 20808A and 20808C include conditions that establish limits on diversions to the ASR system, including a requirement that minimum mean daily instream flows in the Carmel River be maintained for the protection of fisheries, wildlife, and other instream uses.

Thomas-4 Final EIR/EIS Section 3.2.3.5 (was formerly Draft EIR/EIS Section 3.2.3.6) and Table 3-1, explain that the proposed Carmel Valley Pump Station (CVPS) would provide the additional pressure needed to pump water already within the system, through the existing Segunda Pipeline to fill the Segunda Reservoir via a 100 hp pump. See also response to comment Beech2-17 in Section 8.7.2.2. The CVPS would not affect CalAm's maximum allowable surface water diversions from the Carmel River; see response to comment Thomas-2, Thomas-3 and Thomas-6.

Thomas-5 As explained in EIR/EIS Section 3.4.2, CalAm proposes to use the ASR system to store water during wet periods. As noted in Table 3-6, the Subsurface Intake System and MPWSP Desalination Plant would operate 24 hours per day, 365 days per year. Injection of desalinated product water and Carmel River supplies into the ASR system would occur during the wet season, typically from December through April or May. Water would be extracted from the ASR system typically from May through November.

Thomas-6 See response to comment Thomas-1. As a result of compliance with SWRCB Order 95-10, CalAm's surface water diversions from the Carmel River will be held to a legal limit of 3,376 afy. Compliance with the Order would restore the spring, summer and fall flows on the Carmel River.

Thomas-7 As was described in Draft EIR/EIS Section 3.2.3.5, Terminal Reservoir would have stored potable water supplies from a variety of sources, including Carmel River supplies, desalinated product water, and ASR product water from the Seaside Groundwater Basin. However, Terminal Reservoir has been removed from the proposed project (see Final EIR/EIS Section 1.6); therefore, the EIR/EIS analysis reflects this change.

Thomas-8 As noted in EIR/EIS Section 1.3.1, the primary objectives of the proposed project are to develop water supplies for the CalAm Monterey District service area to replace existing Carmel River diversions in excess of legal entitlement (see Section 2.2.3), to reduce pumping from the Seaside Groundwater Basin and to allow CalAm to meet its obligation to pay back the Seaside Groundwater Basin (see Section 2.2.4), to meet peak month demand of CalAm's Monterey District service area customers (see Sections 2.3.1 and 2.3.2), to serve existing vacant legal lots of record (see Section 2.3.2.2, formerly Draft EIR/EIS Section 2.3.3.3), and to accommodate tourism demand under recovered economic conditions (see

Section 2.3.2.1, formerly Draft EIR/EIS Section 2.3.3.2). Construction is expected to be complete in June 2020 and operations would begin immediately thereafter.

Thomas-9 EIR/EIS Section 4.6.2 presents the regulatory framework for terrestrial biological resources and draws conclusions about the proposed project's consistency with these regulatory requirements. The Federal Endangered Species Act (FESA) is discussed in Section 4.6.2.1.

EIR/EIS Section 4.5.2 presents the regulatory framework for marine biological resources; consistency with the Magnuson-Stevens Fishery Conservation and Management Act is discussed in Section 4.5.2.1. MBNMS, a Lead Agency for the EIR/EIS, is also in consultation with the National Marine Fisheries Service and U.S. Fish and Wildlife in compliance with the FESA and the Magnuson-Stevens Act; see EIR/EIS Section 7.1. See also response to comment Thomas-1.

Thomas-10 As explained in EIR/EIS Section 2.4.2, CalAm's total adjudicated right to Seaside Groundwater Basin groundwater will be 1,474 afy. Repayment of the water that CalAm has pumped from the Seaside Basin in excess of its adjudicated right would occur over 25-years as agreed to between CalAm and the Seaside Basin Watermaster; payback would start when CalAm secures additional supplies. The payback would occur as "in-lieu" replenishment, which means CalAm would pump only 774 afy during the 25-year repayment period, leaving the 700 afy balance of their 1,474 afy adjudicated right in the ground to replenish the basin. EIR/EIS Table 2-4 presents assumed quantities provided by CalAm's water supply sources with and without the GWR project and during and after the Seaside Groundwater Basin replenishment period. The desalination plant was sized assuming only 774 afy would be available from the Seaside Groundwater Basin for 25 years. As shown, the amount of supply available from the Carmel River would be the same during and after the replenishment period.

Thomas-11 See response to comment Thomas-3. During the winter months, CalAm is allowed under Water Rights Permits 20808A and 20808C to extract water for diversion to ASR, and the water is diverted from the underflow of the Carmel River, not from deep wells. The difference in the flows between the gages is more likely due to the permitted diversion of flows to ASR, than to restoring the groundwater. For example, as reported to the MPWMP Board of Directors on April 19, 2017, since the start of Water Year 2017 (October 2016) through March 2017, runoff was 325 percent of average, and 1,510 acre-feet had been diverted from the Carmel River for injection and storage in the Seaside Basin ASR (MPWMD, 2017).

Thomas-12 The proposed project would allow CalAm to be in compliance with its water rights on the Carmel River. EIR/EIS Section 2.4.3 discusses the volume and timing of diversions from the Carmel River to the ASR system.

Thomas-13 As presented in EIR/EIS Table 3-1 and Section 3.2.3.9, the Ryan Ranch-Bishop and Hidden Hills Interconnection Improvements would allow CalAm to convey

MPWSP water supplies to the Ryan Ranch, Bishop, and Hidden Hills satellite water systems by constructing new pipelines that would connect to existing booster stations, and by making improvements to existing booster stations. Since Carmel River water and MPWSP desalinated product water would be injected into the ASR system, it is possible that these communities could receive Carmel River ASR water as part of their water supply. As CalAm ratepayers, these communities would contribute to CalAm's operating expenses in some fashion via the rate structure. See EIR/EIS Section 1.5.4 for an explanation of how the decision-makers would address cost issues.

Thomas-14 See response to comment Thomas-1.

References

Monterey Peninsula Water Management District, 2017. Special Meeting of the Board of Directors, Item 24b. April 19.

State Water Resources Control Board (State Water Board), 1995. Order No. WR 95-10: Order on Four Complaints Files Against The California-American Water Company, Carmel River, Monterey County. July 6, 1995.

8.8 Form Letters and Responses

8.8.1 Form Letter 1
8.8.2 Form Letter 2

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8.8.1 Form Letter 1

March 8, 2017

Attn: Mary Jo Borak
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800, San Francisco, CA 94108

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a, Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP) (A1204019)

Dear CPUC Commissioners and Sanctuary Agency Officials:

The two most alarming deficiencies in California American Water Company's proposed desal project are 1) poor science around the 'first of its kind' slant well ocean intake; and 2) lack of water rights.

These signed requests were collected after the DEIR/EIS was released. I am transmitting them widely so that more public officials become aware of these shortcomings. It is urgent that at least two very specific issues are clarified: FORM1-1

1. There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography--ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project. FORM1-2

2. Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals. FORM1-3

Additional concerns include possible litigation and delay, lack of contingency planning, and continued pressure from the State Cease and Desist Order.

Ratepayers are facing huge new costs, regardless of success, delay or failure. I and other signers request your support in pursuing these issues. Sooner, rather than later. FORM1-4

Thank you for your attention.

Sincerely,

Michael Baer
560 Madison St.
Monterey Ca, 93940

cc: CPUC Public Advisor, NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), Fort Ord Reuse Authority (FORA), Peninsula Mayors' Water Authority, Marina Coast Water District (MCWD), Seaside Groundwater Basin WaterMaster, City Councils of Seaside, Monterey, Marina, Pacific Grove, Carmel, Del Rey Oaks, Sand City

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Date: 2/14/17

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.

- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.

- Additional comments: PLEASE MAKE THE WATER RIGHTS DETERMINATION WITH GREAT URGENCY. IT IS ONLY COMMON SENSE TO DO THIS BEFORE INCURRING EVEN MORE POTENTIALLY STRANDED COSTS TO BE BORNE BY RATEPAYERS.

FORM1-5

Thank you for your attention to this matter.

Sincerely,
(Signature) [signature]
(Print name and address) DAVID BEECH
1450 MANOR RD
MONTEREY CA 93940

cc: NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), Fort Ord Reuse Authority (FORA), Peninsula Mayors' Water Authority, Marina Coast Water District (MCWD), City Councils of Seaside, Monterey, Marina, Pacific Grove, Carmel, Del Rey Oaks, Sand City

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Date: Feb 22, 2017

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.

- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.

- Additional comments: Life is most prone to coastal erosion, would consume large amounts of fossil fuel/energy, further ensures Cal-Am economic predation upon residents.

FORM1-6

Thank you for your attention to this matter.

Sincerely,
(Signature) M. Eckles
(Print name and address) 1025 OLMSTED AVE
PACIFIC GROVE, CA 93950

cc: NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), Fort Ord Reuse Authority (FORA), Peninsula Mayors' Water Authority, Marina Coast Water District (MCWD), City Councils of Seaside, Monterey, Marina, Pacific Grove, Carmel, Del Rey Oaks, Sand City

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

February 16, 2017

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

• □□□□There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.

• □□□□Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.

• □□□□If the CPUC, for reasons which those ratepayers who have been following this process closely do nor accept, Cal Am's desal pumping operation will continue to hasten seawater intrusion into the Salinas Valley aquifer. The results will be irreversible. FORM1-7

Thank you for your attention to this matter.

Sincerely, Roland Martin

(Print name and address) Roland Martin
269 Del Mesa Carmel, Carmel, Ca. 93923

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Date: 2/26/17

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.

- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.

- Additional comments: Cal-Am is out for profit and not the consumer good. FORM1-8

Thank you for your attention to this matter.

Sincerely,
(Signature) Marilyn Mason
(Print name and address) Marilyn Mason
915 Toro Ct.
Seaside CA. 93955

cc: NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), Fort Ord Reuse Authority (FORA), Peninsula Mayors' Water Authority, Marina Coast Water District (MCWD), City Councils of Seaside, Monterey, Marina, Pacific Grove, Carmel, Del Rey Oaks, Sand City

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Date: 2-24-2017

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.

- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.

- Additional comments: I do not want to get from my faucet water stolen from Marine

FORM1-9

Thank you for your attention to this matter.

Sincerely,
(Signature) Hebard R Olsen
(Print name and address) Hebard R Olsen

cc: NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), Fort Ord Reuse Authority (FORA), Peninsula Mayors' Water Authority, Marina Coast Water District (MCWD), City Councils of Seaside, Monterey, Marina, Pacific Grove, Carmel, Del Rey Oaks, Sand City

California Public Utilities Commission

Date: Feb 13, 2017

c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Monterey Bay National Marine Sanctuary
c/o Karen Grimmer, NEPA Lead
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners and Agency Officials:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) until at least two very specific issues are clarified:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world. There was only one attempted project at Dana Point, CA. State agencies require a feasibility study of this new technology. With an untested and experimental design, the *highest standard* of scientific testing must be made. There is a more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in the DEIR environmental review of impacts. ERT imaging will be completed in mid-2017. Such scientific data and observations must be included in the DEIR evaluation of impacts and the question of 'no harm' from the project.
-
- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another water district's groundwater. The fundamental determination of legal water rights must be made now before further infrastructure investment and before more project approvals.
-
- Additional comments: Legal water rights must be made NOW!

FORM1-10

Thank you for your attention to this matter.

Sincerely,
(Signature) DeAnna Yateman
(Print name and address) DeAnna Yateman
Carmelo & 11th Carmel, CA 93921

cc: NOAA Sanctuary Advisory Council, California Coastal Commission, State Water Resources Control Board, CPUC Office of Ratepayer Advocacy, Monterey County Supervisors, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District

Juli Hofmann
3201 Martin Circle
Marina CA 93933
February 23, 2017

ATTEN: Paul Michel
Monterey Bay Marine Sanctuary
99 Pacific St., Blg 455A
Monterey, CA 93940

Dear Commissioners:

Attached is a CD containing 791 scanned letters signed by individual Monterey Bay citizens, like me, who wish to express concerns regarding the Cal-Am Slant Well project (MPWSP). These letters are signed by unaffiliated, private citizens, mostly from the City of Marina and Ord Communities, and are NOT specifically related to the DEIR public comments. However, the issues are vital to us as well as to other area interests. I hope you will review them to understand our concerns.

I would appreciate confirmation of receipt of these CDs at jhofmann@redshift.com when they have been distributed to your commissioners.

FORM2-1

Thank you very much,

Juli Hofmann

Juli Hofmann

Your Address: 360 Everett Dr
Marina CA

Date: 2-21-17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has no water rights in the Salinas Valley Groundwater Basin (SVGB) but they intend to pump water from this district to their Peninsula customers; the SVGB water district already has serious concerns of the adequacy of its aquifers to meet the needs for current and future water. This is not considered in the environmental review! FORM2-2
- Cal-Am's project represents an ***environmental injustice*** that blatantly ignores the rights and welfare of Marina, a small city of 21,000 with a working class and diverse population. FORM2-3
- Cal-Am's project assumes that compromising the Salinas Valley Groundwater Basin is inconsequential over the needs of a wealthier, more politically influential jurisdiction. FORM2-4

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

E. Meacham (Print Name)

E. Meacham (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3128 Crescent Ave. #67
Marina, Ca.

Date: 2.14.11

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am's project proposes pumping millions of gallons of water per day from our already over-drafted Salinas Groundwater Basin...much more per day than Marina Coast Water District currently pumps! FORM2-5
- No considerations are given to our own region's fragile and limited groundwater resources! FORM2-6
- The 180' and 400' aquifers are already over-drafted. The 900' aquifer is currently a primary water source but due to its small storage and/or recharging rates, this last aquifer may be at risk. Cal-Am has failed to prove that the region's water sources will not be harmed by their massive pumping! FORM2-7

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Fannie Auria (Print Name)

Fannie Auria (Signature) POA Claudia Auria

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 420 Reservation Rd Apt 54
Marina Ca 93933

Date: 2-22-17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Saltwater intrusion is a real threat to the region's water supplies; there will be enormous amounts of water pumped by Cal-Am and pumping causes seawater intrusion. FORM2-8
- There is a much more accurate method of mapping the saltwater intrusion in the Salinas Valley Groundwater Basin (called Electrical Resistivity Tomography-ERT) but this method is NOT used in Cal-Am's environmental review! FORM2-9
- This information is needed to prove Cal-Am will do "no harm" to our groundwater sources.
- Until such ERT imaging is completed, we request a delay in approval of the environmental review.

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

2-22-17 (Signature)

Val Valdez (Print Name)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 1911 CHENNAULT CT.
MARINA CA 93933

Date: 2/17/17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world; there is only one attempted project at Dana Point, CA.
- With an untested, experimental design the *highest standard* of scientific testing must be made; Cal-Am has used "sloppy science" and created unproven "theories" to minimize the impact on saltwater intrusion in the region.

FORM2-10

- Serious questions are being raised about Cal-Am's models and the data coming out of their test slant well; with the high risk to the Salinas Valley Groundwater Basin, no approvals should be made without first having all the facts!

FORM2-11

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

EVAN HAUGE (Print Name)

Evan Hauge (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 346-B Watson St
Monterey CA 93940

Date: 2/21/17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has not proven with any high levels of certainty that their project will not damage or cause injury to the Salinas Groundwater Basin...the "life blood" of this region's groundwater source. FORM2-12

- Even with significant saltwater intrusion, the region has responsibly managed its water sources. Water remains affordable, and Marina Coast Water District has embarked on alternative projects to secure water in the future; Cal-Am will undermine all such plans! FORM2-13

- Cal-Am must give written assurances for monetary compensation to Salinas Groundwater Basin ratepayers should their project damage the regional water supply. Without this, Cal-Am will be allowed to gamble with another's districts water supply without contemplating paying damages in the future to injured parties! FORM2-14

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Peter R Clark (Print Name)

Peter R Clark (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 307 Whitney
Marina, California, 93933

Date: Feb. 14, 17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has no water rights in the Salinas Groundwater Basin but they intend to pump another district's groundwater and transport this water to their Peninsula customers. The fundamental determination of legal water rights must be made now before any further project approvals! FORM2-15

- Cal Am plans to extract high volumes of water from one source (Marina) and return a small portion of this water to another area (Castroville). This goes against ordinances that prohibit groundwater extraction and exportation and there is no scientific proof that there is any direct benefit to the groundwater of Marina and the Ord community by such action. FORM2-16

- Groundwater from Marina and Ord communities must stay in and be used for Marina and the Ord communities! FORM2-17

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Johanna Pooler (Print Name)

Johanna Pooler (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 13805 Sherman Blvd
East Garrison, CA 93933

Date: 2/10/17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has failed to prove, as required by law, "no harm" to our local groundwater. FORM2-18
- Cal-Am failed to establish accurate and comprehensive baseline information before installing the test slant well. The model that Cal-Am uses to predict "harm" uses this inaccurate and incomplete information! FORM2-19
- Cal-Am's test slant well is showing that less seawater and more aquifer water than expected is being pumped. This means that Cal-Am expects to pump a larger portion of fresh water from the 180 foot aquifer and there is miscalculation of important predictions...this not acceptable science! FORM2-20

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

DIANA NEPTUNE (Print Name)

Diana Neptune (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3338 Michael Dr
Marina, CA

Date: 2/10/2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am's slant well project is **not** just ocean intake as they have promoted to the public. Cal-Am's slant wells will absolutely be in the 180' aquifer, a source of water for our region, and they have clouded this critical fact! FORM2-21

- Current test slant well results show greater than predicted groundwater, rather than ocean water, has been drawn from the test slant well. This is taking precious water from aquifers that belong to the Salinas Valley Groundwater Basin! FORM2-22

- Saltwater intrusion has degraded the quality of our aquifer water; we need to know precisely where all leakages of saltwater could occur to lower aquifers and the "ERT" imaging can provide this much needed information. The approvals of the environmental review should **not** be done until we have this ERT study completed! FORM2-23

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Gainell Johnson (Signature)

Harold Johnson (Print Name)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 230 Michael Dr.
Marina, Ca. 93933

Date: 2-14-17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world; there is only one attempted project at Dana Point, CA. There has been no serious evaluation of the Dana Point project included in the environmental review. "Those who do not know the past, are doomed to repeat it". FORM2-24
- Cal-Am's test slant well itself produced results that did not meet the projected targets and the pumping during the testing had to be stopped multiple times for unexpected occurrences; this is truly sloppy science! FORM2-25
- For such an untested, experimental design, the highest standards of scientific testing must be applied; Cal-Am is simply not doing this! FORM2-26

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Louis Auriga (Print Name)

Louis Auriga (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3154 Crescent Ave.
Marina, CA 93933

Date: 2/14/17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Even with significant saltwater intrusion, the Salinas Valley Groundwater Basin region has responsibly managed its water sources, and has embarked on alternative projects to secure water in the future; Cal-Am will undermine all such plans! This ***is*** regional harm! FORM2-27

- Marina Coast Water District provides 33,000 people in the Marina and Ord communities with affordable, potable water and this legal obligation must be met now and the future without intrusion by Cal-Am. Cal-Am has no water rights in this Basin! FORM2-28

- Cal-Am must give written assurances for monetary compensation to Salinas Groundwater Basin ratepayers should their project damage the regional water supply. Without this, Cal-Am will be allowed to gamble with another's district's water supply without contemplating paying damages in the future to injured parties!

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Janet Fearnside (Print Name)

(Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3760 Madison St
Monterey CA 93940

Date: 2/17/17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has failed to prove, as required by law, "no harm" to our local groundwater.
- Cal-Am failed to establish accurate and comprehensive baseline information before installing the test slant well. The model that Cal-Am uses to predict "harm" uses this inaccurate and incomplete information!
- Cal-Am's test slant well is showing that less seawater and more aquifer water than expected is being pumped. This means that Cal-Am expects to pump a larger portion of fresh water from the 180 foot aquifer and there is miscalculation of important predictions...this not acceptable science!

Additional Comments:

There is also no established baseline for regional & seasonal trends.

FORM2-29

Thank you for your kind attention to this matter.

Sincerely,

Michael BAER (Print Name)

(Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3137-2 Seacrest Ave
Marina, CA 93933

Date: 22 Feb 2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has not proven with any high levels of certainty that their project will not damage or cause injury to the Salinas Groundwater Basin...the "life blood" of this region's groundwater source.

- Even with significant saltwater intrusion, the region has responsibly managed its water sources. Water remains affordable, and Marina Coast Water District has embarked on alternative projects to secure water in the future; Cal-Am will undermine all such plans!

- Cal-Am must give written assurances for monetary compensation to Salinas Groundwater Basin ratepayers should their project damage the regional water supply. Without this, Cal-Am will be allowed to gamble with another's districts water supply without contemplating paying damages in the future to injured parties!

Additional Comments: we need evidence on this ~~the~~ Cal Am is not trust worthy - I need proof to save my water

FORM2-30

Thank you for your kind attention to this matter.

Sincerely,

Moira LaMountain (Print Name)

Moira LaMountain (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3137-2 Seacrest Ave
Marina, CA 93933

Date: 22 Feb 2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- There have been NO successful, completed slant wells for subsurface ocean desalination anywhere in the U.S. or the world; there is only one attempted project at Dana Point, CA.
- With an untested, experimental design the *highest standard* of scientific testing must be made; Cal-Am has used "sloppy science" and created unproven "theories" to minimize the impact on saltwater intrusion in the region.
- Serious questions are being raised about Cal-Am's models and the data coming out of their test slant well; with the high risk to the Salinas Valley Groundwater Basin, no approvals should be made without first having all the facts!

Additional Comments: We need evidence. Cal Am is not trustworthy!

Thank you for your kind attention to this matter.

Sincerely,

Moira LaMountain (Print Name)

Moira LaMountain (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3137-2 Seacrest Ave
Marina CA 93933

Date: 22 Feb 2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am's project proposes pumping millions of gallons of water per day from our already over-drafted Salinas Groundwater Basin...much more per day than Marina Coast Water District currently pumps!
- No considerations are given to our own region's fragile and limited groundwater resources!
- The 180' and 400' aquifers are already over-drafted. The 900' aquifer is currently a primary water source but due to its small storage and/or recharging rates, this last aquifer may be at risk. Cal-Am has failed to prove that the region's water sources will not be harmed by their massive pumping!

Additional Comments: Please do the right thing. We need evidence. Cal Am's not trustworthy.

Thank you for your kind attention to this matter.

Sincerely,

Moira LaMountain (Print Name)

Moira LaMountain (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 3064 BAYER DRIVE
MARINA, CA. 93933

Date: 2/20/2017

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am has failed to prove, as required by law, "no harm" to our local groundwater.
- Cal-Am failed to establish accurate and comprehensive baseline information before installing the test slant well. The model that Cal-Am uses to predict "harm" uses this inaccurate and incomplete information!
- Cal-Am's test slant well is showing that less seawater and more aquifer water than expected is being pumped. This means that Cal-Am expects to pump a larger portion of fresh water from the 180 foot aquifer and there is miscalculation of important predictions...this not acceptable science!

Additional Comments: IT IS WELL PAST TIME TO STOP THE ASSAULT ON MARINA'S WATER SUPPLY BY THE THREE PIECE SUIT PARASITES AT CAL AM / CONGLOMERATE.

FORM2-31

Thank you for your kind attention to this matter.

Sincerely,

B. NOLAN (Print Name)

B. Nolan (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

Your Address: 128 Cypress Grove Ct
Marina, CA 93933

Date: 02-15-17

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

I request the CPUC deny approval of the draft Environmental Impact Report (DEIR) and deny certification for the Monterey Peninsula Water Supply Project (MPWSP) for the following reasons:

- Cal-Am's project proposes pumping millions of gallons of water per day from our already over-drafted Salinas Groundwater Basin...much more per day than Marina Coast Water District currently pumps!
- No considerations are given to our own region's fragile and limited groundwater resources!
- The 180' and 400' aquifers are already over-drafted. The 900' aquifer is currently a primary water source but due to its small storage and/or recharging rates, this last aquifer may be at risk. Cal-Am has failed to prove that the region's water sources will not be harmed by their massive pumping!

Additional Comments:

Cal-Am's project is hostile to the rights of residents of Marina, FORM2-32

Thank you for your kind attention to this matter.

Sincerely,

Barbara Svetlik (Print Name)

B S C (Signature)

cc: Marina City Council, Monterey County Supervisors, NOAA Sanctuary Advisory Council, California Coastal Commission, Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Water Management District (MPWMD), State Water Resources Control Board, Fort Ord Reuse Authority (FORA), Marina Coast Water District (MCWD), Mayors' Water Authority Group.

8.8.1 Responses to Comments from Form Letter 1

Form Letter 1 consists of 149 one-page letters, received as a package and consisting of several common statements as well as hand-written comments added by individual signers. All unique comments have been identified and addressed in responses below.

Form1-1 The Lead Agencies acknowledge receipt of the letters and provide responses below where comments included enough specificity to allow for a substantive response.

Form1-2 Master Response 11, CalAm Test Slant Well, Section 8.2.11.8 discusses the new and evolving slant well technology and specifically addresses the test well at Dana Point. EIR/EIS Section 4.4.1.4 presents ERT and the work of Dr. Rosemary Knight; Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), presents supplemental information on ERT/AEM and clarifies its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. Master Response 3, Water Rights, Section 8.2.3.5 further addresses the issue of harm and injury.

Form1-3 EIR/EIS Section 2.6 addresses water rights. See also Master Response 3, Section 8.2.3.2 for a discussion of the sequence of approvals vis-à-vis water rights, and Section 8.2.3.7 for an explanation of the proposed project's potential effects on water supplies used by the Marina Coast Water District.

Form1-4 Possible litigation is outside of the scope of this CEQA and NEPA analysis. The comment does not provide sufficient explanation of what is meant by contingency planning to permit a response. EIR/EIS Section 2.2.3 describes the SWRCB Order 95-10 and the associated Cease and Desist Order. See also Master Response 3, Water Rights. Regarding ratepayer issues, see response to comment PWN2-22 in Section 8.6.17.

Form1-5 See Master Response 3, Section 8.2.3.2 for a discussion of the sequence of approvals vis-à-vis water rights. Regarding ratepayer issues, see response to comment PWN2-22 in Section 8.6.17.

Form1-6 EIR/EIS Section 4.2.4.5 describes the Coastal Retreat Study (Appendix C2); see also responses to comments Shriner-4 in Section 8.7.23 and PTA-6 in Section 8.6.16. EIR/EIS Section 4.18 evaluates energy conservation and Section 4.11 addresses greenhouse gas emissions. Regarding ratepayer issues, see response to comment PWN2-22 in Section 8.6.17.

Form1-7 EIR/EIS Section 4.4.5.2 addresses the proposed project's impact on seawater intrusion in the Salinas Valley Groundwater Basin. See also Master Response 8, Project Source Water and Seawater Intrusion.

Form1-8 Thank you for your comment. This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Form1-9 Master Response 3, Section 8.2.3.7 addresses the proposed project's potential effects on water supplies used by the Marina Coast Water District.

Form1-10 Master Response 3, Section 8.2.3.2 provides a discussion of the sequence of approvals vis-à-vis water rights.

8.8.2 Responses to Comments from Form Letter 2

Form Letter 2 consists of 791 one- or two-page letters, received as a package and consisting of several common statements as well as hand-written comments added by individual signers. All unique comments have been identified and addressed in responses below.

Form 2-1 The Lead Agencies acknowledge receipt of 791 form letters reflecting the concerns of certain citizens from the City of Marina and Ord communities.

Form 2-2 EIR/EIS Section 2.6 addresses the issue of water rights as one of project feasibility. See also Master Response 3, Water Rights, Section 8.2.3.2 for a discussion of the sequence of approvals vis-à-vis water rights and Section 8.2.3.7 for an explanation of the proposed project's potential effects on water supplies used by MCWD.

Form 2-3 Environmental justice, including potential disproportionately high and adverse impacts on minority and low-income populations, is addressed in EIR/EIS Section 4.20, Socioeconomics and Environmental Justice. See also responses to comments Marina-5 through 10, 36, 37, 39, 45 through 83, 132 and 133 in Section 8.5.1 for specific discussions of environmental justice concerns in the City of Marina.

Form 2-4 EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, regardless of jurisdictional boundaries, and concludes that impacts would be less than significant.

Form 2-5 The proposed project would involve more slant well pumping per day than is currently being pumped by the Marina Coast Water District. The water pumped by the proposed project would be brackish, and the project proposes to return to the groundwater basin the freshwater component that originated in the basin. As such, the EIR/EIS concludes that the proposed project would not significantly impact the Salinas Valley Groundwater Basin. As described in EIR/EIS Section 3.2.1.1, the proposed slant wells at CEMEX would pump 24.1 million gallons per day (mgd), or approximately 27,000 acre feet per year (afy). EIR/EIS Section 5.6.2 explains that the Lead Agencies found Alternative 5a to be the environmentally superior alternative; it would pump 15.5 mgd or approximately 17,500 afy (see EIR/EIS Section 5.4.7.2). The water drawn by the wells is expected to be close to 95 percent ocean water and whatever portion of the water that originated in the groundwater basin (five percent) would be returned to the groundwater basin as desalinated water (see EIR/EIS Sections 2.6.2 and 4.4.2.2 and Master Response 4, The Agency Act and Return Water). In comparison, MCWD pumped 4,200 afy of potable water in 2015 (MCWD, 2016).

Form 2-6 See response to comment Form2-4 and Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin.

Form 2-7 See response to comment Form2-4 and Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin.

Form 2-8 See response to comment Form2-4. See also Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin and Master Response 8, Project Source Water and Seawater Intrusion.

Form 2-9 EIR/EIS Section 4.4.1.4 presents Electrical Resistivity Tomography (ERT) and the work of Dr. Rosemary Knight; Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), presents supplemental information on ERT/AEM and clarifies its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. Master Response 3, Water Rights, Section 8.2.3.5 further addresses the issue of harm and injury.

Form2-10 Master Response 11, Section 8.2.11.8, discusses the new and evolving slant well technology and specifically addresses the test well at Dana Point. EIR/EIS Section 4.4.4 presents the approach to analysis of potential impacts on groundwater resources.

Form2-11 EIR/EIS Appendix E2 explains that the groundwater model used in the EIR/EIS to evaluate impacts on groundwater resources was prepared by the CEQA/NEPA team, and it is not a CalAm model. See Master Response 12, The North Marina Groundwater Model (v.2016), and Master Response 11, CalAm's Test Slant Well. The CPUC decision-making process is explained in EIR/EIS Section 1.5.4. EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, and concludes that impacts would be less than significant.

Form2-12 EIR/EIS Section 4.4.4 presents the approach to analysis of potential impacts on groundwater resources and Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, and concludes that impacts would be less than significant. See also Master Response 3, Water Rights, Section 8.2.3.5 for a discussion of harm or injury.

Form2-13 Master Response 3, Water Rights, Section 8.2.3.7, presents an explanation of the proposed project's potential effects on water supplies used by MCWD.

Form2-14 EIR/EIS Section 4.4.5.2 presents Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Damage. This measure is not required to reduce a potential impact to less than significant, but would ensure that CalAm would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that a nearby active groundwater well has been damaged or otherwise negatively affected by the project pumping of the slant wells, the project applicant shall coordinate with the well owner to arrange for an interim water supply

and begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well.

Form2-15 EIR/EIS Section 2.6 addresses water rights. See also Master Response 3, Water Rights, Section 8.2.3.2 for a discussion of the sequence of approvals vis-à-vis water rights, and Section 8.2.3.7 for an explanation of the proposed project's potential effects on water supplies used by the Marina Coast Water District.

Form2-16 See response to comment Form2-4, Master Response 2 Master Response 3, Master Response 4 and Master Response 8.

Form2-17 Master Response 11, Section 8.2.11.8 discusses the new and evolving slant well technology and specifically addresses the test well at Dana Point. EIR/EIS Section 4.4.4 presents the approach to analysis of potential impacts on groundwater resources. EIR/EIS Section 4.4.1.4 presents ERT and the work of Dr. Rosemary Knight; Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) presents supplemental information on ERT/AEM and clarifies its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. Master Response 3, Water Rights, Section 8.2.3.5 further addresses the issue of harm and injury.

Form2-18 EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources. See also EIR/EIS Section 2.6 and Master Response 3, Water Rights, for a discussion of "harm".

Form2-19 The reporting of test slant well baseline data is described in Master Response 11, CalAm Test Slant Well, Section 8.2.11.4, and how the test slant well data were used in the groundwater modeling is described in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.2. See also EIR/EIS Appendix E2, Section 4.2, Test Slant Well Pumping, for an example where real-world monitoring data is utilized to compare measured drawdown with the drawdown calculated with the superposition model. EIR/EIS Appendix E2 explains the groundwater model used in the EIR/EIS and demonstrates why this model consists of the best available information.

Form2-20 Master Response 11, CalAm Test Slant Well, Section 8.2.11.5, presents the results of the test slant well pump test; see also EIR/EIS Appendix E3. EIR/EIS Section 4.4.5.2 evaluates impacts of the propsed project on the Salinas Valley Groundwater Basin and considers the portion of source water that might have originated in the groundwater basin to be between zero and 12 percent. The actual percentage of water that would be returned to the Basin would be determined annually based on measured values in the production wells. See also Master Response 3 and Master Response 8.

Form2-21 The EIR/EIS is explicit about where the wells would be located in the groundwater basin. Section 3.2.1.1, specifically Table 3-1 explains, the slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sand Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant. Impact 4.2-8 explains that the slant wells would be screened at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. Impact 4.2-10 explains the wells would extend to the west beneath the seafloor and be screened in the Dune Sand Aquifer and the 180-Foot Equivalent Aquifer. See also Figure 4.4-3 for a hydrogeologic cross section that shows the test slant well penetrating the Dune Sand and 180-Foot-Equivalent aquifers. See also Master Response 8.

Form2-22 See response to comment Form2-20, and Master Response 3, Water Rights.

Form2-23 See responses to comments Form2-8 and Form 2-9

Form2-24 Slant well technology is discussed in Master Response 11, CalAm Test Slant Well.

Form2-25 See Master Response 11, which explains why the testing was stopped.

Form2-26 See Master Response 11.

Form2-27 Master Response 3, Water Rights, Section 8.2.3.7 presents an explanation of the proposed project's potential effects on water supplies used by MCWD.

Form2-28 See Master Response 3.

Form2-29 See Master Response 11. Also see Chapter 4.4.1.2 for the baseline discussions of local and regional hydrogeolgy, including seasonal variations.

Form2-30 The EIR/EIS analysis relies on the best available information and was prepared by the CPUC and MBNMS as the CEQA and NEPA Lead Agencies.

Form2-31 Master Response 3, Water Rights, Section 8.2.3.7 presents an explanation of the proposed project's potential effects on water supplies used by MCWD.

Form2-32 Master Response 3, Water Rights, Section 8.2.3.7 presents an explanation of the proposed project's potential effects on water supplies used by MCWD.

8.9 Draft EIR/EIS Public Meeting Verbal Comments

Public Meeting Verbal Comments Transcript
Responses to Public Meeting Verbal Comments

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8.9.1 Public Meeting Verbal Comments Transcript

CAL AM MONTEREY PENINSULA

WATER SUPPLY PROJECT A.12-04-019

SUNSET COMMUNITY CENTER, CARPENTER HALL

CARMEL-BY-THE-SEA, CALIFORNIA

FEBRUARY 16, 2017, 4:00 P.M.

TRANSCRIPT OF PUBLIC COMMENTS

SPEAKERS

Gary Cursio

Margaret Ann Coppernoll

John Tilley

Elisabeth Billingsley

Harvey Biala

Kathy Biala

Hebard Olsen

Tom McMahon

Peter Mounteer

Brian Leneve

Rene Poskoff

Jody Hansen

Michael Baer

Jan Shriner

Herbert Cortez

Julie Hofmann

George Riley

PUBLIC COMMENTS:

(Time noted: 4:22 p.m.)

GARY CURSIO: My name is Gary Cursio, and I am here representing the Coalition of Peninsula Businesses as well as the Monterey County Hospitality Association. I would like to thank the Commission for all they have done along the process, keeping us moving forward, helping us get an extension to the CDO, speaking on our behalf. It is all very much appreciated and noted. Thank you for that.

The Monterey County Hospitality Association is made up of 250 members and over 25,000 hospitality employees, and we are their trade association.

The reason all of us fought so hard to extend the CDO was to allow time for this EIR process to run its course and conclude. The EIR findings, which are largely the same as the DEIR released in 2015, show that this project, which is made up of 6.4 million gallons per day, along with the groundwater recharge project, to be environmentally sensitive and feasible. Therefore, the Coalition of Peninsula Businesses and the Monterey County Hospitality Association ask that you please move forward with approvals so that we can solve our water supply shortage and stay within the new deadlines set by the CDO.

Transcript-1 (Cursio)

Thank you.

CHARLES GARDNER: Thank you. Okay. Margaret Ann is next, followed by John Tilley, and then Elizabeth Billingsley.

MARGARET ANN COPPERNOLL: Wow. Quite an introduction.

Good afternoon, and thank you so much for inviting us to come here today. My name is Margaret Ann Coppernoll. I'm a Marina resident.

I'm here today to plead with the CPUC to deny the certification of the MPWSP and to deny approval of this Draft EIR. The reason is that this desal project is infeasible and irreparable harm is being done and will be done. Cal Am has no groundwater rights, making its project, from the start, infeasible. None of the arguments presented qualify Cal Am with groundwater rights. Those water rights belong to the jurisdiction that has lead responsibility. That jurisdiction is Marina Coast Water District, a publicly-owned water purveyor that has a decades-long golden track record of providing fresh potable water to its customers at affordable prices and rewards them with incentives for their water conservation efforts.

Cal Am has inserted its test slant well into Marina Coast Water District's freshwater aquifer, the perched dune sand aquifer. This aquifer provides a natural barrier against seawater intrusion. As science shows, overpumping causes seawater intrusion. The DEIR report states that Cal Am is currently drawing from this aquifer, not the subsurface out in the ocean as the project design depicted. The EIR tells us that the desal project intends to continue drawing from the dune sand aquifer once its other nine slant wells are constructed.

Transcript-2 (Coppernoll)

This project is in violation of the City of Marina's Coastal Land Use Plan, as the DEIR points out. The project is in violation of the CEQA Chapter 9.2 requirement to prove it will do no irreparable harm. It's already doing irreparable harm by taking water that it has no right to take and diminishing Marina's water supply.

The dune sand aquifer is a perched freshwater aquifer that naturally prevents saltwater intrusion. Field research studies have scientifically demonstrated through electrical resistivity tomography, or ERT, that freshwater exists along with saltwater-intruded water in the various geologic, stratographic layers of the subsurface areas of the Salinas Valley groundwater basin aquifers.

Marina Coast Water has done a first-class job in restoring fresh water through sustainable groundwater management plans and programs. Per the report, the desal project is undermining those efforts by pumping 2,100 gallons of water per minute out of the dune sand aquifer, water that ends up back in the bay. This squandering action is unlawful.

The project's goal to construct pipelines that will extract Salinas Valley groundwater basin water out of its jurisdiction and transport it to another area is also unlawful. Providing another water source to the Peninsula is an honorable objective, but it is not honorable to usurp another jurisdiction's water rights in the process.

I plead with you to be fair, to do the morally right thing, to protect Marina's lawful groundwater jurisdiction from this invasion into its water supply system. Please, please deny certification and approval until authentic scientific data can be obtained and any irreparable harm to Marina's water supply system could be averted.

The United Nations has declared water to be a basic human right. California supports this policy that every human being has a basic right to affordable water for drinking, sanitary, and cooking needs. Water is God's gift to mankind and should not be viewed as a for-profit commodity for investors.

Transcript-2 (Coppernoll) cont.

Thank you, and God bless all of you and our communities.

CHARLES GARDNER: So John Tilley, followed by Elizabeth Billingsley, and Harvey Biala.

JOHN TILLEY: Hello. My name is John Tilley. I'm with the Peninsula Coalition of Businesses also, and I'm also involved with the Monterey Commercial Property Owners Association.

I'm really pleased about the EIR coming through to see that this progress has been made. It's very important to know that the projects that are in place have been blessed in this manner. I was very thrilled to see the portfolio of water projects that were part of our application are being well-viewed and that the CDO was extended. And thank you very much for any help you offered in that regard.

I have two main reasons why I'm very supportive of this proposed water project. One is this thing about the community, which means the people that are employed where Cal Am

Transcript-3 (Tilley)

serves. And when I see the number of people coming to this Peninsula every day to work and I think about what would happen if the water supply project was not available, it really concerns me that so many lives would be affected in such a negative way.

Another way I think about this as a very, very positive step forward is as an environmentalist, which I am deeply involved with the environmental projects in the area and very supportive of the health of the Carmel River. The idea that we can limit the amount of the water coming off the river through these projects thrills me. The fact that we can restore the natural course of the river, the volume of water there, the habitat for the many animals that survive there is such a great thing to have. We're blessed in this area with abundant, natural beauty, and I am really thankful that these projects are in place to protect our environment and also to protect our community.

Transcript-3 (Tilley) cont.

Thank you very much.

CHARLES GARDNER: Thank you.

Okay. Elizabeth Billingsley, Harvey Biala followed by Kathy Biala.

ELIZABETH BILLINGSLEY: Hello, everybody. I'm Elizabeth Billingsley, a Peninsula resident for 55 years, but now I'm upset about this EIR. How could the California Public Utilities Commission listen to all of Cal Am's sob stories about the current plight of no water when they did nothing to responsibly renew their own water sources? Now you will allow them to destroy Marina Coast Water District's only water source that 33,000 people are dependent on? Really?

In your environmental review there is no mention about the Salinas Valley groundwater basin needs for our people. We have more undeveloped land than anybody here in the Peninsula, and Cal Am just takes -- talks about the Peninsula needs. Does Cal Am care if we cannot meet our own future water needs and we do not [sic] have the legal rights to this water?

Cal Am has no right to our water, period. You will end up having yet another destroyed water source left by Cal Am if you allow them to take our water illegally. Add us to the Cal Am's list of Carmel River and Seaside groundwater basin of destroyed water resources that Cal Am has brought upon their ratepayers. Marina says "No" to Cal Am.

Transcript-4 (Billingsley)

Thank you.

CHARLES GARDNER: Thank you very much.

So Harvey Biala, Kathy Biala, and then Hebard Olsen.

HARVEY BIALA: My name is Harvey Biala, and I'm a resident of Marina.

Cal Am describes a proposed project as an ocean intake system with subsurface slant wells extending offshore, leading us to believe Cal Am will be taking ocean water for the desalination

Transcript-5 (H. Biala)

project. There is a diagram explained at public meetings, and it seems to depict this and imply that the slant wells will be pumping water safely out from under the ocean floor. This is completely misleading and we are outraged that this is put before the public in this deceptive manner.

In the DEIR there is a diagram that clearly shows the slant well is in the 180-foot aquifer. How dare Cal Am suggest otherwise. Our aquifers are connected to the ocean across the entire region. Cal Am cannot illegally take 27,000 acre feet per year from our water sources and claim no harm will be done to an already over-drafted and fragile groundwater system.

By the way, Marina Coast Water District is currently managing 4,000 acre feet per year, which is one-seventh of what the Cal Am project is proposing to be pumping.

Cal Am has not bothered to understand Marina and Ord communities' future needs for our water. The DEIR lists pages of the Peninsula's needs for single-family affordable housing and commercial needs, but there is absolutely no mention of what we are struggling with to accommodate our future growth and water needs in Marina. We have a university expecting to grow to 12,000 students. We have, as yet, an unopened flagship medical veterans facility. We have commitments to build in excess of 2,000 more homes and so much more. And we are wondering how to provide water for all this development without the water grab from Cal Am. Where is this considered in the DEIR? Why does Cal Am's Peninsula needs -- why does Cal Am's Peninsula needs take precedence over ours when we have water rights and they do not?

This is truly an example of environmental injustice in which a powerful and predatory mega-corporation is allowed to dominate a small, economically challenged, and diverse community to meet the needs of a wealthier, more politically influential population.

Transcript-5 (H. Biala) cont.

Thank you.

CHARLES GARDNER: Kathy Biala, Hebard Olsen, and then Tom McMahon.

KATHY BIALA: My name is Kathy Biala, and I'm a resident of Marina.

First, I want to stress that Cal Am has no legal water rights in the Salinas Valley groundwater basin. The issue of groundwater rights must be determined before any further project approvals.

Secondly, because this specific type of slant well technology is experimental, a high level of scientific scrutiny is required. But basic scientific methodology has been breached in the Cal Am project. Among these are:

Cal Am's assumption that the 180-foot aquifer contains only unusable brackish water is a falsehood on two counts. Brackish water is valuable in a desalination process because it contains a portion of fresh water by definition and, hence, has great value to the local water purveyor, Marina Coast Water District.

Transcript-6 (K. Biala)

Further, an MCWD hydrogeologist has discovered a perched fresh water aquifer on the Armstrong property not addressed in Cal Am's assertion of no harm. How can Cal Am's model predict no harm to our basin without an accurate baseline of where the freshwater is?

Cal Am has shown a complete disregard for the electrical resistivity tomography, the ERT for shorthand, that can image very large portions of the groundwater basin up to depths below the 900-foot aquifer in a 3D mapping. By contrast, Cal Am, who knew about the ERT at least two years ago, is obtaining data from only nine vertical monitoring wells, builds a model from this limited data, and then claims no harm to our basin.

The test well study has not been completed, and yet still this DEIR is to be approved? This is very absurd. Any Cal Am claims of no harm are mere conjecture at this point until the test is completed.

Large numbers of pumping stoppages have occurred with significant lapses in data collection, and yet no questions have been raised as to whether this is a valid study under such conditions.

Two major data variances in the test slant well have already occurred. One, exceeding the acceptable water drawdown level of more than one foot that was later explained away by the impact of agricultural pumping; two, not reaching a projected salinity level of 96 percent in the threshold well, meaning that currently 93 percent salinity is 7 percent aquifer water being pumped.

This model is highly faulty as it did not factor in, before the testing began, the impacts of the agricultural pumping nor identify levels of uncertainty for unexpected results. This is shoddy science.

MCWD will initiate the ERT in May. If you approve this project without the benefits of an ERT study, you will likely face compelling legal challenges based on the facts revealed by the ERT. Do not approve this project until an ERT is completed and the data applied to the existing model. What is at stake is an entire regional water supply.

Transcript-6 (K. Biala) cont.

Thank you.

CHARLES GARDNER: Thank you.

Hebard Olsen, then Tom McMahon, and then Peter Mounteer.

HEBARD OLSEN: I'm Hebard Olsen and I live in Monterey.

And since Cal Am does not have rights to the water that they are putting in the system, I'm going to be turning the tap on and getting stolen water.

Now the question is how can I cure that problem? That's getting rather difficult. When they did their test well, they had water drawn from a mile or so away from the well on the land.

Transcript-7 (Olsen)

I would like to not have the project approved until they can serve me water that they actually own, not water that they have stolen from Marina and whoever else is out in that area.

Second, I would like to know if they have got in their budget sufficient money to pay for the damage to Marina after they get -- run their well for a while.

It seems to me that the original EIR should not be approved and that one of the alternatives that takes water from Moss Landing should be the one that's considered, not any of the ones that take water from Marina.

Transcript-7 (Olsen) cont.

CHARLES GARDNER: Thank you. Tom McMahon, Peter Mounteer, and then Brian Leneve.

TOM McMAHON: Good afternoon. My name is Tom McMahon. I am with the Pacific Grove Downtown Business Improvement District. I'm also a Pacific Grove representative with the Coalition of Peninsula Businesses, and I'm the owner and general manager of Monterey Bay Laundry.

I don't want to come here tonight and speak about hypotheticals. I want to speak about the reality of what we face in the business community and as a resident on the Monterey Peninsula. It was no more than about 90 days ago that we were facing the termination or the effective date of the CDO which threatened to completely shut off -- or virtually completely shut off the water supply to the Monterey Peninsula. Now, I think we all sat at that time and said, "Well, it's unlikely. I don't think they are going to do that." And we hoped and worked very hard in order to get that CDO date pushed out, and we were effective in doing that.

But, in the meantime, it's important for people to realize that, particularly from the business community, if you look at the business community in Pacific Grove, we need investment. Our business community is anemic. We need investment. But we cannot get investment when we have a huge question mark associated with whether or not water is going to be available to these businesses.

Transcript-8 (McMahon)

At a very personal level, I can tell you that we shut down two operations -- two laundry operations, one in Pacific Grove and one in Monterey, due exclusively to the fact of the question mark associated with whether or not we were going to have water available. We were looking at the need to invest significantly in the business, and the question mark introduced too much of a risk for us to be able to make that investment, given the fact that we were unsure of what our water supply would be.

This is not hypothetical. This is happening now. There are businesses now that either cannot operate within our community or cannot invest in our community or can't perform what -- the duties or what they're attempting to do as a business because of that question mark with the water.

I really urge you to approve the EIR so we can solve our water supply issue and allow the community of Pacific Grove, Monterey, Carmel to be able to grow and thrive. Right now we can't do that.

Transcript-8 (McMahon) cont.

Thank you.

CHARLES GARDNER: Thank you.

So we have Peter Mounteer, Brian Leneve, and then Rene Poskoff.

PETER MOUNTEER: Good afternoon. My name is Peter Mounteer. I am the marketing and events manager at the Pacific Grove Chamber of Commerce, and I'm here today on behalf of that organization and its membership.

We represent over 400 businesses and individuals, many of whom who have a strong interest and a sound water supply solution for the Monterey Peninsula area. We ask that you please move forward with approvals to the environmental impact report so that we can solve our water supply shortage and stay within the new deadlines set by the Cease and Desist Order.

The groundwater impacts are shown to be less than significant. The modeling has been peer-reviewed and undergone intense testing to confirm its accuracy. Subsurface intakes conform to state policy on desal plants. They avoid harm to the environment and they are a feasible technology, given the geology of the Cemex site. Solving this problem is of urgent importance to our community and health of the Carmel River.

The environmental impact report shows that the collaboration that has taken place between Cal Am, the cities, the Monterey Regional Water Pollution Control Agency, the Monterey Peninsula Water Management District, environmental groups, and other stakeholders has arrived at a suite of projects that provides a sustainable, reliable water supply and protects the water and river environment of the Monterey Peninsula.

Transcript-9 (Mounteer)

Thank you.

CHARLES GARDNER: So Brian Leneve and then Rene Poskoff.

BRIAN LENEVE: Good evening. Thanks for this opportunity to talk. I don't have any prepared statements, so I may be stumbling through this a little bit.

I am Brian Leneve. I'm a resident of Carmel. I'm a ratepayer of Cal Am, and I'm also the president of the Carmel Steelhead Association, and I'm also an environmentalist.

I believe this is a good project. We have worked to support it since the beginning. Since 1995, steelhead in the Carmel River have been waiting for some sort of a break to get more water into the river. This is the closest they have come to it. Without this project, the steelhead will continue to suffer, they will continue to decline, and they become extinct.

Transcript-10 (Leneve)

As an environmentalist, I like the slant well intakes. I believe it's an environmentally superior way of taking water from the ocean. Two speakers from me talked about the hypothetical. There's a lot of people here from Marina tonight talking about hypothetically how this may affect the groundwater. In Marina, however, that's hypothetical. They don't want to listen to the studies or read the studies in the EIR. But we support this EIR. We believe it's a way forward for the environment and statistically the steelhead.

Transcript-10 (Leneve) cont.

Thank you.

CHARLES GARDNER: Rene Poskoff.

RENE POSKOFF: Good afternoon. I'm representing the Coalition of Peninsula Businesses as well as the Monterey County Hospitality Association and the 22,000 people that it employs. And the Coalition of Peninsula Businesses and MCHA have been working very diligently over the past -- I lost track of the number of years, as I'm sure maybe you have, on this project, but I won't repeat all the great reasons that already have been stated. But we're very much in support of it. We think it's needed, and we urge you to move forward.

Our community -- and when I say "community," I really talk about both. We're residents, all 22,000 people that work in the hospitality industry and our business people, but they are residents and business people. And we need this project. We urge you to move forward.

And the only other statement really I would make is that I know there's a lot of conversation about the cost of water, and we all understand that. But there's one thing which is scarier than expensive water, and that is not having water at all. Because without it, as an individual, as a resident, or a business, we can't -- we can't support our industry, and we need it. So we urge you to move forward.

Transcript-11 (Poskoff)

Thank you for your time.

CHARLES GARDNER: Thank you. That's the conclusion of the list that I have. Is there anybody else who would like to provide comments who hasn't signed up already? Okay. Is there anyone who has additional -- has commented but they have additional comments?

HEBARD OLSEN: Yes, I do. Here.

CHARLES GARDNER: If you could just repeat your name for the court reporter, that would be great.

HEBARD OLSEN: I'm Hebard Olsen again. And I forgot to mention the fact that Marina's water is from a non- -- a temporary system. The Army, when they turned the system over, they determined that the system, the water source, is not -- should not be a permanent water source. So we have a problem that's brewing, and this Cal Am project will add to that problem and make its fruition more likely.

Transcript-12 (Olsen)

Marina actually has some desalination and they might have to turn to totally desalinated water, moving an expense to them from our -- from the project of Cal Am. So that's not fair to them.

And, again, I said that I would be drawing on -- water that I'm getting from my tap would be stolen water, and how do I feel about that.

Transcript-12 (Olsen) cont.

CHARLES GARDNER: Okay. Thank you. Anyone else have additional comments?

Okay. I think what we'll do is go off the record.

(Time noted: 4:44 p.m.)

(Time noted: 5:26 p.m.)

CHARLES GARDNER: Okay. So we have a couple of people who have come and want to provide comments, so we're going to go back on the record to receive those comments. We have Jody Hansen and then Michael Baer. So we've asked people to stick to three minutes, but there's only two of you, so -- but you might lose us after five or so.

So, Jody, would you like to provide some comments?

JODY HANSEN: Thank you. My name is Jody Hansen. I'm the president and CEO of the Monterey Peninsula Chamber of Commerce. I'm here this evening representing the Coalition of Monterey Peninsula Businesses as well as the Chamber.

We are in strong support of this project. It's very important for our community. You're going to hear from a lot of different groups today and many of them saying that this EIR has problems. And there's no such thing as a perfect EIR. And having been at the last CPUC meeting where we knew that it may not have been the last, but where we heard that the EIR was going to take longer, it's going to take an additional year, and the staff was talking about making it bulletproof, well, we know that this project is not perfect. And it can't be made bulletproof when we have a community that is always looking for the problems with projects.

Solving this problem is of urgent importance to our community and the Carmel River. We saw that taking the dam down has been a huge difference for the Carmel River, and we're looking at getting the desal project finished so that we can allow that river to become healthy again.

The EIR shows that the collaboration that has taken place between Cal Am, the cities, MRWPCA, MPWMC, environmental groups, and other stakeholders has arrived at a suite of projects, this portfolio of projects that provides a sustainable, reliable water supply and protects the river and the wider environment of the Monterey Peninsula.

Transcript-13 (Hansen)

We, as a coalition of Peninsula businesses, represent the business community that actually provides a lot of economic stability for this area, and without water we're in a world of hurt and we go into a real possible economic downfall again.

So I think this is where we have to look at ways to mitigate the EIR and be creative, if we need to be. The PUC has been extremely diligent and thorough in its study of the environmental impacts of the MPWSP. The end analysis is extremely important, which is demonstrated by its comprehensiveness and depth. We're glad to see this level of study, glad this milestone has been reached, and we're looking forward to a speedy decision on the project.

Transcript-13 (Hansen) cont.

Thank you very much.

CHARLES GARDNER: Thank you. Michael?

MICHAEL BAER: Hello. I'm Michael Baer. I'm a resident of Monterey Peninsula and I'm a ratepayer.

The level of distrust, I want to just -- that's kind of the theme. Well, first of all, you've got five years of history, at least, with this project, 4,000 pages of a document, and I'm supposed to say something in three minutes. So the idea is to take one thread as an example and, you know, not try and cover everything.

But the theme is distrust both of Cal Am and the PUC. And we've been talking about this for years and people complain. And I think the poor turnout is reflective of people -- of the distrust, not of the lack of interest of what's been doing on. And there's been letters to the editor, you know, all the time for years.

So I want to take this slant well as the theme, the thread, for which I want to talk about why there's such distrust. In 2014, Cal Am told us that they would run a test slant well continuously for up to two years for a cost of about $4,000,000. In the original Coastal Commission permit it said that they would decommission that slant well, cap it and bury it. And because it was identified as a temporary experimental test, the CEQA regulations were waived. Now it is designated as a back-up production well. So it's a way for them to get around some CEQA regulations back in 2014.

The costs have grown to over $12,000,000 at the last count, and the last count was several months ago. That fact falls between the cracks. I just want to highlight that. Like when we come to a ratepayer argument, we can't really say, "Oh, by the way, you tripled the costs on the slant well." And here we are at the EIR. We can't really talk about costs. But we paid that $12,000,000, which was originally slated at $4,000,000, and I'm sure it will be higher before this is all done.

Transcript-14 (Baer) cont.

It was supposed to be continuous tests up to 24 months. But in those 24 months there have been three major stoppages, one of 14 weeks, one of 8 weeks, and, most recently, one of three weeks, and more than a dozen other stoppages from a couple of hours to several days.

The State Water Resources Control Board, when they agreed to this, were under the impression this would be a subsurface intake system -- subocean intake system. But the current slant well does not draw water from beyond the mean high tide line. It draws it out from the aquifer. And even though the other production wells are described as extending beyond the high tide to some extent, it raises the question: What did this test well actually test if this slant well is not representative of the other ones?

In the Executive Summary there's been some omissions. The EIR skips over the fact that Dennis Williams had conflicts of interest. He was the hydrogeologist doing some of the modeling in the original EIR, and he has an international patent on slant wells. So he gains -- if this is successful, he stands to gain a tremendous amount of money from that, and yet he remains on the hydrological working group collecting all the data that's being used in the model, and there's questions about whether or not that is accurate which I won't go into here.

Transcript-14 (Baer) cont.

The other thing that was omitted was that the Marina City Council denied the CDB permit for the slant well, finding that the prepared negative declaration for that project was insufficient and that a full EIR should be required for that -- an EIR should be required for that test slant well, which was subsequently overruled by the Coastal Commission.

So you can kind of get this idea where this distrust comes from. We're told one thing in the beginning. It doesn't turn out that way.

And just -- finally, I would just say that we have a hard time believing, many of us, that the impact on the groundwater will be insignificant as this EIR states. I'm talking 25,000,000 gallons a day coming out of the 180-foot aquifer for 40 years. The modeling is very impressive. It's hard to understand as a layman. You know, you have to rely on the experts. But given the level of distrust, we don't believe this is -- I don't believe -- and there's many like me who don't believe this is a sustainable source water.

I guess that's all I have for today.

THE COURT: All right. Thank you, Mike.

Okay. Anybody else arrive? Okay. So we'll go off the record again. Thanks.

(Time noted: 5:35 p.m.)

(Time noted: 6:37 p.m.)

THE COURT: So we have three more people that have arrived that would like to provide comments. So we're going back on the record.

In order, we have Jan Shriner, Herbert Cortez, Julie Hofmann. So we've been asking people to keep it to three minutes, but there's certainly more time if you need. You don't have to keep it to that. So if you want to start?

JAN SHRINER: Thank you. Thank you for the opportunity. I need to say that I am on the board of the Marina Coast Water District. It's a volunteer elected position, but today I'm here speaking as a resident of Marina, not in that official capacity and in no way authorized by the board. I sit on other boards and collaborative working groups, but none of them have authorized me to speak on their behalf. So it's Jan Shriner as a Marina resident.

Some of the things that -- I was just looking over this really briefly, skimming through. I'm glad in some ways to see that this schematic of 3-13 shows that these intake lines are not actually going offshore and under the bay. But I read in the text on page 3.8 that they are actually going offshore under the bay. So it's confusing there. They say, in the paper, 161 feet to 356 feet, except for Number 8. On the schematic Number 8 is not labeled, but none of them appear to be any different than one another.

One of our biggest concerns in Marina is our erosion rate. On this site it is found to be the highest erosion rate of the continent. We have a scientist locally who estimates that up until two years ago the erosion rate was 220,000 cubic feet per year. Now he estimates, it's been in the paper, it's either 350- or 380,000 cubic feet per year. The State Parks uses an erosion rate of something like 7 feet per year as far as how far it's moving away from the water. I know when you go to the site at Reservation Road you will see the parking lot falling into the bay. I know the Marina Coast Water District beach office is falling into the bay.

Transcript-15 (Shriner)

When I run out to this site, I can see the low spot is this landfill. There is kelp already around the road of the sediment ponds. So it's very concerning to me about erosion.

We love our publicly water -- publicly owned water in Marina. Our community water rates are the lowest in the region. We appreciate an accessible, transparent process in Marina. A lot of us participate. And in this case, for the EIR, the online link is extremely difficult to locate. Some of us are lucky enough to have picked up disks.

But assumptions for models that were undisclosed until Friday, February 10th, and I was able to kind of ask some scientists last night about it, some of them don't know their assumptions off the top of their head. When you come to a public workshop, I would like them to be able to rattle off: What are the erosion rates that went into the model? What are the historical pumping data that went into the model? They were only able to say, "Try Appendix E2," or, you know, "Try Appendix C1," things like this, kind of like vague. It's not accessible for the public, and maybe we expect too much.

Recently, the previous Thursday, one week before today, I went to a DOGGR presentation. It's California State Department of Conservation, Division of Oil Gas Geothermal Resources. The presentation was for an aquifer exemption of untreated wastewater injection into the

Lombardi and Aurignac sands of the Salinas Valley groundwater basin. The public were told not to worry, that we would never be using these aquifers, the future of the Salinas Valley groundwater basin is rosy, and the cite -- the cited examples included locating a desal project in Moss Landing.

This is a state organization. This is our aquifer. We need better communication among the agencies. I told them I wanted to be in the room when they informed Cal Am that the desal project will be located in Moss Landing. Because this whole Draft EIR appears to me to be in Marina with an alternative explored, bruskly, at Potrero Road and two or three other options in Moss Landing. The decision has not yet been made, but I would prefer to see it moved at least to Potrero Road, but then there is the problem with the groundwater rights, right? That's the first reason why it got located here, supposedly so slant wells could take seawater, but these intakes do not go offshore, not according to this schematic.

So please work on your process. Of course, we'll be reading some more of these things. And I appreciate the time that you gave us, or three minutes, to be here today.

Transcript-15 (Shriner) cont.

CHARLES GARDNER: Thank you, Jan.

Herbert, are you ready? And then, Julie, you're up next.

HERBERT CORTEZ: So I would like the following concerns to be added to the record.

Before I begin, I do want to mention about the current violation that I see with the CPUC and this public hearing. It's violation of Resolution ALJ 252. According to the rules, the public should have had a chance to sign up to speak before 10:00 a.m., and that was not the case. I have documentation and screenshots about 8:30 in the morning trying to sign up for the public hearing. This is an official CPUC hearing, is my understanding, and so the rules should have been applied to this hearing. So I will present that at the end of my discussion.

So to begin with, I do want to say that the current draft environmental impact report, I want to address what Cal Am has said in the past three public hearings about super-positioning modeling. That's what it is, it's modeling. This super-position modeling which they speak of so highly does not address the deep aquifer of Marina Coast Water District.

And before I continue with this statement, I must say that I'm also a Marina Coast Water District board member. I do not speak on their behalf. I'm speaking as a concerned resident of Marina and Monterey County in that they did not authorize me to make any of these statements.

But I do want to add that I find it very interesting that if you're going to address the super-position modeling of being able to see how much groundwater is taken and put back, that you cannot address the big -- the deep aquifer, which is 900 feet, and I think that's crucial to this discussion. So they want to show you the 180- and the 400-foot aquifer because they think, according to their terms, it's not water that's of beneficial use. But they don't show you and

Transcript-16 (Cortez)

they don't tell you scientifically -- and it's proven and cited -- that there's leakage from the 180, 400, and deep aquifer. So if you're super-positioning focus on the 180 and 400, it should include the deep aquifer which is 900 feet, and that's not addressed. So that's my first concern about the Draft EIR.

My second concern about the Draft EIR is that they don't focus on the Hopkins groundwater analysis that was done in 2015 that finds freshwater in the 180-foot aquifer. So the reason why that's important is because the case that Cal Am is making to the public is that this is water that's not of beneficial use. Well, of course, if the public keeps hearing, "well, this is not in use and someone is going to come and make it better," well, that's great. The problem is this is fresh water, and that fresh water is used to help us support saltwater intrusion.

Now, if they develop slant wells and they continue putting in slant wells, well, guess what? That's more saltwater intrusion. And if you aren't going to do that, then you should put in your Draft EIR that's how the Hopkins groundwater analysis is proven wrong, or there is no fresh water there, and their super-position modeling is not addressed. And I think that's really important.

Okay. My third point about the Draft EIR is the following. It goes back to this conversation and this image and perception to the public regarding beneficial use of this area. Now, my understanding is that you had in the morning -- not in the morning -- but early afternoon you had constituents from pro business in Monterey, and, of course, they want that water. But you know who else needs that water? The people who live in Marina, the growing population that's about to increase in the next 20 to 30 years, which is forecasted by Fort Ord, by the Marina Coast Water District, and the Monterey Regional Water Pollution Control.

So if the issue is that the water is not of beneficial use, why would there be a memorandum of understanding between these agencies -- a state agency, a county agency and a federal agency -- about the long-term use of this water? That's not addressed in this Draft EIR. And this is public documentation in which they can see the analysis of use of what's needed -- freshwater, groundwater, brackish water -- and it's not addressed in the EIR.

And so this image and perception that has gone on for the past two weeks and possibly more about the fact that this water is not of beneficial use needs to be stopped. It should be on the record that if they are going to keep saying that, they should document it and make sure that it's available for all eyes.

Now, my final thing that I want to say before I leave is I was really concerned about not being able to sign up in public. And the reason why is because I live in Marina, yet we're here in Carmel. The reason why I found out that this was happening, it wasn't because of Cal Am's great public push to have public participation, it was because I went to the Marina City Council, and the Marina City Council probably asked Cal Am to come and make a presentation.

Transcript-16 (Cortez) cont.

So I'm here today to say that I really want this resolution that I think there's a violation of ALJ 252 to be corrected, because this is a long-term activist concern that I have, because this is just a draft. This is a long-term project for Cal Am. There will be more people like me speaking up. There will be more knowledgeable people understanding exactly what a Draft EIR is and what false perceptions are from Cal Am. So I would like that corrected.

Transcript-16 (Cortez) cont.

So with that said, thank you very much.

CHARLES GARDNER: Julie Hofmann.

JULIE HOFMANN: Julie Hofmann, a Marina resident.

I think secure water is a good thing. And I like parts of this DEIR, you know, as far as recovering wastewater and some of the other groundwater replenishment.

But I think that if anyone has looked at a map and seen all of these straws that are in the Salinas Valley water basin, you have an idea of how much there are impacts already to that water supply. And Marina sits on the very end of that water supply. And now we have a Draft EIR that really disregards Marina's role in being at the end of that waterline.

There's a big do-no-harm requirement in this Draft EIR as I have read it, and I have a problem with some of the data. I understand this is going to use millions of gallons of water. The way I first heard about this was going to be a desal project, but yet the closer I read the DEIR, I understand that quite a bit of groundwater will be taken up. This is the way slant wells work. It helps desal the water a little bit before it gets there.

I think that we need better information before we go wading into this project. Maybe slow this train wreck down a little and start considering how Marina will be impacted by this. It's really interesting to me that the second location on Potrero Road has more information in the DEIR about impacts to the Elkhorn slough than there are for Marina.

I think that the biggest problem that I have with the slant wells is there just isn't any slant wells with any sort of reliability or historical evidence as working with desal. There aren't any in California, there aren't any in the United States, and there aren't in the world that I can find that provide drinking water to a tap of a paying customer. So we need to really look at that before we start putting 10 slant wells into the end of the Marina aquifer.

I have heard about this ERT data, and it's sort of like a CAT scan for the groundwater. And rather than relying on data from small wells poked around and modeling from the data pulled from those different places and interpretating -- interpolating, as I understand it, the difference between this point and this point and kind of making up a number here, we could have a much better idea of what's actually going on in our groundwater.

And I do understand that Marina Coast Water is paying to have this done. And I think that the CPUC should delay this project until we can see that modeling and see that data, and

Transcript-17 (Hofmann)

maybe Cal Am should use that data to give us a complete picture of the groundwater before we sallie forth. So we need the complete data.

I'm very worried about the mitigation to going into a project like this that's using so much of the groundwater and doesn't seem to have much data to really tell us what's going on with the water. And we need to be really sure before we go into this, because this is a long-term issue. We're at the end of the line. There is increased water needs everywhere along the Salinas Valley. We could end up with saltwater intrusion simply from that alone, without the slant wells at the end of the water line here.

Transcript-17 (Hofmann) cont.

So let's be sure about these slant wells. I just see high costs and failure to provide water in the long-term, and I see harm to the Marina aquifer with the information as it's been provided so far.

Thank you.

THE COURT: Thank you.

Is there anybody else who has arrived?

Okay. Let's go of on the record again and we'll see if anyone else arrives.

(Time noted: 6:49 p.m.)

(Time noted: 7:27 p.m.)

CHARLES GARDNER: So we will go back on the record to receive further comments.

If you could state your name.

GEORGE RILEY: Yes, I will. George Riley from Monterey. I've been active in water issues in Monterey for ten years, at least. I have no idea what was said tonight, but I'm going to guess that they were concerned about the lack of water rights in the project. I know this is supposed to be on the EIR, and I don't know everything that might be related to the EIR exactly, I'm sure they were concerned about the fact that the project is located within another public agency, the water district. And I worry about invasion, and without water rights and without being invited, that's become a real issue.

I do think that the PUC structure for the public participation hearings restricts the comments that are made to you and the information that you get. Those who are residents here and those who are ratepayers here get the whole picture. We get the silo that comes from San Clemente Dam. We get the silo that comes from returned water or -- I don't know. It's 15,070.19, I think, of the 38 or 39 million dollars of money that Cal Am gets. It's a decision made by the PUC that supports Cal Am and doesn't support the ratepayers. We get the different silos altogether here because we pay the bills.

Transcript-18 (Riley)

But we think that the general approach to public participation hearings is that you create a silo that some of the stuff that's said here doesn't apply. You're talking about an EIR, we're talking about the cost on the ratepayers, and that doesn't apply, or another case that doesn't apply.

So the dilemma that I think the ratepayers here feel and the public comment that I'm suspecting that you heard tonight represents an impact on ratepayers that is presented to you in silos, to us in the composite, and that's the dilemma we have.

And I feel like two things that are still outstanding on the EIR process and the project in general is the lack of water rights and poor science. I am convinced that the feasibility analysis that's required by the state for the slant well idea is based on very skimpy science and that we would like to advocate a more serious approach, a more expansive approach to science which includes the ERT -- you know what I'm talking about -- process and that's outside the schedule.

So we're -- as ratepayers, I think we're going to be advocating two things: One, figure out what the schedule is on how to determine the water rights issue; and, second, to figure out where a better approach to science can apply to the whole evaluation of the approach. Side issues are going to be invading another jurisdiction, seawater intrusion in general, maybe a few more, but you get my gist.

Transcript-18 (Riley) cont.

And I probably have run out of three minutes. Thank you very much.

CHARLES GARDNER: You can continue.

GEORGE RILEY: I don't know that there's a whole lot more to be said. But I do think the main thing I want to say is ratepayers here, whether it's commercial or residential, we represent residential -- I mean, I'm speaking on behalf of residential victims -- that there's a general unfairness between the commercial rates and the ratepayer rates. The commercial rates have no financial incentive to save money anymore after they changed the rate structure for them.

It's our position that once they have reached a certain category of installation of water-saving devices, once they have reached this level of that, then they can use all the water they want and have no financial incentive to save water. Just the opposite applies to residential. Just the opposite. And so we think there's an unfairness there. But that doesn't apply to the EIR. That's the dilemma. That's an example of the dilemma that I think we face.

And we keep paying the bills. And Cal Am has had several projects that have gone nowhere, and they incur costs, and they go to the PUC, and the PUC approves. And every example of this over the past ten years has been that Cal Am can go to the PUC: We have a failed project, but we were conscientious about what we were trying to do, we were within the objectives of what we were trying to accomplish, we were trying to get there, but we failed. Sorry we didn't deliver something. And then what happens to the extended costs? They come

to the ratepayers. Not once has the PUC decided that there's somebody sharing that cost beyond stockholders. Not once. So that's a real rub to the ratepayers.

The San Clemente Dam example. I know I'm way over the basic topic. I appreciate that you're not going to call three minutes. The San Clemente Dam is another example where the ALJ recommended in the proposed decision a certain level of reimbursement to Cal Am. The commissioner assigned to that project reversed -- absolutely, totally reversed that decision and even added to it the benefit to Cal Am. And even Cal Am was surprised at how generous the PUC decision was. And the ratepayers pay all that bill.

So even when Cal Am -- even when the PUC gets all the facts, hears all the information, takes into account all of the evidence that's been submitted, comes to a conclusion that Cal Am did not deserve but a certain amount, then the Commission -- and this is why the Commission is in our cross-hairs as well. I mean, Cal Am is a problem to us; the PUC is also similar in the cross-hairs. A single commissioner, relatively brand new, and subject to nine -- if my memory is right, there are about 14 or 15 ex parte meetings in that process -- nine of them, if I remember right, was with this one commissioner -- documented in the ex parte reports -- and this one commissioner turns around and says, "We will reverse the proposed PUC decision, reverse it." And even Cal Am was saying hallelujah. And the ratepayers pay for it.

I mean, so we suffer from decisions that you make, Cal Am proposes, and Cal Am consistently represents to the public that the PUC demands this, the PUC ordered us to do this.

We know the process. Cal Am goes to the PUC, they ask for this, you approve this, and then they came back and say, "The PUC orders us to do this." They do not take responsibility for their own role in it. I mean, we know this. I mean, this is what we're up against.

And we would just like you to hopefully consider a little more -- you have got a bad history as far as ratepayers are concerned locally in the past ten years -- I've only been active about ten years -- and I'm amazed at how many decisions and opportunities I have had to be critical of Cal Am or the PUC and what decisions they have made, but somewhere in there there's got to be some attention given to the ratepayers, and I think they have been ignored, and I don't even know how that applies to the EIR. But, anyway, thank you for the time.

(Time noted: 7:35 p.m.)

Transcript-18 (Riley) cont.

CERTIFICATE OF COURT REPORTER

The foregoing public hearing was held before me, KELLI A. RINAUDO, Certified Shorthand Reporter, License No. 6411, RMR, CRR, CCRR, and RDR, for the State of California.

The public comments were taken by me in machine shorthand at the time and place therein named, and thereafter, under my direction transcribed into longhand.

I further certify that I am not of counsel or attorney for either or any of the parties to said hearing, nor in any way interested in the outcome of the cause named in said caption, and that I am not related to any party thereto.

Dated March 2, 2017.

_____

KELLI A. RINAUDO, CSR NO. 6411

RMR, CRR, CCRR, RDR

8.9.1 Responses to Public Meeting Verbal Comments

The verbal comments from the public hearing on February 16, 2017 were transcribed. The numbering in the response to comments includes the commenter's last name in parenthesis.

Transcript-1
(Cursio) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-2
(Coppernoll) The CPUC's consideration of the EIR/EIS and the proposed project is described in EIR/EIS Section 1.5.4.1. Water rights, the feasibility of the proposed project, the issue of harm, and effects on the Marina Coast Water District (MCWD) supply are addressed in Master Response 3, Water Rights. See also response to comment Coppernoll-1.

The existing test slant well currently draws water from the brackish Dune Sand Aquifer and the 180-Foot Equivalent (FTE) Aquifer, neither of which are perched at this location. Contrary to the comment, the water being drawn by the slant test well is not fresh. Sampling of the test slant well water reveals the salinity of the pumped water has varied over time, ranging from 25,400 mg/L of TDS at start-up in April 2015 (76 percent ocean water salinity) to 31,800 mg/L in November 2016 (95 percent ocean water salinity); see Master Response 11, CalAm Test Slant Well. As described in EIR/EIS Table 3-1, the proposed slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP. See Master Response 2, Source Water Components and Definitions.

The perched groundwater-bearing zone referred to in the comment is located inland of the proposed slant wells. Groundwater flows to the edge of this zone and "waterfalls" into the underlying Dune Sand or 180-Foot Aquifer formations. The edge of the perched layer occurs 1.5 miles inland from the capture zone of the proposed slant wells. There is no evidence that the groundwater in the perched zone is reversing seawater intrusion or providing "protection" against seawater intrusion. This is evident in the fact that there is documented seawater intrusion further inland, which has been occurring for decades and continues to occur today See also response to MCWD-Hopkins Groundwater Consultants (HGC) Section 8.5.2.2.

EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, including the risk of seawater intrusion, and concludes that impacts would be less than significant. See also Master Response 8, Project Source Water and Seawater

Intrusion.The EIR/EIS acknowledges that components of the proposed project would be inconsistent with the City of Marina LCLUP. See Impact 4.6-4 in Section 4.6, Terrestrial Biological Resources. See also responses to comments Marina-94 and MCWD-150.

Master Response 3, addresses Marina's Water Rights.

Numerous resource protection programs throughout the SVGB (e.g. the Castroville Seawater Intrusion Project and the Salinas Valley Water project) have been developed by the Monterey County Water Resources Agency to promote groundwater recharge; EIR/EIS Section 4.4.1.3 describes these groundwater enhancement programs in the SVGB. The suggestion that groundwater quality has been restored through sustainable groundwater management plans and programs of the MCWD is inaccurate. Ceasing of groundwater pumping in the 180-Foot Aquifer and transferring MCWD pumping to the deeper aquifers was done out of necessity (see Master Response 7, the Deeper Aquifers of the SVGB, Section 8.2.7.1) and was not a deliberate effort by MCWD to restore that aquifer. See response to comment MCWD-HGC in Section 8.5.2.2. See also Master Response 6, Sustainable Groundwater Management Act and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Transcript-3
(Tilley) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-4
(Billingsley) EIR/EIS Section 1.1 explains that CalAm is proposing the MPWSP to develop water supplies for CalAm's Monterey District service area (Monterey District). Section 1.3 presents the need for the project: to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources. Therefore, the focus of the analysis on water demand (EIR/EIS Section 2.3) is on CalAm's Monterey District and not on other areas that may or may not need water; see also response to comment Biala1-30. See Master Response 3, Water Rights, specifically, Section 8.2.3.7 regarding effects on MCWD's water supply. EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, and concludes that impacts would be less than significant.

Transcript-5
(H. Biala) As described in EIR/EIS Table 3-1, the proposed slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater

Basin) for use as source water for the MPWSP. See also Master Response 2, Source Water Components Defined, and Master Response 3, Water Rights, regarding water rights, harm, and effects on MCWD's water supply.

See response to comment Biala1-30 regarding consideration of other service area's water needs. Consistent with NEPA and CEQA, the EIR/EIS analyzes the project as it was proposed by CalAm, the applicant; likewise, the project objectives within the EIR/EIS (see Section 1.3) reflect the purposes for which CalAm proposed the project. EIR/EIS Section 4.4, Groundwater Resources, analyzes the physical impacts of the proposed project on the quality and quantity of water in the regional aquifers that could be affected by the project, thus providing data as to whether and how the water sources of other water users could be affected.

Environmental Justice is addressed in EIR/EIS Section 4.20, Socioeconomics and Environmental Justice.

Transcript-6
(K. Biala) See Master Response 3, Water Rights, Section 8.2.3.2, Sequence of Approvals. See response to comment Marina-11 regarding slant well technology. See Master Response 2, Source Water Components and Definitions, and Master Response 3, Water Rights, Section 8.2.3.7 regarding the effects on MCWD's water supply.

The perched groundwater-bearing zone referred to in the comment is located inland of the proposed slant wells. Groundwater flows to the edge of this zone and "waterfalls" into the underlying Dune Sand or 180-Foot Aquifer formations. The edge of the perched layer occurs 1.5 miles inland from the capture zone of the proposed slant wells. There is no evidence that the groundwater in the perched zone is reversing seawater intrusion or providing "protection" against sea water intrusion. This is evident in the fact that there is documented seawater intrusion further inland, which has been occurring for decades and continues today.

EIR/EIS Section 4.4.5.2 presents the analysis of potential impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin, including the risk of seawater intrusion, and concludes that impacts would be less than significant. See also Master Response 8, Project Source Water and Seawater Intrusion, response to comment Transcript-2, and MCWD-HGC in Section 8.5.2.2. See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM). Results of the test slant well are presented in Master Response 11, CalAm Test Slant Well, and EIR/EIS Appendix E3. See Master Response 12, The North Marina Groundwater Model (V. 2016), Section 8.2.12.1.

Transcript-7
(Olsen) See Master Response 3, Water Rights, Sections 8.2.3.5 and 8.2.3.7. EIR/EIS Impact 4.4-3 concludes that impacts associated with changes in groundwater levels during operation of the MPWSP would be less than significant. However, CalAm

has voluntarily proposed Applicant Measure 4.4-3. If it is determined that a nearby active groundwater well has been damaged or otherwise negatively affected by the project pumping of the slant wells, the project applicant shall coordinate with the well owner to arrange for an interim water supply and begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well. CalAm would be bound to implement this mitigation measure through the Mitigation Monitoring and Reporting Program (CEQA Guidelines Section 15097), which ensures that measures included in an EIR to mitigate or avoid significant environmental effects are implemented.

Alternative projects at Moss Landing are described in EIR/EIS Section 5.4 and evaluated in Section 5.5.

Transcript-8
(McMahon) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5

Transcript-9
(Mounteer) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-10
(Leneve) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-11
(Poskoff) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-12
(Olsen) See Master Response 3, Water Rights, regarding water rights, harm, and effects on MCWD's water supply. See also response to comment Transcript-7.

Transcript-13
(Hansen) This comment does not concern the adequacy of the environmental review included in the EIR/EIS, but will be considered by decisionmakers, as discussed in Section 1.5.

Transcript-14

(Baer) The EIR/EIS is based on the best available information. See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2 and 8.2.11.3, which summarize the Coastal Development Permit and CEQA and NEPA review processes for the test slant well; see also Section 8.2.11.5 which describes the long-term pump test and the outages. See also EIR/EIS Appendix E3.

In a letter dated September 26, 2012, the CPUC requested an opinion from the SWRCB on whether CalAm has a credible legal claim to extract feedwater for the proposed MPWSP in order to inform the CPUC's determination regarding the legal feasibility of the MPWSP; the CPUC did not request a water rights determination. The SWRCB acknowledged in their review that the information provided to the SWRCB does not allow staff to definitively address the issue of how the proposed project would affect water rights in the Basin since it was unknown at that time which aquifer(s) the wells will extract water from, and further complicating the analysis, the relationship of the aquifers in the well area to surrounding low-permeability aquitards was uncertain. The results of the test slant well long-term pump test, and the information sought by the SWRCB in their July 2013 Final Report, are summarized in EIR/EIS Appendix E3.

As described in EIR/EIS Table 3-1, the proposed slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP.

EIR/EIS Section ES.8 explains that the groundwater model and results presented in the April 2015 Draft EIR, which relied on the work of Dr. Williams, have been revised in response to public concerns about potential conflict of interest. See also Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5.6.

Finally, EIR/EIS Section 4.4.5.2 concludes that the impacts of the proposed project pumping on groundwater resources would be less than significant (not "insignificant" as the comment states) according to specified significance criteria. While the proposed project would extract 24.1 mgd of source water from the Dune Sands Aquifer and 180-FTE Aquifer (see Master Response 8, Project Source Water and Seawater Intrusion), and the Environmentally Preferred Alternative (Alternative 5a) would extract 15.5 mgd of source water, it would be 90 percent ocean water in the first few months of project pumping and 95 percent ocean water within 5 years of project pumping; see Master Response 4, The Agency Act and Return Water, Section 8.2.4.3 as well as EIR/EIS Appendix E3. See Master Response 12, The North Marina Groundwater Model (v. 2016).

Transcript-15
(Shriner) EIR/EIS Table 3-1 explains that the proposed slant wells would draw water from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin). The proposed location of the slant wells is shown on EIR/EIS Figure 3-3a, and lengths of permanent slant wells seaward of 2020 Mean High Water are shown in Table 3-2 and Figure 3-3b. The Coastal Retreat Study conducted for the EIR/EIS is included as Appendix C2, and is explained in EIR/EIS Section 4.2.1.3; see also response to comment Shriner-3 and PTA-6.

EIR/EIS Appendix A1 is the Draft EIR/EIS distribution list. In addition to the direct mailing of 392 CDs, a notice of availability (NOA) was mailed to all property owners and residences within 300-feet of any proposed or alternative facility; the NOA provided the web address containing the Draft EIR/EIS for download, and announced the locations of hard copies for public review. Announcements regarding the availability of the Draft EIR/EIS, with links to the document, were provided in a regional newspaper (the Monterey Herald), a local newspaper (the Carmel Pinecone) and in the Federal Register.

Assumptions for the groundwater model were disclosed and reviewed with the public approximately 4.5 months prior to the release of the Draft EIR/EIS. The September 1, 2016, CPUC-sponsored workshop at the Sunset Center in Carmel-by-the-Sea included a presentation and discussion on EIR/EIS Appendix E2, North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios. Copies of the presentations that were made at the workshop continue to be available at: http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html.

The Draft EIR/EIS NOA that was published on January 13, 2017 included an announcement that "[t]he open house/public meetings will include a brief presentation on the contents and conclusions of the Draft EIR/EIS and interested parties will be provided an opportunity to interact with technical staff and preparers of the Draft EIR/EIS." The Lead Agencies and consultant staff were directed to help reviewers navigate the Draft EIR/EIS in order to facilitate the public's review of the lengthy and complicated document.

EIR/EIS Chapter 5 presents the alternatives' analysis, including analysis of alternatives at Moss Landing and Potrero Road. A detailed screening of components was provided in EIR/EIS Section 5.1 through 5.3. EIR/EIS Section 5.4 describes a total of eight whole alternatives, including the proposed project, the No Project Alternative, and Alternatives 1 through 5b; the alternatives are evaluated in EIR/EIS Section 5.5. The environmentally superior/environmentally preferred alternative (Alternative 5a, Reduced Project 6.4-mgd Desalination Plant - Intake Slant Wells at CEMEX) is described in EIR/EIS Section 5.6.

Transcript-16

(Cortez) The Public Hearing on the Draft EIR/EIS was not a CPUC Commission Meeting. Therefore, rules described in CPUC Resolution ALJ 252 did not apply; see response to comment Cortez-1.

See Master Response 1, EIR/EIS Authorship: this EIR/EIS was prepared by the CPUC as the CEQA Lead Agency, by NOAA's MBNMS as the NEPA Lead Agency. Likewise, the Lead Agencies, and not CalAm, hosted the EIR/EIS public meetings.

Regarding superposition modeling, see Master Response 12, The North Marina Groundwater Model (v. 2016), particularly Section 8.2.12.3. The deeper aquifer is evaluated in EIR/EIS Section 4.4.5.2; see also Master Response 7, the Deeper Aquifers of the SVGB, particularly Section 8.2.7.2. Regarding freshwater in the 180-FTE Aquifer, see Master Response 2, Source Water Components and Definitions, as well as response to comment MCWD-HGC in Section 8.5.2.2. EIR/EIS Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater were assessed using the 2016 version of the North Marina Groundwater Model (NMGWM$^{2016)}$ and MODPATH. Without slant well pumping, the particles representing saltwater would continue to migrate inland. With slant well pumping, the movement of saltwater is in response to the regional background gradient and drawdown created by slant well pumping. The EIR/EIS therefore, utilized the superposition NMGWM^{2016} without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping.

See Master Response 3, Water Rights, regarding the beneficial uses of water, and specifically Section 8.2.3.7 regarding effects of the proposed project on MCWD's water supply. What MOU the comment is referring to between a state agency, a county agency and a federal agency is not clear, but may be referring to the three party planning agreement. EIR/EIS Table 4.2 identifies Project No. 31 as the MCWD RUWAP Desalination Element, and discusses the three-party planning effort involving Fort Ord, MCWD and MRWPCA: The three party planning (TPP) effort will explore the most cost effective and technically efficient mix of advanced treated water, conservation, desalination, groundwater recharge and recovery, and other water sources, options, and alternatives to provide the 973 afy of augmented water, and whether more or less than 1,427 afy of advanced treated water is necessary to serve the Ord Community. The FORA Board will utilize the TPP study in developing a preferred water augmentation mix and deciding which additional water augmentation project(s) should be developed by MCWD.

Transcript-17

(Hofmann) EIR/EIS Section 4.4.5.2 describes potential operational impacts of the proposed project on groundwater resources in the Salinas Valley Groundwater Basin. See also Master Response 3, Water Rights, Section 8.2.3.7 regarding the effects of the

proposed project on MCWD's water supply. See Master Response 11, CalAm Test Slant Well, and response to comment Marina-11, in Section 8.5.1, regarding slant well technology. See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) regarding the use of ERT data.

EIR/EIS Section 4.4.5.2 presents the technical analysis of impacts of the proposed project's operation on groundwater resources, and is supported by Appendices C3 Section 4.4.4 (regional geologic setting), Section 4.6.6 (hydrostratigraphy), Section 5.2 (groundwater quality, CEMEX area), as well as Appendix E2 (groundwater modeling), and Appendix E3, Section 1.2 (hydrogeologic conceptual model).

Transcript-18
(Riley) See Master Response 3, Water Rights. See response to comment PWN2-22 regarding ratepayer issues. See Master Response 11, CalAm Test Slant Well, and response to comment Marina 11 in Section 8.5.1, regarding the feasibility of slant well technology. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), regarding the use of ERT data. The balance of these comments address process and ratemaking, and not the Draft EIR/EIS.

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